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LPU WORKING PAPER NO. 1

FINANCING ANIMAL HEALTH SERVICES IN SOME AFRICAN COUNTRIES

by

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Livestock Policy Unit

ILCA

International Livestock Centre for Africa
Addis Ababa, Ethiopia
July 1983

LPU

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1. To heighten the awareness in African governments and in other organisations of the importance of livestock policy issues.
2. To collate in an easily assimilable form what is already known about policy issues and to present it to policy makers.
3. To carry out research of its own (including that commissioned from consultants) on priority livestock policy issues and to present the results to policy makers.
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1. Introduction

Past livestock development projects in sub-Saharan Africa have mostly emphasized the transfer of technology proven successful in commercial ranching operations in the developed market economies and the provision of credit as well as technical assistance to facilitate such a transfer. After long years of somewhat furstrating experience, it has now become increasingly obvious that an adequate understanding and analysis of the economic and social policy issues involved in the livestock sector are as important as technological inputs or credit. The International Livestock Centre for Africa (ILCA) recently established a Livestock Policy Unit to look into some of the policy issues considered important in sub-Saharan Africa. One of these is the financing of livestock services.

The systematic study of the financing of agricultural services is a topic which has largely been neglected in the past, both by African governments and external donors. In the livestock field, the few exceptions which exist have been studies concerning animal health services carried out for some West African countries under French technical cooperation.

Livestock services obviously cover a wider area than just animal health services for which information from the existing literature is more readily available, partly as a result of the historical importance of veterinary services in livestock development in tropical Africa. ILCA's Livestock Policy Unit, however, intends to study also other services which include animal husbandry services involving extension and training, as well as marketing, management and research services among others. The general purpose of the study is to examine how such livestock services are financed and the effect that the method of financing has on: the adequacy of the service provided; the government's net budgetary burden; the extent to which different classes of livestock owners/producers use livestock services; equity issues in the delivery and use of these services; and the economic efficiency of resource allocation.

As a starting point this paper deals with the financing of animal health services and extensively draws on information available in the studies carried out by IEMVT, GTZ and SEDES. The paper is essentially descriptive at this stage mainly due to lack of complete data. It therefore attempts to describe the financing situation in 13 West African countries (mainly Francophone) and to some degree Madagascar. The period covered is mostly the 1970's although data are reported for earlier periods. The analysis toward the end of the paper is only very preliminary and at that further restricted, in several instances, to some six or seven of the fourteen countries. Although the quality of data available for these countries has naturally been a criterion for selecting them, lack of consistency in the information contained in the several sources has at times created considerable problems. One such problem has been that some of the reports tend to treat livestock services as being identical with animal health services while in others the distinction between animal health services and other livestock services is recognized but only partially accounted for in the information presented. The evidence from those countries which make the distinction indicates that the animal health budgets constitute on average over 70% of the livestock services budgets. So in practice I have glossed over the problem for the time being, by treating the data for livestock services as ones also pertaining to animal health services.[1/]

1/ Readers will note that, except where specific reference has to be made to animal health services, the two terms are interchangeably used.

The animal diseases covered for the purpose of this paper are those which are commonly found in these countries and considered of economic importance mainly in cattle production. They include: rinderpest, contagious bovine pleuropneumonia (CBPP), anthrax, streptrothcicosis botulism (a few countries), pasteurellosis, trypanosomiasis and conditions brought about by internal and external parasites.

The paper mainly concentrates on the recurrent budgetary expenditure allocated by the central government, although some parts deal with investment or capital expenditure in order to show the overall composition of total expenditure. Local or regional allocations (within a country) are only mentioned in relation to the discussion of the method of financing.

2. The Size and Composition of the Animal Health Services Operating Budget

2.1 The Evolution of the Animal Health Budget

Much of the information contained in this part of the paper is taken from reports prepared by IEMVT (1980), GTZ and SEDES (1976, 1977), and SEDES (1975). IEMVT covered about 19 countries in West and Central Africa, while the GTZ/SEDES reports covered seven West African (Sahelian) countries. The SEDES (1975) statistical tables cover a total of 24 countries -- 13 in West, 8 in Central and 3 in Eastern and Southern Africa (Mauritius, Somalia and Madagascar). The data presented in the tables in this paper are the result of a combination of these sources for the 14 countries selected. Where figures for the same year are given in each source, the figures from the more recent reports are taken in the belief that these represent a more reliable basis. Table A in the annex to this paper summarizes the evolution of the animal health budget over 14 years for the 14 countries for which data are readily available from the literature.

It can be seen from that table that funds allocated by most countries to livestock services have generally been increasing in absolute (but current value) terms during the 12-14 years up to 1978/79. The striking exception is the Central African Republic's allocation from 1970/71 onwards which, if the figures are correct, have sharply fallen and have remained well below that of 1970/71.

The share of animal health services in total national budgets for all sectors shows a consistent decline in most cases. This is demonstrated by some of the countries for which data are continuously available over a reasonably long period. In Chad, a major surplus producer, the share of the livestock services in the total national budget has fallen from about 2% in 1965/66 to about 1% in 1975/76. In Upper Volta, Mauritania and Niger, again major surplus producing countries, this share has fallen respectively from 1.4, 2 and 3% in 1965/66 to 0.8, 0.4 and 1% in 1977/78. On the other hand Mali, Senegal and Benin seem to have maintained the share of their budgetary allocations to livestock at more or less the same and relatively high level over the years. The Gambia and Ivory Coast have maintained a stable share but at a relatively lower level.

Table A includes information on the share of livestock services in government budgetary expenditure for agriculture as distinct from total budgetary expenditure for all sectors. On the whole, data for total agricultural expenditure on which the percentage share calculations are based were available only for a few years and for a few countries.

Although absolute allocations to livestock services have continuously increased in all the countries (except Sierra Leone in 78/79) over the different years for which percentage share calculations could be made, no general pattern of

of relationship can be established between these allocations and their relative share in total agricultural expenditure.

In Chad, the relative share of livestock services in the total agricultural budget declined from 4.7% in 1971/72 to 2.9% in 1973/74 and again rose to 4% in 1975/76. The increased percentage share in 1975/76 resulted from the reduction in the absolute allocation to non-livestock agricultural services rather than to any dramatic increase in the allocation to livestock services. In Niger, the percentage share by livestock services in total agricultural expenditure declined from 16% in 1975/76 to 7.9% in 1978/79 as a result of a higher rate of growth in the allocation to non-livestock agricultural services than to livestock services. For the Gambia, the figure declined from 11.5% in 1972/73 to 3.2% in 1977/78 for basically the same reason as Niger, although the increase to 5.8% in 1974/75 was due to the absolute reduction in the allocation to the non-livestock agricultural services.

In Upper Volta between 1972/73 and 1977/78, and Sierra Leone between 1973/74 and 1976/77, increases in the relative share of livestock services resulted from the higher rate of growth in the allocation to livestock services while both this and the absolute allocations to non-livestock services continued to grow. For Sierra Leone, the sudden jump in the percentage share by livestock services was a result of the aboslute reduction in the allocation to non-livestock agricultural services as was also the case for Cameroon in 1977/78.

One need not over-emphasize the weakness of the data base for drawing meaningful conclusions from the above presentation. On the other hand, the figures may be indicative of the inherent inconsistencies in the budget allocation process which can adversely affect the financing of livestock services in many countries in sub-Saharan Africa. The following section is meant to demonstrate this point further.

2.2 Expenditure for Animal Health Services and Livestock's Role in the Economy

Table B shows the relationship between the contribution the livestock sub-sector makes to agricultural GDP and the central government expenditures allocated to the sub-sector. Unfortunately the figures shown could only be calculated from data available for 1979 so that any trend which may have emerged in relation to earlier years could not be identified. Nevertheless, it is clear that in many cases the livestock sector is not getting an allocation proportionate to what it contributes to the agricultural sector and the economy as a whole. A simple measure to test this was used for the countries for which all relevant data were available. The measure -- the ratio of the percentage share of government agricultural expenditure in agricultural GDP to the percentage share of livestock expenditure in livestock GDP -- was calculated and gives the following results:

Upper Volta	1.57
Mauritania	2.84
Niger	3.80
Gambia	4.00
Ivory Coast	0.28
Cameroon	0.74
Sierra Leone	1.29
Togo	4.77

A ratio of one signifies that the level of central government expenditure for livestock services is proportionate to the contribution of livestock to agricultural GDP. A ratio of more than 1 signifies that proportionately less is being allocated to livestock than its contribution to agricultural GDP. It can be seen that except for Sierra Leone and Upper Volta which are the nearest to unity, four out of the eight countries for which data are available spend much less a proportion of agriculture expenditure on livestock than the contribution of livestock to agricultural GDP warrants. Ivory Coast presents

an extreme case in the opposite direction. One could already notice from Table J in the annex that Ivory Coast's expenditure per head of cattle on livestock services has been the highest of all countries for which data are available for the three years shown -- more than 4 times the next highest country's expenditure level. This may be a reflection of the government's effort to reduce the country's great dependence on foreign supplies of livestock and livestock products. Ivory Coast was the second highest, after Nigeria, net importer of livestock and livestock products in 1960, 1970 and 1980 and the highest per capita net importer in the whole of sub-Saharan Africa in 1980 (ILCA 1983).

Cameroon's case may be more justifiable both in terms of the large livestock population involved and the diversified ecology existing in the country. Cameroon also happened to be one of the few so-called high performers in both livestock and general agricultural production during the last 15-20 years (preliminary indication from a study under preparation in ILCA).

2.3 Composition of the Animal Health Budget

In many cases staff and non-staff costs can be separately distinguished in the overall budget for livestock services. Table C shows the breakdown for the 14 countries and the years for which data are available. It is clear from the table that in most of the countries the share of non-staff costs in the total operating expenditure indicates a declining trend. Madagascar and Sierra Leone are the exception. In Madagascar the share of non-staff expenditure was more or less maintained during the six years reported; in Sierra Leone this share in fact showed a substantial increase. Although non-staff budgetary allocations have in the majority

of cases shown an increase in absolute terms[1/] during the 13-or 14-year period it is the higher rate of increase of staff budgets that has given rise to this situation. Staff budgets have risen mainly for two reasons. Firstly, the number of national animal health staff of all categories has considerably increased after independence without a commensurate or proportionate increase in the allocation of the facilities and materials made available for them to work effectively.

Secondly, salary increases to animal health staff have further contributed to staff cost increases. One could say that increasing unit costs of materials such as vaccines, drugs and veterinary equipment could have equally contributed to increased non-staff costs. These, however, could be varied by reducing the amount or number to be purchased in order to keep overall budgetary expenditure under restraint. This could hardly be done in the case of staff already trained or in-post.

While the ideal proportion of staff and non-staff expenditure is a subject that needs more investigation, at this stage the more worrisome part is that the share of non-staff expenditure (often referred to in the literature as expenditure for "material") is declining in the majority of the countries. The implications of this in terms of the quality of services provided is rather evident apart from the wastage of expensively trained but underutilized manpower. We will come back to the presentation of the available information in somewhat greater detail later in the paper.

Information on the composition of the animal health budget, as between operational (current) and investment (capital or development) expenditure, is very diffucult to obtain. In fact

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1/ The sources do not state whether the figures are at current or constant prices but it is assumed that both staff and non-staff expenditures are in current prices.

the operational budgets of some of the countries include the investment or capital portion (e.g. Cameroon). The very term investment or capital expenditure needs a clearer definition, because in many cases vehicles are considered as part of the operating budget (in Francophone countries designated as "budgets de fonctionnement"). In one case (Chad) even expenditure for the construction of stock routes (pistes à betail) is considered as part of the operational budget. Data are only available for budgetary expenditures of the six French-speaking Sahelian countries as shown in Table D. Due to lack of adequate data providing separate figures for operational and investment expenditure for most countries, it was unfortunately not possible to provide a broad picture of how operational and investment expenditure by government on livestock services compared to these two categories of government expenditure in the rest of the agricultural sector or in the economy as a whole. We could only calculate some approximate indicator for three of the countries (Mali, Upper Volta and Senegal) using national expenditure data reported by the IMF (1982). Using simple annual averages from the data in Table D and IMF (1982) budgetary expenditure figures for 1975 or 1976 as a base it was possible to calculate that the percentage shares of operational and investment expenditure by livestock services in total national operational (current) and investment (capital) expenditure were as follows.[1/]

Mali	$\frac{OE_{Livestock\ (L)}}{OE_{Total\ (T)}}$	= 0.4%		$\frac{CE_L}{CE_T}$	= 0.1%
Upper Volta	$\frac{OE_L}{OE_T}$	= 1.6%		$\frac{CE_L}{CE_T}$	= 0.6%
Senegal	$\frac{OE_L}{OE_T}$	= 0.8%		$\frac{CE_L}{CE_t}$	= 0.1%

OE = Operating Expenditure CE = Capital Expenditure

1/ The national budget figures in Table A, which were used as a basis for calculating livestock expenditure as a proportion of the total national budget, excluded external aid and capital expenditure. However, the calculations given here are based on agricultural budgets which include external aid and capital expenditure.

The above could only be taken as a further demonstration of the inadequate attention that is being given to livestock development, particularly in the case of Mali and Upper Volta where livestock contributes over 10% of the total GDP.

3. Sources and Methods of Financing

3.1 The Role of External Financing

Again there is information only for the six Francophone Sahelian countries and only for four or five years up to 1975. As can be calculated from Table D the share of external financing in total expenditure is quite high. Table 1 below provides data for some invidivual countries.

Table 1 Share of External Aid in Total Operating and Investment Expenditure (1971-1975)

Country	Share (%) of External Aid in:-		
	Total Expenditure	Operating Expense	Investment
Chad	67	64	100
Mali	48	47	100
Upper Volta	28	27	100
Mauritania	35	27	93
Niger	18	17	25
Senegal	7	8	0

Source: calculated from Table D in annex

In Chad, Mali and Upper Volta investment expenditure for animal health services is totally dependent on external sources. For Niger, this share is relatively low. In Senegal, external aid was either not available or was not used for investment purposes, if the data in Table D give the correct picture. In Senegal, the growth rate of

budgetary allocations for livestock services has in general kept pace with the growth rate of the total operating budget from domestic sources.

It is perhaps not surprising that investment expenditure was so much dependent on external sources since much of the fixed capital items required the outlay of scarce foreign exchange which foreign donors could provide. Moreover, donors usually prefer to finance investment expenditure for several reasons which need not be elaborated here. The surprising thing is that the operating budget depended on outside financing to the extent it did particularly in Chad. It is again unfortunate that yearly figures are not available to show if the share of external financing has been increasing or decreasing during the period covered, but it would be interesting to find out how such countries cope with financing operating costs after external aid phases out.[1/]

Apart from personnel costs, much of the operating expenditure in animal health services consists of the purchase and distribution costs of vaccines, drugs and acaricides and the running and maintenance costs of vehicles, veterinary equipment and fixed capital items such as buildings. Senegal, Chad, Niger and Mali produce vaccines required for many of the contagious animal diseases. In fact Senegal and Chad export considerable quantities of vaccines to neighbouring countries (IEMVT 1980) while Niger and Mali are reported to produce enough vaccine for their own needs in treating or immunizing the more important economic diseases such as rinderpest and CBPP. Veterinary drugs and chemicals as well as fuel and maintenance items for vehicles normally have to be imported. Assuming that external financing is directly related to the requirement of foreign

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1/ M. Sall (personal communication July 1983) categorically states that they do not do anything apart from asking another donor to take over.

currency to purchase these items, then the share of external financing in the operating expenditure of animal health services ought to bear some relationship to the required expenditure on these items. The absence of information providing an itemized breakdown of the "materials" portion of the operating expenditure does not allow an exploration of what the relationship should look like in the different countries. However, using budget data devleoped by Nico Nissen (1982) for the provision of government veterinary services, there is an indication that for Chad, which produces vaccines locally and is assumed therefore not to need to import, the actual share of external financing is higher than the requirements of foreign currency to purchase important items. Nissen's data were developed on the assumption that vaccines and vaccinations are free, drugs have to be paid for by livestock owners and both are applied by government veterinary services and on more or less ideal standards of staffing. Let us further assume that vaccines need not be imported and paid for in foreign currency by countries that produce these (Senegal, Chad, Mali and Niger); that all drugs and chemicals are imported, and that operating costs for transportation, storage and distribution have a 75% foreign exchange component. On this basis, the share of external financing in total operating expenditure should be only 51% instead of 64% in the case of Chad, and 37% instead of 8%, 56% instead of 48%, and 49% instead of 17% in the case of Senegal, Mali and Niger respectively.

The assumption that external funds are provided to finance only foreign exchange needs in livestock services may appear a rather unrealistic assumption. However, historically external aid for development had most often been directly related to meeting foreign currency shortages faced by recipient countries. This said, could not one conclude that Chad's "domestic effort" in financing the recurrent expenditure portion of livestock services is less than the rest? At this point, it may be

interesting to note that Chad has registered the weakest annual growth rate in its domestic livestock services budget during the 1961/62 - 1975/76 period (2.6%), while Senegal registered the highest rate (8.9% per year on average). Niger's and Mali's livestock services budget grew at 5.2 and 4.7% respectively (Nissen 1982).

Most indications are that the financing of animal health services in most countries has not reached a level appropriate to the need of adequate protection of the livestock population from the most important economic diseases. Several factors could explain this situation. One may be the low priority which has been given to livestock in development policy despite its significant contribution to the economy and despite the fact that in many African countries veterinary services not only comprise the single most important service package provided for livestock development but also have a relatively good record, at least in comparision with other livestock and agricultural services, for effectiveness. Another factor could be the absolute or relative inability for countries to mobilize resources and maintain an adequate level of financing to provide adequate animal health services even if the political will to do this were there. Still another could be the way in which they raise and utilize financial resources from domestic sources. The next section will try to deal with this aspect however qualitative the discussion is bound to be due to lack of quantitative data.

3.2 Livestock Related Revenue

In many African countries taxes on cattle used to be the major source of revenue collected from pastoral herders. Cattle head taxes have now been suspended or abolished in several countries in Africa either because of practical administrative difficulties and irregularities in their collection or because they became counterproductive in the governments' efforts to census the

animal resource. For example in Nigeria the "jangali" tax which existed from the early 19th century was abolished in 1975, and in Madagascar the cattle head tax was abolished in 1972. In most Sahelian countries the cattle head tax was either suspended or abolished to reprieve herders from the hardship brought about by the drought of the early 1970's. In many cases these taxes were in existence from precolonial times although they were legalized during the colonial period.

In more recent times a wide variety of duties, taxes, fees and charges have been applied in most countries possibly in part as a response to the increased livestock services being provided by veterinary or animal production departments. Table E shows the type of duties taxes, fees and charges applicable to livestock and livestock products in the 13 West African countries and Madagascar in the 1970's. Partly due to lack of time, at this stage of the exercise it was not possible to quantify, on the basis of the rates available, the total amounts which are raised or could potentially be raised from the duties, taxes and charges levied by the different countries. The purpose of Table E is to give a qualitative indication of what means are available and used by governments to raise funds for financing livestock services. User charges directly related to animal health services (vaccination, treatment, meat inspection, veterinary certificate charges and fees) are obviously the least popular methods judging by the number of countries applying them. This could be because of the administrative and even political difficulties which arise from levying and collecting these charges or because of the cost of doing so.

The most popular appear to be external and internal trade taxes and charges as well as slaughtering fees perhaps because they are easier to administer (despite the disadvantage that taxes on livestock export trade and slaughtering fees encourage black market transactions and unofficial slaughter respectively)

and less politically sensitive (because they do not directly confront livestock owners). It is perhaps partly because of this indirect relationship to the final beneficiaries of livestock services, that trade taxes and slaughtering fees have very little chance of being recirculated to finance livestock services but normally enter general purpose central treasury or municipal accounts. Claims that user charges should be earmarked and recirculated to livestock services have a stronger basis, although in practice this often does not happen, particularly in the case of vaccination charges, among the countries considered. Cattle head taxes (usually levied on pastoralists) could be considered to fall in between the two: they are both part of the general government revenue raising effort to which livestock owners/producers are expected to contribute as well as a specific charge for raising funds to provide services particular to this sector of the population. It has sometimes been argued that head taxes should not be charged where animal health services are paid for (Nissen, 1982). However, in most cases user charges are subsidized and do not cover the full direct cost of providing services -- it is perhaps because of this that some countries still maintain head taxes while charging for veterinary services.

Although the revenue figures that could be potentially raised were not calculated from duty, tax and charge rates available, there are some indications of how much revenue some of the countries considered here raise from livestock and livestock products. The figures in Table 2 below are reported in the IMF (1982) yearbook for 5 of the 14 countries.

It is interesting to note that in Mali livestock head tax receipts alone are many times the operating budget allocated to livestock services.[1/]

1/ According to Shapiro (1979) in Mali and Upper Volta 10 percent of the predrought tax revenues came from livestock but only 2 to 3 percent of budget expenditures were allocated to livestock.

From the figure for 1975 in Table 2 and Table A in the annex it can be shown that the livestock head tax revenue was over five times the livestock services budget allocation. From figures available in SEDES (1975) a sum of CFA 1,400 million could have been theroretically collected in 1972 while the livestock services budget was only 11% of this figure. Using SEDES figures along the same lines, one can calculate that the livestock budget in the Gambia was equivalent to only 1.2% of the potential receipts from livestock head taxes (1970); in Chad the 1974 livestock services budget accounted for 20%; and in Mauritania 25% (1973). In Upper Volta (1974), Cameroon (1970) and Senegal (1970) potential livestock head tax receipts amounted to 90, 75 and 60% of their respective livestock services budget.

Table 2 Livestock Related Revenue

	1972	1973	1974	1975	1976	1977	1978	1979
1. Chad (mill CFA)								
meat control tax	18	9	95	14	4	NA1/	NA	NA
livestock sales	135	38	37	63	1	NA	NA	NA
Total	153	47	132	77	5			
2. Mali (mill CFA)								
livestock head tax	NA	NA	NA	929	961	987	964	1060
slaughter fee				6	5	6	8	7
tax on nomads	NA	NA	NA	1	2	1	6	3
Total				936	668	994	978	1070
3. Upper Volta (mill CFA)								
livestock head tax	NA	44	40	51	55	50	44	47
transit tax	NA	16	13	4	NA	NA	NA	2
Total		60	53	55	55	50	44	49
4. Gambia (000 Dalasi)								
livestock head tax 2/	10	10	10	10	NA	53	89	NA
Total	10	10	10	10	NA	53	89	NA
5. Senegal (mill CFA)								
livestock head tax	NA	167	NA	3	NA	NA	NA	NA
tax on edible fats	NA	134	NA	124	126	191	208	224
Total		301	NA	127	126	191	208	224
6. Cameroon (mill CFA)								
livestock head tax	NA	NA	NA	100	10	NA	NA	NA
tax on meat transport	NA	NA	NA	NA	10	NA	NA	NA
vet.health inspection tax	NA	NA	NA	60	250	60	170	80
Total	NA	NA	NA	160	270	60	170	80

Source: IMF (1982)
1/ NA = Not available
2/ Only central government's share of total receipts; percentage share not stated.

We are not trying to make the point that all receipts from livestock related duties, taxes and charges should be channeled to financing livestock services including animal health, or even that 100% collection is feasible on the basis of the rates established. The point we are trying to make is that there is a great leeway for governments to raise larger amounts to help operate improved livestock services, especially in those countries where the sector plays an important role in the economy. In the first instance, this of course implies that such countries undertake to accord the priority to livestock development which it deserves.

3.3 Methods and Channels of Financing

In many African countries, mass vaccinations against the principal contagious diseases such as Rinderpest and CBPP are provided free of charge. Anti-parasitic treatments are usually charged (not necessarily at full cost) to livestock owners after an initial phase of demonstration campaigns. The practice in the 13 African countries considered here (no information for Madagascar) gives the following picture. In six countries (Benin, Cameroon, Gambia, Ivory Coast, Mauritania and Togo) all vaccinations and treatments were provided free of charge at least as of 1976 (Nissen 1982). In Cameroon and Ivory Coast free services are specified only for the traditional livestock production sector (GTZ/SEDES 1976). In the Central African Republic, Chad, Mali, Niger and Sierra Leone all vaccinations were free of charge while treatments are paid for; in Senegal all vaccinations and treatments are paid for except for vaccinations against Rinderpest and CBPP, whereas in Upper Volta all animal health interventions are paid for (Nissen 1982).

The provisions of animal health services is normally the monopoly of government agriculture or livestock departments. There is no indication in the literature that private veterinary practice exists although there are bound to be some non-governmental organizations providing animal health services as part of their agricultural development assistance activity. Private services,

where they exist, are usually involved only in the procurement, sale and/or distribution of veterinary medicine. However, the the role of the private sector at present appears to be minimal in most of Africa although certain governments (e.g. Senegal) have started to encourage private business to enter the trade.

We have more definitive information on the five Francophone Sahelian countries on how finance for livestock services is channeled. The picture looks like this (GTZ/SEDES 1976):

Mali: in addition to the central government budget for livestock and animal health services, there are regional (local) government budgets funded through taxes raised at the local level[1/] and through service charges. In 1975 about 20% of the animal health budget was financed from regional budgets.

Upper Volta: a similar set up as in Mali with the regional budgets, again mainly raised from local taxes, financing 3% of the total domestically financed livestock services budget and about 30% of the (domestically financed) animal health budget. The Livestock Services Department has at its disposal a revolving fund for the supply of biological products and veterinary drugs.

Mauritania: it seems that 100% of the livestock services budget is channeled through the central treasury. What is interesting here as in Upper Volta is that a special fund was set up for the purchase of veterinary medicine to be distributed to the regions initially in kind. The proceeds from the sale of the commodities was supposed to be used to establish a revolving fund to be used exclusively for livestock services.

1/ Local taxes funded 90% of the local expenditure while services, charges, fees etc. funded the remaining 10%.

Niger: in addition to the national budget, funds are raised by regions from local taxes ("taxes d'arrondissement" constituting 80%). In 1975, regional budgets constituted about 5% of the total internally funded expenditure on livestock services.

Senegal: essentially similar to Niger with regionally raised funds (mainly from "taxes rurales") making 3-4% of total budgetary expenditure for livestock services in 1975.

In all the above countries, the amounts made available to livestock services or animal health services are apparently allocated by the regional administrations from a larger locally financed regional budget.

In Chad, it seems that allocations are totally made by the central government from funds raised by the national authorities. In the Gambia, it is reported that small subventions are made from local councils to finance expenditure for animal health services. Funds are principally raised by means of a cattle head tax levied annually, and are used by the Department of Animal Health and Production to purchase veterinary supplies for use in each local council area (IEMVT 1980). There is unfortunately no quantified information on this to compare with the national or regional livestock or animal health services budgets. In Sierra Leone available budgetary data (IEMVT 1980) indicate the establishment of a revolving fund for sale of medicines to farmers (30,000 Leone per year).

The GTZ/SEDES report (1976) states that livestock head taxes have been cancelled in Chad, Mali, Niger and Senegal since 1973; the SEDES report (1975) makes no mention of such cancellation, although it mentions that it was suspended in some countries for a number of years because of the drought.

These cancellations have apparently not adversely affected the size of the animal health or the livestock services budget in absolute terms (at current prices). On the other hand, they seem to have negatively affected the share of the livestock budget in the national budget probably because, as indicated earlier, the livestock services budgets are in an even weaker position to have claims on funds raised from charges on activities such as cattle trade and slaughtering not directly carried out by livestock producers. There is an indication that the decline of the share of livestock services is sharper for the years after 1973 at least in the case of Mali, Niger and Senegal, although it is uncertain that this is an effect of the change in fiscal policy.

4. Some Indicators of the Adequacy of Animal Health Services

The adequacy of services could be measured by several means. Here we used the following as indicators:

- the number of technical staff of different categories available to animal health services in different years.
- the number of animals (only cattle for simplicity's sake) served per staff category.
- the recurrent budget allocation/expenditure per head of cattle population.
- the ratio of expenditure on personnel and non-personnel costs to measure the so-called coefficient of efficiency.

Obviously we need some standard or norm against which to measure the adequacy of the services provided. Fortunately a set of standards have been developed by the GTZ/SEDES (1977) group to make calculations of the technical manpower and financial requirements as well as the number and type of veterinary centres required for adequate animal health services. In brief, the following standards have been used:

a) As far as staff is concerned the relationships between high (HL), medium (ML) and low level (LL) staff should be

$$\frac{ML}{HL} = 3; \quad \frac{LL}{HL} = 15; \quad \frac{LL}{ML} = 5.$$

b) financial norms were established taking (a) above into account and further assuming that 100% of the animals are vaccinated against rinderpest and CBPP and that treatments are paid for and administered by livestock owners/producers.

4.1 Table F in the annex shows the situation as regards the different categories of staff numbers existing in 1970, 1975 and 1979 and the ratios of middle level (ML) to high level (HL) and that of low level (LL) to middle level staff. It can be seen that the total number of staff increased in 7 out of the 11 countries shown. The number of high level staff increased in nine countries including the seven referred to above while the number of middle level staff increased in all countries.

With the exception of Togo, Niger and CAR where particularly in the last two the ML:HL ratio was excessively high to start with because of the low number of high level staff, this ratio increased or remained at about the same level in the remaining 8 countries. Of these 8 countries, the ML:HL ratio in Upper Volta increased mainly because the number of high level staff declined while in Mauritania it was a result of a decrease in the number of high level staff at the same time as the number of middle level staff increased substantially.

In the case of low level staff, it is only in 5 countries (Mali, Niger, Ivory Coast, Benin and CAR) that their numbers have increased between 1970 and 1979 and these are the only countries in which the number of all categories of staff showed an increase. In the remaining six countries, the number of low level staff decreased.

Except for Ivory Coast and CAR, the LL:ML ratio decreased for all the other countries. These include those where the number of low level staff has increased but where its growth rate has been slower than that of middle level staff.

The general picture one draws from this is that the majority of the countries concerned have concentrated on increasing the number of middle level staff mainly at the cost of increasing the number of low level field staff. As a result only very few countries could favourably measure against the standard LL:ML ratio (5:1) in 1979 while the ML:HL ratio in many of them was closer to the standard ratio of 3:1. This indicates that the staffing of animal health services in most of these countries has increasingly become top heavy and has likely affected the quantity of services provided.

4.2 Table G shows the size of the cattle population which was actually served and should, according to the norm, be covered by different categories of staff and veterinary centres respectively. The information in the table, while not exactly comparable, shows that the staffing composition is top heavy (compared to the GTZ/SEDES norm) in the majority of cases and that middle and low level staff should be increased in number relative to the other categories.

4.3 Table H shows the recurrent budget allocation or expenditure per head of cattle population. According to similar norms used by GTZ/SEDES (1977) and Nissen (1982) the six Sahelian countries should spend an average of US$0.75 - US$0.90 per head of cattle based on 1976 data and at 1976 prices. It can be seen from the above or from Table H that only Niger, Mauritania and Senegal reach that level of financing, although the current dollar expenditures per head have increased for all six countries between 1970 and 1979. The increased expenditure per head is only partly caused by the decline in the cattle population as a result of the 1972-73 drought, since the overall rate of increase in expenditure per head is much higher than that of the decrease in the cattle population, particularly between 1970 and 1975.

As mentioned earlier, the figure for Ivory Coast looks exceptionally high and needs further investigation. Again it is interesting to note that the total animal health staff in Ivory Coast were equal in number to those of Senegal although the cattle population in Senegal was about 4 times that of Ivory Coast.

4.4 Table J shows the changes in the coefficient of efficiency (CE ratio)[1/] for 9-10 years. The CE ratios differ greatly for the different countries. Although not a totally adequate expression of compatative efficiency (e.g. Mauritania may appear to look more efficient than, say, Mali or Niger because of a much smaller number of staff given the area and the livestock population), it is important to note that except in Sierra Leone, there has been a constant decline for all the countries listed. This deterioration should be of serious concern to governments and it would be interesting to find out if there is any specific policy or procedure in Sierra Leone to maintain the effectiveness of animal health personnel.

Staff and non-staff cost estimates have been calculated (GTZ/SEDES 1977) using the standards and assumptions mentioned earlier in this section. According to the results arrived at from these calculations, the average CE ratio for the six Sahelian countries (Chad, Mali, Mauritania, Niger, Senegal and Upper Volta) works out at around 1.1 with a range of 0.7 and 3.5. A comparison of these figures with those depicting the situation in the 1970's (Table J) makes it clear that the CE ratio was far below this level in almost all the countries listed in the table. There will therefore be a lot of effort required on the part of these countries in the first instance in reversing the deteriorating non-staff expenditure situation.

[1/] The CE ratio is calculated by dividing the non-staff expenditure by the staff expenditure in order to determine the degree to which animal health staff are supplied with vaccines or drugs, means of transportation and veterinary field equipment to facilitate their operation in the field. Both GTZ/SEDES and IEMVT consider a ratio of 1 or very close to 1 as a measure of an efficient operation.

It is also important not only that increasing funds are made available to animal health services but also that a policy of keeping an appropriate balance between personnel and non-personnel expenditure is subsequently maintained.

The adequacy of animal health services is not only a function of the availability of adequate manpower and funds. It is also a function of the management of the resources made available. It is outside the immediate scope of this paper to deal with the organization and management issues relating to the provision of livestock services. However, things like organizational structure, staff motivation procedures, disease reporting systems and the control of livestock movements are important elements which need to be looked into, even if retrospectively at the initial stage, as this paper tried to do in the area of financing animal health services in some African countries.

5. Conclusion

5.1 It is obvious that one cannot generalize too far from the evidence presented for the countries considered in this paper. However, the evidence presented in the earlier sections indicates that:

- animal health services have generally not been funded by national operating budgets to an adequate level, especially considering the important role livestock plays in the economies of several of these countries;
- there are indications that more finance could be made available, if government policy were more favourable toward allocating to the livestock services a higher portion of the revenues already being tapped from the livestock sector;
- the composition of the recurrent budget of animal health services should be cause for concern -- staff costs continue to take a disproportionately large portion and this situation, if it continues, will at some stage make field operations almost totally ineffective;
- there was and likely is a high degree of dependence on external financing, particularly for investment expenditure;
- the quantity and quality of services provided in many of

these countries have still a considerable way to go before they will attain adequate standards of controlling animal diseases of economic importance.

5.2 The present paper has essentially attempted to give a summary view of the existing situation regarding the financing of animal health services in a restricted number of African countries. The underlying reasons for selecting animal health services at this stage have been explained earlier. Within the area of animal health services itself there is still a need to carry out further studies in several respects. One that seems obvious is extending the geographical coverage of similar studies on the financing of animal health services in other parts of sub-Saharan Africa -- e.g. the important livestock countries of eastern and southern Africa.

A second and very important area would be a set of in-depth studies investigating issues that arise from the delivery and use of animal health services and are liekly to have a significant relevance to policy -- e.g. equity issues, issues related to the economic efficiency of resource allocation. A related study would look into the assessment of alternative managerial or organizational mechanisms of channeling finance and of cost recovery as they affect the cost effectiveness of services -- e.g. central government as against parastatals, public versus private veterinary services, the use of livestock owners (groups or individuals) in the delivery of veterinary services etc.

Verification and updating surveys in the countries considered here could be another worthwhile future activity. Its usefulness would, however, have to be judged by the incremental benefit such as exercise would yield in developing hypotheses for testing under the in-depth studies. As is recognized such surveys are costly affairs.

As mentioned in the introduction there are still other livestock services which need to be dealt with in the financing context. AI services are quite widespread, at least in eastern Africa; and the financing of livestock research in Africa is almost totally untouched, just to give two examples. The future studies on the financing of these services and the others are liekly to combine both a similar type of situation study and in-depth analyses. Whatever priorities we are to attach to the sequence of these studies these definitely will be one or two services to cover besides animal health services.

5.3 Manpower and financial resources will, as usual, remain a big constraint in trying to carry out such studies. Additional constraints are access to data already available in government files and the indifference of many of us in Africa to the usefulness of such studies. May be the last two constraints are equally important or even more important than the financial constraints facing African researchers and research organizations. If this paper has aroused interest in the need to research livestock policy issues in Africa at least among my African colleagues, it would have gone a long way toward achieving one of its important objectives.

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Table B	Livestock GDP and the Animal Health Services Budget
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Table F	Animal Health Technical Staff
Table G	Heads of Cattle per Category of Staff
Table H	Animal Health Budgets per Head of Cattle Population
Table J	Changes in the Efficiency Coefficient

TABLE A ANIMAL HEALTH OPERATING BUDGETS (AHOB)[1/]

(National Currencies in Current Prices and Percent of NOB and AB[1/])

in million FCFA, unless otherwise indicated

COUNTRY / YEAR	65/66	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	Growth rate p.a (%) 65/66-78/79
1. CHAD AHOB	153.6	160.9	155.4	160.1	163.5	120.9	121.3	134.4	181.1	195.7	195.0	NA[2/]	NA	2.6
% NOB	1.94	1.4	1.3	1.2	1.1	0.8	0.7	0.9	1.2	1.2	NA	NA	NA	=-[3/]
% AB	NA	NA	NA	NA	NA	4.7	3.6	2.9	3.2	4.0	NA	NA	NA	-
2. MALI AHOB	56.8	NA	NA	NA	136.9	154.1	148.4	141.9	173.8	NA	NA	NA	NA	6.1
% NOB	1.08	NA	NA	NA	1.26	1.38	1.30	1.08	1.10	NA	NA	NA	NA	-
% AB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
3. U. VOLTA AHOB	127.8	127.8	137.1	134.4	128.6	125.5	131.5	137.2	157.7	187.3	229.0	249.9	253.7	5.9
% NOB	1.43	NA	NA	1.29	1.22	1.19	1.21	1.08	1.08	0.89	0.99	0.81	NA	-
% AB	NA	NA	NA	NA	NA	NA	15.0	NA	17.8	18.3	NA	19.2	16.2	-
4. MAURITANIA AHOB	86.5	93.1	140.2	163.1	174.0	157.4	134.5	177.5	NA	220.0	244.0	229.0	270.0	4.6
% NOB	1.99	1.52	1.98	1.97	NA	1.57	1.18	1.24	NA	1.08	0.61	0.44	0.50	
% AB	INFORMATION NOT AVAILABLE								INFORMATION NOT AVAILABLE				8.5	
5. NIGER AHOB	190.5	207.2	233.6	245.9	261.9	269.8	280.6	301.6	328.0	366.5	398.6	458.6	494.6	7.3
% NOB	2.98	2.15	2.35	2.27	2.40	2.2	2.0	1.98	1.86	1.50	1.2	1.1	0.8	-
% AB	INFORMATION NOT AVAILABLE									16.0	11.9	10.9	7.9	-
6. GAMBIA AHOB (1000 Dalasi)	INFORMATION NOT AVAILABLE			85.8	86.1	133.0	149.7	162.9	213.2	239.7	527.3	928.1	1118.7	6.39
% NOB				0.25	0.24	0.30	0.32	0.34	0.29	0.36	0.33	0.23	0.43	-
% AB							11.6	3.5	5.8	3.7	4.7	3.2	-	-
7. SENEGAL AHOB	365.3	NA	469.1	430.1	448.7	534.6	524.0	486.0	555.1	653.5	701.8	729.6	NA	6.6
% NOB	0.80	NA	1.0	0.87	1.06	1.31	1.16	0.99	1.01	0.92	NA	NA	NA	-
% AB			INFORMATION NOT AVAILABLE											
8. IVORY COAST AHOB	242.0	305.9	380.3	513.5	570.8	592.7	621.9	NA	849.3	957.3	1234.1	1465.8	1667.1	15.4
% NOB	0.48	0.48	0.56	0.75	NA	NA	NA	NA	0.66	0.62	1.12	0.57	0.60	-
% AB			INFORMATION NOT AVAILABLE											
9. BENIN AHOB	89.6	108.7	103.3	105.4	113.4	128.7	121.2	144.3	143.3	129.6	130.1	165.0	NA	6.3
% NOB	1.08	1.32	1.24	1.07	NA	1.09	1.06	NA	NA	NA	NA	NA	NA	-
% AB			INFORMATION NOT AVAILABLE											
10. SIERRA LEONE AHOB ('000 Leone)	INFORMATION NOT AVAILABLE		79.8	84.2	110.6	121.5	148.9	157.7	291.8	341.8	475.4	541.2	530.9	22.8
% NOB			0.19	0.15	0.20	NA	NA	NA	NA	NA	NA	NA	NA	-
%AB			INFORMATION NOT AVAILABLE					2.7	2.7	3.1	3.6	5.7	4.9	-

1/ AHOB = Animal Health Operating Budget; NOB = National Operating Budget; AB = Agricultural Budget.

2/ NA = Information not available; "--" = Not applicable

TABLE A (Contd.)

COUNTRY / YEAR		65/66	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	Growth rate p.a. 65/66-78/79
11. CAMEROON	AHOB	204.9	289.0	294.4	310.8	INFORMATION NOT AVAILABLE				631.3	799.6	873.7	912.9	1118.4	9.3
	NOB	0.62	0.71	0.70	0.67					NA	NA	NA	NA	NA	-
	AB	NA	NA	NA	NA					NA	9.4	9.1	13.2	13.7	-
12. MADAGASCAR	AHOB	341	451	501	533	580	593	INFORMATION NOT AVAILABLE							12.3
	NOB	1.33	1.05	1.10	1.23	1.33	1.12								-
%Agricultural Budget	AB	NA	NA	NA	NA	NA	6.2								-
13. TOGO	AHOB	30.5	44.7	47.7	54.3	57.4	59.7	72.1	78.5	91.1	76.5	76.5	96.0	127.2	11.3
	NOB	0.61	0.71	0.73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
	AB	INFORMATION NOT AVAILABLE										2.1	1.8	2.1	-
14. CENTRAL AFRICAN REPUBLIC	AHOB	90.5	113.1	104.2	93	39.3	76.3	69.0	69.6	54.2	56.5	48.5	48.5	48.0	0.9
%National Budget	NOB	1.06	1.08	0.91	0.76	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
%Agricultural Budget	AB		INFORMATION NOT AVAILABLE												

2/ For Cameroon the 1965/66 to 1968/69 budget was common for both livestock and fisheries. After 1969/70 - Livestock only; figures from 1974/75 include both operating and investment budgets.

3/ No explanation given for the sudden and sharp decline of AHOB starting in 1970/71.

Sources: SEDES (1975) GTZ/SEDES (1976) IEMVT (1980), IMF (1982)

TABLE B LIVESTOCK GDP AND THE ANIMAL HEALTH SERVICES BUDGET (1979) IN MILLIONS OF CURRENT US DOLLARS AND PERCENTAGES

Country	Total GDP	Share of Agri. in Total GDP	Value of Agri.GDP	Share of Livestock in Agri.GDP	Value of Livestock GDP	Budgetary Agricultural Expenditure (BAE)	BAE as% of Agri.GDP	Animal Health Budgetary Expenditure(AHBE)	AHBE of Livestock GDP
	US$m.	%	US$m.	%	US$m.	US$m.	%	US$m.	%
Chad	570	70	399	39	156	NA	NA	0.92	0.59 1/
Mali	1220	42	512	36	184	NA	NA	NA	NA
Upper Volta	860	38	327	27	88	7.3	2.2	1.19	1.4
Mauritania	470	27	127	26	33	13.7	10.8	1.25	3.8
Niger	1710	44	752	30	226	29.5	3.9	2.33	1.0
Gambia	132	46	61	16	10	14.4	23.6 2/	0.59	5.9
Senegal	2480	29	719	21	151	NA	NA	3.43	2.3 2/
Ivory Coast	8130	26	2374	2	47	108.8	4.6 3/	7.80	16.6
Benin	850	43	365	12	44	NA	NA	0.77	1.8 2/
Cameroon	5330	32	1706	10	171	38.3	2.3	5.77	3.1
Sierra Leone	790	36	284	6	17	10.9	3.8	0.50	2.9
Madagascar	2810	34	955	21	200	NA	NA	NA	NA
Togo	1000	25	250	10	25	28.5	11.4	0.60	2.4
CAR	640	37	237	8	19	NA	NA	0.23	1.2
Total/Average 4/	27992	32	9068	15	1371			24.86	2.5

1/ 1976-77
2/ 1977-78
3/ 1980
4/ Unweighed

Sources: World Bank (1981) for total GDP and share of agricultural in total GDP; Jahnkee (1982) for share of livestock in agricultural GDP; Table A for animal health services budget.

TABLE C COMPOSITION OF THE ANIMAL HEALTH SERVICES BUDGET

Staff and Non-Staff Expenditure - in 1000 Dalasi(Gambia); 1000 Leone(Sierra Leone); Million FCFA for the Rest & Percentage 1/

COUNTRY \ YEAR	1965/66	%	1967/68	%	1968/69	%	1969/70	%	1970/71	%	1971/72	%	1972/73	%	1973/74	%	1974/75	%	1975/76	%	1976/77	%	1977/78	%	1978/79	%
1. CHAD																										
i. Staff Budget(SB)	102.8	67	102.8	67	109.0	70	111.0	69	115.0	70	97.3	80	94.7	79	112.9	84	144.0	85	146.0	61	NA	NA	NA	NA	NA	NA
ii. Non-Staff (NSB)	50.8	33	56.6	33	46.4	30	49.1	31	48.5	30	23.6	20	25.6	21	21.5	16	24.5	15	35.0	19	NA	NA	NA	NA	NA	NA
2. MALI																										
i. SB	38.7	68	NA	NA	NA	NA	NA	NA	65.1	48	70.2	46	64.8	44	94.6	67	118.4	68	NA	NA	NA	NA	NA	NA	NA	NA
ii. NSB	18.1	32							71.8	52	83.9	54	83.6	56	47.3	33	55.4	32								
3. U.VOLTA																										
i. SB	103.0	81	110.0	86	118.3	86	115.3	86	114.1	89	107.3	86	113.3	86	118.1	86	138.2	89	166.3	89	207.9	91	228.3	91	231.7	91
ii. NSB	24.8	19	17.8	14	18.8	14	19.1	14	14.5	11	18.2	14	19.1	14	19.5	11	21.0	11	21.1	11	21.1	9	21.6	9	22.0	9
4. MAURITANIA																										
i. SB	58.4	68	71.7	77	74.9	54	80.3	49	81.2	47	85.2	54	96.0	71	101.5	57	NA	NA	147.5	67	169.0	69	165.5	72	169.5	63
ii. NSB	28.1	32	21.4	23	65.3	46	82.8	51	92.2	53	72.3	46	38.5	29	76.0	43			72.5	33	75.0	31	63.5	28	100.5	37
5. NIGER																										
i. SB	119.6	63	123.6	60	132.3	57	136.8	56	143.6	55	145.9	54	156.5	56	163.6	54	197.2	60	252.0	69	235.5	59	287.2	63	302.1	61
ii. NSB	70.9	37	83.6	40	103.3	43	109.1	44	118.3	45	123.9	46	124.1	44	138.0	46	130.8	40	114.5	31	163.1	41	171.4	37	193.5	39
6. GAMBIA(100 Dalasi)																										
i. SB	NA	NA	NA	NA	NA	NA	68.6	80	69.5	81	102.2	77	113.8	76	121.3	75	165.2	78	175.7	73	470.4	75	656.9	82	829.2	70
ii. NSB							17.2	20	16.6	19	30.8	23	35.9	24	41.6	25	48.0	22	64.0	27	156.9	25	171.2	18	355.5	30
7. SENEGAL																										
i. SB	252.3	69	NA	NA	304.8	65	330.7	77	335.2	75	371.7	70	389.0	74	386.2	80	459.4	83	545.5	84	593.9	85	620.7	85	NA	NA
ii. NSB	113.0	31			164.3	35	99.4	23	113.5	25	162.9	30	135.0	26	99.8	20	95.7	17	108.0	16	107.9	15	108.9	15		

1/ Percentage share of staff and non-staff budget in total budget

NA = Data not available

TABLE C (Contd.)

COUNTRY \ YEAR	1965/66	%	1967/68	%	1968/69	%	1969/70	%	1970/71	%	1971/72	%	1972/73	%	1973/74	%	1974/75	%	1975/76	%	1976/77	%	1977/78	%	1978/79	%
8. I.COAST																										
i. SB	115.0	48	188.0	62	228.2	60	329.4	64	411.2	72	419.4	71	433.9	70	NA	NA	631.4	74	729.4	76	876.4	69	DD.0	71	DD.2	74
ii. NSB	127.0	52	117.9	38	152.1	40	184.1	36	159.6	28	173.3	29	188.2	30			217.9	26	227.9	24	357.7	31	433.8	29	427.9	26
9. BENIN																										
i. SB	68.5	77	84.9	78	84.6	82	85.8	82	90.7	80	102.0	79	93.4	78	116.3	81	115.3	81	DATA NOT AVAILABLE							
ii. NSB	21.1	23	23.8	22	18.7	18	19.5	18	22.7	20	26.7	21	27.2	22	28.0	19	28.0	19								
10. CAMEROON																										
i. SB	130.9	64	146.1	51	175.2	60	194.2	63	BREAKDOWN NOT AVAILABLE																	
ii. NSB	74.0	36	142.9	49	119.2	40	116.6	37																		
11. S.LEONE (UOO LEONE)																										
i. SB	NA	NA	NA	NA	38.2	46	46.4	55	51.4	47	53.0	44	64.3	43	71.6	46	69.2	24	121.9	36	136.1	29	151.1	28	151.8	29
ii. NSB					41.6	52	37.8	45	59.2	53	68.5	56	84.6	57	86.1	54	222.6	76	219.9	64	339.3	71	390.1	72	375.1	71
12. MADAGASCAR																										
i. SB	183.0	54	211.0	47	269.0	54	301.0	57	314.0	54	341.0	58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ii. NSB	158.0	46	240.0	53	232.0	46	232.0	43	266.0	46	252.0	42														
13. TOGO																										
i. SB	28.9	89	40.0	90	42.6	89	48.8	90	52.3	91	55.3	93	66.8	93	73.3	94	85.5	94	74.5	97	67.3	88	87.2	91	116.9	92
ii. NSB	3.6	11	4.7	10	5.1	11	5.5	10	5.1	9	4.4	7	5.3	7	5.2	6	5.6	6	2.0	3	9.2	12	8.8	9	10.3	8
14. CAR																										
i. SB	48.7	54	52.0	46	60.7	58	58.2	63	NA	NA	47.7	63	48.5	70	41.7	60	33.6	62	31.3	55	32.5	67	40.5	84	48.5	95
ii. NSB	41.8	46	61.1	54	43.5	42	34.8	37			28.6	37	20.5	30	27.9	40	20.6	38	25.2	45	16.0	33	8.0	16	2.5	5

Sources: IEMVT (1980); GTZ/SEDES (1977), GTZ/SEDES (1976); SEDES (1975)

NA = Not available

TABLE D COMPOSITION AND SOURCE OF FINANCING OF THE ANIMAL HEALTH SERVICES BUDGET

(Million FCFA)

Country	Period	Total Expenditure			Operating Expenditure			Investment Expenditure		
		TA 1/	EA 2/	NB 3/	TA 1/	EA 2/	NB 3/	TA 1/	EA 2/	NB 3/
Chad	1972-75	1580.7	1066.5	514.2	1422.2	907.9	514.3	158.5	158.5	- 4/
Mali	1971-75	1120.5	536.2	584.3	1094.5	510.2	584.3	26.0	26.0	-
Upper Volta	1971-75	985.2	275.0	710.2	975.2	265.0	710.2	10.0	10.0	-
Mauritania	1972-75	1582.7	553.0	1029.7	1404.7	387.5	1017.2	178.0	165.5	12.5
Niger	1971-75	1777.7	319.7	1458.0	1619.6	280.6	1339.0	158.1	39.1	119.0
Senegal	1971-75	2980.0	217.4	2762.6	2730.0	217.4	2512.6	250.0	-	250.0

1/ TA = Total for each category

2/ EA = External aid

3/ NB = National budget

4/ "-" = NIL

Source: GTZ/SEDES (1976)

TABLE E TAXES, DUTIES AND CHARGES APPLICABLE TO LIVESTOCK & LIVESTOCK PRODUCTION (1975)

Type of Levy	Chad	Mali	Upper Volta	Mauri-tania	Niger	Gambia	Senegal	Ivory Coast	Benin	Cameroon	Sierra Leone	Togo	CAR	Mada-gascar
1. Import/export duties & taxes on live animals, meat, edible offals	X	X	X	X	X	X 1/	X 8/	X 11/	X	X	X 13/	X	X	X 16/
2. Trade licence fees on butchers & merchants	X	X	X	X	X	–	X 9/	X	X 12/	X	X 14/	–	X	–
3. Livestock head tax	X	X	X 2/	X 3/	X 5/	X	X	–	–	X	–	–	–	X 17/
4. Meat Inspection taxes, charges	X	–	–	–	–	–	–	X	–	–	–	–	–	–
5. Vaccination charges	–	–	X	–	–	–	X 10/	–	–	–	–	–	–	–
6. Treatment charges	X	X	X	–	X	–	X	–	–	–	X	–	X 15/	–
7. Slaughtering fees	X	X	X	X	X 6/	X	X	X	X	X	X	X	X	X
8. Market fees	–	–	–	X	–	–	X	X	–	–	X	–	–	–
9. Holding ground fees	–	–	X	–	–	–	–	–	X	–	–	–	–	–
10. Transit fees	–	–	X	–	–	–	–	–	–	–	–	–	–	–
11. Sanitary taxes and vet. certificates	–	X	–	–	–	X	X	X	–	–	X	–	–	–
12. Other charges	–	X 1/	–	X 4/	–	–	–	–	–	–	–	–	–	–

1/ an additional development tax in one region.

2/ excluding camels, sheep and goats.

3/ suspended for 5 years from mid-1972 because of the drought.

4/ "taxes sur la circulation des viandes".

5/ gradually being abolished.

6/ abolished in 1973.

7/ only on imports of meat, import of live animals banned; exports are free of duties and taxes.

8/ export taxes & duties were suspended for three years from June 1972.

NOTE: "X" denotes that duties, taxes are (positively) levied on livestock and livestock products: "--" not levied.

Sources: SEDES (1975); GTZ/SEDES (1976); Nissen (1982)

9/ plus local taxes and development tax varying with locality.

10/ except for Rinderpest and CBPP.

11/ import duties and taxes only on pigs, export duties and taxes only on cattle.

12/ higher licence fees for merchants operating in the transhumant zone.

13/ only meat and other animal products; live animals imported duty and tax free; no export duty.

14/ no licence fee for butchers-merchants pay a fixed sum per head per year irrespective of species type.

15/ a very interesting feature is the "carte d'abonnement" to Bororo cattle owners. The "carte" is valid for one year and enables 80 heads of cattle to have all veterinary services for a fee of CFA 1200.

16/ only one exports

17/ abolished in 1972

TABLE F ANIMAL HEALTH TECHNICAL STAFF

(number by category and ratios)

COUNTRY	STAFF CATEGORY				RATIOS		
	High level	Middle level	Low level	Total	ML/HL	LL/ML	LL/HL
1. Chad							
1970	9	46	166	221	5.1	3.6	18.4
1975	23	60	216	299	2.6	3.6	9.4
1979	24	152	163	339	6.3	1.1	6.8
2. Mali							
1970	45	64	248	357	1.4	3.9	5.5
1975	50	66	250	366	1.3	3.8	4.9
1979	75	156	335	566	2.1	2.1	4.4
3. Upper Volta							
1975	30	33	166	229	1.1	5.0	5.5
1978	12	34	149	195	2.8	4.4	12.4
4. Mauritania							
1970	10	19	79	108	1.9	4.2	7.9
1975	11	23	78	112	2.1	3.4	7.1
1979	9	78	59	101	8.6	0.8	6.7
5. Niger							
1970	3	28	178	209	9.3	6.3	58.6
1975	13	53	196	262	4.1	3.7	15.1
1979	33	124	291	448	3.7	2.3	8.8
6. Senegal							
1972-73	79	135	480	694	1.7	3.6	6.1
1974-75	108	172	258	538	1.6	1.5	2.4
1978-79	148	256	222	626	1.7	0.9	1.5
7. Ivory Coast							
1975	59	172	222	454	2.9	1.3	3.8
1979	63 1/	235 1/	335	633	3.7	1.4	5.3
8. Benin							
1970	9	24	55	88	2.7	2.3	6.1
1975	16	33	81	130	2.1	2.5	5.1
1979	20	50	112	162	2.5	2.2	5.6
9. Cameroon							
1975	42	86	596	724	2.0	6.9	14.2
1979	48	191	266	505	3.9	1.4	5.5
10. Togo							
1970	10	43	31	84	4.3	0.7	3.1
1975	22	61	33	116	2.8	0.5	1.5
1979	36	72	21	129	2.0	0.3	0.6
11. CAR							
1970	1	18 2/	89 2/	108	18.0	4.9	89.0
1975	11	NA	144	155	-	-	13.1
1979	17	39	274	330	2.3	7.0	16.1

1/ 1978

2/ 1969

Sources: GTZ/SEDES (1976); IEMVT (1980) and Nissen (1982)

High Level = Veterinary doctors and other graduat

Middle Level = Assistant veterinarians.

Low Level = Field-level technical assistants.

TABLE G HEADS OF CATTLE PER CATEGORY OF STAFF

(1000 head)

	Actual 1975			Calculated on basis of norms (1976 data) 1/		
	HL	HL	LL	HL	ML	LL
Chad	157	60	17	155	50	11
Mali	77	59	16	192	60	13
Upper Volta	57	52	10	161	59	13
Mauritania	109	52	15	123	38	8
Niger	193	47	13	179	54	11
Senegal	21	13	9	178	62	13

1/ Norm prescribes

240,000 Livestock Units per high level staff
60,000 " " " " middle "
17-20,000 " " " " low "

Sources: Actual data (1975) calculated from information obtained from GTZ/SEDES (1976); data based on norm calculated from information available in GTZ/SEDES (1977).

TABLE H CATTLE POPULATION AND HEALTH EXPENDITURE PER HEAD

1970, 1975 and 1979

	Cattle Population ('000 head)	AHOB 1/ per Head (current US$)
Chad		
1970	4500	0.12
1975	3600	0.24
1979	3716	0.25
Mali		
1970	5400	0.09
1975	3886	0.21
1979	4765	NA 3/
Upper Volta		
1970	2550	0.18
1975	1700	0.47
1979	2706	0.44
Mauritania		
1970	2003	0.30
1975	1200	0.86
1979	1136	1.07
Niger		
1970	4077	0.22
1975	2508	0.65
1979	3112	0.75
Gambia		
1970	247	0.17
1975	300	0.44
1979	312	1.90
Senegal		
1970	2557	0.62
1975	2318	1.22
1979 2/	2440	1.38
Ivory Coast		
1970	408	4.78
1975	545	7.74
1979	650	12.00
Benin		
1970	549	0.72
1975	700	0.91
1979 2/	756	0.92
Cameroon		
1970	2308	0.48
1975	2600	1.28
1979	3100	1.69

.../2

TABLE H (Contd.)

	Cattle Population ('000 head)	AHOB 1/ per Head (current US$)
Sierra Leone		
1970	296	0.39
1975	290	1.21
1979	338	1.48
Madagascar		
1970	8519	0.23
1975	9700	NA
1979	10150	NA
Togo		
1970	187	1.07
1975	226	1.73
1979	221	2.70
CAR		
1970	677	0.35
1975	600	0.43
1979	1200	0.19

1/ AHOB = Animal Health Operating Budget

2/ 1977 data

3/ NA = Not available

Sources: FAO Production Yearbook (1977) for the 1975 and (1981) for the 1970 and 1979 cattle population data; livestock budgets/expenditure figures based on figures in Table A of text.

TABLE J CHANGES IN THE EFFICIENCY COEFFICIENT

COUNTRY \ YEAR	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Mauritania	0.87	1.03	1.13	1.34	0.40	0.75	0.49	0.24	0.44	0.38	0.59
Senegal	0.29	0.33	0.43	0.34	0.61	0.49	0.20	0.18	0.17	NA	NA
Gambia	NA	0.25	0.24	0.25	0.32	0.33	0.27	0.36	0.33	0.22	0.42
Mali	NA	NA	1.10	1.20	1.29	0.50	0.47	NA	0.43	0.37	0.35
Upper Volta	NA	0.16	0.12	0.17	0.16	0.14	0.16	0.12	0.10	0.09	0.09
Niger	NA	0.70	0.79	0.79	0.78	0.81	0.65	0.73	0.69	0.59	0.64
Chad	NA	0.44	0.42	0.24	0.27	0.19	0.24	0.04	0.03	NA	NA
Cameroon 1/											
Sierra Leone	NA	0.82	1.29	1.31	1.20	3.21	1.80	2.49	2.58	3.38	NA
CAR	0.72	0.59	NA	0.59	0.43	0.67	0.61	0.82	0.59	0.19	0.05
Benin	0.22	0.22	0.25	0.26	0.28	0.23	0.23	NA	NA	NA	NA
Togo	0.12	0.11	0.10	0.08	0.08	0.08	0.06	0.03	0.14	0.10	0.09
Ivory Coast	0.67	0.56	0.39	0.41	0.43	NA	0.35	0.35	0.45	0.41	0.35
Madagascar	0.85	0.75	0.85	0.72	NA	NA	NA	NA	NA	NA	NA

1/ Data for Cameroon are only available for 1965/66 to 1969/70 but they are given below for comparative purposes.

1965/1966: 0.56
1966/1967: NA
1967/1968: 0.96
1968/1969: 0.67
1969/1970: 0.59

NA: Data not available

Sources: GTZ/SEDES (1976), SEDES (1975), IEMVT (1980)

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