LIVESTOCK DEVELOPMENT PROJECTS;
PAST, PRESENT AND FUTURE

Proceedings of a meeting
organized by:
United States Agency for
International Development
and
International Bank for
Reconstruction and Development

Success Rate of IBRD Livestock Projects

IDRC Funding of Livestock Projects

Type of USAID Livestock Projects
LIVESTOCK DEVELOPMENT PROJECTS

PAST, PRESENT AND FUTURE

PROCEEDINGS OF AN INFORMAL MEETING OF DONOR REPRESENTATIVES INVOLVED IN LIVESTOCK DEVELOPMENT, ORGANIZED BY USAID AND THE WORLD BANK
PARIS, FRANCE  4-6 DECEMBER 1992

HARVEY BLACKBURN AND CEES DE HAAN (Editors)

The thoughts, concepts and opinions expressed in this document are those of the authors and do not necessarily represent the policies or goals of their respective institutions.
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Foreword

Livestock play a key role in developing agricultural sectors of developing countries. Not only do they provide more than one quarter of agricultural production and GDP, but the livestock sector also provides key inputs to arable farming by maintaining soil fertility and providing the power to plant and harvest crops. For the small farmer, cash income from livestock (especially milk and small ruminant sales) is used to purchase critical crop inputs, as well as needed household supplies and school fees. Beyond the farm gate livestock industries provide jobs for urbanites and an important source of foreign exchange. Finally, livestock play a critical social role, as an important factor in providing food security, the sole source of sustenance for landless farmers in many parts of the world.

Recognizing livestock importance, it is not surprising that in the sixties and seventies a significant share of the development assistance was earmarked for livestock development projects. Both the World Bank and USAID allocated over 20 percent of their agricultural projects to livestock development.

However, the performance of these earlier projects was rather poor. Ill-conceived economic policies, institutional weaknesses, and the use of inappropriate technologies combined against successful project implementation. As a result, most donors lost interest, and support to livestock development plummeted, with few exceptions to less than 10 percent of total agricultural support.

More recently, there is an increasing awareness by the decision makers in the developing countries and international donor community that the livestock sector can not be further neglected. Further neglect cannot occur because of livestock crucial role in agricultural development and because of its environmental impact, which can work both positively and negatively.

It is against this background that USAID, in cooperation with the World Bank, organized an informal meeting of representatives of the main donor organizations, involved in livestock development. This meeting provided an opportunity for each of the participants to provide an overview of the main trends in their livestock program, and, to discuss a small number of key issues affecting the sector. The issues discussed were macro-economics, livestock and the environment, the organization of the animal health services and the focus and organization of livestock research.

These proceedings provide an overview of the papers presented by the donor-representatives, the issue papers and a summary of the discussions. The views expressed in this meeting are mostly the individual views of the participants and should not be regarded as the official views of the organizations they represent. Similarly, the summary of the discussion should not be considered as an "official position" of the donors, but more as the consensus of a group of professionals involved in livestock development.

In this sense, we hope that these proceedings will contribute to a better understanding of current views and concerns of the professional livestock development community.

June 1993, Washington D.C.
Harvey Blackburn
US Agency for International Development

Cees de Haan
World Bank
CHAPTER I

OVERVIEW OF DONOR ACTIVITIES
THE PAST, CURRENT AND FUTURE POLICIES OF THE INDIVIDUAL COUNTRIES

Harvey Blackburn,
Agency for International Development

Overview

This overview is based upon the reports of 7 donors. The original reports contained information on: the past, present and future project activities; funding levels; regional emphasis; and key experiences which have shaped their livestock effort. Across donor groups there has been a decrease in the number and funding level of livestock projects. This reduction is in response to the low performance of livestock projects in the 1970's and early 1980's. The types of projects supported had similar emphasis and evolved across time to new and different areas of interest (e.g., support of public sector enterprises shifting to support of privatization). Regional emphasis may be changing as several donors are shifting some of their livestock efforts to various parts of Asia. At this time livestock project success rates appears to be improving compared to the results of the early 1980's. For example, the IBRD reports that the success rate of their livestock projects has consistently increased from 1983 to 1991, from 43% to 64%, respectively. If this trend holds across donors, it could be inferred that more effective livestock programs are being designed and implemented then a decade ago.

Donor Funding Levels

The IBRD has funded the largest portfolio of livestock projects. From 1974 to 1992 total expenditures on livestock activities were $16.6 billion. Funding of livestock only projects dropped to a low in 1980-1985 and then increased in 1986-1992. However, livestock component projects experienced a consistent decrease in funding after 1979.

<table>
<thead>
<tr>
<th>Funding For IBRD Livestock Only and Livestock Component Projects</th>
</tr>
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<tbody>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>Livestock as a Component</td>
</tr>
<tr>
<td>Livestock Only</td>
</tr>
</tbody>
</table>

5
The Netherlands reported livestock funding decreased as a percent of their total aid budget, from 6.8% in 1978 to 2.2% in 1984 and currently to 1% of their budget. Livestock funding declined during these periods from Dfl 70 to 40 million. The major categories funded were dairy cattle, general livestock and beef cattle.

During 1991 IFAD was supporting 87 livestock component and livestock only projects at a level of $193 million, which represent 10.2% of total project costs. Of these 87 projects, 21 are principally livestock and funded at $151 million.

Currently AID’s livestock funding is approximately $35.1 million, which is a decrease from the 1980 peak of $58.1 million. From 1985 to 1990, funding for livestock only projects stabilized at about $16 million. The majority of AID’s livestock activities where in Sub-Saharan Africa; however, during a time span of 1985 to 1990 there was a modest increase in funding for North Africa and Asia.

During the last ten years GTZ has funded 110 livestock projects. German livestock projects currently comprise about 17% of GTZ’s agriculture budget. The 1980 funding level was DM70 million. However, in 1990 the budget has been reduced to DM60 million.

IDRC is the only donor reporting an increase in livestock funding from 1980 to 1989. By 1989 funding levels for animal systems were approximately CD$15 million and crop-animal systems were funded at approximately CD$14 million. Figure 2 of Li Pun’s paper shows how research funding for animal systems and crop-animal systems has increased as a proportion of the budget from the period of 1971-1980 to the period of 1981-1989.

Project Types

The goals of the various types of livestock projects have been similar. The major theme has been to improve the livestock sector, which in turn improves the nutritional and economic well being of the target population. Due to this common theme, there has been a similarity of livestock project types among donors. Typical types of projects have included:

- Rangeland development,
- Nutritional based projects which include fodder production,
- Vaccine production, health care and veterinary diagnostics,
- Breed improvement or substitution,
- Production and management of various livestock species,
- Multidisciplinary crop-livestock systems,
- Domestic pricing and trade policy reform, and
- Development of marketing systems and standards.

In attempting to achieve the goal of economic development and nutritional well being, livestock projects, like other development activities, have undergone a series of transitions as the needs and conditions within recipient countries have changed. The papers describing donor activities exemplify this point, for across time livestock sector projects have changed from:

- Public sector livestock projects to projects emphasizing the private sector,
- Component livestock projects to multidisciplinary interventions,
- Public sector veterinary care to private sector veterinary care, and
- Emphasis upon cattle to a diverse group of livestock.

Livestock projects between the 1970's and early 1980's focused on single aspects (e.g., nutrition or health) of the livestock sector. These projects were designed to address problems in animal health, poor genetics, nutritional deficiencies and the development of large ranching or feedlot schemes. Cattle were the principle livestock species considered in these efforts. Also during this time Latin America and Africa were the regions of principal involvement (IDRC, AID, GTZ, IBRD).

Starting in the 1980's, there was a major shift in livestock projects to focus upon integrating the various components of the production system. Such an approach was meant to focus upon small farmer production systems. By taking this approach it was possible to incorporate into project design emphasis on animal traction, gender issues and access to credit. IFAD, the Netherlands and IDRC specifically mention the utilization of a multidisciplinary approach, which takes into account not only crop-livestock interactions but also access to credit and producer organizations in project design and implementation. Livestock species emphasis did shift away from a portfolio of cattle only. IBRD, IDRC, GTZ and AID indicated a shift to small ruminants, pigs, poultry and camelids.

During the 1990's, donor livestock project emphasis is still centered around a multidisciplinary approach. However, there are several project focus areas which have been added. Clearly the empowerment of the livestock producer is a key issue. This is being addressed through efforts on access to credit, the formation of producer groups or pastoral associations (in particular at regional and national levels) greater attention to gender issues and development of regional trade. Environmental sustainability has always been an important issue for livestock specialists and is now receiving additional attention, not only in semi-arid and arid production systems but also in mixed farming systems. Furthermore, more attention will have to be given to intensive production systems which produce a high volume of concentrated animal wastes. As donors become more involved with privatization and the agro-industrial processing of animal products environmental concerns will also have to be considered at this level of the production cycle.

**Lessons Learned**

Population growth, income growth and environmental sustainability are factors which will generate an increasing need for animal products, and therefore the donors will become more heavily engaged in this sector. The significance of these challenges increase the need to explore lessons learned from previous livestock efforts. Such an exploration will serve to highlight approaches which do or do not work. It may also provide insight in determining what type of projects need to be implemented.

Donors have expressed dissatisfaction with the impact livestock efforts have generally yielded. An overview of AID's range livestock project experience highlights some of the more common lessons learned. The IFAD report makes an important point by stating that in a degrading environment it is difficult to achieve an improvement in primary production. The lack of this realization and other unrealistic expectations from livestock sector efforts has
contributed to poor project performance. Donor experiences have led to a consensus that projects need to be designed with broad based support and involvement of the people they are expected to serve. As a result there are more livestock sector projects targeted at small holders and working through producer groups or pastoral associations. In AID these types of projects have been successful in addressing the issues of land tenure and sustainable resource use.

There is a greater appreciation of the need to view the livestock sector as a component of a much larger system. In this light, IFAD has found it beneficial to promote micro-enterprises and provide opportunities for off-farm employment as part of livestock development. In such a context, the livestock sector is viewed as an important source of jobs for processing livestock products. It is also becoming apparent that mixed crop-livestock enterprises have to be acutely aware of the time constraints upon the producers. Unless proposed interventions address this issue and devise ways of either saving time or the benefits from using an intervention clearly out weigh other production practices adoption rates will be low.

Have donors made progress in conducting better livestock projects? Most donor reports state an interest in promoting multidisciplinary projects. But has this message really been understood by the research community and the NGO’s which execute donors efforts?

**Future Activities**

Several donor reports stated that population and economic growth will drive an increasing demand for livestock products. If this is the case, the challenge for the donors will be to devise and execute livestock activities which will successfully promote human economic development and improve environmental conditions. As in the past, future livestock efforts will have to be carried out across a wide range of ecosystems and production systems. Both arid/semi-arid rangelands and crop-livestock systems will have to be addressed.

Future livestock activities will have a different focus than past efforts. Many of the donors report an interest in livestock not so much as a tool for increasing food production, but as a resource to generate income both on the farm and to the national economy (GTZ, The Netherlands, AID). Coupled with this, market orientation will be utilization of livestock for sustainable natural resource use. Target populations will continue to be pastoral groups, poor small farmers and landless people; within all groups, gender concerns will be addressed. New efforts must clearly define the expected benefits to these people, for their resources are too few to expend upon minimal return efforts.

Donors expressed a need to focus on several different types of production systems. These include systems found in areas of marginal production capacity (the semi-arid and arid zones), livestock-crop systems and market oriented systems (GTZ). Within these different zones are different segments of the production system which will need to be addressed by the host country and the donors if the livestock sector is to play a productive role which matches its potential. Therefore, it is essential that the components of the production system be correctly weighted and prioritized.

In many ways a similar set of problems will have to be addressed in future livestock projects as those carried out in the past. Problems of animal health, nutrient supplies,
management, marketing and utilization of genetic resources still remain problematic points in developing livestock industries. However, there does seem to be a recognition that new approaches must be used instead of the single factor approach used in the past.

Several donors expressed a desire to have implemented projects bring about change (or increased improvement) in the production system as a whole. This is a deviation from past livestock projects and may yield higher success rates than previously livestock efforts. However, what still seems to be lacking is a mechanism to evaluate and unify the components of the production system when considered at the same time. AID is proposing that decision support systems, which utilize accurate biological simulation models can and should fill this void. Use of systems analysis and decision support systems is the only mechanism which can unify the components of the system, prioritize research agendas and give a dynamic evaluation of what role potential interventions will play in improving the performance of the livestock sector.

**Discussion Points**

- What are the donors regional priorities; what sort of funding levels and what type of projects will result in the greatest impact in Eastern Europe and Asia? With the economic reforms which have occurred in Latin America is this a region which deserves more attention then received over the past decade?

- Several donors referred to a greater utilization of NGO’s in livestock oriented projects. Do NGO’s provide a mechanism to execute livestock oriented projects and support host country institutions or businesses? If so, what is the appropriate role for these organizations?

- Given the current funding scenario, what are the appropriate mechanisms for prioritizing geographic regions and livestock production systems?
Introduction

Some of the earliest projects financed by Dutch development cooperation were in the livestock sector. This was primarily because of the leading position of the Netherlands as an exporter of milk products and dairy cattle in those years, which drew the attention of developing countries in need of assistance in their livestock development programs. Rising urban incomes and population growth had led to a sharp increase in demand for milk products and meat, which had to be met by local production and supplementary imports.

Initially, the Netherlands responded to these requests through multilateral channels. In subsequent years, requests for bilateral support programs were also accepted. The scope and the number of projects, ranging from milk powder supplies and cattle deliveries to technical training and research grew rapidly, as did the necessity to review the effectiveness of this type of project.

Phases in Livestock Development Support

A critical study of Dutch-financed livestock projects was carried out by the Operations Review Unit. The activities evaluated were concerned mainly with cattle production; processing was often a minor part and no activities with small stock were included in the evaluation. The study (DGIS, 1987) distinguishes five phases in Dutch livestock development support.

These different phases, which are summarized in the table below, indicate the main trends over the years. They may, however, partly overlap and may differ from one country to another.

The large-scale supply of Dutch dairy cattle during the 1970's often led to adjustment problems for the animals: climate, feed, and management systems all proved unsuitable. In addition, the cattle were not suited to the conditions of small-scale farming in developing countries: they could not be used as draught animals and often suffered from disease, stress, hoof problems and infertility.

In an attempt to alleviate the problems involved in distributing imported livestock to small farmers, Dutch aid was used to finance large-scale modern dairy enterprises in the countries concerned. 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 serious problems. Imported

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2. Senior Livestock Officer, International Agricultural Center, Wageningen, the Netherlands
equipment was often ill-suited to local requirements and conditions and imposed a heavy foreign-exchange burden through the need to import spare parts.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Period</th>
<th>Main Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Large scale farming</td>
<td>1972-1980</td>
<td>Large-scale dairy farm management; mechanization; breeding and selection; artificial insemination; veterinary care</td>
</tr>
<tr>
<td>3. Small-scale farming</td>
<td>1978-1982</td>
<td>Small-scale dairying; research; extension and training; fodder production</td>
</tr>
<tr>
<td>4. Integrated approach</td>
<td>1980-</td>
<td>Recognition of women's role in animal husbandry; credit provision; use of animal traction and manure; extension and training in mixed farming</td>
</tr>
<tr>
<td>5. More emphasis on</td>
<td>1985-</td>
<td>Price and marketing policy; macro-economic and market-oriented production; ecological context and ecological constraints; farmers' organizations</td>
</tr>
</tbody>
</table>

It gradually became clear that the import-dependent activities of the first two phases were inappropriate. As animal husbandry normally takes place on a very small scale in developing countries, during the third phase, aid was increasingly targeted on the small farmer. The focus on small-scale animal husbandry hardly constituted yet a concerted policy at this stage and developing country governments sometimes failed to give their full support. The practical experience gained did, however, provide greater understanding of the importance of small-scale livestock farming.

As attention switched to the small farmer, views on the role of livestock 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. A more integrated approach was adopted in which livestock activities were seen in the context of mixed farming systems. Aid activities increasingly took into account a number of new factors, like credit facilities, the role of women, animal traction and other species of livestock.

Where the small-scale integrated approach began to bear fruit, it often ran into marketing problems. Hence the realization that the various circumstances surrounding beef and milk production are at least as important as the production techniques themselves: the macro-economic context, the market and the natural environment were increasingly taken into account in the design and implementation of activities. This marks the start of the fifth phase and the formulation of a new livestock policy framework.
Livestock Funding Trends

Data on the Netherlands' funding of livestock projects since 1978 have been summarized in Tables 1 and 2. However, due to changes in the number and status of recipient countries and because of modifications in the data base and accounting systems, data compilation for the period 1978-1984 differs from that for the 1985-1992. Moreover, livestock activities increasingly constitute part of rural development projects and consequently cannot be identified as such. Nevertheless, certain trends can be established.

The percentage share of the annual development cooperation budget committed to livestock activities has decreased considerably. In 1978, livestock activities comprised 6.8 percent of the total aid budget compared to only 2.2 percent in 1984. Annual figures are not available for the period 1985-1992, but on the basis of a total commitment of Dfl 407 million over that 7.5-year period (Table 2), it may be assumed that the percentage share of the total aid budget has further decreased to approximately 1 percent. In absolute terms, the annual commitments for livestock activities are estimated to vary between Dfl 40 to 70 million during this period. Although no data are available, it is assumed that commitments 'hidden' in rural development projects amount to less than Dfl 10 million/year.

Table 1. Funding of Livestock Projects in the Netherlands Development Cooperation Program,
Share of Livestock Activities in Budgets (Dfl x 1 million).

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual budgets(^3) Dev. Coop</th>
<th>Commitments all livestock activities</th>
<th>% Share of livestock activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>1615</td>
<td>110</td>
<td>6.8</td>
</tr>
<tr>
<td>1979</td>
<td>1861</td>
<td>112</td>
<td>6.0</td>
</tr>
<tr>
<td>1980</td>
<td>2018</td>
<td>73</td>
<td>3.6</td>
</tr>
<tr>
<td>1981</td>
<td>2066</td>
<td>76</td>
<td>3.7</td>
</tr>
<tr>
<td>1982</td>
<td>2102</td>
<td>70</td>
<td>3.3</td>
</tr>
<tr>
<td>1983</td>
<td>1999</td>
<td>28</td>
<td>1.4</td>
</tr>
<tr>
<td>1984</td>
<td>1957</td>
<td>42</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>511</td>
<td></td>
<td>3.8</td>
</tr>
</tbody>
</table>

Over the period 1978-1984, 70 percent of the livestock funding in the 13 program countries went to dairy development activities. A similar percentage may be assumed for the commitments in all recipient countries. For the period 1985-1992, funds committed to dairy development activities constituted only 35 percent of the total budget allocated to livestock development in all recipient countries. Emphasis clearly has shifted from dairy development to a wider range of activities in the subsector.

\(^3\)Allocations under categories I-VI of the budget for development cooperation
Table 2. Commitments (Dfl x 1 million) in Respect of Different Types of Livestock Activities.

<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>min. Dfl</td>
<td>%</td>
<td>min. Dfl</td>
<td>%</td>
</tr>
<tr>
<td>Livestock general</td>
<td>28</td>
<td>11</td>
<td>113</td>
<td>28</td>
</tr>
<tr>
<td>Dairy cattle</td>
<td>178</td>
<td>70</td>
<td>142</td>
<td>35</td>
</tr>
<tr>
<td>Beef cattle</td>
<td>44</td>
<td>17</td>
<td>59</td>
<td>14</td>
</tr>
<tr>
<td>Animal traction</td>
<td>6</td>
<td>2</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Small stock</td>
<td>*</td>
<td>*</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Poultry</td>
<td>*</td>
<td>*</td>
<td>73</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>256</td>
<td>100</td>
<td>407</td>
<td>100</td>
</tr>
</tbody>
</table>

*No data available for this period

Livestock Development Policy for the Nineties

The general framework of the Dutch development policy for the 1990's is laid down in the policy document 'A World of Difference' (DGIS, 1991). The main goal of this policy is poverty reduction, to be achieved through sustainable development, which means economic growth, ecological sustainability and fair distribution. Two important additional policy goals are autonomy for women and environmental protection.

Agriculture in many developing countries has been a neglected sector, and livestock an even more neglected subsector. In many countries, the low world market prices have resulted in large imports of livestock products at concessionary prices. This has benefited consumers, but prevented the development of strong livestock subsectors.

Despite these constraints, in many countries, support to livestock development is justified and desirable, even though distinctions must be made between countries. From the point of view of macro-policy, the agricultural sector—and consequently, the livestock subsector—has a pioneering function to fulfil in sustainable economic development. The expansion of agriculture and livestock production is the driving force behind effective rural development. However, livestock production is not necessarily a standard solution, and a thorough, interdisciplinary analysis of agro-ecological and socio-economic conditions, including production and market relations as well as an analysis of the livestock sub-sector and its macro-economic and policy environment, must precede the design of any livestock program or project if it is to be eligible for Dutch funding. Analysis of the problem should aim at the

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4 13 program countries (main recipients) only
5 All recipient countries
6 Refers to 13 program countries only; total for all recipient countries amounts to Dfl 511 million (see table 1)
7 Refers to all recipient countries
identification of opportunities for and constraints on livestock development with special attention to the needs of the poor. On the basis of a realistic assessment of the weaknesses and strengths of the country and the sub-sector, priorities, objectives, approach, means, etc., can then be clearly defined, after which a project or program can be designed.

According to Dutch livestock policy, strategies for sustainable livestock production should be embedded in a broader policy for rural development and aim at increased market-oriented production. Against the background of a much wider development scenario, rural development programs should strengthen both the vertical and horizontal integration of livestock development. "Vertical integration" means strengthening the production chain: input supplier, producer, trader, processor and consumer. Better integration of rural areas into national economies is a precondition for rural economic growth. "Horizontal integration" refers to optimal interaction between livestock production and arable farming, forestry and other income-generating activities. Considering the multiple functions of livestock and the complex interaction with production factors and other subsectors, a systems approach is called for in the elaboration of sustainable livestock production.

The strength of livestock and dairy production within the rural development context is its potential to generate a regular income for small farmers, women or the landless. Livestock and dairy production can and should have a redistributive effect by transferring income from the urban customer to the rural poor. Market-oriented production systems are a prerequisite for this. More and more livestock owners should consequently develop into, and be seen as, entrepreneurs, as partners in development. Livestock development can also contribute to the creation of employment because of the resulting increase in demand for farm labor and non-agricultural rural products.

Livestock can play an important role in the development of sustainable land use. The intensification and progressive commercialization of mixed subsistence farming require an increase in the efficiency of the production system, without any loss of ecological sustainability. Sustainability will be enhanced by the more intensive use of animal traction to reduce the competing demand for labor in crop and livestock production, as well as by improved soil management through the collection and strategic application of manure.

Contrary to accepted wisdom in the past, livestock products are no longer considered essential to human nutrition. In fact, in most developing countries, meat, milk, etc., are luxury products. Indirectly, livestock production may have a positive effect on food security at the household level, through the increased agricultural production resulting from the use of draught power and manure. Income generated by livestock may also improve the nutritional status of the family through food purchases.

Consequently, Dutch livestock development policy departs from the view that the justification for support to livestock development is to be found not so much in the contribution of livestock to food production as in livestock's income-generating potential, its redistributive effect, and its function within the local production system.

**Livestock Production in the Bilateral Aid Program**

The Netherlands maintain bilateral aid relations with 53 countries, which can be divided into three categories: program countries, countries in program regions and sector countries.
For the first two categories, country and regional policy plans, which form the framework for bilateral development cooperation, have been prepared for the period 1992-1995. Considering the above-mentioned funding trends, it will hardly come as a surprise that livestock production does not feature very prominently in these policy papers. Only in the case of countries like Pakistan, Tanzania, Kenya, Zambia and some countries in the Sahel region, where activities in livestock production have often existed for many years, is livestock production specifically mentioned as a subsector for future cooperation. In most other country and regional policy papers, livestock is referred to only briefly: eg., as a component in integrated rural development program or in relation to environmental and to women-in-development programs. This limited attention to the subsector in policy plans reflects the changed priorities in Dutch development cooperation, where attention is focused on poverty reduction, for which livestock production may or may not form one of the suitable instruments. Due to the unfavorable experiences in the past, it undeniably also reflects a hesitation to finance sectoral livestock production activities.

Target Group. Dutch aid will, more than in the past, be directed towards the poorest segments of the population. For livestock activities this implies that attention will, in particular, focus on smallholders, pastoralists and landless livestock keepers. However, large-animal farming requires investments and risks beyond the means of the very poor. The livestock activities of this target group are generally characterized by smallstock and backyard farming. Consequently, more emphasis will be put on the development and introduction of feasible smallstock and backyard production systems for resource-poor farmers.

Given the important contribution of women to livestock production, particularly in the predominant mixed farming system, a gender-specific project approach is a prerequisite for Dutch livestock activities. Extension services and training directed specifically at women, and access to credit for women on the same terms as for men, are but a few examples of possible interventions. However, the promotion of economic self-reliance, active participation and co-responsibility in order to stimulate women's autonomy must also be included in the approach. Possible negative effects on the position of women or on food security at household level should be assessed and their prevention be accounted for in the project.

As was recently confirmed by an evaluation of 40 Dutch-funded rural development projects, one of the common features of successful and sustainable projects is a high degree of target group participation. This can be achieved by strengthening grassroots organizations representing the target groups involved. Active participation by the population, right from the project planning stage, is an absolute precondition for sustainability. Strengthening and supporting farmers' organizations to improve their bargaining power is an explicit goal of Dutch development cooperation.

Aid Channels. In addition to bilateral government to government funding, Dutch aid may be channeled through multilateral organizations as well as through international and national non-governmental organizations. The international and regional dimensions of development problems, the need for better coordination of aid and the advantages of the increase of scale are some of the reasons why Dutch development policy aims to increase the funds channeled through multilateral organizations. In the livestock subsector, multi-bifunding of FAO projects and co-financing of World Bank and IFAD projects have been, and are likely to remain, preferred channels for multilateral funding. Due to the limited implementation capacity of the
relevant department of the EC Commission, co-financing with the EC is considered less attractive.

NGO’s will also increasingly be associated with the implementation of Dutch development policies. This channel will be the preferred option for activities and initiatives where intergovernmental cooperation is difficult or impossible.

**Project Planning and Design**

Lessons from the past as presented in the evaluation reports of the Operations Review Unit on rural development projects and on livestock activities have produced valuable conclusions and recommendations on project design, which can be summarized in the following seven points:

1. Livestock activities must form an integral part of rural development programs and policies. Often this will imply that livestock production is only a supplementary but nonetheless important activity, given its multi-functional role for the poor. That does not alter the fact that in areas where livestock is the mainstay of farming, programs will be predominantly geared to livestock development.

2. Projects should preferably be restricted to one sector; multi-sectoral projects have turned out to be too complex and inefficient to have a substantial and lasting effect on either economic growth or poverty reduction.

3. In view of the complex reality of rural areas, project design should be simple and flexible. A modest start based on coherent packages of small-scale capital-intensive activities, attuned to local conditions, must be the starting point. On the basis of experience gained, packages can be adjusted, added or abandoned. A well-organized monitoring and evaluation system is a prerequisite for such a step-by-step approach.

4. Projects must be farmer-oriented and not government projects. In other words, farmer-felt needs and objectives should determine project concepts. Projects should aim at strengthening the bargaining power of farmers and offer them opportunities to take their destiny into their own hands.

5. Projects must make use of local knowledge by bringing in local expertise. Oversized expatriate project teams prevent the integration and absorption of projects into local structures, thus hampering project sustainability.

6. Projects must include local organizations representing the target group. Moreover, the private sector should be encouraged to play a more significant role. Both will have to fill the gaps that arise from the retreat of governments from productive activities as a consequence of the redefinition of government’s role in development. Government should no longer be the sole agent of development.

7. Projects must be production-oriented and emphasize income- and employment-generating activities. Experience has taught us to expect high results and sustainability from projects that create opportunities for viable productive activities. Livestock development projects in
particular have a potential for stimulating rural income growth. Productive livestock activities should, therefore, receive more attention in rural development programs if opportunities are to be fully exploited.

Adequate project planning and design are certainly tools that can considerably improve the chances of success and sustainability. Too often, however, governments and donor agencies alike have been tempted to set up large-scale complex projects with over-ambitious objectives, to be achieved in excessively short periods. Too often, this has resulted in donor organizations walking away from livestock and dairy projects with their well-intentioned but exaggerated ambitions frustrated. In order to avoid these errors from the past, Dutch aid will, wherever necessary and possible, take the form of a long-term integrated programs. The complexity of the rural situation does not leave any other choice.

National Policy Environment

Replicability, transferability and sustainability are major objectives in Dutch development projects and programs. Long-term results, leading to cumulative development, are sought. However, these objectives are difficult to achieve, when projects have to be implemented in an unfavorable macro-economic and policy environment. In many countries, political commitment to the stimulation of rural development in general, and the livestock sector in particular, has been lacking. This has resulted in inadequate producers' organizations, limited access for smallholders to markets and credit, underdeveloped infrastructure and low and fluctuating producer prices. Many national governments have an urban bias, preferring short-term benefits, such as the large-scale export of raw materials and the import of cheap products, including dairy products.

An unfavorable macro-economic and policy environment is possibly the single most important determinant of poor performance in livestock and dairy projects. Strengthening of national sector-specific planning and policy capacities, therefore, constitutes a priority in Dutch livestock development policy. Support in planning and policy preparation is particularly relevant, if the lack of political commitment originates from inadequate policies, lack of national expertise or underestimated potential. In this context, an International Workshop for senior policy makers and executives on Livestock Production in Rural Development with emphasis on the topic 'Development of Livestock Policies' (Gootjes et al. 1992) was held in January, 1992, in Wageningen, the Netherlands.

Governments' commitment should be reflected in market and price policies clearly designed to stimulate rural development. There is a wide consensus on the need for sounder market and price policies for livestock products. Price subsidies to compensate for lower producer prices, as applied in several countries, can only be seen as second best. Their dismantling should be encouraged as they have a tendency to patronize farmers.

Some governments are assuming new roles, while retreating from production and distribution and others must follow their lead. Their roles are shifting to that of creating an enabling environment and providing services, simultaneously reducing administrative controls. Services still to be provided by the public sector include land use planning, support to farmers' organizations, control of infectious animal diseases, applied research, provision of credit facilities, education and training and the general improvement of infrastructure.
Private initiatives in the livestock sector must be encouraged, especially those involving credit, input supply and services. Nonetheless, as indicated above, some tasks in livestock development in many countries will remain the responsibility of the public sector. Eliminating the role of government too hastily could lead to the formation of new monopolies which will damage the livestock subsector.

References


**Animal Production within GTZ's Agricultural Technical Assistance Programs**

Within GTZ's organizational structure, the division for animal production covers animal breeding, husbandry, nutrition and animal health care.

The total expenditure per year during the last decade was about 17 percent of the total amount spent on agricultural programs, the absolute figure in 1988 being about DM 70 million. In 1990, however, this figure decreased to about DM 60 million. This decreasing tendency may indicate that less importance is being attached to livestock production aspects in bilateral technical assistance programs.

When considering increasing efforts to achieve substantial growth rates in animal production, especially in a world where the availability of land per capita is still decreasing, the following should be borne in mind:

- agricultural primary products which can be consumed by humans should not be used to produce animal products;
- agricultural land which is used for the production of basic staple food should not be reduced in favor of the introduction of fodder cultivation unless the latter is required for the upkeep of the natural fertility of land or for the maintenance of draft animals; and
- arid and semiarid rangelands, because of their fragile ecological nature, should not be used to any large extent for production of food and/or cash crops.

Under these three basic preconditions, which hold true for the majority of developing countries, any further increase in animal production must be achieved mainly by an intensification of existing production systems, rather than by an increase in animal numbers.

**Trends in the GTZ-funded Livestock Projects Over the Past 15-20 Years**

In order to meet the principles stated above, the GTZ developed a system of program elements at the end of the 1970's. The objective of these programs was to offer standard instruments for planning and implementation of projects.

**Cattle and Buffaloes:** Cattle and buffaloes are traditionally the most important domestic animals in tropical savannas and especially in sub-humid areas utilized mainly for agricultural purposes. Here, the GTZ aimed to contribute to the improvement of the
genetically-determined performance potential, both for milk and meat. A second goal was to satisfy the need of small farmers for animal traction. This was to be accomplished through breeding, husbandry and nutritional methods.

**Small Ruminants:** Small ruminants represent one possibility for generating increased of farm income. This applies particularly where land is limited. Sheep and goats are widely considered to be "complementary partners" to large ruminants. Goats especially are often viewed with skepticism and suspicion. They are seen in connection with soil erosion, which is widespread in many regions. Therefore, controlled husbandry was a priority where small ruminant production was being emphasized.

**Small Livestock:** Small livestock (poultry, rabbits, bees and others, such as guinea pigs, agoutis, etc.) have several advantages over ruminants. These include high reproduction rates, easy adjustment to various climatic conditions and production systems, high efficiency in the conversion of feeds, and a constant "ready-to-serve" protein supply without difficult storage.

**Forage Production and Feed Quality Control:** The rapid expansion and intensification of livestock production requires the optimal use of feed resources, including the use of concentrates. High-yielding animals need balanced feed rations in order to fully utilize production performance and fees as well as to guarantee longevity and health of the producing animals.

**Primary Animal Health Care and Establishment of Private Veterinary Services:** The existence of well-functioning animal health services is an essential prerequisite for any improvement of livestock production. Public sector institutions concerned with animal health in developing countries, however, are often overburdened with financial problems and inadequate staffing. These insufficiencies severely hinder farm visits by the government veterinary services, particularly in view of the often large distances between urban centers and rural farming areas. The GTZ, therefore, promoted the strategy of decentralizing animal health care and the establishment of private veterinary services. At the same time, so-called primary animal health care systems with village workers were set up to ensure a dense network of closer contacts to producers.

**Animal Health Surveillance:** Animal mortality caused by epizootic diseases, parasitic infestation and deficiency symptoms have extremely detrimental effects on production. A well-functioning disease surveillance is a major precondition for any export-oriented animal production. Priority is not given to the health of the individual animal, but rather to diagnosing and controlling those diseases and deficiency symptoms which jeopardize the prosperity of entire herds.

**Tsetse and Trypanosomiasis Control:** The tsetse fly is distributed over two-thirds of the entire African continent and trypanosomiasis causes severe damage to livestock. Africa's annual meat production could be doubled in the long term if infested areas were to be made free of trypanosomiasis. Improvement programs were implemented which were aimed at the control of tsetse flies as the carrier of the disease, improvement of preventive care, treatment of sick animals, and replacement of stock by trypanotolerant cattle.
**Control of Ticks and Tick-Borne Diseases:** Ticks and tick-borne diseases cause heavy losses and affect milk and meat production. Controlling the pathogenic agents is often difficult and requires intensive efforts, with priority given to developing vaccination methods, eg., against East Coast Fever. Projects were implemented which were aimed at the control of tick-borne diseases and concentrated mainly on the eradication of ticks with acaricides and development of biological tick-control measures.

**Animal Production and Veterinary Research:** In the past, livestock production in many developing countries was often considered a by-product of the agricultural sector. Therefore, little attention was paid to adaptive research. In order to optimize and increase productivity, an intensification of adaptive research, especially as regards the connections between animal production, crop production and farm management, was required. Therefore, most of the GTZ’s animal production and veterinary projects also contained specific research components, which were carried out in cooperation with national and international research institutes.

**Types of Projects Funded**

Over the last ten years, the GTZ has, on behalf of the German government, assisted in implementing about 110 livestock projects in about 80 partner countries. To develop a generalized classification of these projects is barely possible as each project was planned and designed according to specific requirements. These are some of the typical types of projects funded:

- Livestock planning, production monitoring and evaluation
- Integrated cattle and buffalo production
- Rangeland development
- Small ruminants
- Smallholder goat extension
- Unconventional livestock
- Nutritional or feed laboratories
- Veterinary diagnostic laboratories, including field services
- Veterinary assistant training
- Primary animal health care
- Vaccine production
- Tsetse fly and trypanosomiasis eradication

The list does not represent any priority ranking. The assistance provided by the GTZ generally included the provision of specialists, short term consultancies, supply of required specific materials and specialized training of manpower.
**Future Strategy for Planning and Implementing New Livestock Projects**

The World Summit in Rio, UNCED 1992, once again underlined the need for a complex strategy for livestock farming. Today, economic benefit has to be considered in relation to the ecological costs. This is particularly so in cases where the management of natural resources is no longer viable, or where non-renewable resources are being exhausted. The prevailing approach in livestock development of achieving productivity in the form of high meat and milk yields, based on the model of developed countries, must be replaced by an approach aimed at sustainable management of available natural resources.

In many developing countries--and in Africa, in particular--animal production and crop farming are often still separate production systems. As the pressure of agricultural exploitation increases, the rate of resource degradation increases in both systems. The interactions brought about by the integration of the two systems, however, leads to more efficient and sustainable resource management. The GTZ will, in future, be placing appropriate emphasis on this aspect in the planning of new projects.

The ecological situation, population density and distance from urban centers are all crucial factors in determining the production system employed. In this context, the following are the three most significant systems of animal production:

- Animal production in marginal regions
- Livestock farming on cultivated lands
- Mark-oriented animal production

For the GTZ, this means that emphasis will be placed on projects bringing about positive changes on these production systems as a whole. Equally important for all three production systems in this connection, is the provision of advisory services to the national institution in sectoral planning, policy formulation, integration of national programs into structural adjustment measures and institutional diversification. Where new functional structures are to be established, institutional and human resource development measures will be provided so that functions previously performed by public sector institutions can be taken over by private sector or target group organizations. Closer, concrete cooperation with NGO’s will be established.

Animal production in marginal regions is based on systems, whereby extensive and often mobile animal husbandry is the predominant form of land use over a large area of land, to which there is usually no ecologically or economically sustainable alternative. It is practiced in arid and semiarid regions, in mountain regions and in other economically marginal areas. Animal capital forms the cornerstone of an extensive "social security and insurance" system, and as such is the basis of a traditional, appropriate and highly flexible form of economic activity.

The aim of projects dealing with these production systems is to enable the people to bring about a sustainable improvement in their quality of life by managing natural resources spread over a wide area through extensive herding of cattle and buffaloes, sheep, goats and camels.
The types of measures provided to promote this farming system include:

- Systems management of pasture resources, including water
- Development of appropriate veterinary services, primary health care, traditional veterinary medicine
- Basic supply of veterinary medicines and vaccines
- Control of epizootic diseases and zoonoses
- Livestock marketing, establishment of marketing structures
- Establishment of social infrastructures
- Creation of alternative sources of income
- Resource monitoring, land use planning
- Land rights and investment security

The keeping of animals on cultivated land, as a rule has a "money box" function, i.e., helps secure subsistence and income without major investment, and increases the stability of the farm through traction, manure management and fodder cultivation. Management decisions are determined largely by the crop farming activity. With this production system, decreasing availability of former grazing lands, necessity of increasing the productivity of land and labor, or attractive markets lead to integration, intensification and specialization, with a tendency toward the farming of draft, dairy and small livestock.

Development efforts in this context aim to enable small farmers to manage on-farm resources better and more sustainable, with the objective of securing farmer livelihood, increasing soil fertility and securing additional income and capital on a sustainable basis. The following kinds of measures are provided for this system:

- Farming system extension services
- Establishment of farm-based information systems
- Improvement of animal nutrition through fodder cultivation, improved fallow, utilization of agricultural by-products
- Improvement of animal housing conditions
- Breeding and selection of production sires
- Utilization of dung as a component to secure long-term soil fertility
- Improvement of animal health by ensuring control of epizootic diseases by sovereign states, and establishment and privatization of appropriate veterinary services
- Strengthening self-help among livestock farmers through training in simple treatment methods
- Support to self-help capacities in private sector input supply, in breeding and production monitoring and in the creation of marketing potential
- Clarification of issues of land rights and long-term management of farmlands as a precondition for ecologically stable management systems

In general, the market-oriented animal production system presupposes that an infrastructure exists and that produce can be transported to the consumer markets in urban centers without any problem. This production system is characterized by intensive farming designed to produce marketable produce. The farmers concerned are often families with little
or no land, eg., practicing mobile herd management, or may be semi-industrial layer or broiler producers, or commercial sheep or pig fatteners, etc. They market their produce in some cases themselves, or are incorporated within a marketing structure. The farms are, to a large extent, dependent on a smoothly-functioning veterinary health service, an off-farm supply of high-quality feeds, and livestock of high productive capacity.

The aim is to enable the producers of foods of animal origin to supply urban consumer centers with high-quality product sustainability and at low cost.

To achieve this aim, the following inputs can be provided:

- Advisory services on price and market policy
- Feed quality control
- Diagnostic laboratories, vaccine manufacture
- Information systems/farm-based extension services
- Marketing infrastructure, dairies, livestock markets, abattoirs
- Input supply, fodder, veterinary medicines, breeding animals
- Utilization of by-products and waste products
- Privatization of farm services, insemination, herd book, animal health
- Fodder cultivation, rotation planning, dung management
- Organizational development, development of private sector institutions

GTZ projects are always planned using the "objectives-oriented project planning" (ZOPP) method. This procedure ensures that the project country organizations and target groups are actively involved in the projects right from the planning stage.
IDRC'S SUPPORT TO LIVESTOCK RESEARCH IN DEVELOPING COUNTRIES
Hugo Li Pun, IDRC

Introduction

Livestock play important roles in developing countries. Significant proportions of land and plant resources are used for the production of livestock. In economic terms, the contribution of livestock to the agricultural gross domestic product of most developing countries is high (over 30 percent). But this is an underestimate as it does not take into account the contribution of manure, nor the value of animal traction. Livestock are also important sources of valuable products such as high quality protein and fiber. For small farmers, peasants and even the landless, livestock serve as a means of capitalization (being easily saleable and providing liquidity). It utilizes products of low opportunity cost: marginal lands/grasslands, agricultural by-products and labor (woman, children, the aged). Animals are also important in food security as they are buffers against economic and climatic instability e.g., droughts, floods, frost, high inflation, devaluation, and inefficient financial systems.

The needs for animal products in developing countries are high as expressed by present consumption and nutrition levels. Demand for animal products in developing countries is high due to their income elasticity and growing incomes (Mellor, 1989). Pastures and animals contribute extensively to nutrient recycling (Sanchez and Ara, 1991). For all the above reasons, animals are very important for the sustainability of agricultural systems.

In contrast, livestock in developed countries play a diminishing role and may even have some negative connotations (During and Brough, 1991) due to:

- Over-consumption of animal products, food in general and a growing concern about the effects of high cholesterol in the diet.
- Diminishing role of agriculture in natural resources and labor use, and in the economy in general
- Pollution of the environment as a result of high intensive agricultural systems (pesticides, fertilizers, manure).
- Animal rights are becoming a growing concern.
- Perceptions that in developing countries, animals contribute to destruction of the tropical rain forests, as some countries have promoted policies that have encouraged the use of forests for extensive beef ranching.
- The perception that most animals in developing countries are in the hands of rich ranchers and farmers.
The competition for cereals between animals and people in developing countries.

Changes in donor commitment to support agricultural sectors have. These changes may be the result of a combination of factors:

- Differences in perceptions regarding the role of agriculture in general, and livestock in particular, for developing countries.
- Pressures from the constituencies.
- A changing global environment (globalization of economies, reunification of Europe), which could result in greater competition for funds.
- Appearance of new issues in the research and development agenda: environment, gender and sustainability.
- The perception of low impact from livestock R&D projects due to their complexity, cost and long-term nature.
- The need to define new roles for agriculture and agroindustries in which an increasing participation of the private sector is being encouraged: therefore, reducing the typical support to public sector R&D.

On the other hand, agriculture in developing countries will face serious challenges as per capita arable land will be decreasing while food demands continue to grow. Among the major factors affecting the demand for food will be: population growth, urbanization and income growth (CGIAR, 1991). These factors will result in high demands for high-value cereals, animal products, vegetables, fish and processed foods. Within this context, national institutions, in general, have not expressed clear views, nor have they yet reacted to changes in terms of structures or programs.

IDRC is an organization supported by the Canadian government to assist developing countries in creating their own long-term solutions to pressing development problems. Support is given directly to Third World institutions whose research focuses primarily on meeting the basic needs of the population and overcoming the problems of poverty. The institution is autonomous in its policies and activities. Its Board of Governors is international and reflects the nonpartisan, multi-cultural character of the organization. Through the years, IDRC has been very active in the support of agricultural research, particularly in the area of farming systems and animal production systems. As a result of the changing environment, the Center has recently reorganized its programs to better respond to the challenges of promoting sustainable development.

The purpose of this paper is to describe IDRC’s support of livestock research over the past two decades, and present new trends in the Center’s support of livestock research within the context of natural resource management.
Past Support of Livestock Research

Since its creation two decades ago, IDRC has chosen to support research aimed at improving the situation of small farmers in developing countries, given their needs, the fact that they are the majority of the rural population, and that they had been excluded from many research and development efforts.

Thematic Coverage

During the first five years, support was given mainly to component research in the areas of animal health (trypanosomiasis) and animal feeding (pastures and agricultural by-products). The first experiences in supporting small farmer research were developed in cropping systems and rural development in Asia (IRRI) and Latin America (CATIE, Caqueza in Colombia) in the early 70’s. Animal production system research projects were initiated in the mid-to-late 70’s in Latin America (CATIE in Central America, IDIAP in Panama and IVITA in Peru). Those projects pursued holistic, participatory approaches combining biological sciences (nutrition, animal management and health, pasture agronomy and management, soils sciences and agronomy) and social sciences (mainly, agricultural economics). During the 80’s, a strong emphasis was placed on systems research, starting in Latin America but followed by Africa and Asia. This resulted in more than half of the funds being allocated to systems research (Figures 1 and 2).

Mixed systems (crop-animal; crop-animal-trees) research was started in the mid-80’s, mainly in Latin American and Asia, due to the relatively high institutional capacity for systems and multi-disciplinary research in those regions. With this came the incorporation of other disciplines of the technical teams, such as rural sociology and anthropology to address social issues in the characterization of systems, design of alternatives, technology adoption and training. Gender analysis was also started in the last five years.

The need to develop and promote methodology for research, exchange experiences, and promote training and technical back-up led to the support of research networks. The Center was particularly active in supporting a number of them, including animal production and mixed system networks in Asia, and feeding system networks in Africa. A list of them and their main characteristics is provided in Table 1.

Geographical Coverage

Although there are commonalities in ecological conditions across regions, the Center has recognized the need to have regionally differentiated programs according to specific characteristics of production systems, people’s needs and aspirations, government plans, relative institutional capacity, activities of international programs, etc. For example, given land constraints in Asia, prevalence of mixed farms (crop-animal) and consumption patterns, the Center has supported research in mixed systems and small ruminants (in intensive systems or integrated in plantations to maximize the utilization of undergrowth, reduce the use of herbicides and fertilizers).
TABLE 1. IDRC SPONSORED NETWORKS IN ANIMAL PRODUCTION SYSTEMS RESEARCH, 1991.

<table>
<thead>
<tr>
<th>Network</th>
<th>Countries</th>
<th>Institutions</th>
<th>Researchers</th>
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<tbody>
<tr>
<td>A. Systems Networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RISPAL (LA)</td>
<td>12</td>
<td>20</td>
<td>153</td>
</tr>
<tr>
<td>RIMISP (LA)</td>
<td>10</td>
<td>16</td>
<td>N/A</td>
</tr>
<tr>
<td>SRUPNA (ASIA)</td>
<td>12</td>
<td>20</td>
<td>85</td>
</tr>
<tr>
<td>B. Systems Related Networks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIEPT (LA)</td>
<td>18</td>
<td>51</td>
<td>104</td>
</tr>
<tr>
<td>ARNAB (AFRICA)</td>
<td>9</td>
<td>29</td>
<td>40</td>
</tr>
<tr>
<td>AFRNET (AFRICA)</td>
<td>10</td>
<td>23</td>
<td>25</td>
</tr>
</tbody>
</table>

In Africa, given the importance of pastoral systems in the semi-arid zones and the need to intensify land use in the more favorable areas of Eastern Africa, the Center has chosen to concentrate efforts to address the improvement of those systems.

In Latin America, where land is not a serious constraint in the tropical areas, efforts have been made toward the improvement of grazing-based dual purpose production systems. In the more unfavorable areas, such as the highlands of the Andean region, the emphasis has been on the improvement of mixed systems. Due to the fragility of the ecosystems in the humid tropics, the Center has been supporting agroforestry and agrosilvipastoral systems research. Traditionally, a larger emphasis has been allocated to Latin America given its relatively high institutional capacity to conduct long-term pioneering research in complex topics such as systems research. As experiences have evolved, a more balanced support across regions has been achieved (Figure 3).

Species

Within the characteristics of the different farming systems, a strong emphasis has been given to the improvement of ruminant production systems due to their ability to utilize low quality forage and by-products and convert them into high quality products. The emphasis in beef cattle of the 70’s (reflecting a strong program in Latin America), was shifted to dual-purpose cattle and small ruminants in the 80’s (reflecting emphasis in small-holder production, changes in the socio-economic environment, and the better understanding of prevalent farming systems).

Also, in the last years, the preoccupation with gender issues, the development of neglected species, and then need to generate income for less-endowed farmers and
homesteads were conceived to support minor species (guinea pigs, native swine, South American Camelids, bees). The evolution of support is shown in Figure 4.

Results of these efforts have been documented recently in several publications (Li Pun, Sere and Devendra, 1991; Li Pun, Estrada and Sere, 1991; Li Pun and Paladines, 1992; Vargas, et al., 1991; Nittis, et al., 1991; Riesco, 1990; Romero and Holmann, 1991). They include introduction of improved grasses and legumes, better nutrition and feeding, animal health practices, improved management, better soil management, revolving seed funds, and others. Such projects have resulted in better animal performance and increased income for participating farmers. Technologies developed have been adopted in many cases. The linkages between changes in the macroeconomic policies and farmer's responses have been studied in projects in Guatemala and Costa Rica (Vargas, et al., 1991; Romero and Holmann, 1991, respectively). Important lessons have been derived from the support to networks which have been used to design new initiatives (Li Pun and Paladines, 1992).

New IDRC Organization

In order to better address the challenges of sustainable development, the Center recently reorganized its Divisions and Programs. The former Division of Agriculture, Foods and Nutritional Sciences (AFNS), has been reorganized into the Environment and Natural Resources Division (ENR). This represents a fundamental change to promote more holistic approaches in the use and management of the natural resources and incorporate strong environment and sustainability considerations in the research the Center supports. In doing so, the Center aims at promoting interdisciplinary research and developing projects which involve information systems needed for decision making (IDRC, An Agenda 21 Organization, 1992). It shifts from supporting agricultural research in a narrow focus, into a broader perspective that considers not only the production aspects, but also the transformation, marketing and utilization and their impact on the environment. Policy-related outputs are an objective, given the pressing needs to promote greater impact. Two main Programs are emphasized:

- Sustainable Production Systems; and
- Technology and Environment.

A series of agriculture-related global initiatives have been organized to address priority topics where the Center will concentrate its resources. They include the following themes: low input sustainable agriculture, production to consumption systems research, community-level biodiversity conservation, threatened ecosystems, small enterprise development, and food security without resources degradation. Within these topics and contexts, animal research activities may be supported when appropriate. Regional initiatives relating to global initiatives have also been proposed.
Trends for Future Support

A global workshop on animal production systems research was organized by the Center in September, 1991, in San Jose, Costa Rica. A selected group of researchers from national and international organizations and donors were invited to review the state of the art in systems research as well as to discuss perspectives. A trend for the decrease in the support of agricultural research in general, and livestock in particular, was discussed. The meeting recommended the formation of a task force comprised of IDRC, Winrock International and Inforum (The Center for Sustainable Agriculture) to explore widely the perceptions from researchers and decision makers in both developed and developing countries and donors regarding the role and priorities for livestock research and development in relation to the utilization of natural resources and the environment. A series of activities are being organized. They include a survey involving more than 70 of the stakeholders in North America, Europe, Africa, Latin America and Asia. The survey was conducted between June and September of 1992. Results will be discussed in an electronic conference which will take place between November and December, 1992. Different issues and opinions have been organized around three main topics: animals and the environment, the role of animals in socioeconomic development, and donor perspectives on past and future support. A publication of results from the electronic conference is expected. It could serve to guide future endeavors in livestock R&D given the wide coverage of the discussion involving different sectors and disciplines, and avoiding sectoral biases.

Notwithstanding the results of that conference, which may prove useful for IDRC as well, the following are some of the trends perceived for future projects:

- No preconceived resource allocation will be given to livestock research globally or regionally. Its support will be as part of other major initiatives.

- Livestock may be supported as an activity within the perusal of more integrative activities such as ecoregional approaches, where systems analyses show that they are important and a key entry point to improve a given system or for the development of sustainable production systems. For example, agroforestry systems without livestock activities do not make much sense in many cases if animals are not included to utilize, forage, contribute to nutrient recycling and produce useful outputs for farmers over time.

- There are cases where specialized livestock systems are the key to promoting the rational use of resources. In those cases, a whole-commodity systems approach will be used to analyze bottlenecks and key entry points from the production to utilization chain. Based on those results, projects to develop alternatives may be designed. These may be cases where the support of dual-purpose production systems research in the tropics or the alpaca production systems in the highlands may be justified.

- Projects on livestock may be supported when longer term global benefits for society at large are considered. That may be the case of the contribution of animals to global food security and the appropriate use of species (domestic animals, wildlife and pastures, so as to preserve biodiversity).
Projects on biotechnology may also be supported in topics of direct relevance to developing countries.

Some of the general characteristics that would be looked for in future projects may include the following:

**Systems approaches**: which include holistic, interdisciplinary and participatory research will be used. Although this is not new, an evolutionary approach will be used based on experiences from previous projects and the participation of key disciplines and other actors that facilitate the development of sustainable systems. For example, participants would not be only farmers, but merchants, processors, exporters and/or representatives from local governments who could be approached to discuss problems and articulate possible solutions. System analysis and development will be supported beyond the farm boundaries as to include off-farm related activities which could possibly affect or create greater impact on farm processes.

**Multi-institutional projects.** It is realized that most national and international institutions and NGO's do not encompass all the needed combination of "hard and soft" sciences needed for holistic research. An alternative is to look for the adequate complementarity of disciplines and strengths between different organizations.

**Search for policy-related outputs.** Research on technology aspects often have neglected the understanding of the general socio-economic and environmental framework. On the other hand, socio-economic policies often have been formulated without considering technological knowledge generated at the micro level and that considers what is best for beneficiaries and the environment. Future efforts to be supported will look for means to these two facets of development.

**Representative systems.** Given restricted Center resources, support for research will go mostly to cases where experiences could be extrapolated to major ecosystems, or could have regional or global impact.

**Larger, more tightly-focused** projects may be supported so as to address key issues.

**Collaboration with other donors.** Activities will be identified where impact could be achieved from the concerted effort with other partners to go from research to development.

**Networking.** Lessons from past networks supported by the Center will be used in the support of new ones. Issues and new approaches will be stimulated through the existing networks when appropriate. Mechanisms will be supported to stimulate entrepreneurial approaches, participation, sharing of costs, benefits and responsibilities, using electronic media to encourage more interaction and broader participation, access to information and reduction in the costs of meetings.

**Canadian community participation.** Partnerships with the Canadian organizations will be looked for when appropriate to make available specialized expertise in Canada for the benefit of Third World countries.
Information systems. Support of information systems for decision making will continue to be one of the key Center actions. With the increasing relevance given to private sector participation in economic development, access to information by the private sector may be a key to promote sustainable development.

Ongoing political and economic trends in the world, pressing needs in developing countries, institutional changes, growing concerns for economic growth, equity and preservation of the environment certainly pose interesting challenges for future research on the appropriate management of natural resources. Within this context, research and development on livestock should be supported, not as an objective in itself, but as a utilizer of natural resources and an enterprise to promote sustainable development in rural areas. Use of past experiences, creative approaches and ideas, and concerted efforts could be used to pursue relevant actions for a better world. IDRC will continue to encourage and support Third World institutions in the conduction of applied research in pioneering areas. This could lead to joint ventures with other donors. Participation of the Canadian research community in those efforts may be very useful. International collaboration has an important role to play in sustainable development, but an even more important role is to be played in developing countries as actors and makers of their own destiny for this and future generations.

References


FIGURE 1. IDRC FINANCIAL SUPPORT TO AGRICULTURAL SYSTEMS PROJECTS (ACCUMULATED)

Millions of Canadian Dollars


- Cropping Systems
- Animal Systems
- Crop/Animal Systems

Li Pun et al. (1991)
FIGURE 2. PERCENT OF IDRC'S FUNDS ALLOCATED TO ANIMAL SCIENCE: BY TYPE OF RESEARCH

1971-1980

AC 85.1

C/A 1.6

AS 13.3

1981-1989

AC 49.1

C/A 23.5

AS 27.4

AS = Animal Systems
C/A = Crop/Animal Systems
AC = Animal Components

Li Pun, et al. (1991)
FIGURE 3. PERCENT ALLOCATION OF IDRC'S FUNDS TO ANIMAL SCIENCE PROJECTS BY REGION

1971-1980
- Latin America: 87.2%
- Africa: 19.5%
- Asia: 2.7%
- Middle East: 10.6%

1981-1989
- Latin America: 50%
- Asia: 19%
- Middle East: 8.8%
- Africa: 22.1%

Li Pun et al. (1991)
FIGURE 4. PERCENT OF IDRC ANIMAL SCIENCE FUNDS SPENT BY LIVESTOCK SPECIES

1971-1980

- Dual Purpose: 22.9%
- Milk Cattle: 11.9%
- Small Ruminants: 11.5%
- Minor Species: 7.3%
- Beef Cattle: 46.4%

1981-1989

- Dual Purpose: 33.7%
- Milk Cattle: 8.61%
- Small Ruminants: 28.5%
- Minor Species: 4.8%
- Beef Cattle: 22.4%
- Animal Traction: 2%

Li Pun et al. (1991)
IFAD'S MANDATE AND THE POTENTIAL ROLE OF LIVESTOCK FOR RURAL POOR

The IFAD Mandate

The International Fund for Agricultural Development (IFAD) has a specific mandate for the alleviation of rural poverty through investment in economic activities targeted at the rural poor. It is concerned with the development of people; development of sustainable agricultural production systems and conservation of natural resource base is seen as a means of poverty alleviation rather than as an end in itself. IFAD's objective is to lift small farmers (men and women), herders, artisanal fishermen, tribal people, and landless rural households permanently out of poverty by raising productivity of existing production systems, diversifying income sources, improving food security, and increasing the income that small producers receive for their products. IFAD gives special attention to the development of self-reliant institutions run by the people, enhancement of the status of women, and environmental conservation.

Livestock Development for Poverty Alleviation

The major cause of poverty is the inability of people to convert their labor input into food or cash. Increasing the productivity of family labor is the major element of all successful IFAD projects for poverty alleviation or for improving household food security. Livestock can have a number of important functions in this approach.

Large ruminants can help farmers to better cultivate their arable fields to improve crop husbandry, and to increase the area cropped or the cropping intensity. Manure of all farm animals is important to maintain and improve soil fertility, and to transfer soil nutrients from off-farm fodder sources onto the cropped lands. Large animals can create attractive income opportunities through contract services for plowing or the local transport of goods. Milk for home consumption is an important by-product of draught.

Livestock can activate the productive use of labor of the landless. Ownership of livestock, including poultry, bees, or silkworms, expands the scope for labor use, and increased income will result as long as low-cost or no-cost husbandry can be applied and the products have a market. The positive impact on household food security is often significant.

Some livestock husbandry is largely independent of land ownership. Scavenging birds and bees are important in this respect, but also ruminants can be fed under entitlements which a society gives to its members in respect of fodder use, i.e., from weeding operations, stubble grazing, or communal grasslands.
Livestock is a means to build capital and savings, avoid risk and hedge against inflation. Starting with one animal of a low cost species, poor families can build up capital reserves by multiplying numbers and, if successful, graduate in due course to more valuable species. Consumption or sale of products, eg. milk, meat, fiber, honey, dung, or traction, are obviously important by-products in this process of capital generation.

The transformation of primary livestock outputs can be an important income-generating activity for many poor rural households. The processing of many livestock products has a long tradition, employs specific skills and labor-intensive techniques, and many processed products are highly appreciated by the more affluent segments of domestic societies or for export. Durable milk preparations; spinning, dyeing, and weaving of silk or wool; bone carving or leather/skin handicrafts are some examples.

THE PORTFOLIO OF IFAD FINANCIAL ASSISTANCE

Credit for Livestock Development Projects

As of December 31, 1991, IFAD has assisted in 87 projects with a livestock component. The Fund’s investment for these livestock activities amounted to about US $193 million, which represented 10.2 percent of the total costs of IFAD projects. The above figure underestimates the Fund’s contribution to livestock development, as sizeable investments in other projects, which are not considered here, were for infrastructure or services that also benefitted livestock development on small holdings. Out of the above 87 projects, 21 were predominantly concerned with assisting poor families through the development of their livestock. The Near East, Africa, and Asia had nearly equal shares in these projects. The total IFAD investment in such livestock projects was US $151 million.

Grant Financing for Research

The Fund is providing grant financing for a number of research projects in the livestock sector. Small ruminant research receives attention in Africa and the Caribbean; a research network for aspects of camel husbandry has been established for the Near East and North Africa region. Of importance also is the research into alley farming, which IFAD supports in 19 African countries. As of September, 1992, IFAD has made US $10.6 million available for such research, which serves the purpose of developing, refining, and adapting livestock production technologies that are suitable for use by the IFAD target group. The Fund has assumed an important role in bringing a poverty and ecological focus to the above research undertakings, and in building up the collaboration of leading institutions in different countries through research networking.
Grant Financing for Pest Control

The Fund also assumed a leading role in assembling quickly the different elements of a campaign in North African countries, which led to the eradication of the New World Screwworm in Libya through the application of the sterile insect technology transferred from Mexico for this purpose. IFAD’s grant financing for the campaign amounted to US $5.6 million.

MAJOR TYPES OF LIVESTOCK DEVELOPMENT PROJECTS

Integrated Crop Livestock Development

IFAD has assisted a number of projects that were aimed at improving the lives of smallholders through more efficient incorporation of livestock activities into their crop production. These projects are located in different ecologies which range from humid conditions in tropical and subtropical lowlands to semi-arid conditions at different altitudes that are marginal for annual cropping, and to severe arid conditions where arable farming depends on irrigation. The Indonesia first and second Smallholder Cattle Development and China Szechuan Livestock Development projects are representative of the first types of projects. Also, a number of agriculture development projects in the African humid tropics have significant livestock components. The Lebanon Livestock Development Project is representative of the second type, and large livestock components in agricultural development projects along the Nile valley are representative of integrating farm animals into irrigated agriculture in arid zones.

The common objective of the above projects is the fuller development of sustainable ruminant production as an integral part of arable farming. Improving the productivity and utilization of the farm fodder base and alignment of feed supplies with the size and management of the livestock herd are important steps in the process of increasing benefits that smallholders can obtain from better farm traction and the expanded production of milk, meat, fibre, or manure.

Pastoral Livestock Production

IFAD has assisted a number of exclusively or predominantly pastoral communities to improve their income, with the important side objective of restoring ecological balances. The China Northern Pastures and Livestock Development, Somalia Central Rangeland Development, and Djibouti Rural Development and Environmental Protection in the Day Forest projects are examples of IFAD assistance to strictly pastoral societies. A number of the Fund’s projects in Northwest African countries are representative of the assistance for varying mixtures of nomadic, transhumant, and sedentary animal husbandry systems.
The major objective of this type of project is to balance the fodder needs of the ruminant populations kept with feed supplies that the grazing lands alone, or in combination with the by-products from arable farming in the vicinity, can sustain. The more arid the conditions, the more technical difficulties are encountered in activities to increase the productivity of the rangelands and the less attractive and replicable become the investments for this purpose. To put limits on grazing pressure is often unavoidable. All pastoral activities and problems concern groups of households. The Fund is, therefore, placing strong attention on achieving project objectives through working with pastoral associations.

**Livestock Development for the Landless and for Women**

IFAD has taken a ground-breaking role in evolving, testing, and applying animal production as a tool to increase the income earning capacity and household food security conditions of families without access to land. Women-led households are a large fraction of this beneficiary group. The Small Farmer Agricultural Credit, Grameen Bank II and III in Bangladesh, and Smallholder Livestock Development projects, as well as the First and Second Small Farmer Development, Production Credit for Rural Women and Hills Leasehold Forestry and Forage Development projects in Nepal are some examples of this type of assistance.

This category of projects is basically relying on credit operations, with repayments in cash or in kind. Poor households are enabled to acquire a small flock of animals, often poultry, small ruminants, or bees. Due attention is given to establishing a sustainable feed base for production operations, and the credit package for establishing the small enterprises include the financing that is essential for the first year’s feed purchases. Of particular importance is a realistic assessment of the market opportunities and cash flows that result from the operations. Simple, low-cost production technologies are applied and due attention is given to providing essential field support services. Communication with a large number of small production units is facilitated through the formation of beneficiary groups.

**Development of Livestock Institutions and Services**

IFAD has assisted some countries in strengthening general support for their livestock industries. The Livestock Health Services Projects in Kenya and Somalia, the Sudan Stock Route Project, the Small Ruminants Project in Togo, and the National Livestock Development Projects in Cameroon and the Central African Republic are examples.

The major objective of this type of project is the more efficient delivery of essential public sector services. The Fund has been promoting formation of groups of stock owners in order to reduce the cost of service delivery. Strong efforts have also been made to promote voluntary beneficiary participation in input or stock water supply or disease control services as a basis for cost recovery or the gradual privatization of public sector services.
SOME MAJOR ISSUES AND LESSONS LEARNED

Sustainable Use of Resources for Poverty Alleviation

IFAD interventions are typically directed to areas that have a weak resource base and have been increasingly directed to areas which are environmentally unstable and deteriorating. Large proportions of the resident population belong to the IFAD target group. In many of these circumstances, it is difficult to obtain significant and rapid improvements of primary production, rural employment or income generating activities, which are all central objectives of the Fund's strategy for poverty alleviation. In some instances, selected areas have a precarious resource base and have become isolated from the mainstream of economic development in the country concerned. Actually, IFAD interventions now often take place in areas with population densities that can no longer be supported by the available resources. Conditions for life and survival are deteriorating due to the continuous degradation of the resource base, and rural outmigration is the rule. These symptoms confront societies of sedentary agriculturalists and pastoralists alike.

The Fund's lending operations have increasingly reflected its specificity in targeting the benefits of its interventions to the poorest segments of the rural people. In the pursuit of this objective, attention to environmental concerns has always been strong. Socio-economic surveys are part and parcel of the project identification/preparation process and they reflect the Fund's concern for improving the analytical basis for designing its projects. Environmental assessment missions are now also undertaken as part of the project generation process for interventions that are located in particularly endangered and vulnerable ecological conditions. This assists the Fund in adopting and promoting land use technologies that are in line with ecological needs and opportunities and that are socially acceptable.

The Scope for Poverty Alleviation

The shift in IFAD's project portfolio to lower potential areas poses challenges to the design of technical packages for dissemination, especially when the agro-ecological conditions prevalent in these areas represent a major constraint to crop diversification. The scope for crop diversification is often quite limited and, where it is not, diversification has usually already started to take place. The causal chain involved in the progression of small farmers to greater wealth normally starts with an increase in livestock keeping, leading to the production of manure, and the incremental cash income that enables the purchase of inputs to increase crop output. The crop residues then sustain greater numbers and productivity in livestock. Improvements in livestock output are the trigger to the generation of an upward spiral in the productivity and income of small farmers and to the generation of enlarged employment opportunities in rural areas. Socio-economic surveys for the Fund's projects commonly note that the wealthiest farmers in poor rural communities are those who have the greatest number of animals and a family labor supply that is surplus to the requirements for producing staple foods.
It is, however, also clear that the promotion of micro-enterprises and off-farm incomes is extremely important in areas with a poor resource endowment. The development of livestock product processing is an important step in this direction and due attention should be given to identifying financially-attractive, livestock-based microenterprises and the infrastructure, market, and training requirements needed to assure they reach their full expansion potential.

**Increasing the Livestock Feed Base on Arable Farms**

To develop sustainable, self-sufficient feed bases for financially-attractive, small, commercial production units is the principle issue with which smallholders are confronted. In most cases, resource-poor farmers are not willing to use the little land they can operate for the production of forages for livestock operations of risky financial futures rather than for producing staple foods. Also, the usefulness of various crop residues as well as of forages, if grown, depends on the capacity of such fodders to fill the feed gap associated with seasonal growth patterns in crops and grasslands of surrounding areas. Total yield of farm-produced fodders is often not very relevant considering off-farm fodder availabilities. Seasonal feed gaps are location-specific, and the criterion by which the usefulness of farm-produced fodders is judged is the ability of that fodder to fill this feed gap. The usefulness of leguminous forages in crop rotations is often limited because these legumes provide good, fresh feed at the wrong time, and conservation is difficult in the smallholder context and for climatic reasons.

The concept of using leguminous shrubs and trees as alley farming or in boundary lines remains important for many smallholder situations. The uptake rate of alley farming techniques is still disappointing, probably due to high labor requirements from already hard working women, and to traditional rights of using land and trees. Planting in fence lines appears more in line with social customs in many instances. However, these approaches warrant strong future emphasis, especially in view of the positive contribution to erosion control and safe fuelwood supply.

**Livestock Development for Women**

Poultry, pigs, small ruminants, dairy cattle and dairy buffalo, and silkworms and bees, are the source of regular income for many poor, woman-headed households, and IFAD has played an active role in promoting such production and related processing activities. attention should be given to the demand on the time of beneficiary women. Time spent on new income-generating activities can have both a positive and negative impact on the well-being and nutritional status of the households concerned. Poor women, in particular, are often already over-burdened with work in the without-project situation.

The problems are further compounded in low-potential areas where outmigration of men is the rule and increasing. The various demands on women’s time need careful assessment to reduce the cross-cutting negative impact on their other vital functions. The application of time saving technologies for women’s routine responsibilities is often essential to ensure their successful and wholehearted participation in project activities.
Livestock for the Landless Poor

Poor people’s ruminants can be quite harmful. In order to increase food production, cash income, or capital, poor families must maximize the benefits they can reap from off-farm feed sources. As in many pastoral societies, exploitative attitudes are the rule which can only be checked by strong societal rules; public sector regulations are not capable of maintaining a balance between availability of, and need for, feed. It is, however, normally not the few stock of the poor which causes most of the damage, but poor people’s ruminants are obviously contributing significantly to the deteriorated status of communal grazing areas. If assistance is restricted to the provision of animals only, the dangers are always that 1) loans for livestock turn unserviceable and actually increase indebtedness, or 2) the additional animals aggravate environmental hazards.

Distribution of livestock to landless people needs to be based on realistic estimates of feed balances in order to make certain that additional livestock production, and in particular, production of ruminants, can be sustained in the long term by the feed resources on which landless or land-poor families can rely. It is not sufficient to just make credit available for the purchase of animals; it is necessary to firmly link this with credit and technical advice for a sustainable feeding and management system.

Sustainable Use of Rangelands

The major objective of pastoral societies in a precarious environment is survival, an objective best served by increasing livestock numbers to the maximum that one herder can supervise. The alleged non-economic behavior of pastoralists which supposes that animals are kept for prestige motives, fails to recognize the survival value of herd growth and the low cost of grazing the additional animals. Active revegetation of degraded public rangelands with an annual cool season rainfall of 350-400 mm, i.e., the borderline to rainfed cropping, is not justified on economic grounds even if the range users would provide the required labor without pay. Only periodic resting to revegetate degraded ranges would be technically and financially viable; but deferred grazing needs alternative grazing grounds and these may not be available. Therefore, most pastoral systems continue to be unsafe environmentally.

Any progress in improving in a sustainable manner the productivity of rangeland ecosystem in arid and semi-arid regions with erratic rains is contingent upon adjusting stock numbers to the feed that the area actually produces. Destocking and subsequent stocking control are necessary to reestablish and maintain ecological balance. This is a difficult task if it is to be carried out without hardship for poor families. Investments to increase offtake rates from ranges, e.g., production stratification, stock routes, transport facilities, and markets, all need consideration. More important, however, are government interventions to discourage absentee livestock ownership, which accounts for up to 80 percent of all ruminants in the pastoral systems of some Near East and North African countries.

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The Role of Pastoral Associations

All activities and problems of pastoralism concern groups of households. To do something for pastoralists requires a group approach. Pastoral institution building is a long-term process requiring full voluntary participation of herders. A project approach with a fixed time horizon of five to seven years, and without guarantee for continued government support, thereafter, is unsatisfactory. Much damage has been done in the past by top-down type group formation and unkept promises.

The formation of strong and active pastoral groups requires rallying points that are identical with the solution of the people’s most pressing problems. Such major problems are grazing and water rights, right of using trees, herd ownership and movement, and provision of critical inputs and services.

Development of Livestock Institutions and Services

The objectives and methods of improving the general availability of essential inputs and services for small livestock owners are straightforward; the issue is their long-term financial sustainability. Most recipient countries of IFAD have an enormous number of priority claims on the budget resources available so that public sector funds cannot be expected to meet the operating expenditures of their livestock sectors even if these are limited to the barest essentials.

All projects of the Fund endeavor to reduce the costs of essential public sector services by strong emphasis on beneficiary group formation. In fact, IFAD has developed the essential instrumentalities and a strong track-record of developing voluntary beneficiary participation through groups. Wherever possible, projects now also stimulate the recovery from beneficiaries of investment or operating expenditures for public sector facilities or services, or they engage in gradually transferring such responsibilities to beneficiary groups or competent private entities.

Future Emphases

Assistance in poverty alleviation will have to take into account a clear understanding of the beneficiaries’ resource situation, their skills and ambitions. People will do what makes them better off materially or spiritually, and if a project or a particular component of it helps them to move toward their goals, they will participate. Livestock development for poverty alleviation should emphasize:

- its catalytic role in arable situations for maximizing income from crops and livestock combined, as based on what individual farms can sustain;
- its relevance to the development strategies of the landless and women-headed households;
• the environmental sustainability of ruminant development for landless people, women and pastoralists; and

• the evolution of socio-economic and institutional conditions to transfer increasing proportions of support services to the private sector.
POLICIES AND STRATEGIES FOR LIVESTOCK DEVELOPMENT—A PERSONAL PERSPECTIVE

G. G. Freeland, ODA

The products and purposes of livestock husbandry are diverse and include:

- Dung and Urine--manure/compost/nutrient recycling
- Work/Energy--on-farm and/or off-farm
- Progeny
- Security/Risk Spreading
- Social/Cultural/Religious--customs and obligations
- Savings/Encashable Assets
- Milk
- Eggs
- Wool
- Meat and Offal
- Horn, Hides, and Skins

These might be broadly classified under three headings: Input Products, Output Products, and Assets.

Into which of these categories the individual products might fall, and their relative importance one to another, will vary not only with the species of animal involved, but also with time, season, place, climate, farming system, age, family situation, social and cultural obligations, wealth, size, and property rights of the owner or the custodian of the livestock. Perhaps a classic example of these changing values is illustrated by certain waste products. Under certain circumstances, a livestock owner may pay a farmer to be allowed to graze his stock on the farm’s post harvest stubble, whereas, in a neighboring time or place, the roles may just as likely be reversed, with the farmer paying the herder to hold his stock upon the fallow land and, thereby, fertilize the soil ready for planting of the next crop.

Within a subsistence farming system, it is generally those species that, within the constraints of climate, feed, and water resources, can meet the greatest combination of products and purposes that are most popular and receive greatest care and attention. It is, therefore, not surprising that ruminants (and large ruminants, especially) hold greatest universal favor, while pigs and poultry hold lowly scavenger positions. As farming practices intensify, disaggregate, specialize, and become case and market-oriented, so investment inputs to livestock husbandry can increase—and the higher biological efficiency of specialist monogastric and dairy production systems becomes the economic preference.

Where livestock are an integral part of a composite farming system, it is usually their input products that are of prime importance. These may include dung, work, and progeny (and, therefore, milk to feed the progeny), as well, of course, as their roles as securities and encashable assets, whereas, their output products, such as surplus milk and coarse wool, are more likely to be seen as perks to the system; and while terminal products, such as meat and hides, are as much likely to be viewed misfortunes as benefits.
On the other hand, where livestock dominate or are held in surplus to, or are extraneous to, the needs of the farming system, their output products begin to gain a greater share of importance while the input and security values of the individual animals begin to decline in relative terms.

Ironically, of course, in subsistence farming, it is usually only when items are held in surplus to need that a price is put on them in order that they may be sold for some gain into situations of shortage; whereas, when a farm barely supplies its own input needs, these inputs tend to be regarded as free. It is only when farming becomes properly integrated into the cash economy that its outputs and inputs become more properly valued and more universally traded. Similarly, only when farming becomes actively seen as a process of income generation, profit, and loss, and less one of security and survival, can it more fully contribute to the total economic development of the country and, in return, be properly invested in as part of that same development.

For these reasons, I would suggest that a general policy toward livestock should be to promote activities that facilitate this transaction and help to bring farming more actively into the monetary economy. Examples may be:

- small-scale dairy farming, which encourages daily sales and daily investment in feed-stuffs if optimum returns are to be achieved; or

- draught animal power, which frequently enables greater productivity per unit of land and labor and, thereby, can often allow a greater diversity of crops and investment in them, transforming survival into surplus and risk aversion into calculated investment in opportunity.

However, as has been indicated earlier, input products of livestock must properly satisfy the farming system before their output products can begin to achieve a position of relative importance and investment value. Therefore, it is a prerequisite that livestock be put into a position of surplus before their output products can be properly exploited. The surest way to do this is to first reduce unnecessary wastage through disease and mortality and then to raise fertility. So, in the field of animal health, I would first recommend support of national initiatives to control and prevent the spread and depredations of major infectious diseases of serious economic/socio-economic consequence. Then, in the interests of farming in the cash economy, support of initiatives which provide effective, properly-costed, clinical services to the individual farmer, at his request and expense. Initially, these may have to be provided, with appropriate cost recovery, by the public sector. However, as the system becomes increasingly monetized, so it should increasingly be passed over to the private sector.

In the field of animal husbandry, however, the first initiatives should be to make simple, local-level improvements in the existing farming system. Then, as incremental production increases and begins to allow decisions on turnover and off-take to be by choice rather than by fate or necessity, it may become appropriate to invest in change of, or addition to, the system instead of merely in its internal improvement.

Thus, it may be seen that, where livestock are concerned, it is often initially necessary to add into the system. Only once a position of adequacy is achieved is it feasible to consider
adding on to the system. Once adding on can be properly pursued for income generation, some of the previous input products of livestock can be purchased from outside, rather than having to be home produced. Substitute products such as chemical fertilizer may even be procured. Then, the output products can step forward to still greater prominence and value, and investment in their greater production per unit of primary resource can be more profitably pursued. It is the opinion of this author that many of the larger donor projects in animal production failed to make much impact on rural development because they saw livestock solely in terms of output products and, having identified a commodity in demand, sought to promote its commercial production without properly appreciating the baseline position of livestock in the social and farming systems. They also failed to recognize that key, but poorly-costed products (such as dung or draught), obtained from numerous, small, hardy, thrifty, indigenous animals at minimal input cost could not readily be sacrificed for the sake of producing more milk from two or three high-yielding, high-consuming, labor-demanding, exotic dairy cows.

Paradoxically, it is probably in the two extremes of the farming system--the wealthy landowner and the landless laborer--that the greatest freedom exists to choose to specialize in output production: the one because he can afford to keep livestock surplus to his input needs, and the other because, being landless, he has little need for input products. Conversely, the small, mixed farmer has to make improvements, changes, and sacrifices to shift from his dependence upon input products.

It is another paradox that, to best promote the transition from traditional, low input, subsistence farming systems to commercial farming systems of higher productivity per unit of primary resource (and it is this last point which, in environmental terms, will hold greatest significance on this overcrowded planet), the inputs on the side of disease control are best initiated at a national level. Then, as commercialization increases, they can begin to take on a more individual, farmer-oriented focus. Contrastingly, in animal husbandry, the starting point should be local and based on an intimate understanding of the farming system. Then, as a position of surplus is obtained, a wider approach, oriented to commodities and national development programs, should also be adopted.

For donors, the key to aiding effective agricultural and livestock development is not just to identify our ultimate objective but, even more critically, to know and understand our starting point, and to recognize that the optimal path between the two will not be straight but will have many twists and turns. At each twist and turn, we must off-load some old ideas and practices (and probably some smaller farmers) and adopt new ones, requiring different inputs and creating new opportunities for off-farm and agro-industrial employment.

Undoubtedly, our goal should be greater productivity per unit of primary resource, but in the interests of long-term sustainability, let us be careful that we have properly identified and valued the right products and not been blinded by short-term gains that require systems the environment cannot support. Nor should we be too surprised if, in some cases, the present low input, all-rounder role of livestock in a mixed farming system is already close to its optimum contribution in terms of overall efficiency. Livestock often serve better when fully-integrated with agriculture than when treated separately from it.

Of course, developing livestock within the context of a farming system rather than simply on a commodity basis does complicate the approaches required. For, as indicated in the second paragraph of this paper, from farm to farm there are numerous factors--economic,
personal, social, and cultural—that alter the relative importance and value of animals and their products. Still greater may be the variations between farming systems. Indeed, where livestock are concerned, there are probably only two universal truths:

- While choosing which animals should survive and which should be culled is a normal management practice (and a particularly important one requiring fine judgment when the system is under stress), to have the power to choose restricted by the predations of disease is both a waste of and a constraint upon the system.

- Farmers will much more readily invest in operations over which they can exercise control, or can have faith in control exercised on their behalf, than in systems where favorable control is absent. This is a problem of communal grazing lands. However, the answer lies not in subdividing them into small units of individual tenure, which seriously limits both carrying capacity and stocking density, but in giving right and responsibility for sufficiently large tracts of land to herding communities to manage.

Until both of the above are resolved, animal health initiatives and interventions will continue to be more manageable and acceptable to farmers than those in animal husbandry.
Overview

AID’s involvement with the livestock sector has included a diverse group of project activities. The diversity of project type is a function of two factors:

- The needs of the host country and the current developmental phase of the country’s livestock sector.
- The focus of the Agency as a whole and the AID mission located in the host country.

AID livestock projects are initiated by host governments and AID personnel working in the country concerned and comply with AID’s country development strategy. In principle, AID’s country development strategy is based upon major Agency initiatives which are formulated in Washington. Currently, the major initiatives for AID include Democratization, Family, Privatization and the Environment. Clearly, livestock can play an important role in achieving these broad based initiatives.

Types of Projects

Because the Agencies initiatives are broad and conditions vary from country to country, AID livestock project types have been diverse. For example, AID projects have covered all major livestock species (cattle, sheep, goats, poultry and swine). An exemplary list of the types of AID livestock projects include:

- Institutional Development,
- Range and Natural Resource Management,
- Ruminant Nutrition,
- Breed Substitution,
- Veterinary Services,
- Vaccine Development,
- Integrated Crop-Livestock Systems,
- Agro-Industrial Development, and
- Collaborative Research Support Programs.
The total number of livestock project types implemented world-wide is presented in Table 1. The component category denotes livestock activities which are part of a larger project, for example, a rural development project. Many of AID’s livestock projects have been focused on more than one aspect of the production system (e.g., marketing, health and fodder production); these types of projects have been designated as combination projects. This is an important point as one examines AID’s portfolio of livestock projects, because many health and marketing efforts were carried out in conjunction with other livestock production activities.

AID’s livestock project activities were classified into those occurring between 1979 to 1984, a time of peak funding, and 1985 to 1990, a time of reduced funding. Principle livestock investments were made in the categories of: livestock as a component of other agricultural projects, combination projects, production oriented projects and range resource projects. The proportion of these four types of projects remained constant even though there was a 41% drop in livestock or livestock component projects.

Table 1. Types and Number of AID Funded Livestock Projects.

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>1979-1984</th>
<th>1985-1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livestock as a</td>
<td>15 (22.7%)</td>
<td>10 (25.6%)</td>
</tr>
<tr>
<td>Component</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination</td>
<td>13 (19.7%)</td>
<td>5 (12.8%)</td>
</tr>
<tr>
<td>Production</td>
<td>20 (30.3%)</td>
<td>14 (35.9%)</td>
</tr>
<tr>
<td>Health</td>
<td>4 (6.0%)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Range Mgt</td>
<td>12 (18.2%)</td>
<td>7 (17.9%)</td>
</tr>
<tr>
<td>Policy &amp; Economics</td>
<td>2 (3.0%)</td>
<td>3 (7.7%)</td>
</tr>
</tbody>
</table>

Global Funding Trends

AID livestock funding per annum from 1970 to 1990 is presented in Figure 1, on a nominal dollar basis. The funding peak was reached in 1980 and then decreased in 1985 and decreased again 1990. However, the funding of livestock-only projects remained relatively stable from 1985 to 1990. The year 1970 is something of an anomaly, because during that year most livestock projects were ending and new projects started only in 1971. To place livestock funding on an Agency perspective the 1980 livestock budget was 0.7% of AID’s total budget and this percentage dropped to 0.3% of the 1990 budget.
During the period from 1979 to 1984 approximately 55% of AID's livestock activities were in Sub-Saharan Africa; however, this percentage dropped to approximately 40% during the 1985 to 1990 time period. While activities decreased in Sub-Saharan Africa, funding to livestock projects in North Africa, Near East and Asia increased during this period, while the level in Latin America remained constant.

Regional Activities

In North Africa, the Near East and Asia production and rangeland or natural resource management projects were the most prevalent project types (Table 2). The range management projects primarily focused upon cattle and small ruminants, while production projects dealt mainly with poultry. In the combination category there were limited numbers of health and dairy cattle efforts. This was the only region to show a funding increase of 28% from the period 1979-1984 to the period 1985-1990.

Table 2. Type, Number and Funding of Livestock Projects in North Africa, The Near East and Asia.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>1979 to 1984</th>
<th>1985 to 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projects</td>
<td>% Funding</td>
</tr>
<tr>
<td>Combination</td>
<td>3</td>
<td>18.1</td>
</tr>
<tr>
<td>Production</td>
<td>3</td>
<td>20.6</td>
</tr>
<tr>
<td>Health</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Range Mgt</td>
<td>3</td>
<td>61.3</td>
</tr>
<tr>
<td>Policy &amp; Economics</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total Projects</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Average Funding per Year</td>
<td>$11,356,989</td>
<td>$14,513,725</td>
</tr>
</tbody>
</table>

During AID's peak livestock activity Sub-Saharan Africa received the highest regional funding levels (Table 3). In 1979-1984, there were 27 livestock-only projects, against only 13 livestock-only projects in 1985-1990. Along with the decrease in projects there was a corresponding decrease in funding of 44%. The major emphasis of AID projects in both periods were production and range management. Although there were still a large number of combination projects during 1979-1985, these types of projects decreased more than other project types since the early eighties.

9Livestock activities have been categorized by AID geographic regions; however, the efforts summarized below are principally the result of bilateral funding from the AID Mission located in a specific country.
In Latin America AID’s efforts have consistently been centered around production oriented projects (Table 4). Latin American efforts differed from other regions by placing more emphasis on economic policy projects. Project activity in Latin America is also low, because many of the countries are considered graduate countries, not eligible for AID assistance.

Table 3. Type, Number and Funding of Livestock Projects in Sub-Saharan Africa.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>1979 to 1984</th>
<th>1985 to 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projects</td>
<td>% Funding</td>
</tr>
<tr>
<td>Combination</td>
<td>7</td>
<td>43.2</td>
</tr>
<tr>
<td>Production</td>
<td>9</td>
<td>19.3</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Range Mgt</td>
<td>9</td>
<td>35.0</td>
</tr>
<tr>
<td>Policy &amp; Economics</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total Projects</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Average Funding per Year</td>
<td>$33,107,359</td>
<td>$18,558,159</td>
</tr>
</tbody>
</table>

Table 4. Type, Number and Funding of Livestock Projects in Latin America.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>1979 to 1984</th>
<th>1985 to 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projects</td>
<td>% Funding</td>
</tr>
<tr>
<td>Combination</td>
<td>2</td>
<td>22.1</td>
</tr>
<tr>
<td>Production</td>
<td>8</td>
<td>51.2</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>17.7</td>
</tr>
<tr>
<td>Range Mgt</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Policy &amp; Economics</td>
<td>2</td>
<td>9.0</td>
</tr>
<tr>
<td>Total Projects</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Average Funding per Year</td>
<td>$15,953,253</td>
<td>$11,350,704</td>
</tr>
</tbody>
</table>
Research Projects

AID supported research projects can be initiated either from central bureaus or from field missions. For example, the Bureau of Research and Development (R&D), a central bureau, funds the CGIAR system and has consistently funded ILRAD and ILCA at $2 million and $3 million per year, respectively. Furthermore, the same bureau funds CIAT ($4.7 million), ICARDA ($4.2 million) and ICRISAT ($4.1 million), which have livestock components in their research programs. The R&D Bureau also funds the Small Ruminant CRSP (a lifetime funding level of $25 million) which has a global mandate with completed or ongoing projects in Indonesia, Kenya, Bolivia, Peru, Brazil and Morocco. Mission support for research is usually done as a component of a larger development project. For example, the mission in Pakistan supported range/livestock research as part of a agricultural research and technology project. Vaccine development has been funded either through central or regional bureaus, depending upon the scope of the problem and the technique used to develop the vaccine.

Lessons Learned From AID’s Rangeland Efforts

In 1978, AID reviewed its rangeland projects, arriving at the a consensus that "livestock sector programs and projects must be reoriented to make them more nearly compatible with social, economic and environmental realities in the semi-arid and arid pastoral regions of Africa". Herder involvement was considered essential in project design, implementation and evaluation. The following list of problems and recommendations were formulated at that meeting.

- Livestock population and plant community data are unreliable.
- Management units for development interventions in livestock should be small scale and based upon existing cultural-ecological systems.
- Semi-arid rangelands can experience considerable biological and climatic stress without necessarily resulting in long term secular degradation.
- Emphasis should be placed on subsistence based pastoral herding rather than on commercial activities.
- Monitoring and evaluation should be made integral components of every program and project in the livestock sector.

A second evaluation of AID’s involvement in the livestock-range sector took place in 1985. The review panel made the following recommendations on project design:

- Training components in range science, ecology and sociology should be strengthened.
- Projects should be simple enough to manage, adequately flexible, properly staffed and build on a long range strategy.
• Projects in arid and semi-arid environments should contain contingencies for drought.
• Projects should be designed in the context of a systems approach, capable of dealing with multiple factors and their interactions.
• The rangelands should not be viewed in isolation of the rest of agriculture and the national economy.
• Fluctuations in world prices and markets can impact project success; therefore project must be able to adequately absorb such situations.

Many of these points have been incorporated into subsequent livestock projects. For example, in all on-going African range/livestock projects, pastoral participation has been strongly incorporated into project design and implementation. Policy issues are being addressed as part of project implementation, as evidenced by AID's involvement in West African regional trade issues. Training of host country scientists still remains a key element of AID livestock efforts. Steps have been taken to design multidisciplinary projects so as to promote a systems approach, however these efforts have resulted in multidisciplinary and not integrated projects. Key to bridging this gap is a greater appreciation of the dynamic nature of arid and semi-arid ecosystems.

Future Activities

Three main factors will drive AID's future livestock activities. These include:

• The growing human population, and the need to meet their nutrient requirements;
• The need to utilize natural resources to their fullest potential while insuring resource sustainability or improvement; and
• The need to improve the economic well-being of rural and urban households through postharvest value added industries which create rural and urban jobs.

To meet the challenges, that these three factors present, AID livestock activities will address a wide range of issues, requiring an evolution in project design and implementation. New livestock projects will have to focus on integrating livestock with other components of the agro-ecosystem and the economy as a whole. AID's continued emphasis or new areas for livestock activities are presented below.

• In areas where mixed crop-livestock systems have potential, the balance between crops, livestock, the natural resource base, time and labor constraints needs to be accurately weighed. In addition this balance will have to be evaluated in a dynamic biological and socio-economic environment.
In all production systems, effective nutritional management of livestock resources will have to receive priority attention. This applies to most diverse systems as those found in Eastern Europe or in Mongolia which may vary in quality and quantity of feed resources.

Significant efforts need to be marshalled toward a rational use of genetic resources. While gene conservation efforts are necessary and utilization of molecular genetics may have some interesting applications, the critical problem remains how to best match animal genotype to the environment.

New efforts in range management and conservation are required to maintain resource viability. The new paradigms of range science reveal a need to develop management strategies, which not only incorporate the formation and empowerment of pastoral groups, but also allow for flexible management of a shifting environment under increasing population pressure.

As population and economies grow, there will continue to be a need to promote marketing practices which are fair to the producer and consumer. There will also be a need to further develop domestic and regional trade. AID will promote these efforts by encouraging policy reform and development of market information systems.

Key to new livestock efforts will be determining the demand for livestock products and then developing the supplies to meet the demand. To effectively link these two dynamic aspects of production will require an improved integration mechanism and projection capabilities then currently exist, for clearly economic sector models are not capable of addressing these complex issues.

Conversion of Eastern European and New Independent States livestock sectors to a market economy will require an effective plan on how this conversion should occur and how to focus our scarce resources for maximum impact.

The dramatic growth in demand for livestock products in Asia will result in higher levels of livestock funding. In this region both smallholder mixed farming systems will have to be addressed as well as extensive production systems.

To effectively address these areas of concentration requires recognition that plant and animal systems are highly dynamic with respect to time. These dynamic biological systems have to interface with equally dynamic social and economic systems. Therefore, a major component in the evolution of livestock projects is the integration of computer simulation (or decision support systems) into the design, implementation and monitoring of projects. By utilizing computerized decision support tools livestock projects can be effectively planned, and even more importantly, research expenditures can be prioritized. In addition, it will promote truly integrated projects instead of disparate multidisciplinary efforts which lack a unifying mechanism. It is only by using such technology that donors will be able to come to grips with the complexity of the systems they are dealing with and obtain the primary object of economic growth and human development.
FIGURE 1. FUNDING TRENDS OF USAID ANIMAL AGRICULTURE PROJECTS

Funding Level (Millions $)

- Livestock Component
- Livestock Only
CHARACTERISTICS OF WORLD BANK LIVESTOCK LENDING

Overview

Over the period July 1, 1974 to June 30, 1992, the World Bank financed 67 livestock-only projects at a total nominal cost of US$2.2 billion and 313 livestock component projects at a total nominal cost of US$8.6 billion, bringing the total nominal project cost of World Bank-funded livestock projects over the last 18 years to US$10.8 billion. In constant 1991 US dollar values, this equals respectively US$3.6 billion for livestock-only, US$13.0 billion for livestock components and US$16.6 billion in total project costs (Table 1). The actual share financed by World Bank Loans or IDA Credits is about 60 percent.

Trends

The level of livestock project financing in the World Bank is declining. Average total costs of World Bank funded livestock-only and livestock component projects is given in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Livestock only Projects</th>
<th>Livestock Component Projects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Projects</td>
<td>Bank/IDA Funding</td>
<td>Total Funding</td>
</tr>
<tr>
<td>1974-79</td>
<td>45</td>
<td>1833</td>
<td>2206</td>
</tr>
<tr>
<td>1980-85</td>
<td>10</td>
<td>327</td>
<td>486</td>
</tr>
<tr>
<td>1986-92</td>
<td>12</td>
<td>835</td>
<td>897</td>
</tr>
<tr>
<td>TOTAL</td>
<td>67</td>
<td>2995</td>
<td>3588</td>
</tr>
</tbody>
</table>

Thus, from a peak in the late seventies, livestock lending declined in the early eighties, and continued to decline (although less dramatic) in the late eighties. The decline was especially strong in the livestock-only project category.
Geographic Distribution

The largest decline in livestock lending has been in Europe and Latin America, increases have been registered in East and South Asia as shown in table 2.


<table>
<thead>
<tr>
<th>Region</th>
<th>Period</th>
<th>1980</th>
<th>1985</th>
<th>Number</th>
<th>Amount</th>
<th>%</th>
<th>1986</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1980</td>
<td>40</td>
<td>141</td>
<td>4</td>
<td>49</td>
<td>334</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>East Asia</td>
<td>1985</td>
<td>18</td>
<td>349</td>
<td>10</td>
<td>20</td>
<td>558</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>1986</td>
<td>17</td>
<td>1401</td>
<td>40</td>
<td>6</td>
<td>232</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td>1992</td>
<td>14</td>
<td>1161</td>
<td>33</td>
<td>17</td>
<td>611</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>North Africa/Middle East</td>
<td>1980</td>
<td>13</td>
<td>215</td>
<td>6</td>
<td>18</td>
<td>796</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>South Asia</td>
<td>1985</td>
<td>11</td>
<td>255</td>
<td>7</td>
<td>10</td>
<td>670</td>
<td>21</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1986</td>
<td>3522</td>
<td></td>
<td></td>
<td>3201</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The decline in livestock lending in Europe and Latin America results from the difficult economic situation in these continents of the late eighties. The decline is perpetuated in the East European region because of start-up problems after the transition to a market economy. Livestock lending to Africa has been rather low in financial terms, although quite substantial in number of projects.

Main Focus

Since 1974, information is available on the relative share of funding for animal production and animal health activities in World Bank funded livestock projects. The analysis shows a decline in the share of veterinary activities in the total project lending.

This trend did not occur in Africa, however, where the share of funds for veterinary activities increased from 17 percent before 1983 to about 40 percent over the period 1984-1989 (de Haan and Bekure, 1991).
Table 3. Share of Animal Health Activities in Total World Bank-funded Projects.

<table>
<thead>
<tr>
<th>Period</th>
<th>Share of animal health</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-1979</td>
<td>35</td>
</tr>
<tr>
<td>1980-1985</td>
<td>21</td>
</tr>
<tr>
<td>1986-1992</td>
<td>11</td>
</tr>
</tbody>
</table>

Since 1984, more detailed breakdowns are available of the Bank's livestock lending program. While such breakdowns are by nature arbitrary, they provide an approximate estimate of the nature of World Bank lending. Table 4 provides the breakdown over the different species and activities.


<table>
<thead>
<tr>
<th>Period</th>
<th>Cattle</th>
<th>Small Ruminants</th>
<th>Pigs</th>
<th>Poultry</th>
<th>Forage Rangeland</th>
<th>Animal Health</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984-1986</td>
<td>31</td>
<td>1</td>
<td>6</td>
<td>13</td>
<td>4</td>
<td>4</td>
<td>45</td>
</tr>
<tr>
<td>1987-1989</td>
<td>23</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>52</td>
</tr>
<tr>
<td>1990-1992</td>
<td>19</td>
<td>5</td>
<td>30</td>
<td>9</td>
<td>9</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>2</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

Thus, although these trends should be assessed with caution, they point to:

- A decline in lending for cattle, at the benefit of sheep and goats and—above all—pigs and poultry. The latter is especially a reflection of increased lending in East Asia; and
- A varying level of input into forage and range production and animal health.

Within lending for cattle, 63 percent was directed at dairy development, 28 percent at beef and 9 percent at milk and beef combined. Within dairy lending the India II dairy project with a total project cost of US$425 million strongly affects the milk/beef funding ratio.

Since 1989, livestock research and extension is split out from the "General" category. Over the three years till 1992, the average annual lending for research has been US$27 million and for extension US$12 million. Together, these two categories thus account for only about 10 percent of total livestock lending.
Performance

A major evaluation of World Bank funded livestock projects and project components by the World Bank’s independent Operation and Evaluation Department was published in 1985, covering all livestock only and livestock component projects completed before December 31, 1983 (World Bank, 1985). The results of this retrospective evaluation are summarized in table 5.

Table 5. Main Evaluation Results of Livestock-only and Livestock Component Projects Period 1974-1983.

<table>
<thead>
<tr>
<th>Project category</th>
<th>Ex post ERR</th>
<th>Success rate</th>
<th>Number of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By Project Type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock-only projects</td>
<td>7.2</td>
<td>43</td>
<td>46</td>
</tr>
<tr>
<td>Component projects</td>
<td>14</td>
<td>67</td>
<td>58</td>
</tr>
<tr>
<td><strong>By Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td>12.9</td>
<td>68</td>
<td>38</td>
</tr>
<tr>
<td>Europe/North Africa/Middle East</td>
<td>14.9</td>
<td>77</td>
<td>13</td>
</tr>
<tr>
<td>East Asia</td>
<td>16.0</td>
<td>54</td>
<td>11</td>
</tr>
<tr>
<td>South Asia</td>
<td>12.0</td>
<td>67</td>
<td>3</td>
</tr>
<tr>
<td>East/Southern Asia</td>
<td>3.1</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>West Africa</td>
<td>9.7</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>11.0</td>
<td>57</td>
<td>104</td>
</tr>
</tbody>
</table>

Thus, while overall performance at 57 percent success rate was modestly satisfactory (although the 57 percent success rate has to be compared with a 75 percent success rate in agricultural projects during that period), the poor rate of a large number of African projects was especially disappointing and has been one of the main reasons for the poor image of livestock projects in the World Bank ever since.

Subsequent evaluations of World Bank funded projects show an improving success rate for livestock projects against a rapidly deteriorating success rate for agriculture in general, as shown in table 6.

<table>
<thead>
<tr>
<th>Period</th>
<th>Success rate (%) Livestock</th>
<th>Number of Projects</th>
<th>Success rate (%) Agriculture</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-1983</td>
<td>43</td>
<td>46</td>
<td>75</td>
<td>n.a.</td>
</tr>
<tr>
<td>1984-1987</td>
<td>56</td>
<td>25</td>
<td>68</td>
<td>238</td>
</tr>
<tr>
<td>1988-1991</td>
<td>64</td>
<td>14</td>
<td>55</td>
<td>352</td>
</tr>
</tbody>
</table>

Policies

While the World Bank has no formal Livestock Policy, there is broad informal agreement on most policy issues. The agreed informal strategy follows the World Bank's basic objectives of poverty alleviation, social equity, strengthening the role of women and environmental protection, within a market oriented economic context.

Economic and Institutional Policies

At the macro-level, the following principles are generally applied:

- **Prices**: Abolition of internal price controls and a progressive adaptation of local meat and milk producer prices to world market prices; full cost recovery for private good services, such as clinical veterinary services, vector control, non-compulsory vaccinations and artificial insemination (AI) (Umali et al. 1992). In credit programs, the policy calls for market interest rate and a shift from directed (i.e. livestock credits) to general credit program, with the allocation is decided by market mechanisms; and

- **Institutions**: Clearer definition of the role of the public and private sector, with, wherever possible, increased involvement of the private sector (de Haan and Bekure, 1991). Especially in animal health, the emphasis is on privatization, in particular at the grass root level (auxiliaries, village vaccinators). Farmer empowerment is sought at the village level and national level.
Production Systems

As far as the strategy concerning different livestock production systems is concerned:

- The emphasis is on small-holder and rural poor. There is an increased interest, especially in East Africa and East Asia on dairy development (Walshe et al. 1991). In West Africa and East Asia, the emphasis is on smallholder beef production, with also considerable emphasis on smallholder pig and poultry production in East Asia;

- Increased attention is also given to pastoral production, but more from an environmental perspective. There is a renewed interest in the dry areas of the Sahel, North Africa and the Middle East in resource management projects, seeking to foster grassroots participation in integrated crop, livestock and forestry management (Hall, 1991);

- In Eastern Europe, there is a preference for private family farm development, with considerable discussion on the pace of privatization (de Haan et al, 1992); and

- There is an almost complete cessation of assistance to public and semi-public production and processing, with some exceptions concerning support for parastatal production in China.

Services

Strategies governing the provision of services provide:

- a high priority in Africa and East Asia to the development of unified (crop/livestock/forestry) extension systems, with specialists training the single extension agent (World Bank, 1992). There is a tendency to introduce more pluralistic approaches in the other regions;

- a high priority to the development of private veterinary delivery systems, using auxiliaries and/or private veterinarians according to the economic conditions and the prevailing production systems, privatizing drug-import and distribution, and wherever possible vaccine production (Umali et al. 1992);

- a progressive transfer of AI to the farmers groups after initial demonstration funded by government; a search for simpler AI technology, using grade bulls and fresh semen (Walshe et al. 1991);

- a shift in credit programs to general rural finance schemes without specific allocations for livestock and lending at market rates;

- for the privatization of processing industries, with search for simpler (and less costly) processing methods (i.e. raw milk, Walshe et al. 1991).
- acknowledge the need to give more attention to national livestock research, which is relatively underfunded. Bank support to International Livestock research adequate.

Future Developments

It is most likely that livestock lending in the near future will remain at about the current level of US$400 million per year, with increased emphasis on small holders and livestock-environment interactions and increasing private sector (including farmers organizations) involvement. Geographically, East Asia will gain even more in importance, and so will--to a limit degree--North Africa, the Middle East and South Asia. Lending for Eastern Europe will focus more on adjustment than on project/investment lending. Livestock lending for Sub-saharan Africa will probably remain at present levels, maintaining also a high number of activities.

References


(H) STRATEGIE DE L'AIDE FRANCAISE EN MATIERE D’APPUI AUX PRODUCTIONS ANIMALES

Ministère De La Cooperation
Et Du Developpement

Les économies des pays en développement, notamment en Afrique, doivent retrouver le chemin de la croissance. Cela ne peut se faire sans un développement durable du secteur agricole. Tout en reconnaissant les spécificités du sous-secteur "élevage", les orientations stratégiques dans ce domaine s'inscrivent dans le cadre général de l'appui apporté à l'élaboration des politiques agricoles par la coopération française dont les principaux points d'application sont :

* La définition d'un cadre de politique économique et agricole assurant au niveau des États une cohérence suffisante entre les imperatifs des marchés intérieurs et le développement des échanges internationaux,
* L'organisation des producteurs,
* La gestion des ressources naturelles.

L'évolution progressive des axes stratégiques de la coopération française, rendue nécessaire par le contexte actuel des économies africaines et la transformation démocratique des États du continent, s'accompagne également d'une adaptation des outils de coopération.

Quels que soient les efforts développés dans la mise au point d'une stratégie de développement de l'élevage, on doit souligner l'importance des contraintes locales qui pesent significativement sur la plupart des systèmes de production, notamment la faiblesse des systèmes de crédit rural et la non-maitrise du foncier. Le rôle des bailleurs de fonds est plus particulièrement de contribuer au développement de ces facteurs de production.

Enfin, deux autres éléments moteurs peuvent déterminer d'importants changements à brève échéance sans que l'on puisse maintenant en mesurer l'ampleur et les conséquences. Il s'agit, d'une part, du déséquilibre croissant entre villes et campagnes qui aura forcément des répercussions considérables sur les systèmes de production péri-urbains, et, d'autre part, de la prise de conscience de chaque citoyen qu'il fait partie de divers ensembles sociaux, professionnels et politiques imbriques les uns dans les autres, dans lesquels il exerce un pouvoir. L'aide internationale doit la aussi jouer un rôle en aidant les États et les hommes à s'adapter à ces nouvelles situations.

1. LE CADRE GENERAL

Ce cadre de politique doit établir de nouvelles règles d'équilibre entre, d'une part, une liberalisation totale des échanges et, d'autre part, des mesures de protection pour éviter que les importations subventionnées ne concurrencent trop fortement les productions nationales : en effet, la disparition brutale des systèmes de production bases sur des espèces a cycle long (bovins) serait irreversible compte tenu du cout de leur reconstitution. Il doit également renforcer la cohérence des différentes politiques nationales pour exploiter au mieux les composantes fondamentales: l'appui aux filières et l'intégration régionale.
1.1. ORGANISATION ET RESTRUCTURATION DES FILIERES

Plusieurs speculations (petits ruminants, porcins, volailles, bovins) font deja l’objet d’actions de soutien dans un certain nombre de pays, a differents stades (production, transformation, commercialisation) et a des degres divers: groupements d’eleveurs, fourniture d’animaux, approvisionnement en intrants, conseil agricole, credit, appui a la commercialisation, etc...

Les filieres "lait" doivent faire l’object, elles aussi, d’un appui particulier en raison des problemes d’approvisionnement qui vont se poser a moyen terme. Les resultats jusqu’ici enregistres en Afrique necessitent cependant un examen attentif des solutions qui ont ete experimentees et des propositions actuelles. Une telle etude, portant sur les projets de developpement de la production laitiere (production, transformation et commercialisation) vient de demarrer et ses conclusions, disponibles d’ici 2 ans, devraient pouvoir guider utilement des choix strategiques ulterieurs.

Cette approche par filiere doit etre poursuivie pour l’ensemble des speculations animales sachant que des resultats seront probablement obtenus plus rapidement la ou des possibilites d’intensification ou de semi-intensification de l’élevage existent. A terme, l’organisation des filieres doit deboucher sur l’émergence d’une interprofession seule capable d’assurer un dynamisme suffisant aux operateurs. Cette evolution capitale signifie l’aboutissement des tendances amorcees, a savoir:

* Le desengagement de l’Etat des fonctions de production, avec parallelement un renforcement des moyens consacres aux missions authentiques de service public;
* La professionnalisation des operateurs, notamment des producteurs, et la creation d’organismes representatifs des milieux agricoles.

Dans ce domaine, la cooperation francaise propose son appui a plusieurs niveaux:

* Mise en relation des organismes professionnels du Nord avec leurs homologues africains,
* Preparation de la transition a effectuer entre groupements horizontaux (producteurs) et transversaux (dans le cadre des filieres),
* Actions de formation,
* A plus long terme, appui aux realisations et developpement de partenariats economiques bases sur la recherche de profit mutuel.

1.2 INTEGRATION REGIONALE

La forte concurrence exercee par les importations extra-africaines de denrees animales subventionnees sur les productions africaines nationales menace d’aneantir les efforts de production existants, en zone sahelienne aussi bien que dans les pays humides. Certains Etats tentent de mettre en oeuvre des mesures de protection a l’egard de ces importations, mais seule une harmonisation au plan regional des politiques de protection pourrait etre efficace.

Cette harmonisation peut etre discutee dans le cadre du suivi de la Conference des Ministres de l’Agriculture de l’Afrique de l’Ouest et du Centre, d’autant que peuvent etre
associees aux negociations des organisations sous-regionales deja existantes (en Afrique: CEBV, CEBEVIRHA). Le processus a d'ailleurs ete engage avec la mise en route d'une etude visant a faire le point sur les pratiques actuelles et les possibilites d'harmonisation des mesures de protection face aux importations extra-africaines.

Il ne s'agit la que d'une premiere etape vers l'integration regionale. D'autres points d'application sont possibles en matiere d'harmonisation: mouvements du betail inter-Etats (commerce, transhumance), plans de lutte contre les maladies, mise sur le marche de produits veterinaires par habilitation regionale, approvisionnements en intrants, programmes de formation, etc.

2. ENVIRONNEMENT

L'impact de l'elevage sur l'environnement est mal connu. Des idees sont avancees, des observations sont faites, mais le sujet a finalement ete assez peu etudié. Les medias, dans ce domaine souvent plus soucieux de denoncer que d'informer, ne repondent que partiellement aux besoins de l'opinion publique face aux questions d'environnement. Par exemple, on souligne plus facilement les aspects negatifs du role de l'elevage sur la degradation des parcours et la desertification en zone sahelienne, ou sur la deforestation en zone humide, que les aspects positifs (effet de la pature sur l'embroussaillement en zone humide, fumure, diminution des risques de feux...).

Dans le cadre d'un developpement durable de l'agriculture, la strategie de developpement de l'elevage doit prendre ces aspects en compte et mettre en oeuvre les etudes complementaires permettant de determiner precisement les effets de l'elevage sur le milieu. L'ensemble des etudes ainsi disponibles pourrait faire l'objet d'une restitution generale lors d'une conference scientifique portant sur l'elevage et l'environnement, qui integrerait également les resultats d'autres etudes en cours dans d'autres zone.

Independamment de la preparation de cette conference, l'aide francaise s'efforce, lors de l'elaboration de chaque projet, d'integrer une composante environnementale dans les programmes d'actions envisages.

Parallèlement a ces etudes ou investigations, la cooperation francaise peut aider a la mise en oeuvre d'actions pouvant etre menees a court terme en concertation avec les usagers eux-memes (eleveurs et agriculteurs, collectivites) s'ils sont suffisamment organisees et representatifs de la communauté dont ils sont issus. Leur contribution doit alors intervenir des la preparation des programmes d' appropriation fonciere individuelle ou collective et des projects de gestion de l'espace rural, l'objectif etant de leur confier la responsabilite de cette gestion, en vue d'une rationalisation des usages de l'espace entre: agriculture, elevage, notamment transhumant lorsqu'il y a lieu, foresterie, et reserves naturelles dont la faune sauvage.

3. SANTE ANIMALE

3.1 REPARTITION DES ROLES ENTRE ETAT ET PRIVES

La Conference de Yamoussoukro (14-18 septembre 1992) a montre que la privatisation des services de l'elevage etait bien engagee dans un certain nombre d'Etats africains et qu'elle commencait a etre internalisee par bon nombre de responsables administratifs de l'elevage de
ces pays. De plus, grace aux différentes réunions et concertations organisées par les bailleurs
de fonds depuis plusieurs années, un consensus se dégage maintenant quant à la répartition
des tâches entre secteur privé et secteur public:

* Role des services de l’État (missions de service public):
  .Appui à l’organisation des professions;
  .Formation de l’ensemble des professionnels.

* Role des producteurs et de leurs associations:
  .Gestion des intrants;
  .Exécution des opérations courantes de prophylaxie et de soins de
  base;
  .Participation à la vulgarisation;
  .Concertations avec les services officiels.

* Role des auxiliaires:
  .Auxiliaires de base (issus du milieu social concerné): soins de santé animale de
  base;
  .Auxiliaires diplômés (ex-fonctionnaires cadres moyens): encadrement des auxiliaires, des intrants, liens avec l’échelon technique
  supérieur, divulgation des résultats de la recherche auprès des producteurs.

* Role des vétérinaires praticiens:
  .Activités classiques de clientèle (soins, intrants);
  .Mandats sanitaires (prophylaxie, inspection sanitaire);
  .Autocontrole de la profession.

Cependant, l’approche "privatisation" doit rester pragmatique et prudente, et tenir compte
des spécificités nationales, locales ou socio-économiques. Outre le financement de
l’installation d’opérateurs privés, les bailleurs de fonds doivent continuer à apporter leur appui
aux réflexions sur la conception de dispositifs sanitaires associant secteurs privé et public,
notairement en matière:

* d’identification de catégories d’opérateurs privés cohérentes avec la
  législation et les pratiques du terrain;
* de mandats sanitaires (agrément, formation, responsabilités, contrôle,
  sanction, rémunération);
* d’impact sur l’éleveur (couts/avantages).

Il est à noter que l’expérience accumulée grace aux opérations de privatisation en santé
animale doit pouvoir être valorisée dans d’autres domaines (services d’appui à la production
agricole).

3.2 PRODUCTION DE VACCINS

La politique de privatisation définie sous l’impulsion des bailleurs de fonds ne sera
appliquée que si elle est réellement acceptée par les autorités politiques des États et par les
producteurs. Elle sera d’autant mieux admise par ces derniers qu’ils constateront une
amélioration des services rendus au niveau de la compétence des praticiens et de
l’approvisionnement en intrants sanitaires, médicaments et vaccins.
Même s’il reste encore beaucoup à faire, des progrès indiscutables ont déjà été réalisés dans différents pays en ce qui concerne la distribution des intrants, avec la suppression des monopoles d’importation et de distribution, la multiplication des points de vente et la mise sur pied d’une législation cohérente. L’approvisionnement en vaccins doit lui aussi être rationalisé de sorte que l’éleveur puisse disposer à un prix raisonnable des vaccins nécessaires qui auront fait l’objet de contrôles satisfaisants sur les plans de l’efficacité et de l’inocuité.

Or, actuellement, la production de vaccins animaux en Afrique ne répond pas à ces critères: les unités de production, trop nombreuses et insuffisamment spécialisées, sont utilisées en deçà de leurs capacités théoriques, les contrôles de qualité font défaut, le tout dans un contexte de pénurie chronique de ressources. La surabondance d’une offre de mauvaise qualité à des prix non établis par rapport aux coûts de production décourage toute initiative privée dans le domaine de la production.

Une amélioration de cette situation est possible pour peu qu’il y ait un consensus des bailleurs de fonds sur une stratégie qui consisterait à proposer aux États une concentration des productions de vaccins dans quelques laboratoires africains qui bénéficieraient alors d’appuis conséquents pouvant permettre à terme leur privatisation. Parallèlement, l’aide internationale assurerait temporairement un marché solvable et sécurisant à ces unités de fabrication en accordant des subventions dégressives aux acheteurs (administrations nationales, groupements d’éleveurs), notamment pour les vaccins protégeant contre les maladies susceptibles de menacer l’état sanitaire de la communauté mondiale.

Une étude doit être menée dans les meilleurs délais pour préciser les stratégies. Elle ferait l’inventaire des laboratoires existants, étudierait leur viabilité sur les plans technique, économique, financier et administratif, et formulerait des propositions en vue d’une concentration des productions tenant compte d’éventuelles particularités locales.

4. RECHERCHE ET VULGARISATION

4.1 RECHERCHE

En matière de recherche sur les systèmes de production, la stratégie doit prendre en compte une tendance lourde qui est l’évolution démographique des pays du Sud. Quelles que soient les crises ponctuelles qui pourront survenir sur le plan de la situation alimentaire, l’augmentation de la population humaine induira une intensification des productions végétales et animales. Différents formes d’intensification apparaîtront en fonction des pays et des zones agro-écologiques concernées. Les priorités et la recherche en élevage en découlent:

* Zones arides et semi-arides : gestion durable des paturages par les éleveurs;

* Zones subhumides et humides:
  . Lutte contre les maladies à protozoaires,
  . Amélioration de la connaissance des systèmes de production,
  . Augmentation de la productivité, notamment en zones periforestières, avant de limiter le défrichage des forêts;

* Zones d’altitude:
. Lutte contre les maladies transmises par les tiques,
. Amélioration de la qualité de l'alimentation animale,
. Amélioration génétique;

* Zones péri-urbaines:
. Amélioration de la qualité de l'alimentation animale,
. Amélioration de la transformation, de la commercialisation et de l'hygiène des produits.

Schematiquement et dans une perspective à long terme, la recherche pourrait évoluer progressivement et mettre de plus en plus l'accent:

* Des systèmes d'élevage extensifs vers des systèmes plus intensifs,
* Des polygastriques (gros et petits ruminants) vers les monogastriques (porcins et aviculture villageoise).
* De l'élevage bovin vers les petits ruminants,
* De la production de viande vers la production de lait,
* De la production stricto sensu vers les problèmes posés par la transformation, l'hygiène et les marchés.

Cette évolution ne pourra se faire que si les producteurs sont étroitement associés à la recherche:

* Lors du choix des thèmes de recherche: il faut s'assurer que les contraintes identifiées au niveau des producteurs remontent du terrain par le biais des groupements d'élevage et du dispositif de conseil privés, des services de l'exécution des programmes (expérimentations) et de la valorisation des résultats.

La mise au point de dispositifs d'interface entre les chercheurs et les producteurs doit constituer une priorité pour une nouvelle définition des mécanismes de pré vulgarisation et d'autovulgarisation par les associations de producteurs.

Consciente de la nécessité de regrouper les moyens disponibles et les compétences, l'aide française souhaite renforcer la collaboration entre les différents bailleurs de fonds à travers la recherche de synergies et de complémentarités. Un exemple de ce type de collaboration est donné avec la création du Centre International de Recherche-Développement sur l'Elevage en Zone Subhumide (CIRDES) à la demande du Conseil de l'Entente et avec l'appui de la CCE et celui de la France.

4.2 VULGARISATION

Pour l'aide française, la vulgarisation agricole doit tenir compte de quelques règles simples:

* Le conseil agricole concerne l'ensemble de l'exploitation;
* Il est adapté à la demande des producteurs, c'est-à-dire qu'il tient compte des spécificités locales des systèmes de production, et des moyens financiers de ces producteurs et de l'État;
* La structure de vulgarisation est la plus décentralisée possible,
afin que les producteurs soient en mesure de participer activement au contrôle des programmes mis en œuvre, au contrôle des agents exécutant ces programmes et au contrôle de la gestion du système.

L’ensemble des taches d’identification des besoins, de programmation et de contrôle peut être confié aux organisations professionnelles agricoles au fur et à mesure de leur emergence et du développement de leur capacité à orienter les mission du service de vulgarisation.
CHAPTER II

THE ISSUES

(A) THE OVERALL MACRO-ECONOMIC AND INSTITUTIONAL FRAMEWORK

(1) The Issue Paper
SOME MACRO-ECONOMIC ISSUES IN LIVESTOCK DEVELOPMENT
Cees de Haan

Overview

Inappropriate policies probably have been the single most important factor contributing to the failure of livestock development projects. As a complete overview of all policies affecting livestock development would be infeasible for the time available for discussion, this issues paper will deal mainly with trade and pricing policies and the relative allocation of priorities between production systems.

These issues are interrelated and impact the competitiveness of livestock production in the developing world. Corrective trade and price measures are only justified, and will only be supported by the international financial community, if the local production they are to protect, is efficient and can compete with undistorted import prices. Protection of uncompetitive local production, it is argued, leads only to higher consumer prices. Production efficiency is greatly affected by the production system, and selecting the right priorities concerning which production system to develop is therefore crucial for successful livestock development.

Trade Issues

International and national trade barriers have severely hampered livestock development. International trade policies have caused dumping of low cost beef and mutton in Africa, constituting an unfair competition to local production. Similarly, milk powder distributed as food aid has been a major impediment for local dairy development. On the other hand, these cheap products have benefitted poor urban dwellers, and, while these imports have caused some substitution of local meat products, they have substituted also to a large extent imported fish. Furthermore, milk powder, provided under food aid, has been an extremely powerful catalysts in dairy development, for example in India.

Subsidy policies on live animals have resulted in unfair competition for local dairy breeders in North Africa and the Middle East. National and regional formal and informal trade barriers
have substantially increased the transaction costs for livestock trade in Sub-saharan Africa. Information streams are frequently inadequate to promote efficient trade.

Discussion Points

- How competitive is meat and milk production in the developing world and Eastern Europe, and what is the data base? How do we integrate the intermediary products of livestock (manure, traction) into the estimation of comparative efficiency?

- If livestock can be produced economically in a developing country, what should be the policy on dumping? If dumping is to be prevented, what are the mechanisms? Are there experiences of import policies which allow adequate supplies of subsidized meat or milk imports for the poor, without unduly hurting the local industry?

- How can policy makers in developed countries be convinced to introduce a less detrimental export policy?

- How can we improve interregional trade (Eastern Europe, West Africa); how effective have we been in implementing regional projects (see Harvey Blackburn’s review of the Central Corridor experience)?

- What can be done to reduce the informal barriers. How can we improve the information system on markets and prices?

Pricing Policy

Scope of the problem: Direct price controls on meat and milk (one of the main causes of past project failure) have been eliminated in most developing countries. However, indirect controls through government monopolies on import and distribution of meat and milk are still important constraints. Furthermore, exchange rate policies, which produce overvalued local currencies, puts imported products cheaply on the local markets. Policies, which restrict the availability of foreign exchange, restricts also the availability of essential production inputs. Similarly, the subsidization of government services and inputs impedes the entry of private operators.

Discussion points

- Should projects be started in an unfavorable policy environment?

- How can a better local awareness be created for the effects of unfavorable policies on local production? How can we increase the capacity for livestock policy analysis in developing countries?
How feasible is full cost recovery for all services and inputs, also for the poorer producers?

Production Systems

Scope of the problem: The priority focus regarding particular livestock production system has shifted over the last decades from predominantly parastatal and ranching to smallholder production, and especially smallholder ruminant production in integrated crop/livestock systems in the higher rainfall areas. Also in Eastern Europe, the tendency is to aim at the development of family farms, the equivalent of smallholder production systems in the developing world. Pastoral production in the dry areas and non-ruminant production has received less attention. Whereas certainly in many situations there are good arguments for prioritizing such systems, the priority to smallholder crop/livestock farmers seems to have developed into a kind of dogma, whereas often we lack convincing evidence that it is the most efficient systems, and that we have the correct technologies and delivery systems for these systems. Similarly, changes in land tenure have been argued as critical pre-conditions for investments in pastoral production systems. However, projects aiming at modifying the land tenure system have generally disappointed.

Discussion Points

- What should be the priority focus in the production systems; In the Bank we put a high priority to smallholder dairy and beef fattening. Is this priority shared by the other donors?
- How justified it is to invest in smallholder poultry projects; won’t they be taken over by large companies as has happened in poultry projects in East Asia? How important is competition for grain as an argument against donor involvement in poultry development?
- What should be the policy in Eastern Europe; How fast should privatization of land occur, and what forms should it take?
- What are appropriate input, credit and extension delivery systems for smallholder livestock systems?
- What experiences do we have with the need, the different approaches and the effect of land tenure changes?
The Case Study
Collaboration Between Donors on Policy Issues
USAID and World Bank Collaboration for the Liberalization of Livestock Trade Between Mali, Burkina Faso and Cote d’Ivoire.
A Case study / discussion paper by Harvey Blackburn

Problem Statement

Traditionally coastal west African countries have imported livestock from Sahelian countries. During the 1980’s there was a displacement of Sahelian livestock on the coastal markets. This displacement was caused by:

- Tariff and nontariff barriers to trade,
- Importation of subsidized beef,
- Low income growth,
- Substitution of meat by fish, and
- Drought reducing the capacity to export animals.

Clearly the Sahelian countries have a comparative advantage in producing livestock not only for their domestic markets but also export markets. However, after being displaced from international markets there is a problem of market reentry. In part this reentry has been aided by countries like Cote d’Ivoire placing tariffs on subsidized products being imported from the EEC. However, to recapture market share trade between these countries must be made more cost efficient.

Working Toward a Solution

IBRD and AID co-funded a study which quantitatively assessed the cost of various marketing options for livestock trade in this region. This study was able to evaluate, in detail, the costs involved in moving livestock from Mali and Burkina Faso to Cote d’Ivoire. The budgets included labor, transportation, export licenses, and rent-seeking. The study provided a basis to evaluate where the critical impediments to trade were. In addition the study evaluated the potential impact of policy reform on the profitability of exporting livestock (e.g., lowering various transportation costs, or fees for obtaining export permits). The analysis led to the formulation of a strategy on improving profitability (Table 1). Three major problem areas were identified along with strategic goals and strategic actions necessary to accomplish those goals.
Implementation of the Strategy

With a clearer understanding of the impediments to trade dialogue between the two donors, other donors and the three countries was initiated. Regional organizations (CEBV and CILSS) have played a role in facilitating the technical review and acceptance of the co-funded Livestock Action Plan (Table 1). The AID mission in Mali has also endorsed the effort and will be providing technical support for implementation of the plan in Mali. AID’s regional office will continue to support this reform effort by funding a consultant to garner support for the plan among the participating countries. The World Bank has passed the report to the respective country divisions for consideration in their portfolios.

At this time, AID and the World Bank are making efforts to engage the concerned governments in technical and political dialogue. A series of meetings are anticipated with the cooperation of regional organizations (CILSS, CEBV, CINERGIE) to identify mutual reform priorities which can lead to implementable change. It is hoped that the logic of trade reform will be sufficient to convince policy makers that these changes will be beneficial not only to livestock producers but to the national economy. Once a priority agenda has been set the donors will sponsor meetings between the participants to determine how to proceed with some or all of the reforms.

Discussion Points

- Does this type of co-donor interaction contribute to more expeditious policy reform?
- Would the same conclusions been reached without this interaction (on the individual donor level, country level or regional level)?
- Would a process of donor interaction followed by a division of responsibilities be useful in other types of policies issues (e.g., land tenure, veterinary services)?
- Issues of a regional nature seem to be difficult for donors to deal with organizationally. In structuring regional policy reforms are there different avenues to utilize?
Table 1. Strategy Formulation for Cost-Reduction in Intra-regional Livestock Trade.

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<th>Strategic Goal</th>
<th>Strategic Actions</th>
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<td>Greater efficiency of road and rail transport.</td>
<td>Coordination of investment, maintenance and management of regional transport infrastructure.</td>
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<td>Deregulation of international trucking.</td>
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<td>Improved market information.</td>
<td>Alignment of national policies and schedules for the liberalization of transport tariffs.</td>
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<td>Regulatory &amp; Administrative Barriers to Efficient Trade</td>
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<td>Timely dissemination of market information on a regional basis.</td>
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<td>Problems of Public Administration &amp; Governance</td>
<td>Elimination of rent seeking by public officials and their agents.</td>
<td>Simplification of procedures and reduction of incumbent costs.</td>
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<td>Institutionalization of national strategies for oversight and enforcement.</td>
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<td>Restructuring of control services including changes in recruitment, and of incentive and penalty structures.</td>
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<td>Mobilization of public support and participation.</td>
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Case Study
Livestock Development Trends in Asia: Bigger or Better?
Brian Brandenburg, Livestock Specialist
China/Mongolia Agriculture Operations, World Bank

Introduction

Under U.N. geographic protocol, Asia occupies a vast area, encompassing 28 countries located in the sub-regions of West Asia, South Asia, Southeast Asia, and East Asia. The region holds three of the world’s largest countries by population: Indonesia, China, and India. Asia incorporates vastly diverse climatic and ecological zones, ranging from temperate continental steppes in east-central Asia to the humid tropics in southeast Asia. It is, therefore, not surprising that livestock production is practiced in virtually all its forms and economic levels, from the subsistence smallholder level to vertically integrated corporate production. Countries that have shown considerable economic development, in particular, in recent decades are those in south-east and east Asia. Household incomes from Asian livestock production has reached an estimated 30 percent of total income; much of this income represents actual or in-kind cash resources available for immediate liquidation in times of need.

World Livestock Shares

Asia’s share of world livestock species inventory ranges from a low 37 percent of all equines (horses, donkeys, mules) to a high 97 percent on buffaloes; pigs and poultry shares represent a very substantial 51 and 43 percent, respectively. The latter two species have been instrumental in increasing smallholder incomes in many Asian countries due to their adaptability to small-scale, intensified production, provided support infrastructures are in place.

Livestock Product Shares

Asia’s share of world livestock product commodity production is very substantial for poultry, pork, and mutton (29 percent, 44 percent, and 34 percent), but relatively small for beef (10 percent). In spite of these production statistics, per capita annual production of livestock products remains relatively small. At a 1991 per capita meat production of 28 kg, Asia ranked just above Africa (21 kg per capita) and below all other regions. Average world production was 57 kg. The same trends are evident for milk and eggs: Asia ranked second to last, above Africa, with 17 kg and 4 kg per capita production, respectively. Advances in commodity production is severely diluted by Asia’s large and rapidly growing population, which in 1991, stood at 3.2 billion, or almost 59 percent of the world’s total. Dietary intake trends reflect the livestock product shortage. At only 9.5 percent of total dietary caloric intake, Asia ranks, not surprisingly, second lowest—just above Africa (7.5 percent). The importation of livestock food products to narrow this gap represents a large and growing foreign exchange cost to many Asian countries and has been a main factor for stimulating commercialized, or upgraded smallholder, livestock production.

Comparative Livestock Trends

In terms of world livestock species share, 1991 cattle inventories in Asia stood at 37 percent (versus 13 percent worldwide); sheep at 34 percent (20 percent); pigs at 50 percent
(27 percent); and poultry at 46 percent (24 percent). Asia leads all other world regions in comparative growth in livestock species inventory over the past decade; regional livestock growth was 10.5 percent compared to 7.9 percent worldwide. Specifically, increases in poultry growth were a phenomenal 53 percent compared to 35 percent growth worldwide. Trends for specific production parameters are also revealing of Asia’s livestock subsector dynamics: with a population increase from 1980-91 of 18.8 percent (versus 18.5 percent worldwide), Asia outstripped the world in the generation of livestock products by a factor of two (44 percent versus 20 percent) and food production (both animal and plant-derived) by a factor of four (17 percent versus 4 percent). Accompanying this growth, livestock product prices have also risen substantially in Asia, from 18 percent versus 4 percent worldwide. This trend reflects both inflationary movement and rising consumer incomes, increasing the demand for, as well as prices and production costs of, livestock products.

**Constraints and Opportunities**

The factors conducive to Asian livestock production are many and not always directly intrinsic to the livestock subsector. Stable socio-economic growth has been paramount in the success of many east and southeast Asian countries, some of which have emerged as the "small dragons". One of these, Singapore, has actually done away with livestock agriculture as it can now afford to import, rather than produce, virtually all of its animal-derived foods. Other conducive factors relate to the development of production infrastructures such as support services and markets, public sector-guided investment and incentive policies, private sector development and/or privatization of production and processing, available feed and forage resources, and increasing consumer demand. Factors constraining future livestock production in Asia include: the need for advanced (small) ruminant technology, improved livestock extension and applied R&D, limited feed and forage resources and the increased use of crop by-products, livestock competition for human land and feed resources, the environmental considerations of intensified production, the need for more integrated production systems, and the need for improved livestock/cropping interactions at the small holder level.

**Bigger or Better?**

Asia is bigger than most other regions, but so will its problems be if important decisions are not made soon. Asia, like other regions, can, of course, not be judged in terms of "bigger or better", but must be evaluated in terms of resources versus needs. In this context, Asia faces substantial problems for future livestock agriculture, even though, in many cases, the problems are those of success. Many relate to the increasingly scarce production resources of land and feed with which to support the often rapid growth of animal agriculture. Future production increases must, therefore, come from increased efficiency rather than from building increased capacity; Asia’s livestock problems are becoming increasingly "software" rather than "hardware" in nature. Furthermore, a holistic view of livestock agriculture in relation to its environment, must become increasingly accepted. An improved and increased support services infrastructure continues to rank very high in this view. Privatization of support services and production can, if their adaptation is planned carefully, provide the two factors essential in achieving the two key factors toward sustainable product: increased production efficiency and an incentives structure for increased participation.
Summary of Discussions
E.P. Cunningham - Chair
M. Asseo - Rapporteur

Presentations on trade policy, donors interacting to promote regional trade and a
discussion on successful livestock development in East Asia, formed the basis for participants
to discuss policy and macro economic issues livestock industries are confronted with.

Discussion centered on four major topics relating to policy, trade and privatization. These
topics were broadly termed:

1. Economic environment
2. Scope of privatization
3. Rules of privatization
4. Insuring private services are profitable

**Economic Environment**

Livestock production and processing has to function in an economic environment which
can be classified as: international relationships, regional relationships and domestic
relationships. The inter-relationship between these three levels of economic policy impacts
the growth of livestock industries. If appropriate government policies are not in place the
industry can be stifled to the point where consumer demand weakens and product
substitution occurs. Conversely, the group felt that if policies of free trade and privatization
of livestock services were liberalized there is the potential for sector growth and new
businesses could enter into the market place.

There was strong sentiment expressed that international relationships could have pervasive
effects upon the domestic livestock industry growth. There was almost unanimous consensus
that dumping of livestock products in LDC’s should not be permitted. Additional discussion
centering upon how dumping impacted poor and rich consumers. In some environments it
was believed that poor consumers benefitted from dumping policies (although this may be
short lived). However, there may be other environments where it makes little difference to
the poor whether or not dumping occurs. In West Africa not only has there been a dumping
of meat but there has also been a substitution of fish for meat. The occurrence of this
product substitution is contrary to the consumers preference for meat.

It was not clear what the impact that the current round of GATT negotiations would have
on livestock industries in developing countries. It was noted that in the current round of the
GATT subsides have only been decreased by one-third. With this the case, developing
countries may have to be prepared to raise levies to protect their industries. Therefore this
situation needs consideration as donors work toward structural adjustment and policy reform.

In an environment where domestic or regional livestock industries are challenged by
subsidized product are governments willing to take steps to impose trade regulations? It was
unclear how many governments would respond to this type of challenge. However, several
governments in West Africa (Cameroon, Cote d’Ivoire and Togo) have introduced protection against dumping by other countries.

The discussion of regional trade provided an example of how countries with a competitive advantage could work with their neighbors as trading partners. Such arrangements need not lock the importing country out of the livestock industry, for with the growing agricultural intensification there are opportunities to add value to livestock products as they cross international boarders.

**Scope for Privatization**

Past group experiences have shown that private services are successful when livestock producers are profitable. If policies do not exist which allow producers from all spectrums and levels of production to be profitable the chances for private services succeeding are decreased.

The main focus of the privatization discussion was on veterinary services. Key to this privatization effort is for governments to decide what are compulsory services and what are voluntary services. To effectively make this assessment there needs to be a comprehensive evaluation of the country’s situation so that all parties concerned can have adequate access to information about the potential benefits of private veterinary services.

There are several constraints to privatization. In some situations defacto privatization has already occurred, however the civil servant lobby still has to be overcome. The boundaries between public and private veterinary services have to be determined especially in regard to compulsory and voluntary services. In the end government has to be responsible for compliance and quality of the product delivered, although it can subcontract the services. The groups experience indicated that the private sector is capable of handling voluntary veterinary services.

The role of para-vets and how they interface with veterinarians is still unresolved. The development of a corps of para-vets is very different from the European and American models of veterinary service. It was expressed that improved veterinary service would not advance further until farmers are better trained to administer some portion of their own veterinary care. It is in this light that para-vets fill a needed void. It is suggested that they may fill a temporary developmental void which will be replaced by producers as they do more of their own preventive veterinary care.

**Rules of Privatization**

For privatization to take hold there will have to be an end to automatic civil service recruitment of veterinarians. Furthermore, for private and public veterinary service to be truly effective the mixing of both must be stopped, and sub-contracting of government services to private operators is an excellent way to promote privatization. A potential way to foster the transition to private veterinary care is the recruitment of veterinarians by farmer organizations.
Also as drug companies start expanding into developing markets they might present additional opportunities to foster privatized veterinary services.

The topic of price controls for livestock goods and services was briefly discussed. There was consensus that many of the direct price controls have been eliminated from the sector. However, there are indirect controls which are still in place (e.g., currency valuation). Clearly until these types of controls are eliminated the livestock sector will still be inhibited. It was felt that where price supports or subsidies were needed that they should not be applied directly to the producer but through an intermediate route. For example, if drugs should have to be subsidized the subsidy should be between the manufactured and the retailer not the retailer and consumer.

**Insuring the Profitability of the Private Sector**

For private services to be profitable an atmosphere must be created. This means that policies do not impede market entry. But the question remains of how to effectively provide the poorest livestock producers with veterinary care and other livestock services, and whether they will be able to pay. Cost recovery in some instances has improved the accessibility of the service to the poor, as free services are often monopolized by the wealthy and powerful. But in some instances targeted subsidies are necessary, and they may require donor assistance at higher levels than other livestock services. Donors could take the approach of being directly involved or there could be a greater dependence upon the NGO community to assist the poorer community with veterinary needs.

**Conclusion**

Clearly many of the policy impediments to livestock production have been removed. However, there are still indirect policies in place which are stifling the sectors growth. As donors assist in privatizing livestock services there is the need for a number of major studies. These include determining how efficient the private sector is in providing livestock services, and if there are private sector advantages how are they divided among the livestock industry as a whole. Comprehensive studies on how livestock impact national economies after they leave the farm still need to be performed.
Overview

Livestock and livestock development have a negative environmental image, as most recently underlined by two publications (World Watch Institute, 1991, Rifkin, 1992), which attracted heavy attention in the US.

The key areas contributing to the negative environmental image of livestock are:

- overgrazing and desertification in the dry areas;
- destruction of tropical forest;
- loss of bio-diversity through competition with wildlife populations; and
- contribution to environmental pollution and global warming.

On the other hand, positive contributions are frequently not adequately acknowledged. Key areas, in which livestock can have a positive contribution to the environment are:

- soil fertility enhancement, directly through the contribution of livestock through manure and indirectly through the use of forages in the rotation; and
- erosion control, with the positive effect of animal traction on soil physical parameters (as compared to mechanized cultivation methods) and to the prevention of erosion in hilly terrains (as compared to hoe cultivating).

The main questions concerning the alleged negative environmental effects of livestock seem to be three fold: (a) what is the extent of the problem; (b) what is the role of livestock in the causing the problem; and (c) what can be done to address the problem. In the following paragraphs, these three questions will be reviewed for the negative environmental attributes of livestock described above.

Overgrazing and Desertification

Extent of the problem. The extent of overgrazing and desertification is poorly documented. Tucker et al. (1991) from NASA points to an expanding and contracting Sahel according to weather changes. Furthermore, livestock numbers in the arid areas have been rather stable over the last decades, which would not be possible if serious degradation would have taken place.
Role of livestock. Several authors have pointed to other causes of range degradation and desertification. Gorse and Steeds (1987) point to fuel wood cutting and Dodd (1991) to crop encroachment as important causes of range degradation. De Haan (1991) points to subsidization of feed and local cereal production as important causes of crop encroachment and overstocking, respectively. It is generally acknowledged that livestock induced overgrazing is frequently found around water points. Underlying all these causes is the human carrying capacity of the arid zones, which is at the limit (or past the limit) of what these zones can carry.

What can be done. Current approaches call for: (a) participation of the local population in arid land resource management, allocating to the population some sort of exclusive users rights; (b) fiscal incentives, including the introduction of grazing fees; (c) flexible livestock management, adapting livestock management to the erratic and unpredictable rainfall patterns of the dry areas (Behnke and Scones, 1991); (d) use of low inputs range improvement techniques, rather than costly establishment of fodder trees and introduced pastures; and (e) stratification of the production, with younger animals finished in the higher rainfall areas.

Discussion Points

- **Scope.** How can we promote a more objective assessment of the degree of degradation and establish a more permanent monitoring systems?

- **Role of livestock.** The UNCED conference in Rio has put desertification on the agenda for future action. What --if anything-- need to be done to get to a correct assessment of the role of livestock in range degradation?

- **What can be done (a)** What are the positive experiences in pastoral organization and range improvement; (b) How essential are the allocation of users rights, and should they be done collectively. Are there examples of successful allocation of users rights, and levying of grazing fees. How, as official donors working with Government organizations, can we effectively mobilize grass root "bottom-up" pastoral participation; (c) Do we agree that pastoral organization is an essential pre-condition for any physical investment in range improvement (including drilling of water points); (iv) How can we operationalize flexible range management; (d) What is the scope for technical innovations, and do we have any reliable information on input/output relations; (e) How can we promote stratification; and (vii) What weight should we allocate to pastoral development in our overall livestock development efforts?

Tropical Forest Destruction

Scope of the problem. The cutting of tropical forests for ranching has probably been the most important criticism against livestock raised by environmentalists. World Bank estimates indicate that from 1975 till 1985 between nine and fifteen million ha of forest has been cut in the Amazon, and that 65 percent of that land was used for livestock. Similar encroachments are taking place in the humid zones of Africa and Asia, although livestock is much less the causal agent there. On the other hand, Sanchez (1991), showed that following tropical forest, pasture was the second best soil coverage under humid tropical conditions.
Role of livestock  It has frequently been argued that it is not livestock development as such, but fiscal incentives, subsidized credit, public infrastructure development and land policies, which have been the main cause of deforestation in the Amazon. Reliable data on the economics of cattle ranching in the Amazon area are scarce, but those available point to negative returns if only livestock production is taken into account, increased land values tips the balance.

What to do. Removal of the distortions privileging livestock is an obvious first step. However, it is unclear if that will be enough. The Winrock report argues against any livestock development in Africa’s humid zone, but without any specific proposals how to avoid livestock incursion.

Discussion points  Key issues seem to be: (a) Which are the policies/regulations deterring cattle encroachment in the humid forests; (b) If developed in the humid zones, what are the best technologies for sustainable land use; and (c) How can we convince public opinion, that livestock is only one factor in one continent contributing to the felling of tropical forests?

Livestock/Wildlife Interaction

Scope of the problem and role of livestock. There has been a marked reduction in the world’s wildlife population, especially in large animals. Livestock has often been depicted as being in direct competition for forage resources with wildlife. Furthermore, wildlife has been seen by the veterinary establishment as important transmitters of diseases. Crop encroachment is also important. The fundamental underlying reason is human population pressure, which changes the preferred habitats of wildlife.

What can be done  More recently, evidence is accumulating that livestock and wildlife can be kept together beneficially. For example, Western has shown that in Kenya, with the cooperation of the Maasai, livestock and wildlife together linking in with tourism, improved the vegetation and yielded a higher income than any of the two activities carried out separately.

Discussion points  (a) How can we integrate wildlife better in livestock development projects; (b) How can we develop livestock/wildlife integration in areas where tourism is not possible.

Livestock, Global Warming and Environmental Pollution

Scope of the problem and role of livestock  Through the emission of methane, livestock contributes to global warming. However, methane constitutes only 18 percent of all "greenhouse gasses" contributing to global warming and the methane production of the global livestock population is only 15 percent of total methane production (Johnson et al., 1990). Environmental pollution is a major problem in the industrialized world and the "mega-units” of Eastern Europe, but is still not a major issue in much of the developing world.
What can be done There is little to be done on the methane-global warming linkage of livestock, except putting the contribution in its correct perspective. Preston shows that a high energy diet with sugar cane reduces methane emission. For the "mega-units" stronger environmental requirements, leading frequently to downright closures, would be required.

Positive Contributions of Livestock to the Environment

Overview. While generally the negative aspects of livestock production are well recognized by the decision makers, the positive aspects are less well known.

Scope of the contribution. Livestock can make a direct positive contribution to soil fertility maintenance through manure production, and indirectly through the utilization of N fixing forage legumes. However, crop/livestock integration is not a panacea: (a) the contribution of manure is limited, and in most systems livestock can only maintain total soil fertility if there is a direct fertility transfer from outside; (b) crop/livestock integration will arguably (McIntire et al., 1992) only occur if socio-economic conditions (population pressure and market conditions) are conducive. The role of development projects can play to promote this integration is limited; (c) the opportunities for forage production are limited, as farm labor will be directed first to food and cash crops; and (d) the transition from hoe-culture to animal traction brings a net loss in soil conservation.

Discussion points (a) Are there examples of economically and financially successful projects promoting livestock inter alia to maintain soil fertility; (b) What can be done to promote crop/livestock integration; and (c) Or is it better, especially for Asia, North Africa and Latin America to aim for specialized production systems; and (iv) What priority should be given to animal traction?
Summary of Discussions
Chair: E. Grosse-Herrenthey
Rapporteur: P. Arduoin-Dumazet

On the basis of the documentation presented, the discussion centered on the following points:

- The negative and positive impacts of livestock on the environment, and, in the role of livestock in some of the most quoted instances of degradation, i.e., desertification, deforestation and global warming;

- The current "state of the arts" regarding:
  - appropriate technical solutions and appropriate policies and regulations, especially in range management; and
  - involvement of the local populations and, in particular, livestock farmers, in better use of renewable natural resources.

- The need for an objective evaluation of the environmental impact of livestock in order to be able to reply in an authoritative manner to the public on these issues.

Impact of Livestock on the Environment

In spite of the large number of papers on this subject, it was felt that few had objective scientific bases and many gave contradictory evidence. Discussions on the subject raise lively, even passionate, emotions. Many points raised by the meeting, confirmed the issues raised in the paper. The included:

- The degradation of natural resources and the greenhouse effect has taken place at a time of constant livestock numbers worldwide. They can therefore not only attributed to livestock;

- Impact of climate and man in the widest sense (population growth and increasing demographic pressure, extension of cultivation, and over-use of wood resources) are probably more important. In cases, where there are linkages between livestock and environmental degradation, there are frequently underlying structural and institutional changes, which trigger the negative environmental effects. While livestock then seems the immediate cause, it is not at the root of the problem. Of the examples cited at the discussion were:
  - In deforestation in the Amazon areas, cash incentives and capital gains have been the primary stimuli for intervention. Furthermore, there is now convincing evidence that forage production represents the second best means of protecting soil and water resources. Besides, in a general way, the degradation of forest resources is usually started by the expansion of cropping by the poorest sections of the community before being used for livestock activities.
In desertification, modification of the system of ownership of livestock and, in particular, the absenteeism of livestock owners has a fundamental impact, especially in the Sahel.

Experiences with positive effects of livestock on the environment were also exchanged:

- The introduction of legumes into cropping systems for the purpose of providing an animal feed resource has also significantly beneficial impact by maintaining the stability and fertility of the soils.

- The value of organic fertilizer has always been underestimated and, in particular, the transfer of fertility due to the movement of animals (transhumance and manure contracts). Similarly, the use of biogas is, after a long stagnation, now increasing in, for example, China and India.

- The use of crop residues for livestock feed is a positive factor, from the point of view of using a resource that would otherwise be lost.

- In areas within the 1,500 mm isohyet in the African savannas, it has been shown that livestock and grazing stimulates the growth of woody vegetation, and thus favors biomass development.

**State-of-the-Art Technologies and Policies in Livestock/Environment Interactions.**

Most of the discussion focused on the current stage of knowledge on the livestock management in the arid areas:

- There was a consensus on the need to maintain flexibility in livestock movements and stocking rates, and the dangers of imposing rigid stocking rates on restricted areas of arid land. The meeting appreciated the exciting ideas emerging from recent work in the US, UK and Zimbabwe, on the advantages of "opportunistic" arid land management, acknowledging that still much remained to be done to operationalize these concepts. There was no consensus on the value of rotational grazing within the pastoral zone;

- On the institutional side, there was agreement that the establishment of pastoral association and the allocation of exclusive users rights are essential pre-requisite before investments such as networks of water points can be developed. The pastoral association should take the responsibility for the maintenance of these points. There are still few conclusive experiences in this area, though. In general, it was acknowledged that the generation of revenue from livestock and a realistic pricing of the inputs in the pastoral zones are important factors which promote the culling of unproductive animals in such systems and in general improves range conservation. The use of subsidized concentrate feed was mentioned as one of the main factors in causing range degradation in the Magreb. There was no consensus, however, on the desirability of a generalized introduction of a grazing fee.
• It was further remarked that for certain ethnic groups (the Touaregs, for example), there is a risk that mankind will see some groups disappearing and with them their cultural heritage if only technical or economic criteria are taken into consideration.

• Land tenure security is a vital precondition—as much in pastoral areas as in areas where cropping predominates. This aspect remains a delicate one and must be carefully handled 1) due to the intervention of various groups in different areas, and 2) as a result of the fact that individual rights are not necessarily equal. In many instances, it is has shown to be advisable to reexamine legislation and rules of inheritance.

• Interesting experiences are also becoming available on the integration of livestock and wildlife, long time seen as antagonistic. Experience in Kenya, for example show that the combination of livestock and wildlife was superior in improving the botanical composition and in generating revenues for the local population, than any of the two activities carried out single.

In the higher potential areas, successful experiences with environmental protection (anti-erosion) through the introduction of forages were mentioned in Ethiopia, with a shotgun approach providing farmers with a menu of forage species and cultivating systems. In some areas, legumes and alley cropping comprise solutions that are, in most instances, perfectly acceptable from the sociological point of view.

The Need for a Clear Assessment

It is apparent, therefore, that on the basis of current knowledge, livestock is an important factor, but cannot be considered to be the major cause of environmental degradation. The meeting unanimously agreed that it would be advisable and opportune, to get a more balanced view disseminated among policy makers and the general public.

• Given the broad studies that are already underway, it is possible, on the basis of existing literature, to make an objective analysis of the impact of livestock, and put forward a balanced argument to counter the "anti-livestock" bias. Such a position paper can be prepared and ideally should be available for the follow-up UNCED conference on desertification.

• While there is considerable information available, there is still a need for a more definite evaluation of the long term trends in the arid range lands. The establishment of a permanent monitoring systems, e.g., using satellite imagery, needs to be pursued. Such systems would have immediate spin-offs for pastoral planning activities.

References


ANIMAL HEALTH

The Case Study
AN APPROACH OF THE EUROPEAN DEVELOPMENT FUND
TOWARD MORE VIABLE VETERINARY SERVICES IN AFRICA
Jan Mulder, EEC
Directorate-General for Development

Since the start of the European Development Fund (EDF) in the early sixties, the financing of projects in the rural development sector in Africa has been important. The main emphasis has been placed on increased agricultural production. Animal production is an integral part of agricultural production. The development of the former by the latter, the association between animal production and agricultural production has been encouraged from the beginning.

During the early eighties, an evaluation division was created, which for the first time evaluated, in a systematic way, the various projects which had been the subject of EDF financing. Animal production projects were evaluated as well and the conclusions of the evaluation were compiled in the document, "Basic Principles of Livestock Development" (1984). There were numerous recommendations, amongst which are:

- Policies concerning the development of livestock resources should be focused on the livestock producer and his family with particular attention being paid to the role of women.
- The scale of financial resources to be allocated to such efforts must be in reasonable proportion to the livestock sector's potential and current contribution to national wealth.
- Every possible effort should be made to promote and encourage private initiatives of all kinds in the provision of the goods and services needed by the livestock producer, such as drugs, animal feed, credit, marketing of livestock products, etc.
- It is essential to formulate and implement a pricing policy for inputs and livestock products alike.

It was at around the same time that the EDF was confronted with numerous demands to finance a vaccination campaign against rinderpest. This was probably due to the fact that one of the earliest interventions of the EDF in the development of African Animal Resources was participation in financing a vaccination campaign against rinderpest called Joint Program 15 (JP 15). Together with other donors, a vaccination campaign was financed in several African countries over a period of about 15 years. JP 15 envisaged the eradication of rinderpest in Africa and almost succeeded. When donor financing stopped toward the end of the seventies, it was thought that rinderpest was under control, if not eradicated. However, it was too early to cry victory.

At the beginning of the eighties, it was clear that rinderpest outbreaks were occurring again on a large scale in several African countries. What was the reason, despite the massive financial investment in a campaign to control rinderpest in Africa, for the recurrence of this disease on such a large scale?
Several reasons were found. None of them applied in the same way to all African countries. A number of them are cited here:

- The allocation of the government’s budget toward agriculture and, in particular, toward livestock development had not reflected the importance of the sectors contribution to the national economy.

- All veterinary graduates were automatically recruited into the state veterinary service and the major part of the budget of the veterinary service was utilized for the payment of salaries and not for the operations in the field.

- The policy of almost all governments was to conduct vaccination campaigns free of charge and subsidize to a large extent several other veterinary interventions.

Therefore, it was concluded that the essential point was not the provision of funds for a specific campaign against a specific animal disease, but that there was a need to establish a policy whereby it would be possible to find an additional or alternative source of financing for the veterinary services. However, it was not only the veterinary services that demanded attention. The object was, as before, to increase of animal production in Africa in order to respond to the increased demand due to increased population. The issue was not only a better financing of veterinary services, but a better financing of the livestock services. The problem of adequate nutrition—and with it, the associated problem of overgrazing—demanded equal attention with the outbreak of contagious diseases.

The Organization of African Unity and, especially, its Inter-african Bureau of Animal Production, proved to be an interested partner in the development of new policies that envisioned establishing better livestock services for farmers.

In 1986, a financing agreement was concluded between the Organization of African Unity and the Commission of the European Communities. The agreement consisted of two approaches: 1) Those countries confronted with outbreaks of rinderpest would be assisted immediately in stemming the spread of the disease. 2) For all other countries, financing agreements aimed at making livestock services more effective would only be concluded after a successful conclusion of a policy dialogue aimed at making available better finances for those working in the livestock services.

The financing agreement concluded by mentioning four options for arriving at that situation. The dialogue points mentioned and the experience with them are as follows.

**Direct Payment for Services Rendered.** This policy aims for a situation whereby farmers contribute to all services provided by the government. The degree of government subsidy can vary, but should, in the course of the project period, be adapted. This policy has, by now, been almost universally accepted in Africa as far as the provision of drugs and non-compulsory vaccinations are concerned. The degree of subsidy from country to country varies.

Proceeds from the sale of drugs and vaccines are put into a revolving fund. The operation of these revolving funds, however, is sometimes problematic. In certain countries, inflation is high and sales prices are not adapted accordingly. The time between purchase and sale of
new drugs can be too long. Also, the purchase of new drugs and vaccines pose problems as not all African currencies are easily convertible into those currencies that are required for the purchase of new inputs. In addition, there is sometimes the problem that drug importation is the exclusive responsibility of a state company which is saddled with old debts. A solution might be to encourage the establishment of private companies. EDF financing can be used for both purposes. There are, however, countries that prefer to continue with the provision of free or subsidized services. The latter is sometimes the case with compulsory vaccination campaigns. If the budgetary provisions of the government are insufficient, it cannot be left up to the donor to forever provide the funds for these subsidies. In that case, a system can be developed according to the next dialogue point of the OAU-EC financing agreement.

Direct or Indirect Taxation for Services Rendered. In several countries, certain taxes already exist on the livestock sector. For various reasons, however, these taxes do not return to the sector itself. There are good reasons for the principle of unicity of finance for government budgets. However, in some countries under certain conditions, it should be possible to introduce certain taxes or levies which are imposed to finance certain specific actions. For instance, a livestock development fund could be formed. If this is done at a national level, it could suffer from the same problems as the revolving fund which was discussed earlier: complex administrative procedures, etc. It might be better to establish these funds at a regional or even a district level so as to simplify procedures. It is, after all, important that if a farmer pays special taxes, he sees better services in return. However, when special funds are developed on a local level, it is a small step to move to the next dialogue point of the OAU-EC financing agreement.

Development of Farmers' or Pastoral Associations or Cooperatives. Instead of the government being responsible for the provision of veterinary and other services, farmers themselves could be encouraged to organize the provision of these services. A precondition is that the law must permit the formation of these associations and cooperatives. The law has to regulate the conditions under which these societies can be formed, and protect the members of these associations.

Despite an already long history of cooperatives in Africa, the EDP has limited experience in encouraging the organization of livestock services via cooperatives. However, in the construction of watering points in dry areas, it became increasingly common that the responsibility for the maintenance of these watering points lie with the users. EDF funds can be used to provide better veterinary infrastructure for the benefit of members of societies who, in turn, are themselves obliged to recruit qualified personnel for veterinary and extension services.

This is already a step in the direction of complete privatization. The next dialogue point gives an opening to another form of privatization.

Privatization of the Veterinary Profession. Of all the dialogue points, this one has certainly attracted the most attention. The enthusiasm is considerable. To establish the system in practice has, however, proven to be a long and cumbersome process. However, chances in certain regions are still considered good. There is, after all, no reason to assume that,
contrary to the situation elsewhere in the world, only in Africa would it not be possible for private veterinarians to earn a living in rural areas.

Experience has proved that a number of conditions are helpful in starting a privatization program. It is, first of all, necessary that there be a national professional organization that regulates which veterinarians can establish themselves. It is the profession, itself, which must control the quality of service that it provides. Secondly, the legislative framework must exist to allow private veterinarians to operate. There must also be an assurance from the government that unfair competition from often-subsidized government services is avoided. The above conditions are the responsibility of the government.

The role of the donor is in the provision of credit. It can form a loan guarantee fund which guarantees the loans that banks have provided to selected veterinarians. A donor could also consider giving premiums to encourage veterinarians to leave government service and establish themselves. The donor could also consider giving the loan for an activity associated with the veterinary activity. In certain circumstances, it might, after all, not be possible, in the beginning, to generate a sufficient income from the practice or from the veterinary pharmacy alone.

It is essential for the development of a private practice that the market generate enough income to farmers so that they are able to pay for the services they receive. The OAU-EC financing agreement pays attention to this aspect as well, as follows.

Imposing a Special Levy in Case the Importation of Animal Products Distorts the Local Market. This point addresses the problems of the effects of dumping of animal products on African markets. A levy should prevent this. Ideally, this levy should be used for the financing of certain services provided by the government, but the principle of "unicity of finance" prevents this in most countries.

In the preparation of EDF Interventions in the livestock sector, these dialogue points need to be considered. However, there is no solution which is universally applicable. Solutions have to be found for the specific conditions of each country, each region and, possibly, each location.

The Commission of the European Communities has an open approach to finding the best system for each specific region.
Summary of Discussions
Chair: G. Freeland (ODA)
Rapporteur: Y. Cheneau (FAO)

Animal health is a prerequisite for animal production: animals in good health are the normal condition, while disease conditions are considered a possible regulatory mechanism for animal population size.

The discussions were centered around three items: vaccine production, privatization of animal health care, and project implementation. The experiences expressed in these subjects were mostly gained in Africa.

Vaccine Production

The present situation could be summarized as follows:

- over capacity of vaccine production laboratories;
- problems with dispersal of production;
- lack of quality and unrealistic sale prices;
- financial and organizational constraints.

Potential ways of improving the situation are: no donor support for any new vaccine production facility, regrouping or regionalization of vaccine production in four to six sites in Africa; modification of the structures: autonomy, specialization in production (no activity in diagnosis or research); search for private sector partners in developed countries and adaptation to market forces. Some vaccines are needed for one country only (Teschend disease in Madagascar) while other vaccines have a worldwide market (Newcastle, rabies). In conclusion, it was recommended that:

- Quality and price should be considered as the most important criteria; the internal and international quality control are needed and should be enforced.
- Purchase of vaccines by donors should always be done through international tenders; the market forces should be respected.
- Donors should not and neither should governments subsidize the smallest (weakest) laboratories and the non-sustainable facilities.
- Some laboratories should be reoriented toward diagnostic/investigative/research activities and not enter into vaccine production.
- Research on new vaccines should be supported, especially for diseases exotic to the developed world.

The European Community will fund a comprehensive study of the veterinary vaccine needs and supplies in Africa.

Privatization of Animal Care

The main question to be solved during a dialogue with governments relates to functions that should be maintained as a responsibility of official veterinary services and the ones that can be handled by the private sector. Governments should maintain control of key issues, but donors should support and encourage the decentralization process and help establish veterinary services priorities. The problem is complicated by state monopoly practices (importation and delivery of veterinary products, trade, and marketing), by the specificity of veterinary interventions (need for cold chain, danger linked medicinal drugs), and by the economic stakes.

How can some of the functions be transferred to the private sector? It can be done through:

1) Veterinarians: They can handle the clinical work and vaccination campaigns; a "mandat sanitaire" could be established as far as the compulsory vaccinations are concerned; monitoring should be done by official services, possibly initially through donor support and/or by the farming communities.

2) Producer Associations and Auxiliaries: Auxiliaries could certainly be involved in artificial insemination schemes--the example of the Central African Republic can be considered a model. It should be kept in mind, however, that producers cannot pay the full cost for the time being and donors or governments should be prepared to subsidize, but never at 100 percent, even if the "public interest" is at stake.

Consultation between donors is essential, and it may be preferable not to undertake something which is not sustainable. The idea was expressed that it may be necessary to maintain some herd populations in certain zones (i.e., for environmental reasons) even if it is not profitable.

Development of extension services remains a problem and all attempts to establish successful services have, until now, been unsatisfactory--whether through veterinary services themselves, livestock services, or agricultural services (the exception: OPERATION FLOOD in India). One of the unsolved problems is the reluctance of producers to pay for "production advice".

The need for more cost effective epidemiology and disease investigation work was pointed out. It happens very often that the decision to undertake a control/eradication program is not
based on reliable epidemiological and economic data, but mainly for political reasons. With constrained donor and national funds, such ventures are counter productive and unprofitable.

Project Implementation

During the last three decades, the donor community has relied entirely on governments for project implementation; the private sector has basically been neglected. Involvement of the private sector is becoming more and more acceptable and consideration should be given to nongovernmental structures, i.e., NGOs. It is certainly a possibility, but it should be closely monitored.

The session continued with a report on the North African Screwworm Campaign. The success of SECNA was acknowledged. Particular attention was given to the following questions: cost-effectiveness of the SECNA program, origin of the infestation, donors attitudes and resource mobilization, public awareness and information. Clearly the SECNA program provides a successful example of how donors can effectively interact in the resolution of a common problem and a clearly defined objective.
The Context

Broadly speaking, research undertaken for the livestock industry in the developing continents should be an attractive proposition. Population growth alone, at 2 percent per annum, requires a doubling of output within 35 years. Given normal economic development, increases in disposable income will not only convert this need into real demand, but will amplify it as the shift toward consumption of animal products follows. The third factor that sets the context at the broadest level is the growing urbanization of all three continents. Most consumers will no longer be in close contact with producers. Complex processing, marketing and distribution systems, therefore, come into being, and most of production moves out of auto-supply and local semi-barter arrangements into a full cash economy.

The combination of these forces should lead to growth of effective demand for animal products of close to 5 percent. Indeed, this has been the experience even through the troubled 80's. Furthermore, this growth phase should persist for at least a generation into the future and perhaps even longer than that.

This pattern is highly favorable to investment in agricultural research, because any output-enhancing technology is likely to be highly remunerative. If the technology also improves productivity (as it usually does), this adds to the return. Studies on the profitability of investment in agricultural research in such circumstances have shown very high rates of return (Ruttan, 1982).

This favorable context is worth emphasizing because attitudes to agricultural research, particularly in countries in the developed world, have become much less favorable in the last decade. There are multiple reasons for this (fewer, more educated farmers; crises in government budgets; growth of private sector R&D services), but the principle factor is the perception that with saturated markets, investment in research for agricultural production is no longer so attractive. This clearly has been the case. With persistent grain surpluses, and milk, sugar, sheep meat, and other commodities limited by quota arrangements, the payback from research must now be calculated solely in terms of cost reduction or contribution to environmental concerns. An additional factor is that, after three decades of intensive investment in applied, production-related research, it is becoming increasingly difficult to find topics for research for which a reasonably good answer cannot be found in the accumulated literature.

It would be a great mistake if the developed world, acting as donor countries, were to apply these conclusions to the very different situations in Africa, Asia, and Latin America.
Basic and Applied Research

The spectrum of research required for the livestock industry in developing countries is heavily weighted toward the applied end, but also consists of the most sophisticated of basic work. Since applied work is, by its nature, location specific, it makes obvious good sense that this should be almost entirely the business of the NAR’s. For the same reasons, it does not make sense for the international centers to compete with the NAR’s in this function, though there is a strong case for collaboration as research results are moved out of the experiment station and toward practice.

The international centers, of course, are not the only possible participants at the more basic end of the spectrum. Developing countries that have made substantial investments in their research systems—such as India, Thailand, Brazil, and Mexico—certainly have the capacity to contribute to the solutions of even the most basic of problems. In addition, universities and research institutes throughout the developed world have an undoubted capacity to contribute. Furthermore, for certain kinds of research, notably in the pharmaceutical industry, much of the world’s R&D capacity lies in private companies, and ways should be found to tap this resource where appropriate.

At the applied end of the spectrum, it should, in theory, be easier to make research effective. The targets are more obvious, the research cycle is shorter, the complexity of the questions usually lower. Furthermore, because the work is close to the user’s problem, transfer into practice may often be easier and swifter. These factors mean that the professionalism with which the research is carried out is critical. Research teams are generally small, and the individual researcher carries a correspondingly greater responsibility for the quality of the work. In addition, since his results are more likely to go straight into practice, the economic consequences of incorrect conclusions can be immediate and damaging.

There is, therefore, a great necessity to ensure that the standards of professional competence throughout the NAR’s are at the highest level. Experiments must be properly designed and carried out according to tight experimental disciplines, and, most important of all, the results must be submitted to an independent refereeing system. One of the focal points for national managers and international donors should, therefore, be to find ways of strengthening and rewarding this professionalism throughout the NAR’s system.

Does Livestock Research Get Its Fair Share of Resources?

There is a perennial argument about how to arrive at a "fair" allocation of government expenditures across the economy, within subsectors, and within activity groups. Such an activity group is agricultural research expenditures. It, therefore, comes at the third level in the hierarchy of government decision making. The criteria become more obvious as one moves down the hierarchy. The usual first ranking is to compare expenditure by commodity with the proportion of agricultural GDP accounted for by each commodity. This has the merit of simplicity, through other factors, such as proportion of farmers involved in each commodity, export earning capacity, technological complexity, and availability of technical solutions from other sources, could all be taken into account. Livestock, in developing
countries, account for 25 percent of agricultural output (FAO, 1990). If non-monetized input (mainly traction and manure) are included, livestock contribute up to 35 percent (Winrock, 1992) or 44 percent (Zwart, 1991) of agricultural output.

Pardey, et al. (1991), for a sample of 83 developing countries, found that 18.7 percent of research manpower in the NAR's was in the livestock sector. At the international level, Gryseels and Anderson (1991) showed that livestock had accounted for 10.2 percent of CGIAR expenditure in the early 70's, but had stabilized at just under 20 percent in the period 1976-1988. It should be added that the geographical distribution was quite skewed, with 68 percent of this expenditure being in sub-Saharan Africa and 0 percent in Asia.

For what it is worth, then, these figures suggest that research expenditure in the livestock sector is somewhat below what might be expected from its monetized contribution to agricultural GDP.

Taking Advantage of Research Elsewhere

Development economists have noted that, in the poorer countries of the world, economic development is, in general, advancing at a much faster annual rate than was experienced by the industrialized countries when they were at a similar stage of development. One of the reasons given for this is the "free ride" effect. Countries that were first in the development race had, of necessity, to pioneer much of the technical innovation that made the process itself possible. Those countries that followed later do not have to make the same investment in innovation--they can take advantage of developments already made elsewhere.

This factor must be particularly relevant to agricultural research. It also has a special relevance to the development of methodology, which has absorbed much of the resources of agricultural research establishments in the developed world. The consequence of this is that research institutes in developing countries can, in many disciplines, greatly increase their effectiveness by concentrating on technology transfer and local adaptation--a point made in greater detail by Eicher, 1988.

New Structures

As further detailed by Eicher (1988), the national agricultural research establishments in many developing countries are less effective than they should be. A large part of the problem has been an expansion in scale and staff numbers beyond the capacity of the country to support a corresponding program. Quantity has also led to some reduction in quality, both of staff and programs. How best can these institutions be helped to improve performance? Are there other mechanisms for making agricultural research effective?

In keeping with the tenor of the times, a shift to a more competitive structure might help. This is already evident in many developed countries, where research funding is on a competitive grant basis. Given that much of the funds needed for program operation in many developing countries are coming from outside sources, it should be worthwhile to look at the
construction of a well-managed, multinational fund, open to competitive bidding from individuals and institutions throughout the developing world.

Despite the fact that close to 2 percent of agricultural GDP in developed countries is spent from public funds on agricultural research, it is estimated that at least as much again is spent by private sources. The private sector, worldwide, therefore, has enormous potential for problem solving and development of technology. Can this potential be harnessed in a more organized way to the needs of developing country agriculture? Since the private sector can respond only to the prospect of profit, a research contracting system would need to be established in which well-defined tasks and targets could be taken on board on agreed terms. Again, there are many models for building a competitive element into government contracting, and it should be worthwhile to examine these models for one that could form the basis of a global R&D competitive contracting system to bring the front edge of science and technology to bear on problems of the developing world.

References


Summary of Discussions
Chair: Li Pun (IDRC)
Rapporteur: Grell (GTZ)

This sessions opening remarks dealt with changes in the global political climate (e.g., the move toward democratization and heightened awareness of environmental issues), population growth and sustainability. Dealing with these complex interactions will require a more holistic understanding of livestock production systems. Given these global conditions how should donors promote more effective livestock research and extension efforts? To address this situation, a presentation and follow up discussion of the research and extension centered on the following points:

- prioritization of research
- methodology of development
- better research and development linkages
- competition for resources

Prioritization of Research

The efficiency of research will remain a crucial issue. Studies confirm that past investment (public as well as private) in livestock research in industrialized countries was highly profitable. In developing countries, the situation is different, research funds are limited, and there are practically no private sector research sources. In addition, there has not been the institutional growth to foster a vibrant livestock research community in developing countries. Despite these limitations, it was pointed out that livestock contribute more to agricultural GDP than what governments are spending for livestock research and extension programs. This inequity in the distribution of research funds makes it difficult for the NARS and the international community to build critical mass for problem resolution through research.

It was felt that the several factors external to livestock sector will be significant driving factors in the near and long term research and extension agenda. These critical areas include an increasing human population and urbanization and environmental well-being. Population growth, urbanization, and increasing purchasing power will result in a higher demand for animal products. Decreasing per capita land availability on the other hand, is putting more and more pressure on remaining resources. Food production versus environmental protection leads to a decision point of where future research funds will be spent. These changing events clearly demonstrate the need for better more efficient priority setting in National Agricultural Research Systems.

International and national research systems have performed poorly in defining and conducting livestock research, and, outside the animal health field, have not developed many technologies for successful introduction in development projects. This lack of technology generation and transfer is a reflection of a need for better priority setting and greater
effectiveness in livestock research. Donors have been heavily involved in past priority setting, especially at the national level. Unfortunately this has focused on their own agendas and with little coordination among themselves. On the other hand, farmers involvement in the priority setting has been weak, and we should develop more farmer and industry centered research priorities.

**National and International Research Responsibilities**

There was a general consensus that the international research centers and the NARS have to complement each other better. It was also felt that research competition between international centers and NARS has to be avoided. Creditable steps toward this end have been taken, however, the equality of the partnership should be improved.

International research centers such as ILCA, ILRAD, or ICARDA should concentrate on methodology development and the development of widely applicable technologies, but not compete with NARS in understanding local livestock farming systems or carry out local adaptation trials. For the international centers, scientific "toolbox" testing on sites should be limited to further develop the methodology and to adapt the toolbox to the research and development needs of NARS.

The issue of exploring and determining the types of sustainable livestock interventions will be important for NARS and IARCs. A primary issue will be the identification and development of sustainable indicators. A key element of developing such indicators is a more holistic understanding and development of accurate approaches as to how to identify key bottlenecks within a very complex situation. Farming systems research has proven to be a very useful approach. However, this technology needs to be extended and refined.

International centers have an important training responsibility in conveying new technologies for national research staff use. The NARS role as multiplicaters to better fit appropriate technologies into their countries should be strengthened.

Impeding IARC, NARS and donor ability to completely asses baseline and technological impact is a lack of economic statistics. Furthermore, there is no international center to adequately analyze economic policies of countries in order to provide decision makers with the best economic policies for their livestock sector. Several participants felt that ILCA should expand into this area or IFPRI should have a greater presence.

There is a great need to coordinate international and national research to avoid duplications and make better use of limited funds. There are excellent national livestock research institutes in countries like India or China, and the international institutes should seek a closer cooperation with these institutes. The lack of research on buffalos in Asia is a good example of where stronger linkages could be built. There is also an urgent need for pooling of resources in the national research systems. Many of the countries are too small to cover the entire gambit of research needs, and their production systems. Therefore, one possible approach is countries specializing in certain areas, within a regional framework of information exchange. This would allow a more efficient use of the limited national resources. The donors would have an important role in stimulation of such regional networks.
Better Research and Development Linkages

There was a general consensus that research and development linkages are very weak. Research being conducted is not being transferred to producers. However, there seems to be a dichotomy between when research funds are requested and the outputs from the research are achieved. Quite often research objectives strongly state the potential impact the work will have on development. However, the outputs of the project are almost totally focused on the publishing in international journals and not extending the results to development. This is a function of not designing and encouraging the research scientist to apply their results and not allocating resources for this purpose.

To better connect research and development a greater investment in human resources has to be made. More emphasis on teamwork and training within multidisciplinary research teams is needed. But most important will be a reward system in the career of young researchers, which is more oriented toward research outputs for development needs in their own country and less oriented toward the latest curiosity on the international research scene. Having both multidisciplinary and development outputs as important parts of research efforts requires a major restructuring of how NARS manage their personnel.

Competition

The CG system provides a basis which international and national research systems can be further enhanced. In addition, it was believed that a more competitive research system will stimulate and increase the quality and focus of the research. To establish a more competitive funding system may require alternative funding modalities, such modalities could also promote a better spread of CG and donor resources. Several alternative funding programs were explored. One funding mechanism would be to form a granting fund which applicants could apply to. Grants would be awarded on three or four themes. The majority of the participants would come from NARS or the CG system. In some ways this program could be modeled after the EEC-STD Program. A second granting mechanism would be to contract with scientists from the public or private sector for a specific product. Such a program would be similar to the way defense departments contract for their research and development needs.

Of major concern in these more competitive granting systems is the issue of fairness and equity. Policy guidelines would have to be developed which could help promote national research capacities.