

Report No. 2315-AF

# Livestock—The Development Challenge

## A Sub-Sector Survey

### Afghanistan

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Projects Department  
Europe, Middle East and North Africa Region

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### CURRENCY EQUIVALENTS

Afghanis (AF) 40	=	US\$1
AF 1	=	US\$0.025

### WEIGHTS AND MEASURES

1 hectare (ha)	=	10,000 m <sup>2</sup> = 2.47 acres = 5 jeribs
1 jerib	=	2,000 m <sup>2</sup> = 0.2 ha = 0.49 acres
1 kilometer (km)	=	0.624 miles
1 sq. kilometer (km <sup>2</sup> )	=	0.386 sq. miles = 100 ha
1 kilogram (kg)	=	2.2046 pounds
1 metric ton (ton)	=	1,000 kg = 2,204.6 pounds
1 liter	=	1.057 US quarts

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This report is based on the findings of a Mission consisting of V.A. Ashworth and D.M. O'Connor (Consultant), which visited Afghanistan in March 1978; draft report was reviewed by the Government and discussed with Bank Missions in January and July 1979.

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1. IBRD 13704
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BASIC DATA

<u>Area</u>	<u>Population (1976/77)</u> <sup>/a</sup>
<u>Total:</u> 675,000 km <sup>2</sup> = 67.5 million hectares	<u>Total:</u> 14.0 million
Pasture: 40 million hectares	Urban: 2.5 million
Arable: 8 million hectares	Rural: 10.0 million
- cultivated 3.8 hectares (irrigable)	Nomadic: 1.5 million
- uncultivated 4.2 hectares 2.7 mil. ha)	Rate of Growth: 2.2%

<u>Education (1974/75)</u>	<u>GNP Per Capita (1976/77)</u> <sup>/b</sup> : \$160
Adult Literacy Rate: 8-10% (1970/71)	Rate of Growth: 3.1% (1966-76)
Enrollment Ratios:	
Primary School: 29.8%	
Secondary School: 12.0%	
Higher Education: 6.7%	

<u>Labor Force (1975/76)</u>	<u>Thousands</u>	<u>% of Total</u>
Agriculture and Livestock	2492.8	52.9
Industry and Mining	40.7	0.9
Handicrafts	843.6	17.9
Construction	44.7	0.9
Transport and Communications	56.6	1.2
Commerce	257.3	5.5
Services	691.6	14.7
Other	282.7	6.0
<u>Total</u>	<u>4710.0</u>	<u>100.0</u>

<u>Merchandise Exports</u>	<u>1975/76</u> <u>US\$ Mil.</u>	<u>Per</u> <u>cent</u>	<u>1976/77</u>	<u>Per</u> <u>cent</u>
Dry Fruits and Nuts	54.7	23	61.9	21
Fresh Fruits	20.1	8	25.8	9
Cotton	35.3	15	64.5	22
Natural Gas	46.3	20	39.6	13
Miscellaneous	30.1	13	36.0	12
<u>Sub-total</u>	<u>186.5</u>	<u>79</u>	<u>227.8</u>	<u>77</u>
Karakul	10.4	4	19.8	7
Wool and Hair	10.8	5	8.9	3
Hides and Skins	11.7	5	11.0	4
Carpets and Rugs	16.1	7	25.9	9
<u>Sub-total</u>	<u>49</u>	<u>21</u>	<u>65.6</u>	<u>23</u>
<u>Total</u>	<u>235.5</u>	<u>100.0</u>	<u>293.4</u>	<u>100.0</u>

<sup>/a</sup> Source: Basic Economic Report, IBRD No. 1777a-AF, March, 1978.

<sup>/b</sup> World Bank Atlas, 1977.

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BASIC DATA (Cont'd)

Livestock Population (1977)

	<u>Million Head</u>
Cattle	3.4
Sheep	19.4
Goats	3.0
Camels, Donkeys, Horses	2.0
Poultry	6.0

## BACKGROUND, SUMMARY AND CONCLUSIONS

### Introduction

1. This Livestock Sub-sector Survey was initiated at the request of the Government of Afghanistan in order to identify firstly, the major sub-sector development constraints and secondly, possible strategies and programs for alleviating these. It was hoped that the resulting report would form the basis upon which Government could establish future policies within which possibilities for future IDA and other donor financial assistance could be identified. The recommendations made in this study are based on the work of the original mission (March 1978) and follow-up discussions (based on a draft report dated December 21, 1978) with representatives of the Government of the Democratic Republic of Afghanistan. The recommendations made will need to be adapted to the new Government's evolving policies, detailed analytical work and, in many cases, financial and economic evaluations would need to be made before final decisions on recommended programs and projects could be made. The report does not advocate that Afghanistan's economic future should be based upon priority allocation of resources towards livestock development. It is recognized that national resource allocation must take account of broader national issues and developmental goals. Livestock is but one sub-sector of the total economy. It is however important and would justify, in terms of potential economic and social benefits, a higher allocation of development resources than has been made in the past. The survey endeavours to analyze existing and past programs and strategies, developmental constraints, and then within the subsector, to recommend strategies and priority programs which would, if effectively implemented, make a worthwhile contribution towards achieving national economic and social goals. Where recommended strategies, programs and projects are accepted and accorded appropriate priority, it will be necessary to prepare detailed in-depth implementation schedules. It is recognized that Afghanistan could not implement all of the recommendations at one time. For this reason a rough order of priority is suggested, with programs categorized as "Priority Short Run" or "Lower Priority Longer Run". Higher priority "short run" programs would perhaps be implemented progressively during the next 5 to 8 years. It is not intended that the report cover all technical aspects of livestock development. However, more detailed technical discussion is contained in the Annexes 1-5.

### Livestock Sub-Sector Background

2. Livestock products, including carpets and rugs, account for 25% of GNP and 23% of exports (1976/77, US\$65.6 million). In addition, the value of unofficial live sheep exports to Iran is estimated at about US\$33 million. Per capita meat consumption is estimated at 11.5 kg per annum and milk 60 kg, which is low by international standards. The livestock sub-sector is important in the total economy due to its contribution both to exports and domestic living standards; almost all the rural population of about 12 million are, to some degree, dependent on livestock for income, food and draft power.

3. The dominant feature of Afghan livestock production and husbandry is the annual migration system, with some 20 million sheep and 3 million goats maintained mainly on the rangelands, with winter grazing on the semi-arid plains and summer grazing in the mountains. Production is severely limited by

the poor quality and sparse nature of the rangeland grazing, with which the livestock exists in precarious balance. High death rates occur in drought years due to the combined effects of starvation, disease and parasites. Three and a half million cattle, kept mainly for draught use on irrigated land, are also poorly fed and have low production. Good potential exists for livestock development, as sheep, goat and cattle breeds are well suited to the generally harsh conditions and, given adequate nutrition and disease control, meat and milk production could be substantially increased; and is capable of meeting both domestic and export requirements. Capable, resourceful, livestock owners have shown an ability to devise management systems well suited to the environment.

4. Current plans and projects aim to increase livestock numbers largely through disease control but, with the exception of the IDA-financed Herat Livestock Development Project (Credits 375-AF and 649-AF) which includes components for increasing irrigation forage production, fail to recognize that increasing livestock production can only be achieved through an integrated approach designed to achieve national (urban and rural) food security, improve disease control, increase offtake, and most importantly, increase the feed base. Little has been achieved over the past decade and stock numbers and production appear to have remained static, due largely to a failure to define priorities and to plan and execute effective projects.

#### Conclusions

5. Increased livestock production is essential as one means of increasing protein available to present and forecasted population. Plant protein cannot completely substitute for animal protein in the diets of Afghan people who constitute a society in which animals and their products are culturally and economically important. The major objective in Afghan livestock production should be to maintain, or even decrease numbers and increase individual animal productivity through improved feeding and disease control, while concurrently reducing mortality and increasing offtake. The substantial increase in livestock feed supply necessary for improving production, can only be achieved through range development and by greater use of irrigation water for forage production. Using balanced crop rotations which include a legume, both livestock and agricultural crop production could be increased as part of improved farm management systems in which animals and plants are complementary. There is insufficient understanding of range use and development, which is a massive, delicately balanced complex of agronomic, ecologic, socio-economic factors. Long-term survey and research work must be initiated so as to provide a sound basis for designing and implementing effective improvement programs. Range projects initiated without full cognisance of all the factors involved could upset a very delicate balance and result in a sociological and ecological disaster. No meaningful improvement in rangeland production can be obtained until some effective means are found to control both the livestock and people using the ranges. This cannot be achieved in the short run and all involved must be reconciled to the fact that range improvement is a difficult long-term objective. Range improvement programs should include activities to encourage nomads to change lifestyles and move into alternative means of making a living.



6. The nomads and their pastoral system represent one of the nation's great resources. They utilize a resource and make a contribution to the economy without any call upon Government services or expenditure; and no other group or system in Afghanistan could utilize the harsh remote rangelands any other way. While some modification of the present system, such as encouraging partial nomadic settlement combined with maintaining the migration system, may be desirable, it should be allowed to evolve slowly and with the full support of the people it is designed to help; the nomads themselves. Programs designed to help nomads should be very carefully prepared, have a reasonable chance of success and be efficiently executed by people with expert knowledge (and sympathy for) both the complex as a whole and the people in particular.

7. As alfalfa yields are high in Afghanistan by international standards, alfalfa production on irrigated land for feeding to livestock appears economically attractive. However farmers cannot be expected to increase alfalfa production until they have assured self-sufficiency in wheat, adequate summer water, reliable livestock product markets and adequate veterinary protection and extension. Alfalfa can contribute significantly to soil fertility and improved yields in crop rotations, but development must be through integrated agricultural and livestock programs which ameliorate all the major constraints mentioned.

8. The export of sheep meat to high priced Iranian and Gulf State markets can earn the foreign exchange required to import lower priced high quality protein such as soya and non-fat milk powder, which are better suited to infant and nursing mother use, the groups where protein deficiency is of greatest concern. Increased milk and egg production could also contribute to improving the diet of young children and nursing mothers. Cattle are kept on most farms for draft purposes, with milk produced largely as a byproduct. Providing reliable markets and collection systems are established, potential exists for increasing milk production by stepping up irrigated forage production and improving animal health services, artificial breeding and extension. This would require the organization of a milk collection and transport system for liquid milk sale in urban areas, and for processing in small low cost plants to cheese and other milk products. A fluid milk industry would need to be supplemented in the winter with reconstituted milk from initially, imported components. Improved poultry production must be based on grain feeding to improved stock which efficiently convert feed to meat and eggs. While grain feeding cannot be justified for sheep and cattle on both social and economic grounds, potential exists for using corn and barley in an efficient poultry industry, particularly as the country moves closer to grain self-sufficiency. The industry would, however, need to be efficiently operated and use well bred imported stock in relatively small commercial operations, adequately supported with health, extension, credit and marketing services.

9. The Ministry of Agriculture is faced with heavy responsibilities and has many calls on its limited manpower resources; it has comparatively few well trained and experienced people with a full understanding of the development process, and an appreciation of farmer and flock owner's problems. Furthermore, the administrative framework in which staff have to operate is inadequate to meet the needs of dynamic agricultural and livestock development. In order to identify priorities, limit objectives, and concentrate

resources in effective programs and projects, an indepth review of the Ministry's objectives and resources in the livestock sub-sector and of administrative bottlenecks is now required. To increase the number of trained staff the Ministry should develop regular and appropriate in-service training programs and require all professional staff to spend lengthy periods in the field, with promotion and salary increases being dependent upon field performance. Ultimately, specialist training should be given to a limited number in poultry production, hides and skins, animal husbandry, nutrition and wool so that appropriate projects and programs could be effectively implemented at the farm level. Selection of projects and programs should, inter alia, be based upon a detailed analysis of their cost effectiveness, rather than the more superficial evaluation which prioritizes projects merely because they are cheap (financially and manpower) or judged as being too expensive.

10. Control of all animal diseases is beyond the present resources of Government. Economically important diseases should, however, be defined and a control program, based on 3 regional diagnostic laboratories with well equipped mobile vaccinating teams, established. Greater benefit could be obtained from existing clinics and sub-clinics by providing these with adequate equipment including refrigeration, for vaccine storage, transport, and with improved staff training and supervision. But what is needed most in the animal health field is a 'barefoot veterinarian' approach, which would train semi-literate village veterinary workers in limited, but effective, skills and extend veterinary services to the villages, where the need is most. Government could not, however, afford to establish an entirely free effective veterinary service and consequently, the introduction of some cost recovery system among livestock owners will be necessary.

#### Recommendations

11. Overall development goals for the livestock sub-sector should be to economically increase production in order to raise incomes and standards of living, reduce farmer risks associated with livestock production, promote self-sustaining development and strengthen the national economy by increasing exports, rural employment opportunities and achieving security in basic food production.

12. Strategies to achieve these goals should include programs which would have maximum impact at the grassroots farm level; retain the means of production largely in the private/cooperative sector; increase animal productivity and offtake rather than numbers; improve animal nutrition through first achieving national food security; upgrade the effectiveness of Government institutions; and ensure that producer prices provide sufficient incentive for increasing livestock production, consistent with maintaining balanced production of key crops such as wheat, cotton, fruit and vegetables.

13. The main recommended programs and policies within these strategies would include:

#### Rangelands and Nutrition

- (i) Improved animal nutrition can only be achieved by increasing the total amount of digestible feed available. A total

increase in feed can be achieved in four ways. Firstly, increasing the amount of irrigated forage grown; secondly, introducing on rainfed crop land suitable leguminous crops; thirdly, introducing range management and control systems combined with introducing suitable legumes and woody plants to increase range pasture productivity; and fourthly, improving the utilization of crop and industrial by-products. Afghanistan should not encourage animal fattening or milk production based upon feeding large quantities of relatively expensive concentrates and grain.

- (ii) A survey of the entire ranges involving the agronomy, ecology, sociology and economy is a vast undertaking but such a survey, progressively implemented over time, is recommended for serious consideration.
- (iii) Preparation, after appropriate survey, of a pilot but comprehensive nomad cooperative-range management project.
- (iv) Establishment of special training programs for range management and production technicians and professionals; and a comprehensive review of reports, studies and relevant literature on the Afghan nomad-range complex.

#### Institutional Reform

- (v) In order to improve the operational efficiency of the Ministry of Agriculture in general and the Veterinary Services and Animal Production Department in particular, as a development agency, a high level task force should be established to carry out a comprehensive review of the existing situation highlighting constraints and bottlenecks, and making recommendations for future improvement (it is considered this would be worthwhile despite recent moves made to improve the situation).
- (vi) Despite its apparently high cost, the Ministry of Agriculture should establish a training department fully equipped and supported with the necessary qualified staff to carry out a meaningful training function, which would focus upon three main areas: continuous in-service, induction, and retraining.
- (vii) A complete effectiveness and operational review of the Government farms should now be made. The prime aim should be to establish limited objectives, with a meaningful role in the livestock production improvement and guard against a disproportionate channelling of resources (finance, manpower, water) into operations which do not prove in practice to be cost effective and which ultimately cannot make a significant contribution to improving national production.

- (viii) A Project identification, preparation, appraisal and evaluation unit should be established within the Planning Department of the Ministry of Agriculture to assist with policy formulation, to initiate, appraise and supervise projects within that policy, and to promote the use of monitoring and evaluation as a management tool. 1/
- (ix) Staff field assignments should be made more attractive relative to Kabul based appointments. A broader range of incentives to attract staff to the field needs to be introduced. Such a package could include salary and promotion bars which cannot be passed without serving on a field assignment; provision of housing at low rentals; for married staff an assignment allowance for wife and each child; and maximum field tours of say four years followed by rotation to Kabul or other stations with better than average facilities.

#### Animal Health

- (x) After a full review of existing knowledge, "notifiable" diseases, control of which should be given priority consideration, should be defined. Criteria for selection of these diseases should be the cost of control compared to the economic and financial losses saved, including particularly, their effect on production and growth.
- (xi) The number of diagnostic laboratories should be restricted to perhaps three or four. These should be properly equipped, staffed, and have adequate financial support. Emphasis should be placed upon determining exactly which diseases and parasites exist, their economic importance, the most efficient means of control and the location of more concentrated infection areas. It is undesirable for Afghanistan to attempt to provide sufficient facilities and highly trained staff, to be able to undertake diagnostic services for every possible disease.
- (xii) An effective animal health control service can be an element for rural education and social change. Basic veterinary services including vaccinations and animal health extension can be effectively provided by village veterinary workers, or a 'barefoot veterinarian' approach which would expand the service offered through well trained and supervised 'village veterinary workers' (VW's), and out into the villages where the need is greatest. These people need not be academically qualified but must be well trained in basic veterinary first

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1/ A unit has recently been established but it is not clear that it includes provision for an effective monitoring and evaluation unit.

aid and vaccination techniques. Ultimately the standard of training and academic background can be progressively raised but it is neither necessary, desirable or economic for Afghanistan, at its present stage of development, to aim at having the majority of the veterinary staff fully qualified academically.

- (xiii) Diseases of national importance and hence "notifiable" should be controlled free of charge; all other veterinary services, particularly clinical, should be charged for on a simple fixed rate basis; local finance is a constant constraint and an efficient service simply cannot be provided free by the Government of Afghanistan.
- (xiv) While legislation for specific animal disease control and animal health services in general is a desirable objective, it is essential that such legislation should be simple, practical, and capable of being enforced.
- (xv) Present policy for vaccine production should be fully reviewed. A fairly large range of vaccines is presently produced, and whether it is desirable, economic and necessary for Afghanistan to produce these should be carefully examined; furthermore, the quality and therefore effectiveness of presently produced vaccine should be examined.
- (xvi) More practical type training and experience should be introduced into existing education programs. No degree in veterinary science should be granted until the candidate has spent a minimum of one year in the field operating among farmers.

#### Meat

- (xvii) Meat industry policy should be based upon programs which would increase meat production (through integrated agricultural development programs including effective veterinary services), sufficient to ensure meeting annual domestic demand at reasonable prices, and the ever increasing export demand. However in order to compete with the main world mutton and lamb exporters (Australia and New Zealand) Afghanistan will have to develop vigorous, professional marketing skills, and establish a reputation for reliability in meeting contractual quantity and quality obligations.
- (xviii) The policy of maintaining reasonable domestic meat prices should take account of not only consumer purchasing power and demands, but also the returns which producers require to not only maintain production, but to compensate for the risks involved in livestock production and divert land and water from lower value crops such as wheat, into forage for conversion to meat.

- (xix) For the domestic market, no additional processing works should be established until demand and meat price, clearly indicates that, they would be financially viable without Government subsidies or need to unfairly increase the consumer price, or reduce that paid to producers.

#### Carpets

- (xx) Expansion and improvement in the carpet industry production and efficiency should receive priority. Government intervention should be confined to providing the necessary support including maintaining favorable trading conditions, assistance in expanding export markets, ensuring availability of credit for both production and marketing, quality control, and to the extent possible, a fair return for the producer's effort. Caution should be exercised in any Government attempt to control the carpet industry.

#### Dairy Production

- (xxi) Dairy development should be designed to meet an increasing demand for improved nutrition levels, and replacing milk product imports which, if local production is not increased, are likely to increase in accordance with demand.
- (xxii) Milk production programs should be based largely upon small farm development in conjunction with integrated rural development projects, and as a part of a national dairy development program. Such a policy is likely to see milk production increase more quickly and at lower cost than on large 'commercial' state farms, where managerial experience and the entrepreneurial approach are not strong.
- (xxiii) The retail milk price should reward the producer sufficiently to encourage him to maintain and increase production.
- (xxiv) The preparation of a national dairy development program with the presently proposed dairy project 1/ as a first phase, is recommended. Dairy production programs should not be designed to encourage all year round milk production. Due to the climate, winter milk production is not only difficult but would be expensive and hard to maintain. It is strongly recommended that farm dairy production should be on a seasonal basis with calving coinciding with the onset of spring growth.

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1/ Annex 4, Section F, paras. 3.02-4.02. Also FAO/ISCDD Final Report, December 1977.

### Poultry

- (xxv) In view of the need for daily personal type management and the need to carefully monitor costs relative to output, commercial poultry production is best undertaken on a decentralized basis. Government activities should focus on operation of a rehabilitated Bagrami poultry farm designed to carry out applied research, such as housing, and the introduction of parent stock for the production of hybrid stock for sale to commercial producers. In addition Government should provide supporting services including animal health, specialized poultry husbandry and feeding extension, credit, and assistance with egg and poultry marketing cooperative formulation; and a feed compounding plant for quality concentrate feed production.
- (xxvi) Within the Ministry of Agriculture, a specialized poultry extension service should be established.

### Livestock Census

- (xxvii) As with many developing countries the available Afghan statistical data are not always reliable. As a basis for more objective Livestock Sub-sector planning a new livestock census is required; a census should be accompanied by the establishment of simple reliable systems for monitoring changes over time.

### Wool

- (xxviii) National wool production policy should give priority to improving, through extension activities, national flock nutrition and control of parasites and diseases. However, the establishment within the Ministry of Agriculture of a small highly trained extension service which would focus upon wool improvement and production technology would be worth considering.
- (xxix) Afghanistan could ultimately be a major producer of long staple, coarse carpet-style wool, and given appropriate research and development programs in the production and marketing sectors could develop an export industry in quality "carpet-style" wool sold in "washed" condition. To achieve this goal, production and quality, including the implementation of a wool grading system would have to substantially increase.
- (xxx) Until a clear demand is demonstrated and existing plants are operating to full capacity (including the use of more than one shift operation), no additional wool scouring plants should be established. Production of woollen textiles, and yarns suitable for the carpet and handicraft trade, should be so designed to meet domestic demand only.

### Animal Breeding

- (xxxix) The introduction of new sheep breeds should not be made in the foreseeable future. The present breeds have very good genetic potential for desirable economic characteristics including wool, growth rate, fecundity, milk production, pelt color, and hardiness. The introduction of fine wool breeds, with the objective of producing fine wool to substitute for imports may not prove cost effective; a previous attempt to introduce new sheep breeds failed.

### Hides and Skins

- (xxxix) The quality of leather and of locally made handicraft goods, which are in keen demand by tourists, should be upgraded. Government assistance should be directed firstly towards ensuring the establishment of a viable industry producing high quality goods; secondly, establishing control standards and systems; thirdly, providing both operation and marketing credit at commercial rates to the private sector; and fourthly where appropriate, arranging for foreign managerial and technical assistance.

### Animal Research

- (xxxix) Research must have a basic objective of economically increasing farm production. It should meantime, be confined to testing and adapting international work to Afghan conditions within the framework of farm management systems and technology relevant to the Afghan farmer. Policy, coordination and direction should be undertaken within the framework of the proposed Agricultural Research Institute which is to include all concerned agencies and departments. An integral part of any reorganized research program would be improving the information flow from researcher to farmer and vice versa.

14. Whilst the potential for improving livestock production sufficient to meet both domestic and export demand, is good, the means by which it can be developed to the best advantage of both the nation and individual livestock owners, presents no easy task. The contribution which the sub-sector makes to the economy as a whole and to the well being of peoples' lives would justify an improvement firstly, in priority given it as compared to the past, and secondly, the resources allocated for its development. Livestock and the related industry, including carpets and handicrafts, represents one of the nation's most valuable resources, but without the will and the means to give the development process the necessary momentum, the sub-sector will continue to remain Afghanistan's development challenge.

### Investment Possibilities

15. The main investment possibilities which have emerged from this study and of interest to IDA include:



- (i) A dairy/poultry project including assistance to existing and possibly new State farms, milk collection, processing and marketing, concentrate feed production, on-farm development and credit, and strengthening of related Government services such as veterinary, artificial insemination and extension. Total investment and operating costs over four years could amount to about Af 1600 million (US\$40 million) but a substantial proportion of these costs (perhaps 25-30%) could ultimately be recovered from consumers and, through credit activities, subborrowers.
  - (ii) A phased national program to coincide with an improvement in marketing opportunities and range management survey work, for establishment of an effective national veterinary service including a village veterinary service, mobile services to nomads, extension of the number of sub-clinics, review of present vaccine production objectives, staff training and provision of supporting equipment. An initial 3 year phase including investment and operating costs could amount to Af 800 million (US\$20 million). Cost recovery on drugs and vaccines might ultimately amount to 50 or 60% of this.
  - (iii) Additional rural development projects which address, on an integrated package basis, veterinary services, agricultural research and extension, range management and improvement, livestock marketing and an improvement in animal feed supplies. The recently approved Rural Development Project to be centered on Ghazni, Kabul and Paktika provinces is estimated to cost (investment and operating) Af 1560 million (US\$39 million) phased over five years.
  - (iv) After appropriate survey and preparation work in each case, range management and rural development projects designed primarily to assist nomads and other rangeland users. Variations in cost would be considerable, but including preparation work, each project could cost Af 320-400 million (US\$8-10 million) including investment and operating costs.
16. These opportunities, would after agreement in principle with the Government of Afghanistan, require the preparation of detailed feasibility studies to determine their technical, financial and economic viability. Social benefits would, to the extent possible, also need to be taken into account in determining the acceptability of projects.



## AFGHANISTAN

### LIVESTOCK SUB-SECTOR SURVEY

#### I. THE STRUCTURE OF THE LIVESTOCK INDUSTRY

##### A. Livestock in the Economy 1/

1.01 Total GNP in 1976-77 was about Af 115 billion, which translates to GNP per capita of Af 8,200 (US\$160). 2/ Agriculture (including livestock and forestry) produces about 50 percent of GNP. Livestock accounts for about 16% and handicrafts (largely woolen carpets and rugs), a further 8-10%. Livestock products are about 14% of total exports with carpets and rugs accounting for a further 9%. This 23% represents a substantial decline (from about 40% in 1967-68) during the 10 years ending March 1977, when the value of total exports increased by a factor of 4.4, due largely to an increase in the volume and value of other exports including dried fruit and natural gas (Table 1, page 2). The total value of recorded livestock exports including carpets and rugs in 1976-77 amounted to US\$65.6 million, of which carpets and rugs contributed 39%, karakul 30%, hides and skins 17%, and wool and hair 14%. The value of unrecorded live sheep exports to Iran is about US\$33 million 3/ per annum. Only a small amount of livestock products, mainly milk powders are imported. Of the total estimated population of 14 million, 85% including about 1.5 million nomads live in rural areas. Population growth rate is about 2.2% per annum. 4/ About 70% of the total labor force of 4.7 million are engaged in agriculture, livestock, and handicrafts.

##### B. Livestock Production

1.02 All meat and milk (excepting imported donated milk products) are produced domestically, and provide annual per capita levels of about 11.5 kg 5/ meat and 60 kg milk equivalent. Fresh milk consumption is mainly restricted

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1/ Detailed information on Afghanistan's economy is presented in 'Journey to Economic Development', IBRD report No. 1777a-AF, March 17, 1978.

2/ Compared to India \$150, Pakistan \$170, Nepal \$120, Turkey \$990 (World Bank Atlas, 1977).

3/ Mission estimates.

4/ Compared to India 2.1%, Bangladesh 2.0%, Pakistan 3.0%, and Nepal 2.1%; Ministry of Planning considers present growth rate (1978) 2.51%.

5/ Compared to Iran 12 kg, USSR 42 kg, USA 88 kg, and New Zealand 103 kg (Total red meat 1977).

Table 1: Exports of Livestock Products  
-----Afghan Year -----

	1346 (1967-68)	1347 (1968-69)	1348 (1969-70)	1349 (1970-71)	1350 (1971-72)	1351 (1972-73)	1352 (1973-74)	1353 (1974-75)	1354 (1975-76)	1355 (1976-77)
<b>Casings - 1000 Coils</b>	2104	1874	1467	820	3971	3254	1965	2243	1623	2316
Volume Index	-	-	-	100	484	397	240	274	198	282
Total Value Afs Mil.	-	-	-	52.4	52.4	46.5	46.9	47.0	47.4	41.4
Value Index	-	-	-	100	100	89	89	90	90	79
Value Afs/Coil	46.0	44.0	50.3	43.5	208.3	151.3	92.2	105.4	76.9	95.8
Unit Value Index	100	96	109	95	453	329	200	229	167	208
<b>Karakul - 1000 Pelts</b>	1903	1424	1693	1735	2134	1189	957	827	838	1114
Volume Index	100	75	89	91	112	62	50	43	44	59
Total Value Afs Mil.	1077.6	629.1	982.8	858.0	1483.5	1269.8	960.5	707.0	610.0	1137.2
Value Index	100	58	91	80	138	118	89	66	57	106
Value Afs/Pelt	566	442	580	495	695	1068	1004	855	728	1021
Unit Value Index	100	78	102	87	123	189	177	151	129	180
<b>Hides and Skins - 1000 Units</b>	1752	1902	2375	1628	2336	2074	2323	2118	3242	3246
Volume Index	100	109	136	93	133	118	133	121	185	185
Total Value Afs Mil.	155.1	152.1	195.9	173.8	265.1	252.9	339.9	417.3	664.4	643.0
Value Index	100	98	126	112	155	163	219	269	428	415
Value Afs/Unit	88.5	80.0	82.5	106.7	113.5	122.0	146.3	197.0	204.9	198.1
Unit Value Index	100	90	93	121	128	138	165	223	232	224
<b>Wool and Fine Hair-Tons</b>	3716	5437	5225	5207	6075	4345	3294	4040	5628	4991
Volume Index	100	146	141	140	163	117	89	109	151	134
Total Value Afs Mil.	367.2	520.7	509.4	622.2	673.8	476.5	343.6	364.5	467.1	393.3
Value Index	100	142	139	169	183	130	94	99	127	107
Value Afs/Kg	98.8	95.6	97.5	119.5	110.9	109.7	104.3	90.2	83.0	78.8
Unit Value Index	100	97	99	121	112	111	106	91	84	80
<b>Carpets and Rugs 1000 M<sup>2</sup></b>	-	-	-	395	487	574	512	543	436	739
Volume Index	-	-	-	100	123	145	130	137	110	187
Total Value Afs Mil.	-	-	-	550.6	679.1	877.2	889.3	1184.7	980.6	1266.7
Value Index	-	-	-	100	123	159	162	215	178	230
Value Afs/M <sup>2</sup>	-	-	-	1394	1394	1528	1737	2182	2249	1714
Unit Value Index	-	-	-	100	100	110	125	157	161	123
<b>Value of Total Exports-Mil.</b>	66.4	71.8	81.7	85.1	99.7	124.5	159.1	230.6	235.5	293.4
Value Index	100	108	123	66.4	150	188	240	347	355	442
<b>Value of Livestock Products Including Carpets and Rugs-Mil.</b>	26.4	22.1	29.1	26.5	36.7	36.1	44.2	45.8	49	65.6
Value Index	100	84	110	100	139	137	167	173	186	248
<b>Value of Livestock Exports as Percentage of Total Export Value-%</b>	40	31	36	31	37	29	28	20	21	22

Source: Central Statistics Office

May, 1978

to families with cows, although sheep and goat milk is available in rural areas during spring. Sheep numbers fell by about 40% during the two-year drought (1971-72), and the subsequent building up of flocks has reduced numbers available for slaughter and karakul pelt exports. The build-up in flock numbers took another set back in 1976-77 when drought in the north again caused high losses. Although cattle are maintained primarily as draft animals, they also provide milk and milk products, meat and hides. Camels provide transportation, milk and meat, particularly amongst nomads, while donkey transport is also important. Poultry husbandry is almost entirely backyard scavenging while efforts to expand intensive commercial poultry production have so far made little progress. Estimated livestock numbers and production which probably overstate the meat and milk position are shown in Table 2.

Table 2: ANIMAL NUMBERS AND PRODUCTION

	<u>1976/77</u>	<u>1977/78</u> /a
	<u>-----millions-----</u>	
<b>A. Numbers</b>		
Cattle	3.7	3.42
Of which:		
Milk Cows	1.1	1.026
Sheep	21.2	19.4
Of which:		
Karakuls	6.2	4.8
Goats	3.0	3.0
	<u>-----1,000 tons-----</u>	
<b>B. Production</b>		
Cow Meat	62.3	106.3
Sheep Meat	92.2	97.3
Goat Meat	25.0	25.2
Other Meat	6.8	7.1
Milk from Cows	600	508
Milk from Sheep and Goats	261	211
Wool	25.4	28.3
	<u>-----1,000 pieces---</u>	
Karakul Skins	1,584	2,360
Hides (Horses and Cows)	566	966
Skins (Sheep and Goats)	1,200	1,200
Casings	4,600	4,900

/a Estimates.

Source: Ministry of Agriculture, Planning Department

### C. Animal Husbandry 1/

1.03 Afghan animal husbandry comprises mainly extensive pastoral sheep and goat production, with cattle being restricted principally to irrigated areas, primarily to provide work oxen. Livestock of some kind are found on most farms. Husbandry techniques are well adapted to the harsh environment, but productivity is low as nutrition is poor and disease and parasite control lacking. Agricultural practices in Afghanistan are largely traditional with no more than 15% of farmers presently using chemical fertilizer. Total usage in 1977/78 was 100,000 tons representing about 26 kg per ha cropped which is very low compared to neighboring developing countries. The outstanding livestock husbandry feature is the extensive pastoral system dominated by the seasonal sheep and goat flock migration between winter grazing on the semi-arid plains, and summer mountain pastures. Well adapted husbandry and associated breeds and varieties of livestock and crops have enabled farmers to gain a subsistence living from a difficult agricultural environment. The 12 million rural population live in about 20,000 villages, containing more than 1.2 million farm families in the low-land valleys and plains, which also provide winter bases for about 200,000 nomadic families. About 2.8 <sup>2/</sup> million irrigated hectares provide 85 percent of all food and industrial crops, while crop residues supply a proportion of livestock winter feed. The total land area of about 65 million ha includes about 8 million arable ha, of which only about half is planted annually, due to lack of irrigation water and the need to fallow rainfed areas. Over 40 million ha of grazing is barely sufficient, even in years of 'normal' precipitation, to meet minimum livestock feed requirements.

## II. LIVESTOCK IN THE SEVEN-YEAR PLAN 3/

### A. Plan Goals

2.01 The previous Government launched a Seven-Year Plan (1976-77 to 1982-83) for Social and Economic Development. The Plan proposed an Af 41 billion

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<sup>1/</sup> For a detailed description of types and characteristics of Afghan sheep and cattle, see 'Planning Study of the Agricultural Sector of Afghanistan, (Vol III, Part II, pages 33-55), Robert R. Nathan Associates Inc., Washington, D.C. December 1971.

<sup>2/</sup> Estimates of irrigable land vary widely; of irrigable area only 50-70% is irrigated in any one year, depending on water availability.

<sup>3/</sup> The new Afghan Government suspended this Plan in April, 1978; discussion on its content is included in order to provide some background and perspective of past development planning in the livestock sub-sector; a new 5-year Development Plan was still under preparation when this survey was finalized.

(US\$1.03 billion) program in agriculture and irrigation including livestock, with the objectives of increased output and foreign exchange earnings, higher living standards especially for small farmers, and greater rural resource mobilization. Despite the subsector's estimated 25-30% contribution to GNP, only 5% of the total proposed development expenditure for agriculture and irrigation was allocated to livestock (Table 3). While food self-sufficiency was an important goal, emphasis was placed on cash crops, especially sugar beet and cotton. Virtually, all output growth (about 4.6 percent per annum) was dependent upon productivity increases and more intensive farming methods. The plan projected a fivefold increase in fertilizer use, a fourfold rise in cotton improved seed use, 23 times more use of plant protection chemicals and a threefold increase in agricultural credit.

2.02 The plan recognized the need to increase livestock production to meet population expansion demands. The major livestock subsector objectives included increasing export earnings and meat supply through sheep development, reducing animal losses by increasing forage cultivation, water supply and shelter provision, and increasing the livestock owner's income. A plan feature was the targeted production for annual increases of 3.5% in sheep and goat numbers, 3% increase in cattle numbers, and annual production increases including meat 7.6 percent, milk 4.3 percent, wool 3.2 percent and karakul pelts 4 percent.

2.03 The development strategy for increasing animal numbers and production was based on improving animal health protection, expanding research centers, increasing industrial by-product utilization, improving extension and credit services, providing water supply facilities and shelters, and strengthening the Karakul Institute. Prophylactic animal treatment would increase from about 6.3 million to 11.6 million per annum, an 84% total increase or a little over 9% per annum.

#### B. Programs and Projects

2.04 The plan included the continuation of the First and Second, IDA supported Livestock Projects <sup>1/</sup> in Northwestern Afghanistan, which are designed to increase sheep production, and tap the rich Middle Eastern markets with mutton processed through a modern export standard slaughterhouse. These projects are supported by production components including on-farm development, increasing forage production through groundwater exploitation, extensive veterinary support programs, and sheep improvement center establishment to serve the nomadic and transhumant flocks.

2.05 Karakul sheep development was to be achieved by increasing sheep numbers on Government breeding farms, reviving karakul cooperatives, strengthening the Karakul Institute, and providing credit to flock owners for financing improved sire and winter feed purchases. The plan included provision for a

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<sup>1/</sup> IDA credits 375-AF and 649-AF, Report Nos. 56a-AF, March 1973, 1043-AF, May 1976.

Table 3. AGRICULTURE AND IRRIGATION DEVELOPMENT EXPENDITURES  
(Af billion)

	<u>Total</u> (1969/70-1975/76)	<u>Budget</u> (1976/77)	<u>7-Year Plan</u> (1976/77-1982/83)
Ministry of Agriculture, Total including: Cooperatives and Extension	<u>4,059</u>	<u>788.85</u>	<u>7,660</u>
Crop Development	516	173.08	1,928
Livestock Development	278	101.08	995
Seeds and Fertilizers	-	70.93	860
Regional Projects:			
Kunar	87	67.95	450
Nagarhar	1,906	237.30	1,719
Paktia	1,494	111.17	804
Agricultural Bank	611	271.80	1,450
Herat Livestock Devt. Corporation	68	126.00	1,103
Ministry of Water and Power:			
Irrigation Construction	2,368	1,392.00	19,318
Irrigation Surveys	244	82.00	585
Helmand and Argandab Devt. Authority	814	763.00	12,087
Total Irrigation	<u>3,426</u>	<u>2,237.00</u>	<u>31,990</u>
Rural Development Dept.	<u>521</u>	<u>140.00</u>	<u>1,362</u>
Total Agriculture and Irrigation	<u>8,006</u>	<u>3,165.85</u>	<u>41,012</u>
National TOTAL	<u>29,175</u>	<u>14,027.00</u>	<u>174,435</u>
Agriculture and Irrigation (percentage of total) <sup>/1</sup>	27.4	22.6	23.5
Livestock - Percentage of Agriculture and Irrigation	4	7	5
- Percentage of total	1	1.6	1.2

/1 Including HLDC

Source: 'Journey to Economic Development', IBRD Report 1777a-AF, Vol. II, Page 164.



detailed range pasture survey, so as to introduce protection and conservation in pasture grazing allocation; a new Kabul vaccine production laboratory; and deep frozen semen technology for the existing artificial insemination scheme. For animal health protection the number of animal health centers was to be increased from 17 to 26 plus 50 sub-clinics. Further proposals included seri culture development in Herat, a large scale poultry complex producing one million broilers and 25 million eggs per annum, a sheep breeding farm of 6 to 20,000 head; a slaughterhouse in Ghazni and expansion of the Kabul abattoir, rehabilitation of the Pul-i-Charki woolen textile mill; a new woolen mill in Kandahar; and establishment of tanneries in Herat and Ghazni.

#### C. Progress to Date

2.06 After completion of two Plan years most projects were behind schedule. The Ghazni slaughterhouse and tannery were deferred indefinitely, but an acceptable feasibility study was completed for the Herat tannery. A feasibility study for the expanded Kabul woolen textile mill has recently commenced, and the Kandahar mill is expected to come into production in early 1979. A feasibility study was completed 1/ for the proposed sheep and poultry farms. Implementation of the First and Second Livestock Development Projects in Herat is progressing, but they are not sufficiently advanced to have significantly increased livestock production. Slaughtering for the domestic market has commenced but export contracts have yet to be finalized. The new Kabul vaccine laboratory is under construction, and animal health clinic establishment is progressing. A completed feasibility study 2/ for a dairy development project based on Kabul includes an artificial breeding component which would use deep frozen semen technology. A separate national AI service study has also apparently been undertaken. Karakul development has made little progress, and the range resources study has not commenced. A new Baghlan cheese factory has been completed, and one of five small proposed subsidiary plants established in Samangan Province. A processed feed mill feasibility study 3/ in Baghlan for using sugar beet industrial by-products has also been completed. During the first two Plan years sheep and cattle numbers declined annually 2.5% and 2.8% respectively due to the effects of drought. To achieve the projected targets annual growth rates would have had to increase substantially above the projected 4.6% per annum.

#### D. The Plan in Perspective

2.07 While the Seven-Year Plan represented an endeavour to promote sub-sector development it largely failed to grip the real livestock production

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- 1/ It is understood that the study was completed by Bulgarian consultants under bilateral aid; the report was not available to the survey mission.
- 2/ FAO/ISCDD, Final Report, Rome, December 1977.
- 3/ 'Provisional and Second Report of an Animal Feed Industry in the Region of Baghlan', Swiss Technical Cooperation, March and July, 1977.

issues. A fundamental strategic error was the targeted increases for sheep and cattle numbers by about 27% and 20% respectively. The existing feed base for present numbers is inadequate and increases would, without a corresponding feed supply improvement, be counter-productive. The major objective in Afghan livestock production should be to maintain numbers and increase individual animal productivity through improved feeding and disease control, while concurrently reducing mortality and increasing off-take. With the exception of the proposed feed-mill, the Plan included no meaningful program for increasing the feed base. No reliable statistical data are available as indicators but even the official figures for livestock numbers show little change since 1969/70; sheep and goats 24.7 million compared to 24.2 (1977/78). Recorded export volume during the 10 years ending March 1977 (Table 1 page 2) gives some indication of production trends; wool and hair virtually unchanged; karakul down significantly; hides and skins showing a long run upward trend; casings up significantly; and carpets and rugs following a similar encouraging trend. With little likelihood of any significant early feed base improvement, achievement of the targeted output increases would have been very unlikely. It is to be hoped that the lessons of the past will be reflected in the overall strategy, policies and programs incorporated in the yet to be finalized new 5-year development plan.

### III. CONSTRAINTS TO IMPROVING LIVESTOCK PRODUCTION 1/

#### A. Animal Nutrition and Rangelands 2/

3.01 Livestock development is seen as those strategies, policies and programs which would facilitate achieving the goals suggested in para 4.01. For the purposes of this report agricultural production refers specifically to crops, both grain and cash.

3.02 Animal malnutrition is the number one Afghan livestock "disease". The basic problem is simply too many animals for the amount of feed available. The great majority of livestock graze the rangelands and while animals are individually owned the rangelands are community property and are used in most cases free of charge. Because of this basic issue, no meaningful improvement in rangeland production can be obtained until some effective means of control, of both livestock and people using the rangelands, is achieved. Rangeland control is a complex of closely related, little understood issues.

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1/ The constraints are discussed in detail in Annexes 1 through 5.

2/ Disease and animal nutrition are constraints in all aspects of livestock production. To avoid repetition these 2 factors may not be specifically mentioned in subsequent paragraphs. As the rangelands are the greatest source of livestock feed the two aspects are so interlocked that a meaningful discussion on one cannot be held without the other.

The social aspect of livestock ownership is an important constraint in livestock development. The nomadic and transhumant <sup>1/</sup> livestock owners who own about 80% of the total sheep and goats, regard livestock as social and economic wealth. The factors which would persuade these livestock owners to control numbers, increase individual animal productivity, and increase offtake by selling are not clearly understood. Factors adversely affecting rangeland productivity on an increasing scale include bush removal for domestic fuel use and rainfed crop production. The expansion of rainfed wheat production probably reflects increasing demand from increasing population with a more or less fixed amount of irrigated land.

3.03 Sedentary farmers keep livestock largely to provide draft power, transportation or domestic food needs. In comparison to crop production, animals have low priority, and generally are not seen as a potentially important income source. While potential exists for improving animal nutrition on the ranges the complexity of the socio-ecological factors involved dictate that development will be slow, and no meaningful improvement in this sector can be obtained in the short run. Thus initial attention must focus on increasing animal production through sheep fattening and milk cows on irrigated land. Table 4 page 10 shows estimated gross margins to be obtained from various types of agricultural crops and sheep fattening and milk cows based on alfalfa (medicago sp.) production. Afghan alfalfa yields are among the highest in the world <sup>2/</sup> but a critical disadvantage is its high summer water requirement, which, inter alia, the producer sees as increasing the risks associated with increasing livestock production.

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<sup>1/</sup> Nomads are regarded as those who have no fixed abode and live constantly in tents. Transhumants are a conglomerate of semi-nomads and semi-sedentary people who usually own some land including a dwelling, but who spend varying times living in tents tending their sheep and goat flocks.

<sup>2/</sup> Average yields of over 25 tons dry matter per hectare have been measured on farmers fields in the Hari Rud valley where water is adequate. National averages would be less than 20 tons and may be closer to 10-12 tons depending on climate and soil; average California yields under irrigation would be about 14 to 15,000 tons dry matter/hectare; except for HLDC figures, reliable data on actual farm alfalfa productivity are lacking.

Table 4: ESTIMATED GROSS MARGINS/HA FROM PRINCIPAL CROPS AFTER ALLOWING FOR LABOR COSTS AND SUMMER WATER COSTS /a

Crop	Gross <u>/c</u>	Labor <u>/b</u>	Summer <u>/c</u>	Gross	Rank
	Income		Water	Margin	
	-----Af '000-----	-----	-----Af '000-----	-----	
Wheat	14	2.3	-	11.7	-
Cotton	22	3.4	18.6	0.0	9
Rice	37	5.6	20.1	11.3	7
Vegetables	36	4.4	9.8	21.8	5
Corn	8	1.5	16.1	(9.6)	10
Potatoes	41	4.9	23.8	12.3	6
Melons	40	3.5	14.0	22.5	4
Vineyard	44	3.8	16.4	23.8	3
Orchard	60	3.4	19.6	37.0	2
Sheep fattening <u>/d</u> (i)	78	7.2	24.7	46.1	1
(ii)	39	5.5	24.7	8.8	8
Milk <u>/e</u>	46	9.0	24.7	12.3	6

/a These estimates assume adequate summer water is available; in areas where this is not the case, summer cropping, including alfalfa, may not be practical.

/b Af 50/man day including family labor.

/c Summer water valued at Af 2410/'000 M3 which represents approximate 'gross margin' from cotton after allowing for labor costs.

/d For detail of sheep fattening calculation see Annex 2, Table 2, page 13.

/e Assumes 250 kg cow producing 1000 kg milk/lactation (0.7 yr). For simplified comparison purposes assume all alfalfa feeding; yield 25,000 kg DM/ha, requiring 3,300 kg/cow/annum. No income assumed from sale of aged cattle and calves to compensate for no allowance for feeding of supporting cattle-heifers, calves, bulls.

Source: Mission estimates

3.04 Table 4 shows a comparison of crop gross margins after deducting water costs based on the opportunity cost of water for cotton production which is roughly estimated at Af 2,410 per 1,000 m3 and labor. At high yields in favorable areas and current prices sheep fattening on alfalfa appears the most profitable alternative. However at lower yields (12,500 kg DM/ha) and assuming the same summer water consumption as 'high' yields, it is less profitable than most other crops except corn and cotton. However combinations of double cropping may give better returns e.g. crop combinations involving wheat, melons, rice, beans and corn. The reasons why farmers have not adopted this form of production in large measure is probably due to associated risks which include:

- (a) high investment in alfalfa establishment and livestock;
- (b) possible alfalfa loss in years of severe summer water shortage;

- (c) cyclic sheep price movements both for purchases and sale;
- (d) high disease losses resulting from inadequate veterinary protection; and
- (e) possibility that if land and water are diverted to alfalfa and livestock production, insufficient staple food would be available to meet family needs.

While the provision of an assured market (e.g. Herat Slaughterhouse) and the introduction of effective veterinary cover would markedly reduce risks farmers need to see this demonstrated over time. In the cultural and historical context irrigation water is used for food production and sheep are grazed on the rangelands. Only after a period of assured food security and profitable sheep production on irrigated land could farmers be expected to adopt fodder production to a significant extent. Food security is critical in an almost totally subsistence society. With a given water supply, which is very dependent on annual precipitation, the maximum cropped area is fixed. Increasing the area of alfalfa grown (and for that matter other high water demanding crops), probably reduces the area of wheat grown in a proportion of 2:1 i.e. an increase of 1 ha of alfalfa means 2 ha less of wheat.

3.05 Table 5 shows the value of animal products (sheep meat, poultry meat, milk and eggs) which can be obtained from feeding corn. To produce one kilo of sheep meat valued at Af 45, 8 kilos of corn costing Af 48 would need to be fed; an uneconomic cost/price ratio of 1:0.9. In comparison, 2.5 kg of corn costing Af 15 if fed to poultry for meat production under good management, would be required to produce one kilo of meat valued at Af 60; a cost price ratio of 1:4. Because of its lower cost alfalfa (footnote /b) can profitably be fed to fattening sheep (ratio 1:2) and milking cows (ratio of 1:2.6).

Table 5: APPROXIMATE FEED COST: PRODUCT PRICE RATIOS

	Feed Conversion Ratio Kg Corn: Kg Product	Current Farm Gate Product Price Af/Kg	Feed Cost /a Product Price Ratio
Sheep	8.0:1	45	$48:45 \frac{/b}{=} = 1:0.9$
Poultry Meat	2.5:1	60	$15:60 = 1:4$
Dairy Cattle-Milk	1:1	7	$6:7 \frac{/b}{=} = 1:1.2$
Eggs /c	3.5:1	2	$20:36 = 1:1.8$

/a Assume corn Af 6/kg retail; farm gate price probably about Af 5/kg.

/b Using farm grown alfalfa at estimated value/cost of Af 0.6/kg/green (Af 2.7/kg/DM) the ratio for sheep becomes  $22:45 = 1:2$ , and for milk  $2.7:7 = 1:2.6$ .

/c 18 eggs = 1 kg.

Source: Mission estimates

## B. Institutional Constraints

3.06 Agriculture and livestock production is constrained by a number of complex interrelating factors but, until the advent of the new Government in 1978, the overriding constraint to development had been Government's inability to establish a satisfactory policy framework and to provide effective supporting services. The Ministry of Agriculture has, in the past, been unable to effectively focus on basic livestock development issues and to concentrate sufficient resources to make a significant impact in any particular area. Real understanding of the existing situation of livestock and livestock owners has been inadequate and some misconceptions existed. The operating framework including administration, financial and staff management has been inadequate to meet the needs of dynamic development (Annex 5).

3.07 Qualified staff shortage has been frequently cited as a critical factor. While this is true of a number of specialist disciplines the emphasis should have been upon a shortage of trained, motivated staff. In-service training, staff supervision, and delegation of authority have been weakly developed in the administrative structure. Furthermore, there have been too many examples of well qualified people being under-utilized or not used at all. A general reluctance of staff to take field assignments was understandable as there were few material rewards for serving in areas where facilities and transport were poor, good housing difficult to obtain, and where Head Office support and interest is too often inadequate. Little authority was given to field staff in the past, and promotion was usually most likely obtained by staying close to the center. While many exceptions existed staff motivation, morale and utilization was low. The new Government has shown an awareness of these problems and is taking steps to alleviate them.

## C. Animal Health

3.08 An inability to identify priorities and limit objectives has led to a dissipation of limited resources in manpower, finance and equipment and despite a long period of substantial technical and financial assistance, an effective animal health service has not yet been established. While an acute shortage of qualified and experienced veterinarians exists in terms of need, the real problem has been the overall operating framework deficiencies e.g. inadequate support for field staff; little delegation of authority; absence of operational plans and objective definition for field staff.

3.09 Diseases of national economic importance which should receive control and eradication priority have not been defined and little attention has been given to the economics of animal health control. While most known animal diseases exist in Afghanistan the extent and area of concentration is not known with sufficient accuracy. The policy of providing entirely free veterinary services both prophylactic and clinical, together with some drugs and medicines, places a heavy drain on scarce financial resources and hence limits the extent and quality of services. The nomadic and transhumant system also constrains effective animal health program implementation. Veterinary drugs

are available commercially through a limited but expanding number of Afghan Fertilizer Company (AFC) retail outlets. AFC enjoys a monopoly on the importing and sale of these drugs and retail prices in comparison with those of possible alternatives, appear high. Understanding and sympathy for farmers problems needs substantial improvement.

3.10 Due to a complex of factors livestock owners have rather distrusted Government and Government officials which made obtaining their cooperation a task requiring special patience and understanding which has not always existed. Animal Health and Production Extension personnel are insufficiently trained in animal husbandry and nutrition and have inadequate understanding of the interactions of livestock and forage production, water use and food security, and how they affect farmer attitudes.

#### D. Animal Breeding and Husbandry

3.11 Constraints include insufficient adequately trained technical staff capable of undertaking a meaningful breeding and animal husbandry research program. Priority for Government expenditure and for most technical assistance received in livestock has been directed toward animal health control, and animal breeding and husbandry have received low priority. A lack of appreciation exists of the benefits to be obtained from well conducted breeding programs which are essentially long term in nature. They cannot be undertaken annually, and need continuing support including finance and staff. No evaluation has been done of the existing outdated artificial insemination scheme's effectiveness and little evidence is available for planners and those who allocate financial resources to justify an increase in money for this type of operation. Government operates a number of farms including sheep production dairying and poultry, which suffer from Government administration and management framework problems, are inadequately supported with experienced staff, finance and facilities and given little direction as to how they should achieve defined objectives. In many cases the basic facilities are satisfactory and the farms have considerable potential.

#### E. Wool

3.12 Most Afghan sheep produce wool which although potentially good, is largely multi-colored and of poor quality. Antiquated shearing techniques adversely affect wool quality by causing fibres to be of uneven length. Inadequate access to consistently reliable markets and the migratory nature of sheep grazing, are serious constraints to improving wool production. While the marketing system works reasonably well the producer has little alternative but to sell mostly to the same trader every year. Furthermore, because of the price received and quantities produced, wool is seen as little else than a by-product contributing less than 10% of flockowners incomes. Current farm gate prices for raw wool are estimated as follows:

<u>Color</u>	<u>Af/Kg</u>	<u>\$/Kg /1</u>
White	45	1.13
Black	16	0.40
Brown	18	0.45

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/1 Af 40: US\$1.00.

Source: Mission data.

Wool is purchased from farmers on a negotiated price basis and in most cases is "washed". Farm gate prices in 1971 were about Af18 for black and multi-colored, and Af30-40 for white and cleaner wool and since then the export value per kg of raw wool has declined from Af119 (US\$2.98) to Af79 (US\$1.98) 1/ (34%). 2/ However, as the US\$ value of the Afghani doubled during this time there has been an increase (\$1.49 to \$1.98) in the US\$ export price. As a landlocked country a considerable distance from the main international markets Afghanistan is presently not well placed to compete in the international wool trade, and is unlikely to develop a scoured wool export trade or a viable export trade in woolen yarns and finished goods except carpets and handicrafts.

#### F. Meat

3.13 Meat industry development constraints include the competition of livestock with subsistence crops for water (in the absence of food security 3/) and in meat processing a severe shortage of managerial experience, skills and facilities. The use of arable land and water for forage production is resisted while farmers food needs remain at risk. The development of a profitable mutton export trade, despite favorable proximity to high priced markets in neighboring countries (Table 9 page 29), is presently constrained by marketing skills and experience. Such a trade is also dependent on animal

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1/ Using 1978 exchange rate of Af40 = 1 US\$.

2/ In comparison average price for greasy wool (48s, 35 micron count) at New Zealand (world's largest producer of coarser wools) auctions was NZ\$0.45 in 1970/71 and NZ\$1.80 in 1977/78.

3/ National 'Food Security' and 'Self Sufficiency' are related but not synonymous concepts. 'Self Sufficiency' envisages meeting total annual demand for wheat from domestic production. 'Security' would provide for total demand to be met over a time period, including drought years, from a supply including storage, domestic production, and strategic importation. To the farmer food 'Security' means being assured of sufficient wheat for family requirements every year either from his own production or purchases.



disease control. If recent trends continue, purchaser health standards are certain to become more stringent. The Afghani foreign exchange rate mitigates against viable export meat industry development and other export oriented activities. In 1972/73 the annual average free rate was Af 80:US\$1, but in June 1978 had increased to Af 40:US\$1 and the trend continues. The Revolutionary Government recognized this issue and has now established a special mutton export exchange rate of Af 45.3 = US\$1.0.

#### G. Hides and Skins

3.14 The hides and skins industry is constrained by marketing and poor handling of raw pieces. Leather quality is adversely affected by existing tanning techniques and, while distance from large international markets makes it difficult to compete in the international leather trade, the market for salted and pickled pelts could be further profitably developed.

#### H. Poultry

3.15 Constraints to improving poultry production include the absence of commercially produced balanced poultry feedstuffs; low genetic quality of the domestic flocks; no supporting extension services; lack of marketing systems to encourage production in outlying areas; and perhaps most importantly the problem of the nation being barely self-sufficient in food grains.

#### I. Milk

3.16 The absence of marketing opportunities including facilities such as transport, collection and storage, together with the subsistence nature of farming is a major constraint to developing dairy production. A substantial and sustained increase in dairy production can only be based on irrigated fodder production.

#### J. Credit

3.17 Agricultural credit is frequently cited as an important constraint. This may be so but it is by no means certain that it is the unavailability of credit which prevents farmers from digging wells, growing more feed, buying winter feed, or expanding flock and herd numbers. It may be more important in marketing and processing industries. What is a constraint is not availability of reasonably priced credit but access to it. This subject is discussed more fully in para. 5.26 below.

IV. GOALS, STRATEGIES, PROGRAMS AND PROJECTS  
FOR LIVESTOCK DEVELOPMENT

A. Goals

4.01 Agriculture in Afghanistan means about 20,000 villages and 12 million people, farmers landed and landless, and some 1.5 million nomads, amongst all of whom dwell the majority living in absolute poverty with per capita incomes seldom exceeding US\$85. Table 6 gives an example of per capita incomes and land availability in 1970. The absolute rural poverty level was calculated in 1976/77 to be Af 3,972 <sup>1/</sup> (US\$85).

Table 6: AVERAGE ANNUAL PER CAPITA INCOME AND LAND AVAILABILITY, 1970

Province	Sample Population	Average Per Capita Income (Af)	Land-Irrigated Total (Jeribs) <sup>/b</sup>	Equivalent <sup>/a</sup> Per Capita (Jeribs) <sup>/b</sup>	% of Population in Absolute Poverty <sup>/c</sup>
Baghlan	1015	6670	2432	2.40	11
Kandahar	990	5631	2369	2.40	25
Kunduz	1125	4508	2866	2.54	21
Parwan	684	2653	632	0.92	48
Ghazni	1633	2514	1746	1.07	59
Nangarhar	1094	2041	1014	0.93	60
Laghman	385	2671	493	1.28	47

<sup>/a</sup> Dry-farmed land productivity assumed 1/3 irrigated equivalent.

<sup>/b</sup> Five jeribs equal one hectare.

<sup>/c</sup> Based on 1969/70 absolute poverty level, calculated to be Af 2,907.

Source: Ministry of Planning, Survey of Progress - 1970-71.

What land distribution data are available show that prior to 1978, about 80% of the land holders owned areas of less than 3.9 ha, and 98% less than 20 ha, while about 2% held nearly 34% of the total land area. These figures related largely to irrigable land.

<sup>1/</sup> IBRD Report No. 1777a-AF 'Journey to Economic Development', March 1978, Vol. II, pages 76-77.

Table 7: LAND DISTRIBUTION IN AFGHANISTAN, 1967

Size of Holding (hectares)	Percent of Holders	Percent of Land
0 - 0.5	40.0	4.0
0.6 - 3.9	40.0	25.0
4.0 - 19.9	17.8	29.0
20.0 - 99.9	2.0	34.0
100+	<u>0.2</u>	<u>8.0</u>
	100.0%	100.0%

Source: Smith, et. al., Area Handbook for Afghanistan, 1973, p. xxxvi (based on 1967 Survey).

If population trends follow the most conservative estimates, the year 2000 will see about 24.2 million <sup>1/</sup> Afghans demanding, even at present meagre per capita consumption and income levels, something like 278,000 tons of meat and about 1,452,000 tons of milk equivalent; roughly 80-90% above present milk production, and 50% for meat. <sup>2/</sup> Thus if the basic food, housing, health care, and education needs are to be provided as quickly as possible at lowest cost, livestock production programs are an urgent necessity and should be directed at the village level where the need, and potential, is highest. Increased livestock production is essential as a means of increasing protein available to present and forecasted population. <sup>3/</sup> As protein deficiency is most critical in young children and nursing mothers' diets, emphasis should be placed on increasing milk and egg production. Policies aimed at improving meat supply to poorer people by artificially lowering prices, imposing meatless days or making exports illegal, must be treated with caution as these tend to enable richer people to increase consumption while the price still remains too high to allow lower income sections to benefit. Such policies also discourage production and encourage greater export smuggling thereby compounding the problem of meeting local demand through adequate supply at reasonable prices. The meat export price which can be obtained from Iran and Gulf States is sufficiently high to provide incentive for increasing sheep production and earning foreign exchange, which could be used to import greater quantities of lower priced protein such as milk powder and soya more, suitable for infant consumption.

<sup>1/</sup> IBRD Report No. 1777a-AF, Vol. I, Page 39.

<sup>2/</sup> A 2% per annum increase in demand (over present supply) would require in 2000, 324,000 tons of meat, and 1,500,000 tons of milk annually.

<sup>3/</sup> Edible protein can also be provided from beans, peas, vegetables and introducing new crops such as soya which may in terms of efficiency of resource use e.g. water, land and capital, prove more economic to the nation. However, livestock products will remain an important source of protein in a society where their use is traditional, and where total reliance of plant protein as opposed to animal protein would be neither desirable nor practical.

B. The Approach - Lessons Learned

4.02 Attempts to improve traditional livestock sector productivity in many developing countries have not always been successful. The factors which have contributed to a lack of success include a failure to understand the full social implications of livestock in the whole society and to appreciate that, subsistence farmers or pastoralists place first importance on food security. Returns from alternative forms of production must be very high for the subsistence farmer to justify the risks involved in making changes. Too much "development" is "imposed" from the top down and the people it is supposed to assist either don't understand or want the proposed development. In many cases expected benefits have not materialized or have come too slowly, due to overly optimistic original projections. Too often, livestock have been considered in isolation instead of one component in a complex involving animals, agriculture, and people. Follow-up extension and supporting services have been lacking or inadequate, and those providing these services, have in too many cases, not appreciated the importance of, and the process by which people's confidence is gained. Where projects have proved less successful than planned the absence of monitoring and evaluation systems and responsive management has prevented timely reviews and modifications capable of changing failure into success.

C. The Resource Base and the Potential

4.03 Afghanistan's natural resource base is not strong. The climate is generally harsh with extremes of heat and cold and the 40 million ha of rangeland 'pastures' are severely depleted. Due to the rangeland 'pasture's' poor productive capacity (500-1,100 kg DM/ha/annum), 1/ the animals exist in precarious balance with the available feed base. Periodic cyclic droughts result in heavy losses. In relation to need, water, not land, is the most valuable natural resource. It is in short supply, particularly during summer, and indirectly this considerably weakens the feed base.

4.04 Due to its development stage and long isolation from prosperous markets, Afghanistan is not well endowed with people with modern marketing and managerial skills, and the livestock processing and marketing sector, except for carpets and karakul remains weakly developed. Afghan farmers, including livestock owners, given their limited resources are skilled, resourceful, self-reliant, and hard working. Like farmers the world over, given adequate incentives, genuine encouragement, market opportunities, and adequate supporting services they will respond. The nomads and transhumants are a seldom appreciated resource for by utilizing the harsh, inaccessible rangelands, which otherwise would be largely wasted, they make an important contribution to the economy.

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1/ Mission estimate; variations would be even wider with almost nil production in some areas in years of very low precipitation; in assessing carrying capacity seasonal productivity must also be considered e.g. spring growth probably accounts for over 70% of total seasonal digestible dry matter production on most Afghan pastures.

4.05 Despite weaknesses in the the 'natural' resource base, the livestock have great productive potential. However, due to the combined ravages of mal-nutrition and disease, annual animal productivity is very low. Production co-efficients include 1 kg of poor quality wool per head; 1/ lambing rate about 60-75%; virtually no twinning; age at first lambing 2-3 years; mortality about 20%; slow growth rates; calving rate about 50%; milk production 1,000 kg per lactation; age at first calving 3-4 years; and an overall offtake of only about 16%. These indices are not a guide to the real potential, particularly for sheep, which, when adequately fed and given satisfactory health control, demonstrate high productive capability. Table 8 gives some guide to possible improvements in sheep production coefficients which could be obtained with only 'reasonable' improvements in nutrition and disease control.

Table 8: CHANGES IN TECHNICAL COEFFICIENTS OF SHEEP PRODUCTION  
ASSUMING IMPROVED NUTRITION LEVEL AND REASONABLE DISEASE CONTROL

Coefficient	Present	Reasonable Nutrition and Disease Control
Lambing Rate	60-75%	80-90%
Age at First Lambing	2-3 yrs.	2 yrs.
Mature Ewe Liveweight	25-35 kg	35-45 kg
Mortality - Mature Ewes	15-20%	10%
- Ewes 6 months	10-20%	6-10%
- Lambs up to 6 months	15-20%	10%
Wool Production	1 kg	1.5-2.5 kg
Annual Live Offtake assuming numbers remain static	10-20%	30-40%

Source: Mission estimates.

As existing breeds are remarkably adapted to the harsh environment and display wide genetic background and thus a good potential from breed improvement new sheep breed introduction is not recommended. 2/ For dairy production, however, crossbreeding of the national herd with improved breeds would be desirable. Efficient poultry production however, can only be based on imported parent stock but nothing can be achieved unless disease is controlled, the feed base substantially improved, and farmers provided with incentives and family food security.

1/ Comparative figures (1976/77) for main world wool producers include Argentina 5 kg, Australia 5.2 kg, New Zealand 5.2 kg, Uruguay 3.9 kg, and USSR 3.1 kg.

2/ An attempt to introduce fine wool merino sheep in the 1960's ended in the death of all the imported animals; instead of introducing new breeds e.g. to provide fine wool to balance local coarse wool in textiles, Afghanistan would be better to concentrate on improving local breed productivity and import the limited quantities of fine wool needed; also locally produced woollen goods industry should be so designed to keep the demand for fine wool to a minimum.

4.06 Overall goals for the livestock sub-sector should be to economically increase livestock production in order to:

- (i) raise the incomes and standard of living of livestock producers in particular and the rural population in general;
- (ii) promote self-sustaining rural development, <sup>1/</sup> a feature of Afghanistan which is conspicuously absent;
- (iii) strengthen the national economy by increasing: raw material supply for processing industries, exports, rural employment opportunities; and assisting the achievement of security in basic food production.

#### D. Strategies

4.07 How best to achieve these goals is a matter for debate, but taking into account past experiences, available resources and the factors constraining their successful deployment the following basic strategies are recommended:

- (i) Overall strategy should be to devise and implement programs which would have the maximum impact at the 'grass roots' farm level, attack directly the inadequate 'basic needs' problem, and be sufficiently economically orientated to be 'self sustaining'.
- (ii) In order to initiate and maintain self-sustaining development, and recognizing the crucial role of livestock of the vast majority of Afghan farmers and nomads, the means of production, and processing and marketing sectors should, be retained largely in the private/cooperative sector. Government should confine its role to being essentially a catalyst in stimulating livestock production, establishing national policy and the "climate" for its successful implementation, providing advice and guidance, conducting research, providing effective extension and other support services, and should not endeavor to play a major direct role in livestock production, processing and marketing which can be more flexibly promoted by the private sector.
- (iii) Programs should be designed not at increasing total livestock numbers, but increasing productivity and offtake from the present herds and flocks.

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<sup>1/</sup> Self sustaining development is interpreted as being development which is spontaneous, self financing, and apart from initial promotion and provision of basic infrastructure does not require continuing Government financial support.

- (iv) Priority should be given to improving animal nutrition through first achieving national food security, then through appropriate incentive mechanisms (designed to maintain a balance between food, cash and forage crops), diverting water to forage production as part of agronomically and economically sound crop rotations, and ultimately through long-term research, survey and experiment, controlling both animals and people using the rangelands. As part of sound crop rotations, an increase in land and water resources allocated to legume forage production, would, in the medium and long term, not necessarily result in lower production of other crops. Legumes can, through their beneficial effects on soil 'condition' and fixation of nitrogen, result in increased production of crops subsequently grown on the same area (Afghan farmers repeatedly report higher yields when wheat follows alfalfa or clover). Furthermore, forage fed to livestock is converted, to readily available plant nutrients (N, P, K) in the form of dung and urine, which if returned to the soil, provides an additional production 'bonus'. Livestock can therefore, be an integral and beneficial part of any agricultural production improvement program.
- (v) An upgrading of the effectiveness of Government institutions, particularly the Ministry of Agriculture, as development agencies should be an essential element of livestock development strategy. 1/
- (vi) The strategy for increasing meat production, except for poultry, should aim to increase offtake from the breeding herds and flocks, and in order to increase weights quickly, focus upon subjecting animals prior to slaughter, to a short intensive feeding period based on leguminous forage produced under irrigation as part of sound crop rotations. For meat, milk, and poultry production, programs should be largely based on family operated farms, and on providing the incentives, consistent with national resource use priorities, which would give encouragement to these forms of farm production. With poultry a case can be made for larger commercial operations, but while disease control efficiency remains comparatively low and managerial skills weakly developed, care should be exercised in establishing large commercial enterprises which appear attractive on paper but in practice, due to these weaknesses, prove unprofitable. Meat marketing and processing strategy should be based on relevant animal production programs. Priority should be given to ensuring full Herat abattoir utilization and establishing the export industry which could be a major factor in initiating self-sustaining development. No additional export plants should be planned and processing for the domestic market should be based meantime, on low cost, simple facilities.

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1/ The new Government is already moving in this direction.

- (vii) Rangeland strategy should focus upon devising programs which will increase knowledge of the total system and lead to formulation of practical projects based on numbers control of animals and people which would allow controlled management and improved technology to be introduced. A serious potential danger exists in implementing rangeland-nomad programs which are based on inadequate knowledge of the total system and which deal with only isolated components such as water supply, forage storage, veterinary services or sheep/goat dips.
- (viii) Strategy for wool should focus upon improving the quantity and quality (particularly color) of production, improving farmer marketing opportunities and incentives, expanding (quality and quantity) carpet and handicraft production for export, and producing woolen goods and textiles, sufficient to meet domestic demand only.
- (ix) Karakul industry strategy should strengthen the existing marketing and processing services with the overall objective of maintaining quality and ensuring a mechanism by which the trade may quickly respond to international market changes. 1/
- (x) Milk production, processing and marketing should be based on the opportunity which exists for dairying to become the initiator of self-sustaining development. Production, and ultimately processing and marketing, should remain in the producers' hands (through cooperatives) with necessary supporting services provided by Government. To obtain maximum advantage from limited imports, production should be based on seasonal calving at the farm level and milk reconstitution during winter. Unless it was heavily subsidized the production cost of winter milk, because it would have to be largely based on concentrate feeding of cows, would probably result in unacceptable high retail prices. Using imported components (skim milk powder and butter oil) reconstituted milk could probably be produced, at current costs, for about US\$0.13-0.14 per litre. This would include plant investment and operating costs. The current pasteurized milk retail price in Kabul is Af 13 per liter (US\$0.33). Presently the Afghani could be considered overvalued and a more realistic rate of say Af 50:US\$1 would give a reconstituted milk price of US\$0.26 per liter. Long run projections suggest that international milk product prices will probably not increase. In deciding whether investment in dairying is justifiable therefore, Afghanistan must place a high value on the wider dimensions including employment opportunities, stabilizing

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1/ A useful and potentially economic by-product of the karakul industry would be rennet production from slaughtered lambs; collection organization would be difficult and require careful prior planning; the production technique was successfully tried in the early 1970's by the UNDP Animal Health Project.



farm incomes, beneficial social changes in rural society, and ultimately foreign exchange. Taking these factors into account dairying is likely to prove economically and socially justifiable, but the risks would be minimized by concentrating development at the small farm level. A safer course of action might be to base dairy supplies on both local milk production and reconstitution. While a combination of State owned dairy farms and smallholder production with the State Farms acting as the focal point for collection, processing and marketing and providing back-up extension and technical assistance, could prove economically viable and socially and politically attractive, Government should exercise caution in approaching the expansion of State owned farms. The technology practiced on such properties is invariably high cost, capital intensive and in too many ways has little demonstration relevance to smallholders. The amount of capital and skilled manpower invested in State Farms has, in too many countries, proved disproportionate to the benefits obtained and would have been better directed towards assisting smallholders to increase production and efficiency (in Afghan agriculture the overwhelming potential for increasing productivity lies with the private sector). Also Afghanistan does not presently possess the high degree of managerial skills necessary to ensure that larger scale dairy operations (which require a high degree of managerial skill) are efficiently operated and prove cost effective. Like large poultry operations, State operated dairy farms can appear attractive on paper, but in practice, world wide experience has shown that the end result usually falls well below expectations.

- (xi) In a country barely self-sufficient in food grains expansion of grain consuming livestock operations would not normally be justifiable. However taking account of present proposals and programs which should result in wheat price stabilization and national security in supply, together with long run projected meat demands, expanded poultry production should be seriously considered. In comparison to sheep and goat meat, production could be rapidly expanded, economically and without undue risk. Furthermore expanded poultry production could release more mutton for export and diversify and improve small farm income. In order to be economically viable poultry production must be based on improved stock farmed with a high level of management, husbandry and veterinary control. Units should be kept small to minimize losses incurred in disease outbreaks, the risk of which is always high. Because of the high degree of management skill and economic motivation required for successful poultry keeping, emphasis should be placed on development within the private sector either as an additional activity on small farms or in larger specialist units (see also comments on State owned dairy farms para (x) above which apply equally to poultry). The public sector is, however, probably better placed to initiate and control the required processed feed production.

Government would also need to import the parent stock and multiply these for release to production units and provide the required veterinary and extension services. The size of unit (both large and small) which would prove optimally viable would have to be determined by detailed financial and economic analysis which would examine a range of alternative possibilities using differing technologies and production coefficients.

- (xii) Leather, hides and skins offer opportunity for expanding the small existing export trade. Emphasis should be on improving quality and a technical assistance program could be usefully employed to establish a small extension service to butchers, farmers, and tanneries.

#### E. Policies, Programs, and Projects

4.08 Using the goals suggested in para 4.01 and the strategies proposed in para 4.07 as criterion, the following Programs and Projects in rough order of priority are recommended. They are discussed in more detail in the appropriate sections of Annexes 1-5.

#### V. PRIORITY SHORT RUN PROGRAMS

##### A. Animal Nutrition and Rangelands

5.01 Improved animal nutrition can only be achieved by increasing the total amount of digestible feed available. A total increase in feed can be achieved in four ways. Firstly, increasing the amount of irrigated forage grown; secondly, introducing on rainfed crop land suitable leguminous crops; thirdly, introducing range management and control systems combined with introducing suitable legumes and woody plants to increase range pasture productivity; and fourthly, improving the utilization of crop and industrial by-products. Increasing irrigated forage grown would be dependent, firstly, upon national priorities for water use, secondly on an alleviation of farmers risks by first attaining national food security, thirdly on providing adequate price incentives and support services, including extension, to farmers, and fourthly, through research and adoption of existing information, developing agronomically, and economically sound crop rotations. <sup>1/</sup> Such a program is likely to be brought about only if the objective of increasing animal feed becomes a national priority and is given prominence in the design of nearly all projects in the agricultural sector, including irrigation projects, rural development projects and livestock projects per se.

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<sup>1/</sup> A review of past Afghan experimental work and relevant systems practiced in countries with similar climatic conditions would probably result in suitable crop rotations being quickly developed.

5.02 The Veterinary Services and Animal Production Department should introduce a livestock husbandry-nutrition extension service based upon the existing animal health centers and subclinics. Personnel would concentrate only on nutrition and husbandry and not be involved in other extension activities. Staff should be given a minimum of one year retraining which should involve a period of not less than 6 months practical experience working in villages. Teaching at Kabul University Faculty of Agriculture and Higher Agricultural Studies Institute should place increasing emphasis on animal nutrition and animal husbandry.

5.03 Forage production research both on rainfed and irrigated land has received inadequate attention in the past. Considering the importance of livestock in the economy and the animal nutrition position this is a serious deficiency but reflects the consequence of a preoccupation with food self-sufficiency and animal health control. Veterinary Services and Animal Production Department efforts have been largely devoted to animal health control and the operation of Government farms. The question of suitable leguminous forage production and related factors should receive high research priority. Afghanistan is singularly fortunate in that local alfalfa varieties are among the world's highest yielding (averages of 25,000 kg DM/ha have been recorded on farmers' fields in the Hari Rud Valley). <sup>1/</sup> However little research has been done on water requirements and optimum water input, benefits to other crops grown after alfalfa, and crop rotations designed to give optimum water use and income. The likely benefits of introducing suitable legumes into dryland farming has not been examined. Work in Middle Eastern countries has shown annual nitrogen fixation by such species on rainfed land to vary between 40 kg and 80 kg per ha. If suitable species could be found for Afghan conditions both crop yields and livestock production on rainfed land could be improved significantly. On both rainfed and irrigated land there is a need to develop both the 'thinking' and technology, which would result in agricultural crop and livestock production improving together as part of integrated systems. This has been achieved in other parts of the world e.g. Australia and New Zealand; the emphasis should be on livestock and agricultural crops, not livestock or crops.

5.04 The establishment of a feedmill as presently proposed using industrial by-products seems logical and appropriate particularly within the context of a milk and poultry production project. However some aspects, particularly the price to the consumer (presently suggested Af 5.2/kg) in relation to alternative feedstuffs such as cottonseed cake (presently about Af 4.0/kg), should be more carefully examined. Afghanistan should not encourage animal fattening or milk production based upon feeding large quantities of relatively expensive concentrates and grain. Leguminous crops particularly alfalfa, together with crop residues and roughages could provide an adequate

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<sup>1/</sup> While a national average would probably be only half this (or even less) these high yields obtainable in areas (Hari Rud, Helmand, Nangahar, Kunduz, etc.) with favorable soils, climate and water supply indicate that livestock production is competitively profitable.

and cheaper feed base for these types of animal production. Table 4, page 10 shows that good returns can be obtained by growing alfalfa (in areas where high yields are obtained) for sheep fattening and that this compares favorably with alternative crop water use.

5.05 The rangeland enigma is discussed in detail in Annex 2. No easy solution is possible and Government must reconcile itself to the need to launch a long-term research and survey program. The issues at stake are so vital and complex that great patience must be exercised before any meaningful and worthwhile results can be achieved. A survey of the entire ranges involving the agronomy, ecology, sociology and economy is a vast undertaking but such a survey progressively implemented is recommended for serious consideration. The survey should be backed up with necessary applied research which would establish inter alia, those plant species, including woody plants and legumes which could be satisfactorily introduced onto controlled grazed areas. The range survey objective (including research) should be to identify specific areas which could become the basis, in conjunction with the people concerned, of range controlled areas. Meantime individual development projects should undertake rangeland research and improvement programs within the context of an agreed national program. A similar program to that which has been undertaken in the Herat livestock projects (and is included in the Rural Development Project 1/) should be progressively extended to other regions. The HLDC work is leading to preparation of a pilot range management and improvement project involving designation of a specific area for specific groups of people, control of livestock numbers, a management program, and any necessary infra-structural investment. The Ministry of Agriculture, Forestry and Range Management Department should be responsible for formulation of national policy and recommended research and survey program implementation. As with all research it is better to undertake a small amount thoroughly than to initiate a nationwide program inadequately supported with trained staff, equipment and finance. The separation of Range Management and Forestry into separate Departments should be considered.

5.06 The nomads and their pastoral system represent one of the nation's great resources. They utilize a resource and make a contribution to the economy without any call upon Government services or expenditure; and no other group or system in Afghanistan could utilize the harsh remote rangelands any other way. While some modification of the present system, such as encouraging partial nomadic settlement combined with maintaining the migration system, may be desirable, it should be allowed to evolve slowly and with the full support of the people it is designed to help; the nomads themselves. Government policy should be designed to extend services such as veterinary, health, education, cooperatives and so on to nomads, as a means of establishing confidence among the people and ultimately educating them on the benefits to be obtained from controlled grazing, limiting livestock numbers, partial permanent settlement, education and health programs. Care needs to be exercised in ensuring that any program designed to help nomads is very carefully

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1/ Credit 928-Af

prepared, has a reasonable chance of success and is efficiently executed by people with expert knowledge (and sympathy for) both the complex as a whole and the people in particular.

5.07 The new Government is anxious to prepare and implement programs designed primarily to improve standards of living among nomads and other rangeland users, increase livestock production and reverse range deterioration. A possible program could include:

- (i) designation (perhaps by way of lease for a nominal rent) of specific winter and summer grazing areas for specific (rangeland users include sedentary farmers and their interests must be taken into account);
- (ii) formation of a primary cooperative (or cooperatives, with, if necessary, a union of several cooperatives involved with the same land area);
- (iii) providing credit to cooperatives for:
  - (a) installing irrigation wells on the wintering area;
  - (b) materials which must be purchased for housing construction;
  - (c) seeds and fertilizer for growing basic food crops and livestock forage to be stored for winter use;
  - (d) cooperative buildings for storage and meetings;
  - (e) purchasing improved handicraft production equipment, e.g., looms, spinning wheels;
  - (f) establishment of firewood plantations;
  - (g) improved wood burning stoves, and even perhaps larger size transistor radios;
  - (h) working capital to finance purchase of members produce e.g. wool, hides and skins, livestock, carpets, gelims;
  - (i) pasture seeds and forage shrub root stocks to be used for improving areas to be rotationally set aside from grazing especially around the home base;
  - (j) constructing livestock watering points (supplied from rainfed reservoirs and not deep wells) on migration routes and in grazing areas;
  - (k) farm machinery; and
  - (l) emergency feed purchases.

- (iv) provision of Government financed support services which would concentrate initially in the wintering areas, but where practical also in summer pasture areas, and which would include agricultural, range management and animal husbandry extension, veterinary, basic health, cooperative support and input supply services (fertilizer, seeds, veterinary and human drugs and medicines, pump engine fuel and spare parts, etc), both child and adult education and vocational training in the use of improved looms and spinning wheels, hides and skin handling, wool handling, improve shearing techniques, the use of improved wood burning stoves, and if possible improved cheese, ghee and curd making techniques.

5.08 Too much emphasis cannot be placed upon the potential dangers of implementing range-nomad programs based on inadequate knowledge of the entire complex and which do not address all the factors involved. For example, African experience has demonstrated that simply installing water points for nomads (because they say their most critical problem is water shortage) only contributes to breaking down the rotational grazing aspect of nomadic pastoralism, increases overgrazing in concerned areas, increases soil erosion, does not increase animal production, and with time, aggravates the original problem. Afghanistan should not repeat these mistakes. Similarly, providing veterinary services which decrease mortality significantly does not necessarily increase productivity. This means animal health programs must be accompanied by extension improvements (education of the pastoralist towards understanding his total environment) and increased marketing opportunities. If this is not done, the result is more animals competing for the same limited feed supply and ultimately not only static, but in time, decreased production.

5.09 A detailed feasibility study including technical, financial and economic analysis would have to be completed before any such program could be implemented. It would best be undertaken on a small scale involving a small homogenous group of people who presently use well defined summer and winter areas. The first step would be survey work designed, inter alia, to identify a suitable nomadic group or groups, including a census of people and animals, a livestock ownership survey <sup>1/</sup> and to precisely identify migration routes, regular grazing areas and use timing. Next, establish regular contact with, and gain the confidence of, these people as part of the process of persuading them of the advantages of cooperative management and resource's improvement. A key factor is understanding the people and their society; it would be essential to include sociologists or anthropologists in the survey, preparation and implementation work. The survey-project preparation team must be experienced and trained to consider the whole complex including inter alia, ecology, agronomy, animal husbandry, economics, finance and credit, hydrogeology, and sociology. The most critical factor would be organization and management. The cooperative framework offers possibilities, but cooperatives would require good managers (a critical Government support input would be

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<sup>1/</sup> Not all people using ranges are nomads; many flocks belong to town dwellers who employ transhumant shepherds to manage their flocks.

training), and nothing useful would be achieved unless a consensus existed among the members to support the program and the discipline required for successful implementation.

5.10 The project would endeavor to overcome the fundamental issue of the present nomadic pastoralist system viz., the conflict between community land ownership and its use by individually owned and managed livestock. By obtaining a legal land lease and the opportunity to receive previously unavailable support services including education, the people would be provided with a secure base upon which to manage and improve their land. The concept involves cooperative development in a social system which presently contains many elements of group participation and cooperation, together with partial sedentarization and maintenance of the traditional nomadic system. Sufficient irrigation water would be provided in the wintering area for production of subsistence food crops (wheat, barley, corn) and, forage (alfalfa, clover, sorghum, surplus barley and corn) for storage and use during winter. Older persons and a work force sufficient to operate the cooperative farm would remain in the winter area all year. The balance of the group would continue migrating to summer grazing areas. A cooperative center would be a focal point for provision of Government financed basic services including education and training, input supplies, marketing, and cooperative activities. Water points established along migration routes and in summer grazing areas would be rainfed reservoirs and not permanent pump operated wells. This concept should reduce the tendency for frequent heavy grazing to concentrate around permanent water supplies; the rain water stored would be roughly proportionate to the amount of available range feed. Also, rainfed reservoirs have low operating and maintenance requirements. Under a range management and improvement program, which would be devised by the cooperative members assisted by Government technical specialists, range areas would be spelled from all grazing for varying periods. Closed areas would, if possible, be seeded with suitable species, including legumes and forage shrubs. Firewood production would be an essential factor in stopping further range degradation, which is being accelerated by firebrush harvesting from ranges. <sup>1/</sup> Initially, services other than water supplies, would not be provided in summer areas as during this time people and livestock are widely scattered over comparatively inaccessible areas. An important concept would be to provide opportunities for nomads to adopt alternative life styles and other forms of income earning e.g. handicraft production, sedentary farming, leather making as a means of moving them out of livestock production and off the overpopulated ranges.

5.11 The most difficult challenge would be to break down the established custom of according social prestige (and value) to the livestock numbers. While widely recognized as a socio-economic characteristic common to all pastoral peoples, too little is known of all the contributing elements, particularly in Afghanistan. A detailed study of this issue would be the sociologist's task. Food security and risk aversion are thought to be important

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<sup>1/</sup> McArthur and Harrington 'A Grazing Ecosystem in Western Afghanistan,' mimeo, 1978 (based on work conducted by HLDC).

elements of this socio-economic system; successful project implementation would contribute towards assuring people that insurance against the risk of adequate food, or the means of obtaining it, not being available can be achieved in ways other than holding large numbers of animals. Quantifying the benefits to be gained from not increasing livestock numbers would be an essential part of adult education programs. In any event, for such a program to be successful animal numbers must somehow be effectively controlled. The total package may need to include a Government guaranteed price for livestock, involving an element of financial (but not necessarily economic) subsidy, but which would overcome the wide seasonal and annual livestock price fluctuations.

5.12 To successfully implement this type of program, dedicated people with relevant training in the various rangeland disciplines are needed. Such people are short in Afghanistan. A training program, designed to produce technicians and professionals with an understanding of the rangeland-nomadic complex should be established in the Ministry of Agriculture Range Management Department. In devising a suitable program, other agencies which can make a contribution e.g. University of Kabul Faculty of Agriculture, HLDC, should not only be consulted, but should participate. A first step would be to make a detailed review of work done to date in relevant disciplines in Afghanistan (relevant international work should also be progressively reviewed). Like so many developing countries, Afghanistan has been the recipient of countless reports and studies by various experts over many years. Duplication has probably occurred in the past and should not be repeated. The past work of the Range Management Department, University, HLDC, PDA, HAVA, and various bilateral and international agencies should be reviewed. Relevant work would include various sociological and anthropological studies on nomads and trans-humants, and which have not been widely available within Afghanistan.

#### B. Institutional Reform

5.13 A reorganization, designed to overcome the most serious Ministry of Agriculture weaknesses in general and the Veterinary Services and Animal Production Department in particular as discussed in 3.06 and 3.07 above and Annex 5, is now urgent. A high level task force should be established to carry out a comprehensive review of the existing situation highlighting constraints and bottlenecks, and making recommendations for future operating effectiveness improvement. 1/

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1/ Government is presently taking steps to alleviate the most serious administrative bottlenecks but the process of reform will of necessity, be slow and take time to assimilate. What is at stake is management and implementation capacity together with the broader issues of the whole direction of the Department's policies and programs. It is these issues as well which should now be examined.



5.14 The Ministry of Agriculture should establish a training department fully equipped and supported with the necessary qualified staff to carry out a meaningful training function, which would focus upon three main areas. Firstly, devising and implementing regular in-service training programs for professional, technical, administrative, and support staff. Secondly, induction training of all new recruits including both professional and administrative staff. Such staff should receive a minimum of six months and preferably twelve months introductory training, part of which would include where applicable a field assignment. For professional workers, particularly those in extension and veterinary, introductory training could meaningfully include up to six months probationary village experience. Thus staff would have a better understanding of agricultural development problems, and approach alleviation of farmers' problems in a more sympathetic and realistic manner. All recruits should be required to pass examinations upon the results of which permanent appointment would depend. Furthermore, a system of salary bars should be introduced for professional and technical staff which would effectively prevent promotion above certain levels unless minimum periods (say three years) had been spent on field assignments outside Kabul. Thirdly, a complete retraining of all existing staff (including administrative and support staff) based upon the findings and recommendations of the recommended task force. Such retraining should be accompanied by introduction of specific job manuals defining functions, responsibilities, and objectives. It is argued that training on such a scale is too expensive and would absorb a disproportionate amount of limited financial resources. What needs to be considered is the cost effectiveness of two systems; one which employs people with adequate training, better morale, a better understanding of what they are expected to do and how to achieve it and who, as a consequence speed up the pace of project/program implementation and the whole development process and thus advance the pace at which financial and economic benefits are obtained; or, one which has characterized past performance in the Afghan agricultural and livestock sector viz., large numbers of people inadequately utilized, with inadequate training, low morale and long delays in project/program implementation. In terms of cost effectiveness, smaller programs, more efficiently executed with better trained people, may bring more benefits faster and therefore be more effective. In any event more and better staff training is urgently needed; benefits are certain to outweigh the costs; and the situation which prevailed up until the advent of the Revolutionary Government should not be allowed to continue.

5.15 A complete effectiveness and operational review of the Government farms should now be made. 1/ The prime aim should be to establish limited objectives, with a meaningful role in the livestock production improvement. In order to improve present Government farming activities priority should be given to establishing the financial and administrative framework needed to

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1/ Government is now reviewing the structure and operational efficiency of existing State farms; it is understood that the new Five-Year Plan will include provision for expanding the number of State farms; a new Presidency of State Farms is being established under the General President of Agriculture Extension and Food Production.

make them effective commercial organizations. Each farm needs suitably defined objectives and the equipment, inputs and suitably qualified staff needed to achieve these objectives. Well run farms are needed for demonstration and training and would serve as a basis for any planned expansion in Government farming activities. Poorly run farms discredit the Ministry of Agriculture in the rural community, are a financial drain, lower staff morale and in general are a waste of resources which a poor country can ill afford (para 4.07(x) discusses state dairy farms). Apart from management and administrative issues, State farms need to be more performance oriented and much more attention needs to be paid to cost effectiveness.

5.16 A Project identification, preparation, appraisal and evaluation unit should be established within the Planning Department of the Ministry of Agriculture to assist with policy formulation, to initiate, appraise and supervise projects within that policy, and to promote the use of monitoring and evaluation as a management tool. 1/ With ongoing projects and programs there is little objective monitoring and evaluation or analysis made of lessons learned, or costs and benefits obtained from successes and failures. In order to achieve meaningful monitoring and evaluation a review of the Government budgeting system, which presently does not allow easy identification of costs by project or program, would be desirable.

#### C. Animal Health

5.17 Priority should be given to an in-depth review and evaluation of the Veterinary Services and Animal Production Department's effectiveness and operations. The review should make recommendations for an effective performance oriented operating framework providing timely and effective animal health control services, adequate field staff support, promotion based upon field service experience, timely supply of supporting equipment, vaccines and drugs, and quick efficient response to disease outbreaks.

5.18 The Department should, after a full review of existing knowledge, define "notifiable" diseases, control of which should be given priority consideration. Criteria for selection of these diseases should be the cost of control compared to the economic and financial losses saved. Control of diseases and parasites which adversely affect productive coefficients such as growth rate, should receive high priority. Further expansion of clinic and sub-clinic numbers should in the meantime be restricted until each existing clinic is adequately equipped (including transportation) and staffed and an effective veterinary service is being provided in the respective 'command' area.

5.19 Control of "notifiable" diseases should center around the establishment of highly mobile, fully equipped and staffed vaccinating teams. A total

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1/ It is understood that such a unit has recently been established.

eradication program, which at this stage is not considered a practical or economically justifiable objective, should not be attempted. The vaccinating teams should be established in strategic centers, initially Kabul, Mazar-i-Sharif, and Herat and later at Kunduz, Jalalabad and Kandahar. Through the information network provided by Animal Health Centers and Subclinics and the Regional Diagnostic Centers, disease outbreaks could be contained by "fireman" vaccinating teams.

5.20 To increase effectiveness, regular supervision from senior management through to sub-clinic technical staff is essential. The number of diagnostic laboratories should be restricted to perhaps three or four. These should be properly equipped, staffed, and have adequate financial support. Emphasis should be placed upon determining exactly which diseases and parasites exist, their economic importance, the most efficient means of control and the location of more concentrated infection areas. It is undesirable for Afghanistan to attempt to provide sufficient facilities and highly trained staff, to be able to undertake diagnostic services for every possible disease. Reliance should be placed upon the enormous improvement in international air transport, and the opportunity it offers for making use of international centers equipped with the sophisticated equipment and staff necessary to undertake diagnosis of rare diseases. Similarly, the Central Diagnostic Station should not undertake any basic research. Presently, Afghanistan has neither the finance, staff, or need to maintain and sustain meaningful research in veterinary science.

5.21 Once a satisfactory operating framework and management program has been devised and introduced, a complete retraining (progressively implemented) of the existing staff is considered necessary. Retraining should not only focus upon the technical aspects of animal health and veterinary medicine, but should deal with the wider dimensions involved. An effective animal health control service can be an element for rural education and social change. What is needed is a 'barefoot veterinarian' approach which would expand the service offered through well trained and supervised 'village veterinary workers' (VW's) and out into the villages where the need is greatest. Basic veterinary services including vaccinations and animal health extension can be effectively provided by village veterinary workers. These people need not be academically qualified but must be well trained in basic veterinary first aid and vaccination techniques. Through frequent and regular in-service training, supervision and adequate back-up, effective services can be economically expanded to cover large numbers of village livestock. Furthermore, such a scheme employing village based and orientated people, would help to make maximum use of the presently limited numbers of qualified staff. Such a program could have a wide impact in Afghanistan but it should first be tested on a small scale as proposed for the Ghazni-Wardak Rural Development Project. AFC should increase the number of veterinary medicine outlets by appointing veterinary technicians, pharmacies and individuals as agents. Retail margins should be designed to promote their use by farmers without Government subsidy. The advisability of maintaining the present AFC monopoly on the impact and sale of veterinary medicines (which are higher priced than necessary) should be reviewed.

5.22 Diseases of national importance and hence "notifiable" should be controlled free of charge. When making these vaccinations, additional diseases could probably be included in the prophylactic program without adding significantly to costs. All other veterinary services, particularly clinical, should be charged for on a simple fixed rate basis. If an effective service is ultimately to be extended nationwide, progressive charge introduction should be started as soon as possible. The cost of a totally free nationwide service is likely to be such that Government could not afford to effectively maintain it. 1/

#### D. Meat

5.23 Meat industry policy should be based upon programs which would increase meat production (through integrated agricultural development programs including effective veterinary services), sufficient to ensure meeting annual domestic demand 2/ at reasonable prices, and the ever increasing export demand. The Iranian market, which Afghanistan is favorably placed to supply is expected to have a net sheep and goat meat deficit, to be supplied largely from imports, of 250,000 tons annually in 1980, and 666,000 tons in 1985 (Table 9 page 29). 3/ The market could be even larger if domestic production was to fall short of projections. Good markets also exist in the Middle East and USSR. If operating at full capacity the Herat Plant could possibly process about 100,000 tons (600,000 sheep) or 15% of the 1985 projected Iranian import demand. However in order to compete with the main world mutton and lamb exporters (Australia and New Zealand) Afghanistan will have to develop vigorous, professional marketing skills, and establish a reputation for reliability in meeting contractual quantity and quality obligations. To achieve this the Herat abattoir must be able to operate on a commercial basis free of stifling Government administrative procedures and regulations; it cannot be seen as just an extension of a Government Department.

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1/ As an example reference should be made to the estimated annual recurrent cost (AF 37.3 million) of effectively servicing about 800,000 animals as proposed for Rural Development Project Credit 928-Af, IBRD Report No. 2297-Af.

2/ No domestic demand projections have been made but as indicated in para. 4.01, page 17, projected population in 2000 A.D. would, at present consumption levels and prices, require a 50% increase in present production.

3/ Recent events in Iran will have altered the validity of these projections but in view of the reported decision of the Iranian Government to restrict meat imports from non-Muslim countries and of frozen meat, the market for chilled Afghan mutton may well improve (both for quantity and price).

Table 9: Projected Net Trade in Meats in the Near East and East Africa, by Country, 1980 and 1985

(In Thousands of Metric Tons, Carcass Weight Equivalent)

	Beef and Veal		Sheep and Goat Meat		Pig Meat		Poultry		Other Red Meats		Total Meat	
	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985	1980	1985
<b>NEAR EAST</b>												
Afghanistan	-6	-8	+6	+12	-	-	+3	+5	+8	+14	+11	+23
Bahrain	-1	-1	-7	-8	-	-	-3	-2	-	-	-11	-11
Egypt	-16	-55	-26	-36	+1	0	+7	-14	-5	-9	-39	-114
Iran	-54	-212	-250	-666	-3	-4	-94	-265	-15	-43	-416	-1190
Iraq	-38	-137	-131	-305	-	-	-31	-82	+8	-17	-208	-541
Israel	-44	-54	0	0	+5	+11	+68	+133	-6	-6	+23	+84
Jordan	-4	-6	-7	-13	-	-	+1	0	-1	-1	-11	-20
Kuwait	-3	-4	-13	-20	-	-	-10	-20	-1	-1	-27	-45
Lebanon	-26	-33	-39	-25	+1	+2	+5	+5	-	-	-39	-51
Oman	-1	-1	-2	-2	-	-	0	0	-	-	-3	-3
Pakistan	+177	+239	+25	+27	-1	-3	+9	+26	+31	+34	+241	+323
Qatar	-2	-3	-5	-7	-	-	-	-	-1	-1	-8	-11
Saudi Arabia	-7	-9	-69	-132	-	-	-24	-47	-7	-18	-107	-206
Syria	-6	-7	+3	+13	-	-	-2	-4	-1	-1	-6	+1
Turkey	+5	-29	+153	+184	0	0	-18	-41	-41	-56	+99	+58
United Arab Emirates	-3	-6	-13	-20	-	-	-16	-27	-	-	-32	-53
Yemen Arab Rep.	-3	-4	-17	-14	-	-	+1	+1	0	0	-19	-17
Yemen P.D.Rep.	-1	-1	-2	0	-	-	+2	+2	0	0	-1	+1
<b>Total</b>	<b>-33</b>	<b>-331</b>	<b>-374</b>	<b>-1012</b>	<b>+3</b>	<b>+6</b>	<b>-102</b>	<b>-330</b>	<b>-47</b>	<b>-105</b>	<b>-553</b>	<b>-1772</b>
<b>EAST AFRICA</b>												
Ethiopia	-23	-23	+24	+20	+1	+1	-4	-13	-3	-6	-5	-21
Kenya	+9	-10	-15	-25	+1	+2	+4	+5	-4	-8	-5	-36
Malagasy Rep.	+86	+127	+4	+7	+8	+11	+10	+15	+12	+14	+120	+174
Somalia	+17	+18	+14	+13	+1	+1	-1	0	-4	-6	+27	+26
Sudan	+125	+241	+12	+34	-	+1	+3	+5	-2	+9	+138	+290
Tanzania	+22	+31	-10	+13	-	+1	-4	-4	+22	+26	+30	+41
<b>Total</b>	<b>+236</b>	<b>+384</b>	<b>+29</b>	<b>+36</b>	<b>+11</b>	<b>+17</b>	<b>+8</b>	<b>+8</b>	<b>+21</b>	<b>+29</b>	<b>+305</b>	<b>+474</b>

- denotes less than 500 metric tons.

Source: FAO/World Bank "Outlook for Meat Production and Trade in the Near East and East Africa", December 1977.

### E. Carpets

5.24 Expansion and improvement in the carpet industry production and efficiency should receive priority. Government intervention should be confined to providing the necessary support including maintaining favorable trading conditions, assistance in expanding export markets, ensuring availability of credit for both production and marketing, quality control, and to the extent possible, a fair return for the producer's effort. Caution should be exercised in any Government attempt to control the carpet industry. As has been demonstrated in a number of rapid growth developing countries this type of entrepreneurial trade is best left in private sector hands. The remarkable expansion of the export carpet trade and its increasing contribution to the economy (para. 1.01, Table 1, page 2) represents a valuable industry. While it is argued that traders' margins are too high the value of the service they provide must be recognized and until this can be replaced with something better (and maintain the industry's contribution to the economy) it should not be meddled with. A further craft industry which should be encouraged as a small but useful export is the production of "craft" type spun wools and products, for which an increasing demand exists in many developed countries.

### F. Milk

5.15 Considerable potential exists in almost all the main crop producing areas for improving milk production on small farms which have reasonable road access. Surplus milk sales to urban areas could assist producers to increase income from a commodity for which presently no accessible market exists in most cases. Table 4 page 10 illustrates comparative gross margins from various crops including milk production and sheep fattening through alfalfa production. Potential income compares favorably from other widely grown crops such as cotton and wheat. On the other hand milk yields assumed are low and could easily be improved. However, the factors which would give farmers incentive to increase dairy production are not clearly understood, and these together with marketing should be carefully analyzed as a part of any dairy production expansion program.

5.26 Dairy development should be designed to meet an increasing demand for improved nutrition levels, and replacing milk product imports which, if local production is not increased, are likely to increase in accordance with demand. Total milk demand has not been projected but Kabul (population about 0.6 million) is estimated to have a current annual fresh milk demand of about 16,000 tons, about double the present estimated supply. A similar situation probably exists in all main towns. Milk production programs should be based largely upon small farm development in conjunction with integrated rural development projects and as a part of a national dairy development program. Such a policy is likely to see milk production increase more quickly and at lower cost than on large 'commercial' state farms, where managerial experience and the entrepreneurial approach are not strong. Furthermore, improved income distribution at the 'grass roots' level among the poorest segments of society is more likely to be achieved quicker with small holder programs.

5.27 The retail milk price should reward the producer sufficiently to encourage him to maintain and increase production. If it is considered socially desirable to have low retail milk prices, then direct consumer subsidies should be considered to avoid penalizing the producer with low prices and reducing his incentive to produce. However, in view of the estimated milk and milk product demand, and the need to stimulate production, it is recommended that no subsidies should be paid and milk and milk product retail prices should be left to find their own levels.

5.28 The preparation of a national dairy development program with the presently proposed dairy project 1/ as a first phase, is recommended. The proposed Afghan Dairy Development Corporation (ADDC) should however be independent of the Ministry of Agriculture, and should undertake the process of milk collection, processing, and some marketing. Marketing should be undertaken by both ADDC and private retailers. Milk collection centers, should ultimately be passed over to cooperatives while ADDC could ultimately be owned and operated by producers' organizations employing professional management, a system successfully demonstrated in India and in important dairy producing countries. Apart from the initial establishment, operation, and management of ADDC, Government policy and intervention should confine itself ultimately only to price and standard regulation, and providing support services to encourage farm production.

5.29 Artificial insemination, veterinary and animal husbandry extension services proposed in the project should be provided by the Ministry of Agriculture, Animal Health and Production Department. However, in order to ensure effective services, it is essential that an overall reorganization of the Ministry of Agriculture in general, and the Department in particular, as discussed in Annex 5, be undertaken. If an improved operating framework is not established within the Ministry, then ADDC should be responsible for provision of these supporting services, which are an integral part of any dairy development program. The overall objectives and operations of ADDC should be limited, thus making goal and desired impact achievement more likely.

5.30 On a pilot basis, as a potential means for controlling prices ADDC should undertake (as proposed) some marketing through bulk vending machines, but additional marketing should be undertaken through private retailers under Government set standards and conditions. Furthermore, ADDC and Government policy should not endeavor to replace completely the present bazaar trade which operates quite efficiently with limited volume. It is most unlikely that a price could be offered sufficient to encourage those producers already marketing surplus milk to sell through ADDC. It should not be made mandatory for farmers to supply milk through ADDC. If consumers will buy direct from producers even with an alternative (ADDC) supply available then the market will ultimately regulate itself and there is no valid reason to interfere.

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1/ Annex 4, Section F, paras. 3.02-4.02. Also FAO/ISCDD Final Report, December 1977.

5.31 Dairy production programs should not be designed to encourage all year round milk production. Due to the climate, winter milk production is not only difficult but would be expensive and hard to maintain. It is strongly recommended that farm dairy production should be on a seasonal basis with calving coinciding with the onset of spring growth. Demand for winter milk should be met by reconstitution of milk products using imported components until local supply is adequate. <sup>1/</sup> If this policy is adopted at the outset, a more efficient dairy industry would be initiated, and the consumer would develop from the outset a taste for, and the understanding of, the type of supply. During off-season winter months ADDC could use its supply mechanism in reverse and provide reconstituted milk and products such as Ghee, back to primary cooperatives for sale to suppliers. However if the market is left to find its own level it could be that the price for which winter produced milk could be sold would justify production. In the long run however, with a stable market operating, winter milk production is likely to prove costly and uneconomic.

#### G. Poultry

5.32 In view of the need for daily personal type management and the need to carefully monitor costs relative to output, commercial poultry production is best undertaken on a decentralized basis. Government activities should focus on operation of a rehabilitated Bagrami poultry farm designed to carry out applied research, such as housing, and the introduction of parent stock for the production of hybrid stock. Day old hybrid chicks would be sold to commercial producers for egg or broiler production. No subsidies should be involved. In addition to providing hybrid stock, Government should provide supporting services including animal health, specialized poultry husbandry and feeding extension, credit, and assistance with egg and poultry marketing cooperative formulation. Government would also need to initiate a feed compounding plant for quality concentrate feed production.

5.33 Within the Ministry of Agriculture, a specialized poultry extension service should be established. The service would not be large and should initially consist of a small cadre of highly trained, practically oriented poultry husbandry and management experts. Initially, some external training may be required, and appropriate adjustments to the teaching program at the University of Kabul, Faculty of Agriculture, and the Higher Agricultural Study Institute would be necessary.

#### H. Institutional Credit

5.34 While animal disease and nutrition constrain animal production improvement, it is not clear what part credit (which is frequently sighted as

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<sup>1/</sup> Including non-fat dried milk which could ultimately be locally produced from the surplus spring production.



a major constraint) plays in alleviating these constraints. The Agricultural Development Bank has expanded operations among livestock producers and institutional credit at reasonable interest rates, is available to them. A major obstacle to expanding institutional credit use is the access process. While major improvements have been made by AgBank, obtaining a medium or long term loan remains a cumbersome, time consuming, and to the applicant, costly process. In many cases, an applicant has to take up to 20 successive steps before finally receiving a loan. What is now required is a simplification of AgBank's lending procedures. While improving access to credit is the prime objective, any process must maintain both borrower credit discipline and the lending institution's financial integrity. Credit is available but access to it needs improving.

### I. Animal Breeding

5.35 To obtain the maximum impact on husbandry and breeding from limited staff and financial resources, priority must be given to those programs which on a cost/benefit basis would have the greatest effect on the national herds and flocks. Improved breeding in dairying should be based on small quantities of imported deep frozen semen to produce first generation bulls for semen production. While pure or crossbreeding of introduced breeds would continue to be practiced on Government 'nucleus' farms, an essential farm level objective would be to maintain, by criss-cross breeding, a percentage of indigenous blood so as to ensure continued usefulness for draft purposes. Breeding programs must be supported with improved nutrition and health and should be part of integrated development programs involving these factors, and adequate producer price incentives and marketing opportunities.

## VI. LOWER PRIORITY LONGER RUN PROGRAMS

### A. Ministry of Agriculture

6.01 Contingent upon the completion of the evaluation recommended above and the establishment of a more sensitive, responsive operating framework, consideration should be given to establishing specific extension services, each with limited objectives and in-built training and supervision programs, in animal husbandry and nutrition, wool improvement and handling, hides and skins improvement, and poultry production.

### B. Animal Health

6.02 While legislation for specific animal disease control and animal health services in general is a desirable objective, it is essential that such legislation should be simple, practical, and capable of being enforced. The

introduction of sophisticated, complicated legislation which Government cannot enforce is likely to have an undesirable effect. An important aspect of any proposed legislation would be the designation of "notifiable" diseases.

6.03 Present policy for vaccine production should be fully reviewed. A fairly large range of vaccines is presently produced, and whether it is desirable, economic and necessary for Afghanistan to produce these should be carefully examined. A more effective policy might be to limit production to those vaccines which can be produced to acceptable international standards under Afghan conditions and import those which require more sophisticated equipment and facilities. The comparative cost of local production compared to importing should be fully reviewed. More practical type training and experience should be introduced into existing education programs. No degree in veterinary science should be granted until the candidate has spent a minimum of one year in the field operating among farmers. 1/ Six months of this experience should be spent in Animal Health Control Center sub-clinics. Only after successful completion of this probationary field experience should graduate degrees be confirmed. A similar system could be introduced for all other qualifications in veterinary science.

#### C. Meat

6.04 The policy of maintaining reasonable domestic meat prices should take account of not only consumer purchasing power and demands, but also the returns which producers require to not only maintain production, but to divert land and water from lower value crops such as wheat, into forage for conversion to meat.

6.05 For the domestic market, no additional processing works should be established until demand and meat price, clearly indicates that they would be financially viable without Government subsidies or need to unfairly increase the consumer price, or reduce that paid to producers. Small low-cost slaughter-houses could be established under concerned municipality auspices in or near major towns. Such slaughterhouses should not be sophisticated and only provide for a general hygiene improvement including meat inspection. As there is little wastage in the existing system, little is to be gained economically by establishing modern slaughterhouses to domestic market process meat.

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1/ Such a proposal could be usefully extended to all agricultural academic qualifications; the objective being to get more people into the field, to ensure graduates have a better understanding of the practical problems farmers face, and to reverse the widely held misconception that the learning process ends with the granting of a degree, when that stage is only the beginning of the process.

D. Wool

6.06 National wool production policy should give priority to improving, through extension activities, national flock nutrition and control of parasites and diseases. However, the establishment within the Ministry of Agriculture of a small highly trained extension service which would focus upon wool improvement and production technology would be worth considering. Such a service would work among producers, discussing and demonstrating the benefits to be obtained in wool quality and production from improved breeding and selection, improved shearing techniques, animal health control and improved nutrition. Afghanistan could ultimately be a major producer of long staple, coarse carpet-style wool, and given appropriate research and development programs in the production and marketing sectors could develop a substantial export industry in quality "carpet-style" wool sold in "washed" condition. To achieve this goal, production and quality, including the implementation of a wool grading system would have to substantially increase. Furthermore, until a clear demand is demonstrated and existing plants are operating to full capacity (including the use of more than one shift operation) no additional wool scouring plants should be established.

6.07 Production of woolen textiles, and yarns suitable for the carpet and handicraft trade, should be so designed to meet domestic demand only. It is unlikely that Afghanistan could establish a profitable export industry in woolen textiles except for handicraft types. For this reason textile production capacity expansion should be based on financial and economic considerations and take full account of present and anticipated future domestic demand. Existing plants should be operating to full capacity before new mills are established, and the reasons why existing mills are not should be fully analyzed before any expansion program is implemented. Inadequate maintenance and absence are probably major factors but administration, financial and procurement procedures together with inexperienced management in the modern sense, do not assist. While broadening the economy's base through industrial type projects is desirable, the social aspect of creating new employment opportunities must take full account of the capital cost of each position created, and examine within the same sector possible alternative means of achieving the same goals.

6.08 Producers should receive a fair share of their product's value. It would be useful to explore the possibilities and advantages of establishing producer wool marketing cooperatives. With larger quantities to market, cooperatives could be in a better position to secure higher prices. However, it would be of no advantage to destroy the trader system outright. Traders provide a service to producer, export trader, and local manufacturer, for which they need a fair reward, and before moves were made to eliminate them the system has to be replaced with one which is equally, or more, efficient and would result in greater producer return as well as delivery of adequate supplies to manufacturers and export traders.

#### E. Karakul

6.09 Government should continue to support the Karakul Industry through the independent operation of the Karakul Institute. The success of the Karakul Institute provides an important lesson which could be applied to other areas of agricultural and livestock development. It is one of the very few self-sustained institutions which is benefiting producer, trader and Government. It is strongly recommended that the Institute should continue its present activities only and not expand into production and related activities. Veterinary services, credit, and extension should continue to be provided by Government agencies. The means by which sheep production in particular can be improved is discussed in Annex 2.

6.10 As a consequence of the publicity given by the Karakul Institute to various pelt grade prices on the international markets, most flock owners are well-informed as to their product's likely value. It is therefore unlikely that there is much incentive for flock owners to reform karakul cooperatives. Cooperatives could play a part in providing input supplies, but it is difficult to see any marketing advantage. Existing dealers, in combination with flock owners, and the Karakul Institute provide an effective marketing mechanism. The margin between the flock owner's price, and the dealers international market price, less the processing and marketing costs is, after allowing for risk, probably excessive. In any event, the service provided is a comparatively efficient one. It is, therefore, recommended that Government should continue to support the Karakul Institute in its present form.

#### F. Animal Breeding

6.11 The introduction of new sheep breeds should not be made in the foreseeable future. The present breeds have very good genetic potential for desirable economic characteristics including wool, growth rate, fecundity, milk production, pelt color, and hardiness. These characteristics should be selected for within the various breeds. A wide variation and hence potential for improvement through selection exists. Ultimately given a well organized, equipped, and financially supported research division a nucleus flock for each particular breed could be established by selecting and purchasing from amongst the entire national flock those animals which display the best in economically desirable characteristics. However, as a matter of national priority such a program should not be undertaken until substantial progress has been made in ameliorating the major constraints of nutrition, disease and parasites, and Government operating efficiency. It has been suggested that in order to produce the fine wool necessary for blending with Afghanistan's coarse wool for textile production appropriate sheep breeds should be introduced. While the economies of this proposal would need detailed examination, the cost and difficulty of introducing new breeds should not be underestimated. It has been tried previously and failed. Many factors no doubt contributed to this but the rigors of the climate, husbandry system and disease and parasites do not make new breed introduction an easy task. A more profitable course might be

to improve the productivity of the well adapted indigenous sheep breeds and use the increased foreign exchange earnings (meat, wool, carpets, skins) to purchase fine wool on the international market. Trying to be self-sufficient in everything is not always the most profitable and economic policy.

6.12 New parent stock should be regularly imported for the Bagrami Poultry Farm and multiplied for release to commercial farms. Such a program should involve rehabilitation of the Bagrami farm within the context of a poultry breeding and production project discussed in Annex 4E.

#### G. Hides and Skins

6.13 The quality of leather and of locally made handicraft goods, which are in keen demand by tourists, should be upgraded. Ultimately, provided quality controls were introduced and satisfactory standards achieved, Afghanistan might be able to compete on a limited basis in specially selected international markets as it now does with sheepskin coats. Government assistance should be directed firstly towards ensuring the establishment of a viable industry producing high quality goods; secondly, establishing control standards and systems; thirdly, providing both operation and marketing credit at commercial rates to the private sector; and fourthly where appropriate, arranging for foreign managerial and technical assistance.

6.14 The possibility of Government entering into joint ventures with private entrepreneurs both local and foreign for the establishment of a high grade leather industry including "handicraft" production, which could ultimately compete in selected international markets, should be explored. A joint venture involving foreign firms could have the advantage of gaining, without excessive expense the technical, managerial, and marketing skills, necessary to ensure the establishment of a profitable industry. Furthermore, Government should encourage cooperative unions, when they have reached an improved stage of financial and managerial viability, to invest in leather processing facilities. Ultimately a "Leather Institute" might be usefully established to promote quality control and expansion of export markets following the Karakul Institute's lessons and experience.

6.15 A technical assistance project could be usefully employed to train a small cadre of specialists to demonstrate not only improved skinning techniques, but methods of handling hides and skins so as to ensure maximum quality. Such a project would serve to establish, within the Ministry of Agriculture, a small well-trained extension service. These trained "hides and skins" specialists would concentrate upon demonstrating to and advising farmers and small butchers.

#### H. Livestock Census

6.16 As with many developing countries the available Afghan statistical data are not always reliable. As a basis for more objective Livestock Sub-

sector planning a new livestock census is urgently required. The last partial census was made in 1967. Accurate, comparatively quick aerial photo techniques which could be used in a national livestock census, are now available and would be suitable to Afghan conditions. Furthermore, a need exists for better statistics on year to year changes in both numbers and productivity; indeed if monitoring these changes is not included in the census package, rather little benefit will accrue from the livestock population census per se.

### I. Animal Research

6.17 Many report recommendations suggest or indirectly imply the need for animal related research e.g. wool, poultry, milk, hides and skins, range improvement, water management etc. Past work has included dairy cow breeding, karakul, poultry, wool and some sheep fattening. It has been of an applied nature and for dairy cattle and karakul, of considerable value. However, like all Afghan agricultural research it has lacked cohesion, resource support and direction. Furthermore, the linkage between research, extension and ultimately farmer has either been weak or non-existent. Too many research results have either not been properly analyzed or widely published. For a number of complex (and in many cases valid) reasons, developing countries like Afghanistan tend to afford low priority to research. Perhaps the main problem is limited finance and skilled manpower combined with the long-term nature of animal research which means that results are not seen easily or quickly.

6.18 Afghanistan should concentrate animal research largely on testing and adapting overseas results within the Afghan context. Animal research should be seen as part of whole farm management systems which take full account of all the integrated inputs of a total farm economy; animals, agricultural crops, forage, water, labor and finance. Too often research is conducted in scientific isolation with comparatively little regard being given to how or where any beneficial results may be used. The sociological setting must be fully considered. Systems developed for use on modern State Farms with their usual capital intensive technology and comparatively good financial resources, are seldom relevant to the traditional farmer owning 20 jeribs with an unreliable irrigation water supply and small income. The main objective of agricultural research should be to produce results which are readily adaptable by farmers and which will economically increase production; and the biggest potential for doing so in Afghanistan is with the 2 million farm families.

6.19 Animal research policy formulation and direction could be usefully integrated into the proposed Agricultural Research Institute. It could continue to be undertaken by separate agencies and departments but central cohesion and direction is badly needed. An essential part of any program would be to improve the means by which results are published and ultimately extended to farmers. Researchers must never forget that their work must involve a two-way communication with the farming community. Finally, in a situation where resources are limited, a smaller amount of adaptive research properly done would prove more cost effective than the opposite approach.

AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

Animal Health

I. Present Situation

1.01 A wide range of diseases and parasites in sheep, goats, cattle and poultry are known to exist in Afghanistan. Economically, because of its effect on cattle the main source of agricultural draft power, rinderpest is potentially the most serious. Following an extensive vaccination campaign from January 1972 to April 1975, during which about 1.4 million cattle were vaccinated, rinderpest came under satisfactory control. During the last three years, essential follow-up vaccination, particularly for new born animals, has been limited and the situation is now potentially dangerous. A high incidence of parasitism exists causing severe direct and indirect losses among all classes and types of animals.

1.02 The Veterinary Services and Animal Production Department of the Ministry of Agriculture is responsible for implementing national disease control, animal husbandry and production improvement programs. The Department has three major sections. Veterinary service is responsible for diagnostic stations, and regional clinics and sub-clinics; vaccine laboratory producing animal vaccines; and animal husbandry which operates Government farms and the artificial breeding service.

1.03 Veterinary Services include the Kabul Central Diagnostic Laboratory, Regional Diagnostic Stations at Baghlan, Herat, Kandahar, Jalalabad and Balkh, and twenty-seven Animal Health Centers with twenty-three sub-clinics in the provinces. Current developments include the transfer of the Central Diagnostic Unit into new premises under construction in Kabul, and the establishment of additional provincial sub-clinics. The structure of the Veterinary Services Division is well suited to conditions but the Division lacks a satisfactory operating framework, experienced and competent staff, vehicles and equipment and is consequently not able to offer a fully effective animal health service.

1.04 The Vaccine Production Laboratory in Kabul is old, ill-equipped and frequently lacks essential materials. There are limited viability testing facilities (small animals only) and insufficient staff, facilities and equipment for good quality control. As part of the Sera and Vaccine Institute, new laboratories are being constructed, and vaccine production will then become the responsibility of the Ministry of Health. In addition to a small number of imported vaccines, production in 1356 (1977/78) was as follows:

<u>Disease</u>	<u>Number of Doses (000's)</u>
Anthrax	2,770
Black leg	375
Cl Welchi mixed	326
Newcastle A	1,190
Newcastle B	621
Sheep pox	2,070
Fowl pox	102
Enterotoxemia	432
Pasteurella	302
Rinderpest	183
	<u>8,371</u>

Vaccine production has increased markedly since 1973-74 when annual production was only 2-3 million doses, but even present levels are not adequate to give satisfactory cover to the animal and poultry population. Vaccinations and clinical treatments are provided free to livestock owners. Limited quantities of a number of drugs including materials such as poultry vitamin supplements are also provided free. The Afghan Fertilizer Company (AFC) has a monopoly for the sale of veterinary drugs. The number of outlets are limited and not always sited for the convenience of livestock owners. AFC mark-ups appear high making the retail price probably higher than necessary and thus unattractive to livestock owners.

1.05 Technical Assistance. Present technical assistance includes professional staff provided by USSR for four regional diagnostic centers, and a UNDP financed 5-year US\$2.2 million project providing assistance to the Central Diagnostic Station, Vaccine Laboratory and veterinary services in 4 provinces. USSR aid and a further UNDP US\$376,000 project provide support to the recently re-established Faculty of Veterinary Science. The Federal Republic of Germany and French bilateral assistance are providing equipment and staffing for the new vaccine laboratories, and the IDA supported Livestock Development Projects 1/ include a veterinary component with expatriate veterinarians and vehicles, and financial support to the Vaccine Production Laboratory.

1.06 Staffing. Afghanistan has only about 23 qualified veterinarians, many of whom lack experience in veterinary practice. Most are involved in administrative duties, teaching and vaccine production and the number actually working in the field is very low. Approximately 350 graduates from the Animal Health and Production Institute (Kabul) make up the bulk of the 495 trained staff. This Institute, originally started with UNDP assistance and now part of the Higher Agricultural Studies Institute administered by the Department of Education, gave a 2-1/2 year course with little practical content to students who had completed twelfth grade education.

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1/ Credits 375-AF and 649-AF, IBRD report Nos. 560-AF, March 1973 and 1043-AF, May 1976.



1.07 Training. Thirty to forty graduates are expected to complete the 5-year Faculty of Veterinary Science course in 1979 and approximately 40 annually thereafter. In addition, about forty Higher Agricultural Studies Institute veterinary graduates are expected to become available each year. These graduates will lack practical understanding of disease control, and still less of husbandry, nutrition and livestock owners. Before an effective animal health service can be established staff need to undergo substantial field training, but overall, the quality of staff entering the Department in future should be improved.

1.08 Equipment and Facilities. The Veterinary Services Section has inadequate equipment, facilities and vehicles. Vaccines cannot be stored under required refrigerated conditions at more than 3 or 4 animal health centers. Because of the experienced staff and vehicle shortage and the absence of an appropriate operating program, clinical services are largely restricted to treatment of animals brought to clinics, or to those living in the immediate vicinity. Vaccination campaigns against specific disease outbreaks are undertaken, but not always on time or effectively as they might be. Mobilization of a team with minimum equipment and transport in too many cases is too difficult and too slow. The slowdown in the rinderpest vaccination campaign is an example. Three years after withdrawal of UN technical and financial support at which time all equipment and vehicles were handed over to the Department, few further vaccinations have been done and the effective unit, with its valuable cadre of experienced staff, is largely inoperative. As the rinderpest campaign must be revived, it has been necessary to seek UN assistance for re-activation of the vaccination unit. Without better facilities, transport, a larger number of trained people, and a positive approach to taking veterinary services to the villages and pastoralists where the need is greatest, more extensive and effective disease control is not possible. Figures show substantial vaccinations in increasing numbers being done each year but in relation to the total need and cost, they are inadequate.

1.09 Health and Production. The major limiting factor in animal production is the quantity and quality of food available to livestock. Malnutrition is the single most important "disease" of Afghan livestock. The marked variation in range production between years, coupled with the tendency of flock owners to follow a "safety in numbers" policy results in periodic drastic shortages of feed and serious animal losses (Annex 2, Table 1). Taken in isolation disease control alone can do comparatively little to increase total livestock production, but it can prevent serious losses within individual flocks and massive contagious disease outbreaks which cause drastic reduction in numbers. Furthermore, adequate disease control is necessary to support any improved husbandry and nutrition program. However, without a feed base improvement and control of numbers, better animal health will cause numbers to increase more rapidly and consequently, more frequent and severe losses during cyclic periods of animal starvation caused by a combination of too many animals and disaster, such as prolonged drought.

## II. Constraints to Improved Animal Health

2.01 An inability to identify priorities and limit objectives has led to a dissipation of limited resources in manpower, finance, and equipment over a wide area, and despite substantial technical and financial assistance over a long period, an effective animal health service has not yet been established.

2.02 While in terms of need there is a shortage of qualified and experienced veterinarians, and supporting technicians, the real problem is the lack of practical training and experience and the overall framework deficiencies in which the staff operates including a positive will to take veterinary services into the villages.

2.03 A shortage of vehicles and equipment results in inadequate support to field staff and a limiting of activities in an operation where mobility is particularly important.

2.04 Clear direction to field staff as to how they are to conduct and implement the animal health control program is lacking. There is insufficient contact between head office and field staff and effective supervision and staff motivation, retraining and inservice training programs are inadequate.

2.05 Diseases of national economic importance which should be given priority for control and eradication, have with the exception of rinderpest, not been defined. Furthermore, little attention has been paid to the economic benefits to be obtained from control of various diseases. Also while it is said that most known animal diseases exist in Afghanistan, their extent and area of concentration is not known with any accuracy.

2.06 The policy of providing veterinary services both prophylactic and clinical, together with some drugs and medicines, free of charge places a heavy drain on the Department's limited financial resources, and hence limits the service. Because staff stationed in clinics generally lack mobility, only those farmers situated close to clinics receive much service. As AFC retail outlets are limited, livestock owners often need to travel long distances to obtain high priced drugs.

2.07 Staff motivation and morale is an important constraint. They receive too little training or instruction in the psychology of dealing with farmers. Senior, well qualified staff are reluctant to serve outside Kabul and still more reluctant to serve outside the main animal health centers, which because of the lack of facilities and housing in most rural areas is quite understandable. Positive, motivation orientated staff management is virtually non-existent in most Afghan ministries, particularly for those who serve in the field. In most ways it is understandable why staff, particularly senior and qualified veterinarians, wish to remain close to Kabul. Administration is very centralized and Kabul is the power center where promotion opportunities are greatest. A monetary and promotion reward system should be introduced for field staff thus providing badly needed incentive and morale stimulus for those who serve in more remote areas.

2.08 The role that an effective animal health service could play as an element of social and economic change in rural society is not appreciated to any extent. Animals are vital to community life and through an effective animal health service the rural population could come to learn something of benefits to be obtained through improved nutrition and hygiene for both animals and people. It can be a very effective means of establishing community confidence. In general, understanding and sympathy for farmers' problems could be greatly improved among those involved with animal and production programs.

2.09 The nomadic and transhumant nature of the livestock industry constrains devising and implementing an effective animal health program. During the summer those with the largest livestock numbers are spread over wide areas and providing any meaningful service except for livestock owned by sedentary farmers, is difficult. However, livestock are concentrated during the fall, winter and spring, and an effective service could then be implemented.

2.10 Due to a complex of interrelating factors including experiences resulting from the implementation of a livestock tax some ten years ago, an inadequate appreciation of livestock owner's problems and values, and the occasional use of vaccines which are either not effective against the disease concerned or actually cause death, livestock owners (and all farmers) have a distrust of Government and Government servants which makes obtaining their cooperation a difficult task.

### III. Recommended Policies, Programs and Projects

3.01 Operational Review. The Ministry of Agriculture has a vital role to play in animal health control and priority should be given to an in-depth review and evaluation of the effectiveness and operation of the Veterinary Services and Animal Production Department identifying bottlenecks and other weaknesses and making recommendations for their amelioration. The review should inter alia make recommendations for an effective operating framework providing timely and effective animal health control services, adequate support for field staff, promotion based upon field service experience, timely supply of supporting equipment, vaccines, medicine and drugs, quick efficient response to outbreaks of diseases of national importance, and more program orientated, responsive management and staff supervision. Aspects of staff training and recruitment are discussed in more detail in Annex 5.

3.02 Definition of Notifiable Diseases. Although a great deal needs to be done, objectives should be limited to those which can be effectively achieved within the resources available. The Animal Health Service should give priority to controlling diseases of national and economic importance. The Department should, after a full review of existing knowledge, establish a list of "notifiable" diseases, control of which should be given priority. Complete nation-wide coverage of a large number of diseases is considered at this stage to be neither practical nor desirable. Criteria for selection of "notifiable" diseases should give heavy weight to the cost of control, and to the economic

and financial losses caused. Control of "notifiable" diseases should be done on the basis of a national program centered around the establishment of highly mobile, fully equipped and staffed vaccinating teams. These teams should not attempt to carry out a total eradication program which is not considered a practical or economically justifiable objective. The vaccinating teams, for which a cadre of experienced staff already exists, should be established in strategic centers such as Kabul, Mazar-i-Sharif, and Herat and later in Kunduz, Kandahar and Jalalabad. Through the information network established by Animal Health Centers and Sub-clinics and the Regional Diagnostic Centers, the outbreaks of "notifiable" diseases could be contained by the vaccinating teams on a "fireman" basis.

3.03 Clinics. Further expansion of the numbers of clinics and sub-clinics should in the meantime be restricted until each existing clinic is adequately equipped (including transportation) and staffed, and an effective service is being provided to the livestock in the respective 'command' area. The present policy of establishing clinics is, in principle, a sound one, but it should be modified in accordance with the availability of trained staff, equipment, and management support.

3.04 Cost Recovery. "Notifiable" diseases should be controlled free of charge. All other veterinary services, particularly clinical and vaccinations, should be charged for on a simple fixed rate basis; veterinary drugs and medicines should be charged for at cost, but farmers should not be expected to meet the full overhead costs of any distributing agency (which may be inflated due to operational inefficiency). Wide publicity over radio and through extension services should be given to the actual charge to be made by the Veterinary Services Department for these services. It is considered important that the progressive introduction of a charge for at least some aspects of veterinary services be commenced as soon as possible. Inadequate 'budget' (finances) is frequently quoted as the main reason why objectives are not achieved and the animal health service is not as effective as it might be. While this is correct to some extent, it is not the only reason for past unsatisfactory performance. However, it is unlikely that Afghanistan could ever afford to provide a nationwide effective service completely free to the beneficiaries.

3.05 Staff Supervision. In order to increase effectiveness regular supervision from senior management through to technical staff stationed in sub-clinics is essential. Supervision should be time fixed, so that staff know those days on each week upon which they will receive a visit from supervisory staff. By this system new and improved technology is quickly passed through to farmers. Regular supervision gives staff the opportunity to obtain guidance on problems encountered in the field. The training and visit system is a proven, effective method of upgrading staff quality and morale and the service they offer.

3.06 Diagnostic Laboratories. The number of diagnostic laboratories should be restricted to perhaps three or four. These should be properly equipped staffed, and have adequate financial support. Emphasis should be placed upon determining exactly which diseases and parasites exist in

Afghanistan, their economic importance and the location of more concentrated areas of infection. It would be unnecessarily expensive for Afghanistan to attempt to provide sufficient facilities and highly trained staff, to be able to undertake diagnostic services for every possible disease. Reliance should be placed upon the enormous improvement in international air transport, and the opportunity it offers, for making use of international centers equipped with the sophisticated equipment, and staff, to undertake diagnosis of rare diseases. Similarly, Central Diagnostic Station should not undertake any basic research. Research of an applied nature is important but Afghanistan has neither the finance, staff, nor the need to maintain a meaningful research program in veterinary science.

3.07 Legislation. While specific animal disease and animal health service control legislation is a desirable objective, it should be simple, practical, and capable of being enforced. The introduction of sophisticated, complicated legislation which Government cannot enforce is likely to have an undesirable effect. That which cannot be enforced tends to bring both Government and the law into disrepute with the very people whom it is designed to discipline. In this regard, an important aspect of the proposed legislation would be the designation of "notifiable" diseases.

3.08 Vaccine Production. The present policy regarding vaccine production should now be objectively reviewed. A fairly large range of vaccines is presently produced, and whether it is desirable, economic, and necessary for Afghanistan to produce such a range should be carefully examined. A more effective policy might be to limit production to those vaccines which can be produced to acceptable international standards under Afghan conditions, and import those which require more sophisticated equipment and facilities. In any event the production cost of local vaccines should be properly monitored and compared on a continuing basis, with the costs and quality of similar imported material. Similarly AFC drug distribution should be increased by appointing veterinary technicians and local pharmacies as agents and reducing AFC price mark-ups to a minimum. New developments in the veterinary medicine field continue rapidly and consequently the types of drugs imported and sold through AFC should be regularly reviewed.

3.09 Academic Qualifications. More practical type training and experience should be introduced into the existing education program. No degrees in veterinary science should be granted until such time as the candidate has spent a minimum of one year in the field operating amongst farmers. Only after successful completion of this probationary field experience should graduate degrees be confirmed. A similar system could be introduced for all other qualifications in veterinary science.

3.10 'Barefoot' Veterinarians. While a limited number of fully qualified veterinarians are required, training should give priority to the production in larger numbers, of technical, practically-orientated 'bare foot' veterinary staff. In order to extend veterinary services to farms and villages on the required scale more emphasis should be placed on training literate villagers in simple veterinary first-aid and vaccination techniques as part of a 'bare-foot' veterinarian approach. Academic qualifications are not necessary for

those simple tasks; indeed using qualified Animal Health Assistants or Veterinarians to do them would be poor utilization of a scarce resource. If Afghanistan wishes to implement a veterinary service using only fully qualified people then many years will pass (with much economic loss in the meantime) before this could be accomplished and it would not be learning from the experience of countries with sophisticated animal production systems where farmers do most veterinary first aid and vaccinations.

3.11 Continuous Training and Supervision. Once a satisfactory operating framework and management program has been devised and introduced, a complete retraining of the existing staff progressively implemented over time, is considered necessary. Retraining should not only focus upon the technical aspects of animal health, but should deal with the wider dimensions of an efficient animal health control service. A pilot program could be introduced, involving a regular routine of visiting a fixed number of villages on a fixed route with a veterinary team which could include a veterinarian or technician, a vaccinator, and an animal husbandry/nutrition extension officer. Staff in the veterinary team would receive regular in-service training from supervisory staff in the Animal Health Centers. Similarly, subject matter specialists from head office or regional centers would be made available at the regular training sessions to discuss problems encountered and new techniques and technology. Such a program could have a wide impact in Afghanistan but it should first be tested on a pilot basis, being well monitored and objectively evaluated after an appropriate introductory period.

3.12 Village Veterinary Service. As an alternative, or perhaps part of the pilot program suggested in para 3.11 above, the establishment and progressive expansion of a village based veterinary service, using well trained and supervised 'village veterinary workers' (VWV) should be considered. VWV's would be literate village based farmers who had successfully passed an initial one or two month training in vaccination techniques and simple veterinary first-aid. Each VWV could, depending on population density and communication network, handle 4 to 8 villages on a regular routine visit basis. He would receive regular twice monthly in-service training from a clinic based Animal Health Assistant (AHA) who would also spend regular time in the field with the VWV. Each AHA would supervise about 8 VWV's who would also act as AFC agents for drug and medicine sales. About 8 AHA's would be regularly supervised and trained by one qualified veterinarian. Qualified experts from head office would take part in these training sessions on a regular basis, but in any event not less than 3 times annually. Thus one veterinarian could indirectly provide an effective service to perhaps 60 villages or about 3-4,000 farm families. Such a scheme would take veterinary services to the villages where the need is most. In the Rural Development Project 1/ which would implement such a service, the benefits in increased productivity and offtake have been estimated, after including all investment and operating costs, and an experimental range management component, to show an economic rate of return of at least 24% which is very satisfactory.

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1/ Credit 928-Af; IBRD Report 2297-Af.

AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

Animal Nutrition and the Rangelands of Afghanistan

I. Present Situation

1.01 Animal nutrition, or the lack of it, is the number one "problem" of Afghan livestock. As the vast depleted rangelands are an integral part of nutrition, a meaningful discussion of one is not possible without the other. The number of animals, sheep, goats, horses, donkeys, camels, cattle and poultry which the country can support is dependent on the total amount of feed available. The major factor influencing the level of livestock production is the quantity and quality of this feed available to the individual animal. Well fed animals are better able to withstand the effects of disease and parasites, hence lower mortality, higher reproductive and offspring survival rates, extended productive life, faster growth rates and increased outputs of milk, meat, wool, and hair. As most animals in Afghanistan receive largely suboptimal levels of nutrition, increasing the total supply of livestock feed, particularly forage, is an essential prerequisite to increasing livestock production. Sources of livestock feed include rangeland "pastures", crop residues (stubble, straw), forage crops (alfalfa, clover, green barley) and industrial by-products, such as cottonseed cake, rice and wheat milling by-products, cottonseed hulls, sugar beet pulp and molasses. Any estimates of the total feed available, including annual range dry matter production, and annual demand from estimated animal numbers so as to arrive at some 'feed balance' figure would, due to the lack of any reliable statistics, be meaningless. The one really reliable feature is that on average, feed demand exceeds supply.

1.02 The ranges provide about 70-80% of the total animal feed available, including all the feed for the majority of sheep, goats and camels and a considerable proportion of that required for cattle and donkeys. Range production varies according to climate, altitude, soil type and the degree of degradation caused by overgrazing, fuel harvesting, erosion and previous history of dry land cultivation. It probably ranges from 100-1,500 kg of dry matter per hectare annually, with an average probably not exceeding 750 kg. Throughout most of the year and in most seasons the range produces only sufficient feed to enable animals to meet minimum requirements. In spring and early summer, short growing season perennial grasses provide good quality feed in reasonable amounts for a limited period. Marked between-year variations in precipitation result in equally variable range "pasture" production. In good precipitation years, rapid increases in sheep and goat numbers can be achieved as a result of increased reproductive rates (60% to over 80%), decreased mortality (20% to less than 10%) and a reduction in animal sales due to the increased feed supply.

1.03 Livestock utilizing the ranges are owned by both nomads, who adopt a transhumant grazing system often moving long distances, and sedentary farmers whose animals graze near villages. All possible variations between these two extremes exist; semi-nomadic, semi-sedentary and so on. The ranges are largely State owned and grazing is mostly free, although cases have been reported of pastoralists having to pay grazing and watering fees to those who claim ownership through traditional use rights. While some traditional use rights are recognized by flock owners who tend to keep to the same areas each year, use is flexible and each season livestock are distributed over the rangelands in relation to feed availability. Flock owners, particularly those without land, regard their flocks as their economic and social wealth. Except for salvage when on the point of death or in cases of real need, females are rarely sold. Males are normally sold at about age 2 years. When selling is necessary male goats are sold first, then male sheep, followed by female goats and finally female sheep.

1.04 In years of good precipitation, livestock numbers rise rapidly, particularly when two or more good seasons follow successively (see Table 1, page 11 for illustration). Numbers tend to build up to a level which cannot be sustained and poor growth seasons then result in high death rates and a major increase in sales. Total death rates exceeding 50% have been reported over large areas in the past, but objective, reliable surveys have never been undertaken. However, it is clear that substantial losses and destocking of the ranges does occur periodically. As a consequence, particularly when "normal" precipitation is restored, feed supplies increase, flock owners sell less animals, reproductive rates are high, mortality low, and so the climb to the next cyclic drought and disaster begins all over again.

1.05 Goats are kept by flock owners because of their high fertility, greater hardiness, as a source of hair for making tents and for leading sheep to graze areas where they would not normally go. With a higher survival rate goat numbers increase proportionate to sheep following catastrophic years but decline following successive good seasons. If adequately fed numbers could be maintained at a constant level, the proportion of sheep would increase.

1.06 Crop by-products, particularly straw, are largely used by draught animals, lactating cows and young cattle. Little surplus is available for range fed sheep and goats during the critical late autumn, winter and early spring. Crop aftermaths provide useful feed for range fed animals in late autumn, but because, in relation to demand, the area is small and the feed value low, the relative contribution is small, and largely used by village based animals. Limited areas of irrigated legume forage crops (alfalfa, clover) and barley are grown, largely to supplement draught animals and lactating cows, and for urban markets for use by horses and donkeys. Sheep fattening, based on alfalfa, clover, barley and cottonseed cake is practiced to a limited extent in villages to produce meat for family use. Around the larger cities small commercial feed-lots exist specializing in fat sheep production for butchers during late winter and early spring when meat prices are at a maximum.



1.07 Cottonseed cake and rice and wheat milling by-products are mainly used by draught animals, lactating cows and small-scale fattening operations. Considerable sugar beet pulp and molasses wastage (para 2.10, page 11) which could, with processing, become useful stock feed, is reported. Limited alfalfa hay and straw conservation is practiced by villagers, particularly for cattle, but little is conserved by transhumant flock owners. Landless flock owners have no animal feed reserves although some do save small amounts of range plants. During severe stress periods they buy if available, barley, maize grain, and alfalfa hay usually for a limited number of individual animals to prevent death, but supplementing to improve performance is rarely practiced.

1.08 Traditional range grazing systems are determined by the availability of summer water. The transhumant system is a form of rotational grazing with forage conserved in-situ on ranges when stock are grazing elsewhere. A large proportion of the winter feed available is grown while animals are summer grazing in the mountains. The more intensive use of these wintering areas by non-transhumant village based animals reduces the winter-spring feed available to transhumant and nomadic flocks.

## II. Some Issues and Constraints Involved in Improving Animal Nutrition and Range Production

2.01 Various methods of improving animal production by increasing or improving feed utilization have been proposed and are discussed below.

2.02 Watering Points. Claims are made that large areas of range cannot be utilized due to access and water problems and it is frequently recommended that water points should be installed in such areas. The extent and precise location of such areas never seems to be known, but considerable areas can only be partly utilized due to water shortage for both animals and people. The range ecology is protected to some extent by these difficulties. Water point installation on winter ranges presently not used in summer because of water shortage, would result in increased summer grazing of that range. This would have two serious adverse effects. Continual use would prevent plant recovery now achieved to some extent, by summer spelling, and less build up of winter feed for transhumant/nomadic flocks. Consequential greater summer range exploitation could lead to plant cover deterioration in higher regions resulting in faster water run off and greater erosion, both of which would seriously affect irrigation systems. Increased range exploitation therefore offers little towards increasing animal production and may have serious adverse long-term effects. Amelioration of the over grazing and animal nutrition issues requires a more fundamental approach. Despite pastoralists consistently claiming that lack of water is their most serious problem, providing it could upset the present precarious range ecological balance. Afghanistan should not repeat the mistakes made in other areas (particularly Africa) where installation of water points has contributed only to a breakdown of the existing nomadic system which is a form of rotational grazing; increased pasture degradation in areas adjacent to water points; and over time to decreased

animal production. In some cases water points can be justified but they should be rainfed storage only and not permanent wells. In this way the feed available on nearby ranges will be roughly proportionate to the amount of stored water.

2.03 Livestock Numbers and Animal Health Control. It is frequently said that increased production can be achieved by increasing numbers through improved disease control. While this is correct in the absolute sense, programs to increase livestock numbers cannot achieve long-term beneficial results as it is the range ability to produce feed which largely determines carrying capacity and production. Without a concomitant program for increasing total available feed, and increasing annual offtake by providing regular marketing opportunities and price incentives to producers, this is not considered to be a viable approach. This does not mean that animal health control is considered undesirable or uneconomic; but animal health and feed production should be part of integrated programs.

2.04 Range Pasture Production. One approach to increasing range "pasture" production would be by controlling grazing, oversowing with suitable legumes, and planting shrubs, trees and other nonedible tall plants to create better ground level growing conditions for edible plants. Any range development requiring investment and management can only be undertaken if grazing is controlled. Before such a program could be attempted surveys and research need to be undertaken to determine in detail the agronomy, ecology, and sociology of the rangeland complex. Research would also be required to identify potential productive plants and the management required to maximise production and utilization. All aspects of present range production and use would need to be examined, in addition to screening and management trials of potential local and imported plant species suitable for livestock fodder, fuel, erosion control and ground shelter. This must be recognized as a long-range research project.

2.05 Nomads. A discussion of the sociological dimensions of the rangeland complex is beyond the scope of this report, but the nomads of Afghanistan are a vital factor in the rangeland issue. The contribution which these people make to the sub-sector and to the economy as a whole, although presently unquantified, must be very significant. Frequently, suggestions are made that settlement - forcibly if necessary - of the nomads would resolve the issue once and for all. While nomadic settlement has occurred, in most cases with mixed success, it cannot be viewed as the panacea of all rangeland problems. Indeed strong arguments can be made for maintaining the present system, at least until something better has been devised and proven. The nomads and their pastoral system represent one of the nation's great resources. They utilize a resource and make a contribution to the economy without any call upon Government services or expenditure; and no other group or system in Afghanistan could utilize the harsh remote rangelands any other way. While some modification of the present system, such as encouraging partial nomadic settlement combined with maintaining the migration system, may be desirable, it should be allowed to evolve slowly and with the full support of the people it is designed to help; the nomads themselves. Government policy should be

designed to extend services such as veterinary, health, education, cooperatives and so on to nomads, as a means of establishing confidence among the people and ultimately educating them on the benefits to be obtained from controlled grazing, limiting livestock numbers, partial permanent settlement, education and health programs. Care needs to be exercised in ensuring that any program designed to help nomads is both very carefully prepared, has a reasonable chance of success and is efficiently executed by people with expert knowledge (and sympathy for) both the complex as a whole and the people in particular (a specific pilot program is discussed in paras. 5.05 - 5.12 of the main text).

2.06 Legumes in Rainfed Cropping. Use of rainfed crop land for forage and domestic fuel production to reduce the removal rate of Artemesia species from the range is a suggested action course. Rainfed crop land could be used to produce legume forage crops in rotation which would improve other crop yields. Considerable research is required to identify suitable plants and their required management. Research in some Middle Eastern countries has shown that some medics, under rainfed conditions can annually 'fix' per hectare, 40-80 kg of nitrogen which is ultimately available to plants. Potential also exists for growing woody shrubs on rainfed land for domestic fuel production thus helping to reduce the present rate of range degradation caused by bush removal for domestic fuel use. 1/ Such species are important both for their ability to produce animal feed and the micro climate they create which enables other plants, such as annual grasses to survive. Such a research program, which must be long term in nature but could ultimately have significant beneficial effects, particularly for the rural poor, should be initiated.

2.07 Irrigated Forage Production. The use of irrigated land for forage production is perhaps the area with greatest immediate potential, but like range improvement, it is a complex of interrelating factors including the sociological dimension. Depending on their water rights most farmers grow small areas of forage (alfalfa, green barley and clover) for draught animals, lactating cows and fattening sheep for domestic consumption and in some cases for sale. Increased areas of irrigated forage involving diversion of the free but high value resource of water from largely subsistence crop growing will not be achieved until farmers' food risks are either ameliorated or eliminated. Firstly farmers must be assured of food security; secondly the alternative enterprise of forage crop-livestock production must be profitable in the farmers' eyes; thirdly a stable reliable marketing system must be created and maintained; and fourthly the support services in the form of reliable animal health and husbandry extension must be available. This is most likely to be achieved in the foreseeable future within the context of well conceived and executed integrated rural development projects and programs as recently proposed for Ghazni-Wardak. A further possibility (and in the long run the most desirable) is to develop sheep fattening with legumes and green feed

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1/ Survey and measurements made by HLDC suggest that in at least one part of Northwest Afghanistan the factor making the single largest contribution to range degradation is bush harvesting for domestic fuel use.

crops as part of balanced rotations on irrigated land, emphasis being placed on growing 3-8 months old male lambs; the age when the most efficient conversion of feed to meat would be achieved. Highest death rates occur in winter and early spring in sheep less than one year old and growing these animals on high quality irrigated forage would avoid this loss. A conversion rate of 1 kg liveweight per 8.6 kg D.M. of green alfalfa has been obtained in feeding trials carried out by HLDC in Herat. Table 4, page 10 (main report) gives an analysis of 'gross margins' to obtain from various principle crops including sheep fattening and milk production based on alfalfa feeding. The detail upon which these gross margins are based are shown in Annex 2 Table 2, page 13. The key advantage of Afghan alfalfa production is, where water is adequate, the very high yields obtained from local varieties. Despite theoretically attractive income possibilities farmers appear reluctant to undertake sheep fattening based on the production of irrigated legume forage crops. The reasons are complex but could include alfalfa yield being largely dependent on an assured adequate supply of summer water; uncertain availability of feeder sheep at stable prices; unknown mortality rates; variable growth rates; lack of marketing opportunities; the necessity to purchase animals at current market cost when the likely scale price is not known; the lack of reliable veterinary and animal husbandry extension services; and in some areas labor shortages, particularly during critical "high demand" periods, such as harvest and crop planting. While yields are always an inherent farming risk, major crops such as rice, wheat, cotton and beet have a relatively fixed market price, assured outlet and known production cost. The risk involved is therefore, low in comparison to sheep fattening. Perhaps the key issue is water supply. Because food security has first priority, and because alfalfa has a very high water requirement compared to wheat, farmers cannot afford to grow it unless summer water is plentiful. But the long term objective should be to integrate livestock and agricultural crop production into agronomically and economically sound farm management systems which involve the concept of plants and animals rather than plants or animals.

2.08 Surplus Sheep Sales. One concept involves the removal from the range of nonproducing and aged females which have a poor survival chance, and removal of young males for fattening before the winter. Livestock owners are reluctant to sell such animals unless they require cash for domestic needs. If by some means, total numbers were controlled these classes of animals would have to be sold; but numbers control is a very complex issue. The concept of providing a stable market for "surplus" sheep and goats is being tested under the IDA supported livestock projects and it seems at this stage that the factors which influence flock owners to sell are more complex than originally perceived and further experience is clearly required.

2.09 Rangeland Control. An important objective frequently recommended is to control animal numbers to obtain optimal production from the available forage, and introduce management programs designed to conserve and ultimately improve rangeland "pasture". The introduction of laws controlling livestock numbers would presently be socially undesirable and impossible to implement. The possibility exists however of defining relatively small user groups for specific rangeland areas, and through extension and demonstration, get each group to exercise self control of numbers. In order to get members to accept

decisions on range use and livestock number limitation made by the group or its headman, the user group would have to be reasonably homogeneous. At present, a proportion of flock owners customarily using rangeland will move if their normal grazing suffers from a local drought. This desirable flexibility would be lost if rangeland was allocated to user groups. It must be appreciated however that the rangeland of Afghanistan, vital as it is to the livestock economy is a complex of socio-economical-ecological factors which presently is roughly in balance, and about which little is known. While the vast rangelands have potential for increasing livestock production, no wholly successful program involving such a complex has ever been devised or implemented anywhere in the world. It has proven very difficult to reconcile the basic issue involving community use of land with private livestock ownership. Not only is control of numbers an essential prerequisite, but the numbers of people owning livestock using the ranges must also be ultimately controlled, a factor seldom appreciated fully by the advocates of range improvement programs. No easy or quick solution is possible and Afghanistan must reconcile itself to the fact that, without the background of a long term survey and research program, no meaningful progress can be made in this field. Indeed it is potentially dangerous to meddle with the complex without knowing the full ramifications of any actions taken.

2.10 National Feed Reserve. A national stock feed reserve has been proposed to provide supplementary feed in (a) drought years, and (b) the annual winter-early spring feed shortage period. Such a scheme would require a massive investment. For example, about 10,000 tons of alfalfa hay 1/ would be required to feed all the sheep of Afghanistan for one day at maintenance level. At present values this would cost about Af 40 million (US\$1 million) excluding interest, storage costs and operating. The administration of such a scheme, including deciding when and to whom the forage should be made available, would be almost impossible and has not been implemented on a large scale by any developing country. The program would also remove scarce feed supplies while being conserved and thus reduce production at that time, unless the unlikely situation of a large national feed surplus existed. Unless animal numbers were controlled, they would continue to increase to a point where it would again become impossible to prevent major losses by starvation and the originally perceived food storage requirements would be inadequate. Presently winter and early spring feed supplies limit the range carrying capacity. Regular use of conserved feed during this period could enable numbers to increase to a point where severe range degradation would take place in the highland summer areas. Transhumant sheep and goats make considerable liveweight gains during summer and lose weight in winter and early spring. While this is not a technically efficient method of conserving energy for winter/spring requirements, it is costless. While a national feed reserve program is impractical more conservation and purchase of supplementary feed by individual

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1/ 23 million sheep and goats; average liveweight say 25 kg at 1.5% of liveweight = about 370 gms DM/head/day = 8,510 tons DM/day. 10,000 tons hay = 8,500 tons DM.

flock owners is necessary to improve animal output. The availability of credit particularly to landless flock owners may assist. Supplementary feed storage should therefore be part of total cooperative programs which address all the development process factors including the most critical viz., some means of controlling animal numbers.

2.11 Industrial By-Products. Proposals are being considered for the utilization of agricultural and industrial by-products particularly beet pulp and molasses, by feed compounding. Cotton seed cake is exported 1/ and waste is reported of the limited supply of sugar beet pulp (about 40,000 tons wasted) and molasses (2-3,000 tons wasted) at Baghlan. This material could be useful feed once processed. Feasibility studies 2/ for a feed mill establishment using these by-products have recently been completed but a detailed appraisal has not been undertaken. Further examination of the proposed feed mill within the context of a dairy-poultry production project should now be done. Apart from molasses and beet pulp, which cannot be economically handled nor safely fed in large quantities, there appears little if any advantage to the farmer in blending and processing of oilseed cake. The main effect of further processing and mixing would be to increase price without any parallel increase in benefits. Given a reliable incentive in milk and poultry product prices, and satisfactory marketing arrangements, the use of processed feeds could be worthwhile and a feed mill seems to have a place in an economy where most animals are underfed and potential valuable feedstuff is wasted.

### III. Recommended Policies, Programs and Projects

3.01 Strategy for improving animal nutrition in Afghanistan should involve a basic policy of not increasing livestock numbers. While Government has no means presently of controlling numbers, all livestock and agricultural programs and projects should include measures designed to increase offtake and marketing opportunities, and provide the inputs and services necessary to increase both livestock and crop production.

3.02 Improved animal nutrition can only be achieved by increasing the total amount of digestible feed available for the national flock and herds. A total increase in feed can be brought about in four ways: firstly, increasing the amount of animal forage grown on irrigated land; secondly, introducing suitable leguminous crops onto rainfed land; thirdly, introducing a range management control system combined with introducing suitable legumes and woody plants to increase range pasture productivity; and fourthly, improving the utilization of crop and industrial by-products presently wasted.

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1/ Estimated annual oilseed cake production, including sesame and cotton seed is about 20-25,000 tons of which 10-12,000 tons is exported.

2/ Provisional and Second Reports 'On the Feasibility of an Animal Feed Industry in the Region of Baghlan'; Swiss Technical Cooperation, March and July, 1977.

3.03 Increasing the amount of irrigated forage grown to increase animal production will be dependent upon: firstly, national priorities for water use; secondly, alleviating farmer's risks by attaining national food security; thirdly, providing adequate price incentives for livestock products; and fourthly providing adequate support services to farmers (extension, veterinary, marketing). Such a program is likely to be brought about only progressively and over time and is best implemented within the context of integrated rural development projects such as that proposed for Ghazni-Wardak; or those suggested for poultry and dairy which would involve specific measures to meet the above requirements. It is not suggested that irrigated leguminous forage should replace other crops completely, but that its wider use in irrigated crop rotations should be expanded, to the benefits of 'other crops' and animals. The maintenance of a proper balance between areas of crops grown and livestock production is important for the whole agricultural sector. How such a balance might be maintained is beyond the scope of this report, but it must be examined on a continuing basis by those who fix prices for key crops such as wheat and cotton, and for livestock products such as meat and milk.

3.04 In support of such projects and programs the Ministry of Agriculture, Veterinary Services and Animal Production Department could introduce a livestock husbandry-nutrition extension service based upon the existing animal health centers and subclinics. Personnel would concentrate only on nutrition and husbandry and not be involved in other extension activities. Staff could initially be recruited from existing extension officers and given a minimum of one year re-training which should involve a period of not less than 6 months practical experience working in villages. As part of this program teaching at the Kabul University Faculty of Agriculture and Higher Agricultural Studies Institute should place increasing emphasis on animal nutrition and animal husbandry.

3.05 Forage production research both on rainfed and irrigated land has received virtually no attention in Afghanistan. Considering the nation's reliance upon livestock and the animal nutrition position this is a serious deficiency. The Veterinary Services and Animal Production Department efforts have been almost entirely devoted to animal health control and the operation of Government farms. It is essential that the question of suitable leguminous forage production and related factors should receive higher research priority.

3.06 The establishment of a feedmill 1/ as presently proposed using industrial by-products seems logical and appropriate. However some aspects, particularly the proposed consumer price in relation to alternative feedstuffs such as cottonseed cake, should be more carefully examined. For example, cottonseed cake sells at about Af 4/kg, while the suggested price for 'processed' feed is Af 5.2/kg. Excepting poultry feeding, cottonseed cake would give much the same benefits. The feedmill establishment within the context

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1/ Provisional and Second Reports "On the Feasibility of an Animal Feed Industry in the Region of Baghlan", Swiss Technical Cooperation, March and July 1977.

of a milk and poultry production project would probably be more appropriate. With poultry, grain conversion efficiency, together with other blended concentrate feed, is high, and with the nation nearing self-sufficiency in grain production and programs about to be launched which should lead to national food security, the establishment of a poultry industry with a supporting concentrate feedmill is worthy of detailed study (Annex 4E). However, Afghanistan should not encourage animal fattening or milk production based upon feeding large quantities of relatively expensive concentrates and grain. Leguminous forage crops, particularly the high yielding alfalfa, together with crop residues and roughages could provide an adequate and cheaper feed base for these types of animal production. To feed grain to cattle and sheep in a country barely self-sufficient in human feed grain would not be appropriate.

3.07 The enigma of the vast rangelands of Afghanistan have been dealt with in some detail. No easy solution is possible and Government must reconcile itself to the need to launch a long-term research and survey program. The issues at stake however, are so vital and the factors involved so complex, that great patience must be exercised by all concerned, before any meaningful and worthwhile results can be achieved. A survey of the entire ranges involving the agronomy, ecology, sociology and economy involved is a vast undertaking but such a survey is recommended for progressive implementation over time. The survey should be backed up with necessary applied research which would establish inter-alia, those plant species including woody plants and legumes which could be satisfactorily introduced onto controlled grazed areas. Meantime individual development projects should undertake rangeland research and improvement programs within the context of an agreed national program. A similar program to that which has been undertaken in the Herat livestock projects should be progressively extended, as resources permit, to other regions. The range survey and improvement work by HLDC is now culminating in the preparation of a pilot range management project, experience with which could ultimately be extended to other regions. The Forestry and Range Management Department of the Ministry of Agriculture should be responsible for formulation of national policy and the recommended research and survey program implementation. It should also coordinate and monitor the work of independent authorities and projects. The separation of Range Management-Research into a new Department distinct from forestry activities should be considered. As with all research it is better to undertake a small amount thoroughly than to initiate a nation-wide program which is inadequately supported with trained staff, equipment and financial resources. Research cannot be undertaken on an annual basis, and Government must appreciate that long-term financial and staff appropriations must be made to sustain it. Without this there is little point in making a start. The overall objective of national range survey and applied research should be to identify specific areas which could become the basis, in conjunction with the people concerned, of range controlled areas.

3.08 To effectively undertake the proposed surveys and sequential project preparation and implementation, people trained in the relevant disciplines and with an understanding of the range pastoralist complex as a whole, will be needed. Such people are short in Afghanistan. An urgent necessity is for the Range Management Department to establish suitable training programs to build



up of a cadre of people capable of effectively expanding work in range management and improvement. As a basis for such training, a comprehensive review should now be made of the many Afghan reports and other relevant literature (including the HLDC range improvement work) on this subject. Like many developing countries Afghanistan has been the recipient of seemingly endless reports and studies, the majority of which include much useful information which tends to be lost or forgotten as time passes. Past duplication has probably occurred and in the future this should be avoided.

AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

Probable Effect of Drought on a Sheep Flock by Numbers, Composition, Output and Income

	Year 1 Stable	Year 2 /a Drought	Year 3 Good	Year 4 Good
<b>A. Flock Projection</b>				
Number on Hand at Beginning of Winter				
Mature Ewes	400	400	330	400
Ewes 18 months	130	130	116	80
Ewes 6 months	160	160	91	168
Mature Males	20	20	14	20
Males 18 months	130	130	14	20
Males 6 months	160	160	91	168
Total Head	1000	1000	656	856
Total Births	380	260	373	404
<b>Sales</b>				
Aged Ewes	30	-	1	30
Mature Males	-	-	-	-
Males 18 months	126	130	7	18
Males 6 months	-	98	60	100
Total Sales	156	228	68	148
<b>Deaths</b>				
Aged Ewes	80	160	33	40
Ewes 18 months	20	40	12	8
Ewes 6 months	30	44	11	20
Mature Males	4	6	1	2
Males 18 months	-	-	-	-
Males 6 months	30	48	11	20
Lambs up to 6 months	60	78	37	40
Total Deaths	264	376	105	130
Number on Hand at End of Year	1000	656	856	982
<b>B. Technical Coefficients</b>				
	-----Percent-----			
Percent of Flock Mated	53	53	68	56
Lambing Percent - Mature Ewes	75	55	85	85
- Ewes 18 months	60	30	80	80
<b>Death Rate</b>				
Mature Ewes	20	40	10	10
Ewes 18 months	15	30	10	10
Ewes 6 months	19	30	12	12
Mature Males	20	30	10	10
Male 18-36 months	-	-	-	-
Male 6 months	19	30	12	12
Lambs up to 6 months	16	30	10	10
Change in Total Numbers during Year (Percent)	N11	-34	+31	+15
<b>C. Income Projections</b>				
	-----Kg-----			
Av. Liveweight of Animals Sold				
Mature Ewes /b	30	-	30	35
Mature Males	-	-	-	-
Males 18 months	70	60	85	85
Males 6 months	-	30	45	45
Total Quantity of Liveweight Sold Kg	9720	10740	3325	7080
Average Price per Kg/L.Wt Af	35	30	45	40
Income from Meat Sold Af '000	340.2	322.2	149.6	283.2
Value of Animals Salvaged /c	-----Af /Head-----			
Aged Ewes	400	350	450	420
Ewes 18 months	300	260	340	320
Ewes 6 months	200	170	230	210
Mature Males	400	350	450	420
Males 18 months	300	260	340	320
Males 6 months	200	170	230	210
Lambs	20	10	25	15
Total 'Income' from Salvage Af '000	52.8	84.9	25.0	29.2
Yield of Milk per Ewe /e	40	30	50	50
Yield of Wool Mature Sheep kg /f	1.5	1.2	1.8	1.8
	-----Af '000-----			
Income from Milk and Wool /g	68.2	45.8	67.5	77.6
Total Income	461.2	452.9	242.1	390.0
Less Cost of Purchased Feed /h	50.0	100.0	-	-
Net Income from Flock /i	411.2	352.9	242.1	390.0

- /a Drought on winter and spring range area previous summer resulting in a shortage of feed in the winter and spring. See appendix 1.
- /b Cull ewes - ewes in poor condition due to ill health or age.
- /c Estimated as an average of all animals that die including those not taken for salvage. "Salvage" = animals slaughtered immediately prior to death and subsequently eaten.
- /d Includes value of meat for family use.
- /e Production per lactation.
- /f Production of greasy unwashed wool. Sheep 6-18 months at 50% yield.
- /g Milk at 2 Af per kg. Wool at 30 Af per kg. Includes value of milk and wool used by family.
- /h Estimate.
- /i Includes value of meat, wool and milk used by family. No allowance for shepherding costs or veterinary expenses.

Source: Mission Estimates.

AFGHANISTAN

Livestock Subsector Survey Flock Model  
Feed Production and Availability

<u>Season</u>	<u>Rainfall and Feed Production on Winter/Spring Ranges</u>	<u>Feed Available to Stock /a</u>
<u>Year 1</u>		
Winter	Average	Average
Spring	Average	Average
Summer	Very little	Average (grazing summer range)
Autumn	Very little	Decline to below average (stock returning mid-late autumn)
<u>Year 2</u>		
Winter	Very little	Below average
Spring	Very little	Below average
Summer	Above average	Average (grazing summer range)
Autumn	Above average	Above average
<u>Year 3 &amp; 4</u>		
Winter	Above average	Above average
Spring	Above average	Above average
Summer	Above average	Average
Autumn	Above average	Average

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/a Summer grazing is average throughout the period. Under such conditions livestock are adequately fed and gain weight.

LIVESTOCK SUB-SECTOR SURVEY

A. Analysis of Estimated Gross Income from Agricultural Crops and Sheep Fattening in Hari Rud Valley by Area, Total Water Requirement, Summer Water Requirement and Labor Input /a.

Crop	Labour Requirement mandays/ha	Average Yields /d kg/ha	Average Price Af /kg	Gross Income Af '0000/ha	Total Annual Crop Water Requirement '000m3/ha	Gross Income '000m3 Total Water Required Af '000	Summer		Gross Income '000m3 Summer Water Use Af '000	Gross Income Less Labor Cost /c	Gross income/ha Less Labor Cost	
							Jul. Aug. Sept. Water Requirement '000m3/ha	Water Requirement '000m3/ha			Per '000m3 Total Water Af '000	Per '000m3 Summer Water
Wheat	45	1,650	8.5	14	8.64	1.62	Nil	-	12	1.39	-	
Cotton	67.5	1,540	14.5	22	11.12	1.98	7.72	2.85	19	1.70	2.46	
Rice	115	1,925	19	37	13.15	2.81	8.33	4.44	31	2.36	3.72	
Mung Beans	30	1,100	14	15	7.59	1.98	7.11	2.11	14	1.84	1.97	
Barley	25	1,650	10	16								
Green Barley	15	4,500(DM)	5.8	26								
Vegetables	87.5	12,100	3	36	5.50	6.55	4.06	8.87	32	5.82	7.88	
Melons	70	10,000	4	40	10.61	3.77	6.89	5.81	37	3.49	5.37	
Coriander	28.75	1,000	16	16								
Corn	30	1,650	5	8	7.28	1.10	6.66	1.20	7	0.96	1.05	
Linseed	30	1,100	23	25	7.59	3.29	7.11	3.52	24	3.16	3.38	
Vetch	45	1,430	5	7								
Sesame	30	1,100	4	4								
Millet	30	1,100	6	7								
Broad Bean	41.25	1,100	16	18	7.59	2.37	7.11	2.53	16	2.11	2.25	
Alfalfa /b	143	25,000(DM)	3.1 /b	78	17.57	4.45	9.75	8.02	71	4.06	7.28	
Potatoes	97.5	16,500	2.5	41	13.44	3.05	9.89	4.15	36	2.68	3.64	
Clover	37.5	4,000(DM)	5.8	23								
Onion Seed	30	600	110	66								
Bulb	42.5	14,300	2.5	36								
Vineyard	75	11,100	4	44	11.27	3.90	6.79	6.48	40	3.55	5.89	
Orchard	67.5	12,100	5	60	13.71	4.38	7.37	8.14	57	4.16	7.73	

/a Water requirement assumptions are 'best judgement' basis. Analysis results should, therefore, be used more as an 'order of magnitude' rather than precise indicators.

/b See Table C for details calculation of income from alfalfa, based on sheep fattening.

/c Afs 50/manday.

/d Herat Livestock Development Corporation averages from actual measurements made on farmers' fields.

B. Ranking of Gross Income from Agricultural Crop and Sheep Fattening by Area, Labor, Total Water Requirement, and Summer Water Requirement Assuming Cotton = 100.

	Hectare	Manday	Unit Total		Unit Summer Water	
			Water	Jul. Aug. Sept. Water	Less Af 50/manday	Less Af 50/manday
Wheat	64	94	82	-	82	-
Cotton	100	100	100	100	100	100
Rice	168	96	142	292	139	151
Mung Beans	68	155	383	74	108	40
Vegetables	164	125	331	311	342	320
Melons	182	173	190	206	205	218
Corn	36	83	56	42	56	43
Alfalfa	455	211	287	360	311	387
Potatoes	186	128	154	146	158	148
Vineyard	200	177	197	227	209	239
Orchard	273	271	221	286	245	314

C. Estimate of Alfalfa Value, when Used for Sheep Fattening.

- Assumptions (based on HLDC trial work)  
100 28kg 1w lambs 4 months old purchased at Af 45 per kg liv.  
Animals fed for 100 days at 1.8 kg DM = 7 kg Green alfalfa  
Gain of 200 gram per day  
Sale weight 48 kg
- Gross Income 96 lambs x 48 kg x Af 45/kg Af 207,360  
4 lambs x Af 500/head 2,000  
Total 209,360
- Marginal Costs  
Purchase - 100 lambs x 28 kg x Af 45/kg 126,000  
Veterinary and Shearing Af 30/head 3,000  
Bloat Af 0.5/head/day 5,000  
Labour 1 man x Af 50 per day 5,000  
Total 139,000
- Gross Margin 70,360
- Gross Margin/kg Dry Matter Used  
Alfalfa used = 100 x 1.8 kg/day x 100 days  
+ 20% wastage = 22,500  
Gross Margin/kg DM = Af 3.1

AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

Livestock Breeding and Husbandry

1. Present Situation

1.01 Livestock breeding and husbandry is the responsibility of the Department of Veterinary Services and Animal Production, Animal Husbandry Division. Division activities include the operation of Government farms and the artificial insemination service. No animal husbandry extension service exists. The Government operated farms include:

(a) <u>Karakul Sheep</u>	<u>Baghlan</u>	<u>Jozjan</u>
Total sheep	1,300	939
Breeding ewes	890	449
Breeding rams sold to flock owners (1977/78)	171	146
(b) <u>Mixed Breeds Sheep</u>	<u>Badghis</u>	
Total sheep	903	
Breeding ewes	430	
Breeding rams sold to flock owners (1977/78)	222	
(c) <u>Poultry</u>	<u>Bagrami</u>	
Chicks and ten weeks pullets sold to public (1977/78)	1,400	<u>/1</u>
(d) <u>Dairy</u>	<u>Beni Hisar</u>	
Total cattle	200	
Breeding cows	70	
Milk production	145,000 litres/annum	

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/1 In addition some eggs were sold for breeding and for the vaccine production unit.

1.02 Two large dairy farms (with a third planned) are operated by the Nangahar Development Authority near Jalalabad. The Helmand Valley Authority operates a small commercial dairy farm using Brown Swiss, Holstein, Jersey, and various crosses near Lashkargah. Breed Improvement Programs in Afghanistan include cross-breeding trials undertaken on dairy farms using Holstein, Brown

Swiss, Jersey, Sahiwal and Tharparkur bulls. Artificial insemination, using undiluted semen is provided free to a limited number of farmers. In 1977/78, approximately 40,000 inseminations were done, mainly around Kabul but also at Kandahar, Ghazni and Balkh. The conception rate of cows mated is not known but is thought to be no higher than 50%. No progeny performance testing has been conducted so the impact of the scheme is not known. Reports suggest however that production wise farmers are pleased with the progeny, but also comment that more feed is required for improved cattle.

1.03 The Bagrami Poultry Unit stock are descendants of original birds introduced about eight years ago. In 1977/78 approximately 140,000 chicks and pullets were released. Due to an outbreak of Newcastle disease this number was considerably less than previous years when over 200,000 were sold.

1.04 Sheep. The Karakul farms are used to supply rams at low prices (Af 1,000 (US\$25)) to flock owners. Selection within these flocks has been limited since a FAO/UNDP Karakul technical assistance project ceased operation in 1971. All females are kept for breeding and all surplus males sold for breeding. As these flocks are only marginally superior genetically to those owned by farmers and as only 3-400 rams can be supplied annually, in a total demand of approximately 15,000 (25% replacement of rams at 2% of estimated 3 million karakul ewes), the farms have little effect on national flock improvement. In comparison, considerable improvement in Karakul has been achieved during the last 10-12 years through the activities of the Karakul Institute which has demonstrated to farmers the effect colour, curl, and handling can have on pelt value. No goat breeding program exists but potential exists for improvement in genetic quality for meat, milk and hair production for this valuable, hardy and much mismaligned animal.

1.06 Financial income and expenditure figures for Government farms are not available but it is doubtful if they earn sufficient income to meet full operating costs. They frequently suffer from a shortage of finance and delays in procuring necessary inputs because of the inflexible administrative systems. Owing to a lack of staff experienced in breeding, husbandry, and nutrition, management on most farms is largely inadequate. Within the severe constraints of the present operating framework, varying numbers of dedicated individuals do their best, but the farms are not used effectively as demonstration, training and research centres, and all operate well below their productive capacity.

1.07 Only a limited number of graduates with training in animal husbandry are available and all are involved in administration or running farms. There are virtually no qualified and experienced staff to undertake extension. The prescriptions of Veterinary and Agricultural degrees and the courses offered by the Higher Agricultural Studies Institute, appear to be weak in applied animal husbandry, nutrition and breeding.

## 2. Constraints to Improved Breeding and Husbandry

2.01 There are not sufficient adequately trained technical staff to undertake a major program of research in breeding and animal husbandry.

2.02 Priority Government expenditure in livestock and most technical assistance received, is directed towards animal health control. Animal breeding, nutrition and husbandry receive low priority despite the repeatedly stated view that nutrition is the number one constraint in the Afghan livestock sub-sector.

2.03 Increased production through breeding cannot be achieved unless the quality and quantity of forage is available to support the demand of improved animals for higher quality nutrition.

## 3. Recommended Policies, Programs and Projects

3.01 In order to obtain the maximum impact on husbandry and breeding from the limited staff and financial resources available, priority should be given to those programs which on a cost/benefit basis have the greatest effect on the national herds and flocks.

3.02 Improved breeding in dairying should be based on small quantities of imported deep frozen semen, which would be used to improve the breeding stock on Beni Hisar farm and produce sires for the Artificial Breeding programme. Although production from existing cows is low, given adequate nutrition and health control, it could be markedly improved. Dairy cow quality should be measured not by comparing absolute production levels but rather the efficiency of conversion of feedstuff to milk. Local breeds, although small may, compared to improved breeds, be very efficient converters of low quality forage. Unless the breeding program is based on imported semen from proven high quality sires (to no more than 2 generations) it is likely that the efficiency of the progeny produced would be no better than existing cattle. An evaluation of existing breeds kept under good nutrition, health and management standards should be carried out before any large scale top crossing with improved breeds is embarked upon. Within the context of well planned projects and given an improved operating and management framework, frozen semen technology should be introduced into a reformed Artificial Insemination Service. The most important factors in animal production are nutrition and management, and so improved breeding programs should be part of integrated development programs involving animal health control, animal husbandry and nutrition extension, proper price incentives, and improved marketing opportunities.

3.03 New sheep breeds should not be introduced to Afghanistan in the foreseeable future. The really serious limiting factors are disease and nutrition. The present breeds have very good genetic potential for desirable economic characteristics including wool, growth rate, fecundity, milk production, pelt color, and hardiness (see Table 8 page 19 main report for productive

coefficient potentials). A wide variation and hence potential for improvement through selection exists. Most commercially important heritable characters however, (growth rate, fertility, wool production, milk production) are strongly influenced by environment under Afghanistan conditions, and because of the difficulty in measuring and recording them, an effective breeding program would be difficult to implement. Wool color and kemp content are however, readily recognizable and highly heritable, and breeding programs for these characters could be undertaken. Because of the relatively low financial importance of wool, a wool improvement breeding program should receive low priority meantime.

3.04 Regular parent stock should be imported for the Bagrami Poultry Farm and multiplied for release to commercial farms. Such a program should involve a rehabilitation and reorganization of the Bagrami farm within the context of a poultry breeding and production project discussed in Annex 4E.

3.05 In relation to the resources so allocated, Government farms so far have made little impact in improving national herd and flock production. If adequately financed and managed they could provide useful training, demonstration and research centres but the present situation is not satisfactory. Unless management and operating efficiency can be significantly improved Government farming activities should be largely restricted to one poultry farm (Bagrami), one dairy farm (Beni Hissar), and two sheep farms (Jozjan, Bai Saqal). The farms can be given the staff, finance and management flexibility to operate successfully, both technically and financially.

3.06 The Karakul Institute has already achieved a marked improvement in the quality of Karakul pelts and while this program continues no further expansion is necessary. The Government Karakul flocks are of little if any better genetic value than the national flock and can contribute little to Karakul improvement. As such, consideration should be given to establishing new objectives for the operation of Bai Saqal farm. A useful program, provided it was well prepared, executed, and supported, would be to conduct studies on range management systems, and their effect on both pasture and animal production.



AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

A. Wool Production, Processing and Marketing

1. Present Situation

1.01 The 20 million sheep are estimated to produce about 20-25,000 tons of wool annually or a little more than 1 kg head which is very low. However, as a number of sheep (turki breed) do not produce wool the 20 and 25,000 tons per annum estimate is probably reasonable. Of the total annual production, about 4-5,000 tons is exported to the Soviet Union. During the last 10 years officially recorded exports have varied between 3,300 and 6,000 tons (Table 1, page 2, main report); in 1976/77 the amount was just under 5,000 tons. Wool and hair (including a small amount of cashmere) accounted for about 3% of total recorded export value in 1976/77. During the last 10 years, wool exports dollar value has shown comparatively little variation except that in 1975/76 the provisional estimate for wool receipts indicated a 60% increase over the previous 10 year average. While the total export value in the 10 years ending 1976/77 showed a 440% increase, the percentage earned from wool receipts has steadily declined, due largely to an increase in value and volume of other exports. Annually, about 1,000 tons are presently used in the 2 existing woollen textile mills, the balance (14-19,000 tons) being used by farmers and nomads for domestic purposes, including carpet weaving.

1.02 Wool is sold washed (not scoured) to the Soviet Union on a barter basis, in three ungraded colors -- white, brown and black. Current prices f.o.b. Afghan border are as follows:

<u>Color</u>	<u>Barter \$/ton</u>
White	2,050
Brown	1,306
Black	1,302

The Afghani per kilogram value of exported wool has varied from Af 99 in 1967/68 to Af 79 in 1976/77, ranging up to Af 120 (1970/71). Wool plays an important role in Afghan domestic life. Handwoven woollen carpets and rugs are highly sought-after both domestically and internationally. The 1976/77 dollar value of exported carpets and rugs amounted to about \$26 million or about 9% of total recorded export value. Export receipts for carpets and rugs has more than doubled during the last 7 years, while the volume has increased by about 87%. During the last 7 years, the Afghani square meter value of carpets has increased by about 23% despite a doubling in dollar value due to the increasing Afghani value.

1.03 Afghan wool is generally coarse, "carpet style"; containing in many cases a high percentage of kemp. Due to the ravages of disease, poor nutrition and dusty conditions, combined with antiquated shearing techniques, quality is generally poor. However, a number of local breeds produce good quality coarse white wool with staple lengths up to 22 cms. Carpets and rugs are produced largely on a cottage industry basis, but a number of entrepreneurs have organized production on a relatively large-scale. Due to the raw material quality, Afghan carpet and rug quality can vary considerably. However, this ancient craft is something which should be preserved and encouraged as the world has become increasingly aware of the uniqueness of Afghan carpets and demand and price appears to be increasing substantially.

1.04 Two woollen mills are currently operating. One in Kandahar and the other at Pul-i-Charki, in Kabul. The capacity of these mills, which are old and in generally poor condition, is about 528,000 meters per annum but actual production is less than 350,000 meters due largely to poor maintenance, obsolescence, and procurement, administration and management problems. They largely produce a coarse, low value cloth, used largely for making blankets and military uniforms. In addition to finished goods, about 34,000 meters of woollen textiles are imported annually. The woollen mills have their own limited scouring facilities although both are obsolete. A wool scouring plant operated by the Ministry of Commerce and established largely with UNDP financial and technical assistance is situated in Kandahar. The 3 year old plant has a daily capacity of 6 tons, but due to problems with marketing and wool procurement, has operated for only about 80 days in 30 months. The yield of wool purchased is between 50 and 60%, which is low and indicates its dirty nature. The only scoured wool purchaser is the Pul-i-Charki mill with which the Kandahar plant has a contract to supply about 1,000 tons annually. Wool is sold on an ungraded color basis with current prices c.i.f. Kabul as follows:

<u>Color</u>	<u>Af/Kg</u>	<u>\$/Kg /1</u>
White	135	3.38
Black	84	2.10
Brown	85	2.13

The plant purchases raw wool from traders who buy direct from farmers and nomads. Current farm gate prices for raw wool are estimated as follows:

<u>Color</u>	<u>Af/Kg</u>	<u>\$/Kg /1</u>
White	45	1.13
Black	16	0.40
Brown	18	0.45

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/1 Af 40: US\$1.00.

Wool is purchased from farmers on a negotiated price basis and in most cases is hand-washed. Farm gate prices in 1971 were about Af 18 for black and multicolored, and Af 30-40 for white and cleaner wool. Since 1971 exported raw wool Afghani kg value has declined from Af 119 to Af 79. Because of exchange rate changes and that trade is a barter one, these figures are not entirely reliable indicators.

## 2. Constraints to Wool Industry Development

2.01 While sheep genotype ultimately limits the amount, type and quality of wool produced animal nutrition and disease have the major impact on amount and quality. Karakul, which make up about 20% of the national flock are kept primarily for fur pelt production; mature animals produce a coarse, hairy, multicolored wool suited only to carpet weaving and low quality yarn production. A number of breeds, about 40-50% of the national flock, have considerable potential for improvement through breeding and selection in the quality and quantity of wool produced. No such program presently exists and a meaningful impact on wool quality through breeding, could only be made over a long period.

2.02 Ready access to reliable, consistent markets are constraints to improving wool production. Sheep are shorn in spring, and traders, many of whom act as moneylenders, travel long distances, in many cases to remote areas, to buy wool from nomads and transhumants. While the marketing system works reasonably well, the producer has little alternative but to sell, in most cases, to the same trader every year. Furthermore, wool, because of its price and the quantity produced, is seen largely as a by-product which returns small amounts of cash each year. The "farm gate" price amounts to about 25% of the export washed wool price and income would represent no more than 10% of total annual flock income.

2.03 As a landlocked country, considerable distances from the main markets, Afghanistan is not well placed to compete in the international wool trade, as the transportation cost across the Soviet Union, or through Karachi is expensive. Industrial users prefer to buy raw wool and scour to their own standards, so it is unlikely that Afghanistan would be able to develop an export trade in scoured wool in the foreseeable future. <sup>1/</sup> Internal consumption will ultimately be limited by domestic demand for and use of woollen fabrics. It is highly unlikely that Afghanistan could develop a viable export trade in woollen yarns and finished goods. The exception is carpets, rugs and other handicrafts. Afghanistan should capitalize on this unique export trade.

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<sup>1/</sup> New Zealand, the worlds largest producer of coarser wools (302,000 tons annually) exports about 250-260,000 tons annually, of which 40% is scoured.

### 3. Present Programs and Projects

3.01 There are no programs or projects aimed at improving wool quality from either breeding or presentation. The value of raw wool will need to substantially improve before a specific project or program in these fields could prove worthwhile. The Seven-Year Plan proposed to increase the annual woollen textile productive capacity to about 1,480,000 meters, an increase of about 423% over present production and about 280% over existing capacity. Two projects were proposed. Firstly, a new factory in Kandahar with an annual capacity of about 600,000 meters of woollen cloth and 300 tons of yarn for carpet weaving. The mill is being constructed for the Ministry of Mines with German technical and financial assistance. Although the factory is situated very close to the woollen scouring plant owned and operated by the Ministry of Commerce, it also includes a wool scouring facility. The plant is expected to have an annual raw wool requirement of about 3,000 tons, about 20-25% of which would be imported high quality fine wool. It is expected to become operative early in 1979. Construction is being undertaken on a turnkey basis, including management for the first operational year. The second project included the renovation and expansion of the Pul-i-Charki mill. The completed plant would have an annual production capacity of about 500,000 meters of woollen cloth and 15,000 blankets. A feasibility study is presently being undertaken and it will be some time before the expanded capacity becomes effective. Woollen textile industry expansion objective is to endeavor to establish a more stable demand for local raw materials, create employment opportunities and reduce woollen textile imports.

### 4. Recommended Policies, Programs, and Projects

4.01 National wool production policy should give priority to improving, through the activities of extension services and other projects, national flock nutrition and economic control of parasites and animal diseases. Wool breeding programs should be based upon sound objectives designed to meet local wool industry needs and ultimately an expanded export market. The importing of improved breeds with desirable wool characteristics is not recommended, as it is unlikely that these would survive and reproduce in the Afghan environment as well as the existing breeds.<sup>1/</sup> It is unlikely that, in the foreseeable future, Afghanistan could compete with the major wool producers, namely Australia, New Zealand and South Africa, on international markets. However, given appropriate research and development programs the potential exists for developing an export industry in quality 'carpet style' wool. In order to achieve such a goal, production would have to increase substantially, and quality improved through improved nutrition, disease control, and the establishment and implementation of a wool grading system. A well planned breeding

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<sup>1/</sup> An attempt to introduce fine wool merino sheep during the 1960's failed completely; all animals imported died.

program designed to improve color and reduce kemp would be beneficial, but presently, priority attention should be given to improving animal nutrition and health.

4.02 Production of woollen textiles and yarns suitable for the carpet trade should be so-designed to meet domestic demand only, and expansion of existing capacity should be based largely on financial and economic considerations and future domestic demand. The reasons why existing mills are not operating to full capacity should be fully analyzed before any expansion program is implemented. A limited quantity of finished woollen goods should be imported at all times so as to ensure a reasonably satisfactory standard of production and some competition for locally produced woollen textiles.

4.03 High priority should be given to expanding production and efficiency in the carpet industry. Government intervention should be confined to providing the necessary support, including maintaining favorable trading conditions, assistance in expanding export markets, ensuring availability of credit for production and marketing and quality control.

4.04 To the extent possible, producers should receive a fair share of their product's value and it would be useful to explore possibilities for establishing producer wool marketing cooperatives. With larger quantities to market, cooperatives could be in a better position to secure higher prices. An extension of the primary cooperative system would be to form cooperative unions which could ultimately be involved in selling wool directly to manufacturers and export traders. It is not suggested that cooperative marketing should become the sole means by which wool is traded, but the intervention of a properly operated cooperative system could help to ensure a fair reward to producers.

4.05 The establishment within the Ministry of Agriculture of a small highly trained extension service focusing exclusively upon wool improvement and production would be worth considering. Such a service would work among producers, discussing and demonstrating the benefits which can be obtained in wool quality and production from improved breeding and selection, improved shearing techniques, animal health control and improved nutrition.

4.06 Until such time as a clear demand can be demonstrated and existing plants are operating to full capacity, including more than one shift operation, no additional wool scouring plants should be established. If the establishment of a wool scouring plant could serve as a basis for stimulating production and improvement in quality in a particular region, then consideration could be given to shifting the Kandahar plant.

## B. Meat Production, Processing and Marketing

### 1. Present Situation

1.01 Total meat production (sheep, goats, cattle and camel) has been estimated at 186,000 tons, but no accurate figures are available. Given

a stable flock and assuming present estimated reproduction and mortality parameters, the annual off-take could be about 16%. 1/ A 1,000 sheep flock, would thus provide about 9.7 tons of liveweight, or about 4.4 tons of carcasse meat annually. A substantial number of the off-take are held by sedentary villagers and traders before sale. A number of these would actually be lost, but liveweight and meat yields would be expected to increase before slaughter. On balance, therefore, the actual annual yield of meat per head could be about 4.4 kg. With a national sheep and goat flock of 23 million, this would give annual meat production of about 101,000 tons. Including the off-take from cattle and camels, estimated at 60-80,000 tons, the estimated annual production of about 186,000 tons probably represents a maximum figure. However, due to cyclic patterns in sheep production, off-take varies from as little as one to as much as five or six kilos a head per annum. There is, therefore, very wide variation in annual production and meat supply, which tends to be confirmed by cyclic changes in meat prices both within and between years.

1.02 Until recently the only 'modern' slaughterhouse operating was the small Kabul plant supplying meat largely to the military and students; this plant is old and requires rehabilitation. It was not designed to meet export standards and has storage capacity for only about 36,000 carcasses, or 500 tons. The Herat slaughterhouse was completed at the beginning of 1978. It has a capacity of 2,000 head a day (one shift) and up to 3,000 head on a two-shift basis. The plant was designed and appraised on the basis of an annual throughput of 500,000 head after six or seven years of operation, has a supporting production project, and the primary objective of tapping high priced export markets in neighboring countries. It is designed to export chilled meat and has limited storage capacity. At Project appraisal (1972), it was anticipated that about ten percent of through-put would be sold on the local market.

1.03 The bulk of sheep and goat meat used domestically is from males aged about six to eighteen months. Some castration is practiced, but the domestic market prefers meat from entire male animals. Sheep and goats are purchased from flockowners, either directly by butchers, or by traders. A large number of younger sheep and goats change hands in autumn, a reflection of their better condition after summer grazing and the necessity for farmers to reduce flock size, and obtain some cash or supplies before the winter. Many of these sheep are not slaughtered immediately, but are held by settled farmers or traders, for disposal during the higher priced winter and spring market. All large provincial towns have livestock markets from which butchers obtain supplies. Apart from the slaughterhouses in Kabul and Herat there are no proper killing facilities in most towns. Animals are usually slaughtered near or literally in front of butchers' shops under sub-hygienic conditions. Meat is openly displayed in shops, exposed to flies and dust. Butchers have no storage or chilling facilities and usually slaughter only sufficient animals to meet daily demands.

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1/ Mission Estimates, Annex 2, Table 1, page 11.

1.04 Despite sub-standard hygiene and absence of meat inspection, the present system results in full utilization for human consumption, all of the animal, except gut content, blood and perhaps hooves. The introduction of modern slaughter facilities would add little to utilization efficiency, but would either increase the retail price of meat, or reduce the producer's return. An important meat trade feature is the absence of grading. Butchers pay a little more for better condition animals, but the basic criteria is weight. This provides no incentive for the farmer to produce quality meat. Most sheep are of fat tail or fat rump type; the fat accounting for approximately twenty percent of total carcasse weight. In response to a general shortage during the winter, many families purchase meat during summer and autumn for sun drying and used during winter and early spring.

1.05 A sizeable live sheep smuggling trade exists between Afghanistan and Iran. The numbers involved are not known, but a number of observers have suggested that a figure is in excess of one million head per annum. 1/ Once across the border smuggled sheep become 'local' production which is heavily subsidized in Iran, and gives the smuggler a good financial margin.

1.06 A small quantity of live beef is imported on an unofficial basis. (buffalos and cattle) from Pakistan for the Kabul markets. The extent of this trade is not known, but in terms of total meat production it is probably not significant.

1.07 Meat prices vary considerably throughout the year. Peak prices usually occur during the late winter, early spring. During the summer and early winter, it is about half the peak rate. Normally, beef retails at about 60% of the mutton price. Mutton enjoys a slight premium over goat meat. Camel meat is also marketed (in unknown quantities) at a price lower than all other meat. Local chickens (poor quality) are sold live in markets throughout the country at about 15% above mutton price. Current prices for sheep and goat meat are about sixty to seventy Af/Kg (US\$1.50 to 1.75). Due to the absence of reliable records, trends in meat prices are difficult to estimate. During the last decade retail prices have increased, depending on the area and season of the year, by between 60 and 100%. During the same period, the price paid for live sheep appears to have increased by a factor of about 2 to 2.5. The reasons for this increase are complex and difficult to specify. They could reflect, inter alia, the interrelated effects of lower sheep/goat numbers caused by high mortality in drought years and consequent lower off-take due to farmers' increasing their herd and flock numbers; increasing human population; increasing per capita consumption; and effects of an increased smuggling trade.

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1/ 1 million head at Af 1,400/head = Af 1,400 million = US\$35 million.

1.08 Per capita meat consumption is estimated to be about ten to eleven kg, which represents a total annual consumption of about 154,000 tons. <sup>1/</sup> However, there is a wide variation within this figure, and most rural and urban poor are believed to consume no more than about 4 kg per capita. Amongst the poverty groups red meat amounts for about one percent of total minimum annual calorie requirements and about 17% of protein requirements. A further important source of meat in rural areas is those animals which officially are described as dead. Few of these are actually wasted. Cultural practices demand that meat from animals which have died, not be eaten. However, it is common practice to slaughter sick and weak animals shortly before they would have died, and this meat is usually consumed.

## 2. Present Projects and Programs

2.01 The Seven-Year Plan provided for an expansion of the Kabul slaughterhouse to an annual capacity of 450 tons of meat, or about 34,000 animals. The work was originally planned to be completed in 1356 (1977-78), but actual physical construction has not yet commenced. Design work has been completed and some of the equipment ordered. Apart from the ongoing IDA assisted Livestock Development Projects operating in the provinces of Herat, Farah, Ghor, and Badghis, no direct meat production, marketing and processing programs are presently operating. However, a large poultry complex designed to annually produce about 5 million chicks, and up to 70 million eggs was proposed in conjunction with a large sheep breeding and production farm for Ghazni province. A modern meat processing plant, largely based on output from these farms and with an annual capacity of 10,800 tons from a through-put of about 400,000 animals was also planned. A final decision has not yet been made on the future of these projects.

## 3. Present Constraints

3.01 The development of a satisfactory and profitable meat industry is constrained by all factors limiting animal production, including disease, competition of livestock with subsistence crops and water, and the absence of food security amongst farmers.

3.02 The development of a profitable mutton export trade is presently constrained by a shortage of marketing skills and experience. Afghanistan is favorably placed to supply good quality chilled mutton to high priced markets in neighboring Iran and Arabian Gulf oil-rich states (Table 9, page 29 main report, and Annex 4 Tables 1-3, pages 26, 28). The development

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<sup>1/</sup> The difference in total estimated consumption of 154,000 tons and annual production of about 186,000 tons could be represented by smuggling, or simply unreliable data.



of these markets and concluding of favorable long-term contracts requires considerable skill and experience. The Iranian market is large but if Afghanistan is to obtain favorable long-term contracts, vigorous professional salesmanship will be required. Furthermore, a reputation for reliability as to quantity and quality and fulfillment of contractual obligations will have to be established. The major mutton exporters to Iran, Australia and New Zealand, are already well established, are vigorous competitors and reliable suppliers. The public sector is short of people with the necessary skills and it does not seem to be fully appreciated that marketing is a highly professional skill which takes time to acquire. An export meat trade is also dependent on control of serious animal diseases, including rinderpest, foot and mouth disease, and anthrax. Not only will the country need to be able to demonstrate that it can effectively control these diseases, but both post an antemortem inspection of all animals entering the slaughterhouses shall be essential.

3.03 Although sheep and goat numbers are said to be about 23 million and theoretically the annual off-take of about 3.7 million should be adequate to provide for both local and export demand, the mechanism by which adequate sheep can be procured for an export industry is not yet fully understood. The selling of sheep by nomadic pastoralists, who constitute the single largest section of owners of breeding stock, is clearly not dependent on "normal" economic considerations and rationale; social and cultural factors play an important part. Ultimately, in order to be able to ensure that adequate off-take from the breeding herds is available for further growing-out and fattening, a clear understanding of these social and cultural factors is required.

3.04 The existence of a sizeable smuggling trade is a factor constraining the development and expansion of a viable export meat industry. While it has been suggested (unrealistically) that this trade be forcibly stopped, it must also be questioned as to whether its suspension would be in the national as well as farmer interest. As the mechanism and economics of the smuggling trade are neither known nor clearly understood, it can only be assumed that it exists because substantially higher prices are paid for sheep in Iran. The Afghan economy and farmers are benefiting to an unknown extent 1/ from this trade and a legal export meat trade must be able to compete with the smugglers. The key issues are price and service. It is essential that HLDC and Government not only ensure that the existing slaughterhouse is operated efficiently and profitably, but that a substantial proportion of profits are passed back to the producers. Furthermore a high standard of supporting technical services to the farming community must be maintained.

3.05 The existing exchange rate of the Afghani against foreign currency, particularly the US\$ adversely affects the meat export trade. In 1972/73 the average annual free rate was Af 80.1:US\$, but in March 1978 it had increased

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1/ But probably not less than US\$33 million per annum.

to Af 43:US\$ and in October less than Af 40. The first Livestock Development Project in Herat was appraised on the basis of a meat price of US\$750 ton FOB Herat, or Af 63,750/ton. Present indications are that the slaughterhouse could expect to receive a price of about US\$2,200/ton FOB Herat or Af 88,000 per ton (Af 40 = US\$1.00). Thus while the export meat dollar value has increased by a factor of nearly 2.6, the Afghani value has improved by slightly less than 1.4. Taking into account the increase in operating costs which has occurred in the interim (probably not less than 6 percent per annum), the slaughterhouse operation is now at a disadvantage in comparison to that position which existed in 1972. In the meantime, due to the effects of both domestic price increases and increases in price for smuggled live sheep, the price of local sheep has increased by a factor of about 2.5. DRA recently recognized this position and has now fixed an exchange rate of Af 45.3 for one US\$.

3.06 A limiting factor in all sectors of the Afghan economy, but which affects the operation and expansion of a meat processing industry, is the severe shortage of managerial experience and skills. Furthermore, not only is management experience lacking, but there is an almost complete absence of personnel experienced in and capable of devising and implementing, financial control systems. Government is aware of the severe constraint which the absence of these skills places on the whole economy and high level efforts are being made to bring about a reform of administrative and financial control procedures. However, it will be many years before the influence of reform measures filter down to the operational level. In the meantime, enterprises such as the Herat export slaughterhouse are going to have to rely upon a substantial input of expatriate management and accounting skills. Endeavours should be made, on an Agency basis, for reform to be implemented in the administrative and financial control procedures. The economy cannot wait for the long period which must elapse before substantial improvement is effected over a wide area. Very high priority should be given to the training of capable, young Afghans in accounting and management.

#### 4. Recommended Policies, Programs and Projects

4.01 Meat industry policy should be based on a program which would bring about an overall increase in meat production through integrated agricultural development programs including effective veterinary services, to ensure an annual supply of meat sufficient to meet domestic demand at reasonable prices, and meet an ever increasing demand for export to neighboring oil-rich countries. The projected meat deficit for Middle Eastern countries is shown in Table 9, page 29 with further details in Annex 4, Tables 1-3. Afghanistan's population is expected to be about 24.2 million in the year 2000 and at even the current meagre per capita consumption (10-11 kg), this would mean an annual domestic demand at current prices, in excess of 278,000 tons per annum compared to the present estimated production of about 186,000 tons; this would represent

a 50% production increase in 22 years, a little under 2% per annum. A 10% increase in per capita consumption would require 306,000 tons per annum in year 2000; representing a 65% increase or 2.3% per annum.

4.02 The policy of maintaining a reasonable domestic meat price should take into account not only consumer purchasing power and demand, but also the returns which producers require to not only maintain animal production, but to switch land from lower value crops such as wheat, into forage which can be converted to meat. The ability and willingness of producers to switch land from subsistence crops to forage will be largely dependent upon their food security position and the alleviation of what they perceive as very high risks involved. 1/ While Government proposes an overall policy of food security encompassing annual wheat purchases both internally and from abroad, to ensure an adequate supply during years of short production, it will take a number of years before subsistence farmers, long experienced in years of hardship and deprivation, are prepared to accept that Government can indeed provide them with food security. This aspect is discussed in more detail in Annex 2.

4.03 Present strategy should be directed towards ensuring that the Herat export slaughterhouse is given maximum support and is brought to a fully operative stage as soon as possible. No additional modern export or domestic slaughterhouse could be economically justified meantime. It is likely that HLDC could economically transport sheep long distances in order to support its operations. For this reason Government should place no restrictions either official or implied on the area from which HLDC may obtain sheep.

4.04 For the domestic market, no additional processing works should be established until such time as the demand, and price at which the meat could be sold, clearly indicates that such an operation would be financially viable without Government subsidies, or either unfairly increase the consumer price or reduce that paid to producers. Presently, the markup between purchase price of sheep and butcher meat sales is not, at 12-20% on outlay, unreasonable. His reward or profit from the sale of each animal is probably the price received for the skin, casings, pluck and head. There is little wastage in the present system. The establishment of a processing industry between the producer and butcher would only increase retail costs. Ultimately small low-cost slaughterhouses could be established under the auspices of the concerned municipalities in or near the major townships. They should not be sophisticated and should only provide for a general improvement in hygiene and perhaps for meat inspection. Economically, very little is to be gained at this stage by establishing slaughterhouses to process meat for the domestic market. The exception could be a plant built to process a specialized product such as poultry. However, the establishment of a relatively unsophisticated plant for poultry processing would again be entirely dependent on financial and economic viability. In view of the absence of storage facilities, both

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1/ Table 4, page 10 (main report) gives an analysis of an 'order of magnitude' basis of comparative Gross Margins to be obtained from principle crops at current prices; it is assumed that growing additional high value forage which has a high summer water demand is practical.

commercially and domestically in Afghanistan, there are distinct advantages to be gained by marketing poultry live instead of processed.

C. Hides and Skins

1. Present Situation

1.01 Hides and skins including furs, but excluding karakul pelts, accounted for 4 percent of 1976/77 agricultural product export value and about 17 percent of the value of "livestock" exports. Since 1966/67, the percentage of total export value contributed by hides and skins has varied between 3 and 6. During 1976/77, 3.2 million pieces were exported compared to 1.8 million in 1967/68, an overall increase of 85 percent, while the value of exports improved from Af 155 million to Af 643 million or 415 percent. The unit value of hides and skins improved during the same period by 224 percent. Probably about 6 or 7 million hides and skins (sheep, goats, cattle, donkeys, camels) are produced annually and slightly less than 50 percent are exported (Table 1, page 2 main report).

1.02 Apart from the Kabul slaughterhouse and the new Herat plant, there are no central slaughtering facilities, and consequently no concentration of hides and skins in any one location. Butchers probably account for about 80 percent of total slaughter in small operations involving only a few animals each day, and 20-30 percent of sheep and goat skins are not suitable for processing due to faulty slaughtering, dressing or handling methods, or because of disease or parasite damage. Butchers usually sell green skins to dealers or merchants for salting. Some sun dried skins are used by nomads and farmers for making tents, shoes, clothing, and other necessities. There are no marketing grades or quality standards for tanning, garment manufacturer, or for export. Nearly all exported sheep and goat skins are shipped salted with the hair or wool intact, but some pickled skins are also exported. About 10 small tanneries have been established to process leather to meet local demand, largely for local handicraft and footwear production. Small quantities are also exported. While the leather quality has shown improvement during the last ten years, further improvement is required if the leather trade is to compete on international markets.

2. Present Programs and Projects

2.01 Noting the planned construction of a new slaughterhouse in Ghazni and the Herat plant opening, the Seven-Year Plan provided for two major new tanneries. The first close to the Herat slaughterhouse and costing about \$3-4 million, was to have an annual capacity of about 600,000 pieces and to be completed in 1978, but a feasibility study has only recently been completed.

The second tannery to have been established near Ghazni has, due to the postponement of the construction of the proposed slaughterhouse in that province, been deferred. No other major programs were planned.

### 3. Recommended Policies, Projects and Programs

3.01 While Government should take the lead in encouraging the establishment of a viable leather industry, ownership and operation should ultimately be largely retained in the private-cooperative sector. Government should assist with the establishment, if possible, of international markets and recover costs for its contribution either by way of a levy on hides and skins processed through tanneries, or on receipts of leather and leather goods sale. Hides and skins exported salted or raw could be similarly taxed. Such a levy should be designed to produce a small amount of revenue for research and industry development and should not be of a size so as to discourage exporters and entrepreneurs.

3.02 The possibility of Government entering into joint ventures with private entrepreneurs both local and foreign for the establishment of a high grade leather industry which could ultimately supply specialist "handicraft" products to selected international markets should be explored. A joint venture involving foreign firms could have the disadvantage of gaining, without excessive expense the technical, managerial, and marketing skills, necessary to ensure the establishment of a profitable industry.

3.03 Upgrading the quality of leather used locally and exported, and the quality of locally made handicrafts should be an important objective. Ultimately, provided quality controls were introduced and satisfactory standards achieved, Afghanistan might be able to compete in specially selected international markets. Government assistance should be directed firstly towards ensuring the establishment and operation of a viable industry producing goods of a high quality; secondly, establishing control standards and systems; thirdly, providing both operating and marketing credit at commercial rates to the private sector, and where appropriate arranging for foreign technical assistance. Except for Kabul and Herat the general lack of major concentration makes upgrading of hides and skins slaughtering and handling standards by farmers and butchers a difficult task. However, a technical assistance project could be usefully employed to train a small cadre of specialists for an extension service that would be established within the Ministry of Agriculture. The "hides and skins" specialists would concentrate upon demonstrating and advising farmers and small butchers on skinning techniques and skin handling. Cooperatives might provide a useful channel by which a start could be made in upgrading standards of hides and skins and ultimately the leather industry. In the initial stages the Herat slaughterhouse could serve as a useful training ground for improved skinning and hides and skins handling techniques.

D. Karakul Production, Processing, and Marketing

1. Present Situation

1.01 Number and Production. Karakul sheep number about 4.8 million or about 25% of total sheep population. Prior to the drought of 1976/77, estimated Karakul population was 6.2 million. Total production of pelts is between 1.5 and 2.4 million annually. Karakul has always been an important source of foreign exchange, being one of the principal agricultural exports. During the decade ending March 21st, 1978, Karakul receipts averaged a little under 10% of total export receipts. However, due to an increasing volume and value of other exports, the percentage has shown a declining trend, from 16% in 1968/69, to less than 5% in 1975/76. During this period, annual recorded exports averaged 1.3 million pelts, varying between 0.8 million in 1974/75, and 2.1 million in 1971/72. The Afghani value of pelts has shown an increasing trend; in 1968/69, the average export value per pelt was Af 442 (US\$11.5) and in 1977/78 Af 950 (US\$23.75) an increase of 215% (Table 1 page 2 main report).

1.02 Karakul production is centered in the north and northwestern provinces and owned by both sedentary, transhumant, and nomadic flock owners. As the best quality pelts are produced under harsh conditions, production is susceptible to the cyclic pattern of droughts and severe feed shortages. In addition to pelts, the mature sheep produce a multi-colored coarse type wool, used largely in the production of traditional carpets and rugs. The Karakul is also used for milk and meat production. During spring, when the lambs are slaughtered, a substantial quantity of milk is used to produce ghee, curd, yogurt, and cheese.

1.03 Afghanistan is one of only three important Karakul producing countries including USSR and South Africa. While it is not the largest total producer, it is the largest exporter of high value grey pelts. Although current demand for this luxury item remains strong, the long-term outlook, taking into account the increasing influence of conservationist groups remains uncertain. In the meantime, the Karakul industry remains an important contributor to export income, as well as an important provider of carpet industry wool. This unique product, which the wealthy markets of the world demand, and is one area where Afghanistan has shown its ability to compete successfully with other international producers.

1.04 Karakul Institute. The Karakul Institute was established in 1966 and operates independently under the Ministry of Commerce. The constitution, now under review, provides for a President and board consisting of the Ministers of Agriculture and Commerce, representatives of three Banks and eight trader/shippers. The Institute was established with the main objective of improving income obtained from Karakul sales on international markets. This limitation of objectives has been a significant factor contributing to its success. It has restricted its activities to providing

service and information and has not itself entered into trading. It provides grading, shipping, and selling services to exporters on a fixed charge basis. Last year pelt curing was also undertaken. All pelts of first and second grade must, by law, be marketed through the Institute, and it is also now required that these be sold at auction.

1.05 Marketing System. Karakul Flock owners sell salted pelts in the bazaar to dealers who send them to the contract curing houses. Cured pelts are sent to the Karakul Institute for grading on the basis of color, curl, quality, and damage (due to poor fleshing, salting, storage, or curing). The Institute arranges both shipping and marketing. Selling is done at the London and Leningrad auctions by fur auctioneers. While there are some smaller middlemen, most pelts are traded only once before auction i.e. direct from owner to dealer, who auctions them through the Institute. Karakul cooperatives, which were formed in the late 1960s, acted as dealers only and most are now defunct, due largely to poor management and financial operation. Many dealers have been forced out of business when caught holding pelts at a time of falling price. As the production season is short, most pelts are purchased before the first auction of new season pelts. This creates considerable risk for the dealers who can obtain credit from commercial banks for up to 50% off their annual purchases.

1.06 Curing. Curing is done by private operators, but largely in plants owned by Bank de Mille (now nationalized). As much curing was being poorly done, the Institute recently constructed and operated a curing house at Kunduz. Presently, negotiations are taking place for the purchase of the Bank de Mille curing house at Mazar-i-Shariff which has a capacity of about 600,000 pelts. While dealers are free to cure pelts where they wish, the Institute Kunduz house was well used last year, handling some 150,000 pelts.

1.07 Finance. The Institute is funded by the charges it makes for services, i.e. Af 2/Pelt graded, 1% of auction price for selling, and Af 0.75/pelt cured. Some money is also received from the London fur trade. The Institute is financially independent and requires no Government funding.

1.08 Pelt Quality Improvements. A marked improvement in pelt quality has been achieved by grading introduction. Value depends on grade, and the Institute has assisted merchants to recognize the various factors affecting grading. Each season three or four Institute graders move around the pelt bazaars talking to flock owners and dealers, showing them the defects in pelts being traded (a type of extension service). The Institute also advises flock owners and dealers, through bazaar contacts and radio broadcasts, of the current London auction prices for the various grades of pelts. As a result, the previous practice of producers selling pelts in bundles has discontinued, and each pelt is now valued separately. A marked increase in the number of higher valued grey pelts (from 30% to 60% in 12 years) and improvements in fleshing, salting, and curing has resulted from these activities. Furthermore, largely as a result of better quality and bulking of reliably graded pelts, prices have more than doubled in recent years.

## 2. Constraints to Improving Karakul Production

2.01 All of the constraints associated with animal production in Afghanistan apply to Karakul. These can be seen in more detail in Annexes 1 and 2. The shortage of feed available during winter and early spring is particularly severe in the Karakul producing areas.

## 3. Present Projects and Programs

3.01 The old Seven Year Plan proposed a targeted production increase for Karakul pelts of 31% from 1.6 to a little over 2 million per annum, or a little under 4% growth per annum. The plan recognized Karakul's economic importance and stated that attention would be focused on pelt improvement and wool quality through the concerned organizations including the Institute. Since the role of agricultural credit is important for marketing, purchases of improved sheep and provision of adequate feed, efforts would be made to expand the volume of agricultural credit available to the sector. Furthermore, efforts would be made to revive Karakul cooperatives, thereby improving the standard of living and incomes of the livestock owners. The Karakul Institute would provide more technical assistance to livestock owners and Karakul producers through cooperatives, pelt processing, marketing, and provision of feed. In order to provide improved rams for use by Karakul Flock owners, the two Government experimental farms involved exclusively with Karakul, would be strengthened, and their activities expanded. The Baghlan Farm would increase the number of sheep carried from 1,800 in 1354 to a little under 8,000 in 1361, and the number of improved sheep distributed from 200 to a little over 900 per annum. Similarly, the Jozjan Farm would increase the numbers being carried from just under 700 to a little under 2,900 and the number of improved sheep to be distributed from about 100 to a little under 350.

3.02 It is not at all certain precisely how the proposed increases in carrying capacity of Government experimental farms was to be achieved. Given their past contribution and level of efficiency, there is little likelihood that they would have achieved these targets. Furthermore, the number of improved rams and sheep to be distributed would not have made a significant impact upon Karakul quality. A substantial improvement in quality and color has been achieved through the Karakul Institute's activities during the last ten years. The continuation of this work would be of much more significance than the proposed activities on Government Experimental Farms. The Government-owned Karakul Flocks are little better genetically than the national flock, and without a well devised and supported selection program, they can make comparatively little impact on Karakul improvement. While the overall proposals included in the seven year plan appeared desirable, no specific projects are now in operation or being prepared to implement the proposals.



4. Recommended Policies Projects and Programs

4.01 A complete review of the role of Governmental farms involved with Karakul breeding and production, should be carried out at an early date. The past contribution which these farms have made to the industry should be evaluated and based upon the findings, their future operation and role should be devised.

4.02 Government should continue to support the Karakul Industry through the independent operation of the Karakul Institute. The Karakul Institute's success should provide an important lesson which could be applied to other areas of agricultural and livestock development. Firstly, it has kept its objectives limited and concentrated on doing what it does well. Despite many suggestions and recommendations to do so, it has not undertaken any activities such as owning flocks and farms, providing veterinary services, trading in pelts itself, providing credit to flock owners or cooperatives. Secondly, the Institute has cooperated with flock owners and dealers, and as a consequence obtained their cooperation and confidence. It has acted in an advisory and service capacity, rather than supervisory and enforcement. Thirdly, the organization has been self-funded and has adequate income. It is, therefore, an element of self-sustaining development. Freedom from the need to obtain budget allocation from Government each year has also given it more flexibility in policy making and operation, and probably less interference and bureaucratic wrangling. It is recommended that the Institute should continue to confine its activities to those in which it is now involved.

4.03 Additional service to the Karakul Industry such as veterinary services, credit etc. should be provided by Government agencies. The means by which sheep production in particular can be improved is discussed in Annexes 1 and 2. As a part of the Animal Husbandry Division of the Veterinary Services and Animal Production Department, the Ministry of Agriculture could consider the establishment of a small-well-trained extension service to the Karakul Industry, particularly, Karakul Flock owners. This should be along the lines as suggested for hides and skins, and wool (Annex 4, Sections B and C.)

4.04 As a consequence of the publicity given by the Karakul Institute to the international price for various grades of pelts, most flock owners are well-informed as to the likely value of their product. It is therefore, unlikely that the reformation of Karakul cooperatives would improve the price received for pelts. Cooperatives could play a part in providing input supplies for farmers and flock owners.

4.05 While animal disease and nutrition are seen as important constraints to improving animal production in general and Karakul production in particular, it is not at all clear what part credit, which is frequently sighted as a major limiting factor, might play in alleviating these constraints. Before any major moves are made to address this particular problem by provision of

special credit lines from the Agricultural Development Bank through Karakul cooperatives, a thorough investigation of the extent of credit as a constraint should be made.

E. Poultry Production, Processing, and Marketing

1. Present Situation

1.01 There are said to be about six million locally bred poultry in Afghanistan. While almost all farmers keep a few chickens, and poultry meat and eggs are important in family diets, no significant attempt has been made to increase farm production. There are some commercial units close to Kabul, but there has not been any significant expansion of intensive production, largely because concentrate poultry feeds are not available commercially and suitable breeds cannot be obtained in any quantity. Commercial farms buy wheat and corn through normal channels in direct competition with people buying these grains for food. In villages, poultry are fed cracked grains, seed bulls, and food scraps, plus scavenging among animal manure and crop stubbles after sheep and cattle. Total production is strictly limited by the availability of feed and the poor domestic flock genetic quality.

1.02 About eight years ago, the Ministry of Agriculture with assistance from the Peoples' Republic of China, established a large poultry complex at Bagrami near Kabul. The unit was designed to produce eggs and day-old chickens for distribution to farmers. In past years, the farm has sold over 200,000 chickens and ten weeks old pullets annually, but in 1977-78, production was drastically reduced due to an outbreak of newcastle disease. About 800,000 eggs were also produced in 1977-78. The original breeding stock have never been replaced. The unit suffers from all the problems associated with the operation and management of farms within a Government Department framework, including cumbersome procurement, administration and financial procedures. Efficient commercial oriented management has also been lacking, and disease control standards have not been adequate for such a large undertaking. The unit, however, is basically sound and includes a small facility for production of mixed poultry food. However, importation of essential basic mineral and vitamin mixes is always a problem.

1.03 Poultry meat sells in the Bazaar at about Af 100 to 120/kg or \$2.50 and \$3.00 kg, dressed and frozen. 1/ Live chickens sell for about Af 65 to 70/kg of dressed weight. Eggs retail at about Af 2-3 (\$0.05-0.07) each. This is in line with the price paid for good quality sheep and goat meat and rump fat. Although no detailed market study has been completed, demand for poultry

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1/ Dressed poultry in USA supermarkets presently range about US\$1.0 per kg.

products, as current prices tend to confirm, is strong. With current prices for corn about Af 6/kg, and wheat Af 8/kg, grain poultry meat cost price ratios of 1:8 or 9 are very favorable. Farm gate prices would be something less than this but still very good.

## 2. Constraints to Improving Poultry Production

2.01 These include the absence of commercially produced balanced poultry feedstuffs, low domestic flock genetic quality, widespread disease and parasites, no supporting extension services, marketing systems which do not encourage production in outlying areas, and perhaps most importantly the problem of the nation being barely self-sufficient in human feed grains.

## 3. Present Projects and Programs

3.01 The old Seven Year Plan provided for the establishment of a large poultry complex with an annual production of about 5 million chickens and 25-70 million eggs annually. The Project was to be entirely Government executed and to be incorporated with a large sheep breeding and fattening operation in Ghazni. A supporting meat processing plant, including poultry was also included. Feed to support the operation was to be produced on a large Government owned and operated irrigated farm. An initial feasibility study for this Project has now been concluded, but no agreement has been reached on its future.

3.02 A feasibility study for the establishment of a feed processing mill at Baghlan using sugar beet and cotton processing industrial by products was recently completed. The proposed plant would have an annual capacity of about 40,000 tons. Initial estimates suggest a sale price of about Af 5.3 per kg. Cotton seed cake is presently available at between Af 3.5-4.5 per kg. Total estimated cost of the plant, is about Af 103 mil. or US\$2.58 mil.

## 4. Recommended Policies, Programs and Projects

4.01 Profitable poultry farming is dependent largely on efficient conversion of food to product (meat and eggs) and it is therefore recommended that parent stock be imported and used to produce commercial stock, that is one generation only. Poultry breeding programs should be based on annual imports of hybrid parent stock (heavy layers, light layers and broilers) as day old chicks. These would be reared (at Bagrami) and used to produce hybrid day old chicks for release to commercial farmers. Commercial layers would be replaced after one year. Regular importation of parent stock as day old chicks can be arranged at low cost. As the biggest loss occurs when birds are transferred to commercial farms this should be done using day old chicks when value

is low. Farmers receiving chicks need to receive intensive veterinary, extension, credit and marketing services support. Extension needs to cover all aspects of housing, hygiene, nutrition and management. An assured supply of quality concentrate feed including minerals and bacteriostats, must also be provided.

4.02 Commercial broiler and egg producing farms should be relatively small privately owned units. Poultry operations involve considerable disease risk and losses would be minimized with smaller unit sizes, while the high degree of management skill and commercial motivation required for profitable poultry production can be more readily found in the private sector. Government support is required for the importation of breeding stock and chick production, veterinary and extension services and the establishment of a feed mill. Initially some external training would be required and specialist poultry training incorporated into the existing university courses.

#### F. Milk Production, Processing and Marketing

##### 1. Present Situation

1.01 Commercial milk production is presently undertaken on a number of Government and parastatal dairy farms. Near Kabul 'Beni Hisar' farm produces about 550 liters of milk daily for the Kabul milk plant. The Karaiz Mir farm, situated north of Kabul, produces a similar amount which is presently sold to a special trade including tourist hotels. The Nangahar Development Authority has two large commercial dairy farms near Jalalabad which presently produce about 5,000 liters daily, half of which is delivered to Kabul, the balance being used locally. These two farms have a daily production potential for up to 10,000 liters. The Helmand Valley Authority operates a small dairy farm at Bolan which provides a small quantity of milk to an old pasteurizing plant. A cheese plant situated in Baghlan and operated with Swiss technical assistance has recently been expanded to a capacity of about 3,000 liters per shift. In addition, a small subsidiary plant with a capacity of about 1,500 liters per day has been established of Tashkurgan in Samangan province.

1.02 Cattle numbers total about 3.7 million including an estimated 1.1 million cows. Total annual dairy production is estimated at 500-600,000 tons. At current per capita consumption levels (estimated at 60 kg) and assuming population of 24.2 million, annual domestic milk demand in year 2000 could be about 1,452,000 tons per annum. A further 200 to 250 tons is estimated to be produced from sheep and goats. Annual production per cow is estimated at about 500-550 liters. However, taking into account that probably only 50 percent produce in any one year production is probably about 1,000-1,100 liters per lactation with wide variations in between. Milk and beef are largely a by-product of the farmers' need for draft animals. Most cattle

south of the Hindu Kush show more Bos Indicus influence and are larger in size than those in the north where Bos Taurus influence is greater. Average live-weight varies from about 181 to 250 kg, and average butter fat test is about 3.9 percent for all breeds. A village farmer usually owns one or two cows. Cows age about three years before they first calve and annual calving rate is probably no more than 50 or 60 percent. Most farmers use the breeding services of a village bull, but a limited number have access to an artificial breeding service operated by the Ministry of Agriculture out of Kabul. Cows receive low quality grain straw as the main diet. Near larger towns, farmers with a surplus sell milk, some directly to the Bazaar, but many to an intermediary at the farm gate who transports it either by bicycle or donkey to town. Milk is invariably adulterated. Selling prices are usually Af 6-7 (US\$0.15-18) per liter but vary with prices highest during winter and lowest during early summer. Small quantities of milk products including cheese, ghee, dried curd and butter are marketed irregularly, largely during spring. Milk and milk products are an important part of the Afghan diet, particularly in rural areas.

1.03 An old Ministry of Agriculture milk treatment station in Kabul pasteurizes about 1,500 liters daily for sale at Af 13/liter (US\$0.33). Supply is obtained almost exclusively from Government farms at Kabul and Jalalabad. The Baghlan cheese factory produced 41 tons of cheese in 1977/78 from about 450 tons of milk. The cheese sells at Af 120 kg (US\$3.00) and a strong demand exists. Official imports of milk products mainly as milk powders and ghee, are about 300 tons annually. WFP presently distributes the equivalent of at least 12,000 liters of skim milk annually. Small bazaars in quite remote villages seem to stock a good range of canned milk powders and ghee. Due to an inadequate and irregular supply, the demand deficit for milk and milk products in larger townships is thought to be substantial. However, no thorough market analysis has ever been done.

## 2. Constraints to Improving Milk Production

2.01 The most important constraint limiting milk production is a shortage of a high quality animal feedstuff suitable for milk production. Cattle are fed largely on low quality roughages and poor quality range grazing. Only milk cows and younger calves receive any form of supplementation such as alfalfa hay, green alfalfa and clover, green barley, and in exceptional circumstances, cotton seed cake, barley or maize grain. All the constraints adversely affecting the production of improved quantities of quality animal forage apply to dairying.

2.02 The second constraint is, for milk production, the poor genetic quality of the national herd. Afghan cattle are particularly hardy and strong, being well suited to their main function of providing draft power. No selection for milk production has taken place. Farmers are more concerned at getting cows in calf than they are about bull quality and selection. A

limited artificial breeding service was provided for a time by the Helmand Valley Authority but this has been discontinued. A service based in Kabul is available to cattle owners in and around the capital, and also Ghazni and a few other centers. About 40,000 inseminations are made each year with a conception rate of about 50 percent. The sires used are a mixture of Friesian and Brown Swiss. The wide spread incidence of animal diseases affecting cattle, including foot and mouth disease, internal and external parasites, and venereal diseases, adversely affect production and reproduction.

2.03 An absence of marketing opportunities and incentives together with the subsistence nature of farming is a major constraint to developing dairy production. While markets do exist in larger towns, farmers in areas some distance from these centers have little opportunity for marketing surplus fresh milk. Surpluses are usually made into ghee, cheese, yoghurt, or dried curd. There are no reliable regular means by which a farmer can have surplus milk collected and marketed. It is also not clear what factors would persuade farmers to take land from agricultural production, particularly wheat, and increase the forage area. Theoretically, the milk grain price ratio of 1:1.2 (Table 5, page 11 main report) would make milk production profitable if either, or both alfalfa and grain was grown for feeding milk cows. That this is not done on a large scale, or in any commercial quantities needs to be carefully investigated before any substantial dairy expansion is planned. Table 4, page 10 main report gives a rough indication of comparative gross margins to be obtained from principle crops including sheep fattening and milk production.

### 3. Present Programs and Projects

3.01 Swiss technical assistance has recently conducted a study on the establishment of an improved AI service but the outcome is not yet available. The Swiss assisted Cheese Production Project in Baghlan has recently completed an expansion of its processing facilities. A small out-station has also recently been established, and it is proposed to extend this to three other centers, making a total of five producing cheese. While the Baghlan operation has been successful, and it is able to market its produce without problems, it has had difficulty in obtaining adequate regular supply to meet its capacity throughput. Presently, farmers are being paid Af 7/liter at the farm gate, and Af 8/liter delivered to the factory. However, difficulties have been experienced with regular collection and prompt payments to farmers, resulting in a falling off of suppliers.

3.02 Recently, in conjunction with the International Scheme for the Co-ordination of Dairy Development (ISCDD) of FAO, and with some assistance from the Government of Australia, the Government prepared proposals for a major expansion of dairy production and processing in Kabul. 1/ It is proposed

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1/ FAO/ISCDD, Final Report, December 1977.

to establish a new pasteurizing plant with a phased expansion program to 40,000 liters of pasteurized milk daily in 1987. It is expected that 38,000 liters or 95 percent would be fresh milk. The balance would be made up of reconstituted milk from imported components. Prior to reaching self-sufficiency in locally produced milk, it is proposed that the plant capacity be supplemented with WFP commodities.

3.03 The project proposes that milk would be collected from selected areas through about 40 milk chilling centers, each surrounded by about five primary milk collection societies, collecting in the flush season about 300 liters daily. The chilling centers would be focal points for extension, veterinary and artificial insemination services. The total Project cost is estimated at about US\$10 million, of which about \$2.8 million would be covered by WFP assistance. It is proposed that an independent Dairy Development Corporation (ADDC) be formed to implement and manage the Project. ADDC would take over the operation of the artificial insemination service and existing Government dairy farms. The proposed Baghlan feed plant would be an integral part of the dairy project.

#### 4. Recommended Policies Projects and Programs

4.01 Considerable potential exists for improving milk production on small holder properties and existing Government farms. Surplus milk sales could assist low income producers to increase income from a commodity for which presently, over a wide area, there exists no accessible market. Furthermore, as successfully demonstrated in India, the opportunity exists to use dairying and related supporting services, including artificial insemination and animal health control, as a means of initiating self-sustaining rural development. However, the factors which would provide the incentive for farmers to increase dairy production are not properly understood, and these together with marketing should be very carefully analyzed as a part of any program for dairy production expansion.

4.02 Dairy development should be designed to meet an increasing demand for improved nutrition levels, and replacing of milk product imports. In order to best meet these needs, increased milk production should be based largely upon small holder farm development in cooperatives in conjunction with integrated rural development projects and as a part of a national dairy development program. Such a policy could result in milk production at a lower cost and ultimately, in the desired quantity. Furthermore, providing marketing opportunities for surplus milk production can be a means by which small holder incomes are diversified and increased, and regular cash flow established.

4.03 Small holder milk production should be centered around milk collection and marketing cooperatives. Milk collection centers, although

initially operated by supporting services should ultimately be owned and operated by primary cooperatives. As the cooperative movement grows in strength and experience, a desirable objective is for cooperatives, through cooperative unions, to own and operate collection, processing, and possibly marketing facilities. Farmers will not increase production of any commodity, particularly milk, unless given adequate incentives involving price and risk reduction. The first consideration of subsistence farmers is to have food security. Only once this is established, and prices received for alternative products are competitive, are they likely to be interested in switching valuable land and water resources from subsistence crops, such as wheat, into forage crops for the feeding animals to produce milk. All profits from milk processing and marketing in larger towns should be passed back through the cooperative system to the producer. Government's overall objective should be to initiate and encourage self-sustaining rural development, and one sure means of achieving this is to ensure that profits from farmer produced commodities are passed back to producers. The cooperative movement is in its infancy, but if a national goal of ensuring that the production processing and marketing of milk products is entirely in the producer's hands, is now established, then successful cooperative development is more likely to be achieved.

4.04 The retail milk price should give sufficient producer incentive to increase and maintain milk production. If it is socially and economically desirable for milk to be sold at low retail prices, then direct consumer subsidies should be considered rather than penalizing the producer by paying lower prices; otherwise no milk will be produced and the country would have to rely largely on imports. In view of the estimated demand for milk and milk products, and the need to stimulate production, no subsidies should be paid and the retail price should be left to find its own level.

4.05 As a means of stimulating and encouraging production, the proposed dairy development project is commended in principle. The preparation of a national dairy development program of which the presently proposed project is seen as a first phase is recommended. The proposed Afghan Dairy Development Corporation (ADDC) should be independent, and should undertake the process of milk collection, processing, and some marketing.

4.06 The proposed artificial insemination, veterinary and animal husbandry extension services should be provided by the Ministry of Agriculture, Animal Health and Production Department. However, in order to ensure that the services are effective, it is essential that an overall reorganization of the Ministry of Agriculture in general, and the Department in particular, as discussed in Annex 5, be undertaken.

4.07 For the proposed Project, more careful study should be given to the proposed farm gate milk price suggested at Af 7/liter. Although the Project study suggests that milk production should be based upon alfalfa production, it is not at all certain that the proposed price would be sufficient incentive to encourage farmers to grow increased areas of forage. The increased water needed to grow alfalfa and clover does not appear to have been sufficiently emphasized.



4.08 On a pilot basis and as a means of 'controlling' prices, ADDC should undertake some marketing through bulk vending machines, but additional marketing should be undertaken through private retailers under standards and conditions set by the Government. Furthermore, it is considered that ADDC and Government policy should not endeavor to replace completely the present bazaar trade. It is mostly unlikely that ADDC could offer a price sufficient to encourage those producers already marketing surplus milk in larger towns to sell their produce through ADDC, nor is there any reasonable economic rationale which would justify making it mandatory for farmers to sell milk to ADDC.

4.09 The program should not be designed to encourage all year around milk production. Due to the harsh climate over much of the country, winter milk production is not only difficult but would be expensive and hard to maintain. There are some exceptions to this, such as in the sub-tropical area of Jalalabad. Dairy production at the farm level should be on a seasonal basis with calving coinciding with the onset of spring growth of forage crops. Demand for winter milk should be met by reconstitution of imported milk products. If this policy is adopted at the outset, a more efficient type of dairy industry will be initiated, and the consumer will develop from the outset a taste for, and understanding of, the type of supply. If spring-summer production exceeds demand, consideration could be given to non fat dried milk and butter oil production for winter reconstitution.

AFGHANISTANLIVESTOCK SUB-SECTOR SURVEYProjected Total Import Bill for Meat <sup>/a</sup> in the Near East  
under Alternative Consumption Demand Assumptions  
1980 and 1985

	1980	1985
	-----US\$ Million-----	
<u>Alternative Projections /b</u>		
Alternative 1	663.5	2,249.3
Alternative 2	1,266.8	2,995.2
Alternative 3	1,871.5	3,796.5

/a Using 1973 world unit values of meat imports, in current US dollars per kg:

beef and veal	\$1.75
sheep and goat meat	1.17
pig meat	1.47
poultry	1.07
other red meats	1.35

These unit values are compiled from FAO, Trade Yearbook, 1973.

/b Alternatives given in Table 2 Page 27.

Source: FAO/World Bank 'Outlook for Meat Production and Trade in the Near East and East Africa' December, 1977

AFGHANISTAN  
LIVESTOCK SUB-SECTOR SURVEY

Projected Net Trade <sup>/a</sup> in Meats in the Near East under Alternative  
Consumption Demand Assumptions, 1980 and 1985

Alternatives <sup>/b</sup>	1980			1985		
	1	2	3	1	2	3
NEAR EAST						
Beef and Veal	-33	-153	-269	-331	-477	-632
Sheep and Goat Meat	-374	-596	-819	-1,012	-1,286	-1,582
Poultry	-102	-194	-289	-330	-443	-563
Other Meats	-44	-70	-99	-99	-135	-176
Total Meat	-553	-1,013	-1,476	-1,772	-2,341	-2,953

<sup>/a</sup> Import requirement (-); export availability (+).

<sup>/b</sup> Alternative 1 = Consumption projections assuming price indexes shown in Table 3  
Page 28 .

Table 9. Alternatives 2 and 3 correspond respectively to projected meat  
consumption assuming a -10% and -20% change in the projected real meat prices.

Source: FAO/World Bank 'Outlook for Meat Production and Trade in the Near East  
and East Africa' December, 1977.

AFGHANISTANLIVESTOCK SUB-SECTOR SURVEYIndexes of Price Projections for Beef, Lamb and Mutton in  
Constant Dollars

(1970=100)

	1970	1972	1980	1985
Beef <u>/a</u>	100	116	132	146
Lamb and Mutton <u>/b</u>	100	113	129	144

/a Argentine chilled boneless rump, wholesale London prices.

/b A simple mean of lamb and mutton prices. The 1970-72 portion of the index was constructed by deflating wholesale live sheep prices in Iran by the general wholesale price index.

Sources: Beef price projections were made by the World Bank's Commodities and Export Projections Division. The lamb and mutton price projections were based on those made by the Bank's Iran Agricultural Task Force. The latter estimates go back to 1972. For the 1970-72 period the price indexes of the Central Bank of Iran were used. All the estimates were made in 1975.

AFGHANISTAN

LIVESTOCK SUB-SECTOR SURVEY

Ministry of Agriculture - Veterinary Services and Animal Production

1. Present Situation

1.01 Agriculture and livestock development in Afghanistan is constrained by a number of complex inter-relating factors, the most critical of which is insufficient water relative to cultivable land resources. But the over-riding constraint to agricultural and livestock development in the past has been Government's inability to establish a satisfactory policy framework and to provide effective supporting services.

1.02 In comparison with agricultural crop production, livestock development is a complex operation. The inter-action between the basic elements of weather, land, and labor, and the influence upon these of modern technology, is more difficult to define than with growing a single agricultural crop, such as wheat or cotton. While persuading subsistence farmers to accept new crop husbandry and water use techniques and the advantages of modern inputs, such as improved seed and fertilizer is not easy, to have those same farmers accept improved animal husbandry, breeding, health control, and nutrition is a much more difficult task. Fertilizer applied to a crop can in most cases, yield quick and visible benefits. To make animals grow faster, produce more lambs or better quality wool is not such a simple operation, as the interaction is more complex and the time span longer. It is probably for these reasons that livestock development in developing countries including Afghanistan, has generally proved to be a major challenge and the path of attempts to improve production in this field have only been partially successful.

1.03 In the past the Ministry of Agriculture has been unable to grasp the basic issues of livestock development, and to concentrate sufficient resources to make an effective impact in any particular area. Although resources both in manpower and finance are limited, if priorities were established and sufficient attention given to these, more progress could have been made during the last twenty years. A major problem has been insufficient understanding of the existing situation of livestock and livestock owners; misconceptions have existed, and this has resulted in a lack of achievement and inability to focus on priority areas. The reasons for this are complex and these comments must not be construed as criticism of the many dedicated individuals who have tried so hard for so long. The operating framework has been a severe constraint and greatly reduced the effectiveness of these staff.

1.04 During the last fifteen years, a considerable amount of financial and technical assistance has been received in the livestock development field. This has included a series of UNDP financed animal health, training, vaccine production, diagnostic, and clinical services projects; People's Republic of China assistance in poultry and fish development; assistance from the French

Government in dairying; and from the Soviet Union in animal health, dairy production, and training. A number of Afghans have been trained abroad in a wide range of disciplines associated with livestock production, particularly animal health.

1.05 So important is the Ministry's potential as an agent for improving agricultural production in general, and livestock production in particular, that it is essential that an overall evaluation of past effectiveness now be made. A critical self-evaluation of the reasons why so many conceptually sound development programs and projects have either failed to achieve their objectives, or been only partially successful is perhaps now the most important single contribution which the Ministry could make to a fresh look at agriculture and livestock development. It is time to analyze the reasons why, after fifteen years of substantial United Nations' technical and financial assistance combined with similar assistance from the Soviet Union, that a really effective animal health service has not yet been established, and disease and parasites remain a major constraint to improving livestock production, and the greatest majority of livestock owners do not have ready access to veterinary services. Such an analysis would be of value to both the Afghan Government and concerned donors. The aid projects may not have been appropriate to the Afghan context; and they may have been badly executed (by both Afghans and foreign advisors) by the wrong type of people. Whatever the reasons it is vital to Afghanistan that past mistakes not be repeated, and future execution improved. The country needs to get a higher return from the foreign aid investments. An analysis should now be made as to why the Projects in Poultry Production and Fish Farming, originally conceived as sound are not producing the results which they could.

1.06 Similarly, it is time to evaluate the training, production, and overall service contribution to the livestock sub-sector, which the Government farms at Bagrami, Bai Saqal, Shebergan, Bala Murgab and elsewhere have made. The impact these farms could have made to research, demonstration and extension in the livestock sub-sector is substantial, but the amount of effective on-going work could be much improved. A small number of improved sires are distributed at low prices; visits to these establishments by senior research and extension officers appear to be too few; and the farms suffer from cumbersome administrative and financial procedures. Consequently, staff morale and motivation is very low. Given proper support, establishment of meaningful goals and overall direction, they could serve a useful function in training and demonstration. A major expansion of State farming activities could improve the adoption rate of modern technology, and is expected to be an important aspect of the new Government's agricultural development policy. In order to achieve the maximum benefits from investments in this field, the base upon which expansion is planned must be sound; past strengths and weaknesses should be critically analyzed and a new, more responsive operating framework devised.

1.07 For a country so heavily dependent upon agriculture and livestock too many agricultural workers possess insufficient appreciation of the dynamics of agricultural and livestock production. Furthermore, in many cases in the

past, the attitude to farmers has been one which bred mistrust of Government officials, and programs. Those who work in and for the benefit of rural communities need to demonstrate a genuine, sympathetic understanding for the farmer and his problems. The basic objective and key to success for all those who work with farmers, should be to win people's hearts and minds.

1.08 Shortage of qualified trained staff is frequently cited as a critical factor constraining all aspects of Afghan agricultural and livestock development. While this is true in a number of specialist disciplines, emphasis should be upon a shortage of trained staff. Too often the obtaining of an academic qualification is seen as adequate training. Continuous in-service training along with staff supervision, and delegation of authority are weakly developed in the whole administrative and service structure. Furthermore, too many examples are seen of well qualified people being underutilized or in some cases not at all. No matter what the reasons, Afghanistan cannot afford this luxury.

1.09 A general reluctance of qualified staff to take field assignments is another problem. In the Research Department for example almost all the people capable of conducting reliable research are stationed in Kabul, despite the fact that all research stations except one are in the provinces. This reluctance is understandable in most ways. There are few, if any, material rewards for serving in areas where facilities and transport are poor, good housing difficult to obtain, the climate unpleasant at times, and where support and interest from head office is too often inadequate. Little authority or responsibility is given to field staff. Promotion is most frequently obtained by staying close to the centre of power and those who wield it. If livestock development in particular is to proceed, this state of affairs has to change.

1.10 Afghanistan possesses many highly qualified, experienced, dedicated and talented people who are capable of doing almost all the things foreigners are recruited to do, but the real constraint is the operational system under which the individual functions. The deficiencies and inadequacies of the Afghan administrative, procurement and financial procedures are frequently cited as one factor constraining the effective implementation of projects and the time has come to recognize that this is perhaps the main factor preventing Government from mounting dynamic, development programs. While it would be possible to fill several pages detailing these problems, a useful purpose could be served in citing some of the major issues which need urgent attention. These include: excessively detailed and time consuming pre-audit of transactions by finance officials, which have nothing to do with timeliness or effectiveness; post-audit practices focussing primarily on detailed consideration of the legal and procedural priority of financial transactions, rather than on the overall effectiveness of program performance; insufficient delegation of authority coupled with the responsibilities assigned to field operating personnel; failure to reproduce and widely disseminate copies of relevant laws, regulations, and procedure manuals, leading to confusion, misunderstanding and interminable disputes; unduely and cumbersome warehousing procedures with excessive emphasis on preserving and protecting materials at the expense

of expeditious distribution to meet operating program needs; uneven matching of workloads and manpower resulting in large backlogs and inordinate delays in some sections while other sections are over-staffed and under-employed; general lack of clear definitions of job assignments, responsibilities, and authorities; and absence of job performance standards, making effective supervision impossible. 1/

1.11 In the past the present operating framework within the Ministry of Agriculture has been inadequate to the task of developing a dynamic agriculture upon which the wealth of the nation largely depends. Prompt and timely performance of tasks is a critical requirement of agricultural development programs. Timely planting of improved seeds, application of fertilizer, spraying of pests and feeding of animals, will not wait until the dead hand of administrative procedures slowly turns the wheel to release the inputs required. The budget support for Ministry of Agriculture and the Veterinary Services and Animal Production Department for the years 1355 and 1356 are shown in Table 1.

Table 1: ALLOCATION OF AGRICULTURE - BUDGET ALLOCATION

		1355 (1976/77)		1356 (1977/78)	
		Current	Development	Current	Development
-----Af Million-----					
Ministry of Agri-					
culture	Total	72	634	90	821
Wages and salaries		54	310	74	387
% of total paid in					
wages and salaries		75	49	82	47
Department of Veterinary					
Services and Animal					
Production	Total	10	57	21	79
Wages and salaries		2	24	11	31
% of total paid in					
wages and salaries		20	42	52	39

The total cost to Government in 1976/77 amounted to Af 706 million (US\$17.7 million) and in 1977/78, Af 911 (US\$22.8 million), of which 52 and 51 percent respectively was for wages and salaries. The Department of Veterinary Services and Animal Production total budget cost for the two years amounted to Af 87 million (US\$2.2 million) and Af 100 million (US\$2.5 million), of which 30 percent and 44 percent respectively was for wages and salaries. The current and development budgets are substantial, and the benefits received from this annual investment could be substantially improved. The weakness of the

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1/ The new Government is taking steps to alleviate the worst of these administrative bottlenecks.



operating framework results primarily in low staff morale which itself contributes to low productivity and ineffectiveness. The citing of salaries as a proportion of total expenditure should not be construed as providing a case for lowering salaries which are already too low. Rather it is meant to indicate that a very high proportion of annual costs are invested in personnel who are underutilized and thus not giving the return they should.

2. Recommended Policies, Programs and Projects <sup>1/</sup>

2.01 A reorganization of the Ministry in general, and the Animal Health and Production Department in particular, designed to overcome some of the most serious weaknesses is now urgent. A high level task force should be established to undertake a comprehensive review of the existing situation, highlighting constraints and bottlenecks, and making recommendations for future improvement. Only after such an internal review and self-evaluation has been made should foreign technical assistance be employed to assist with devising a new and more effective operating framework and implementation programs.

2.02 The Ministry of Agriculture should establish its own training department. This should be fully equipped and supported with the necessary qualified staff. Training should focus upon three main areas. Firstly, devising and implementing regular in-service training programs for professional, technical, administrative, and support staff. Secondly, induction training of all new recruits, including both professional and administrative staff. Such staff should receive a minimum of six months and preferably twelve months introductory training, part of which would include a field assignment. For professional workers, particularly those in veterinary, extension and research, such training could include up to six months probationary field experience outside of Kabul. In this way, workers are likely to be able to understand more clearly the problems associated with agricultural development, and to approach the alleviation of constraints and farmers' problems in a more sympathetic manner. At the end of this period, all recruits should be required to pass an examination upon the results of which permanent appointment would depend. Furthermore, a system of salary bars should be introduced for professional and technical staff which would effectively prevent promotion above certain levels, unless minimum periods, say three years, had been spent on field assignments outside Kabul. Thirdly, a complete retraining (progressively implemented over time) of all existing staff (including administrative and support staff) based upon the findings and recommendations of the task force recommended above. Such retraining should be based upon the introduction of specific job manuals defining functions, responsibilities, and objectives.

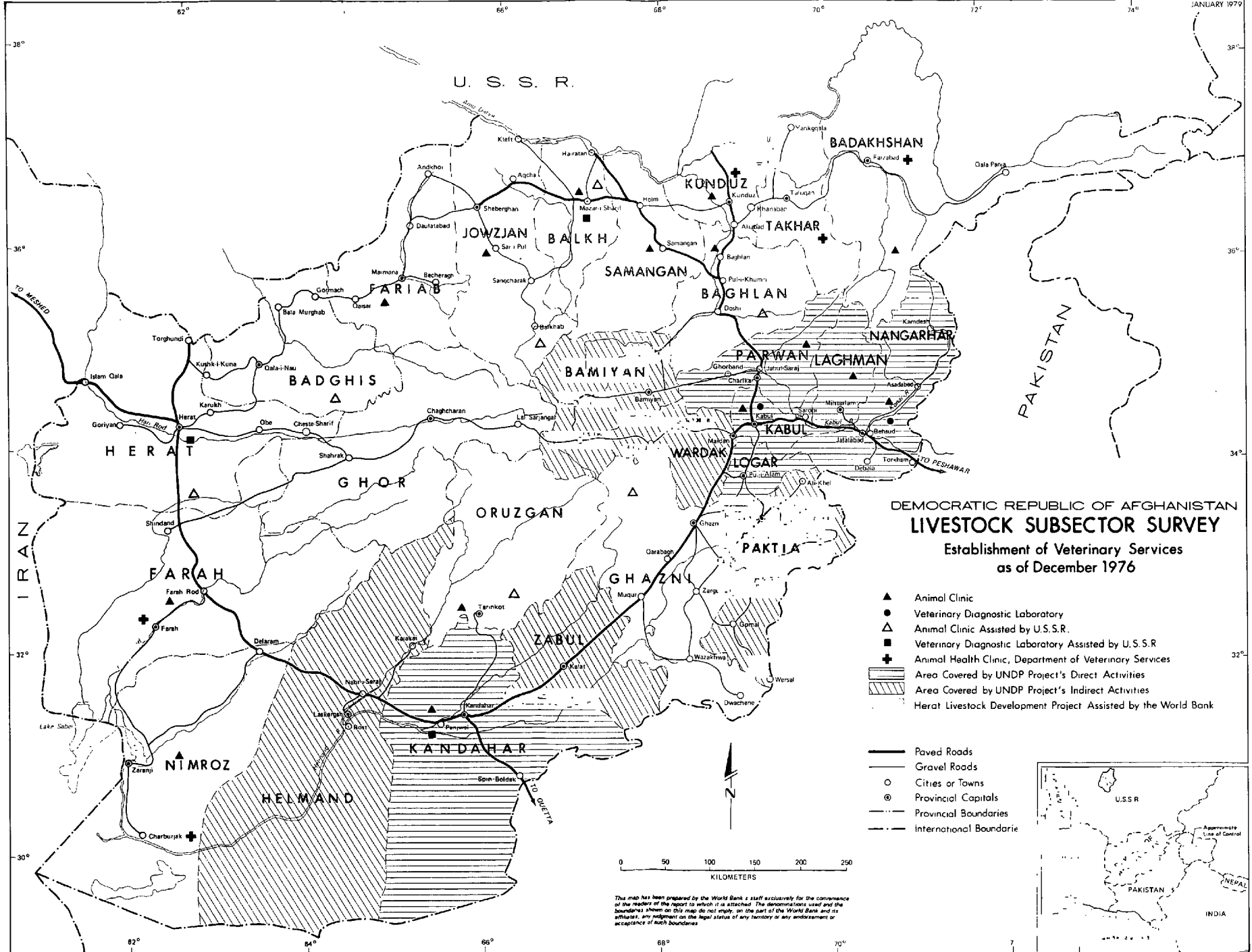
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<sup>1/</sup> While the new Government began to implement many of these proposals prior to completion of this report, the recommendations have not been amended. It is hoped that they will serve to help those who are striving to continually improve administrative and operational efficiency.

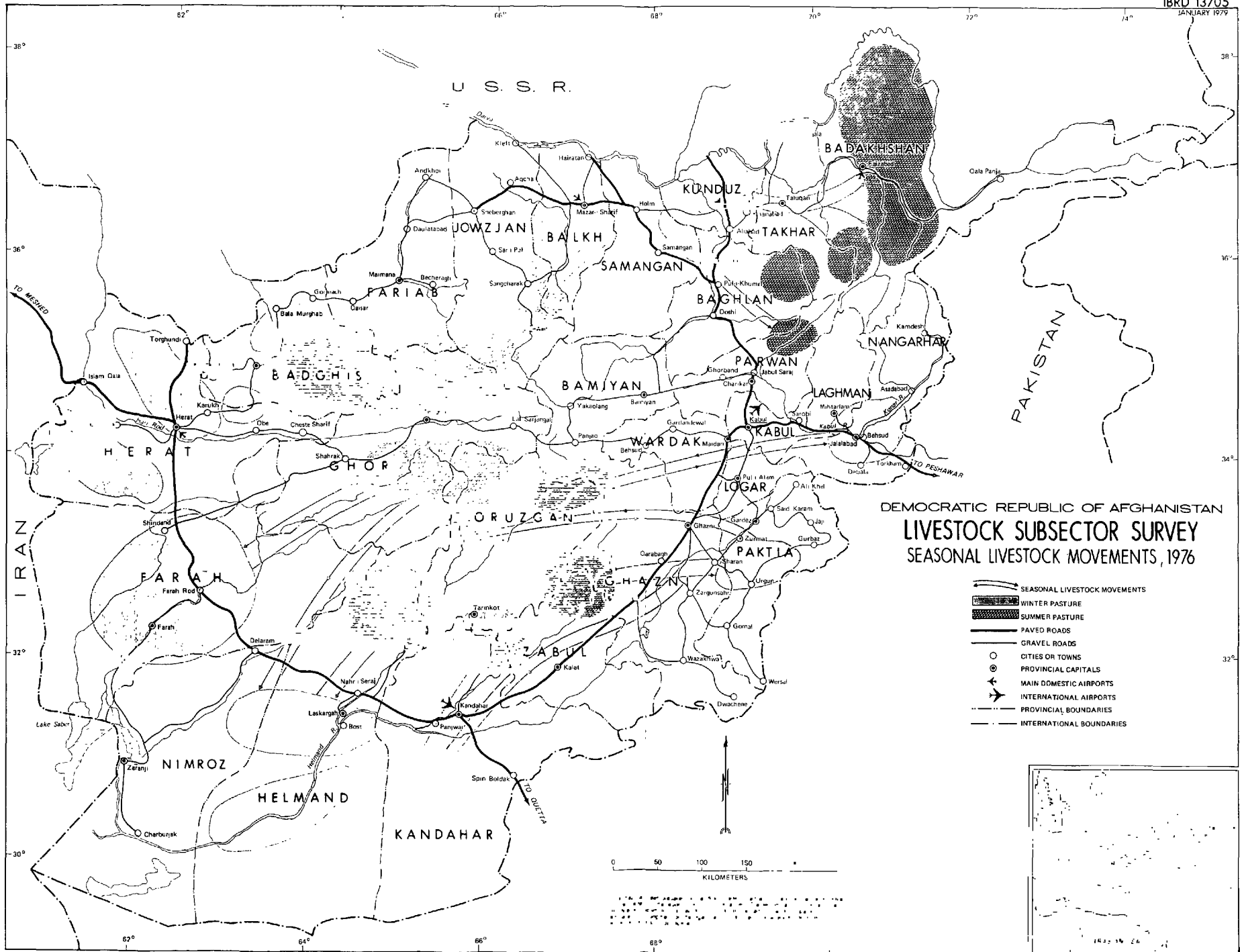
2.03 A complete review of the effectiveness and operation of the Government farms should now be made. The prime function should be to establish new objectives, improve management, and define their role in the livestock production improvement process.

2.04 Contingent upon the completion of the evaluation recommended above, and the establishment of a more sensitive, responsive operating framework, consideration should be given to establishing specific extension services, each with limited objectives and in-built training and supervision programs, in animal husbandry and nutrition, hides and skins improvement, and poultry production.

2.05 As part of a review and reorganization of the Ministry of Agriculture, including the Veterinary Services and Animal Production Department, a new Project identification, preparation, appraisal and evaluation unit should be established within the Planning Department. In addition to establishing a sound policy framework, the Ministry has difficulty in identifying, preparing, and appraising suitable projects. Furthermore with ongoing projects and programs there is little if any objective monitoring and evaluation, and so no analysis is made of the lessons to be learned, or costs and benefits from successes and failures. With limited UN technical assistance including two experts, the first steps have been taken towards the establishment of such a unit. A stronger, better staffed unit is considered necessary if it is to play any meaningful role. Four or five expatriate consultants would be required for 12-15 man years. Expertise would be required in the fields of agricultural project preparation and appraisal, agricultural economics, planning, livestock production, irrigation agronomy, and agricultural production. The key objective and task of such a team would be to train a small efficient team of Afghans in all aspects of the project cycle and to use monitoring and evaluation as a management tool.







DEMOCRATIC REPUBLIC OF AFGHANISTAN  
**LIVESTOCK SUBSECTOR SURVEY**  
 SEASONAL LIVESTOCK MOVEMENTS, 1976

- SEASONAL LIVESTOCK MOVEMENTS
- WINTER PASTURE
- SUMMER PASTURE
- PAVED ROADS
- GRAVEL ROADS
- CITIES OR TOWNS
- PROVINCIAL CAPITALS
- MAIN DOMESTIC AIRPORTS
- INTERNATIONAL AIRPORTS
- PROVINCIAL BOUNDARIES
- INTERNATIONAL BOUNDARIES

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 KILOMETERS

