Pan African Animal Health Yearbook



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Interafrican Bureau for Animal Resources

Pan African Animal Health Yearbook 2006



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MESSAGE FROM THE DIRECTOR OF RURAL ECONOMY AND AGRICULTURE: AFRICAN UNION



Dr. Ahmadu Babagana

I would first and foremost, like to register my appreciation for the cooperation and facilitation from the livestock owners, personnel at district veterinary offices, respective Departments of Veterinary Services, reporting officers from the member states, and the staff of AU/IBAR.

It is only due to their collective support, that the 2006 Animal Health Yearbook is now out, copies of which will be distributed to various stakeholders and partners including donors, policy makers, National Veterinary Departments and other technical Animal Health organizations. I sincerely hope that the recommendations made in this book will be used to improve veterinary service delivery to livestock farmers, especially in Africa.

I wish to acknowledge the role played by AU/IBAR in response to diseases of trans-border importance. In an effort to achieve this, IBAR has spearheaded the implementation of several strategic projects that are conceptualized, funded and implemented together with international cooperating partners. It must be noted and appreciated that for any effective disease control strategies and measures to be instituted, it is critical for all concerned, from the level of Policy and decision makers, right down to the field implementers to know the true picture of the disease status in a given area or country. It is also important to be able to assess risk factors, especially related to the control measures to be adopted and in particular looking at the trans boundary nature of some diseases, which not only affect livelihoods but increasingly affect trade and marketing.

In relation to soliciting donor financial and technical support for any disease control project, the donor/s must be presented with a clear current disease situation as a justification for support. Data and information on this can only be achieved through effective disease reporting, which is the main objective of this yearbook. It is only through regular and effective reporting that such information can be harmonized and disseminated to the relevant stakeholders. All this information starts from the field where the diseased animals are seen, and progresses up through to the Directorate of Veterinary Services and finally to AU- IBAR. As I recognize the amount of effort put in by some of the member countries to consistently report diseases to AU/IBAR, I would also like to urge those members that have not been reporting for one reason or another, to take stock and pay particular attention to improving their reporting mechanisms so that we can all enjoy the benefits of a more comprehensive document which will be of value to all.

Thank you.

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Addis Ababa, Ethiopia.

PREFACE



Dr. Ahmed Elsawalhy

Africa is endowed with immense and diverse livestock resources, which, if utilized optimally, could contribute significantly towards ensuring long term food security and foreign exchange earnings. However, due to a myriad of reasons, the livestock sub-sector has remained untapped and its contribution to the respective economies of member states is not commensurate with its size and potential. One of the major constraints that have hampered the development of the sub-sector is the widespread prevalence of animal diseases, especially those which are highly contagious and trans-boundary in occurrence.

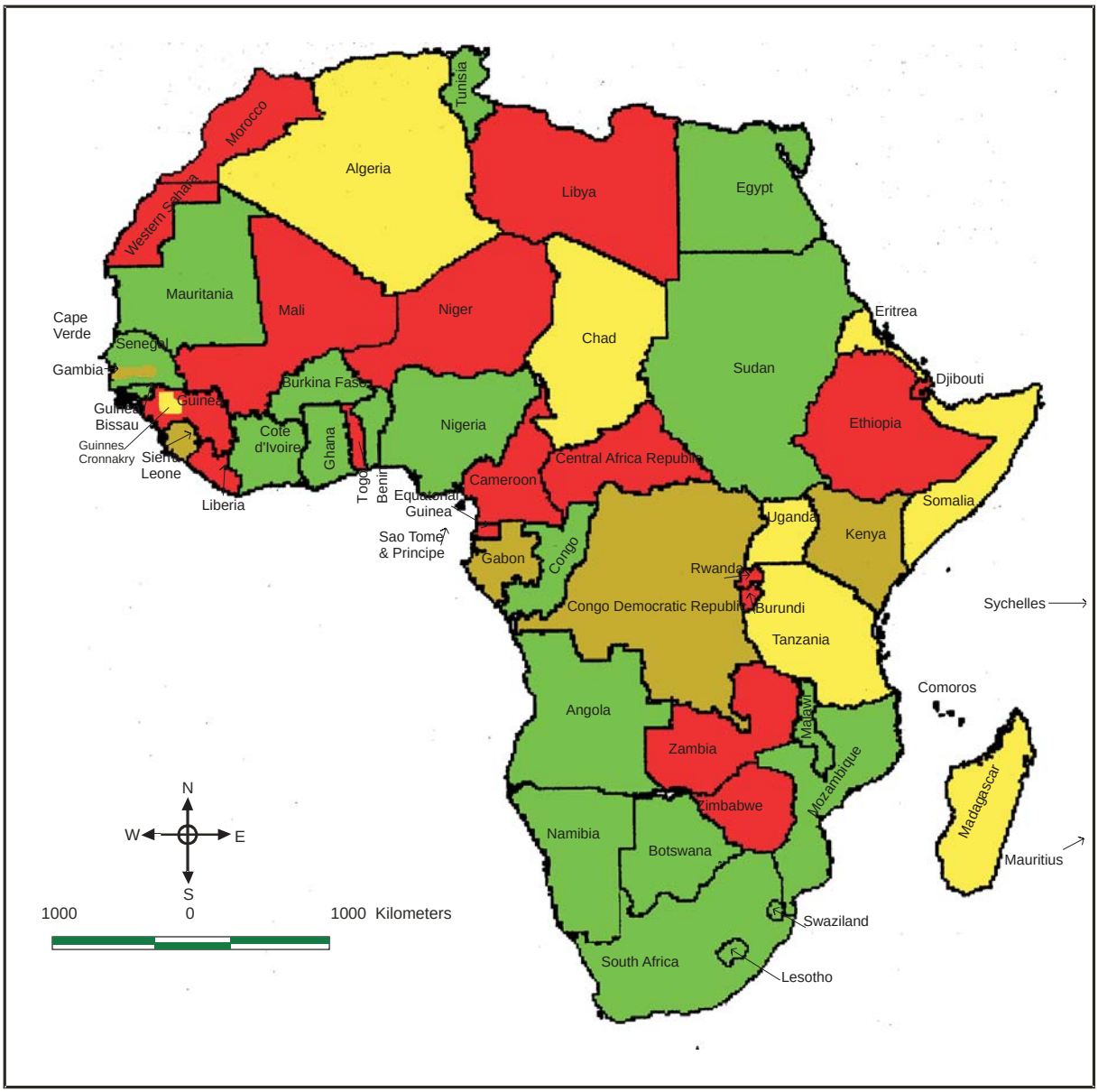
The African Union/Interafrican Bureau for Animal Resources (AU/IBAR) along with the concerned countries and Regional Economic Communities are therefore committed to and are taking the necessary actions to help alleviate some of these problems through a number of animal disease control/ eradication projects and programmes. All of these start with accurate and current information on the disease(s) status.

Disease surveillance has been constrained by a lot of factors including a fundamental lack of community participation. To ensure the highest quality of surveillance, community participation in early disease reporting is indispensable. However, in most cases this essential component of surveillance is wanting, and failure to achieve full reporting is always reflected in the output of the surveillance process.

Under AU/IBAR's guidance, some countries in East Africa developed Participatory Disease Search (PDS). PDS is the application of participatory approaches to disease surveillance and has been utilized most recently as an effective and transparent method for rinderpest surveillance and also for the surveillance of Highly Pathogenic Avian Influenza (HPAI) in both livestock and humans. Similarly all countries on the continent have in place some form of livestock disease reporting system or another, which need to be given the resources and commitment in order for them to be viable and effective. This is because a critical component in the Veterinary Services to carry out its function and mandate is to know the true status of diseases that are prevalent at any given point in time, with particular importance to zoonotic and trans-boundary diseases. Disease reporting to and by relevant authorities cannot, therefore, be overemphasized as a cornerstone to disease prevention and control.

Unfortunately, since year 2004, there seems to have been a consistent decline in livestock disease information flow to IBAR. While I highly commend AU member countries that have been making timely and regular reporting, I wish also to urge those member countries that have not been reporting to strive to do so.

Dr. Ahmed Abdou Ali Elsawalhy
Ag. Director AU/IBAR



53 Member Countries.

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1. ABBREVIATION AND ACRONYMS

AU/IBAR	African Union/Inter African Bureau for Animal Resources
AI	Avian Influenza
AHS	African Horse Sickness
AHSD	Animal Health Service Delivery Systems
ASALs	Arid and Semi-Arid Lands
ASF	African Swine Fever
BSE	Bovine Spongiform Encephalopathy
CAHWs	Community Animal Health Workers
CAR	Central Africa Republic
CBPP	Contagious Bovine PleuroPneumonia
CCPP	Contagious Caprine Pleuropneumonia
DD	Degree Decimal
DMS	Degree, Minute and Second
DMU	Data Management Unit
EZD	Emerging Zoonotic Diseases
FAO	Food and Agriculture Organization
FMD	Foot and Mouth Disease
GIS	Geometrical Information Systems
GPS	Global Positional Systems
GRP	Global Rinderpest Eradication Programme
HPAI	Highly Pathogenic Avian Influenza
IBR	Infectious Bovine Rhinotracheitis
LSD	Lumpy Skin Disease
MCF	Malignant Catarrhal Fever
NCD	Newcastle Disease
OIE	World Organization of Animal Health
PACE	Pan Africa Control of Epizootics
PARC	Pan Africa Rinderpest Campaigns
PDS	Participatory Disease Search
PPR	Peste Petit De Ruminants
RP	Rinder Pest
RVF	Rift Valley Fever
SES	Somali Ecosystem
SERECU	SomaliEcosystem Rinderpest Eradication Coordination Unit
SMR	Small Ruminants
UN	United Nations
WHO	World Health Organization
WRL	World Reference Laboratory

1. INTRODUCTION

In Africa, the knowledge of disease occurrence is of particular importance to the individual country's Department of Veterinary Services who have the mandate of keeping the country's neighbors and trading partners informed of the status, in their countries, of those diseases that are of concern to them. The availability of this knowledge is dependent on efficient disease surveillance and transparency in reporting systems.

In 2006, 9598 disease outbreaks, involving 928,361 individual cases and 112, 072 deaths were recorded at AU/IBAR. Bovines had the highest number of outbreaks reported, contributing to 5,197 (54%) of the number of disease outbreaks recorded in the year. This high number shows the significant importance of cattle on the African continent when compared to other species. Foot and Mouth Disease (FMD) and Contagious Bovine Pleuro Pneumonia (CBPP) are still present and rank as diseases of serious economic importance to the continent. Rinderpest has been almost totally eradicated with the exception of the possible pockets in the SES. Even here, all the suspect cases reported in 2006 were confirmed to be negative.

The year also saw outbreaks of two important infectious diseases in some parts of the continent, the Rift Valley Fever (RVF) in December, and Avian Influenza starting from January. Prompt mechanisms to control these two diseases were put in place. The two diseases being zoonoses have drawn concerted efforts from both veterinary and medical personnel, who are working closely together to control them. Joint surveillance by both human and animal disease surveillance systems is important in tracking and controlling zoonoses and the effort is already reaping benefits especially in controlling the recent outbreaks of Avian Influenza.

Generally, continued growth in International trade, closely related to changing trades in the livestock industry has greatly increased the risk of spread of a wide range of infectious diseases between countries. This calls for the need for countries to develop efficient disease reporting mechanisms.

Monitoring the livestock disease situation across the continent is a core function of AU/IBAR. Understanding that it is not practical to harmonize disease reporting in Africa as a whole, AU/IBAR, through its PARC and later PACE projects encouraged its member countries to develop specific individual disease-reporting formats. As a result, disease reporting formats for both active and passive disease surveillance were developed. Reports to AU/IBAR come by way of monthly reports and immediate notification of any disease outbreak from member countries. After analysis and compilation of information by AU/IBAR, the information is disseminated to member countries and the rest of the world.

Disease reporting systems in African countries are clearly defined but mechanisms to ensure adherence are weak. In regions were Community Animal Health Workers (CAHW) deliver veterinary services, this cadre of Animal Health Service Deliverers (AHSD) provide a very useful link between the livestock keepers/community and the District Veterinary authorities in terms of disease reporting and surveillance but there is no motivation for them to submit reports, nor is there any tangible compelling mechanisms in place to make them accountable. The important role played by CAHWs in disease reporting needs to be recognized and their activities streamlined in order to make them more efficient.

This yearbook was introduced and revitalized in 2002 and its context and quality depend largely on the information provided by countries to AU/IBAR in form of monthly reports. So far, four issues have been published and the current yearbook is the fifth. The 2006 yearbook reflects only the data captured from member states in the course of the year. With the understanding that Information is not power unless it is shared, member states are encouraged to report diseases to AU/IBAR regularly and in order to improve on the quality of the reports, the reporting formats should be revised quite often, possible gaps identified and possible amendments done. Besides, effective participation of livestock keeping communities in disease surveillance, reporting and extension should be encouraged.

2. PROGRESS OF DISEASE REPORTING

By the end of year 2000, IBAR received monthly disease reports from ten (10) out of fifty three (53) member states of the African Union (AU). The reporting rate of 8.01% had been noted to be very low and this prompted the Data Management Unit (DMU) to embark on improving the situation. Awareness creation in member countries was achieved through presentations during meetings, workshops and conferences held in member countries and also in the respective regions. The importance of reporting transparency, accountability and fulfillment of international obligations was emphasized. Feedback on reports was achieved through acknowledgement of received monthly reports. Besides monthly and quarterly disease reports, monitoring letters were also introduced to encourage regularity in disease reporting. Moreover, reporting rate as well as the geographical coverage for reporting was significantly improved through the cooperation of member states and the publication and distribution of the Pan African Animal Health Yearbook.

The 8.01% reporting rate in year 2000 increased to 67.9% by the year 2004 with 40 countries reporting. However, this was followed by a declining trend in the subsequent two years, with reporting declining to 56% (37 countries) in the year 2005 and 52% (35 countries) in the year 2006.

There was a major shift from paper based monthly reporting to electronic format submission. In year 2000, all the monthly disease reports received were on paper. By year 2004 the proportion of electronic report reached 89%. This also declined to 65% in year 2005.

Chart 1: Progress of monthly disease reporting to IBAR in 2006.

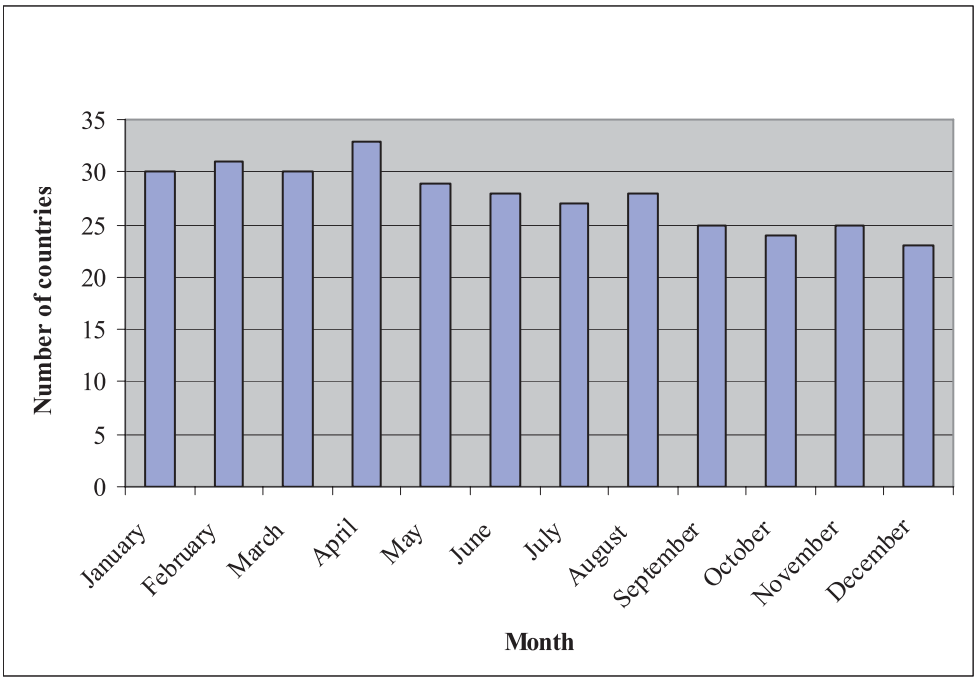


Table 1 shows the progress of monthly disease reporting to AU/IBAR (2000-2006).

Year	Reporting rate (%)	No of countries reports	Proportion of electronic reports (%)
2000	8	10	0
2001	12	11	9
2002	55	37	52
2003	66	40	83
2004	66	40	89
2005	55	37	65
2006	52	35	70

In the course of year 2006, out of 52 member states, only 35 submitted disease reports to AU/IBAR with a reporting rate of 67.3%. A total of 9598 outbreaks were recorded involving different animal and human diseases. A total of 112,072 animals died as a result of disease. There was a single human mortality.

Of the 9,598 outbreaks reported in 2006, the bovine species had the highest with 5,197 (54%). This was followed by small ruminants with 2031 (21%). So in total, the domestic ruminants accounted for 7,228 (75%) of all outbreaks in 2006.

Avian species accounted for 745 (7.7%) of total outbreaks. Dogs and cats accounted for 749 (7.8%), and porcine for 109 (1%) of total outbreaks. Table 2 shows outbreaks rates of infection in which different species of animals were involved in 2006 in Africa.

Table 2: Outbreaks rates of infection in which different species of animals were involved in 2006 in Africa.

Number	Species	Rate of infection (%)
1.	Bovine	54
2.	SMR	21
3.	Avian	7.7
4.	Canine & Feline	7.7
5.	Camel	4
6.	Equine	4
7.	Porcine	1
8.	Human	0.0001

KEY: SMR = Small Ruminants

3. DISEASE SITUATION

The number of deaths reported as a result of disease outbreaks recorded in 2006 indicated that the avian species were most affected, 930279 out of 958,368 (97%), followed by bovine species 11,680 (1.2%). Small ruminants came third recording 10,032 (1%) of the total mortalities. The Porcine species followed with 4469 (0.045%) and canine and feline species showed 788 (0.08%). The equine species showed 353 (0.04%) and the camel 387 (0.04%). Other species did not show any significant mortality.

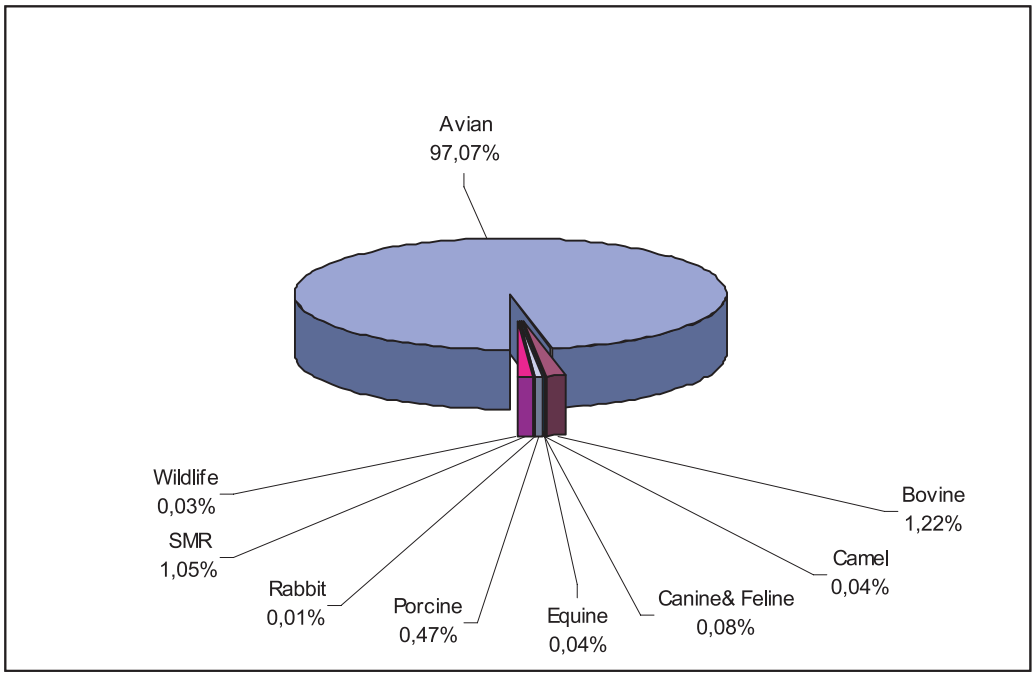
Table 3 shows the breakdown of disease situation in 2006 whereas chart 2 shows the mortalities per species in reported outbreaks in 2006.

Table 3: Breakdown of disease situation in 2006.

No.	Species	Outbreaks	Deaths
1.	Bovine	5197	11680
2.	SMR	2031	10032
3.	Canine& Feline	749	788
4.	Avian	745	930279
5.	Equine	370	353
6.	Camel	341	387
7.	porcine	109	4469
8.	Wildlife	28	260
9.	Others	17	12
10.	Rabbit	10	107
11.	Human	1	1
	Total	9598	958368

Key: SMR= Small ruminants

Chart 2: Mortalities per species in reported outbreaks in 2006.



Twelve most important diseases accounted for most of the reported disease outbreaks in the year. These diseases included Avian Influenza, Rift Valley Fever, Rabies, Trypanosomes, Foot and Mouth disease, Lumpy skin disease, Newcastle disease, Anthrax, Heart water, Brucellosis, and black quarter in that order. Table 4 presents eleven most important diseases reported in Africa in year 2006 by number of outbreaks and number of countries.

Table 4: Eleven top most diseases, in order of their importance, reported in Africa in year 2006 by number of outbreaks and number of countries.

No.	Disease	Number of outbreaks	Number of countries	Average prevalence (%)
1.	A.I	Not recorded	8	Not recorded
2.	R.V.F	Not recorded	2	Not recorded
3.	NCD	466	20	26.38
4.	FMD	481	15	22.90
5.	LSD	476	18	9.25
6.	Rabies	921	20	15.60
7.	Anthrax	426	15	13.02
8.	Heartwater	422	10	5.97
9.	Brucellosis	403	12	18.50
10.	Blackquarter	381	16	20.14
11.	Trypanosomosis	730	12	51.50

Key: FMD = Foot and Mouth Disease; LSD = Lumpy Skin Disease; R.V.F = Rift Valley Fever; A.I = Avian Influenza; NCD = New Castle disease

Chart 3: Eleven most important diseases reported in Africa in year 2006 by number of countries reporting

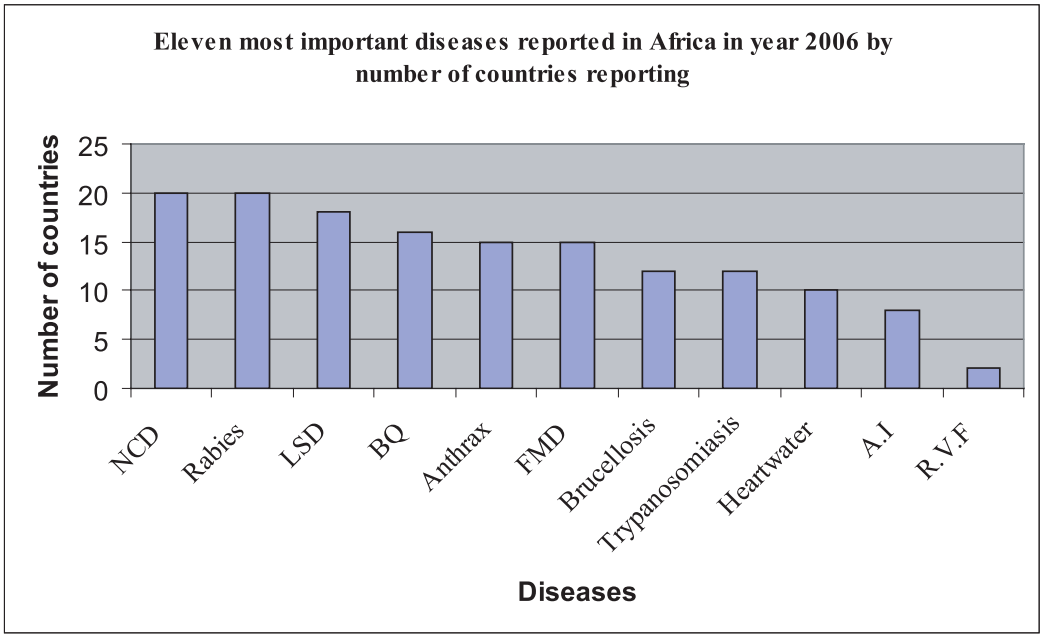


Table 5 presents the eleven most important diseases reported by member countries in Africa (2002-2006)

Table 5: Eleven most important diseases reported by member countries in Africa (2002-2006).

		Number of countries reporting				
NO.	Disease	2002	2003	2004	2005	2006
1.	A.I	0	0	0	0	8
2.	R.V.F	0	2	3	1	2
3.	NCD	25	25	24	23	20
4.	FMD	18	19	20	18	15
5.	LSD	23	19	23	23	18
6.	Rabies	20	19	22	18	20
7.	Anthrax	0	0	0	0	15
8.	Heart water	0	0	0	0	10
9.	Brucellosis	12	11	23	10	12
10.	Blackquarter	0	0	18	0	16
11.	Trypanosomosis	0	0	0	0	12

Key: FMD = Foot and mouth disease; LSD = Lumpy; NCD = Newcastle disease; R.V.F = Rift Valley Fever; A.I = Avian Influenza.

Regarding the proportion of new cases per species of animals affected during disease outbreaks recorded in 2006 in Africa, the Avian recorded the highest with 72.26% followed by the bovine with 21.12% and small ruminants at 5.5%. This trend was consisted with the trend shown in the previous years.

Table 6 shows the proportion of new cases per species of animals affected during disease outbreaks recorded in 2006.

Table 6: Proportion of new cases per species of animals affected during disease outbreaks recorded in 2006 in Africa

Number	Species	Proportion (%)
1.	Avian	63.0
2.	Bovine	19.0
3.	Camel	11.0
4.	SMR	5.0
5.	Rabbit	1.0
6.	Porcine	1.0
7.	Canine & Feline	0.01
8.	Equine	0.013
9.	Wildlife	0.011

3.1 DETAILED DISEASE SITUATION IN 2006 BY REPORTING COUNTRIES

Table 7 shows the detailed disease situation in 2006 by reporting countries.

Table 7: Detailed disease situation in 2006 by reporting countries

NO.	Countries	Nb of reports	Outbreaks	Deaths	Slaughtered	Destroyed
1.	Algeria	8	122	331	2892	321
2.	Angola	12	244	1309	6193	380
3.	Benin	12	375	1270573	677	567
4.	Botswana	11	279	2028	0	0
5.	Burkina Faso	12	143	1086	15544	15544
6.	Chad	9	98	122	0	0
7.	Congo	12	14	6	0	0
8.	Cote d'Ivoire	12	13	949	1184	1242
9.	DR Congo	1	9	8	0	0
10.	Egypt	12	22	223	0	0
11.	Eritrea	7	34	891	0	0
12.	Gabon	4	1	2	0	0
13.	Gambia	5	4	27	0	0
14.	Ghana	12	259	3040	193	0
15.	Guinea Bissau	12	41	521	0	5
16.	Guinea Conakry	6	84	1533	202	5
17.	Kenya	4	126	141	0	0
18.	Lesotho	12	195	1484	0	6
19.	Madagascar	6	346	692	0	0
20.	Malawi	12	16	1244	238	44
21.	Mauritania	12	33	45	10	7
22.	Mauritius	12				
23.	Mozambique	12	110	2453	420	114
24.	Namibia	12	20	36	0	0
25.	Nigeria	12	100	478339	39	215487
26.	Senegal	12	126	696	0	0
27.	Seychelles	12	3	214	0	0
28.	Sierra Leone	4	6			
29.	Somalia	9	2586	8673	0	0
30.	South Africa	12	1956	546664	377789	2804181
31.	Sudan	12	26	37377	0	2000
32.	Swaziland	12	130	523	14	4
33.	Tanzania	6	1161	8001	11	0
34.	Tunisia	11	855	7686	29055	0
35	Uganda	9	73	8193	1663	315
	TOTAL		9610	958368	2862516	235532

Eighteen (18) member countries did not report at all in the cause of the year. These included Burundi, Cameroon, Cape Verde, Central African Republic, Comoros, Djibouti, Equatorial Guinea, Liberia, Libya, Morocco, Niger, Rwanda, Sao tome and Principe, Seychelles, Togo, Zambia, and Zimbabwe.

3.2 DETAILED DISEASE SITUATION (BY DISEASES NOTIFIABLE TO OIE)

Contagious Bovine Pleuropneumonia (CBPP)

Contagious Bovine Pleuropneumonia (CBPP) is a disease that causes high morbidity and mortality losses in cattle. The financial implications of these losses are of great significance to cattle owners. Until 1980s, the disease was controlled by vaccination, movement control and slaughter programs. However, general economic decline led to a reduction in animal health budgets and a resurge of CBPP in the late 1980s and 1990s. CBPP is now endemic in most pastoral areas of East, Central and West Africa, and is spreading towards Southern Africa.

During 2006, fourteen (14) countries reported 323 separate outbreaks of Contagious Bovine Pleural Pneumonia (CBPP), involving 2,810 deaths. All these figures are significantly more when compared to 2005 records (156 outbreaks, and 570 mortalities). The control of CBPP in the countries would therefore be important a way to salvage the losses and increase incomes of cattle owners.
Table 8 shows the comparison of CBPP situation in 2006 with that of 2003, 2004, and 2005

Table 8: Comparison of CBPP situation in 2006 with that of 2003, 2004, and 2005

Year	Number of countries reporting	Number of outbreaks	Number of deaths
2003	14	272	1,289
2004	18	314	1,985
2005	18	156	570
2006	14	323	2,810

In 2006, except for the Northern and southeastern parts of the continent, the remaining regions of the continent continued reporting CBPP. This pattern of distribution has been consistent from 2001 reports to date. Although more countries in western Africa (6) reported the disease, higher numbers of outbreaks, cases and deaths were reported in Somalia (178) and Angola (70), the two countries having contributed to 77 % to all CBPP outbreaks in the year. Map 2 shows the spatial distribution of CBPP outbreaks in Africa in 2006 whereas table 9 shows the distribution of CBPP outbreaks by countries in the same year.

Map 2: Spatial distribution of CBPP in Africa in 2006.

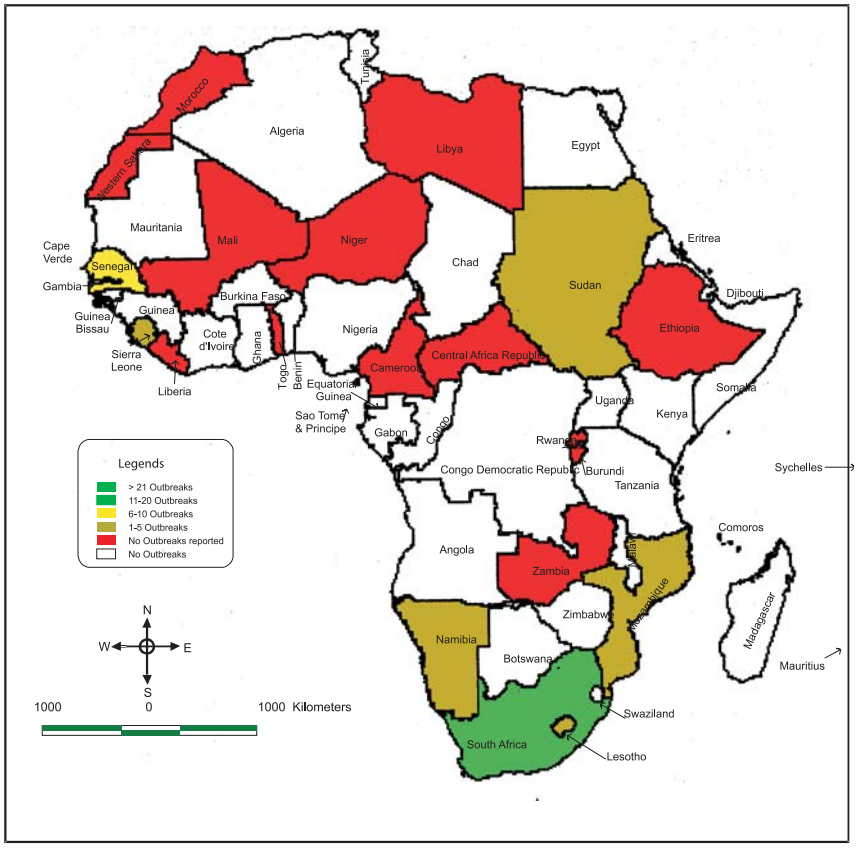


Table 9: Distribution of CBPP outbreaks by countries in Africa 2006.

NO.	Countries	Outbreaks	Deaths
1.	Somalia	178	1957
2.	Angola	70	261
3.	Ghana	20	71
4.	Tanzania	15	102
5.	Chad	9	41
6.	Benin	8	32
7.	Namibia	6	17
8.	Uganda	6	130
9.	Burkina Faso	5	21
10.	Mauritania	2	5
11.	Nigeria	2	164
12.	Cote D'ivoire	1	9
13.	Sudan	1	0
	Total	323	2810

From the table, it can be concluded that the number of CBPP outbreaks in Africa is increasing with years. It is recommended in this report that control through vaccinations be intensified.

Rift Valley Fever (RVF)

Rift Valley fever is a zoonotic disease, which affects humans, ruminants and camels. It may manifest itself as a fatal hemorrhagic disease syndrome in humans, either as sporadic cases or during a major epizootic involving susceptible animals. There may also be many severe influenza/malaria-like cases, some with ocular or neurological lesions. Hepatitis is a feature of both human and animal RVF cases. In animals, RVF manifests itself with a sudden onset of abortion in a large proportion of the herd/flock, associated with high neonatal mortality. Clinical examination of individual animals reveals a biphasic febrile reaction with severe prostration and collapse in young animals, agalactia in milk animals, lymphadenitis, and debility with jaundice and deaths in older age groups. Mortality and most severe clinical signs are higher in young animals and fetuses. There is considerable variation in the levels of susceptibility of the different species to infection with sheep and young cattle being most susceptible, followed in descending order by adult sheep, goats and cattle. In general, breeds that are indigenous to the tropical and subtropical zones in Africa are less susceptible than the European or imported genotypes exotic to the continent.

The disease was first described in sheep in the early 20th century (the virus responsible was first isolated in humans in Kenya in 1930), and was recorded in southern Africa in 1950, when a major epizootic in South Africa caused an estimated 100,000 deaths and 500,000 abortions in sheep. A second extensive epizootic occurred in Namibia and South Africa in 1974-75. Periodic severe outbreaks have also been experienced in Mozambique, Zambia and Zimbabwe.

In 1973 and again in 2007, RVF outbreaks occurred in irrigation areas of the Sudan. In 1977 the disease was recognized in Egypt and caused an estimated 600 human deaths as well as heavy losses in sheep, goats, cattle, buffaloes and camels along the Nile Valley and Delta. RVF outbreaks again occurred in Egypt in 1993.

In 1987, a serious outbreak of RVF occurred in the Senegal River basin of southern Mauritania and northern Senegal. This outbreak first came to attention through severe illness and deaths of people in the area, but there was also a high abortion rate in sheep and goats. The outbreak of the disease in East Africa in 1997-98 not only caused livestock losses and human deaths but also seriously disrupted the valuable livestock export trade to the Middle East estimated at millions dollars per year (12). The recent outbreak in the Eastern Africa (December 2006-March 2007) estimates the losses as a result of trade embargo, local consumer preferences and direct losses due to deaths and abortions in livestock in Kenya alone at US $ 45,000,000 (6). A total of 404 human cases with 118 deaths were reported in Kenya, 100 cases with 48 deaths in Somalia and 3 deaths in Tanzania.

The RVF virus is probably present in all countries of sub-Saharan Africa. Many of these countries, outside eastern and southern Africa, do not have populations of the highly susceptible exotic livestock breeds that serve as disease hosts and act as indicators of RVF virus activity. Human disease may be the first indication that RVF virus amplification is occurring at high levels in these countries, where the indigenous ruminants may not show any clinical signs of disease other than insignificant low levels of abortion.

Until recently RVF was thought to be restricted to Africa. However, it was reported in the Tihama region of both Saudi Arabia and Yemen in September 2000. The Tihama plain - about 50 km wide - is in the west of these countries, between the mountains and the Red Sea, on the eastern side of the Great Rift Valley. It is a semi-arid zone with alluvial fanning from the mountains that form the scarp of the Rift Valley. Its

ecological characteristics are similar to those in the corresponding western side of the Rift Valley in Africa, where RVF disease occurs. RVF virus activity is highly associated with such limited riverine alluvium zones. In Thama plains, during the outbreak of RVF, there were extensive abortions in sheep and goats. There were 855 severe human cases involving 118 deaths. The virus was similar to that circulating in Kenya and Somalia in 1997-98 (7).

RVF has the potential for further international spread, particularly with the climatic changes that might be expected with global warming. High-risk receptive areas are, for example, the Tigris/Euphrates Delta zone to the northeast in Iraq and the Islamic Republic of Iran (7).

RVF outbreaks in Africa in 2003-2006

In 2003, only two countries, Senegal and Mauritania reported cases of RVF. They reported a total of 10 outbreaks in which 44 cases were recorded. All cases involved small ruminants and occurred during the months of October and November.

In 2004, again two outbreaks were reported in Senegal and Gambia. OIE reports indicated another outbreak in the same year from Mauritius, which was not reported to AU/IBAR. In 2005, only one county, Angola, reported a single outbreak of Rift Valley Fever.

Recent RVF outbreaks in Kenyan in 2006

In December 2006, a Rift Valley fever outbreak occurred in Kenya. It was initially reported in the North Eastern Province and Coast Province, which had received unusually heavy rains, causing floods and creating breeding grounds for mosquitoes which spread the causative virus from infected livestock to humans. The outbreak forced the closure of livestock markets in the North Eastern Province, drastically affecting the economy of the region. It was subsequently reported in other districts such as Maragua, Thika and Kirinyaga districts of Central Province and Baringo district of Rift Valley Province. A large number of businesses suffered huge losses as customers shunned the common meat joints, since the meat (popularly referred to as nyama choma or roast meat) was believed to cause the disease. A total of 158 people had died by April 2007 when RVF had diminished drastically. The ban on cattle movement in the affected areas was lifted thereafter.

The torrential rains of 2006-2007 and 1997-1998, which were way above the seasonal average, provided ideal conditions for the breeding of insect vectors of animal and human diseases and caused the eruption of various diseases in Kenya including Rift Valley fever, blue tongue, and lumpy skin disease. The occurrence of Rift Valley fever was, in both outbreaks, first observed when hemorrhagic disease was confirmed in people in northeastern Kenya. Livestock mortalities of up to 70% in goats and sheep and 20-30% in cattle were reported in the same areas (Annual Reports, Kenyan Department of Veterinary Services). Camel mortalities were more pronounced in the 1997-98 epidemic (20-30% mortality) than in the 2006-07 epidemic. Surveys confirmed Rift Valley fever by virus isolation and IgM detection.

RVF disease has a marked negative impact on the welfare and food security of the human population in the drier areas (which are dependent on livestock for their sustenance). Losses are attributed to through the significant reduction of milk production, the abortion storms the disease creates and the deaths especially in young stock.

Prior experience of earlier Rift Valley fever epidemics in Kenya and remote sensing data suggest that the region may experience eruptions of the disease in future. Enhancing the capacity for such predictions of likely events, enhancing reporting rates for RVF like diseases and hence enhancing the capacity for RVF epidemio-surveillance increases the chance that RVF will be predicted early enough to allow effective mitigation activities to be implemented. The disease was recognized first in the Rift Valley of Kenya and described as a specific viral entity in 1931. Epidemics of the disease have since typically occurred in cycles of 5 to 15 years following heavy sustained rains that flood natural depressions, creating reservoirs and creating high densities of the primary vector (Aedes mosquitoes) when its eggs hatch.

Outbreaks of RVF in Humans in Kenya

The recent (2006) outbreaks of RVF in Kenya shows the devastating effects uncontrolled zoonosis can have on a country. In mid December 2006, several unexplained fatalities associated with fever and generalized bleeding were reported to the Kenya Ministry of health (KMOH) from Garissa District in North Eastern Province (NEP). On the 21st of December, the first human case of RVF was confirmed in Garissa district hospital and by December 20th a total of 11 human deaths had been reported. Of serum samples collected from the first 19 patients, RVF virus RNA or immunoglobulin (IgM) antibodies against RVF virus were found in samples from 10 patients.

Human cases were reported in 12 of the 35 (37%) infected districts. There were 708 suspected human cases with 210 being confirmed in the laboratory and 162 succumbing and dying of the disease. The dead included a veterinary doctor who contracted the virus while examining a cadaver. Three laboratory workers also contracted the disease while processing suspect samples but eventually recovered.

Recent outbreaks of RVF in Tanzania in 2006

In Tanzania, regions affected included Arusha, Manyara, Tanga, kilimanjaro, Dodoma, Morogoro, Singida, and Iringa. In total, 90 human cases were reported which involved 19 deaths of livestock.

Since 2003, the geographical distribution of RVF seem to be very dynamic, with the occurrence of the disease shifting from the extreme west African parts of the continent (2003 –2004), to south west Africa (2005) and finally to East Africa (2006). Table 10 shows recorded outbreaks of RVF in African countries by country, number of outbreaks, cases and deaths, 2003-2006.

Table 10: Recorded outbreaks of RVF in African countries by country, number of outbreaks, cases and deaths, 2003-2006.

Year	Country	No. of outbreaks	Cases		Deaths	
			Livestock	Human	Livestock	Human
2003	Senegal and Mauritania	10	44	Not recorded	0	Not recorded
2004	Senegal and Gambia	Not recorded	Not recorded	Not recorded	Not recorded	Not recorded
2005	Angola	1	11		0	0
2006	Kenya	Not recorded	Not recorded	708	Not recorded	162
	Tanzania	Not recorded	Not recorded	90	Not recorded	19

Foot and Mouth Disease (FMD)

Foot and Mouth Disease (FMD) is a problem of great economic importance in Livestock producing countries. Time and again, it has been experienced in a number of outbreaks worldwide. The disease causes a stir in International trade.
FMD is still active in many parts of the world and continues to threaten FMD free regions.

During the year, a total of fifteen (15) countries, one (1) from the north, two (2) from central, two (2) from south, Four (4) from east, and seven (7) countries from west reported the disease in bovines. There were 479 outbreaks involving 24411 cases and 1233 deaths. Somalia reported the highest number of disease outbreaks 214 (44%). The prevalence rates were quite high in 12 out of the 15 reporting countries, calling for the need to instigate control measures.

The main epidemiological event that occurred during the year in Africa related to FMD is the occurrence of the disease due to virus serotype A during the month of February in Egypt. In this particular case, eighteen (18) outbreaks of FMD were reported in several governorates, namely Alexandria, Behera, Dakahlia, Dumyata, Cairo, Ismalia, Fayoum, and Menofia.

During the 2006 outbreak in Egypt, viruses isolated were all closely related to each other and most closely related to viruses from East Africa, especially a recent isolate from Kenya (2005). However, the viruses were not closely related to the new type A Iran 05 strain circulating in the Middle East.

Sero type O is also known to occur in Egypt. The source of introduction of this virus was attributed to the introduction of live animals originating from an infected country prompting undertaking of regular vaccination against FMD type O in the country. This constitutes a new introduction of this serotype to the country and indeed to also the Northern Africa and the Middle East regions.

During the year, FMD serotype SAT 2 was reported in a formerly FMD free zone in Botswana in April 2006 leading to cessation of trade with Europe and instigation of vaccinations. In June, FMD SAT 1 was also reported from Northern Botswana from a part of the country where FMD outbreaks are more common. Cases of FMD caused by SAT 3 serotype were reported in Limpopo province S. Africa, in August. There were reports to OIE of outbreaks in Guinea but the serotype was not established. World Reference Laboratory (WRL) received samples from Mauritania that were found to be serotype A of the indigenous west-Africa topotype. African topotypes of serotype O were involved in outbreaks from the Democratic Republic of Congo and from Ethiopia.

Table 11: Comparison of FMD and overall FMD situation in Africa from 2003-2006.

NO.	YEAR	No. of countries reporting	No. of outbreaks	No. of deaths
1.	2003	17	754	2,974
2.	2004	20	1,140	2,974
3.	2005	18	691	805
4.	2006	15	481	1,233

Numbers of reported FMD outbreaks are reducing with years. This can be attributed to intensified control measures instituted by countries over the years.

Table 12: Breakdown of FMD outbreaks by countries in Africa in 2006

NO.	Countries	Outbreaks	Deaths
1.	Somalia	214	286
2.	Chad	83	66
3.	Senegal	50	104
4.	Tanzania	49	47
5.	Benin	27	30
6.	Burkina Faso	20	13
7.	DR Congo	9	8
8.	Egypt	7	92
9.	Ghana	7	3
10.	Uganda	5	514
11.	Botswana	4	0
12.	South Africa	2	0
13.	Mauritania	2	24
14.	Eritrea	1	0
15.	Nigeria	1	46
	Total	481	1233

Lumpy Skin Disease (LSD)

Lumpy skin disease (LSD) is an economically important disease of cattle and can produce a chronic debility in infected cattle comparable to that caused by FMD. Severe permanent damage to hides results from the skin lesions. Serious economic losses can follow outbreaks that have a high morbidity.

In sub-Saharan Africa, LSD is now enzootic in all the countries in which it has occurred and has proved impossible to eradicate. Restrictions on cattle movement have not prevented its spread within countries and today, LSD is liable to extend its range to the East from Northeastern Africa and Egypt into the highly receptive Tigris-Euphrates delta. Further extension westwards from Egypt into N. Africa is possible and creates a danger of co-existence of LSD with the screwworm infestation. This is of considerable significance, as LSD creates multiple necrotic foci in the skin, which are suitable for oviposition by cochliomyia hominivorax.

In 2006, eighteen (18) countries reported LSD in Africa recording a total of 477 outbreaks, 19762 cases and 591 deaths. Of the countries reporting the disease during the year, South Africa reported the highest number of outbreaks 146 (30%). Geographical distribution shows that LSD outbreaks have been reported mainly in the western, eastern and southern parts of the continent. More or less the same countries have reported LSD since 2003. LSD has also continued to rank high among the OIE list A diseases reported in Africa since 2003, however, there is no significant increase in the numbers of countries reporting outbreaks and mortalities associated with the disease.

The geographical distribution of LSD in 2006 is consistent with the distribution in the previous three (3) years. Table 13 shows the comparison of LSD outbreaks in Africa since 2003 whereas 14 shows the breakdown of LSD outbreaks by countries in 2006.

Out of the 18 countries reporting LSD, 4 registered very high prevalence rates. Somali registered the highest (61%), followed by Benin (45.70%), Malawi (44.30%) and Senegal (32%). This is need to control LSD in these countries.

The geographical distribution of LSD in 2006 is consistent with the distribution in the previous three (3) years. Table 13 shows the comparison of LSD outbreaks in Africa since 2003 whereas 14 shows the breakdown of LSD outbreaks by countries in 2006.

Out of the 18 countries reporting LSD, 4 registered very high prevalence rates. Somali registered the highest (61%), followed by Benin (45.70%), Malawi (44.30%) and Senegal (32%). These is need to control LSD in these countries.

Table 13: Comparison of LSD outbreaks in Africa since 2003.

Year	No. of countries reporting	No. of outbreaks	No. of deaths
2003	19	646	1,089
2004	23	553	1,426
2005	23	345	782
2006	18	477	1,233

Table 14: The breakdown of LSD outbreaks by countries in 2006.

NO.	Countries	Outbreaks	Deaths
1.	South Africa	146	168
2.	Madagascar	76	61
3.	Swaziland	52	82
4.	Tanzania	46	54
5.	Angola	37	27
6.	Botswana	36	27
7.	Egypt	15	131
8.	Mozambique	17	15
9.	Namibia	10	2
10.	Uganda	8	12
11.	Benin	7	2
12.	Somalia	7	0
13.	Malawi	6	4
14.	Senegal	5	0
15.	Sudan	4	6
16.	Burkina Faso	2	0
17.	Lesotho	2	0
18.	Ghana	1	0
	Total	477	591

Reports made to AU/IBAR show that the prevalence rates for LSD in most countries are significantly high and this calls for intensification of control measures.

Newcastle Disease (NCD)

Newcastle diseases may affect many species of birds both domestic and wild, and is of particular concern for poultry flocks. The major concern of Newcastle disease outbreaks is its potential economic impact on the poultry industry (4). The global economic impact of NCD is enormous (14). No other poultry virus comes close and it may represent a bigger drain on the world's economy than any other animal virus. Outbreaks of NCD are extremely costly, and control measures, including vaccination, are a continuing loss to the industry.

Just like in the previous years, Newcastle disease (NCD) outbreaks were most widely distributed in the continent in 2006. Twenty (20) African countries reporting the disease recorded 466 outbreaks and 398680 deaths.

Compared to the situation of Newcastle disease in the previous years, in 2006, there were fewer countries reporting the disease and fewer numbers of outbreaks as well. However, the number of cases reported and mortalities were significantly higher during the year than in the previous three (3) years. Table 15 shows the comparison of NCS outbreaks in Africa since 2003 whereas table 16 shows the breakdown of NCD outbreaks by countries in the same year.

Table 15: Comparison of NCS outbreaks in Africa since 2003.

Year	No. of countries reporting	No. of outbreaks	No. of deaths
2003	25	612	143,770
2004	26	931	241,334
2005	23	490	63,094
2006	20	466	398680

Table 16: Breakdown of NCD outbreaks by countries in 2006.

NO.	Countries	Outbreaks	Deaths
1.	South Africa	115	376136
2.	Ghana	76	1373
3.	Benin	59	10291
4.	Tanzania	55	5560
5.	Kenya	54	68
6.	Madagascar	25	166
7.	Guinea Conakry	13	513
8.	Lesotho	13	1013
9.	Burkina Faso	10	560
10.	Mozambique	11	330
11.	Angola	8	108
12.	Uganda	8	1455
13.	Botswana	6	270
14.	Senegal	4	258
15.	Gambia	2	17
16.	Cote d'ivoire	1	50
17.	Eritrea	1	425
18.	Guinea Bissau	1	30
19.	Malawi	1	7
20.	Swaziland	1	50
	Total	**466**	**398680**

As indicated in this table, the year witnessed high outbreaks of NCD. As this could impact negatively on various poultry production systems including village poultry, it is recommended in this report that vaccination campaigns against NCD should be intensified.

Peste Petits Ruminants (PPR)

Peste Petits is an acute highly contagious viral disease of sheep, goats, and wild ruminants that is endemic in several countries in Africa (8, 13, 16, 18). Presently, PPR occurs in most African countries situated in a wide belt before the Sahara. The virus is antigenically related to Rinderpest virus which infects cattle and other large ruminants (3). PPR is considered to be one of the main constraints to improving productivity of small ruminants in the regions where it is endemic.

From a socio-economic perspective, the disease leads to bad economic impacts. It is a big threat to food security and social economy especially in Arid and Semi Arid Lands (ASALS). High disease mortalities and morbidity of shoats; high compounding socio-economic well-being of people; serious threats to livelihoods, income and trade; and the fragile agro-climate factors worsen poverty scenarios. Control of the disease involves regulatory movement of animals and vaccinations, however, insecurity in the affected areas; lack of awareness; low vaccination overages; porous quarantines; cattle rustling; unrestricted movements within and without the countries in search of pasture and water; and illegal trade temper with control measures.

In 2006, nineteen African countries reporting PPR recorded 237 outbreaks, 11819 cases, and 4206 deaths. However, there were confirmed PPR outbreaks in Uganda and Kenya (the Karamoja/Turkana cluster) but these were not reported to AU/IBAR. They were reported to World Health Organization (WHO). In 2006, Benin reported the highest number of outbreaks (89) followed by Guinea Conakry (39). Compared to the situation of PPR in the previous years, in 2006, there were more numbers of countries reporting the disease.

Geographical distribution of PPR over the last twenty years (Map 3) shows that the disease is more or less confined to the west, central and eastern parts of the continent. The increase in the number of countries reporting PPR outbreaks over the years calls for more and urgent intensification of control measures to arrest further spread of the disease to the southern parts of the continent. Table 17 shows the comparison of PPR of and overall situation 2003-2006, and table 18 the breakdown of PPR outbreaks by countries in 2006.

Table 17: Comparison of and overall PPR situation 2003-2006

YEAR	No. of countries reporting	No. of outbreaks	No. of cases	No. of deaths
2003	14	526	31,820	9,248
2004	16	714	52,038	17,480
2005	16	546	14,971	7,476
2006	19*	237*	11,819*	4206*

excludes outbreaks confirmed in Kenya and Uganda; 237 excludes outbreaks confirmed in Kenya and Uganda; 11,819* excludes numbers in confirmed outbreaks in Kenya and Uganda; and 4206* excludes numbers in confirmed outbreaks in Kenya and Uganda.

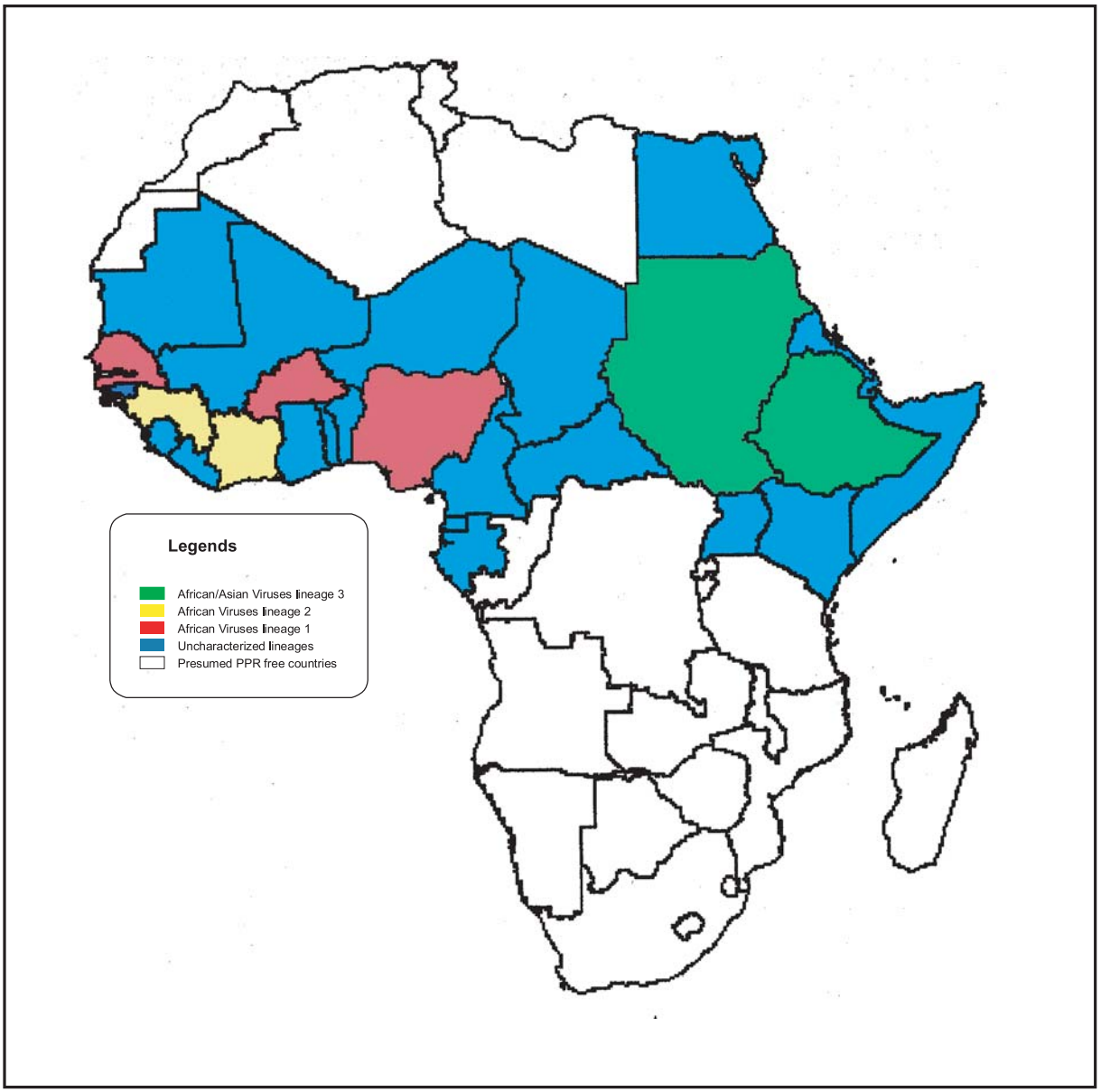
Table 18: Breakdown of PPR outbreaks by countries in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Benin	86	1619
2.	Guinea Conakry	39	909
3.	Somalia	29	680
4.	Ghana	26	29
5.	Guinea Bissau	14	296
6.	Mauritania	11	10
7.	Chad	6	15
8.	Eritrea	6	306
9.	Senegal	6	46
12.	Nigeria	4	79
13.	Senegal	4	258
14.	Congo	3	0
15.	Cote D'Ivoire	2	135
16.	Sudan	2	71
17.	Gabon	1	2
18.	Gambia	1	29
19.	Sierra Leone	1	Not recorded
20.	Kenya	Not recorded	Not recorded
21.	Uganda	Not recorded	Not recorded
	Total	237	4206

Regional approach to PPR control in Africa is highly recommended. Control should entail collective tools namely; creation of public awareness; regulatory framework; and vaccinations. Vaccination coverage should be boasted to target vaccination populations that impact positively. Vigorous vaccination is needed to create buffer zones and halt spread of the disease to presumed disease free countries.

More data is required to tell the countries where the disease is either endemic or, epidemic; and countries that are free or highly at risk. It is also highly recommended that supplementary disease (national) programs be put in place in all countries especially where the virus is endemic, countries in which the virus is epidemic, and countries highly at risk to respond immediately in case of PPR outbreaks even before partner intervention. Countries should also come up with contingency plans for PPR, and do desk simulations to confirm they work

Map 3: Breakdown of PPR outbreaks by countries in 2006



Rabies

Rabies is a zoonotic disease. Both Animal and human rabies is preventable with proper and timely administration of anti-rabies vaccine. However, if a patient does not recognize the risk associated with an animal bite, an attack by a rabid animal could lead to fatality.

Twenty African countries reported 921 outbreaks of Rabies in 2006. A total of 1072 deaths were recorded. Geographical distribution of the disease shows that it covered the entire continent. South Africa reported the highest number of outbreaks (423) followed by Tunisia (172). Table 19 shows the breakdown of rabies outbreaks by countries and species in 2006 whereas table 20 shows the breakdown of outbreaks by species.

Table 19 shows the breakdown of rabies outbreaks by countries in 2006 whereas table 20 shows the breakdown of outbreaks by species.

Table 19: Breakdown of rabies by countries and deaths in 2006 .

NO.	Countries	Outbreaks	Deaths
1.	South Africa	423	230
2.	Tunisia	172	49
3.	Tanzania	64	128
4.	Algeria	60	289
5.	Swaziland	37	52
6.	Botswana	37	35
7.	Ghana	36	26
8.	Kenya	24	24
9.	Lesotho	21	101
10.	Mauritania	10	4
11.	Uganda	8	54
12	Mozambique	8	8
13.	Angola	6	70
14.	Burkina Faso	2	2
15.	Cote d'ivoire	2	2
16.	Eritrea	1	2
17.	Guinea Conakry	1	0
18.	Benin	1	1
19.	Nigeria	1	0
20.	Senegal	1	1
	Total	921	1077

Table 20: Breakdown of rabies by species in 2006

No.	Species	Outbreaks	Deaths
1.	Canine & Feline	722	764
2	Bovine	90	200
3	SMR	53	57
4	Equine	24	29
7	Wildlife	16	16
8	Others	14	9
9.	Hum	1	1
10	Porcine	1	1
	Total	921	1077

Key: SMR = Small ruminants

Breakdown of Rabies outbreaks by species shows that overall 76.9% of the cases were reported in the canine and the feline species. Rabies is vaccine preventable and the fact that most of the animals in these species stay in close proximity with humans, this calls for urgent need to intensify control measures including creation of awareness of seeking immediate medical intervention once bitten, and intensification of vaccination campaigns.

Anthrax

Anthrax is a zoonotic disease. Usually people get it through eating and handling dead animals. During 2006, fifteen countries reported a total of 425 separate outbreaks of anthrax.

The geographical distribution of the disease in the year shows that it was mainly confined to countries in the south eastern, eastern and some western parts of the continent
(Map 4). The disease has not been reported in the previous three (3) years. In the course of the year, 425 outbreaks were reported in which 3204 cases were seen. Of these, 1387 deaths were reported. Most of the outbreaks reported 315 (74%) are from the Bovine species. The highest numbers of outbreaks came from Somalia with 254 (59.6%) outbreaks, followed by Kenya with 28 (6.6%) and Madagascar with 21 (5%).

Map 4 shows the spatial distribution of Anthrax in Africa in 2006; Table 21 the breakdown of outbreaks by country, 2006; Table 22 the distribution of anthrax outbreaks by species, 2006.

Map 4: Spatial distribution of Anthrax in Africa in 2006.

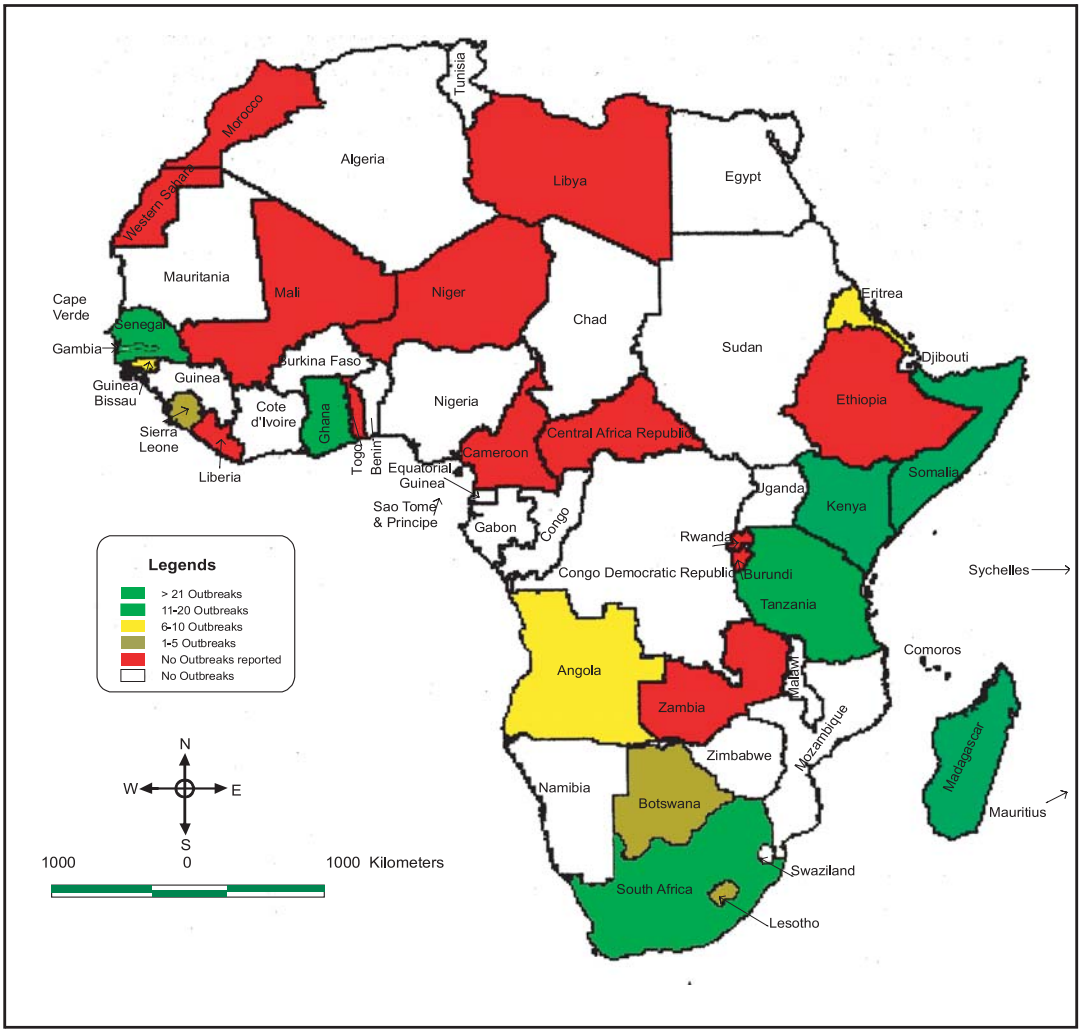


Table 21: Breakdown of Anthrax outbreaks by country, 2006.

NO.	Countries	Outbreaks	Deaths
1.	Somalia	254	655
2	Angola	7	298
3.	Kenya	28	32
4.	Madagascar	21	18
5.	South Africa	19	40
6.	Botswana	4	4
7.	Burkina Faso	19	73
8.	Guinea Conakry	16	82
9.	Tanzania	16	63
10.	Ghana	13	45
11.	Senegal	12	26
12.	Guinea Bissau	8	17
13.	Eritrea	7	59
14.	Sierra Leone	1	
15.	Lesotho	1	178
	TOTAL	426	1590

Table 22: Breakdown of Anthrax outbreaks by species, 2006.

NO.	Species	Outbreaks	Death
1.	Bovine	315	982
2.	Came	66	351
3.	SMR	30	178
4.	Equine	3	41
5.	Wildlife	8	10
6.	Porcine	2	12
7.	Others	1	3
8.	Canine & Feline	Not recorded	10
	TOTAL	425	1587

Breakdown of Anthrax outbreaks by species shows that the bovine species were the most affected in the year. This calls for Sensitization of people against eating dead animals. People should also be sensitized to seek immediate veterinary interventions whenever they notice sudden deaths of their livestock.

Heatwater

Heart water is an infectious, non-contagious, rickettsial disease of domestic and wild ruminants in areas infested by ticks of the genus Amblyomma. Heavy annual losses due to heart water infections are incurred due to acaricides, treatment costs and milk losses.

In 2006, ten countries reported heart water recording a total of 422 outbreaks and 530 deaths. These figures were significantly higher than those recorded in 2005 (269 outbreaks and 483 deaths). South Africa led in the number of outbreaks, recording 174 (41%), followed by Botswana with 112 (26%) outbreaks. Tanzania came third with 81 (19%) outbreaks. In the previous year, Botswana had the highest number of heart water outbreaks. Table 23 shows the breakdown of heart water outbreaks by countries in Africa in 2006 and table 24 the breakdown by species 2006.

Table 23: Breakdown of heart water outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	South Africa	174	96
2.	Botswana	112	189
3.	Tanzania	81	136
4.	Madagascar	33	25
5.	Mozambique	8	6
6.	Swaziland	7	4
7.	Somalia	4	3
8.	Ghana	1	0
9.	Lesotho	1	1
10.	Sudan	1	70
	TOTAL	422	530

Table 24: Breakdown of heart water by species in 2006.

NO.	Species	Outbreaks	Death
1.	Bovine	315	982
2.	Came	66	351
3.	SMR	30	178
4.	Wildlife	8	10
5.	Canine & Feline	Not recorded	10
6.	Equine	3	41
7.	Porcine	2	12
8.	Others	1	3
	TOTAL	425	1587

Key: SMR = Small Ruminants

The number of heart water outbreaks in the year was significantly high. This calls for control through implementation of an effective tick control programs using acaricides as well as regular inspection of animals and pasture for ticks.

African Horse Sickness (AHS)

African horse sickness is a non-contagious disease affecting all equidae. It has high mortality rates in horses (usually 70-95%), in mules (usually up to 50%), and in donkeys (usually up to 10%). It is endemic in central tropical regions of the continent, from where it spreads regularly to southern Africa and occasionally to Northern Africa.

African horse sickness was reported in 12 countries (Map 5) in 2006 as compared to 7 in 2003; 7 in 2004; and 5 in 2005. A total of 302 outbreaks were noted in 2006 as compared to 196 in 2003; 237 in 2004; and 264 in 2005. In the 595 cases involved in 2006, 287 deaths were recorded. The geographical distribution of the disease shows that it was mainly confined to countries in the western parts of the continent.

The same countries that reported the disease in 2003 also made reports in the subsequent years (2004 and 2005) which is was very indicative that either countries were not reporting or the disease was absent. However, year 2006 saw five (5) more countries reporting Africa Horse sickness.

Table 25 shows breakdown of AHS outbreaks by species, whereas 26 the breakdown by countries, in 2006. Table 27 shows the comparison of AHS outbreaks and related data in selected African countries (2004-2006).

Table 25: Breakdown of AHS outbreaks in Africa by species, 2006

NO.	Species	Outbreaks	Death
1.	Equine	291	272
2.	Bovine	9	13
3.	Canine & Feline	1	2
4.	Porcine	1	0
5.	Wildlife	0	0
	Total	302	287

Breakdown of AHS outbreaks by species shows that it is truly an equidae disease. The prevalence rates were significant and since outbreaks of AHS affect international trade, this calls for intensive control measures.

Map 5: Spatial distribution of AHS in Africa in 2006.

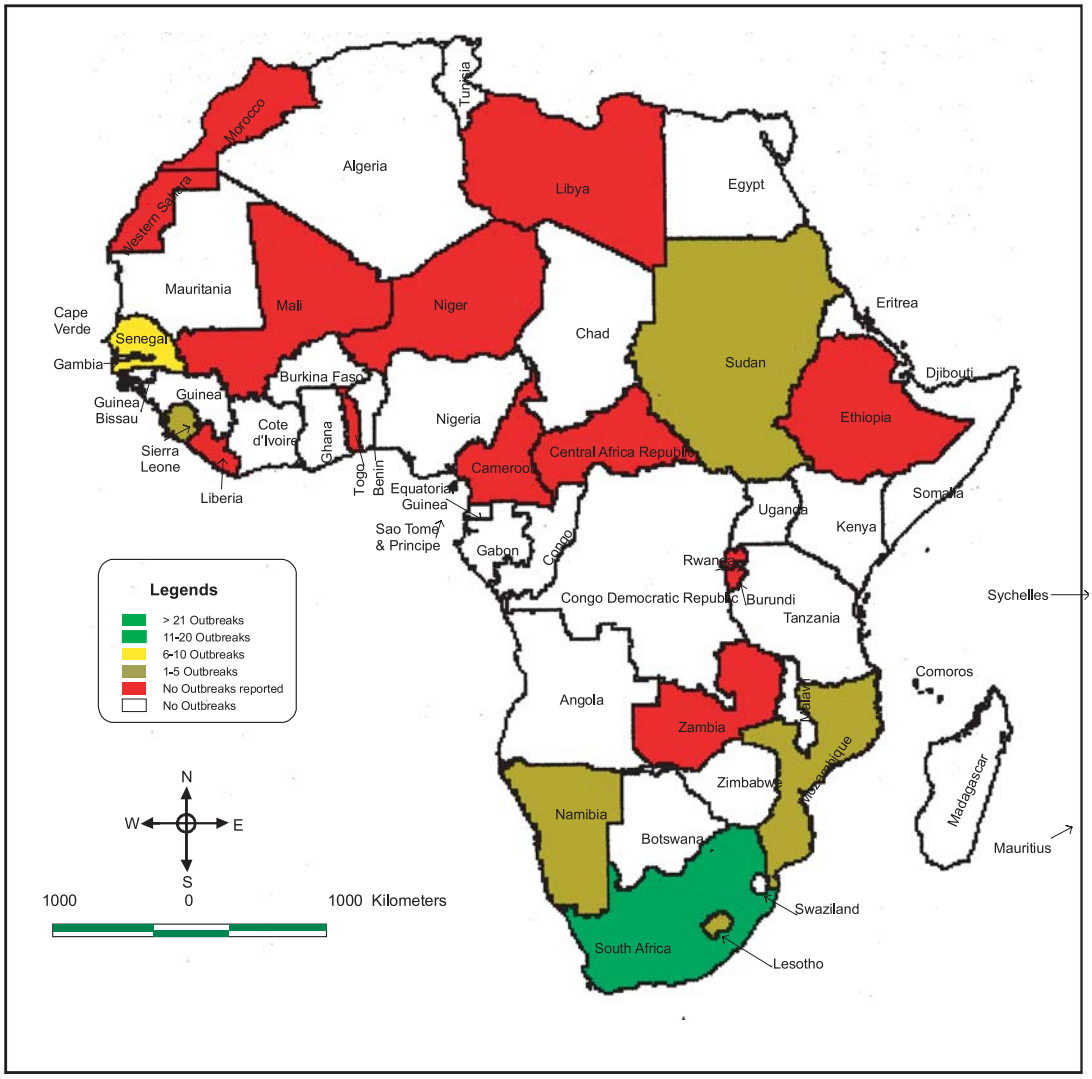


Table 26: Breakdown of AHS by countries, 2006

NO.	Countries	Outbreaks	Deaths
1.	Mozambique	19	2014
2.	Angola	12	106
3.	Guinea Bissau	8	60
4.	Benin	6	135
5.	Madagascar	6	145
6.	Malawi	6	1231
7.	Uganda	5	546
8.	Senegal	3	29
9.	Congo	2	0
10.	Ghana	2	13
11.	Nigeria	1	18
12.	South Africa	1	16
	TOTAL	71	4313

Table 27: Comparison of AHS outbreaks and related data in selected African countries (2004-2006).

NO.	Country	2004 Outbreaks	2005 Out breaks	2006 Outbreaks	2004 Deaths	2005 Deaths	2006 Deaths
1.	South Africa	191	207	1	162	59	16
2.	Ethiopia	26	50	0	237	326	0
3.	Senegal	6	6	3	7	12	29
4.	Botswana	2	1	0	2	8	0
5.	Angola	0	0	12	0	0	106
6.	Benin	0	0	6	0	0	135
7.	Congo	0	0	2	0	0	0
8.	Ghana	0	0	2	0	0	13
9.	Guinea Bissau	0	0	8	0	0	60
10.	Madagascar	0	0	6	0	0	145
11.	Malawi	0	0	6	0	0	1231
12.	Mozambique	0	0	19	0	0	2014
13.	Nigeria	0	0	1	0	0	18
14.	Uganda	0	0	5	0	0	546

Brucellosis

Brucellosis is widespread and of major economic importance in most countries of the world, particularly among dairy cattle. Infections with Brucellosis lead to late abortions, subsequent high rates of infertility, and herd economic losses in terms of milk and calf crop in bovines. From the viewpoint of human health, the disease is important because the causative organism can cause undulant fever in humans. Most cases in humans are occupational and occur in farmers, veterinarians, and butchers.

The importance of the disease in both humans and livestock is an important justification for its eradication. Control can be achieved through effective vaccination program or eradication using a test and slaughter program

During 2006, twelve countries reported 403 separate outbreaks of Brucellosis, involving 10,431 cases and 258 deaths. Brucelosis was the third most common disease reported from African countries in the previous year, contributing to 8.3% to all disease outbreaks recorded during the period. The outbreaks were reported in all regions with an exception of the central parts of the continent. Like was the case in 2004, South Africa reported the highest number of outbreaks (336), cases (5072), and deaths 187. The country alone contributed to 88% of the reported outbreaks. The breakdown of Brucellosis outbreaks by species in Africa in 2006 showed that the bovine species were the most affected followed by the small ruminants. The equine species were the least affected.

Table 28: The breakdown of Brucellosis outbreaks by countries in Africa, 2006.

NO.	Countries	Outbreaks	Cases	Deaths
1.	Algeria	18	3059	6
2.	Botswana	3	24	1
3.	Cote d'ivoire	2	28	11
4.	Eritrea	1	155	30
5.	Ghana	1	9	0
6.	Kenya	1	1	0
7.	Lesotho	2	6	0
8.	Mozambique	15	224	3
9.	South Africa	336	5072	187
10.	Swaziland	1	1	0
11.	Tunisia	17	87	0
12.	Uganda	6	1765	20
	TOTAL	403	10431	258

The breakdown of Brucellosis outbreaks by species in Africa in 2006 shows that the bovine species were the most affected. The number of outbreaks was also high and these calls for intensive control measures to be put in place. Control can be achieved through effective vaccination programs or using a test and slaughter program. Education is mandatory to sensitize people against drinking unboiled milk.

African Swine Fever (ASF)

African swine fever (ASF) is one of the most dreaded epidemic diseases of Pigs. It is dangerous because of its highly infectious nature, variety of spreading; high morbidity rates and lack of specific treatment or vaccine. ASF is the main threat to the development of the African pig industry. Heavy losses are experienced in areas of high pig production. Re-emergence of the disease in 1994 in Africa has devastated pig production in many countries and the situation in others needs to be clarified. Its extremely high potential for Tran- boundary spread has placed all the countries in the region in danger and has raised the spectre of ASF once more escaping from Africa.

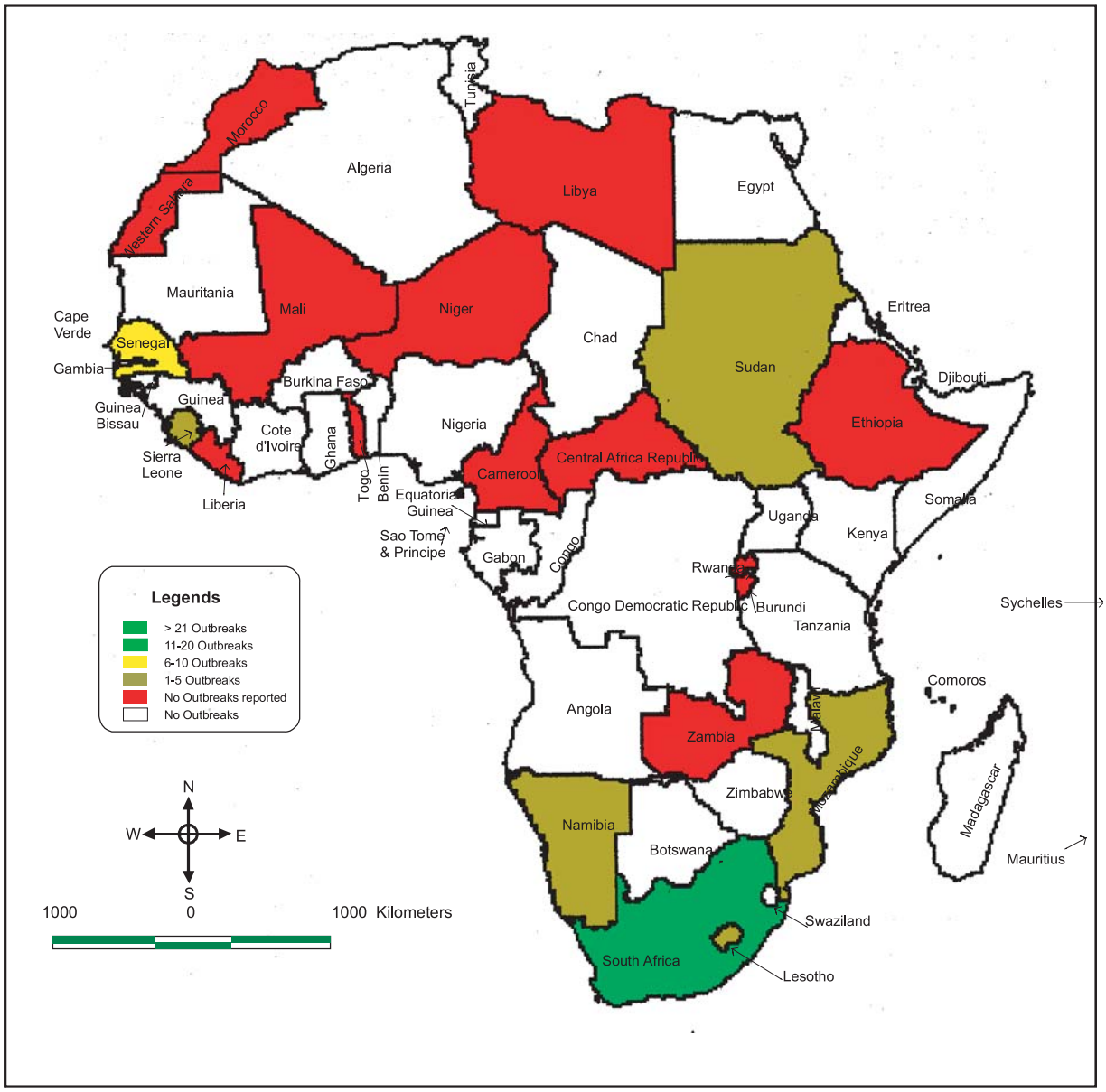
ASF is a disease of growing importance for global food security and household income.

In recent years, ASF epidemics have devastated pig herds in the cote d'ivoire, Benin, Nigeria, Togo, and most recently in Gambia, Ghana, and Madagascar. The 199 epidemic in Ghana was finally brought under control by a major surveillance operation, strict border controls, heightened public awareness, and a market value compensation scheme for slaughtered pigs.

In 2001, outbreaks of ASF were reported in Benin, DRC Congo, Mozambique, Senegal and Togo. In 2006, ASF was reported in 13 countries namely Senegal, Gambia, Guinea Bissau, Togo, Benin, Nigeria, Congo, Uganda, Burundi, Rwanda, Malawi, Mozambique, South Africa, Zambia, and Angola. Fifteen countries reported ASF in 2003; twenty-one 2004; and seventeen in 2005. In the previous three (3) years, the disease was recorded more in western, southern, eastern and central African regions with Togo recording very high prevalences. The geographical distribution of the disease in 2006 shows that outbreaks of AFS are more or less reported by the same countries since 1999.

The 1999 epidemic in Ghana was finally brought under control by a major surveillance operation; strict border controls; highted public awareness; and a market value compensation scheme. Since Ghana seems to have brought ASF under control, it is recommended that other countries affected should borrow a leave from this country. Map 6 shows the spatial distribution of ASF in Africa in 2006.

Map 6: The spatial distribution of ASF outbreaks in Africa 2006.



3.3. DETAILED DISEASE SITUATION (BY OTHER IMPORTANT DISEASES)

Trypanosomiasis

Twelve (12) African countries in Africa reported 730 outbreaks of Trypanosomiasis in 2006. During the outbreaks, a total of 714 deaths were registered. Somalia reported the highest number of trypanosomiasis outbreaks (414) during 2006 followed by Tanzania (149), and Benin (119). Information made available in the reports indicates that bovine is the species most affected during these outbreaks.

Numbers of outbreaks, cases and mortalities recorded in the year where significantly higher than those recorded in the previous three (3) years. Table 29 shows the comparison of and overall Trypanosomiasis situation 2003-2006; and table 30 the breakdown of trypanosomiasis outbreaks by country.

Table 29: Comparison of and overall Trypanosomiasis situation 2003-2006.

YEAR	No. of countries reporting	No. of outbreaks	No. of deaths
2003	13	320	564
2004	8	424	765
2005	14	120	370
2006	12	730	714

Table 30: Breakdown of Trypanosomiasis outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Somalia	414	250
2.	Tanzania	149	141
3.	Benin	119	199
4.	South Africa	14	0
5.	Tunisia	11	11
6.	Uganda	8	17
7	Angola	5	17
8.	Mozambique	5	30
9.	Ghana	2	49
10.	Eritrea	1	30
11.	Ghana	1	0
12.	Kenya	1	0
13.	Malawi	1	0
14.	Sierra Leone	1	Not recorded
	TOTAL	730	714

Breakdown of Trypanosomiasis outbreaks by species in Africa in 2006 showed that the bovine, the camel, the Equine, the small ruminants and the porcine species were affected in the same order of prevalence.

Bluetongue

Unlike were the cases in 2005 where the disease was not reported, and the case in 2004 where the disease was reported in only two African countries; in 2006 bluetongue was reported in six countries. A total of 69 outbreaks and 274 deaths were recorded. The majority of the cases and 274 deaths were reported in South Africa, where 591 of the total outbreaks in Africa were registered. South Africa has consistently reported high cases of the disease since 2003. Table 31 shows the breakdown of Bluetongue outbreaks by countries in Africa 2006.

Table 31: The breakdown of Bluetongue outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	South Africa	30	196
2.	Algeria	28	36
3.	Lesotho	5	1
4.	Tunisia	4	4
5.	Botswana	1	32
6.	Namibia	1	5
	Total	69	274

The breakdown of Bluetongue outbreaks by species in Africa 2006 showed that out of the two species affected (the bovine and the small ruminants) the bovine species was the most affected.

Babesiosis

Babesiosis was reported in nine countries in Africa (Map 7) in 2006. The disease has been not recorded in the previous three years. In 2006, 288 outbreaks were reported in which 412 deaths were involved. The geographical distribution of the disease indicates that the outbreaks were recorded mainly in southern Africa countries with South Africa recording the highest number of outbreaks 90 (31%). The highest numbers of disease outbreaks, cases involved and mortalities were recorded in the Bovine species.

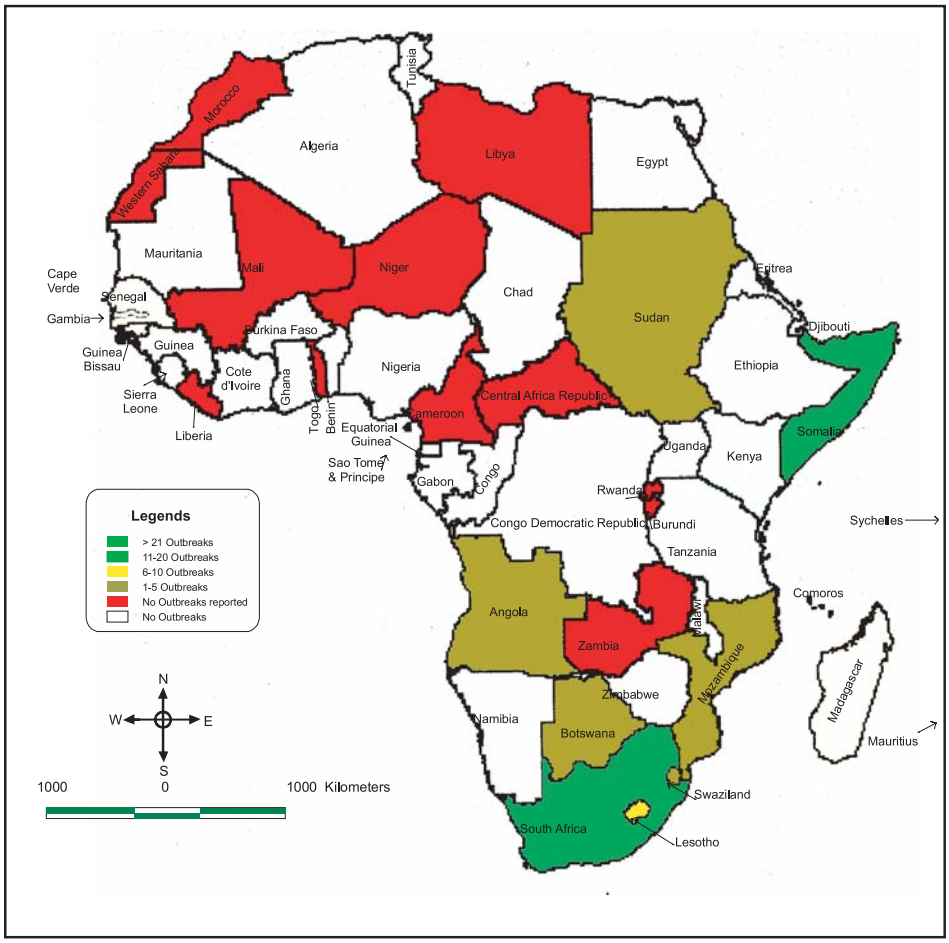
Table 32 shows the breakdown of Babesiosis outbreaks by countries and map 8 the spatial distribution of Babesiosis outbreaks in Africa in 2006.

Table 32: Breakdown of Babesiosis outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Tanzania	151	120
2.	South Africa	90	220
3.	Somalia	26	53
4.	Lesotho	8	0
5.	Mozambique	5	11
6.	Swaziland	4	4
7.	Botswana	2	0
8.	Sudan	1	4
9.	Angola	1	0
	TOTAL	288	412

The breakdown of Babesiosis outbreaks by species in Africa in 2006 shows that the bovine, canine& feline, and wildlife species in that order of prevalence.

Map 7: Spatial distribution of Babesiosis outbreaks in Africa in 2006



Anaplasmosis

Economic losses in anaplasmosis infections are associated with severe debility, emaciation, anemia, and jaundice.

Anaplasmosis was reported in seven countries in Africa in 2006. The disease was not reported in the previous three (3) years. In 2006, 334 outbreaks were recorded involving 268 deaths. The geographical distribution of the disease shows that it was mainly recorded in the southern parts of the continent.

The breakdown of Anaplasmosis outbreaks in Africa by species shows that out of the two species affected (bovine and small ruminants), the bovine species were the most affected.

CCPP

Small ruminants in Africa represent 21% of the world's small ruminant population. The population of sheep represents 17% of the total world sheep population, while goats represent 30% of the world's goat population. In 2006, Contagious Caprine Pleural Pneumonia (CCPP) was reported in three countries only. Out of 289 outbreaks, a total of 3,439 deaths were recorded.

The breakdown of the distribution of CCPP outbreaks in Africa in 2006 showed that Somalia had the highest number of outbreaks (246), followed by Tanzania (41). Eritrea had the lowest number of outbreaks (2).

Black quarter

During 2006, sixteen countries reported a total of 381 separate outbreaks of Black quarter. The geographical distribution of the disease shows that it was reported in most of the continent with the exception of the north and the central. This was consistent with the distribution of the disease in the previous year.

In the year, 381 outbreaks were reported (as compared to 537 in the previous year) in which 11630 cases (as compared to 2709 in the previous year) were seen. Of these 1590 deaths (as compared to 128 in the previous year) were reported. The year 2006 therefore recorded fewer outbreaks; more cases; and higher mortalities of black quarter than the previous year.

Table 33: The breakdown of black quarter outbreaks by in Africa country, 2006

NO.	Countries	Outbreaks	Deaths
1.	Somalia	202	530
2.	Tanzania	64	562
3.	Burkina Faso	23	114
4.	Angola	22	309
5	South Africa	21	66
6.	Lesotho	14	58
7.	Uganda	8	343
8.	Swaziland	6	100
9.	Benin	5	15
10.	Botswana	5	7
11.	Sudan	3	27
12.	Guinea Bissau	3	7
13.	Ghana	2	9
14.	Senegal	2	11
15.	Malawi	1	1
16.	Sierra Leone	1	Not recorded
	TOTAL	381	2159

Table 34: Breakdown of Black Quarter outbreaks in Africa by species 2006.

NO.	Species	Outbreaks	Deaths
1.	Bovine	345	2130
2	Camel	28	18
3.	Canine & Feline	1	2
4	SMR	7	9
	TOTAL	381	2159

Key: Small ruminants

The table shows that cattle were more affected than the other species

East Coast Fever (ECF)

East Coast fever is a tick borne protozoal infection of cattle in East and Central Africa. The disease is transmitted by infected ticks, *Rhipicephalus appendiculatus* (Brown ear tick). The disease is one of the major disease constraints to cattle development. Control of the disease is feasible but requires careful planning and any tick control measures must consider other local tick-borne diseases. In the absence of veterinary or technical help, stockmen and farmers should learn how to take blood smears and lymph biopsy smears to send them to the laboratory for diagnosis.

Tick control, vaccination, and chemotherapy are the three main methods in the control of the disease. Dipping cattle in acaricide supported by movement control can prevent cattle and wild animals from straying into the control areas and introducing infected ticks.

During 2006, seven countries reported 280 separate outbreaks of East Coast Fever (ECF), with 3847 cases and 614 deaths. The disease was reported mainly in the eastern part of the continent. Table 35 shows the breakdown of ECF outbreaks by countries in Africa in 2006.

Table 35: Breakdown of ECF outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Kenya	9	2
2.	Mozambique	4	0
3.	South Africa	1	0
4.	Sudan	1	8
5.	Tanzania	224	596
6.	Tunisia	40	6
7.	Uganda	1	2
	Total	280	614

Breakdown of ECF outbreaks by species in Africa in 2006 shows that the bovine species were the most affected followed by the small ruminants.

Infectious Bovine Rhinotracheitis (IBR)

In 2006, five countries reported IBR recording a total of 29 outbreaks, 12290 cases and 6290 deaths. Ghana reported the highest number of outbreaks 18 (62%). The disease was not reported in the previous three years (2003-2005). Table 36 shows the breakdown of IBR outbreaks by countries in Africa in 2006.

Table 36: The breakdown of IBR outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Angola	2	17
2.	Botswana	5	46
3.	Ghana	18	1226
4.	South Africa	3	1
5.	Uganda	1	5000
	Total	29	6290

Tuberculosis

Bovine tuberculosis is significant zoonoses that can spread to humans through aerosis and by ingestion of raw milk. It is the world's second deadliest infectious disease, which is now the leading cause of death for people with HIV/AIDS.

Economic losses occur in cattle and African Buffalos from deaths, chronic disease, and trade restrictions. Control measures usually include early diagnosis with the tuberculin test, segregation, or slaughter of infected animals, tracing and containment of animals that have been in contact with reactors.

Most African countries do not do routine diagnosis for Tuberculosis and the reported cases are usually from the slaughterhouses. In the year, a total of nine African countries reported 176 outbreaks of Tuberculosis. A total of 2065 cases and 8 deaths were recorded. Geographical distribution of the disease shows that it covered mainly the southern part of the continent with a few countries in the eastern (1), western (2) and northern (2) parts of the continent reporting the disease. Tunisia reported the highest number (105) of tuberculosis outbreaks in the years.

Breakdown of tuberculosis outbreaks by species shows that overall (98.9%) of the cases were reported in the bovine. Table 37 shows the breakdown of tuberculosis outbreaks by countries in 2006.

Table 37: Breakdown of tuberculosis outbreaks by countries in Africa in 2006.

No.	Countries	Outbreaks	Deaths
1.	Tunisia	105	Not recorded
2.	Benin	18	0
3.	Ghana	18	0
4.	Algeria	9	0
5.	Angola	12	0
6.	Mozambique	6	2
7.	South Africa	6	0
8.	Kenya	1	5
9.	Malawi	1	1
	Total	176	8

Malignant Catarrhal Fever (MCF)

A total of five African countries reported 54 outbreaks of MCF in 2006. A total of 131 cases and 80 recorded. Geographical distribution of the disease shows that it covered mainly the southern part of the continent with no reports received from either the western, eastern and northern parts of the continent.

Breakdown of MCF outbreaks by species shows that overall (98.%) of the cases were reported in the bovine. Table 38 shows the breakdown of MCF outbreaks by countries in 2006.

Table 38: Breakdown of MCF outbreaks by countries in Africa in 2006.

No.	Countries	Outbreaks	Deaths
1.	South Africa	51	72
2.	Botswana	1	0
3.	Lesotho	1	1
4.	Swaziland	1	7
	Total	54	80

Pasteurellosis

Infections with Pasteurellosis are of public health importance in Africa and every year, the livestock industry undergoes heavy losses due to the disease. It is a disease of mammals including cats, dogs, rabbits, some birds and fish. Pasteurellosis in humans is associated with close animal contact, namely a cat bite.

In 2006, seven African countries in Africa reported 106 outbreaks of pasteurellosis in 2006. During the outbreaks, a total of 1815 cases and 1373 deaths were registered. Although the number of mortalities due to pasteurellosis was significantly high in 2006 (1373) than the previous year (658), the number of outbreaks was very low in 2006 (106) than that recorded in the previous year (1230).

Burkina Faso reported the highest number of pasteurellosis outbreaks (48) during 2006. Information made available in the reports indicates that bovine was the species most affected during these outbreaks. Table 39 shows the breakdown of pasteurellosis outbreaks in Africa in 2006 by countries and table 40 the breakdown by species.

Table 39: Breakdown of pasteurellosis outbreaks in Africa by countries in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Burkina Faso	48	237
2.	Senegal	23	148
3.	Benin	12	14
4.	Botswana	11	39
5.	Lesotho	10	49
6.	Madagascar	1	0
7.	Sierra Leone	1	Not recorded
	Total	106	487

Table 40: Breakdown of pasteurellosis outbreaks by species in Africa in 2006.

NO.	Species	Outbreaks	Deaths
1.	Bovine	55	176
2.	SMR	48	300
3.	Avian	2	11
4.	Porcine	1	0
	Total	106	487

Key: SMR = Small ruminants

Avian Pox

This is a disease of poultry. It is a common viral disease of commercial poultry (Chicken and turkeys) as well as of pet and wild birds. Fowpox is an economically important disease of commercial poultry because it can cause a drop in egg production and mortality.

In 2006, the disease was reported in two countries in Africa. It was recorded in Guinea Bissau and Madagascar. Avian Pox had not been recorded in Africa in the previous three years. In 2006, 9 outbreaks were recorded 168 deaths.

Breakdown of avian pox outbreaks by countries in 2006 shows that Madagascar had the highest number of outbreaks followed by Guinea species whereas map 9 shows the spatial distribution of avian pox in Africa in 2006.

The breakdown of Avian pox outbreaks by countries in Africa in 2006 shows that only two countries, Madagascar and Guinea Bissau reported the disease, with the former reporting the highest number of outbreaks.

Botulism

During 2006, Botulism, which had not been reported in the previous three years, was reported in three countries only. Seven outbreaks were reported involving eight deaths. The disease was reported in Senegal, Congo, and Swaziland with Senegal reporting the highest number of outbreaks.

Cysticercosis

Only two countries (Angola and South Africa) reported Cysticercosis in 2006 recording a total of 27 outbreaks and 29 deaths. Majority of the deaths were reported in South Africa, where 16 of the total outbreaks in Africa were registered. The breakdown of Cysticercosis outbreaks by countries in 2006 shows that the bovine species was the most affected.

Coccidiosis

In 2006, a total of 11 outbreaks involving 1,789 deaths of coccidiosis were reported in Africa. The breakdown of Cocciddiosis outbreaks by species in Africa 2006 shows that the avian species was the most affected.

Mange

Six African countries in Africa reported 232 outbreaks of mange in 2006. During the outbreaks, a total of 11745 cases and 437 deaths were registered. South Africa reported the highest number of mange outbreaks (65) during the year. Information made available in the reports indicates that the small ruminants were the most affected during these outbreaks. Table 41 shows the breakdown of mange outbreaks in Africa in 2006 by country and table 42 breakdowns of outbreaks by species.

Table 41: Breakdown of mange outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Somalia	71	89
2.	South Africa	65	8
3.	Lesotho	38	73
4.	Ghana	33	194
5.	Angola	17	73
6.	Swaziland	8	0
	Total	232	437

Table 42: Breakdown of mange outbreaks by species in Africa in 2006.

NO	Species	Outbreaks	Deaths
1.	Porcine	7	0
2.	Equine	5	0
3.	Bovine	4	45
4.	Canine & Feline	2	3
5.	SMR	214	389

Key: SMR = Small Ruminants

The table shows that the small ruminants were the most affected.

Dermatophilosis

During 2006, nine countries reported a total of 112 outbreaks of dermatophilosis. During the outbreaks, 1073 cases and 84 deaths were recorded. The highest number of outbreak was recorded in Madagascar (81outbreaks). Available information showed that among the species affected, the bovine was the most affected. Table 43 shows the breakdown of dermatophilosis in Africa by countries.

Table 43: Breakdown of dermatophilosis outbreaks by countries in Africa in 2006.

NO.	Countries	Outbreaks	Deaths
1.	Madagascar	81	10
2.	Burkina Faso	9	44
3.	Angola	4	3
4.	Benin	4	2
5.	Ghana	4	2
6.	Lesotho	4	0
7.	Mozambique	2	6
8.	Senegal	2	2
9.	Somalia	2	15
	Total	112	84

4.0 PROGRESS MADE IN RINDERPEST ERADICATION IN AFRICA

The Pan-Africa program for the control of Epizootics (PACE) was conceptualized to build on the headway made by the Pan Africa Rinderpest eradication Programme (PARC) in the campaign against rinderpest. These efforts in Africa are part of global efforts under the coordination Global Rinderpest eradication Programme (GREP) of Food and Agriculture Organization (FAO) of the United Nations (UN). The major objective of the PACE program has been the eradication of Rinderpest (RP) from the African continent in line with GREP and aims to achieve global eradication of RP by the year 2010.

The PACE program also espoused the further strengthening of sustainable animal health delivery systems among the 30 participating countries, in particular, the establishment of epidemiological surveillance systems, both at National and regional levels capable of meeting the World organization of Animal Health (OIE) pathway requirements for recognition of freedom from specific diseases, such as rinderpest, FMD, CBPP, and Bovine Spongiform Encephalopathy (BSE).

Africa is making good progress in eradicating the disease in a verifiable manner. During the year, the activity was undertaken by the Pan African program for the control of epizootics/Somali Ecosystem Rinderpest Eradication Coordination Unit (PACE/SERECU) under the auspices of AU/IBAR and financed by the European Union. Main activities of rinderpest eradication coordinated by PACE/SERECU and implemented by 30 National programs consisted of surveillance for verification of presence or absence and in the case of proven absence certification following the OIE pathway for the eradication of rinderpest.

4.1 Progress made in West and Central Africa

RP outbreaks have not been reported in west and central Africa in the last 18 years. Nearly half the countries have been recognized as being free from infection, while for the remainder, the focus is on verifying absence of disease and/or infection. Thus during the year, in addition to ***Benin, Senegal*** and ***Togo*** that got their freedom from infection in 2005, ***Burkina Faso, Congo, DR Congo, Guinea Conakry, Guinea Bissau*** and ***Mali*** were recognized free from infection.

Although ***Ghana*** and ***Niger*** applied for the same, their applications were rejected on the basis that they provided insufficient information and have since re-submitted their dossiers for consideration. Also submitting dossiers for consideration of freedom from infection in this region ***are Cote d'Ivoire, Gambia, Mauritania***, and ***Nigeria. Cameroon, CAR*** and ***Gabon*** have submitted their dossiers for recognition of disease freedom. ***Equatorial Guinea*** has applied for recognition of freedom from infection on historical basis.

Regarding freedom from disease status, ***Chad*** was recognized free during the year, while ***Cameroon*** dossier was not submitted to OIE in time for OIE consideration. ***Central Africa Republic (CAR)*** stooped vaccination against RP in the part of the ex-cordon in December 2003 and declared the whole country provisionally free from RP in February 2004. Table 44 shows Rinderpest status with regard to the OIE Pathway in PACE countries of West and Central Africa as of May 2006

Table 44: Rinderpest status with regard to the OIE Pathway in PACE countries of West and Central Africa as of May 2006

Country	Provisionally free	Freedom from disease	Freedom from infection
Benin	1999	2003	2005
Burkina Faso	1998	2003	2006
Cameroon	1999		
CAR	2004		
Congo**			2006
Chad	2002	2006	
DR Congo**	2003 (ZB)		2006
Côte d'Ivoire	1997	2004	
Gambia	1990		
Gabon	2005		
Ghana	1997	2003	
Guinea Conakry	1996	2003	2006
Guinea Bissau**	2003		2006
Mali	1997	2003	2006
Mauritania	1999	2003	
Niger	1999	2003	
Nigeria	1998	2004	
Senegal	1997	2003	2005
Togo	1996	2003	2005

**** Freedom from infection on historical basis**
Source: OIE, Updated 26-Sep-2006

4.2 Situation in East Africa

The PACE program has yielded important results including establishment of epidemiological surveillance systems/networks at national and continental levels. RP has been eradicated from the continent with the exception of the Somali Ecosystem (SES) where some doubts still exist about the circulation of the virus, based on evidence of a disease syndrome in cattle consistent with mild rinderpest. The SES is a zone occupied by the Somali ethnic community and their livestock and adjacent areas into which these animals are moved for pasture or trade purposes. In accordance with the epidemiological situation, it is defined as 27 Woredas of South East Ethiopia, the surveillance and infected zones of Kenya and Southern Somalia. As the SES could conceivably constitute the last focus of rinderpest in the world, the rest of Africa is immediately vulnerable to another epizootic. During the year, intensive rinderpest surveillance was conducted particularly in this presumed last RP foci.

Results from sera collected in 2006 from several herds covering large areas of Somali Eco-System did not show evidence of rinderpest virus circulating. Similarly, clinical and serological surveillance in wildlife, important sentinel species in rinderpest surveillance, did not show the presence of the virus. Sera collected from desert warthogs *(Phacochoerus aethiopicus),* giraffes and buffaloes in various areas within the SES were all negative for RP.

4.2.1 Coordination of Rinderpest eradication in the Somali Ecosystem

In the realization that final eradication of rinderpest from the Somali Ecosystem is synonymous with final rinderpest eradication in the world, and in the recognition that addressing rinderpest eradication in an isolated manner by individual countries forming part of the ecosystem is less productive than a coordinated approach, PACE took a step in establishing a special unit, which deals only with Somali Eco-system and coordinates rinderpest activities there. During the year, a structure called Pan African program for the control of epizootics/Somali Ecosystem Rinderpest Eradication Coordination Unit (PACE/SERECU) was established. PACE/SERECU was established within the Animal Health Unit of AU/IBAR to dynamically manage a scientific-based, coordinated and time bound regional program with the end point being the verification of absence of RP infection and OIE accreditation for RP in the ecosystem. One of the unit's achievements was development of a strategy plan 'Participatory Disease Search' (PDS) as a special application of participatory epidemiological method in Ethiopia, Kenya and Somalia. The capacity for monitoring wildlife disease and undertaking sera-surveys particularly in relation to RP was also established in East Africa and there was improved awareness of the methodology in west and central Africa.

4.3 Progress of African countries along the OIE pathway

To date, significant progress has been made by African PACE member countries in the eradication of rinderpest-especially countries in West and Central Africa. Overall, as of May 2006, 28 out of 30 (93.33%) of the PACE participating countries had declared their countries or a zone of country at least provisionally free from rinderpest. Twelve (42.86%) of which are free from infection, 5 of them on an historical basis. Only two countries (Equatorial Guinea and Somalia) have not made any declaration.

In most countries, the wildlife surveillance has been integrated into the National disease monitoring strategy, specifically for RP eradication and verification of absence according to the OIE pathway.

4.3.1 Progress made in East Africa Excluding the SES countries

Although east Africa is presumed to contain infection, there has been considerable progress made along the OIE pathway by most countries. Eritrea got recognition of freedom from infection in 2005 but on historical basis. At the same time Sudan and Uganda got OIE recognition of freedom from disease. Sudan was recognized free from disease in 2005 and has subsequently applied for recognition of freedom from infection. Djibout has applied for recognition of freedom from infection on historical basis. Table 45 shows Rinderpest status with regard to the OIE pathway in PACE countries of East Africa excluding the SES countries as of may 2006.

Table 45: Rinderpest status with regard to the OIE Pathway in PACE countries of East Africa excluding the SES countries as of May 2006.

Country	Provisionally free	Freedom from disease	Freedom from infection
Burundi	2003		2006
Eritrea	1999	2004	2005
Djibouti	2003		
Rwanda	2003		2006
Tanzania	1998	2005	
Sudan	2004	2006	
Uganda	2002	2006	

***Source**: OIE, Updated 26-Sep-2006 2006*

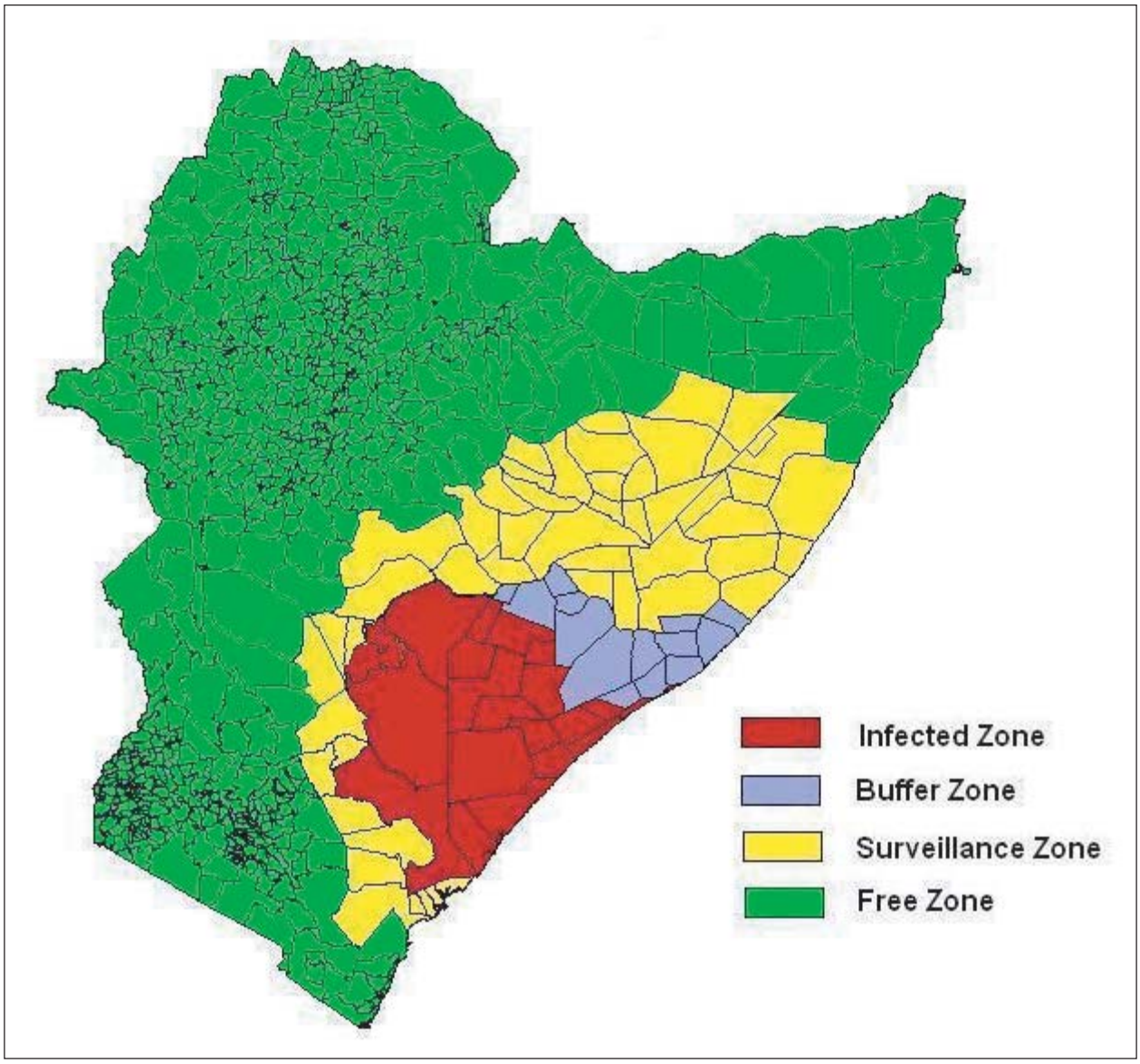
4.3.2 Progress made in the Somali Ecosystem

The presumed last remaining foci of the rinderpest virus are in the Somali ecosystem (SES), a region historically described as the zone occupied by the Somali ethnic community and their livestock and adjacent areas into which these animals are moved for pasture or trade purposes.

In accordance with the epidemiological situation, the SES is defined as 27 woredas (Region V) of Ethiopia, the surveillance and infected zones of Kenya, and Southern Somalia. The presumed persistent infection is due to lineage 2 rinderpest virus that causes only mild or no disease at all in cattle, while causing moderate to severe disease in susceptible wildlife populations.

On this premise, the Somali Ecosystem Rinderpest Coordination Unit (SERECU) was established within AU/IBAR/PACE in order to manage and coordinate the final eradication of rinderpest from the SES, and by extension, the three countries of Ethiopia, Kenya and Somalia. Map 8 shows SES zonation, may 2006.

Map 8 : SES Zonation, May 2006.

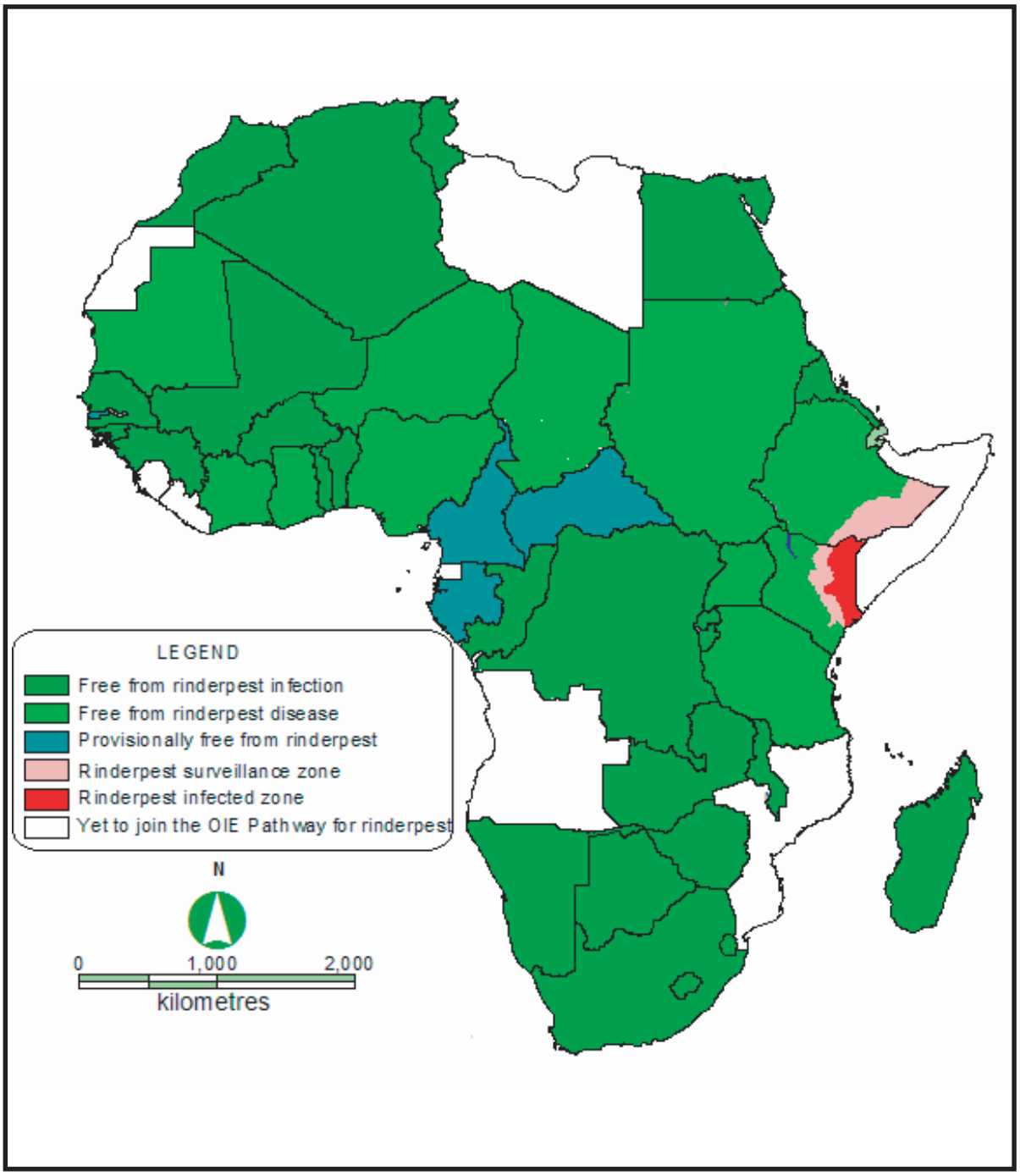


4.3.3 Progress made in non-PACE member countries

Since 2005, AU/IBAR has been assisting non-PACE participating countries in Africa in progressing along the OIE pathway. As of May 2006, all the non-PACE participating countries had gotten freedom from infection except Liberia, Sierra Leone, Angola and Mozambique. Mozambique has already prepared a draft dossier.

The current situation of rinderpest in Africa with regards to progress along the OIE pathway is depicted in Map 9.

Map 9: Status of Rinderpest in Africa with regard to OIE Pathway, May 2006



4.4 Assessment of the Veterinary Service Delivery Systems in the Somali Eco-System

4.4.1 Study background

Rinderpest eradication is a global objective and the African Union/Inter African Bureau for Animal Resources (AU/IBAR), through the Pan African Programme for the control of Epizootics (PACE), is spearheading the eradication campaign in the African continent. The region termed the "Somali Eco-system" (SES) is presumed to harbor the last foci of Rinderpest in the world. A part from the disease risk posed by these foci there is also a considerable negative economic impact on the market value of livestock with consequent adverse effect on the livelihoods of the pastoralists' communities.

The potential for livestock production in the Somali Eco-system, that has more than seven million cattle, is huge but is generally unexploited and the sector is also seriously undervalued due to various factors of which livestock diseases including Rinderpest have a major impact. Other factors affecting productivity include poor livestock husbandry practice and management, poor nutrition both in quantity and quality and poor marketing infrastructures. The importance of the livestock sub-sector and its potential contribution towards eradication of poverty and food security of households constitute a legitimate case for more attention in terms of resource allocation and investment.

During the year, in recognition of the importance of livestock disease control in poverty reduction and for maintaining functioning, community based disease surveillance networks in the final stages of the fight against Rinderpest, the Inter African Union/Inter African Bureau for Animal Resources/Somali Ecosystem Rinderpest Eradication Coordination Unit (AU/IBAR/SERECU) commissioned a three man consultancy team to evaluate the current and assess the required capacity of the veterinary service delivery systems in the SES. A primary purpose of the mission's work was to support the AU/IBAR/SERECU in their endeavor to finally eradicate Rinderpest from the African continent and to leave in place sustainable livestock disease control and surveillance systems.

The goal of the study was to provide the necessary information for strengthening the animal health service delivery systems within SES and consequently upgrade disease surveillance to a high enough standard appropriate for the eradication of Rinderpest, and other economically important trans-border diseases, from the region. It was intended that the study would provide critical input for the creation of a coordinated and sustainable animal health service as sought by the livestock keepers and thereby solicit their necessary and willing participation in the final stages of the global Rinderpest eradication program.

4.4.2 Study objectives

The study objectives were as follows:

- Assessment of the current situation of animal health Service Delivery Systems in SES
- Assess the networks (if any) of vet-paraprofessionals that are supervised by private and public veterinarians in the area.
- Assess roles and linkages between the different players in veterinary services currently on ground including the public and private sectors; professional organizations; associations; NGOs; community Based Organizations; and the communities
- Identify gaps of service delivery and suggest ways this can be alleviated, particularly how the objectives of AU/IBAR/SERECU can be achieved in the SES.

4.4.3 Summary of results

The delivery of animal health services in the whole of the SES is under-resourced, often requiring staffing and transport reinforcement when specific delivery tasks are to be implemented. The challenging environment that includes long distances between centers, poor infrastructure, prolonged droughts, limited communications, insecurity, high service delivery costs and frequent movement of the community and their livestock is unfavorable for the delivery of conventional veterinary services by either the private or public sector.

In Ethiopia and Kenya, the Government mainly undertakes the delivery of veterinary services, including vaccination and disease surveillance, with some assistance from NGOs, CAHWs and the livestock keepers themselves. Private sector involvement is extremely limited. In Ethiopia the Government veterinary service is thin on the ground and in Kenya the majority of Government staff are based at the District Headquarters whilst both services are poorly equipped. The NGOs with collaboration with the Government are supporting the establishment of community animal health service delivery system with limited prospects for sustainability.

In Ethiopia, the Government is operating small drugs shops/clinics, which are inadequately equipped and stocked. The private sector on the ground mainly consists of small retail drug outlets with weak lines of supply. The livestock keepers, sourcing drugs from various sources including inferior and fake drugs from unqualified persons, are also providing curative services mainly for their own animals. In Kenya, the private sector is generally under-developed, and consists principally of retail drugs shops, pharmacies and unlicensed drug dealers. There is only one private veterinary practice, located in Wajir, whose activity is largely limited to the sale of drugs.

In central and Southern Somalia, by contrast, the delivery of animal health services is dependent on the private sector; there is no Government service at all. The service provision is mainly by Veterinarians, Animal Health Assistants, Community Animal Health Workers, NGOs and Livestock keepers. The NGOs train and facilitate the work of the professional associations, support establishment of drug stores and the provision of drugs, and also carry out disease surveillance, treatment and other animal health interventions.

The detailed findings on the current status of animal health service delivery in the SES specific to each of the three countries, as well as the intervention gaps recommended for each country are available at AU/IBAR in the report on ***"An assessment of Veterinary Service Delivery Systems in the Somali eco-system"***. (5)

Much as challenges faced by individual countries in terms of veterinary service delivery could be specific to each country, for the purposes of the results obtained in this study, African countries could be grouped into three in terms of constraints identified in veterinary delivery of veterinary systems. For example, constraints faced in delivery of veterinary services in countries were we have a central veterinary department were represented in this case by the Kenyan situation; constraints faced in delivery of veterinary services in countries were we have a decentralized veterinary service delivery system was represented by the Ethiopian case; and a countries were we have no central Government and hence delivery of veterinary services is done by organized bodies and Non Governmental Organization were represented in this case by the Somalia situation. Therefore, results of this study are relevant to all African country.

5. SITUATION OF AVIAN INFLUENZA IN AFRICA IN 2006

5.1 Highly Pathogenic Avian Influenza (HPAI)

Highly Pathogenic Avian Influenza (HPAI) caused by H5N1 influenza virus is an emerging zoonotic Transboundary Disease. It can result in catastrophic production losses; negatively affect food security; disrupt trade in animal products in the increasingly globalizing world; and in addition, due to zoonotic status, be harmful to human health. The disease therefore has disaster implications (7). Its occurrence in a country constitutes a major constraint to profitable livestock operations and pose a very high risk for Public Health at regional and global levels. (17). The influenza viruses are common in wild birds and occasionally infect poultry.

Like any other TBD, HPAI is a major cause of morbidity and mortality, but its real incidence is not well known, a fact that has made all the more difficult as wild birds, which are very often the carriers of the disease, are sources of infection yet their disease status remains unknown and therefore the diseases is not controllable. The interaction of domestic poultry with migratory waterfowl reservoir for H5N1 virus, international and local trade of poultry and poultry products (legal or illegal), and movement of humans, vehicles and other formites, are the known mechanisms for introducing HPAI, H5N1 into uninfected areas and countries (1, 2). Locally, the virus is primarily spread to other animals through direct contact with infected droplets and potentially via aerosols. Transmission of HPAI from animals to humans mainly occurs due to frequent and intensive contact with respiratory secretions and the excreta of infected animals. Clinical signs in humans include a severe respiratory infection, whose course is usually fatal. Scientists have not been able to predict when the virus might reach an adaptive level to allow for human-to-human transmission, but as the virus progresses to an endemic state, its changing genetic composition (through mutation or genetic drift) increases the likelihood for it to become transmissible among humans. WHO estimates that should the pandemic occur, millions of people could die of the disease.

5.2 Genesis and progression of outbreaks of Highly Pathogenic Avian Influenza (HPAI), 2003 -2006

In late 2003, several southeast Asian (SEA) countries reported outbreaks of highly pathogenic avian influenza that have since spread to other countries in the world. Subsequent outbreaks occurred in Eastern and Central Europe in 2005 and in Western Africa at the beginning of 2006.(10)

The current avian influenza epidemic, caused principally by the H5N1 strain, has been continuing since it was first recognized in Vietnam in December 2003. Since then, numerous outbreaks of the viruses have progressively spread from Asia to Europe and Middle East and then to Africa. Despite concerted attempts at control, Thailand, Vietnam, Indonesia and PR China are still recording outbreaks. There are major control campaigns being implemented in Vietnam and Indonesia.

Two circumstances have increased international concern about the behavior and spread of HPAI. The first is that, to date, more than 279 cases of transmission of the virus to humans have been recorded, with an approximately 60% fatality rate. There is increasing concern that in the future the virus will mutate to enable human-to-human transmission and result in global human influenza pandemic if not contained in time. Secondly, the virus has been introduced through wild birds, along their migratory flyways, to cause disease in poultry and avian wildlife.

5.3 Genesis and progression of outbreaks of Highly Pathogenic Avian Influenza (HPAI) in Africa, 2006

2005, Avian Influenza (AI) was reported only in South Africa and Zimbabwe. The outbreaks occurred in Ostrich farms and were caused by the H5N2 virus strain. Stamping out all ostrich population in infected areas controlled the outbreaks. The first country in Africa to officially notify HPAI due to virus subtype H5N1 was Nigeria in February 2006, where high mortality and morbidity was observed in poultry kept in battery cages in a commercial layer production unit in Igabi, Kaduan state, in the north of the country. Outbreaks of the disease subsequently occurred in several states throughout the country. In the same year, a total of four African countries reported HPAI (H5N1). In total, 59 outbreaks were reported to AU/IBAR during 2006 in Nigeria. During the same month, highly pathogenic H5N1 Avian Influenza was confirmed in poultry in Niger making spread of the virus to a second country in sub-Saharan Africa. Niger reported the introduction of HPAI (H5N1) in Magaria, Zinder region, In this case, significant mortalities of chickens and ducks were observed in five outbreaks in two administrative districts near the border with Nigeria.

In total, 59 outbreaks were reported to AU/IBAR during 2006 in Nigeria. At least 15 cases of human fatalities have been recorded on the continent out of 36 confirmed cases (14 deaths out of 34 confirmed human cases in Egypt, and one death in Nigeria and one case in Djibouti). Still in the same month, Egypt reported the occurrence of HPAI (H5N1) on its territory. Between February and December 2006, outbreaks were identified in 20 out of 27 governorates namely Cairo, Giza, Behera, Dakahlia, Sohage, Alexanderia, Ismalia, Fayoum, Assuit, and Al Gharbya. Another outbreak occurred in April in the commune of Gabi in the Maradi region. On 21st February 2006 in Cameroon, an outbreak of A.I due to highly pathogenic virus subtype H5N1 was reported in three domestic duck farms in Doualalare' area in Maroua, Diamare' department, northern most provinces.

In March 2006, four African countries reported HPAI (H5N1). Cote d'Ivoire reported two outbreaks of H5N1 in Abdjan district, one on backyard free-range chickens and ducks in Marcory Anoumabo commune, and the other, involving a wild sparrow hawk, in treichville commune. The last outbreak reported in the country was in the month of June. In the same month, Djibouti reported its first occurrences of HPAI in a small poultry farm in the commune of Boulaos. Still in March, Sudan reported the occurrence of HPAI in Khaturoum and Gezira where high mortalities were observed in three poultry farms. In Burkina Faso, the first outbreak of AI was reported at a campsite at Gampele, saaba department, and Kadiogo province, following the death of 123 helmeted guinea fowls.

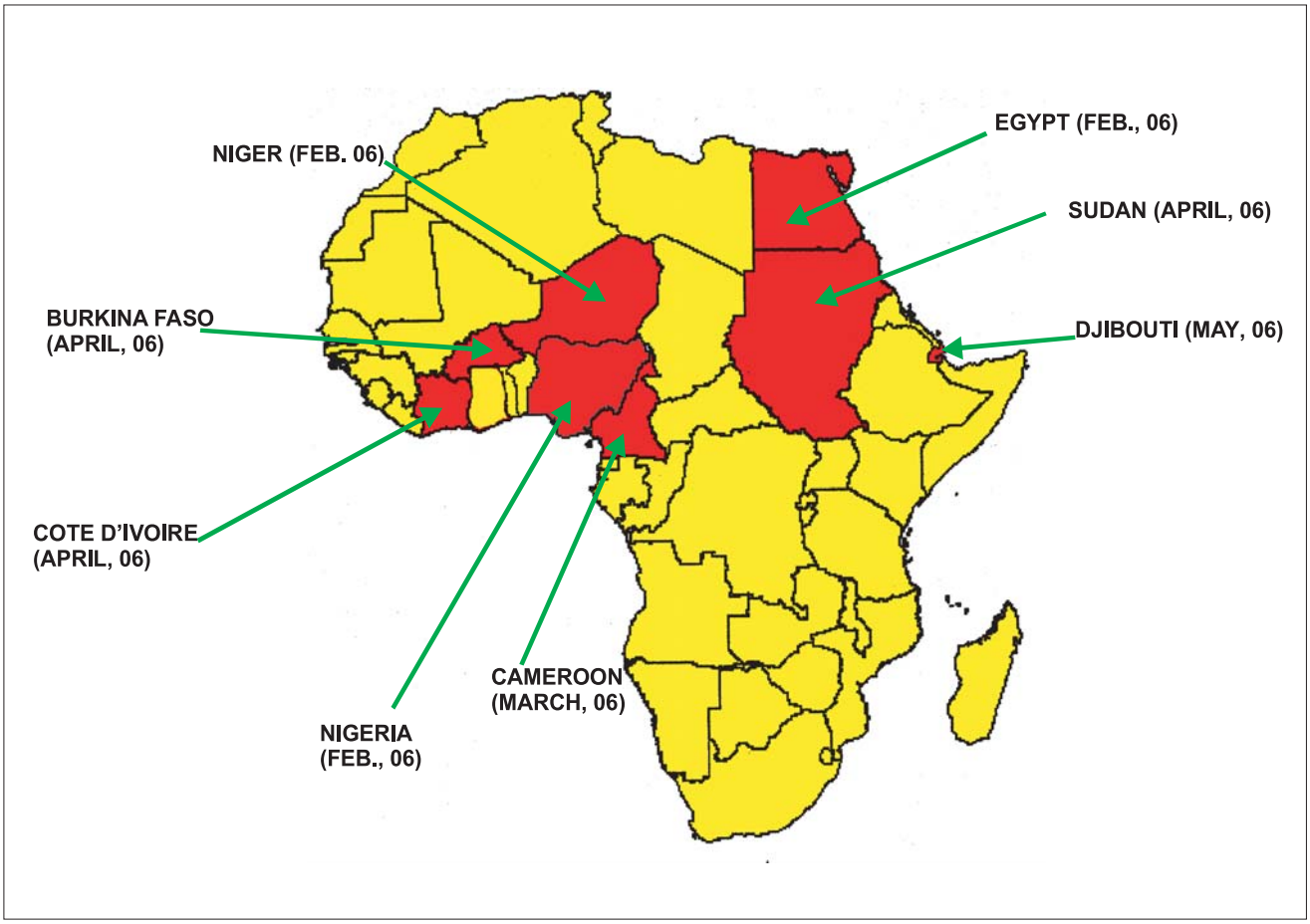
Therefore, in Africa, in 2006 alone, HPAI outbreaks were confirmed by official declaration by O.I.E. in eight countries namely (Nigeria, Egypt, Niger, Cameroon, Burkina Faso, Côte d'Ivoire, Sudan, and Djibouti).

Table 46 shows the confirmed HPAI outbreaks in Africa since February 2006, by date of first outbreak and reported official declaration date by OIE. Map 10 shows confirmed HPAI outbreaks by official declaration date by O.I.E in Africa in 2006

Table 46: O.I.E Confirmed HPAI outbreaks in Africa since February 2006, by date of first outbreak and reported official declaration by O.I.E

No.	Country	Date of first outbreak	Official declaration date by OIE	Species of birds affected
1.	NIGERIA	10th Jan. 2006	8th Feb. 2006	Commercial poultry farm
2.	EGYPT	18th Feb 2006	18th Feb. 2006	Intensely raised poultry (chicken, ducks, and a turkey)
3.	NIGER	20th Feb. 2006	28th Feb. 2006	Poultry farm
4.	CAMEROON	21st Feb 2006	12th March 2006	Poultry farms
5.	BURKINA FASO	1st March 2006	4th April 2006	Helmeted Guinea fowls
6.	SUDAN	22nd March 2006	18th April 2006	Poultry farms
7.	COTE D'IVOIRE	30th March 2006	25th April 2006	Wild sparrow hawk, backyard free range chicken and ducks
8.	DJIBOUTI	March 2006	11th May 2006	Small poultry farm

Map 10: Confirmed HPAI outbreaks by official declaration date by O.I.E in Africa in 2006.



With regard to the widespread extensions of HPAI outbreaks since 2003 from Southeast Asia, the continent of Africa was regarded as the weakest link in global prevention and control of the disease because of the inherent weaknesses of the continent's epidemio-surveillance net-works, diagnostic laboratory capability, and response capacities to face emergency situations; little or no attention paid to the study of domestic-wild birds interface; and the insufficient information and general awareness.
The rest of Africa is at high risk. HPAI has seriously affected farmers whenever and wherever it has appeared. Historically, outbreaks of HPAI have occurred in all continents.

5.4 Issues, threats and challenges of responding to HPAI crisis in Africa

5.4.1 Prevention phase

Following the conclusion of the Joint AU/IBAR/FAO symposium on HPAI prevention and control in Africa (Nairobi, September 14-16, 2005), the 7th Conference of the Ministers responsible for animal resources (Kigali, October 31-November 2, 2005) asked African countries to strengthen their surveillance capacities in regard to HPAI. From then onward, the region's countries undertook the drafting of HPAI emergency preparedness plans (9).

In disease free countries, the main preventive measures taken are partial or total ban of poultry and poultry products importations (from infected countries), the setting up of national inter-ministerial multidisciplinary technical committees to coordinate HPAI prevention and control programs. The committees supervised the drafting of HPAI national emergency preparedness and contingency plans.

Most countries have drafted plans, many of which lack sufficient data, coherence and basis for implementation, since they were conceived as emergency action plans. In addition, few countries allocated the necessary financial resources for prevention activities. Finally, with the exception of Algeria, Guinea, Morocco, and Senegal, no HPAI emergency preparedness plans have been subjected to simulation exercise to identify their weaknesses. In this respect, most plans need adjustments and updating.

5.4.2 Containment and Eradication Phases

5.4.2.1 The spread and characteristics of HPAI outbreaks in Africa

The origin of the first confirmed outbreak of HPAI, H5N1 in Nigeria is still the subject of hypothesis. Trade in poultry and poultry products (legal and illegal) and other movements of live birds seem to have played a major role in the introduction and spread of the disease on the continent. Indeed, in sub-Saharan Africa, the scattering of outbreaks followed a path similar to trade routes of live poultry, mostly by road transport (from Nigeria to Niger and Burkina Faso; from Burkina Faso to Côte d'Ivoire), with the exception of a case in Northern Cameroon where HPAI virus was isolated from a wild duck. The involvement of birds could not be proved in spite of extensive and still ongoing laboratory investigations.

After a succession of HPAI, H5N1 outbreaks from February till may 2006, an inter-epizootic silence was noticed before the resurgence of new cases in Côte d'Ivoire (on November 6, 2006 in Turkey hens imported from a nearby country), in Nigeria (February, 2007), in Egypt (February

25, 2007) and most recently in Ghana (may 2007). The spread and impact of HPAI, H5N1 were most pronounced in industrial and semi-industrial sector in Egypt (more than 30 million dead or culled chickens), Sudan (more than 1 million chickens dead or culled) and Nigeria (more than 700,000 dead or culled chickens). In other affected countries; outbreaks remained localized and affected chicken as well as other domestic birds like ducks (Niger, Cameroon, Côte d'Ivoire), guinea fowls (Burkina Faso) and turkeys (Côte d'Ivoire). Some cases were also confirmed in vultures in Burkina Faso, Cameroon and Côte d'Ivoire.

5.4.2.2 HPAI strategies implemented and their results

Infected countries implemented emergency measures, notably: Intensive community awareness and epidemiological surveillance for early detection and early reporting new cases; outbreak management through institution of control measures including quarantine of infected or suspected zones, culling and destruction of infected or suspected poultry and disinfections of premises and materials; controlled movement and ban on trade in poultry; management of the socio-economic impact at the poultry owners' level (compensation); vaccination; minimizing risks and care of human flu cases of avian origin; advocacy for improved bio-security at farm level and live bird markets; and updating of zoo sanitary rules and protocols. Some of the constraints, threats and challenges encountered in implementing the measures include; limited intervention capacities of affected countries (in terms of human, technical, financial and material resources); inexperience in the management of such zoonotic crises, including absence of crisis communication centers; weak epidemio-surveillance networks; organizational problems of coordination between various services; absence of direct chain of command within veterinary services; disorderly use of vaccination as a tool in the control strategy; inability to implement basic bio-security measures at farm level and in live poultry markets; failure by many countries to timely and/ or adequately revise rules pertaining to zoo sanitary measures; and poor management of HPAI socio-economic impacts leading to delays in release of funds for compensation. Others relate to cultural practices in poultry keeping; poor infrastructure; and inadequate government support.

With the exception of the prevailing situation in Nigeria and in Egypt, an explosion of HPAI outbreaks throughout the African continents as predicted by many international experts did not happen in spite of the limited operational capacities of national Veterinary services. However, the situation still remains worrisome especially with the continuing confirmation of new human cases in Egypt and more recently in Nigeria (February 2007) and Ghana (May 2007). It is feared that the infection, starting from these outbreaks, will propagate itself and spread through countries of northern, western, and eastern Africa, in other words, throughout the entire continent and the Arabian Peninsula. Thus, the H5N1 virus is likely to cause heavy economic losses as much at the national level as that of rural African Families. The proximity of poultry and people in the villages increases the risk of human cases. The diversity of the ecosystems infected leads to the fear that the disease may become endemic, meaning that it may quietly circulate only to re-emerge given favorable climatic conditions or an encounter with a highly susceptible animal population.

5.4.2.3 Current involvement and contributions from various institutions and organizations

African Union/ Interafrican Bureau for Animal resources (AU/IBAR), which has the continental mandate for control of animal diseases, together with other international institutions, including the African Livestock (ALIVE) platform partners, have coordinated and assisted the continent in managing the risks posed by HPAI, such as the assessment of continental gaps and needs, preparation of national Emergency Plans (EP) and subsequent Action plans. The EP and Action plans have not been entirely successful in managing the disease and lessons learnt from the HPAI crisis should therefore shape the way forward both in terms of sustainable immediate and longer term needs.

5.5 Lessons learned from crisis management of HPAI in Africa

Priority actions planned within the framework of emergency plans by countries should focus on mobilizing public opinion and various stakeholders to the national and regional scene, capacity building in the area of early diagnosis with a view of accelerating the implementation of control measures, and increase the rapid response capacities in case of outbreaks. The effectiveness of these measures could be significantly strengthened through simultaneous actions in all countries of the same sub-region. For this to materialize, measures need to be taken to avoid sending out samples late to reference laboratories for confirmation of diagnosis.

The first bulwarks against the avian flu lies in the ability to make a quick diagnosis of the disease so as to rapidly respond (setting up a crisis committee, chain of command and communication, protection materials, resources and culling plan, means of transport, availability of human vaccines, biosafety, etc). To achieve this, it is essential to have an effective system for the early detection of the disease (surveillance, effective monitoring of movement of birds and their products both within and countries and at their borders) and to have equipment to analyze samples in order to identify the presence of the virus.

One of the key problems is that in general poultry farming in Africa is traditional, which makes confinement practically impossible as farmers rarely have cages and leave their poultry free. This contributes to the dangerous spread of the avian flu in Africa with the possibility of the virus mutating. This explains why even after culling, it is necessary to comb out all these villages to ensure that no bird was forgotten. It is then essential to implement the culling of the diseased birds and all those found within a perimeter of several kilometers, to quarantine, or to enclose farm poultry for purposes of protection.

Culling involves compensation for farmers whose poultry are often the sole source of income. It is for this reason that organization of compensation for farmers should be well structured (compensation plans, availability of human and financial resources in the country.

Lessons learnt from the HPAI crises are many, and should therefore shape the way forward both in terms of immediate and longer term needs for its control. Key areas for research could include the epidemiology of HPAI on the African continent and in-depth analysis to optimize resources for the prevention, containment and/or eradication of the zoonoses based on the lessons learnt in dealing with current/recent crises. For the moment, success in containment and eradication is a function of what lessons can be implemented on the ground, and how to harness the lessons into regional integrated emergency preparedness and action plans. Countries at high risk of the zoonotic disease must be wiling and committed to explore and put to good use these opportunities.

6.0 CONSTRAINTS OF DISEASE REPORTING AND SOLUTIONS PROPOSED

Need for reliable disease surveillance

The presence of livestock diseases still provides legitimacy for barriers to trade, and as a consequence the importance of reliable animal disease surveillance has increased. However, the economic consequences of reporting the occurrence of notifiable and other important trans-border diseases have also increased, as this provides trading partners with sufficient reason to impose an embargo that could severely compromise the National Agricultural Industry. The dilemma for some developing economies, reliant on agricultural exports, is how to balance a transparent and efficient disease reporting service, sufficient to provide the necessary information for importing countries to make realistic risk assessments, with the perceived political and economic damage from being honest with trading partners who might take advantage of the information to require additional safeguards and health certification. The situation is more complicated where livestock owners may fail to report diseases to the relevant authorities for fear of quarantines that may be imposed on their livestock markets hence leading to loss of income, or even worse are the consequences of control e.g. curling and slaughter.

The objective of a surveillance system is to support the planning, implementation and evaluation of veterinary intervention programs. Although the final output of the surveillance system may well be a communication or a report to the decision makers, it is how that information is used that is the ultimate objective of the surveillance system. In most cases, this policy of prime importance does not receive the importance it deserves. This is reflected in the weaknesses of the resources allocated to and the organizational set up of the systems in most countries, as well as in the use of the information generated by the system for appropriate action.

Although there are surveillance guidelines available, in most countries the scheme for flow of information from its source (livestock farmers) to the decision making levels and the feedback mechanisms are not usually clear. At the same time, responsibilities for surveillance activities at each level of the veterinary delivery systems are not well delineated in most cases.

Limited ownership of programs by National programs in terms of design and costs

Disease surveillance is key to disease control and should never be treated just as an important component of the same. For its continuity and sustainability, the Departments of veterinary services in member countries should sensitize their policy makers to increase budget allocations to the Ministries of Livestock development so that in case of a break or a stop to donor funding, activities related to disease surveillance do not get interrupted or compromised.

Lack of integration between the Public Health and Livestock sectors

The public health sectors, livestock sectors, and communication sectors do not integrate and usually go divergent ways incase of disease outbreaks. There should be collaborative structures awaiting emergencies. There is also need to have shared resources in terms of process and mechanisms to make them complementary, using zoonotic diseases as a baseline/ entry point, e.g. shared diagnosis, and surveillance and campaign teams should pave way to the concept of one health.

Omission of important diseases in National Integrated action plans

Although there are Integrated National action plans for diseases such as Avian Influenza, other important diseases such as Rift valley fever, that are of high importance are not catered for. Subsequently, Besides, reaction or response time to such outbreaks by the relevant authorities is usually prolonged.

Economic studies have proved that cost of disease prevention is cheaper than cost of disease control in the long run. In this relation, Governments and other stakeholders should use the Avian Influenza structures in place (emergency preparedness contingency plans) for control of other

emerging epizootics such as the Rift Valley Fever. The idea/concept should be incorporated into the policy frameworks supported at the at the highest level e.g. the Ministry. Incorporation of diseases in this manner gives the outside world more insight to the country's veterinary system, creating transparency and leading to investor/partner confidence

Lack of community participation

The community is center of interest of all measures for disease prevention and control; including surveillance. Its participation in early disease reporting is indispensable to ensure the highest quality of surveillance (Schwabe, 1980;Schwabe, 1984; Schwabe and Makuet, 1981; Sollod and Stem, 1991, Chris et al, 2006). However, in most cases community participation in surveillance system is lacking. Although disease reporting in certain areas depends on securing the cooperation of the community, on the other hand, failure to achieve full reporting is always reflected in the output of the surveillance process. Legislation and policing regarding reporting of diseases need to be strengthened.

Lack of participation by other relevant bodies including the private sector

Another weak spot in the surveillance system in several countries is the limited participation of other relevant bodies including the private and communication sectors in disease surveillance and reporting. Appropriate protocol for cooperation between the Government veterinary system, NGOs, partner organizations and the private sector in most countries is still lacking, and further efforts are needed to develop it. By working together to support harmonized, targeted, practical approaches to surveillance as is being currently encouraged by AU/IBAR, international organizations, non-governmental organizations and Governments can effectively control eradicate Tran-boundary diseases, as seems to have been the case with rinderpest, and have significantly controlled others. Moreover, with the current emerging zoonotic diseases such as the Rift Valley Fever and Avian influenza, approaches that bring veterinary and public health sectors together should increase efficiency in information sharing and the protection of public health.

Lack of Feedback mechanisms

Feedback mechanisms are one of the weakest points in surveillance systems. There is usually no way of showing farmers and peripheral staff value and utility of their vital contribution to the system, and hence they loose interest in surveillance activities. AU/IBAR has taken relatively successful steps to overcome this constraint by issuing the Pan African Animal Health Yearbooks, a website, and a data base linked to ARIS, for feedback and as a result, WAHIS, ECTAD, and FAO are all linked. Besides, various projects implemented by AU/IBAR have been organizing country stakeholders' and cross-border harmonization meetings where results of disease surveillance are shared within individual countries as well as within regions. There is additional feedback through Regional Economic Communities as well as the Regional Animal Health Centers.

Need for change of attitude

In general, there is a need for a change of attitude in all those responsible for decision making at National levels so that the application of epidemiological principles and approaches, including disease surveillance, and in particular reporting, will have a significant yield for National programs. There is also need to change our traditional way of reporting in view of globalization. It must be realized that if countries do not report, they jeopardize avenues for global support.

6.1 Formats to use for disease reporting

As part of national disease surveillance programs, a system of monthly general disease reporting by district officers has always been recommended as a standard activity of Government veterinary Government Veterinary Extension services. Each district or a similar administrative unit is required to give a narrative report of disease occurrence and control activity for the month. With the introduction of computers and electronic databases, standardized formats that allow easy coding and entry of data are rapidly replacing narrative reports. Advances in telecommunication in particular cell phone use serve as an added advantage to enhance disease reporting.

Need for complete, timely, organized data

In any disease outbreak, the information collected and reported must balance the need for simplicity to increase the efficiency of the delivery system, and the need for sufficient data, to increase the usefulness of the system. Certain data are needed in order to clearly describe the occurrence of disease over time, place and species of animals affected. Despite the fact that AU/IBAR has agreed on a particular disease reporting format with member countries, in a lot of reports presented to AU/IBAR during the year, this balance has not been achieved. Some reports lacked crucial information such as number of susceptible species; number of cases seen; number of disease outbreaks; and prevalence. This makes it impossible to draw a comparison between outbreaks during the year with earlier outbreaks of the same disease. Therefore it becomes non reflective from earlier reports how a disease progresses.

Sometimes, if data collected and presented is of little real value, information compiled is unnecessary and may become redundant. Eventually, this lack of balance results in an incomplete picture of disease patterns and trend over years. PACE Member countries are encouraged to present reports that are as complete and concise as possible. It is recommended in this report that reporting officers should follow agreed reporting formats while preparing and submitting reports. The idea of disease reporting should also be extended to non-PACE member countries.

Completing different formats for different organizations is a cumbersome task. Since, the introduction of Animal Resource Information System (ARIS) this problem has been well taken care of. ARIS allows member countries to generate reports, first and foremost for themselves, and then in formats that international and regional organizations require.

6.2 Need for improving reporting within African countries

Many African countries report routinely to OIE and FAO but they do not report to AU/IBAR. This needs to be corrected and countries get committed to reporting to AU/IBAR as well. Informed planning and decision-making is becoming key to the success of animal health authorities. Quality and timely information on disease pattern is mandatory for this to happen. Hence, capacity in collecting, collating and analyzing animal health data and sharing of generated information are of paramount importance. Timely detection of major epizootics, knowledge of their extent and magnitude is critical to plan and implement control or eradication programs. Transparency in the animal health matters and traceability or follow up of animals from "stable to table" is key issues in animal trade. Moreover, one of the criteria to gauge the capacity of veterinary services and a pre-requisite for certification of freedom from disease is the capacity to closely follow field events and share information about it with the international community through the OIE.

Unless countries receive regular monthly disease reports from veterinary authorities and staff at the lower administrative levels, there will be no evidence based data to generate information for action or making decisions, as well as for international disease reporting. Countries need to sensitize, train and equip their extension /grass root staff to regularly report disease events.

The Animal Health Information Strategy for the coming three years includes: improvement in disease reporting, further development of the database for animal health information systems and enhanced capacity in disseminating and sharing animal health information. The animal health unit will continue improving disease reporting, both (routine and emergency) within countries and from countries to regional and international organizations (RECs, AU/IBAR and OIE). Collection of animal health data is coupled with the capacity to store, analyze and disseminate information. There is need, as a future priority, to expand this facility to the remaining African countries.

Recording and reporting systems are an integral part of most CAHWs programs. This data is routinely gathered by the monitors and reported in detail within projects and organizations. It is important for the monitors/supervisors to complete standardized disease reporting formats using the information provided by CAHWs for submission to the district offices.

6.3 Discipline to regular reports

During the year, OIE received reports on infectious diseases by medical authorities, and no reports of the same diseases were recorded at AU/IBAR. Worse still, the medical authorities presented very clear pictures of the disease on humans, significantly leaving out the picture of the same disease in livestock, which in most cases are the primary hosts.

AU/IBAR expects and encourages immediate notification of disease occurrence and monthly reporting of disease control measures from member states. It is important not to confuse this requirement with the requirements of other international and regional organizations. Monthly reports are to be submitted by the end of the month or in the preceding month. Reports can also be done quarterly. It is also worth mentioning the need for being consistent in sending monthly reports for all months during the year and not only some of them. This should also be the case even when no outbreaks are recorded, as absence of a disease outbreak in itself is also a report.

As an incentive to the countries reporting, each country should be sent a timely copy of the Pan African Animal Health Yearbook. Besides, in order to encourage countries to comply with the key reporting requirements, an acknowledgement letter for reports received is sent to the relevant compliant countries, highlighting areas that need improvement. To all member countries, reminders on the need to report timely as well as the right format of reporting to AU/IBAR should be sent on a quarterly basis to the Directors of veterinary services (DVSs).

Member countries will be requested to give feedbacks after circulation of the health yearbook. This will assist AU/IBAR in improving the quality of the yearbook as well as assist countries to note the recommendation observed in the reports and work on them.

6.4 Quality of reports

Although the quality of reports submitted to AU/IBAR has improved over the years, there are still some shortcomings that need redress. This could be attributed to the fact that some countries may not be using the right format or are not following the guidelines. Some of the commonly observed problems are as follows:

6.4.1 Certain data elements are overlooked

Reporting formats used by some countries do not cater for how the final diagnosis of the reported disease outbreak was made. Hence, whether the reported outbreak was suspected on clinical grounds or confirmed by a laboratory is not clear. It also creates inconsistency in reporting among countries as some report only those outbreaks confirmed by laboratory while others include all suspected and confirmed outbreaks. The current AU/IBAR disease reporting form has a provision for entering whether the disease outbreak being reported was confirmed by a laboratory or is suspected on clinical grounds. This is the reason why veterinary authorities in member countries are urged to introduce this format.

6.4.2 Instructions of completing forms are overlooked

Guidelines for the current AU/IBAR reporting format provided in the annex, as well as the formats used previously, clearly explain how each column of the form should be entered. However, as these are often overlooked, the quality of reports is affected particularly those needed for quantitative analysis. In several reports, either the number of new outbreaks is missing or confused with total outbreaks during the reporting month (including the previous month). There are instances where the extent of an outbreak is considered as each household affected, even though livestock graze and water together (a single epidemiological unit), inflating the number of outbreaks reported. In most cases, the number of susceptible species is ignored making it difficult to calculate any epidemiological rate. There are countries that do not provide any figure for the number of susceptible animals, cases, deaths, destroyed, etc. despite the fact that they file the number of outbreaks per species. Other common errors include combining figures of different species (number of susceptible animals, cases, deaths, destroyed, etc.) for multi-species diseases. Obviously, this creates problems at a later stage when users want to analyze species-specific parameters.

6.5.3 Outbreak location data missing

With growing application of Geographical Information System (GIS) in disease mapping, veterinary authorities can easily get spatial patterns of disease occurrence for informed decisions. This is possible only if the exact location of each disease outbreak is recorded and provided in each report. Capacity created in the use of GIS and affordable prices of Global Positioning Systems (GPS) receivers is making the capture and recording of location data (geo-reference) easy. Several African countries are now including location data in latitude and longitude degrees in their monthly disease occurrence reports.

Those countries providing geo-reference data need standardization. Although it is possible to convert location data from Degree, Minute and Second (DMS) to degree decimal (DD), AU/IBAR would prefer to capture geo-reference data and DD to three decimal point precisions.

Countries still using the list of administrative units for reporting disease outbreak location are encouraged to introduce geo-reference in their reporting, as the latter is much more accurate and stable, compared to continuously changing administrative boundaries.

6.5 Proposed solutions

Majority of the issues raised earlier in this document concerning the quality and preciseness of reports submitted to AU/IBAR can be solved by member countries making efforts to use the AU/IBAR disease reporting format and following the stated guidelines in completing it. Training of staff involved in disease reporting including CAHWs, and equipping them with current tools in order to capture spatial data is very important. Regular supervision of staff to verify whether or not reporting is done on a timely basis is another area to focus on. Embarking on these activities is not only good at satisfying international disease reporting obligations but also good at having complete and consisted data set for each and every country's need.

Epidemiological units should be harmonized. Numbers of animals susceptible as well as numbers of cases seen can only make sense if the epidemiological units are defined e.g. a herd, a village, a ranch etc.

7. CONCLUSION

The year conformed to the negative trend observed in the previous years in number of countries reporting. Only 35 out of the 52 (67.5%) member states made reports to IBAR. Out of the reports received, 70% were in the electronic format. All member countries should try to make a concerted effort to improve on their Livestock disease reporting to AU/IBAR.

Information is a critical tool for decision-making and policy formulation. It is mandatory in event of crisis, for it is used to map accurately the area affected and this can be used to solicit donor support. Nevertheless, there are still numerous problems associated with disease reporting. As a result, there is need for commitment on part of countries' authorizing officers to take this as a priority.

Consistent checks and upgrading of the reporting systems is necessary even at the grass root levels, but the reality is the opposite. There is over reliance on new technology and lack of systems by countries.

Concerning emerging zoonoses, HPAI and RVF being important TADS are major constraints to profitable livestock operations as a result of reduced incomes directly through mortality and reduced productivity and, indirectly through restrictions on regional and international trade in Livestock and their products. The fact that they are zoonotic and with the potential for pandemic proportions (HPAI), further compounds the problem.

Thus, the presence of a TAD such as RVF or HPAI represents a major constraint in complying with Sanitary and Phytosanitary (SPS) standards of the World Trade Organization (WTO) which are implemented by the World Organization for Animal Health (OIE). Under the SPS agreement, members can employ sanitary measures to the extent necessary to protect human and animal life and health. These measures include all relevant laws, decrees, regulations, requirements and procedures including, inter alia, end product criteria; processing and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packing and labeling requirements (11).

8. ACKNOWLEDGEMENT

The Inter African Bureau for Animal Resources of the African Union (AU/IBAR) would like to thank the heads of Livestock Departments, Directors of Veterinary services and Information Management staff in all the 35 AU member countries who provided reports during 2006 on which this yearbook is based.

AU/IBAR appreciates the effort made by livestock owners, community based programs, field staff and the private sector in disease reporting.

9.0 ANNEXES

Annex I: Definitions of concepts describing disease occurrence as they are they are used in this book

Annex II. References

Annex III: Monthly Breakdown of Disease Reports received from member countries in 2006

Annex IV: Baseline Information of AU / IBAR countries

Annex V a: Disease reporting form-completing guidelines

Annex V b: Disease reporting form complete guidelines

Annex VI: Competent Authority contacts in member countries

Annex I: Definitions of concepts describing disease occurrence as they are used in this book

Prevalence

Prevalence is the number of instances of disease or related attributes (e.g., infection or presence of anti-bodies) in a known population, at a designated time, without distinction between old and new cases. Prevalence is most meaningful when expressed in terms of the number of diseased animals in relation to the number of animals in the population at risk of developing the disease.

Endemic occurrence of a disease
Endemic is used in two senses to describe:

1. The usual frequency of occurrence of a disease in a population
2. The constant presence of a disease in a population (little et al.; 1982)

Epidemic occurrence

'Epidemic was originally used only to describe a sudden, usually unpredictable, increase in the number of cases of an infectious disease in a population. In modern epidemiology, an epidemic is an occurrence of an infectious or non-infectious disease to a level in excess of the expected (i.e., endemic) level.

Pandemic occurrence

A sporadic outbreak of disease is one that occurs irregularly and haphazardly. His implies that appropriate circumstances have occurred locally, producing small, localized outbreaks.

Mortality

This is expressed as the ratio between the number of deaths due to a disease that occur in a population during a particular period of time and the sum, over all individuals, of the length of time at risk of dying.

Economic costs of disease

The total economics cost of disease can be measured as the sum of output losses and control expenditures. A reduction in output is a loss because it is a benefit that is either taken away (e.g., when milk containing antibiotic residues is compulsorily discarded) or unrealized (e.g., decreased milk yield). Expenditures in contrast, are increases in input, and are usually associated with disease control.

Annex II: References

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Annex III: Monthly disease reports inventory-2006

Monthly Disease Reports Inventory – 2006

Country	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Algeria	■	■	■	■	■	■	■	■	■	■	■	■
Angola	■	■	■	■	■	■	■	■	■	■	■	■
Benin	■	■	■	■	■	■	■	■	■	■	■	■
Botswana	■	■	■	■	■	■	■	■	■	■	■	■
Burkina Faso	■	■	■	■	■	■	■	■	■	■	■	■
Burundi												
Cameroon												
Cape Verde												
CAR												
Chad	■	■	■	■	■	■	■	■	■	■		
Comoros												
Congo Brazzaville	■	■	■	■	■							
Cote d Ivoire	■	■	■	■	■	■	■	■	■	■	■	■
Djibouti	■											
DR Congo	■	■	■	■	■	■	■	■	■	■	■	■
Egypt	■	■	■	■	■	■	■	■	■	■	■	■
Equatorial Guinea												
Eritrea		■	■	■	■			■		■	■	
Ethiopia												
Gabon	■	■	■	■								
Gambia	■	■	■	■	■							
Ghana	■	■	■	■	■	■	■	■	■	■	■	■
Guinea Conakry	■	■	■	■	■	■						
Guinea Bissau	■	■	■	■	■	■						
Kenya	■	■	■	■								
Lesotho	■	■	■	■	■	■	■	■	■	■	■	■
Liberia												

Cont....

Country	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Libya												
Madagascar												
Malawi	■	■	■	■	■	■	■	■	■	■	■	■
Mali												
Mauritania	■	■	■	■	■	■	■	■	■	■	■	■
Morocco												
Mauritius	■	■	■	■	■	■	■	■	■	■		
Mozambique	■	■	■	■	■	■	■	■	■	■	■	■
Namibia	■	■	■	■	■	■	■	■	■	■	■	■
Niger												
Nigeria	■	■	■	■	■	■	■	■	■	■	■	■
Rwanda												
Sao Tome & Principe												
Senegal	■	■	■	■	■	■	■	■	■	■	■	■
Seychelles	■	■	■	■	■	■	■	■	■	■	■	■
Sierra Leone	■	■		■	■		■	■	■			
Somalia				■	■	■	■	■	■	■	■	■
South Africa	■	■	■	■	■	■	■	■	■	■	■	■
Sudan	■	■	■	■	■	■	■	■	■	■	■	■
Swaziland	■	■	■	■	■	■	■	■	■	■	■	■
Tanzania	■	■	■	■	■	■						
Togo												
Tunisia	■	■	■	■	■	■	■	■	■	■	■	■
Uganda	■	■	■	■	■	■	■	■	■			
Zambia												
Zimbabwe												

	GENERAL INFORMATION					ANIMAL POPULATION ('000)						
	FLAGS	CAPITAL CITY	CURRENCY	HUMAN POPU. (Million	AREA ['000 SQ KM]	CATTLE	SHEEP	GOATS	PIGS	CHICKENS	CAMELS	BUFFALO
ALGERIA		Algiers	Algerian Dinar	32.8	2382	1 300	16 800	3 400	6	132 000	136	X
ANGOLA		Luanda	Kwanza	15.9	1247	3 900	336	2 000	800	6 650	X	X
BENIN		Porto - Novo	CFA Franc	8.4	113	1 550	645	1 270	500	29 000	X	X
BOTSWANA		Gabarone	Pula	1.7	582	2 380	250	1 850	7	3 500	X	X
BURKINA FASO		Ouagadougu	CFA Franc	13.2	274	4 800	7 000	9 000	600	23000	X	X
BURUNDI		Bujumbura	Burundian Franc	7.5	28	400	330	920	80	4,400	X	X
CAMEROON		Yaounde	CFA Franc	16.3	475	5 900	3 880	4 400	1 430	31 000	X	X
CAPE VERDE		Praia	Escudo	0.5	4	22	9	112	640	480		
CENTRAL AFRICAN REP.		Bangui	CFA Franc	4	623	3 200	211	2 900	649	4 600	X	X
COMORES		Moroni	Comoro Franc	8	2	51	20	170	X	490	X	X
CONGO		Brazzaville	CFA Franc	3.9	342	800	900	4 100	1 000	22 000	X	X
COTE D'IVOIRE		Yamoussoukro	CFA Franc	18.1	323	1 400	1 400	1 100	300	31 100	X	X
D.R.C		Kinshasa	Congolaise franc	48	2345	900	930	4 400	1 100	21 000		
DJIBOUTI		Djibouti	Djboutien Franc	0.7	23	269	470	513	X	X	66	X
EGYPT		Cairo	Egyptian Pound	78.8	1001	3 500	4 400	3 300	X	99 000	100	3 400

	AFRICAN COUNTRIES SURVEY					ANIMAL POPULATION ('000)						
	FLAGS	CAPITAL CITY	CURRENCY	HUMAN POPU. (Million	AREA ['000 SQ KM]	CATTLE	SHEEP	GOATS	PIGS	CHICKENS	CAMELS	BUFFALO
EQUITORIAL GUINEE		Malabo	CFA Franc	0.5	28	2 368	687	864	54	8 900	X	X
ERITREA		Asmara	Nakfa	4.4	118	2 200	1 600	1 700		4 600	80	X
ETHIOPIA		Addis Ababa	Birr	75	1104	35 095	22 000	16 950	25	55 400	X	X
GABON		Libreville	CFA Franc	1.3	268	39	198	91	213	3 200	X	X
GAMBIA		Banjul	Dalasi	1.5	11	364	195	270	14	780	X	X
GHANA		Accra	Cedi	22.1	239	1 300	2 700	3 000	400	20 000	X	X
GUINEA BISSAU		Bissau	CFA Franc	1.5	36	520	285	325	345	850	X	X
GUINEA CONAKRY		Conakry	Guinean Franc	9.4	246	2 368	687	864	54	8 900	X	
KENYA		Nairobi	Kenyan Shilling	34	583	13 392	5 800	7 600	110	30 000	X	X
LESOTHO		Maseru	Loti	1.7	30	510	720	560	63	1 700	X	X
LIBERIA		Monrovia	Liberian Dollar	3.2	111	36	210	220	130	4 200	X	X
LIBYA		Tripoli	Dinar	5.8	1760	220	4 125	1 265	X	248	72	46
MADAGASCAR		Antanarivo	Malgache franc	18.6	587	10 400	800	1 400	900	25 900	X	X
MALAWI		Lilongwe	Kwacha	12.8	119	750	110	1 450	240	15 000	X	X
MALI		Bamako	CFA Franc	13.5	1240	6 600	6 200	9 800	65	24 500	500	100
MAURITANIA		Nouakchott	Ouguiya	3.07	1031	1 500	7 500	5 000	20	4 100	1 200	X
MAURITIUS		Port Louis	Mauritius Rupee	1.2	2	27	7	94	20	4 427	X	X

AFRICAN COUNTRIES SURVEY						ANIMAL POPULATION ('000)						
	FLAGS	CAPITAL CITY	CURRENCY	HUMAN POPU. (Million	AREA ['000 SQ KM]	CATTLE	SHEEP	GOATS	PIGS	CHICKENS	CAMELS	HORSES
MOROCO						2 700	17 300	5 100	10	135 000	X	150
MOZAMBIQUE		Maputo	Metical	19.7	802	1 320	122	392	180	280	X	X
NAMIBIA		Windhoek	Namibian Dollar	2	824	2 294	2 174	1 732	19	2 250		
NIGER		Niamey	CFA Franc	13.9	1267	2 200	4 312	6 700	39	20 000	400	80
NIGERIA		Abuja	Niara	131.5	924	19 830	20 500	24 300	4 855	126 000	X	X
RWANDA		Kigali	Rwandan Franc	9	26	732	254	750	177	1 090	x	x
SAHRAWI		El Aaiun	Dirham/ Tala	341	266	X	X	X	X	X	X	X
SAO TOME & PRINCIPE		Sao Tome	Dobra	0.1	1	232	1 172	22 905	34 905	103 441	X	X
SENEGAL		Dakar	CFA Franc	11.6	196	3 100	4 500	3 900	330	4 500	X	500
SEYCHELLES		Victoria	Seychelles Rupee	0.1	0.4	1 400	X	5 000	18 300	1 000	X	X
SIERRA LEONE		Freetown	Leone	5.5	72	420	365	200	52	6 000	X	X
SOMALIA		Mogadishu	Somali Shilling	8.2	638	1 400	13 000	5 000	18 300	1 000	X	X
SOUTH AFRICA		Pretoria	Rand	47.4	1220	13 500	28 600	6 700	1 500	119 700	X	250
SUDAN		Khartoum	Dinar	27.9	2506	35 000	42 500	37 500	X	41 000	X	X
SWAZILAND		Mbabane	Lilangeni	1	17	660	26	438	31	1 000	X	X
TANZANIA		Dodoma	Tanzanian Shilling	38.3	945	14 350	4 150	9 900	345	28 000	X	X
TCHAD		N'Djamena	CFA Franc	9.7	1284	1 330	1 370	1 070	275	29 000	X	X
TOGO		Lome	CFA Franc	6.1	57	223	740	1 110	850	7 500	X	X
TUNISIA		Tunis	Tunisian Dinar	10.1	164	800	6 600	1 400	X	43 000	200	X
UGANDA		Kampala	Ugandan Shilling	27.6	236	5 700	1 970	3 650	960	23 000	X	X
ZAMBIA		Lusaka	Kwacha	11.6	753	2 273	120	1 069	324	28 000	X	X
ZIMBABWE		Zimbabwe	Zimbabwe Dollar	13	391	5 500	525	2 770	278	15 000	X	26

X Data not available Please CVO update their data

Annex V a: Disease reporting form complete guide lines

African Union, Interafrican Bureau for Animal Resources (AU-
P.O.Box 30786, Nairobi, Kenya - Fax +254 20 226565 e-mail reports@au-ibar.org www.au-ibar.org

Monthly disease reporting form

Reporting Unit: Country ____ Region ____ Province ____ District ____

Reporting Period: Month ____ *(name of the month)* Year ____ *(yyyy)*

Reporting officer: Name ____ Position ____ Signature ____

Date report: Prepared ____ *(dd/mm/yyyy)* Received at Vet. Dept. ____ *(dd/mm/yyyy)* Received at IBAR ____ *(dd/mm/yyyy)*

Is there outbreak to report? YES ☐ NO ☐ *(mark with X an appropriate box)* ***If reporting only vaccination start at the column labeled "w"***

For each outbreak, please enter the following parameters in columns labeled from a) to ad)
Please provide details for each species on different lines for multi-species diseases

Disease (& serotype)	New or Followup	Date				Name of affec. Parish	Latitude *(in DD)*	Longitude *(in DD)*	Species Affected	Age group	Sex	Production system	Control measure
		occurred	repor. to vet.	investigated	final diagn.								
a	b	c	d	e	f	g	h	I	j	k	L	m	n

Please continue to page 2

Annex V b: Disease reporting form complete guide lines

Monthly disease reporting form, Page 2

Basis for diagnosis	Number of susceptibles	cases	deaths	slaug.	recovered	destroyed	Outbreak stopped?
o	p	q	r	s	t	u	v

Disease	# Control vaccination	# Prophyla. vaccination	Source of Vaccine	Batch number	Date Produc.	Expiry date	Tested for quality?
w	x	y	z	aa	ab	ac	ad

Please use the following options for the corresponding headers

J - Species affected

Bov Cattle
Avi Birds
Cml Camelidae
Fel Cats
Can Dogs
Equ Equidae
Cap Goats
Lep Rabbits/hares
Ovi Sheep
Sui Pigs
Fau Wildlife

K - Age group

Bovine, Equine, Camel, buffalo and other large animals
0 – 12 months
13 – 24 months
25 – 36 months
Over 36 months
All

Ovine, Caprine, Swine and other small animals
0 - 6 months
7 - 12 months
13 - 18 months
Over 18 months
All

Chickens and other birds
Young
Adult

L - Sex

Male
Female
Neutral (Castrated)
All

M - Production system

Intensive
Mixed
Extensive (Pastoral & Transhumant)

N - Control measures

Treatment
Vaccination
Quarantine
Stamping out
Control of Wildlife Reservoirs
Vector control
Movement control

O - Basis for diagnosis

Laboratory
Post-mortem
Clinical
Owners claim
Rumour

Annex VI: Competent Authority Contacts in member countries

ADDRESSES FOR THE DIRECTORS OF VETERINARY SERVICES

COUNTRY	NAME OF DIRECTOR	POST OFFICE AND PHYSICAL ADDRESS
ALGERIA	**Dr. Rachid Bouguedour** Directeur des Services Vétérinaires Ministère de l'Agriculture et du Dévelop. Rural	12, Boulevard Colonel Amirouche 16000 ALGER, Algerie Tel: (213-21) 743 434/711712 Fax: (213-21) 743 434/7463 33 Email: dsval@wissal.dz or rbouguedour@yahoo.fr
ANGOLA	**Dr Filipe Vissesse** Directeur général des services vétérinaries Ministério da Agricultura do Desenvolvimento Rural	Av. Comandante Gika-Largo Antonio Jacinto No. 55-56 C.P. 10578 LUANDA-ANGOLA Tel: (244-222) 324 067/323 217/321 429 Fax: (244-222) 324 067 Email: dnap@ebonet.net
BENIN	**Dr. Guillaume Hounsou-Ve** Directeur de l'élevage Ministère de l'agriculture, de l'élevage et de la Pêche	BP 2041, COTONOU, Benin Tel: (229) 21 330 285/21331665/21331768 Email: delevage@intnet.bj or pacebeni@intnet.bj or bonimonsia@yahoo.fr
BOTSWANA	**Dr. Musa Fanikiso** Director, Ministry of Agriculture Department of Animal Health and Production	Private Bag 0032 **Gaborone**, Botswana Tel: +267 3950 635/+267 31 81 571 Fax: (+267) 39 03 744 Email: mfanikiso@gov.bw
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