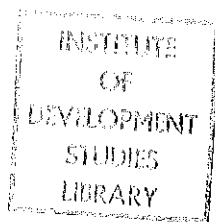




# POLICY ALTERNATIVES FOR LIVESTOCK DEVELOPMENT IN MONGOLIA (PALD)

A Research and Training Project



Research Report No. 5

## **Veterinary Services in Mongolia: Issues and Options in the Context of Liberalisation of the Livestock Economy**

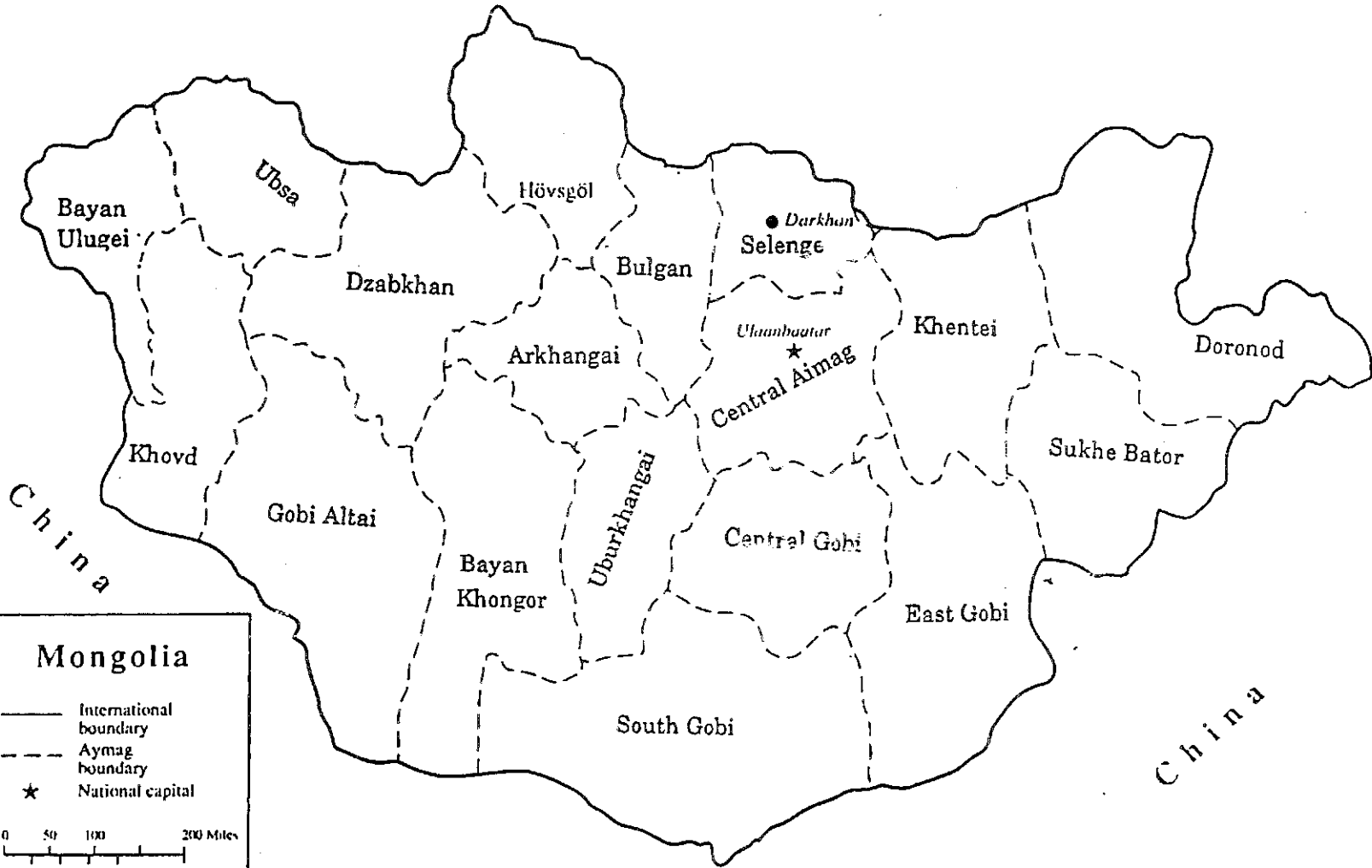
Jerker Edström  
with the collaboration of Onon Zanaa  
and Magcar Baljinnyam

Institute of Development Studies, University of Sussex  
Veterinary Research Institute, Zaisan, Ulaanbaatar  
Department of Veterinary Services  
Ministry of Agriculture, Ulaanbaatar

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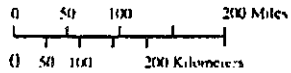
Ulaanbaatar and Darkhan are  
autonomous municipalities

U.S.S.R.



**Mongolia**

- International boundary
- - - Aymag boundary
- ★ National capital



## INTRODUCTION

Veterinary services play a vital role in the economy of Mongolia by reducing livestock production losses and improving welfare of poor herder families. Not only does the livestock sector contribute about 70 percent of total agricultural output and make up approximately 40 percent of the country's exports, but this sector is crucial in providing food security directly for the population as a whole, almost half of which live in rural areas and whose employment and incomes depend largely on livestock. The Mongolian diet is largely based on livestock products, as domestic vegetable and crop production is limited (due to agro-climatic constraints) and as imports of food have never been very important in overall terms. However, what has been imported has in the past primarily been imported at rather low prices from Russia.

The veterinary services were set up to meet the needs of the livestock economy during the communist era, characterised by (predominantly) collectivised ownership and a centrally planned economy. The old command economy is giving way to a new free market economy, though many practical obstacles remain. The central question which will be addressed in this report is "how can the veterinary sector be reformed in order to better perform its roles of improving the profitability of herding and enhancing the contribution of extensive herding to food security?"

## VETERINARY SERVICES IN MONGOLIA

### A brief history

Before the 1921 revolution, Mongolian herders relied on accumulated traditional medicinal practices for their animal health needs, using medicinal plants and herbs as well as mineral preparations. The only source of modern animal disease control before this date was a veterinary station at Songino, for the vaccination of livestock to be exported to Russia. After independence the station produced vaccines against rinderpest and other infectious diseases and a second veterinary station was opened in Ulaanbaatar. The Songino site retains its original function and is today the Biokombinat factory for veterinary vaccines and drugs, the only one in the country. During the early years after the revolution (1923 to 1928), the veterinary services were run by Soviet specialists, but a special school to train veterinary technicians was set up as early as 1924 (with the first vet technicians graduating in 1928). In 1942 the Veterinary Faculty of the State University opened and the first Mongolian specialised veterinarians graduated four years later.

The services were modelled closely on Soviet lines with a strong emphasis on infectious disease control and prevention, using an extensive "population based" approach to reaching the whole of the livestock sector. This has undeniably had a beneficial effect on livestock health and has substantially reduced production losses due to disease. As figure 1 shows, the incidence of reported livestock deaths continued to decline until 1989, when major Mongolian reforms and changes in the Soviet Union resulted in supply shortages and other difficulties for the veterinary services. In order to appreciate the nature of the current difficulties of the veterinary sector, it is necessary to review the organisation of services and their performance in the recent past.

## Coverage and organisation

Mongolian veterinary services are organised on a national scale radiating out from the Veterinary Services Department of the Ministry of Agriculture, through 18 aimag (province) centres (and 4 municipalities), and down to some 250 local veterinary stations at sum (district) level (which usually coincides with the former collectives); these serve approximately 4 to 6 smaller units each, called "bags" (often coinciding with what used to be called brigades). Figure 2 shows this hierarchy. There is also an associated Veterinary Research Institute in Ulaanbaatar, with veterinary research stations in four different ecological zones, as well as some separate services for state farms and hygiene inspection at food processing installations. Aimag and town veterinary services sanitary and hygiene inspection of slaughter houses and food processing installations. Additionally, customs offices at border stations have separate veterinary services to enforcing health and hygiene requirements of cross-border shipments of livestock and livestock products.

Figure 1.

## Numbers of reported livestock deaths by species, 1985-91

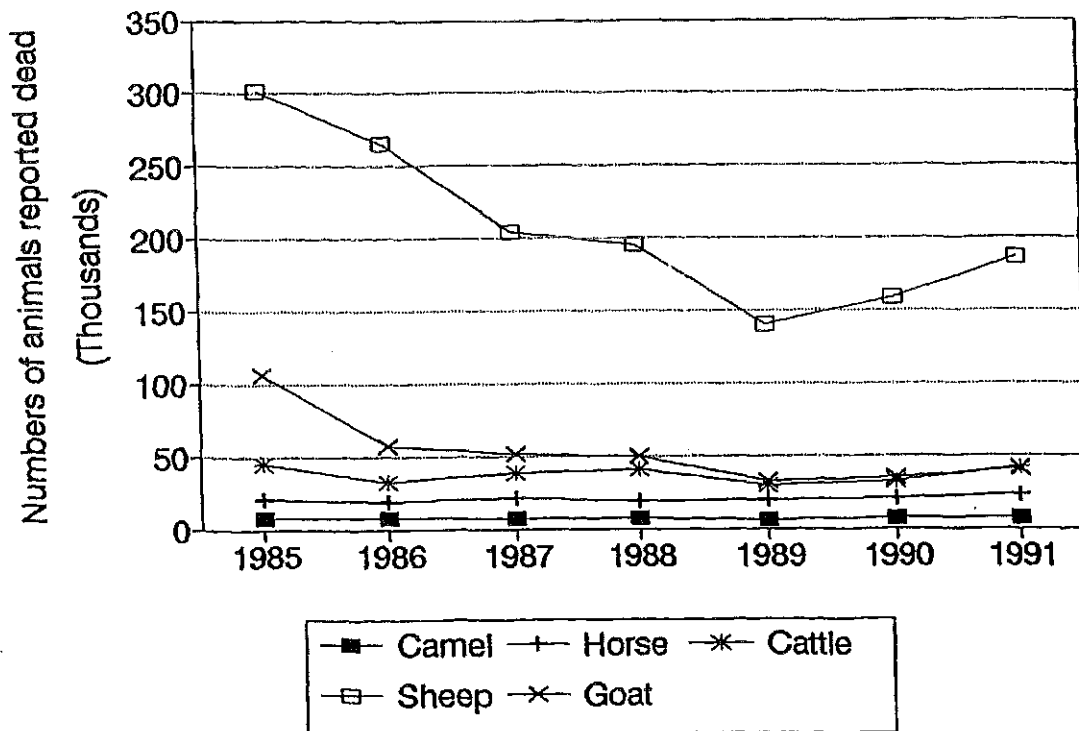
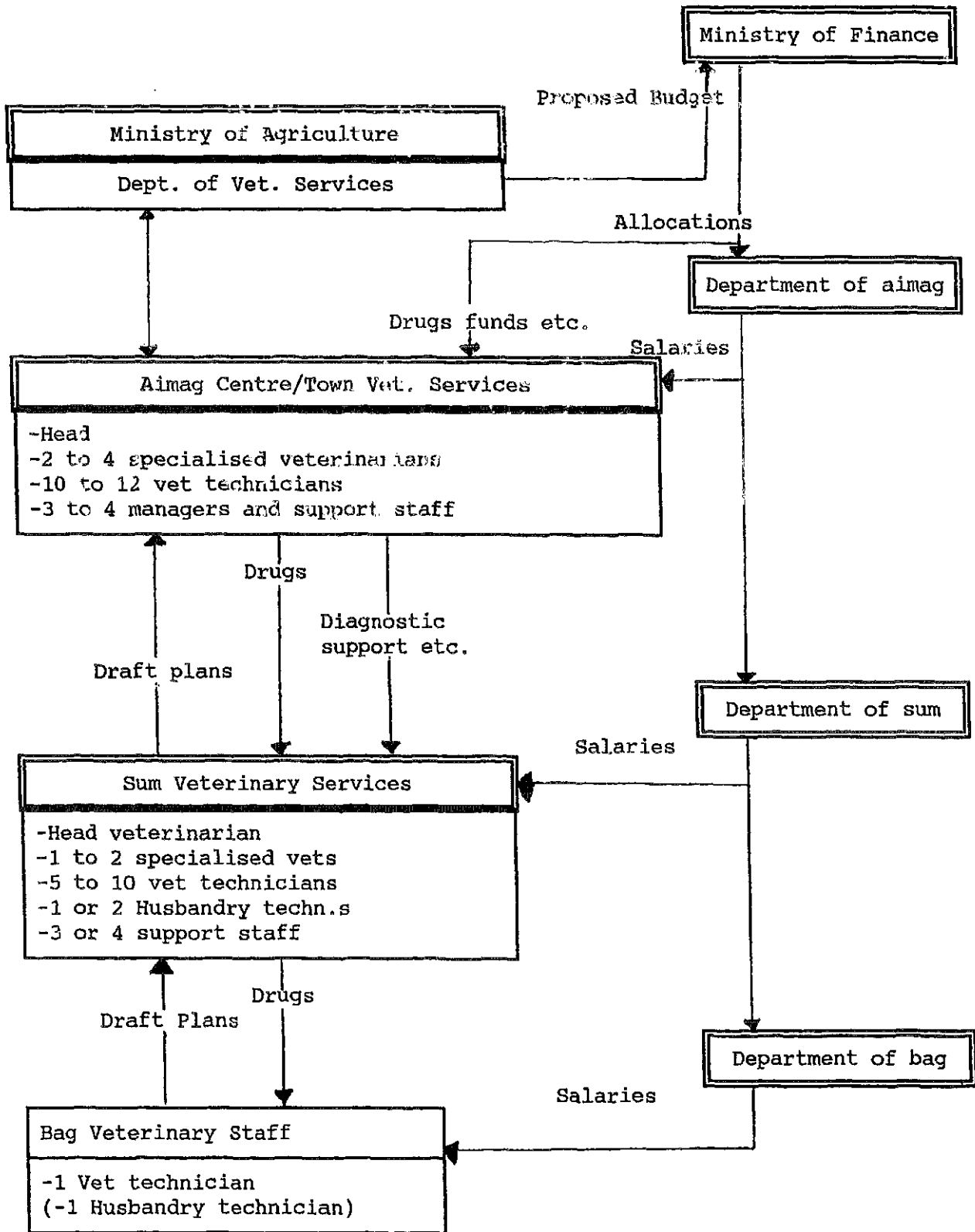


Figure 2. Typical organisational structure as seen from sum and aimag level veterinary services.



In all, the veterinary services employed in 1990 some 839 specialised veterinarians, 2,174 veterinary technicians and 456 animal health workers, or vet-nurses. (Dangroup International 1992). Staffing levels remain high and are relatively evenly distributed, on the basis of the distribution of livestock. Densities of veterinary workers to livestock in different aimags range from above 14 vets per 1,000 "sheep units" to below 10 per 1,000), as shown in figure 3. There is a more or less constant annual output of graduating vets and vet technicians from the Agricultural University and Secondary Specialised Schools, of which some 80 to 90 percent are absorbed into the service. Veterinary training has been separated from training in animal husbandry and breeding and the Veterinary Research Institute separated from the Research Institute of Animal Husbandry at the end of the 1980s.

The service pyramid is still structured on vertical lines of communication and directives and, although plans and targets are formulated with input from the lowest level, these pass up the hierarchy for approval, after which resources are channelled through the aimag and sum departments and funds for drugs procurement flow to the aimag centre vet services; a conventional command planning structure. There appears to be little horizontal integration in reality. Although animal husbandry and breeding services were integrated with veterinary services in the past, the two disciplines have been separated at all levels, except at local level, where effective cooperation is very difficult due to different objectives, strategies and different superiors. Animal husbandry services have a parallel service pyramid culminating in a recently created Department for Animal Husbandry within the Ministry of Agriculture.

**MAJOR ANIMAL DISEASES AND STRATEGIES FOR PREVENTION AND TREATMENT**

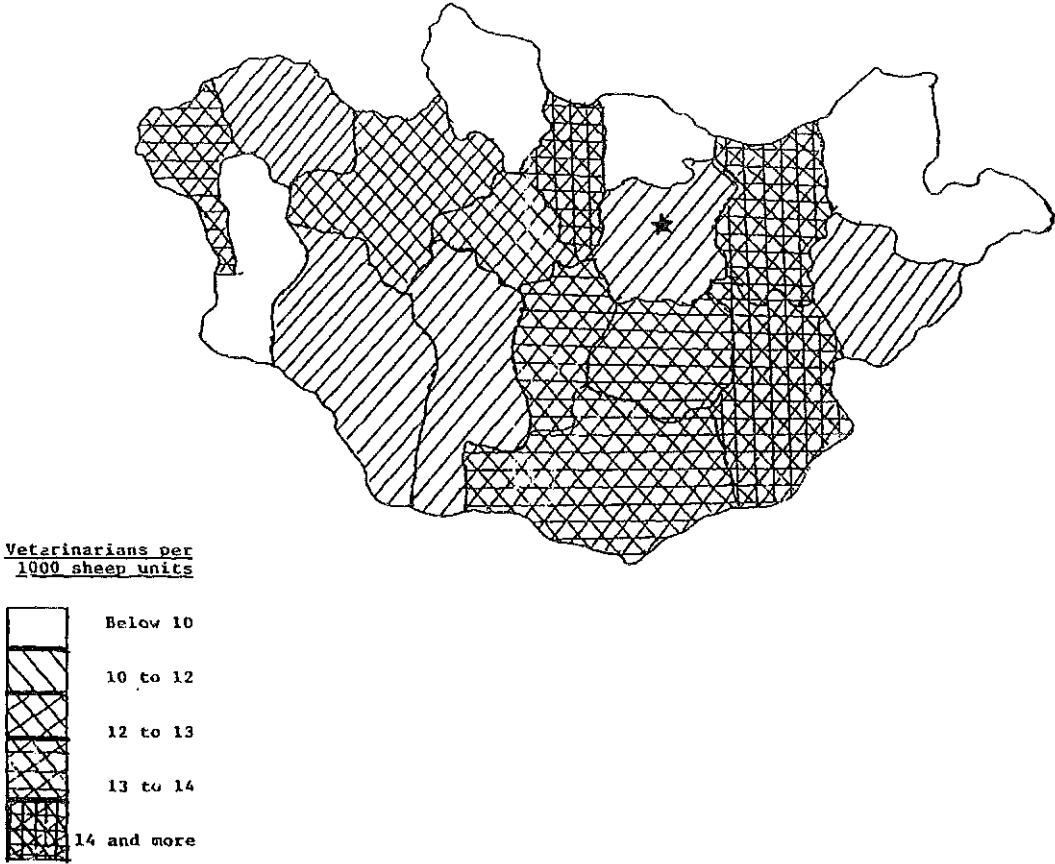
Mongolia has a well developed system for reporting animal disease and mortality. Diseases are grouped into three broad categories: (i) infectious, (ii) parasitic and (iii) non-infectious diseases. The first category comprises mainly viral and bacteriological infectious diseases, which can usually be prevented by vaccination, whereas the second category includes diseases caused by endoparasites and ectoparasites, some of which are infectious, and most of which can be treated with drugs or, in the case of ectoparasites, prevented by dipping or spraying animals. The third category is perhaps a misnomer and includes all conditions which are not easy to diagnose or which are poorly understood, as well as common gastro-intestinal and respiratory diseases, and problems such as intoxication from poisonous plants. Consequently this group makes up the large majority of animals reported sick and dying from disease. It is generally felt, however, that the incidence and impact of most of these diseases is highly influenced by weather and the supply of hay and fodder, and may thus best be addressed by improving livestock management and the fodder supply.

Infectious diseases

Some major infectious diseases have been brought under control by successful campaigns (Sodnomdarjaa 1992);

rinderpest	in 1947,
pleuropneumonia in goats	in 1962,
sheep pox	in 1964,
pleuropneumonia in cattle, bovine tuberculosis,	
equine infectious anaemia	by 1970,
and foot-and-mouth disease	in 1974.

**Figure 3. Density of veterinarians relative to livestock  
(vets per 1000 sheep units)**



Source: The Mongolian National Atlas, 1990



Other infectious diseases like anthrax, tetanus and blackleg, occur sporadically, but the remaining infections of major importance are pasteurellosis (in cattle and sheep), contagious ecthyma (in sheep and goat), enterotoxaemia, contagious agalactia and salmonella. Vaccines and hyperimmune sera against many of these diseases are produced at the Biokombinat factory from local strains, and annual vaccination campaigns are carried out each spring (or sometimes in the autumn). The incidence of disease and deaths from infectious diseases continued to decline up until the end of the 1980s and the number of infectious disease interventions appears to be significantly correlated with a decline in total numbers of animal deaths (see below).

Brucellosis is an important infection which has reached substantial levels of infection in the human population (as a result of ingesting infected and poorly processed meat or milk products, or from handling bodily fluids of animals). The vaccine for brucellosis has been imported with assistance from FAO and WHO since 1975.

In 1970 a new animal disease, leucosis, arrived in Mongolia, with dairy cows imported for the modern dairy industry from Russia, Estonia and Germany. No vaccine is available as yet. Tests have been carried out on local cattle to infect them with leucosis, but as of yet none have shown to be susceptible, although it would be surprising if they were not. There may be a danger that new types of cross-bred cattle could provide a bridge for the virus into the local cattle population. This may become more of a problem with privatisation of dairy animals.

#### Parasitic diseases

Parasitic diseases are caused by some 100 endoparasites and a number of important ectoparasites, particularly in damp mountainous areas or near rivers. By far the most important ectoparasitic disease in Mongolia is mange (caused by mites), which damages the wool of sheep and camels and the hides of cattle and goats, resulting in large production losses. The most important endoparasitic diseases are monesiosis (in cattle, sheep and goats), nematodirois (in sheep, goats and camels) as well as gastrophilosis and paraascariasis (in horses). Programmes against parasitic diseases have proved more difficult and expensive than infectious disease prevention. Prevention of mange, for example, requires spraying animals with preparations like creoline (available from China) and treatment of infected animals usually involves injections of the expensive drug ivermectin (imported from Holland), which is also used for the treatment of most other parasitic diseases. Drugs for the prevention and treatment of these diseases usually have to be imported from the West since trade with Russia has all but ceased, and the costs of importing drugs are currently escalating steeply. Consequently parasitic diseases, like mange, tend to be viewed as more of a costly animal health problem, than infectious diseases, by herders and vets alike.

#### Non-infectious diseases

Non-infectious diseases tend to be most common in young and newborn animals during the spring months (the calving season), after a long and severe winter, when nutritional reserves and immune defenses are low and when severe and desiccating winds make it difficult for animals to keep up body temperatures. They include problems like gastro-intestinal infections, intoxication, nutritional and mineral deficiencies (reducing disease resistance), pneumonia, diarrhoea and lesions of internal organs. Since these diseases make up such a wide range of poorly understood animal health

problems, the most important role of the veterinary services in this regard may be to improve the diagnosis and understanding of these diseases.

#### Implementation of plans for prevention and treatment

The Mongolian veterinary services have developed a finely tuned system for planning and implementing programmes of prevention and treatment of animal diseases. Broad strategies and objectives are elaborated at national level and specific plans for implementation are drawn up at local level. These plans are passed up the pyramid and a budget is worked out by the Department of Veterinary Services in the Ministry of Agriculture, which is then passed to the Ministry of Finance for approval. Funds are allocated to aimag veterinary services, which procure drugs and supply them to sum level services (see figure 2 above). As can be seen in figure 4, implementation of interventions against infectious and parasitic diseases, as well as laboratory investigations, were consistently on or above target throughout the second half of the 1980s. Around 1990, however, implementation started to fall below planned targets, as economic reforms brought difficulties in terms of supplies of drugs and petrol. Prior to 1990 petrol and drugs were mainly imported from the CMEA countries at nearly constant prices, but the breakdown in this trade and the devaluation of the tugrik has resulted in massive negative terms of trade shocks for the country as well as a radically altered cost profile of the veterinary service budget. The foreign exchange constraint has caused major shortfalls in supply. Furthermore, this seems to be a worsening problem, as the costs - particularly of parasitic disease interventions - continues to sky-rocket, as can be illustrated by comparing the budgets for animal disease control for 1991 and 1993, in figure 5. This spectacular cost escalation in parasitic disease control seems to be the result not only of rapid devaluation of the local currency and the fact that these drugs (particularly Ivomectin) have to be imported - unlike vaccines against infectious diseases - but this has been exacerbated by the fact that the sources of imported drugs have shifted from relatively low cost suppliers in the former East Block to more expensive suppliers in the West.

#### The contribution of veterinary services to the livestock economy and livestock health

Estimations of the contribution of the veterinary services to the livestock economy are difficult to make at this stage, not only because price data on livestock, meat, wool, hides and milk are difficult to gather for different dates and for different types of providers, but also because prices prior to 1992 were state controlled and did not reflect relative scarcities. Any analysis of this would be more meaningful using production volumes and livestock numbers.

However, without going into details of production of livestock products, one can show a significant relationship between the number of veterinary interventions and livestock deaths. As equation 1 shows, changes in the number of animals reported dead (in 18 aimags between 1985 and 1990), are negatively and significantly associated with annual changes in the number of interventions against infectious diseases (mainly preventive vaccinations).

Equation 1. Annual per cent changes in livestock deaths as influenced by annual per cent changes in interventions against infectious and parasitic diseases, in 18 aimags between 1985 and 1990.

$$\begin{array}{rcccc} \%Deaths = a + & b\%Infect. + & b\%Paras. + & dummies + & c \\ & 3.712 & -0.308^{**} & -0.082 & \\ & & (-2.140) & (-0.496) & \end{array}$$

R squared = 0.303,

St Error of Y = 27.504,          n = 108,          df = 83

Note: This model is a pooled covariance model using five sets of annual data for 18 aimags. 4 year dummies and 18 aimag dummies are used to control for autocorrelation in the model. \*\* = significant at the 5% level.

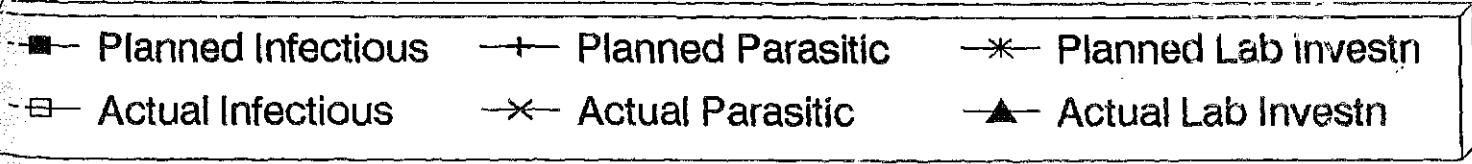
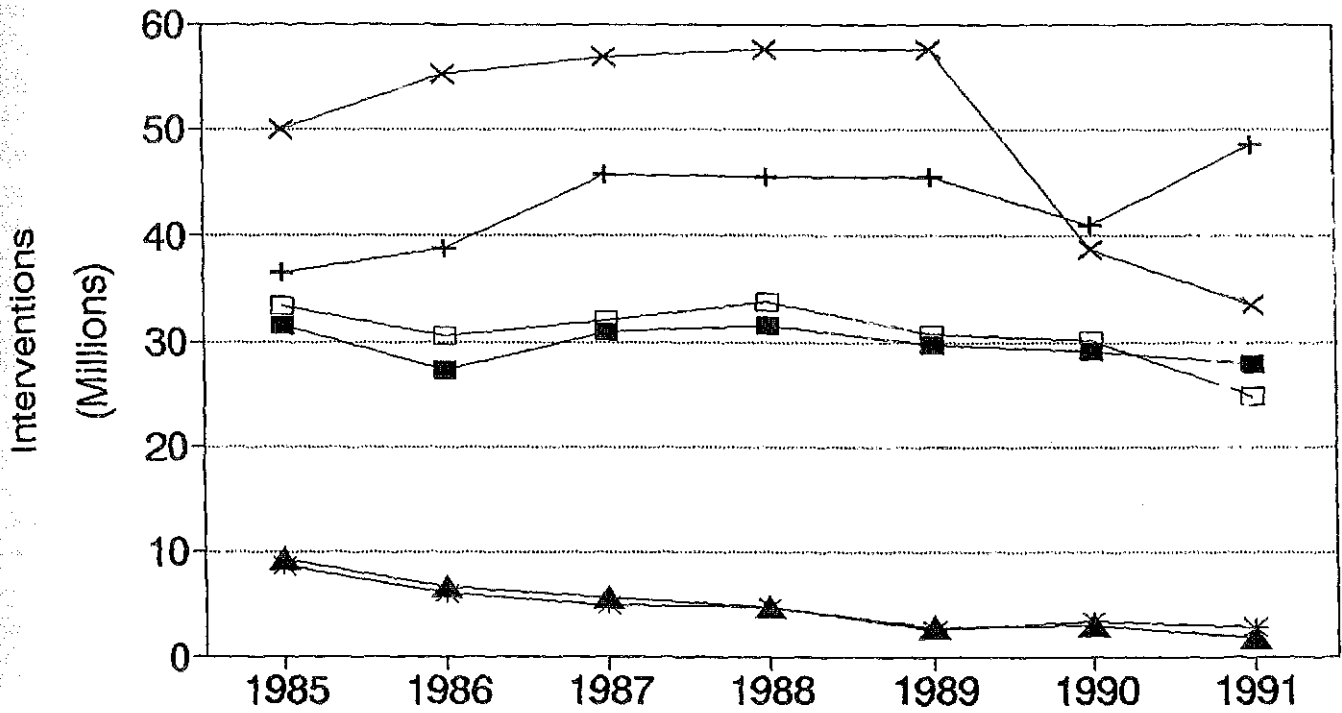
Interventions against parasitic diseases also show a negative association, though this is not statistically significant. Since interventions against parasitic diseases, like mange, may not be carried out so much for the purpose of saving animal lives as for minimising production losses in wool and hides, it would be premature to draw any specific conclusions as to the relative value of the two types of interventions. Furthermore, whilst infectious disease vaccination campaigns are aimed at preventing diseases, many parasitic disease interventions consist of treating already sick animals, so one would not necessarily expect the latter type of intervention to show up as very significantly associated with livestock deaths. More data and research would clearly be needed in order to carry out a fuller analysis. However, while plenty of data are lying idle in Mongolian archives, the resources for extracting and analysing them still need to be mobilised. A fuller model of determination of animal deaths, could usefully include variables for fodder supply, pasture, types of livestock ownership, temperature, rain and snow fall.

#### ECONOMIC ISSUES SURROUNDING VETERINARY SERVICES

The current veterinary law in Mongolia guarantees all producers the right to free veterinary services. The state can no longer afford such a policy. It has become increasingly popular, in the 1980s, to prescribe privatisation of publicly owned and operated enterprises or services as a response to this sort of economic problem. However, it is tempting to compare veterinary services with human health services, where the shortcomings of pure market solutions are relatively clear. This comparison may be a fundamental mistake, since vet services directly provide services to livestock producers and should thus be understood as a production service industry, at least in part. In addition, there are externalities involved in animal health, such as the threat of epidemics affecting the production of "innocent" third party producers as well as the health of the human population generally. An important role of vet services is to protect public health and from this perspective it is clearly in the public interest to have an effective service.

Figure 4.

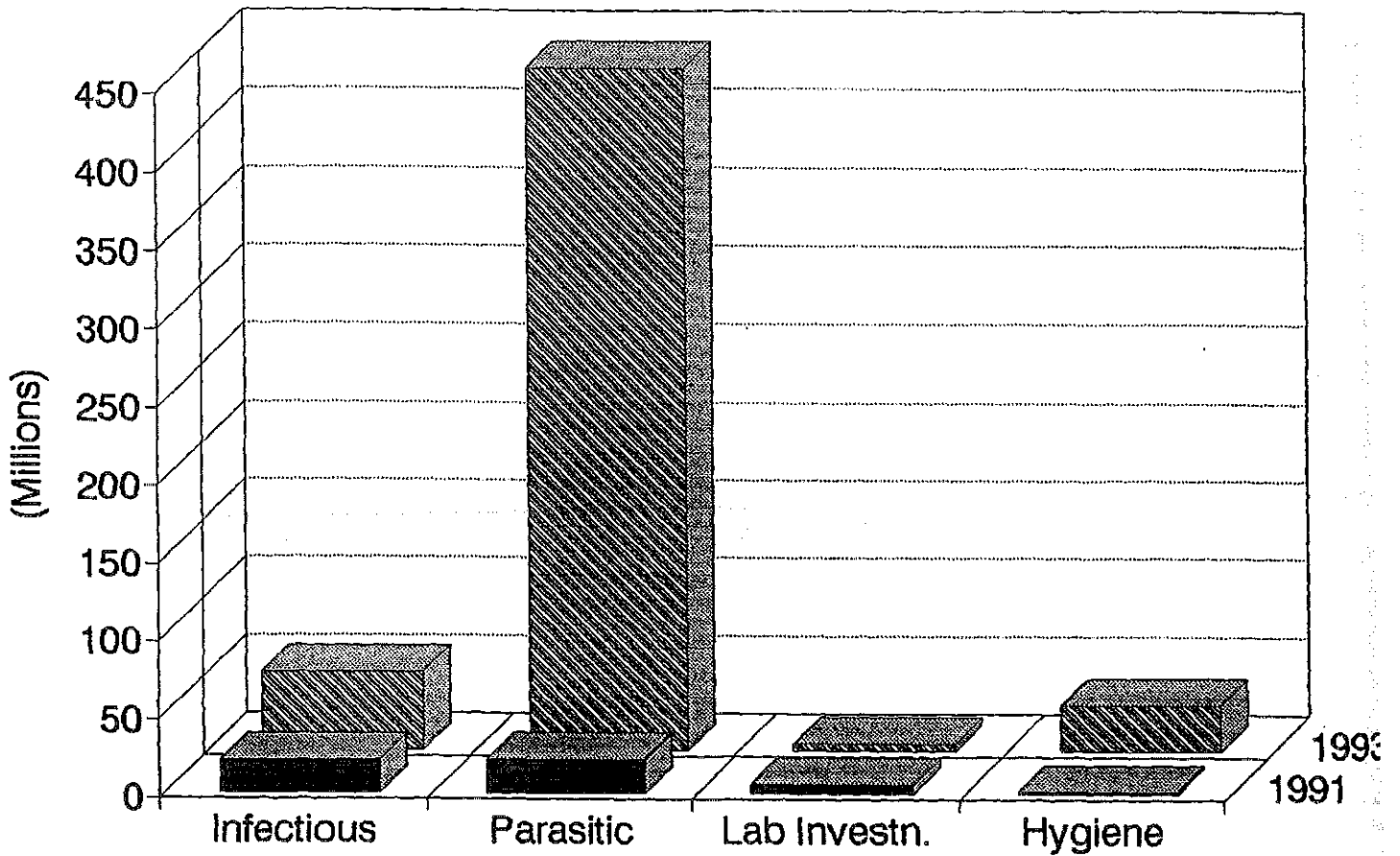
# Planned and implemented interventions in Veterinary Services, 1985 to 1991



Source: Data from Ministry of Agriculture

Figure 5

## Budgets for animal disease control, 1991 and 1993, Tugriks (current prices)



Source: Data from Ministry of Agriculture

However, this does not mean that it has to be a fully public service with all costs paid out of the government budget. In Mongolia, where almost half of the population are rural and highly dependent on livestock for food security, vet services could be construed as having yet another role to play. That is, providing a welfare function for poor herder families with little or no cash and depending for their survival only on their livestock. So, it would probably be true to say that Mongolian veterinary services should be understood as a hybrid, a cross between

- i) a production service industry,
- ii) one to protect public health, as well as
- iii) a tool to meet welfare objectives.

From this perspective it no longer seems clear that complete privatisation would necessarily provide the best solution to the problems of the sector, which is not to say that market forces could not be exploited in some areas, in order to improve cost-efficiency.

In more specific terms, different types of services provided by veterinarians can be described as different kinds of goods; public and private goods, as well as goods of a more mixed nature (Ulami et al. 1992). Some examples are listed below.

Purely private goods are those which uniquely benefit the consumer (or recipient of the service - in this case the livestock producer) and they include services like artificial inseminations, clinical interventions and (sometimes) vaccinations.

Private goods with externalities are those services which benefit the consumer directly, but also involve externalities affecting other parties. Preventive vaccinations against important infectious diseases, for example, would be an example of such a good; another is the diagnosis and treatment of infectious diseases.

Private goods with moral hazard, include the production and distribution of pharmaceuticals and vaccines, for example. These are described as involving moral hazard, because it is not possible for all parties to determine the quality of the goods exchanged at the time of the transaction (if at all). These may be possible to internalise under certain circumstance, but not necessarily. In most cases the state would need to carry the main responsibility for enforcing standards for product quality control of veterinary medicines and drugs.

Public goods are those which benefit more than one consumer and for which there is no way of excluding a third party from enjoying some of the benefits. Examples include services like hygiene inspection of food, infectious disease control programmes like quarantine, disease monitoring, research, extension and quality control of medicines.

In order to better understand the constraints to exploiting market forces in the vet sector in Mongolia, it is useful to analyse the supply and demand for services separately. On the supply side, it is clear that the market for veterinary care is imperfect in many ways (in the economist's sense of that word). Suppliers can not enter the market to compete easily for many reasons including a long education, high capital investment costs and the inability of independent operators to benefit from economies of scale necessary to support all the functions required of a truly effective veterinary service. On the demand side, vet services are also highly imperfect economic goods, since the consumer often does not know what it is he (or she) is buying and has to trust the provider as to what is required.

This is particularly the case for preventive interventions, where the benefits are less visible, than in the case of treatment or cure. Since prevention tends to be more cost-effective than cure, and since it is likely to be harder to sell to the consumer, one would not expect the market mechanisms to be cost-cutting in the way predicted by classical economic theory.

Furthermore, there are many practical obstacles to establishing an efficient market for vet services in Mongolia at the moment, such as the lack of cash (and thus, effective demand) amongst many herders, the poor current transport problems in the country and the very high costs of imported drugs (by Mongolian standards). These arguments against attempting to establish a free market in veterinary care however, do not add up to a sufficiently strong case against introducing market forces into the public veterinary sector, although they highlight the necessity of proceeding with caution in doing so.

One economic aspect of veterinary care in Mongolia which deserves special attention is the problem of the rapidly increasing relative prices of imported drugs (in domestic terms). This is not only a problem for veterinary care providers and beneficiaries, but also one for the country's balance of payments and foreign exchange reserves. The problem seems to be fundamentally one of relative costs in different parts of the sector being distorted by the fact that some goods are priced at international prices, while others are priced in domestic currency. Budgeting and benefit-cost analyses are complicated by the fact that different domestic goods are undergoing very different rates of price inflation (as they are produced with varying degrees of imported inputs and as some prices are still set by the state), together with the fact that the Mongolian currency is undergoing massive devaluations, as the economy struggles to compete as a newcomer on a world market to which Mongolia has very limited access. Although difficult, it would seem that a careful analysis of the cost-effectiveness of different imported drugs should be carried out, as should an assessment of the possibilities of substituting some drugs or developing acceptable alternatives locally.

#### **POLICY OPTIONS FOR IMPROVING VETERINARY SERVICES**

So, what can be done to improve and adapt Mongolian veterinary services today? It must be stressed that things are already changing rapidly, and what was true of the sector one year ago is sometimes no longer the case. Many policy options have been considered and there has been some talk about privatisation in the veterinary services, although the actual statements made by the government on the matter are rather less radical than that. The new government programme, ratified by the Great Hural (Parliament) on 8 October 1992, provides a useful clue to current government intentions with regard to reforming the veterinary sector. This programme states that the structure and activities of the veterinary and livestock breeding services will be changed in accordance with the principles of the market economy, in order to improve efficiency. As to the liberalisation of the livestock economy generally, it states broadly that the aim will be to develop the intensive and extensive (pastoral) livestock sectors in a rational and integrated fashion.

#### **Current changes in the legal framework for veterinary practice**

A new draft law on animal health and gene pool protection has now been drawn up, which it is expected will be ratified in December 1992, after some revisions currently under way. This law will repeal an earlier clause

about the right to free veterinary care for all animals in Mongolia (article 4 of Section 2, in the 1977 Mongolian Veterinary Law), and will legalize private practice within the veterinary sector.

On the other hand the new law is by no means a blueprint for deregulation and wholesale privatisation. It explicitly charges the State Veterinary Services with directing and controlling the provision of services, and ensuring it is extended equitably to all types of livestock owners, managers and producers, without discrimination. The state services are expected to continue to carry out the main bulk of tasks and are charged with controlling the work of other types of service providers, such as private veterinarians and those employed by different types of enterprises.

Another interesting aspect of the new draft law is that it treats livestock breeding (protection of the livestock gene pool) and veterinary services in a consistently integrated fashion. It should provide a sufficiently fresh framework for reforming both veterinary and livestock breeding services in the country, since it pays considerable attention to sustainability and the need to generate resources within the service and for the service. It lists the financial sources of the veterinary service budget as (a) the state budget, (b) payments for veterinary and breeding services (including fees for inspections and examinations as well as income derived from specific production activities run by the services), (c) a tax for a fund for the protection of livestock owned by citizens and organisations, as well as (d) other sources (a range of penalties for violations of the law are listed in a later section, though some of these would probably prove more costly to implement than they would bring in). With respect to the highly costly dependence on imported drugs and other inputs, the new draft mentions the need to improve local production capacity, and it stresses the need to make better use of the wealth of traditional medicinal preparations, which had largely been suppressed during the communist era.

#### Specific issues and options for consideration

Whilst the new draft law opens the door for substantial reforms, it is by no means a guarantee of success. Specific problems and issues have to be addressed and solved, with as much input from all categories of staff as possible (field interviews revealed a wealth of creative, interesting and radical ideas from the grass-roots). It is important to remember the successes achieved in the past and not to take a blind leap into a purely free-market solution, since no efficient markets exist as yet. Financial sustainability, however, forms the central problem faced by Mongolia in this difficult process.

##### (i) Cost recovery

Cost recovery is clearly necessary in the veterinary service, so the recent introduction of service charges (for clinical interventions, treatment and inspection for sales) is a step in the right direction. This is probably the most widely introduced reform in other developing countries (de Haan and Bekure, 1991). The charges are extremely low, however (1 tugrik per large ruminant and 1/2 a tugrik for small ruminants, which is equivalent to 1/3 and 1/6 of one US cent on the parallel market), and are in no way related to the cost of drugs. Preventive interventions against infectious diseases remain free of charge. As figure 6 shows, fees collected for services in 1992 are expected to make up 5 per cent of the income of the services, whilst the central government budget provides 92.5 per cent. If one looks at the breakdown of expenditures in the budget, however, it appears that drugs alone account for some 40 per cent of outlays.



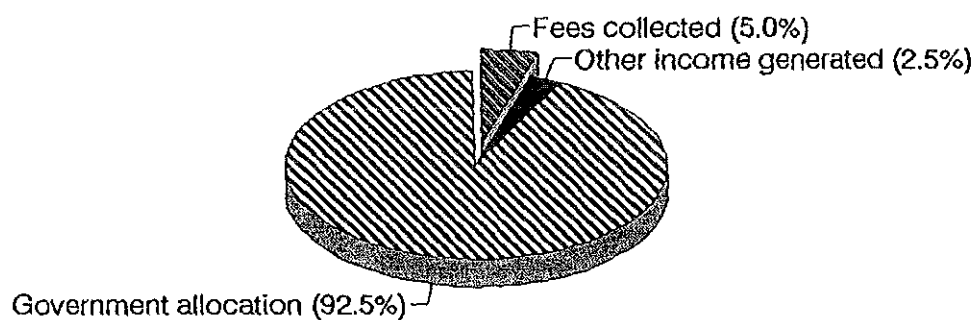
The major obstacle to service charges at the moment, seems to be herders' lack of cash (as livestock product markets are not yet performing efficiently and prices are still low) and a lack of appreciation of the value of certain veterinary interventions (according to vets in the field). Whilst this may be the case in the extensive pastoral livestock sector, the same is not necessarily true for companies (former negdels) and intensive livestock producers (such as the former state farms). In these sectors, service charges can clearly and easily be met by the companies, and there seems to be an overwhelming case for finding a way to recover the full costs in these sectors. In the case of pastoralists, however, the lack of cash does not necessarily provide sufficient grounds for waiving fees altogether. The use of payments in kind (such as milk or other livestock products) could be considered.

Another major obstacle to recovering costs, however, is the fact that the past practice of free services has created expectations and that vets feel that it is difficult to insist on payments from herders. The suggestion was made that herders who had failed to get preventive care offered free of charge, should pay the full costs of subsequent treatment of animals, as a means to encourage compliance with preventive programmes as well as to recover more costs of treatments [Interview; Sandag 1992].

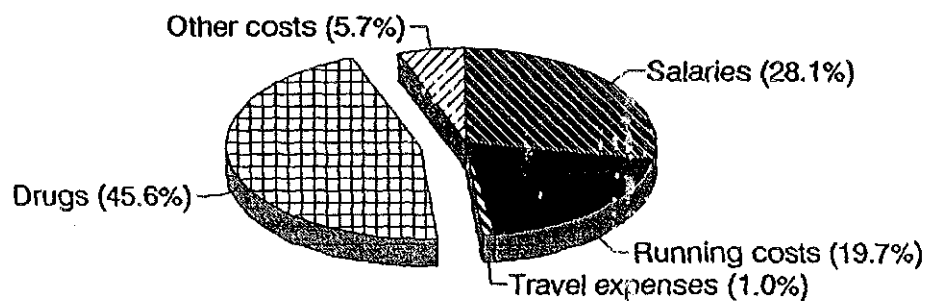
In considering service charges and cost-recovery, it is not only important to distinguish between which types of production systems lend themselves best to this. It is also important to distinguish between, on the one hand, those services which could be said to provide private goods (benefiting the consumer exclusively) - such as artificial insemination, treatments for minor complaints, some vaccinations and clinical interventions (except when these include infectious diseases) - and on the other, public goods (involving moral hazard or large externalities, which necessitate state intervention in order to supply socially optimal amounts of services). The latter include, for example, infectious disease control, preventive vaccination campaigns, hygiene inspection of food processing facilities to control zoonosis (animal to man transmission) and diagnosis and research into animal health and breeding. Whilst a priori theoretical reasons exist for charging for the full costs of private good services (in a market economy), the same body of theory would prescribe state involvement in the services with important public good aspects (Ulami et al. 1992). Table 1, below, provides a framework for cross-checking where cost recovery is likely to be most realistic and appropriate.

figure 6

### Sources of finance of the Budget, 1992, in the Mongolian veterinary services



### Breakdown of expenditures, 1992, in the Mongolian veterinary services



Note: Running costs include recurrent expenditures on, for example heating, as well as maintenance costs.

Source: Data from the Ministry of Agriculture

Table 1. Prospects for improving cost recovery in the delivery of veterinary services in Mongolia, by types of production systems and types of services (as types of economic goods).

TYPE OF SERVICE	TYPE OF LIVESTOCK PRODUCTION SYSTEM (VET'S CUSTOMER)	
	Intensive (state & company farms)	Extensive (Pastoral herders)
Private good (AI, treatment)	Very high	Fair
Mixed good (preventing infect.dis)	High	Poor
Public good (R&D, Inspection)	Fair	Very Poor

(ii) Private practice

The same constraints as those mentioned for service charges obviously also affect the likelihood of private veterinary being profitable in this environment. However, there are clearly sub-sectors of the livestock economy where private practice could work, perhaps with some help. In a new administrative unit, Choir town (the 4th and most recent municipal town), they are currently preparing one veterinarian for private practice catering for the intensive sheep breeding farms and two more vets may be set up in private practice after the initial trial period [interview; Undrah 1992]. This seems to be an appropriate experiment, as the density of livestock and the cash resources of the producers are both sufficiently high.

As mentioned however, such an experiment would be unlikely to succeed in the sparsely populated (and stocked) pastoral areas in the near future. If private vets were to operate in remote pastoral areas, they would most likely require support, and in effect, subsidisation from state veterinary services. Whether or not experimentation of this kind will take place in pastoral areas, it might be more likely to succeed if vets were allowed to sell and buy drugs themselves, as well as to accept payment in both cash and kind (wool, milk or hide).

Yet another option for private practice, suggested by a field vet [Interview; Lubsandorj 1992], would be for companies (the former negdels an state farms) to operate veterinary services for their members and other herders in their areas, retaining their profits and paying the salaries of their employed vets. State veterinary services could oversee the work of the private vets and supply certain support and back-up services, free or at a cost to the company (depending on the type of service). So far however, companies are so heterogenous as to make it difficult to apply this kind of model across the board. It would seem that a process of consultation and experimentation, in various aimags and sums, could lead to different locally appropriate arrangements, providing that the heterogeneity does not become so great as to make the process unmanageable.

(iii) Supply and distribution of drugs

Aside from different livestock density and profitability in different areas and production systems, and the theoretical considerations just raised, other factors affect the extent to which private vet. practitioners can be expected to operate profitably. Access to pharmaceuticals and other necessary inputs is of central importance. At the moment, these products can only be bought and distributed by government services and most imported products are imported and sold by Agrimpex, a para-statal with monopoly powers in this area. Some domestic materials (though not drugs) can now also be bought on the newly established agricultural exchange.

Liberalising the production, trading and marketing of drugs and medicines would not only improve the chances for private veterinarians being able to operate profitably, but it would also improve the supply of these products to government services, so long as market prices could be charged for them (which would require that government vets also charged these rates in competing areas). Liberalising drug supplies and distribution, however, does not take away the need for the government services to control and enforce product standards, so as to minimise the problem of moral hazard (when a supplier sells an inferior product because the consumer can not be sure of what he is buying).

Currently, the veterinary service supplies its primary level units with drugs and equipment through the centralised and vertical planning and administrative apparatus, described briefly above. One suggestion which has been made to officials by a sum level head veterinarian [Interview: Lubsandor], 1992], is to provide the sum level services directly with their own funds and to let them procure their drugs and equipment directly from the importing company or the agricultural exchange. Letting the sum level services budget and spend their own money could well improve not only cost-efficiency of their services (by cutting out middle men), but also improve the timely supply of drugs and equipment.

(iv) Organisational reform

This issue leads on to a more fundamental question, namely, that of the need to reform the organisational structure of the veterinary sector as a whole (and related sectors), as well as the prevailing management and information culture. Aside from the important issue of channelling resources directly to primary level units and reducing some of the hierarchical red tape, there are important changes which could be made to the way in which veterinary and husbandry services are (or are not) integrated. For some years, the two services have been divorced at all levels except at local - sum - level. Furthermore, training has become more separated and the former research institute for veterinary and animal husbandry research has been divided into two distinct institutes. This creates several problems: (i) for effectiveness in integrating efforts at field level, (ii) for cost effectiveness (overstaffing and cumbersome parallel structures), and (iii) for disjointed research agendas, with each discipline attempting to specialise narrowly along the old style Soviet and Western research models, with little attention to interdisciplinary cross-fertilisation. If traditional techniques are to be re-introduced into veterinary medicine and animal husbandry, it would make sense to have a more integrated research agenda.

In connection with control of standards, monitoring and hygiene inspection, one suggestion from the field was to separate service delivery functions and control and monitoring functions [Interview; Undrah 1992]. Self-regulation is not necessarily the best way to improve standards.

(v) Training and extension

The training of veterinary technicians and breeding technicians, is now separated, and it is often felt at field level that new graduates have much too limited skills. It has been said that husbandry technicians are not considered useful by herders and veterinary technicians, too, are said to be poorly prepared for the practical tasks of the job. Although they do need specific areas of specialisation, it may be that a more integrated training programme for veterinary and breeding technicians, would make them more relevant to herders' needs. Doubts have been raised about whether low-level workers can usefully absorb and carry out a multiplicity of skills and tasks (Sandford 1981), but this objection seems less plausible where technicians are trained for several years in specialised secondary education, than in the case of animal health workers with very short and intensive (though often repeated) training (Sandford 1983, Young et al. 1991). Rather than extending numbers of technicians at the expense of technical standards, substituting more quality for quantity seems a more economical and useful way to improve services where coverage is already very high.

Additionally, it has been suggested that an extended period of practical training, in field positions would make both training and extension more relevant (currently technicians often have to be retrained by field vets upon arrival); it would also help to keep veterinarians in the field up to date on new developments in their subject [Interview; Davaa 1992].

In view of the difficulties and high costs of extension work relative to perceived benefits, it may be useful to also attempt to find new ways of spreading information through, for example, radio (for example, in dramatised radio-"soaps" about typical herder families, or specific regular livestock news programmes).

## CONCLUSIONS

Paradoxically, whilst liberalisation is leading to private livestock ownership and management, it may also lead to the state playing a more active role in delivering veterinary services, as the collective organisations (which used to take part in services delivery) are being privatised. This is not to imply that private practitioners should not also be encouraged to set up practice, since private and public practice are not mutually exclusive. In some cases and in the longer term, it may be possible for new forms of organisation, such as commercial companies (for example, the former collectives) and new producer cooperatives to take on and deliver some veterinary and livestock husbandry services. It is of crucial importance to work out new and appropriate strategies and roles for the state services, since the current direction (with increased specialisation and spiralling drugs costs) seems unsustainable.

Cost recovery needs to be increased, but wholesale privatisation of veterinary service delivery does not appear to be a viable solution for both theoretical and practical reasons. Market forces could still be exploited in order to improve cost recovery, with specific strategies for different kinds of drugs and services as well as for different kinds of producers. The latter could well involve selective privatisation in those areas where costs can be recovered more easily.

**Cost efficiency** needs to be raised in various other ways. Options include:

**Reform.** (1) Reducing bureaucratic hierarchies and letting local level services control their own budgets. Information culture, analysis and decision making structure needs fundamental reform, including a general devolution of decision making and control to appropriate levels with a functional rather than hierarchical division of labour. (2) Reforming the veterinary sector from a top-down vertical system to a more organic system better integrated horizontally along regional and sector lines. This might include integrating the veterinary sector with animal husbandry services, cutting down on parallel structures and agendas.

**Extension.** (1) Vet technicians and husbandry technicians could be trained in an integrated way allowing them to perform both functions to maintain high coverage with fewer and more relevant staff. (2) Extension services could train herdsmen themselves as basic 'para-vets', through training and information programmes on animal husbandry and basic veterinary skills, integrating modern and traditional self-help cures and treatments. Radio would be a useful medium to reach broader coverage at low cost.

**Drugs.** Working out a viable drugs policy to enhance local production, making better use of a wealth of indigenous knowledge, as well as liberalising supply and distribution.

**Research.** Veterinary research needs to be re-oriented towards a closer interdisciplinary research with economic approaches to epidemiology and livestock production research. Field level research needs to be stressed.

**Donors.** Assistance to the sector needs to be coordinated, not only for projects within the veterinary sector itself, but with other forms of assistance to the livestock sector; it needs to pay more attention to financial sustainability and how to 'get there' through the current period of crisis-led assistance.

## SOURCES

This report is based on four weeks held research in Mongolia from 11 October to 11 November 1992.

### Key-informant interviews:

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2. R. Sodnomdarjaa, Director of the Veterinary Research Institute and President of the Mongolian Veterinary Association, Zaisan, Ulaanbaatar
3. B. Erdenebaatar, Deputy Director of the Research Institute for Animal Husbandry, Zaisan, Ulaanbaatar
4. A. Yondorj, Veterinary Epidemiologist, Veterinary Research Institute, Zaisan, Ulaanbaatar
5. Lubsandorj, Veterinary Surgeon and Head of the Livestock Breeding and Veterinary Service of Zaamar sum, in Tuv (Central) aimag
6. Erdenedalai, Chairman of Zaamar Company (formerly Zaamar negdel, or collective), Zaamar sum, Tuv aimag
7. Haltar, Zaamar Company member, sheep herder with private and company animals, Zaamar sum, Tuv aimag
8. Uulovgon, Specialist Veterinarian (infectious diseases) and Acting Head for the veterinary service of East Gobi aimag centre, in Sainshand
9. Tseren, Chief of Department of sum, Erdene sum, East Gobi aimag
10. Sandag, Veterinarian and Head of Livestock Breeding and Veterinary Service in Erdene sum, East Gobi aimag
11. Davaa, Veterinarian and Head of Livestock breeding and Veterinary Service in Dalanjargalan sum, East Gobi aimag
12. Undrah, Veterinarian for Sanitation and Hygiene Inspection and Acting Head for the Livestock Breeding and Veterinary Service of Choir town (separated from East Gobi this year and is now the fourth town as a separate administrative unit)

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