



African Union

InterAfrican Bureau for Animal Resources

**History of Rinderpest Eradication from Africa
Impact, Lessons Learnt and Way Forward**

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Introduction

Rinderpest (German word for “cattle plague”), is an acute and sometimes sub-acute highly infectious viral disease of cloven-hoofed mammals, both domesticated and wild. Cattle and the African buffalo are particularly susceptible, while sheep and goats experience only a mild form of the disease. In case of an incursion, rinderpest can be highly fatal with over 90 percent mortality and 100 percent morbidity in susceptible animals. The disease is mainly spread by direct contact with aerosolized virus and/or ingestion of contaminated matter. The disease has no known carrier state; infection results either in death or lifelong immunity. In endemic areas where animals have developed immunity from exposure or vaccination, rinderpest is often a disease of young naïve animals.

Rinderpest in Africa

Rinderpest is one of the oldest animal diseases known to man and is believed to have originated from the Asian subcontinent. From there it spread to medieval Europe and Middle East in the early 17th century, through livestock imports and military invasion. Egypt suffered limited introductions of the disease in 1827, 1841, 1863 and 1883, the virus being introduced with infected trade cattle from sources in southern Russia, southern Europe and Asia Minor. The importation-related outbreak beginning in 1841 raged until 1844 and was estimated to have caused 665,000 cattle deaths.

In Africa south of Sahara, rinderpest first appeared in Ethiopia in 1884, through cattle imports, but this time from India. Between 1888 and 1889, the disease spread southwards, covering almost all of Ethiopia as well as neighboring Somalia, Kenya, Sudan and Uganda. By the end of 1892, an estimated 90 percent of the cattle population in Ethiopia had been decimated, while Uganda lost an estimated 95 percent of its cattle population. The outbreak in Ethiopia triggered the Great Ethiopian Famine of 1888-1892, where millions of Ethiopians died of starvation. By 1892, the disease had spread to West Africa. By 1897, 10 years after its commencement, the epidemic finally reached South Africa where, by 1905, it had burnt itself out. Its suppression was aided by various zoosanitary control measures and by attempts to develop prophylactic controls out of which emerged the serum-virus simultaneous method and the inactivated bile vaccine of Robert Kock. In the following decade, and with assistance from these first generation tools, rinderpest infection in Africa south of Tanzania was totally eliminated. However, across the continent it had killed close to 230 million head of cattle before that point was reached.

Rinderpest Eradication Initiatives in Africa

Concerted efforts to free Africa of rinderpest began in earnest in 1951 when the then Inter-African Bureau of Epizootic Diseases, currently the Inter-African Bureau for Animal Resources (IBAR), was established. The Bureau was principally charged with the responsibility of eliminating rinderpest from Egypt and sub-Saharan Africa where continual east-west cattle movements made it hard for individual countries to proceed beyond local disease control. Because rinderpest eradication required a concerted effort, a multi-nation approach was deemed necessary. For this purpose, the heads of veterinary services in African countries meeting in Kano, Nigeria in 1961 launched a multi-nation joint project (JP15) under the aegis of the then Organization of African Unity (OAU). The objective of JP15 was to vaccinate all cattle of all ages every year for three successive years using live attenuated vaccines to confer a durable immunity.

JP15 was implemented in six phases. Phase I was implemented in West and Central Africa from 1962 to 1965 covering Nigeria, Niger, Cameroon and Chad. Phase II covered Benin, Ghana, Burkina Faso, Togo, Côte d'Ivoire and parts of Mali. Phase III was implemented in the

remainder of Mali and the Ivory Coast, Chad, the Gambia, Guinea, Liberia, Mauritania and Sierra Leone from 1966 to 1969. Phases IV, V and VI were implemented in eastern Africa covering Ethiopia, Kenya, Somalia, Sudan, Tanzania and Uganda between 1986 and 1979. The campaign cost an estimated US\$16.4 million with US\$7.2 million (44%) contributed by national governments, US\$6.6 million (40%) by the European Development Fund (EDF) and US\$2.6 million (16%) by the United States Agency for International Development (USAID) and the Governments of Great Britain, Germany and Canada.

By the end of JP15 in 1979, most of the participating countries were relatively free from rinderpest, except for a few sporadic outbreaks at the Mauritania-Mali border in West Africa and Ethiopia and southern Sudan in eastern Africa. This success gave great hope for the possibility of one day eradicating the disease from Africa. However, it took around 10 years for the levels of immunity to fall, either from reduced vaccination or from the death of animals vaccinated under JP15, for the eastern and western foci to regenerate as epidemics. As a result, more than half of the countries reported increasing numbers of rinderpest outbreaks by the mid 1980s. This prompted the African Heads of State meeting in Nairobi, Kenya, in 1981 to recommend a fresh pan Africa eradication campaign. Thus, the Pan-African Rinderpest Campaign (PARC) was established and charged with the responsibility of coordinating a continent-wide campaign to eradicate rinderpest from Africa.

PARC also was implemented in phases. Phase I (involving emergency operations) began in 1986 in five countries where rinderpest had spread extensively; Burkina Faso, Ethiopia, Mali, Nigeria and the Sudan. Emergency activities then followed in 1987 in Togo, Kenya and Uganda. This first phase cost ECU 22.07 million. Phase II was implemented in Benin, Burkina Faso, Gabon, Ghana, Guinea-Bissau, Mali, Niger and Togo in West Africa and Tanzania and Uganda in East Africa at a cost of ECU 14.37 million. The third and final phase commenced in 1994/95 and ended in 1998. This phase was implemented in Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Guinea, Mali, Mauritania, Niger, Central African Republic, Rwanda and Ethiopia to the tune of ECU 73.74 million. Funding for PARC activities came mainly from the European Union but supplemented by bilateral donors such as DfID, Italy, France, Nigeria and Japan.

PARC's main activities included mass vaccination, disease surveillance, restructuring of veterinary services and prevention of desertification in member countries. Towards the end of the PARC program it became increasingly apparent that mass vaccination was a blunt instrument for rinderpest control, masking signs of clinical outbreaks and interfering with the use of sero-surveillance as a tool for detecting the presence, or confirming the absence of the disease. Thus, mass vaccination was increasingly replaced by cessation of vaccination and increased surveillance activity with targeted vaccination around outbreaks. After 12 years of PARC, most of the sub-Saharan African countries were largely free from rinderpest, and many countries had joined the OIE pathway by declaring provisional freedom from rinderpest. However, two small foci in Sudan and war-torn Somalia persisted.

The evaluation of PARC in 1996 recommended a continuation to consolidate the gains made and to facilitate the stamping out of rinderpest from the remaining foci. It became necessary for IBAR to develop a third international programme. This culminated in the establishment of the Pan African Program for the Control of Epizootics (PACE) in 1998 with funding from the European Union. The programme ran from 2000 to 2006 and provided serological data and disease surveillance data allowing PARC/PACE countries to progress their interactions with the OIE to the point of obtaining recognition as rinderpest free. In support of these activities it also developed disease data management and diagnostic skills across the region.

Although PACE was initially intended to cover 32 African countries, 30 actually implemented the program. While PACE aimed to consolidate the achievements of PARC, it also facilitated the control of other major epizootic diseases such as foot and mouth disease (FMD) and contagious bovine pleuropneumonia (CBPP). The approach was to strengthen the national and regional capacities, to assess the technical and economic aspects of animal diseases and to generate appropriate programs for their control, which would safeguard animal health in Africa against principal epizootic diseases. The major achievements of PACE included the establishment of epidemiosurveillance networks in participating countries and contributing towards the eradication of rinderpest. PACE lasted for seven years between November 1999 and February 2007 (the time between October 2004 and February 2007 being an extension phase) at a cost of over Euro 90 million. By the time PACE wound up, 27 African countries had made significant progress along the OIE pathway for the eradication of rinderpest. Of these, 16 had been recognized as “free from rinderpest”.

Despite these successes, there were concerns regarding what was considered to be the last possible haven for rinderpest which was those parts of Somalia, Ethiopia and Kenya named the Somali Ecosystem (SES), comprising south eastern Ethiopia, north eastern Kenya and Somalia. The reasons for this concern were: this was the last place that rinderpest had been diagnosed; insecurity constraining animal health delivery; uncontrolled pastoral and trade movements, including across international boundaries, and difficulties in implementing the OIE Pathway.

To address these concerns, the Somali Ecosystem Rinderpest Eradication Coordination Unit (SERECU) was established by the AU-IBAR to coordinate efforts towards the final eradication of rinderpest from any remaining possible foci in the SES. The first phase of SERECU ran from January 2006 to February 2007, with a bridging phase between March 2007 and April 2008. The second phase commenced in May 2008 and is still ongoing. The objective of SERECU is to dynamically manage a scientific, coordinated and time-bound regional program to ensure and verify freedom from rinderpest as well as achieve accreditation by OIE for countries in the SES. The total budget for SERECU is Euro 4 million, mainly sourced from the European Union. Currently, Ethiopia and Kenya have been declared free from rinderpest; and Somalia is on course for recognition of freedom by OIE in May 2010.

As this program draws to a close, AU-IBAR is concerned about the need to maintain continuing rinderpest surveillance, though evidence mitigates against the continued presence of rinderpest, namely:

- the presence of national serological and surveillance data from all previously rinderpest infected African countries failing to detect evidence in the years after ending vaccination and this evidence being accepted by the OIE as sound evidence of freedom from rinderpest when matched by an absence of disease reports;
- A livestock population reverting to full susceptibility which should readily indicate the disease and likely to select for virulent rather than mild clinical syndromes, and
- The absence of rinderpest in wildlife populations which were shown by PARC to be important indicator hosts.

Notwithstanding the forthcoming OIE-FAO international declaration of global freedom from rinderpest in 2011, AU-IBAR is mindful of the historical failures of the past regarding the consequences of failing to detect small foci of infection in Africa. It is also aware of the enormity of the investments made by donors and national veterinary services to reach a point where the continent has probably been restored to the rinderpest-free state it enjoyed more than a century ago. Nevertheless, the livestock disease surveillance systems in Africa remain frail and, mindful that the high surveillance standards attained under PACE have not been maintained during the

last five years, AU-IBAR now wishes to indemnify the continent against any disaster by attempting to restore them. At the same time, many African countries wish to add value to their livestock and livestock products through the development of export markets. However, international movement of livestock, meat and other livestock products is now subject to standards of disease control developed by OIE and regulated by WTO which require that these animals and products emanate from countries and zones internationally recognized as free from certain diseases, not only through lack of diagnosis of these diseases but also through the negative results of auditable surveillance data.

Against this background of broadening horizons, one is mindful of previous re-emergence of rinderpest epidemics and though this is thought to be remote, it is important to maintain continued awareness for the disease so, in the unlikely event of a re-emergence, it will be identified early and stamped out quickly. Risk analysis indicates that if wild rinderpest virus persists in animal populations, it is most likely to be as subclinical/mild disease in areas where serological surveillance has been incomplete for reasons such as insecurity and uncontrolled transboundary movements of livestock. Virulent rinderpest virus persists deep frozen in veterinary laboratories in pathological specimens or as tissue culture isolates. Attenuated strains of rinderpest virus for vaccines also persists deep frozen in national, regional or field veterinary laboratories and there is a remote possibility that these vaccine strains could return to virulence. As long as these laboratory sources of rinderpest virus are maintained there is always a risk of accidental or malicious spread of the virus to livestock. There is also the risk that other morbilliviruses, especially PPR which is spreading south through Africa in small ruminants, may cross species and become adapted to cattle.

Now that rinderpest has been eradicated and vaccination against the disease has stopped, there has emerged a cattle population in Africa that is totally unprotected against rinderpest or other related morbilliviruses. Thus, if the disease re-emerged or was introduced, the situation is ripe for another epidemic unless surveillance for early detection and contingency plans for rapid control are in place.

Impact of Rinderpest Eradication

Studies evaluating the benefits of the investment made in rinderpest eradication between 1961 and 2008 show a positive socio-economic impact. For example, Felton & Ellis (1978, quoted in Tambi et al., 1999) found a benefit-cost ratio (BCR) of 2.5 and an internal rate of return (IRR) of 48% when they analyzed the benefits and costs of the rinderpest vaccination campaign in Nigeria. An economic analysis by Lepissier (1971, quoted in Tambi et al., 1999) found that for 33 million vaccinations administered on cattle in Cameroon, Chad, Niger and Nigeria during the JP15 campaign, the project incurred an average cost of US\$0.32 per vaccination. Similarly, Tambi et al. (1999) found the average cost of vaccinating a single bovine during PARC to be ECU 0.42, with as little as ECU 0.27 per animal in Ethiopia. Further, Tambi et al. (1999) analyzed the benefits and costs of PARC in a sample of 10 implementing countries and obtained a BCR of 1.9. They found internal rates of return (IRR) ranging from 11% in Côte d'Ivoire to 118% in Burkina Faso, which suggested that the investment yielded higher returns than the opportunity cost of capital. Additionally, benefits accrued to consumers in the 10 countries in the form of increased supplies of low-priced livestock products.

In a recent study commissioned by AU-IBAR, Omiti and Irungu (2010) established that all the rinderpest campaigns (JP15, PARC, PACE and SERECU) implemented in Ethiopia and Kenya had high and positive net present values (NPV), meaning that they generated sufficient funds to cover the initial investment. Hence, those who gained from the projects (whether producers or

consumers) could potentially compensate those who lost and still remain better off. In Ethiopia, the BCR for JP15, PARC, PACE and SERECU were 138, 31.8, 12.7 and 78.6, respectively. The comparative ratios for Kenya were 171, 35.7, 66.1 and 42.4 for JP15, PARC, PACE and SERECU respectively. The ratios indicate that all the rinderpest eradication campaigns were economically viable and that the funds were utilized efficiently. On the other hand, the IRR for the four projects were higher than the prevailing interest rates of alternative investment in risk-free income securities in the two countries. The four projects had modest contributions to the gross domestic product (GDP) of the two countries and significantly contributed to the final demand for livestock products and incomes of livestock keepers. Other indirect benefits of rinderpest eradication include:

- Capacity building in terms of human resource development (e.g., training of staff on disease diagnosis, epidemiology, data collection, etc);
- Development of disease surveillance and diagnostic infrastructure, e.g., equipment of laboratories and training of laboratory personnel;
- Acquisition of vehicles and equipment such as cold chains, camping equipment, office equipment, etc;
- Establishment of Epidemiology Units in various countries to coordinate disease surveillance and vaccination;
- Establishment of communication networks with and between countries;
- Creation of a wide network and goodwill of governments (especially veterinary departments and research institutes), the private sector, civil society and donors that contributed toward the eradication of rinderpest from Africa. This network can be used as a platform for galvanizing support in future disease control/eradication initiatives;
- More livestock products (milk, blood and meat) and services (e.g., traction and manure) to livestock keepers;
- Increased market access, both regionally and internationally, for livestock keepers due to less frequent quarantines; and,
- Knowledge and experience gained during the implementation of the rinderpest campaigns (e.g., targeted and rationalized vaccination backed up with effective disease surveillance *à la* PARC & PACE, rather than a blanket mass vaccination, *à la* JP15) could be used as a model to shorten the duration needed to eradicate other transboundary animal diseases such as PPR, FMD, and CBPP from the African continent.

Key lessons

Several key lessons can be drawn from the experience of rinderpest eradication from Africa. These include:

1. That for any disease eradication exercise to succeed; there is need for unbridled political goodwill. For instance, national governments were highly committed to rinderpest eradication campaigns with some like Benin, Burkina Faso, Mali and Tanzania contributing over 50% of the total cost of PARC.
2. The role of the donor community in catalyzing rinderpest eradication campaigns through provision of requisite funding is critical. For example, in the case of rinderpest eradication, the EU contributed about 56% of the PARC's costs and therefore helped to initiate the campaign even in countries where counterpart funding was not immediately forthcoming.
3. Owing to budgetary constraints facing many African countries, mass vaccination of animals (where necessary) *à la* JP15 may not be financially viable. Experience from rinderpest eradication shows that rational and strategic vaccination (immuno-sterilization) based on rigorous epidemiological surveillance, *à la* PACE and SERECU not only reduces wastage of scarce public funds but also speeds up the process of disease eradication.

4. An effective disease epidemiosurveillance system at the country level requires availability of both human and physical resources (e.g., office equipment, vehicles, laboratories, camping equipment and cold chains). African countries must redouble their efforts to ensure that such capacity is not only built but also is maintained.
5. An effective disease reporting/early warning system that incorporates all stakeholders (from grassroots communities to the national and regional veterinary personnel) is necessary to ensure early detection and rapid stamping out of any future incursion. Sustained funding for such systems is critical.
6. Disease control/eradication can be achieved only in an environment of peace and security. African countries must therefore foster peace and security both within and outside their national borders.

Recommendations

As Africa and the rest of the world celebrate the unprecedented achievement, the task ahead is still enormous. For example, although rinderpest is already eradicated from Africa, trade-sensitive trans-boundary animal diseases like FMD, CBPP, RVF and PPR still continue to ravage African livestock unabated. The presence of these diseases has continued to erode Africa's ability to access lucrative livestock export markets. Strategies should therefore be put in place to control these diseases with the goal of eventual eradication. The following actions should be put in place:

1. There is need to establish an effective syndromic surveillance system for transboundary animal diseases. Such a system should link key stakeholders for the exchange of disease information and for expeditious emergency response. The syndromic surveillance program should be mainstreamed in the AU-IBAR Strategic plan 2010-2014.
2. Africa should remain vigilant against possible future re-emergence of rinderpest. In this regard, all the rinderpest virus strains held in laboratories in Africa should either be destroyed or kept in high bio-security facilities to reduce the chances of the virus escaping. In the meantime, African states should put in place contingency plans to deal with possible future re-emergence of rinderpest.
3. Many African countries are currently facing financial constraints due in part to the current global financial meltdown and partly due to rapidly growing human population. At the same time, donor funding has progressively diminished in recent years. Therefore, African countries should come up with innovative ways to sustainably fund animal health services. A starting point would be to cut spending on non-growth promoting activities such as the military. Partnership with development partners should be maintained and strengthened. Additionally, trade expansion through regional economic integration could provide the much needed fiscal resources for disease control.
4. There is a need to consider and make use of up to date knowledge of the epidemiology of transboundary diseases, both within the herd, and at the transboundary level, when designing and implementing zoonosanitary control and vaccination strategies for them.
5. A specific programme be formulated for the control/ eradication of PPR and other trade sensitive diseases
6. The African Union should continue playing its coordinating and advocacy roles. In particular, AU will be important in lobbying governments and the donor community to commit more financial resources for the development of livestock in Africa.

Conclusion

The eradication of rinderpest from Africa is unprecedented in history. It marks the first time ever that an animal disease has been wiped off the face of the earth through human intervention. This has largely been achieved through the combined efforts of African governments and

development partners. Although rinderpest has now been eradicated, Africa should still remain vigilant against possible future re-introduction of the disease through failed maintenance of high bio-security systems in laboratories holding rinderpest virus strains, instituting a syndromic epidemiosurveillance system together with a contingency plan for the rapid suppression of any emergent rinderpest event. In keeping with the AU-IBAR Strategic Plan (2010-2014) and the CAADP framework, efforts should be made to control other transboundary animal diseases that continue to limit Africa's access to lucrative international livestock markets. Appropriate funding strategies should be put in place to sustain the development of livestock in Africa. To make a start on this, and to give assurance that rinderpest is truly extinct, the following exit strategy is proposed.

Exit Strategy

(i) Virus sequestration

- An inventory of rinderpest virus strains that exist in pathological samples, as isolates and as vaccine seeds and vaccines in Africa should be made together with their locations (national and regional laboratories and field stations). This exercise to be undertaken jointly by FAO/OIE/IBAR.
- Where such stocks of virus exist, efforts should be made by FAO/OIE/IBAR to persuade those who hold them to have them destroyed and to witness and supervise their destruction.
- Where national governments insist on keeping strains of the virus, attempts should be made to encourage them to have them kept for them in a high security BSL3 level laboratory at PANVAC, Debre Zeit, Ethiopia, subject to FAO/OIE/IBAR inspection and control.
- Where a national government does not agree to having its rinderpest virus it wishes to retain kept at PANVAC, it must keep it at a highly secure BSL3 laboratory under full FAO/OIE/IBAR supervision.

(ii) Dealing with the hazard of re-emergence of rinderpest disease from cryptic foci or if another morbillivirus (PPR for example) emerges in the cattle population

While risk analysis clearly indicates that the chances of wild rinderpest virus re-emerging as outbreaks in the livestock or wildlife populations is remote, unless such an outbreak is detected early and rapid stamping out is performed, such an event could be catastrophic and undo all that has been achieved by successive pan African control campaigns. It is necessary, therefore, to maintain vigilance and emergency preparedness for such an event.

According to Mariner *et al.*, 2010, the SES is the only area of concern as a possible focus of infection remaining in the world. Others would consider a larger area to be of concern, and the region covered by the two regional economic communities IGAD and EAC may be more realistic. This area has a large ruminant population from which there is a desire to export livestock and their products and it is proposed to provide continued surveillance for rinderpest through a programme which includes those diseases that are preventing exports. Thus, livestock producers and those in the livestock value chain may benefit if good surveillance is harnessed to livestock disease control and marketing programmes. It is proposed, therefore, that a programme of "syndromic surveillance" is introduced which covers those diseases which affect export trade, including rinderpest. The proposed syndromic surveillance programme will:

- support control of diseases affecting export trade
- control two important zoonoses

- ensure vigilance regarding rinderpest disease so, in the unlikely event of an outbreak, early warning, coupled with contingency plans and emergency preparedness (which includes immediate access to vaccine in a vaccine bank), will enable rapid stamping out and return to a disease free status.

The syndromic surveillance will support the needs of livestock keepers and those in the livestock value chain. It will also introduce conditions for a livestock export market which should encourage investment by national governments and development partners. The following three syndromes are proposed for surveillance:

1. Stomatitis-enteritis syndrome or rinderpest-like conditions which include, besides rinderpest, the trade-restricting diseases PPR and FMD, and (included for differential diagnosis) MCF, IBR and BVD/mucosal disease.
2. A pneumonia syndrome to capture the trade-restricting pleuropneumonias (CBPP and CCPP) and for differential diagnosis, pasteurilla pneumonia, maedi visna and Jaagziekte.
3. An abortion syndrome to capture the trade restricting diseases brucellosis and RVF. With respect to these diseases, as well as having a major constraint on export trade, they are also important zoonoses and surveillance for these diseases will be important to human health as well as livestock health and trade.

This list need not be too prescriptive and may be varied to cater for a particular country's needs, for example in Somalia, the pox diseases, including capripox, camel pox and lumpy skin disease may be included in a skin disease syndrome for surveillance as these conditions are restrictive to the very important livestock export trade that Somalia is developing.

Technical content will be developed through AU-IBAR and its introduction to national veterinary services will be through AU-IBAR who will assume responsibility for back-stopping the standards of surveillance over the next five years. Data management will be standardised and regional results will be used by AU-IBAR to determine regional disease trends and formulate control policies. National surveillance budgets will be provided, routed through AU-IBAR.

While syndromic surveillance would be carried out in cattle, sheep and goats, wildlife are regarded as highly sensitive indicators for the continued presence of rinderpest in cattle because of the severity of their reactions even to strains that only produce mild clinical signs in cattle. Also, more than 70% of emerging human and animal infectious diseases are emanating from wildlife and they can also harbour other trade-related transboundary diseases, for example FMD. There will be, therefore, components to monitor relevant wildlife populations as part of surveillance activities. Such activities will include:

- Use of disease information databases and analysis within a GIS environment
- Introduction of veterinary investigation and sampling protocols, including participatory techniques to enhance and verify passive reporting
- Use of appropriate diagnostic protocols with emphasis on cost effectiveness (including morbillivirus diagnostics)
- Risk-based active surveillance in wildlife by mapping of wildlife populations and density, and identifying strategic surveillance and sampling sites
- Risk analysis on results of passive surveillance and on epidemiological and ecological information
- Mapping livestock movements (pastoral and value chains) and, after the risk analysis, follow up with targeted surveillance, including use of participatory disease surveillance
- Through IBAR, raise awareness of CVOs to the issues relating to distribution of the trade related diseases and the need to maintain vigilance for rinderpest

- Promote commodity based accreditation of livestock products by evaluating risk factors associated with particular livestock commodities destined for domestic and international markets and possible measures to ameliorate identified risks
- Training programmes in all of the above.

(iii) Interim period

The rinderpest exit strategy proposed requires approval, international agreement and development partner support. The time this will take is difficult to estimate but, certainly, it will not happen before the SERECU project is due to cease its field operations (July 2010). There is a need for continued support for surveillance activities and emergency preparedness in the SES in the intervening time before a syndromic surveillance programme can start if the gains made are not to be jeopardised. It is essential that the ongoing surveillance activities (both in livestock and wildlife) and the capacity for epidemiological investigation, laboratory diagnosis and outbreak response in the SES are maintained in the interim.

It is proposed that these activities and resources should continue to be supported at the end of SERECU and during the interim period as follows:

- FAO-GREP to use part of the funding it has applied for from EU to support IBAR in order for IBAR to support priority activities in the SES at country level in Ethiopia and Kenya;
- Governments of Kenya and Ethiopia themselves to also support these priority activities and resources for the SES from their regular funding;
- For Somalia, SAHSP III which the EU has agreed to fund for 36 months from July 2010 will support these activities and resource areas in the SES.

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