His Majesty's Government of Nepal
Livestock Development

# Livestock Master Plan

## Volume I:
## A Strategy for Livestock Development

June 1993

ASIAN DEVELOPMENT BANK
ANZDEC Limited · Agricultural Projects Services Center

# Foreword

This Livestock Master Plan has been prepared by His Majesty's Government of Nepal, with the support and assistance of the Asian Development Bank. The plan reflects the extensive experience of the many people concerned with livestock development during the last 20 years and reflects their view of options available for the future. Both useful and negative experiences have been taken into account, and the planning has been undertaken in a manner which examines the role of livestock in relation to other components of farming systems in Nepal, and not in the usual mechanistic, discipline oriented way.

A large number of persons have contributed to Plan preparation, including officers of the Department of Agricultural Development, officials from a broad range of government agencies for whom livestock is a concern, representatives from non-government organisations, the private sector, as well as donor agencies. The effort of formulating the Plan has been led and coordinated by the Department of Agriculture Development (formerly the Department of Livestock Services), assisted by consultants supplied by the Asian Development Bank.

The need for a plan was identified during the implementation of the Asian Development Bank assisted Livestock Sector Investment Study in 1980/1990. The Study was amended so as to become a precursor to the plan, and the investment study report was entitled "Strategy for Livestock Development - Leading to Preparation of the Master Plan - a Discussion Document". Following finalisation of the study the Bank agreed to fund a further technical assistance grant to prepare the Master Plan.

The preparation of the Master Plan involved utilisation of the findings of the sector study and the contributions of 130 people, from government agencies, non-government institutions, nine international agencies and the private sector, who participated in a series of workshops held in Kathmandu. The workshops were followed by a number of work groups which probed and debated issues arising from the workshops. A draft document was then prepared and circulated. Specially formed inter-disciplinary and inter-sectoral task forces examined the

document, made comments and suggested amendments which have been incorporated into this final draft.

The Plan was also prepared during a period of substantial change in Nepal which involved a reorganization of the structure of government, the formulation of new national development policies, preparation of the Eighth Five Year Plan, departmental restructuring, redeployment of personnel at all levels, and considerable alteration in the business and investment environment. Changes have been made during Plan preparation to include these developments.

The Plan therefore reflects not only the information, experience and considered opinion contributed by a broad range of national and community leaders, professionals, farmers and other individuals involved with livestock development in Nepal, but also the spirit of change occuring within the country. This is a Nepali document, generated by Nepalis, for the use and benefit of the people of Nepal. It is consistent with the political and development philosophies of the current administration, and with the planning undertaken to date by the National Planning Commission. It is intended that this will be an implementable and reviewable Plan - a document which can be used in a dynamic way to guide livestock development into the next century.

The Livestock Master Plan is presented as a set of three volumes. This volume, Volume I, 'A Strategy for Livestock Development', is an overview, intended to provide the busy or casual reader with a 'snapshot' of the Plan. Volume II, contains The Plan itself and provides the detail a serious reader will require to appreciate the Plan, it's rationale, and supporting activities. The Plan has been prepared using a 'systems approach', and the reader is urged to read the document in it's entirety, and not to attempt to assess the material on the basis of selected passages. The Plan provides the framework within which livestock development will be managed during the next twenty years. Volume II is extensively cross referenced to Volume III which contains the most comprehensive set of data yet assembled on livestock in Nepal, and will provide a data base for planning, monitoring and evaluation of livestock development in the future.

# Acknowledgements

A large number of people have contributed to preparation of the Master Plan; as participants of the workshops, work groups, task forces, as official representatives of government and international agencies, or as private individuals. They have provided freely of the benefit of their experience, and contributed their ideas about how the future for livestock and rural development might be shaped. All contributions were considered and utilised. They have also commented on sections of the Plan as it was being prepared and have spent time together in meetings, and with the consultants, to formulate aspects of the Plan, and in reviewing the draft documents. The time and effort of all is gratefully acknowledged and the people who were involved are individually acknowledged in Volume II, Appendix A.

In particular Dr Udaya Singh, Director General, Department of Agriculture Development, and Mr N. B. Joshi, Director of Livestock Services, DAD, their senior staff and, earlier, Mr K R Pandey, for their unstinting interest and unwavering committment to detailed and time consuming discussions.

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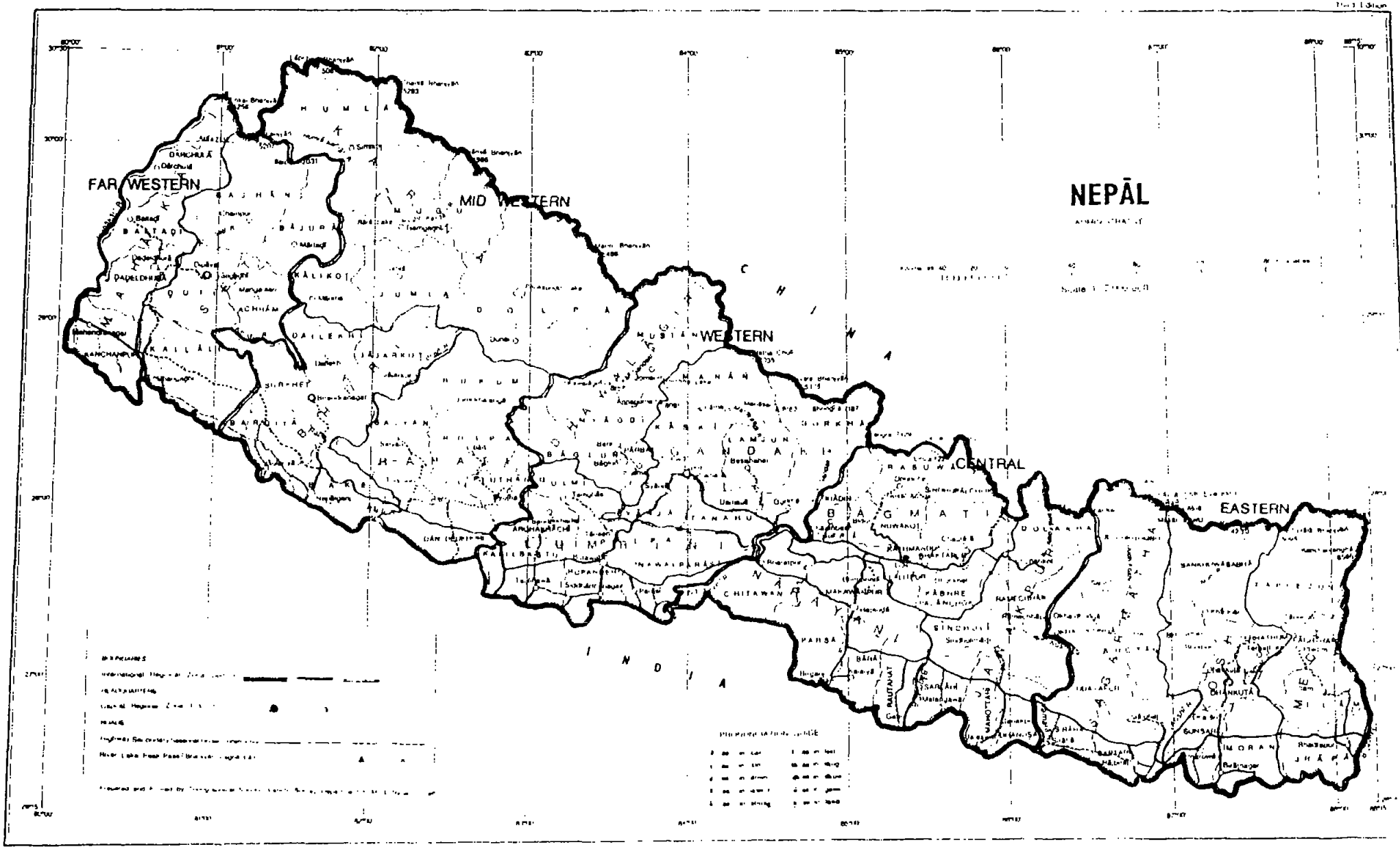
# Abbreviations

| | |
|---|---|
| ADB | Asian Development Bank |
| DAD | Department of Agricultural Development |
| GDP | Gross Domestic Product |
| HMG | His Majesty's Development |
| JT | Junior Technician |
| JTA | Junior Technical Assistant |
| LMP | Livestock Master Plan |
| NARC | National Agricultural Research Council |
| NGO | Non-Government Organziation |
| VAHW | Village Animal Health Worker |


NEPĀL
FAR WESTERN
MID WESTERN
WESTERN
CENTRAL
EASTERN
HUMLA
MUGU
JUMLA
DOLPA
KALIKOT
BAJURA
BAJHANG
ACHHAM
DAILEKH
JAJARKOT
RUKUM
SALYAN
PYUTHAN
ROLPA
RAPTI
DANG
BANKE
BARDIYA
KAILALI
KANCHANPUR
DADELDHURA
BAITADI
DARCHULA
MUSTANG
MANANG
GORKHA
KASKI
LAMJUNG
TANAHU
SYANGJA
PARBAT
BAGLUNG
NAWALPARASI
CHITAWAN
PARSA
BARA
RAUTAHAT
SARLAHI
MAHOTTARI
DHANKUTA
SUNSARI
MORANG
JHAPA
INDIA
CHINA

# A Master Plan for the Livestock Sector

## *The Planning Process*

The strategic planning procedure used in the formulation of the Livestock Master Plan aims to give purpose and a sense of direction to the process of development. It has two related elements - firstly, the formulation of a vision of a desirable and feasible future, and secondly, giving an increasing understanding of what is happening in the surrounding economic, physical and social environment, making sense of it in the light of the emerging vision (and in doing so clarifying the vision), and formulating appropriate action plans. Strategic planning should be a continuous process of learning by doing - so that the experience gained when a plan is implemented is incorporated into subsequent plans. The plan should not be confused with the process of planning - it is only a tool within the ongoing process and must itself be reviewed as part of the process.

Planning is a learning process and in order for the implementers to understand, accept and act in accordance with the plan they must be involved in its formulation. The aim in developing the Master Plan is to help the people whose responsibility it is to guide the process of livestock development in Nepal to learn their way through a planning process so that a collective sense of purpose emerges. This common goal enables collaborative and informed action to be taken to achieve the vision of a preferred future.

A strategic plan such as the Livestock Master Plan should not be a blueprint to be followed slavishly - it provides a framework for guiding informed and purposeful action. Its prime function is to generate a sense of purpose. Purposeful behavior involves initiative and is creative and future-oriented. It usually involves a change in attitudes and in actions. By comparison, the conventional way of thinking and planning generally tends to sustain present attitudes and activities, which in turn affects the expectations of the planning process and its outcomes. An important outcome of the plan is to provide a framework for purposeful action related to the development of the livestock sector in Nepal, which deals with government priorities of poverty alleviation and meeting the needs of women and disadvantaged members of the community, and

which takes account of the potential conflict between purposeful and conventional behavior.

The structure of this volume of the Master Plan is shaped by the planning process used. It begins with a review of the state of development of the livestock sector and the inter-relationships between livestock and agriculture. The nature and impact of government investments in livestock development are reviewed. This is followed by an outline of factors that have, are, and will continue to influence development of the livestock sector, and a assessment of opportunities for the future. A possible future scenario or outcome for livestock development in Nepal is outlined, together with the assumptions that underpin it.

The rationale for the participative planning process, and its outcome in the form of the identification of development principles, is described. These principles were combined with information regarding livestock development in the past and present, together with future prospects, and used to formulate a planning model, from which a livestock development strategy has been derived. An essential aspect of the strategy is the need to repeat the participative learning approach and ongoing planning, not only within the development institutions, but within rural communities as well.

The planning model sets out the essential functions that have to be carried out if the purpose is to be achieved. Comparing the model with the existing situation highlighted areas the development process must concentrate on - farmer participation, development of the private sector, and the role of government. The model was used to identify a set of inter-related programs and associated projects. A distinction is made between projects that are guided by the visionary view of the future and which involve a change of direction and emphasis and are inherently purposeful in nature (Type A), and projects which are also guided by the vision but are an extrapolation of present activities and have a basically technical orientation compared with the institutional and human resource development orientation of the former (Type B).

Key aspects of Plan implementation and a summary of the benefits and environmental implications conclude the volume.

## *The Setting for Development*

Located between India and China landlocked Nepal has a population of about 18 million people, 90% of whom are engaged in subsistence agriculture. The land area of 147,483 sq. km contains three parallel ecological zones described as the high hills and mountains, the mid hills, and the lowland Terai. Although the average population density is 125 per sq. km less than one sixth of the land

area is cultivatable making the population density per area of cultivated land amongst the highest in Asia.

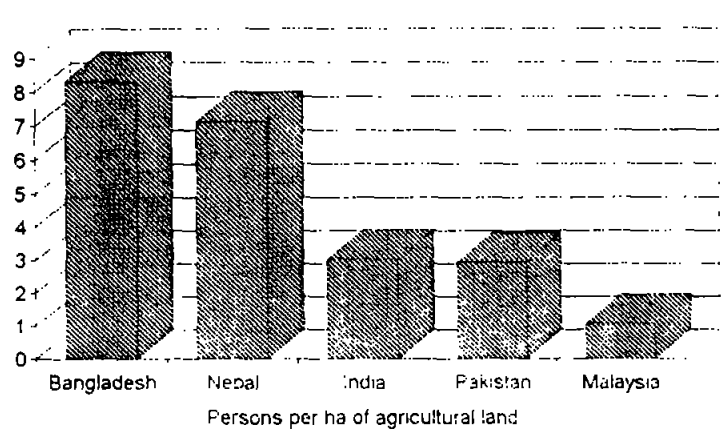
A review of past development achievements, undertaken by the National Planning Commission in 1991, concluded that: despite huge investments that have been made over the last 35 years the life of the common man remains largely unchanged, and has for many worsened; food supply has not kept pace with population growth; and productivity in agriculture (including livestock), although it accounts for 60 per cent of GDP and supports 90 per cent of the population, has largely stagnated, with modest growth achieved from areal expansion rather than increases in productivity.

High population pressure on agricultural land in the hills and declining yields has resulted in both seasonal and permanent migration to the Terai. On relatively fertile land in the valleys rice, wheat, maize, millet, barley and potatoes are produced but population pressure is forcing people to cultivate slopes with thin, erodible soils with environmentally damaging results. Problems are increasing in severity as the rate of increase in the human population continues largely unabated. Higher slopes are usually grazed and may have natural grassland, shrubland or forest as cover but these too are subjected to increasing pressures.

## *The Livestock Sector*

Livestock populations, in relation to arable land and animals per person, are large by Asian standards, with approximately 6.2 million cattle, 3.1 million buffalo, 5.4 million goats, 0.9 million sheep, 0.6 million pigs, 13.5 million fowl, and 0.4 million ducks. The immense biological diversity of Nepal also sustains a wide range of wildlife, including a number of endangered species, and in places wildlife

**Figure 1: Population Density in Selected Countries, 1988**

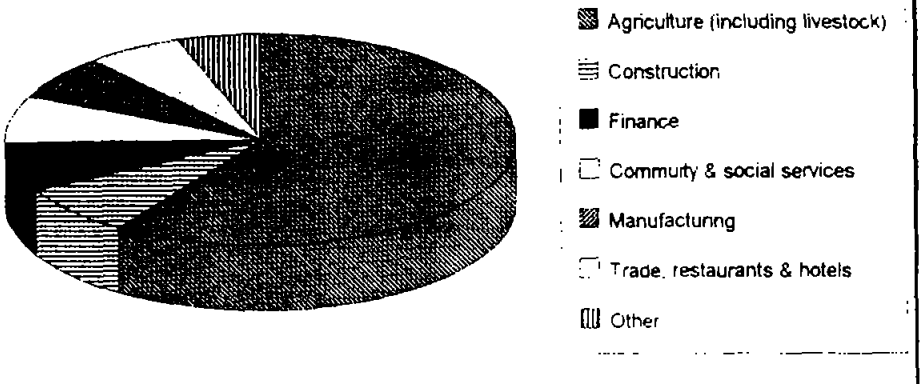


and livestock compete for use of the same land. Livestock are an integral part of agricultural production systems, being kept principally for their manure for croplands and providing almost all of the draft power used in cultivation. This contribution together with production of food (meat, milk, eggs), fiber, hides/skins, and transportation amounts to about 15 percent of GDP (28 per cent of agricultural GDP).

The majority of farmed animals are owned by smallholders, who are scattered throughout Nepal wherever arable land can be found. Almost all rural households keep several types of livestock; the numbers and types depend upon factors such as size of landholding, level of wealth, ethnic group, agro-ecological zone, and access to markets. Women play an important role in the management and day-to-day care and feeding of animals. Domestic livestock, particularly the large numbers of ruminant animals, contribute to environmental degradation through their demands for fodder, much of which is obtained from public forests and grazing lands, but the significance of their contribution is obscured by human demands for fuelwood and unsustainable land management practices on the same land.

Most livestock products are consumed on the farmer's family or in the immediate community, so that accurate estimates of animal production are difficult to obtain. Milk and milk products are a major source of animal protein in the Nepalese diet, with consumption estimated at 47 liters per person per year, although less than five per cent of total production enters the formal processing or marketing chain. Meat production is predominantly from buffalo and goats (slaughter of cattle is prohibited by law and religious custom) although poultry is becoming increasingly common in urban areas. Consumption of meat, variously estimated at between 4.0 and 8.1 kg per person per year, is low by Asian standards. Live animals are important for religious sacrifice, especially during the major Hindu festival of Dasain.

**Figure 2: GDP by Sector, 1991/92**



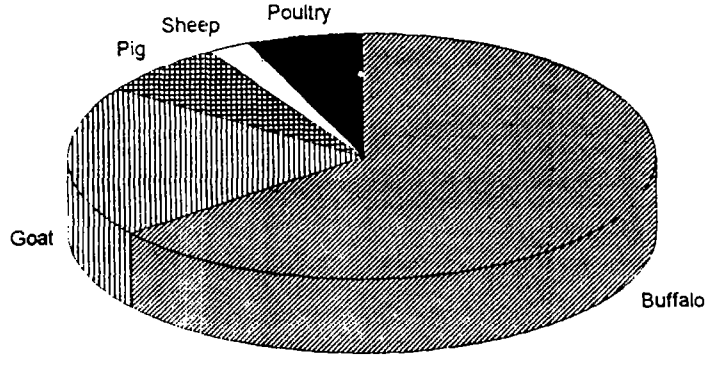
Low livestock productivity is attributable to poor nutrition resulting from excessive livestock pressure on the available fodder resources, a wide range of endemic livestock diseases, demands for draft power and haulage, and animal husbandry methods which do not encourage higher levels of animal productivity. Local breeds have adapted to this harsh environment with low levels of productivity. Livestock feeding depends on seasonally available forages and crop wastes and consequently feeding patterns are uneven and usually inadequate. Unless changed, the environment is also a limitation to the productivity of improved animals.

Domestic trade in live animals and livestock food products is focussed on the major urban centers of the Kathmandu Valley and the Terai where purchasing power is greatest. External trade involving live animals, and to a lesser extent livestock products, is dominated by India. The exception is the production of hand knotted carpets from wool which has increased to become Nepal's most significant single export with earnings derived from Europe. External trade is hampered by poor transport and communications, lack of product standards and grading, poor quality control, and lack of internationally competitive processing facilities.

*Institutional support*

Government policies are supportive of livestock development, but services, though widespread, have had limited impact at field level, mainly because of a lack of resources. DAD provides services and materials in animal health, breed improvement, animal nutrition, extension and training nationwide. These activities are supported, usually on a geographical basis, through donor assisted special purpose projects such as the ADB financed Second Livestock Development Project, and those integrated rural development projects which include a livestock development component. The activities of other government

**Figure 3: Meat Consumption in Nepal by Origin**

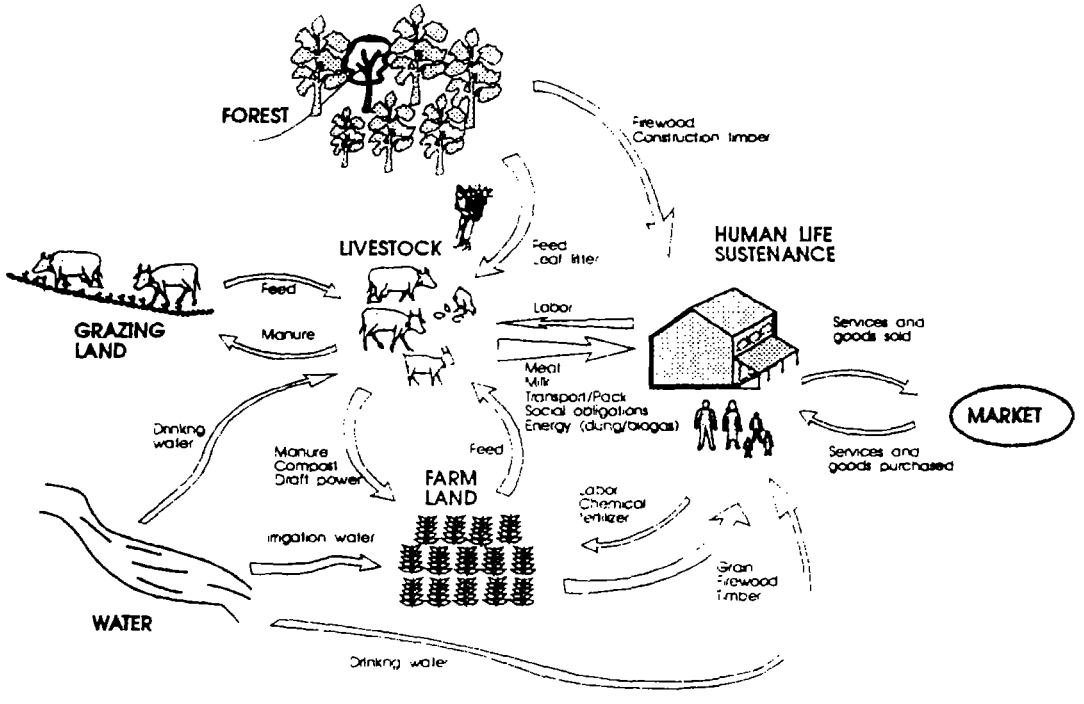


agencies, such as the Department of Forestry which is responsible for the management of public forests and rangelands, also impinge on the management and development of the livestock sector

There are many non-government institutions whose activities affect livestock and rural development. These include traditional village arrangements for the management of community resources and, more recently, the emergence of Non-Government Organizations (NGOs) which have become active in the provision of welfare services to rural communities

Commercial private enterprise is confined mainly to trading in live animals and animal products, and agro-processing which includes dairy processing, slaughter and sale of meat, tanning of hides and skins, and weaving and export of hand-knotted carpets (which is now Nepal's largest single export) Private sector investment has been most obvious in areas where there are strong linkages between production and the market place, such as in the development of the urban-oriented commercial poultry industry

**Figure 4: Flow Chart of the Complex Inter-relationships Linking Livestock with Forests, Agriculture and Human Subsistence in a Typical Middle Hills Agricultural Area**



*Livestock development activities*

Substantial government investment has been made in livestock development. Over the past twenty years the total value of bilateral and multi-lateral assistance for projects with a livestock component is in excess of US$ 247 million, while approximately 15 directly related livestock projects have a combined value of US$50 million. The major investments have been made under the two ADB assisted projects, the First and Second Livestock Development Projects, which together amounted to US$32 million. Through these investments government has established a country-wide network of facilities and staff (including livestock centers and sub-centers, veterinary clinics, livestock farms, and farmer training centers). It is notable that almost all major investments in the sector have been donor funded and public sector operated (especially dairy processing, animal health support facilities, farmer training, research and extension).

The impact of this government investment has been variable. Efforts to improve animal health services have been successful in localized areas. Breed improvement programs based on distribution of "improved" animals and artificial insemination have had very limited impact as these programs have not been linked to supporting programs aimed at improved animal health and husbandry. A large proportion of livestock research has been of little relevance to farmers since insufficient attention has been paid to farmer's problems in the design of research programs. Nevertheless, in other areas a number of major successes have been achieved. These include, the development of an effective extension system based on the formation of common-interest Farmer Groups - particularly where these have market opportunities, and some groups have accumulated financial resources and experience enabling them to progress to more complex programs. Technical innovations such as the introduction of a forage component into food crop rotations, and the use of drenches to control internal parasites are further developments. Some NGOs have had considerable impact in mobilizing farmers and improving the productivity of their livestock. Farmers have demonstrated their willingness and ability to seize commercial opportunities when these become available. However, for most farmers beyond the reach of extension programs and market outlets there has been little positive change in their situation over a long period of time.

Government policy over the years has been to provide research and extension services to the livestock sector largely free of cost. Full or partial subsidy has been extensively provided on livestock inputs (such as animal medicines, breeding animals, fodder seeds, artificial breeding materials, livestock insurance, fertilizer and credit) supplied through government programs. Government also has the ability to set prices for livestock products and to control the movement of foodstuffs within and out of the country. However, the ability

to regulate its price policies is limited. Legislation regarding livestock activities is generally adequate.

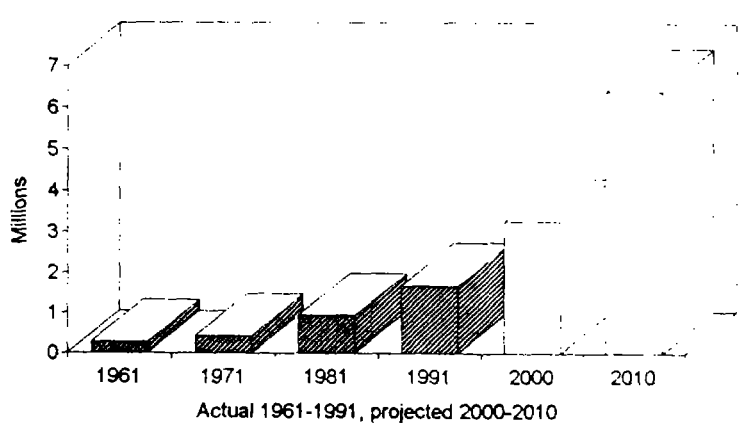
Subsidized inputs have, in some instances, accelerated the adoption of improved husbandry practices, such as in the use of anthelmintics and fodder production, but in other instances (eg. distribution of breeding animals) impact has been minimal. Excessively bureaucratic administrative procedures, such as in the processing of foreign exchange requests and the unofficial imposition of taxes on animal products in transit, inhibit investment in livestock development and domestic trade in animal products.

*Factors influencing livestock development*

The factors which will have the greatest influence on livestock development in Nepal in the future are: i) the high and increasing population pressure which will increase the demand for food crops, and consequently for manure and draft power, as well as local demand for animal food products; ii) the rapidly growing urban centers with their escalating demand for foodstuffs (expected to grow from a population of 1.7 million in 1991 to 6.4 million by 2010); and, iii) the rate of expansion of communications and transport infrastructure which provides access to markets for livestock products.

Principal constraints to the development of the livestock sector are: i) the conditions of poverty, illiteracy, cultural diversity, and geographical isolation which severely hamper effective communications and the ability of livestock raisers to respond to new opportunities; ii) the complexity of farming systems which need to be considered in the identification of effective technological interventions, and the need for location specific solutions which meet both the technical and social needs of livestock raisers; and iii) the predominance of a public sector approach

**Figure 5: Urban Population: Past and Projected**



to livestock development with the exclusion of the private sector from most policy development and planning

*Prospects for Livestock Development in Nepal*

Opportunities do exist which can guide the direction of livestock development activities in the future and which can build upon successful experience from the past. These include:

- widespread ownership of livestock, which means that the majority of the rural poor can potentially benefit directly from improved animal husbandry;
- market opportunities which will increase rapidly with the growth of urban population centers and incomes in both urban and rural areas. Tourism is also likely to provide increasing demand for livestock products and services. New export markets will be identified as agro-processors improve efficiency and quality of livestock products;
- traditional social structures in farming areas which can be employed as a means of organizing farmers and through which their capabilities can be developed - but the recognition and mobilization of these traditional organizations will require a new approach from government;
- on-going projects in Nepal have demonstrated that motivated farmer groups can develop location-specific solutions to the management of natural resources and livestock which result in increased and sustainable agricultural and livestock production;
- sufficient technology is available, or can be adapted through appropriately focussed research, to bring about significant improvements in livestock production if applied on a wide scale
- an extensive network of government facilities and infrastructure which already exists, and can be built upon.

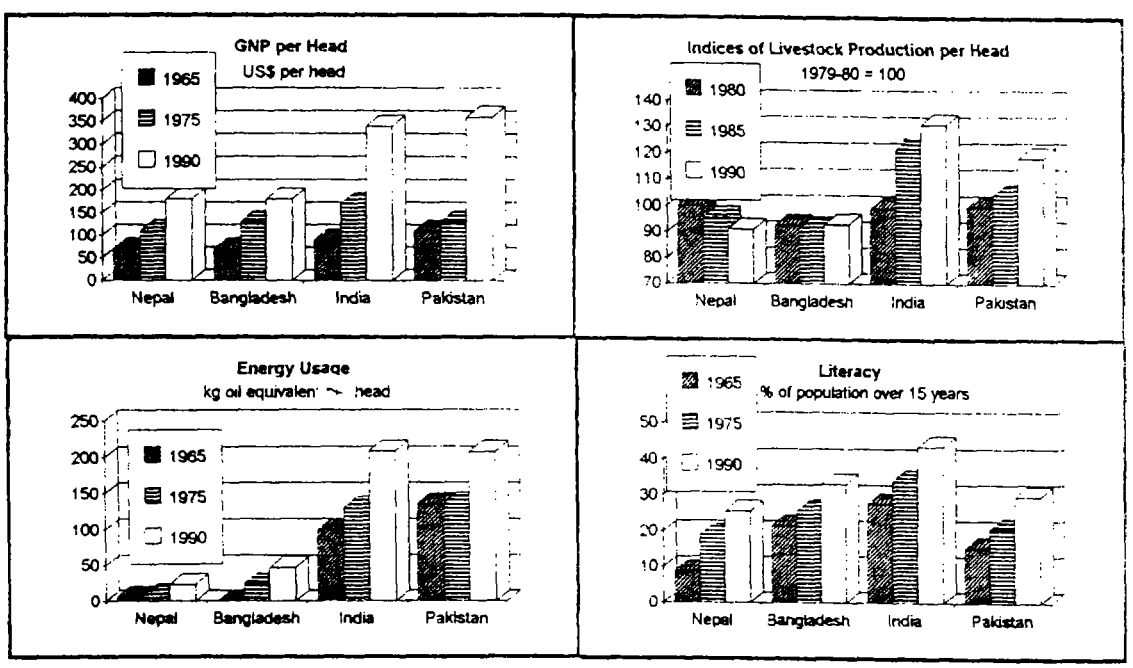
*Asian experience in livestock development*

Experience elsewhere in Asia indicates that economic development is accompanied by a significant change in consumption patterns which affect individual farming households. Rising incomes in urban areas provide the initial impetus to a phenomenon of increasing demand for food and especially animal

products which have an elastic response to growing incomes. This growing demand for livestock products results in structural changes in the livestock sector which are characterized by: i) rapid growth of non-ruminant livestock production using intensive technology located adjacent to major population centers; ii) more intensive livestock production systems which focus on increased animal productivity, such as intensive dairy production in hinterland areas; iii) slow growth of ruminant animal industries which are unable to respond rapidly because of constraints associated with the nature of feed resources, low technology management systems, and a longer biological cycle; iv) a rapid increase in demand for associated inputs and technology which leads to the development of private sector supporting services and agro-processing; and v) rapid growth of imports of livestock products and feedstuffs, if domestic production systems are unable to respond.

This pattern of livestock development appears to be closely correlated with sustained income growth, increased energy consumption, rising education levels, and improving communications and transport infrastructure.

**Figure 6: Intercountry Comparative Indicators**



*A Vision for Nepal*

Evidence within and outside the country suggests that this pattern of accelerating agricultural and livestock development is likely to be repeated in Nepal. Market opportunities will expand as a result of increased consumer incomes, increased farmer awareness of technologies and opportunities, and improving transport and communications. Farmers will respond according to their ability to specialize and benefit from the comparative advantage that these opportunities offer through better utilization of natural resources, and more efficient animal husbandry and agricultural practices. Farmers who do not receive clear market signals or incentives because of poor transport, communications or other factors, will respond more slowly to opportunities to improve the efficiency of their subsistence farming systems

For Nepal this is likely to result in:

*On the Terai*, where conditions of land capability, availability of irrigation facilities and transport are favorable, intensive production of cereal food crops using a high level of purchased inputs and mechanization; and intensive livestock keeping based on milk and poultry production near the rapidly growing industrialized, urban centers.

*In the Hills*, where comparative advantage favors sub-tropical and temperate agricultural systems; intensive livestock associated, with horticultural production, based on milk production from improved cattle and buffalo, small ruminant production especially improved breeds of sheep for wool and goats for meat with associated small industries processing products; and well developed cooperatively organized small industries processing and adding value to livestock products such as traditional dairy products, woollen goods etc.

*In the Mountains:* where technical and market opportunities are more limited, relatively unchanged subsistence production with livestock and grazing systems closely attuned to the environment, together with reliance on indigenous breeds of animals selected for adaptation and production characteristics as a source of sustenance and income.

The realization of this vision can be facilitated or hindered by the actions of government. Government can accelerate the rate of achievement by continuing to provide basic infrastructure and services such as transport, communications and education. In addition, Government can provide information which will increase the farmer's awareness of, and capability to react to, an opportunity, and ensure the provision of supporting services and necessary inputs to encourage a positive response from the farmer. Conversely, inappropriate and conflicting policies, together with excessive regulation, will

seriously inhibit the ability of the Nepalese farmer to respond to these opportunities and result in an increasing dependence on government services and imports as consumers attempt to obtain the commodities they seek

### *Formulation of a livestock development strategy*

In order to accommodate the complex nature of predominantly smallholder livestock production in Nepal, and the multitude of inter-relationships between the numerous institutions involved in livestock development and other sectors of the economy, an holistic and systemic planning process has been employed. This process, which involved extensive participation of representatives of the public and private sector associated with livestock development in the country, was used to identify a set of principles which underlie the formulation of a livestock development strategy for Nepal In accordance with these principles an ideal situation livestock development would be characterized by:

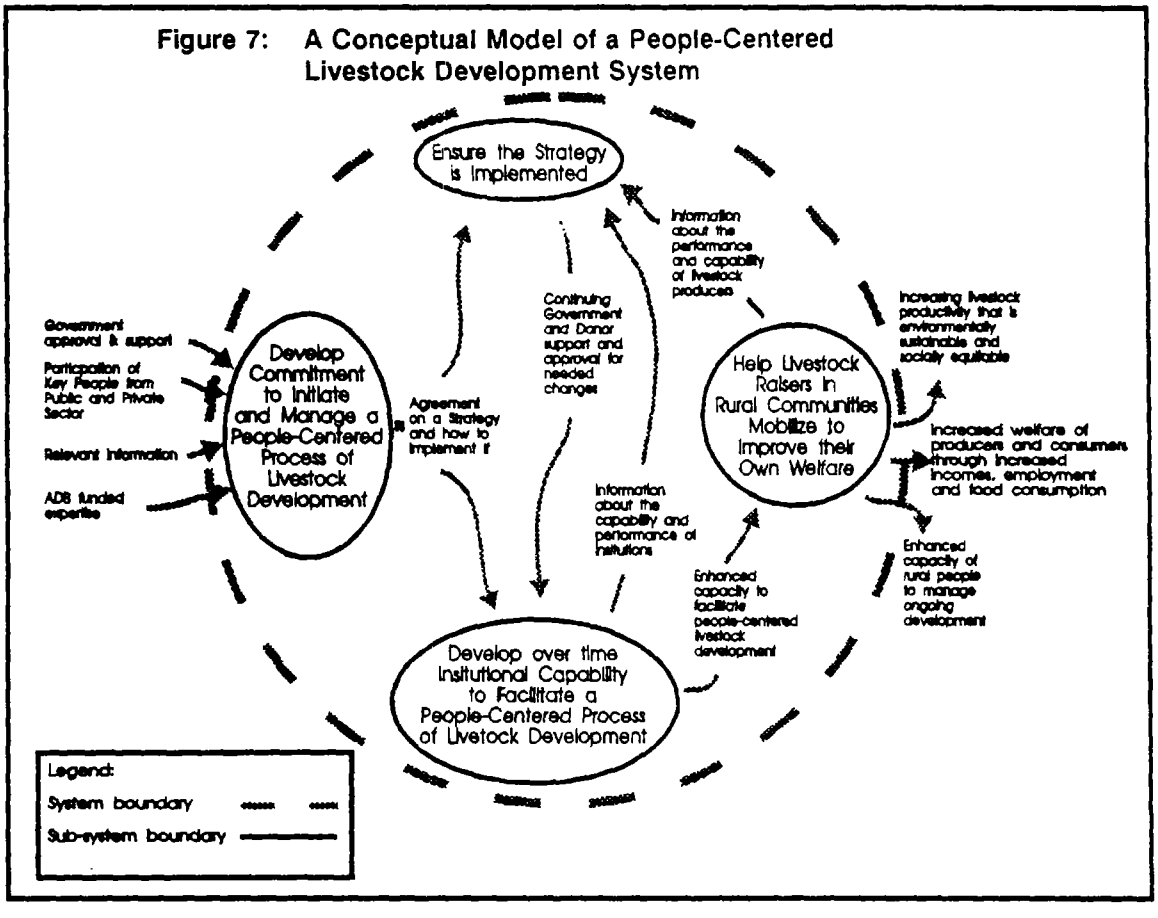
- livestock raisers able to identify, plan and implement livestock improvement programs according to their own priorities and needs on an ongoing basis;
- livestock production being environmentally and economically sustainable, and integrated within the producers farming system in a manner which optimizes the welfare of farmer's household and by consequence the nation;
- supporting institutions, both government and private sector, having the skills, technology and facilities to service the needs of all livestock raisers;
- the government, through DAD as its agent:
    - planning and managing the development of the livestock sector in a manner which fully considers the needs and responsibilities of each section of the population;
    - allocating public resources in a manner which ensures the achievement of national nutrition requirements, and the equitable distribution of opportunity to disadvantaged sections of the population and maximization of involvement of the non-government sector;

- establishing guidelines and monitoring to protect public health and ensure that the benefits of one section of the community are not derived at the expense of another;

- ensuring that the most cost effective processes are employed in livestock sector development.

These principles were evolved in discussions into a strategy for livestock development which would aim to *influence the living standards of people in rural communities by: i) increasing the nutrition, incomes and employment of the people through improved productivity of the livestock sector in an environmentally sustainable and socially equitable manner, while; ii) enhancing the capacity of the people to manage an on-going process of development.*[1] The strategy is dependent on long term policy support from government and donor agencies and requires the strengthening of institutional capabilities needed to facilitate people-centered development.

**Figure 7: A Conceptual Model of a People-Centered Livestock Development System**




[1] *See description of the process in Appendix A*

The components of this system are illustrated in Figure 7 A Conceptual Model of a People-Centered Livestock Development System This diagram indicates the major inputs and outputs of the system and sub systems

Features of the strategy derived from the planning model are that it identifies the need for

- DAD to actively manage the livestock development process and to be involved with other institutions associated with livestock development in Nepal, in an ongoing planning and review process which provides clear guidelines for future actions.

- a farmer oriented development process whereby farmers themselves are involved in problem identification, planning and managing of their development process.

- government research and extension agencies to abandon their preoccupation with institutionally identified, narrowly focused technical aspects of production, in favor of a systems approach to the solution of farmer's problems which actively involves the farmer and may address product processing, marketing and socially related problems, in addition to production;

- a much larger proportion of livestock raisers (who represent around 80 percent of rural households) to receive effective development assistance services if the economic and environmental benefits of improved animal husbandry are to be achieved nationwide.

Three main themes have been identified which are consistent with the philosophy of the livestock development strategy. These themes, which are also consistent with government policy expressed in the Eighth Development Plan 1992-97, are summarized as follows:

- *farmer participation in the planning process* based on a realization that sustained improvement in the welfare of livestock raisers (and their rural communities) is dependent on creating the capability within these communities to organize themselves to improve their own welfare;

- *the potential contribution of the private sector* to improve the efficiency and responsiveness of service institutions to farmer needs and, at the same time, relieve the government of the financial burden of servicing farmers;

- *the appropriate role of government in the livestock development process* which is to act as the manager of livestock sector development, rather than as a provider of all services, who will set policy and determine the allocation of public resources.

## *Development Programs of the Livestock Master Plan*

Five integrated sets of activities, or programs, have been identified to enable the realization of the livestock development strategy. Over a twenty year period, the Plan will aim to reach around 80 per cent of all livestock raisers with improved information services and at least half with comprehensive support services including extension, production inputs and animal health services. Each program embraces the three development themes described above, assesses the range of responses necessary to deal with the agro-ecological diversity found in Nepal, considers the impact on, and potential participation of, all segments of the community, and assesses environmental implications. Although closely inter related, each program is comprised of activities and policies which support a particular development process as shown in Table 1 below

**Table 1: Programs of the Livestock Master Plan**

| Program | Development Process |
|---|---|
| Livestock Sector Management | More efficient use of national resources for livestock development |
| Human Resources Development | Development of the organizational and technical capability of institutions and individuals who service livestock raisers |
| Livestock Improvement | Development of farmers' capability to improve livestock production through delivery of information and services |
| Land Use Management and Environmental Rehabilitation | Development of farmers' capability for improved management of natural resources for community benefit through livestock development |
| Agro-Industries and Market Development | Provision of income and employment opportunities through marketing of livestock products and value-added processing |

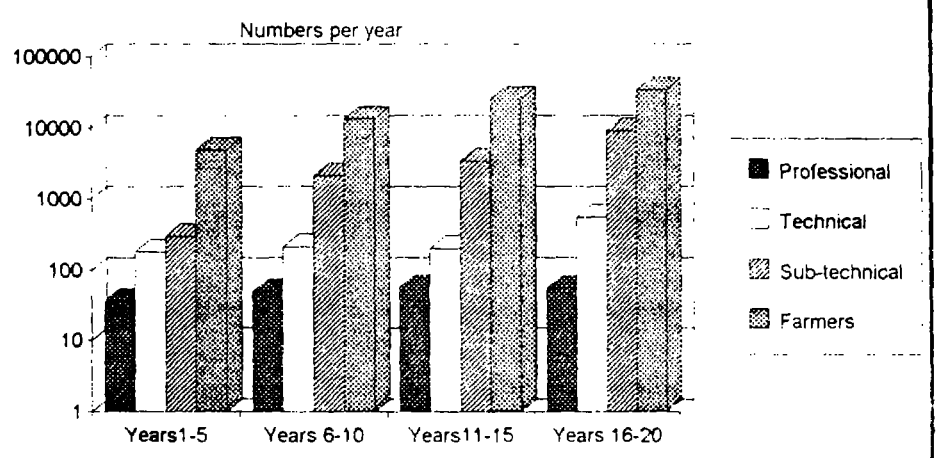
The *livestock sector management program* will establish DAD as the manager of livestock development in Nepal. The program will focus on the development of planning, monitoring and evaluation systems which ensure the participation of all key players involved in livestock sector development, including

the farmers. DAD will encourage effective coordination between government agencies and the private sector at all levels, and especially within the farming community, to ensure the most cost effective servicing of livestock farmers. In its role as manager of livestock development, DAD will ensure that the range of necessary services (extension, disease surveillance and treatment, research, marketing, delivery of inputs etc.) are available to the largest possible number of farmers, within resource limitations, but will only provide services itself where the provision of services is not attractive to the private sector and where justified as an essential service or on the grounds of equity. DAD will aim to develop a partnership in the servicing of the livestock industry with the private sector, and will encourage the development of capability among non-government institutions to meet the needs of livestock raisers by provision of training and the sub-contracting of services. DAD will contribute to the formulation of policy relating to livestock development and will ensure that all participating institutions are aware of the need to reorientate research on a farming systems basis.

The basic premise of the *human resources development program* is that, for livestock development to be sustainable, the farmers themselves must be involved in the planning of their own activities. This will require farmers to increase their awareness of development opportunities and the means to take advantage of these opportunities. Farmers' capability will be developed over time, beginning with organization into groups with common interests and a simple goal, and to move progressively to more complex objectives and organizational structures as confidence and capability grow. The institutions and individuals which support the farmers must see themselves as an important part of the process of change as well as simply providers of supporting services and necessary supplies which will enable the farmers to achieve their own goals.

The Plan calls for a major increase, firstly in the capability of training institutions to review training needs for professional and technical staff, and

**Figure 8: Basic Training for the Livestock Sector**



farmers, and secondly, the expansion of facilities and teachers to train the manpower needed, who will in turn provide the services in response to farmers needs. During the twenty year Plan period basic pre-service training will be provided for 1,000 veterinarians and other professional staff, almost 6,000 technical staff (JT/JTA or equivalent), 75,000 sub-technical staff who will provide front-line services to farmers (VAHW and similar), and almost 400,000 farmers. Regular in-service training will be made available to all technical and professional personnel, whether employed by government, private sector, or self-employed.

The *agro-industries and market development program* recognizes the importance of market opportunities to stimulate increased livestock production and productivity through the adoption of improved animal husbandry technology. Rapidly growing urban centers of the Terai and Kathmandu Valley will create demand for livestock products and provide the opportunity for livestock raisers to intensify their production for this market. The role of government will be to facilitate the process of specialization by improving market information systems, provision of market infrastructure, and the stimulation of agro-processing development which will increase market opportunities for producers and create employment and incomes for rural communities. Government policy and activities will aim to remove constraints to internal movement and trade in livestock products and will establish quality control mechanisms to ensure consumer welfare. Government will also encourage research into technology for the processing of livestock products and facilitate investment in small and large agro-processing activities through appropriate policies applicable to both domestic and foreign investment.

The rationale of the *land use management and environmental rehabilitation program* is that improved management of the public forests and rangelands can increase total production of the biomass, lead to greater sustainability of the ecological system, and maintain biodiversity of flora and fauna. Success of this process requires the involvement of the people who depend on the harvesting of these natural resources for their livelihood. The process involves the organization of people who are directly involved in the use of these public resources and in reaching agreement for their sustainable use. Frequently these people are the women, and children, who are responsible for supervising of grazing of livestock or the collecting of fodder and fuel wood on a daily basis. Understanding of community social factors, and land use rights and responsibilities, are fundamental issues in reaching a consensus on a suitable land use management plan. Program activities will improve land productivity, rehabilitate degraded lands and improve the quantity and quality of forage for livestock through: i) soil fertility improvement by improved cycling of organic manure; ii) forage and fodder development; iii) improved range management; iv) and improved forage seed production.

**Key features of the Livestock Master Plan are:**

Improving animal productivity (rather than increasing numbers) is the key to improving the welfare of rural people, whether they be resource rich or resource poor. Livestock should contribute positively to incomes, crop production, environmental rehabilitation and rural employment. Support services will focus on areas of comparative advantage with good market access, especially by road where livestock development will be most rapid, whereas basic services only will be applied to more remote less advantaged areas.

Government will improve the management of livestock development by, i) improving coordination between the institutions involved (particularly Forestry, Industry and Cooperatives), ii) introducing new and more people related planning and monitoring procedures, and iii) upgrading the skills, management capability and accountability of its own staff.

Government will create a suitable environment and encourage the growth of private sector institutions and individuals to provide a full range of services to livestock farmers, and aim to reduce its own role to that of providing essential non-commercial services, at the same time ensuring the quality of services and products provided and the equitable distribution of services.

The principal means of delivering services to farmers will be through i) an extensive network of animal health workers who will provide basic animal treatments which protect livestock, ii) farmer interest groups as a focus for technical services aimed supporting market-oriented development and, iii) farmer groups comprised of the users of public forests and rangelands aimed at improving the management of natural resources.

Improving relevance, sustainability and scope of services to livestock raisers is addressed by a human resource program which increases the number and skills of farmers and other personnel, and by increasing the capacity of insitutions to support these people with information and physical inputs.

Market opportunities provide the basis for improved livestock management and productivity, and will be enhanced through expansion of market information systems, the development of rural agro-processing industries and product development which increase market prospects, enhance product value and create rural employment.

A farming systems approach to the development and adoption of technology will be established which is consistent with social as well as economic and technical needs of smallholder farmers, and this will involve farmers in the design and evaluation of research and extension.

Women and disadvantaged members of rural communities will form a large proportion of the beneficiaries of livestock services through membership of livestock interest and public resources user groups.

The main thrust of the *livestock improvement program* will be to provide the information and materials needed by farmers in order to increase livestock production and productivity in response to market opportunities. Activities include the identification, development and packaging of suitable technology which meets farmer needs and is compatible with the social, economic and environmental conditions of the farmers multiple enterprize production system. The major vehicle for the delivery of information and services will be through the organization of farmers into groups on the basis of their common interests - initially on the basis of a simple production objective, and subsequently through more complex farmer organization and objectives. DAD will encourage the private sector to participate in the servicing of farmer interest groups with the objective of fostering a self-sustaining commercially oriented partnership between farmers and the institutions and individuals which serve them. These market-led services will aim to meet the requirement of farmers for improved animal nutrition, animal health and breeding services, and to improve animal husbandry practices for increased animal production. Program activities will also aim to improve the efficiency of livestock for the provision of draft power, transport, and organic manure to support food crop production and for the production of biogas

*'Visionary' versus 'Extrapolative Strategies*

The policy and investment interventions needed to influence the direction of development are guided either by a "visionary" view of the future or by an "extrapolation" of existing activities. The "visionary" approach aims to create a more complete, integrated and self-sustaining situation in the future. While based on existing knowledge and values, this approach attempts to fill the gap between the existing situation, and where existing momentum will take us, and the desirable position to be secured in the future. Some elements of the visionary approach contain newer and less tangible values. The "extrapolation" approach on the other hand tends to be guided (and limited) mainly by present norms and viewpoints which are not always consistent with the vision. This approach projects forward mainly existing knowledge and achievements.

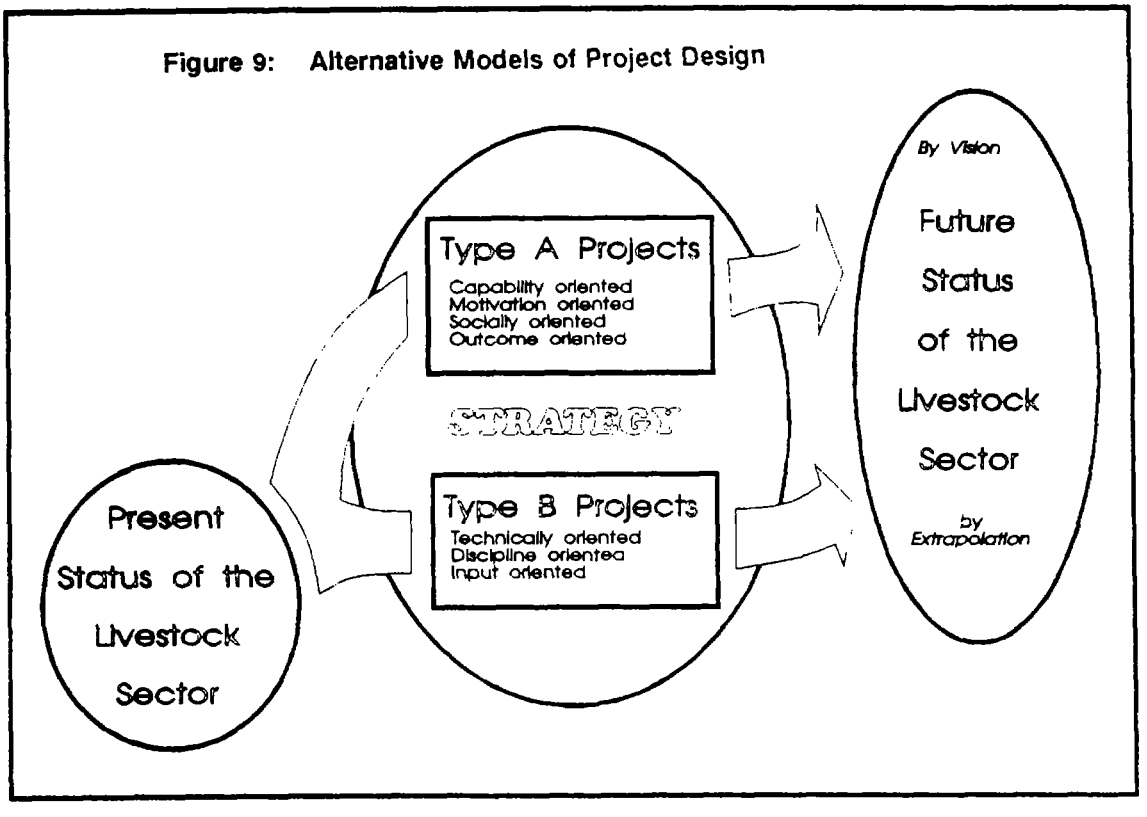
Figure 9 below illustrates the comparison whereby the "visionary" or Type A projects aim to develop capability and motivation to achieve desirable outcomes. Such projects tend to emphasize human resource development issues and problem solving/research oriented activities. Conversely, "extrapolative" or Type B projects follow technical, input oriented guidelines and, while they may achieve technically sound outcomes, they may not achieve integrated, economically beneficial or socially acceptable solutions. The development of improved diagnostic and epidemiological services are a case in point. Although these services are highly necessary, their development in isolation will achieve little. While Type B projects can contribute enormously to a visionary solution

by being integrated into a systems framework, they may also detract from the Type A vision if implemented without due consideration to the setting and linkages applying to that project. Selection of Type B projects must be carefully reviewed, and programmed to ensure that a positive outcome is achieved.

*Implementation of the Livestock Master Plan*

The DAD will be responsible for managing implementation of the activities of the Livestock Master Plan and will take the initiative in planning, coordinating and monitoring livestock development in Nepal. In addition, a number of other government agencies have an important influence on the implementation of livestock development programs. These include the Ministry of Agriculture for policy formulation, Department of Forests which is responsible for management of public lands on which livestock depend for much of their nutrition, Ministry of Local Development which manages village administration and development, NARC for research, and the National Planning Commission and Ministry of Finance which are responsible for national planning and resource allocation.

**Figure 9: Alternative Models of Project Design**



The ability of the livestock sector to absorb and effectively utilize public resources allocated to it will need to be expanded. Implementation capacity of DAD of around $5 million annually in recent years will need to be expanded to around $15 million annually during the latter stages of the Plan period in order to complete the activities scheduled. Improved public sector management systems which will *inter alia* increase staff accountability, provide extensive training to increase manpower capability in the government and private sectors, and channel funds through non-government development institutions, will increase implementation capacity Improved inter-agency coordination will also be an essential requirement.

The major priority of Plan implementation is to initiate the human resource development activities which are essential to i) increase the capability of the development institutions involved in the livestock sector to provide relevant and complementary services to livestock raisers, ii) develop the ability of farmers to utilize these services effectively and iii) reach sufficient farmers with improved services to have a nation-wide impact. Other activities which can be implemented in parallel with the human resources development program include the review of government policies in order to redefine the appropriate role of government and to remove unnecessary constraints to private enterprize in achieving the desired outcomes, and improving the efficiency of institutional mechanisms which can disseminate existing livestock production technology more widely

HMG funds to support livestock development will remain limited and will primarily be allocated to meet recurrent cost obligations. Most development funds will continue to be required from external sources in the form of development assistance. However, new mechanisms will need to be evolved to accommodate the involvement of NGOs and private sector agencies in the implementation of development projects funded from public sector and external resources.

Estimated capital costs for the investments identified amount to US$201 million over the 20 year Plan period. Major programs are for *human resources development* (41%) and *livestock improvement* (28%). Major projects are the development of livestock interest groups (which constitutes the main thrust of extension efforts), development and privatization of veterinary hospitals, livestock user groups for natural resource management, integrated livestock development (involving multi-disciplinary farming systems research, extension, training and provision of facilities), and dairy infrastructure development. Incremental operation and maintenance costs ($41 million), incremental manpower ($11 million) and credit requirements ($23 million) over the Plan period are additional to the capital costs described above.

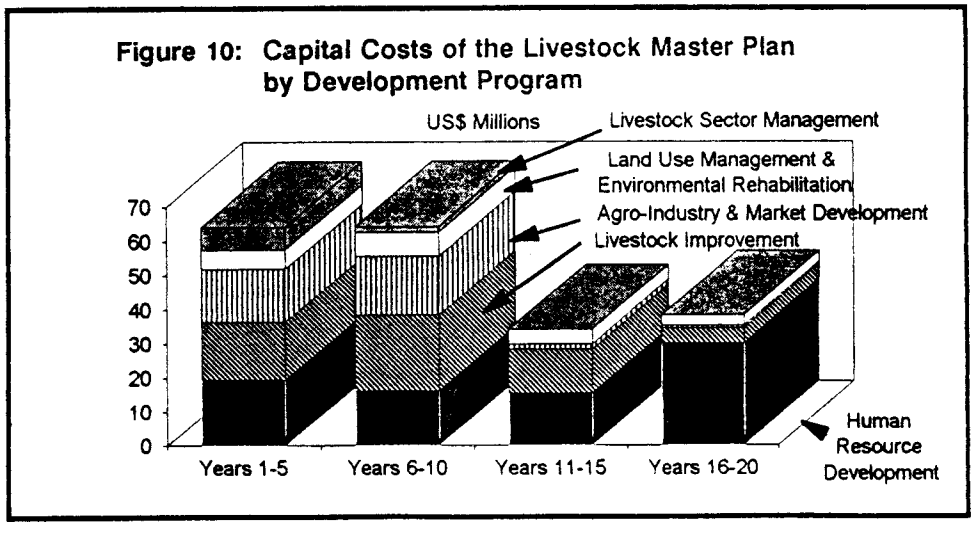
Capital investment during the first ten years accounts for 64 per cent of expenditure during the Plan period. The largest components of expenditure

during the first ten years are for human resources development, livestock improvement and agro-industrial and market development. A significant part of this latter program is comprised of the construction of dairy processing infrastructure under the already approved Dairy Development Plan. Also, during this first ten year period, priority will be assigned to institutional strengthening associated with management of the livestock sector development.

**Table 14: Summary of Capital Costs by Program and Plan Period (US$ millions)**

| Program | 1st Five Years | | 2nd Five Years | | 2nd Ten Years | | Total | |
|---|---|---|---|---|---|---|---|---|
| | $ | % | $ | % | $ | % | $ | % |
| Livestock sector management | 6.7 | 10 | 1.8 | 3 | 0 | 0 | 8.4 | 4 |
| Human resources development | 19.5 | 30 | 16.3 | 25 | 45.8 | 63 | 81.6 | 41 |
| Agro-industries and market development | 15.2 | 24 | 17.3 | 27 | 2.2 | 3 | 35.0 | 17 |
| Land use management and environmental rehabilitation | 5.6 | 9 | 6.9 | 11 | 7.2 | 10 | 19.7 | 10 |
| Livestock improvement | 16.9 | 27 | 22.0 | 34 | 17.3 | 24 | 56.0 | 28 |
| Total | 64.2 | 100 | 64.3 | 100 | 72.4 | 100 | 200.8 | 100 |
| % | 32% | | 32% | | 36% | | 100% | |

Note: Totals may not add due to rounding



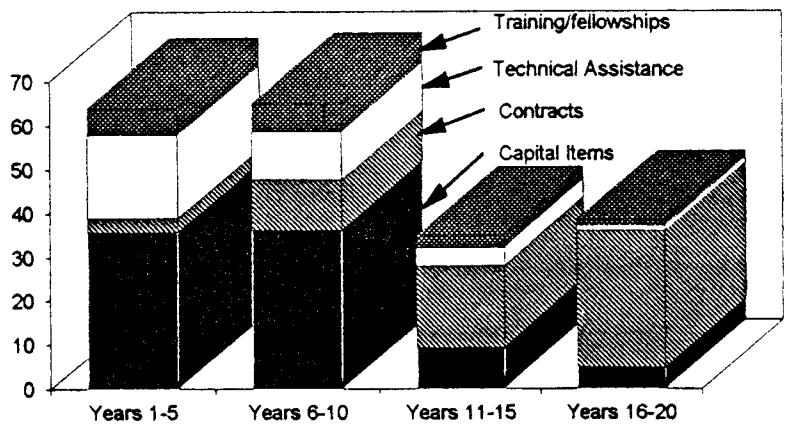
## *Benefits and Beneficiaries*

The principal economic benefit of the LMP is the incremental production of food crops and animal products as a result of the adoption of improved animal husbandry and farming methods initiated and promoted under the Plan. Increased production of animal products results from improved nutrition, animal health and breeding methods extended to farmers under the development programs of the Plan. Increased food crop production is a result of improved nutrient cycling due to improved forage/crop rotations, more efficient composting and cultivation methods and better land use management. The value of this increased production is estimated to amount to US$210 million annually by the end of the Plan period in 2010. The beneficiaries of this increased income will be an estimated 1.4 million livestock raising households who participate in extension activities, and who benefit from improved animal disease protection, prevention and treatment programs.

Value added agro-processing and marketing activities are expected to generate additional economic benefits amounting to US$40 million annually by the end of the Plan period. Small and medium-scale agro-processing of livestock products will increase market opportunities for rural producers as well as generate employment for an additional 170,000 households in cottage and agro-industry. This outcome will be reinforced by government policies intended to facilitate market development as well as improved market information systems and market promotion. Programs to improve market efficiency and establish quality control standards will also benefit consumers, especially those in the rapidly growing urban centers of the Terai and Kathmandu Valley.

Reduced environmental degradation and more sustainable farming systems will result from activities which involve rural households which depend on the harvesting of public forests and rangelands for their livelihood in the management

**Figure 11: Capital Costs of the Livestock Master Plan by Category**



of these natural resources. Environmental benefits will accrue from animal husbandry practices which encourage the stall feeding of livestock and lead to a reduction in the number of unproductive animals.

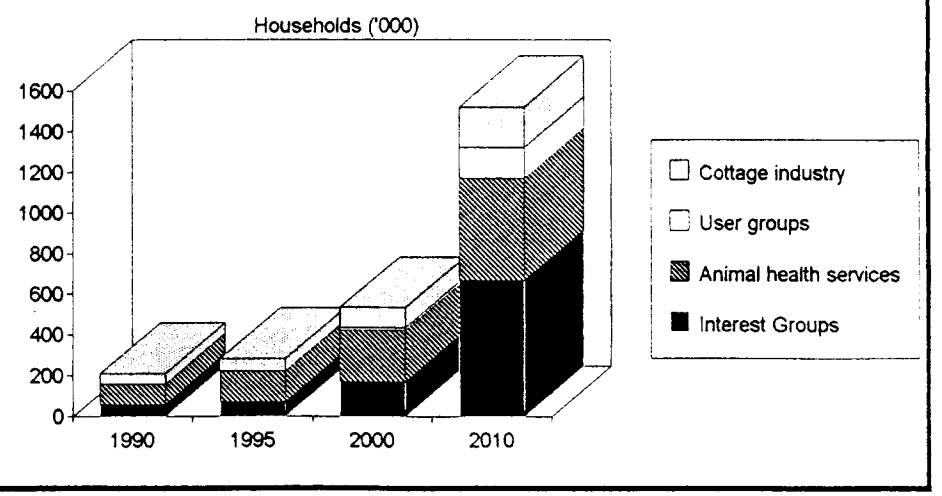
The major human resource development component of the Plan will greatly expand the capability of livestock raisers in rural communities to plan and implement their own development activities, and to increase the responsiveness and capability of government and private institutions to service the livestock industry. The wide distribution of livestock among the poor and disadvantaged sections of the community, and the extensive involvement of women in livestock raising, means that livestock development programs provide an important means by which the needs of these segments of the community can be addressed.

## *Environmental issues*

Environmental concerns have received a high priority in the formulation of the LMP. The welfare of the majority of the people of Nepal depends on the long-term ecological and environmental sustainability of smallholder farming systems. Livestock activities do adversely impact on the environment through their demands on public forest and rangelands, mainly through over-grazing or harvesting of fodder. On the other hand, livestock are an indispensable part of the subsistence agricultural system which sustains the majority of smallholder farmers in Nepal. They contribute almost all draft power and nutrients, in the form of manure, for food crop production.

Subsistence farming systems, with few purchased inputs to improve productivity, have limited flexibility to respond to increasing population pressure. Food crops are required for self-sufficiency, irrespective of land suitability, and many otherwise unproductive livestock may be maintained to produce manure for

**Figure 12: Beneficiaries by Category and Plan Period**



food crop production. The LMP provides for a change to a more sustainable land use by promoting the marketing of animal products, and by introducing technology to increase the efficiency of farming systems through; improved management of public forest and rangelands, increased on-farm production of forage, and better utilization of fodder and crop by-products, and making feasible a reduction in animal numbers. Promotion of market-led development, through development of market information systems and market infrastructure and agro-processing, will encourage specialization in production systems which are better suited to the capability of the natural resource base and are thereby more environmentally sustainable.

Increased specialization as a result of market-led development is expected to result in greater mechanization in accessible arable crop areas (in parallel with reduced animal draft power), with associated increased use of fossil fuels, greater use of chemical fertilizers (as availability of animal manure is reduced), and increased energy demand in rural areas for the processing of animal products. Measures will be needed to mitigate the effects of pollution caused by agro-processing activities such as tanneries and carpet dying and washing, or the localized over-exploitation of natural resources such as occurred with the introduction of cheese factories in high mountain areas.

# Appendix A

# Appendix A

## Process for Developing the Conceptual Framework of the Livestock Master Plan

In preparing the Livestock Master Plan an attempt has been made to introduce an alternative methodology to the process of planning. The objective has been to take an "holistic" approach to livestock development and to consider animal husbandry as an integral part of the complex social, economic and biological system surrounding the farmer, and to use the collective expertise available from within the public and private sectors in Nepal to draw out key features relevant to the future development of the livestock sector. The process attempts to counter some of the deficiencies of standard planning methodologies which tend to focus on the technical aspects of animal production.

The techniques employed were developed as a participative strategic planning process by staff of the University of Western Sydney Hawkesbury in Australia where it is based on the concept of experiential learning. It also utilizes soft systems methodology, a systemic situation-improving process developed at the University of Lancaster in the UK.

The experiential learning process used calls for:

- actors in the situation to be involved - it is a participative process;
- an initial diverging process to enable participants to let go of pre-conceived notions and enable a comprehensive set of data about the problematic situation to be assembled and considered with an open mind;
- an assimilating phase during which patterns and themes are discerned in the data generated through the diverging process;

- a converging stage where key insights gained from assimilating are converted in conceptual models and plans to guide subsequent action;

- an accommodating stage during which action is taken with the expectation that the conceptual models will be a guide but not a blue-print.

The learning process is iterative in the sense that action based on the models will generate more data which will lead to further conceptual insights and a wider range of options.

A key element in the Hawkesbury use of the learning process is regular reflection by participants on the process as it is being utilized. This enables them to not only learn their way through to an improvement in a problematic situation but also how to do this - they learn how to learn. Another key assumption is that unless people are involved throughout the learning process they won't understand or own the outcomes - hence the emphasis on participation.

Soft systems methodology is incorporated into the learning process when the conceptual insights gained from assimilating are developed as conceptual models of relevant systems during the converging phase.

The learning process becomes a strategic planning method when it is used to generate a vision of a desired future and formulate a strategy persistent with moving toward it.

To develop the Master Plan there were a number of iterations of the learning process.

- it was initially used to devise a way to involve people relevant to the planning process, - the result being three day workshops held in Kathmandu in August 1991.

    - the preliminary workshop for the 20 chairmen and moderators enabled them to learn about the process as they used it to plan two subsequent workshops for 120 invitees from the public and private sectors where,

    - the first workshop was to establish the general principles and priorities that should guide the development of the livestock sector and,

- the second workshop was to formulate development programs and projects consistent with the principles and priorities.

- the design of the workshops was based on the learning process and began for example with a diverging process in which participants used cards to generate and share their views on factors in the past that were influential in shaping the livestock sector, and on what they conceived would constitute a desirable future.

- the learning process was also used to discern and develop a conceptual model system that captured the essence of the insights gained from the workshops, the earlier Livestock Development Strategy project and post-workshop consultations.

The set of priorities and principles that was generated during the second workshop and validated during subsequent consultations constitutes a shared vision of the way development of the livestock sector should occur.

The principles are;

- The livestock development process is based on increasing assistance to livestock raisers to enable them to improve their own welfare, in accordance with their own priorities, by means of better livestock husbandry.

- Sustained improvement of the welfare of livestock raisers and rural communities is dependent on community members learning how to improve their own individual situations.

- Government and private sector agencies can increase national and individual welfare by helping the farmer to solve his own problems, identify opportunities for livestock improvement, and providing support to enable him to do so.

- In order to optimize the utilization of limited community resources, the most farmer responsive and cost effective livestock development processes should be adopted.

- Achievement of effective development in Nepal requires that the development process is owned and managed by the Nepalese farming communities, through the participation of concerned Nepalese private and public agencies in both planning and implementation.

- Livestock development requires a continuous process of learning as the institutions and farmers involved gain the capability to plan and implement their programs

- Government's role is to ensure that livestock development contributes to meeting national food and public health requirements, is environmentally sustainable, and is equitable, with the benefits to one section of the community from livestock development not being derived at the expense of another

- The Department of Livestock Services, as the agency charged with the responsibility for livestock development, should ensure that objectives at the national and individual farmer level are realized in the most cost effective manner DLS would thus have to "manage" rather than simply contribute to the livestock development process

High priority activities which will help achieve this vision were judged to be those which would:

- provide information and assistance to enable farmers to identify and evaluate livestock development opportunities,

- enable farmers to recognize and prioritize their problems and issues in relation to their available resources and traditional management practices,

- increase the ability of farmers to plan and implement a program of livestock development which will improve his socio-economic wellbeing

- make available to the farmer the information, materials and services needed to implement his plan of livestock development,

- increase the skills of and knowledge available to professionals serving the industry to enable them to respond positively to the needs of livestock raisers,

- increase the number of farmers which can benefit from institutional support programs,

- increase the productivity of livestock in a manner which is cost effective and sustainable over time,

- increase the involvement of the private sector in livestock production in a manner which is cost effective in terms of scarce government recurrent costs,
- contribute to the distribution of income and employment opportunity or leads to the improvement of welfare among disadvantaged sections of the national community,
- reduce actual or potential hazards to public health
- contribute to national food supplies and improved nutrition,
- contribute to the expansion of market opportunities for livestock products
- reduce the contribution of livestock to environmental degradation,
- improve the coordination between institutions involved in livestock development in a manner which increases consistency between programs and efficiency in implementation,
- provide for effective monitoring and evaluation of livestock development activities,
- increase livestock raisers' production, productivity and welfare,
- provide opportunity for human resource development at all levels in the public and private sectors and for farmers.

The above principles and priorities have guided the formulation of the objectives and strategies upon which the Master Plan is based. A fundamental element of this process has been the evolution of a conceptual model which has enabled the deficiencies in the present livestock development strategy to be identified and addressed in the Plan.

The conceptual model that guided the subsequent development of the strategy in the Master Plan is in Figure 7 on page 31 and was defined as *a system to influence the living standards of the people in Nepal's rural communities by concurrently:*

- *increasing the productivity of the of the livestock sector in an environmentally sustainable and socially equitable manner, while*

- *enhancing the capacity of the people to manage an on-going process of development.*

*The system is dependent on long term policy support from government and donor agencies and requires the development of institutional arrangements and capacities needed to facilitate people-centered development.*

The important features of the model were determined to be:

**Beneficiaries:** The people of Nepal's rural communities;

**Actioned by:** Relevant government and non-government agencies;

**Actions needed:** To concurrently (a) increase productivity of the livestock sector in an environmentally sound and socially acceptable manner, while (b) enhancing the capacity of people to manage an ongoing process of development;

**Rationale:** Effective development is occurring when people are not only learning new and effective ways but also learning how to learn;

**Owner:** The government of Nepal in concert with donor agencies;;

**Constraints:** Institutional arrangements which engender dependence.

The four major elements, or sub-systems, of the model which are identified as being necessary to achieve the desired end result are:

- develop commitment to initiate and manage a people-centered process of livestock development;
- develop, over time, an institutional capability to facilitate a people-centered process of livestock development;
- help livestock raisers in rural communities mobilize to improve their own welfare;
- ensure the strategy is implemented.

Each of the sub-systems above can be analyzed to determine its component "sub-sub-systems" in order to achieve a greater understanding of the processes involved. Subsequent iterations of this procedure are continued until a sufficiently clear understanding of the situation is gained.

Once the model has been described in sufficient detail to enable a thorough understanding of its components, each "ideal" component is compared with current practice to identify possible deficiencies in the real world situation. Insights gained by undertaking this process, together with extensive discussions with individuals involved in the livestock sector in Nepal, have been used to guide formulation of the objectives and strategies of the Livestock Master Plan.