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FEASIBILITY STUDY FOR THE EXTENSION OF ZONING AND ANIMAL IDENTIFICATION AND TRACEABILITY SYSTEMS (ZAITS) FOR EXPORT TRADE IN THE SADC REGION

(CONTRACT 3/2008/PRINT/Services)

Executive summary

Of the FINAL REPORT

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EXECUTIVE SUMMARY **zaits**

A. INTRODUCTION

1. The SADC livestock sector has long realised the importance of regulating and sanitising intra-regional trade in livestock and livestock products (LLPs). This would limit the spread of livestock diseases in the region, render livestock and livestock products safer, and generally raise the animal health status of all SADC countries in the liberalised economic environment of the SADC free trade area.

2. The SADC Secretariat is entrusted with the responsibility to promote regional integration and sustainable livestock production in all of the member states through the co-ordination of animal disease control strategies, human resources development, management of information and improved utilisation, marketing and trade of safe livestock quality products. The Promotion of Regional Integration (PRINT) in the SADC Livestock Sector is a project within the framework of the Food, Agriculture and Natural Resources (FANR) Directorate of the SADC Secretariat.

3. The specific objective of the PRINT Livestock Project is to develop a sustainable basis for a coherent regional approach to the development of the livestock sector in SADC. This will be achieved mainly through the establishment of a Livestock Information Management System (LIMS) that will generate reliable, standardised, essential information in animal health; production; trade and marketing.

4. The expansion of Zoning, Animal Identification and Traceability Systems (ZAITS) feasibility study will contribute to the further development of the LIMS database and seek to provide baseline information on a number of aspects. Hence, the specific aim of the said feasibility study is to conduct an analysis of existing animal disease control strategies in beef export zones and their corresponding animal identification and traceability systems in selected SADC Member States (Botswana and Swaziland) with a view to explore the feasibility of expanding these initiatives to other Member States (MS) which have export potential in LLPs (three of them have been selected for this study, i.e. Madagascar, Tanzania and Zambia).

5. A study to establish the feasibility of possible expansion of zoning and animal identification and traceability systems for export trade in the SADC region was conducted from 15 September 2008 to 28 February 2009 by ADT Projekt GmbH. The study was commissioned by the PRINT Livestock Project aimed at supporting of the Regional Indicative Strategic Development Plan (RISDP) of SADC particularly the policy on promoting regional integration of the livestock sector and sustainable livestock production.

Key objectives

6. The objective of this study was to analyse the contribution of zoning, animal identification and traceability systems towards animal disease control strategies and the promotion of intra-regional and international trade in livestock and livestock products in the SADC region. The study included a detailed review of experiences in Botswana and Swaziland, followed by exploratory studies to establish the feasibility of possible expansion of zoning and animal identification and traceability systems in Madagascar, Tanzania and Zambia.

7. The outputs of this study will contribute data to the Livestock Information Management System (LIMS), an information management system established to provide reliable, standardised and essential information on animal health, livestock production, trade and marketing. The LIMS will be shared between SADC Member States, and form the basis for the formulation of harmonised policies and strategies for animal disease control, livestock

production, animal disease risk assessment and management, and livestock marketing and trade.

Approach to the study

8. The assignment was comprised of literature review, desk studies, extensive use of internet resources and interviews. Documents consulted included the OIE Terrestrial Code of 2008, internal periodical reports, consultancy reports, policy documents, legislation, standard operational procedures and other publications. Interviews were conducted with different stakeholder groups including veterinary authorities, departments of livestock production, exporters of livestock and livestock products, livestock traders, producer organisations, development agencies, suppliers of farm inputs, and other private stakeholders and government departments. Geographical information system data to support zoning was collected from a number of sources within each of the countries.

B. LITERATURE REVIEW

The concept of zoning

9. The concept of regionalisation is recognised by the WTO as expressed in the SPS Agreement and is also provided for in the SADC Trade Protocol as an acceptable tool for providing sanitary guarantees to importing countries. This concept is an acknowledgement of the reality that it is difficult to achieve whole country freedom from some diseases due to presence of either wild reservoir hosts or the inevitable risk of introduction of disease from neighbouring countries.

10. Geographic zones in a clearly defined part of a country containing livestock with a distinct risk status with respect to a specific disease can be established. Relevant surveillance, control and bio-security measures must be applied in accordance with the OIE's Terrestrial Code for the purpose of facilitating international trade. The Code provides clear guidelines on recognition of a country, zone or establishment within a country to be free from a specific disease/infection and the criteria for maintaining or regaining such disease-free status.

11. The prerequisites of zoning are that animals in a particular zone should be separated by means of natural or artificial geographic barriers or alternatively by appropriate management practices and they must be clearly identified as belonging to that zone in a manner that would distinguish them from animals in another zone of a different or similar animal health status. Zoning can be established on a long-term basis as a risk management tool with respect to a particular disease or on a short-term basis in the case of a containment zone established to manage a limited outbreak of a specified disease in any area otherwise recognised as a free zone. This concept is commonly used for highly contagious and easily spreading contagious diseases such as FMD and CBPP.

12. Four different types of zones are recognised for long term zoning with the purpose of animal disease control, eradication or risk management. The types covered in this report largely describe the most common types of zones with respect to zoning for animal disease containment and risk management in accordance with relevant disease chapters of the OIE Terrestrial Code. These are:

    - **Infected zone** - a zone where the disease or infection is present in susceptible livestock or reservoir host (wildlife) or carrier livestock or a vector.
    - **Buffer zone** – a zone that may be established between an infected zone and the rest of the country in the absence of a physical or geographic barrier adequately separating the infected zone from the remainder of the country.

- **Surveillance zone** – a zone characterised by heightened surveillance that is established to surround an infected zone that is separated by a physical or geographic barrier
- **Disease-free zone** – a zone free of disease or disease-causing agent with respect to a particular disease.

In the case of disease incursion in an otherwise disease-free zone, a single containment zone may be established. This containment zone may be subdivided into a control zone and protection zone defined simply as areas of a given radius around infected establishments. Different diseases may require different measures to achieve zoning.

Regional outlook on zoning

13. Developing countries, including most countries within the SADC region have substantial livestock resources that could be traded to exploit the opportunity presented by rising global demand for food of animal origin. Today the demand for higher quality cuts from European supermarkets and meat traders is where potentially the most profitable market is. There is also evidence of a significant growth in local and regional demand for meat and other livestock products from urban consumers within the SADC region, in countries that have seen incomes rise over the recent years. It has been reported that local meat consumption patterns in SADC Member States suggest that low value cuts such as brisket and offal can find their way into regional markets.

14. The OIE recognises that it would be desirable to embark on a national or regional eradication of serious trans-boundary animal diseases (TADs). However, if eradication is not feasible or is yet to be accomplished, the OIE advocates establishment of either disease free zones or compartments of production that are free of disease in order to reduce the risk of introducing or spreading disease or infection to importing countries.

15. Few African countries (mainly SADC Member States) have managed to export beef to Europe for decades. The Beef Trade Protocol of the Cotonou Agreement, a partnership agreement between the members of the African, Caribbean and Pacific (ACP) group of states and the European Union (EU), which has been extended up to the end of 2008, enabled beef from some ACP countries to be imported into the EU at reduced tariffs up to a quota amount determined for each of the participating countries.

16. Beef exports within the SADC region do not face excessive sanitary barriers and a larger market can be accessible to more SADC Member States. Exports to Europe and other parts of the globe may be constrained due to the absence of quality certification schemes such as EurepGAP (primary production) and HACCP (food industry). Supermarket chains in the Western world now demand certification as a pre-condition in order to be able to supply to them. Additionally, EU markets for meat and sugar are constrained due to relatively high import duties. A specific study of the import requirements of all the 15 member states compared to those of the EU, the Middle East and Asia should be conducted as a matter of urgency. From this current study it was clear that intra-regional import requirements differ vastly from Member State to Member State.

17. Long-term disease control zones in Botswana, Namibia, South Africa, Swaziland and Zimbabwe were primarily established for FMD control and/or risk management. The spread of other animal diseases of cattle (such as CBPP) have been controlled utilising the same zoning infrastructure and bio-security measures in Botswana and Namibia. These countries recognised the need for zoning as a tool for managing risks of introduction or spreading of FMD instead of focusing efforts at farm level or the entire country.

18. The level of risk for the occurrence of FMD can be reduced significantly by the geographical separation of the Cape buffalo (the natural reservoir host of the FMD virus) from populations

of susceptible livestock species such as cattle, sheep and goats. The concept of zoning has provided the basis for certifying parts of these countries FMD-free for the purposes of trade in beef and beef products. Use of this concept in the SADC region did not only begin after 1995 with the adoption of the SPS Agreement that recognises regionalisation but has been in practice for decades, facilitating trade entry of beef into high value markets in the EU.

Interfaces created by zoning

19. Interfaces created by animal disease control zones in the SADC region include international borders with neighbouring countries, wildlife conservation areas and human settlements. The major interface created by zoning is the conflict between two land-use systems, namely livestock production and wildlife conservation. An extensive network of veterinary control fences with the objective of separating livestock and wildlife often cuts through wildlife habitats. This results in fragmentation of wildlife populations that were historically linked. The resulting isolation of wildlife ecosystems is not only viewed as threatening biodiversity but also to the survival of some wildlife species. Despite the potential of wildlife-based tourism generating wealth in such areas, the current reality is that smallholder agro-pastoralists living in the adjacent communal areas depend greatly on livestock for their livelihoods. Nature-based tourism is still largely regarded by the livestock sector as a 'lifestyle-supporting' land-use system that does well on the basis of economic indices, but has less impact on supporting livelihoods in the neighbouring communal areas.

20. There is a growing development of trans-boundary conservation projects in the SADC region that have led to establishment of many trans-frontier conservation areas (TFCAs), or so-called 'Peace Parks'. Although this has been heralded by many interested parties and stakeholders, particularly conservationists and the eco-tourism industry as the new frontier in wildlife conservation, the TFCAs have the potential to also be a new frontier of conflict between livestock production and conservation areas. TFCAs' noble intention of biodiversity conservation may heighten the risk of contact between livestock and wildlife harbouring TADs.

21. In all of the five SADC countries with veterinary cordon fences, namely Botswana, Namibia, South Africa, Swaziland and Zimbabwe, reports are available on how veterinary control fences bring benefits to the beef export industry. However, there are also a number of studies detailing the misery brought upon rural communities as a result of restrictions introduced by these bio-security barriers. Veterinary control fences that mostly define boundaries of animal disease control zones often cut through human settlements, splitting social groupings. Often such fences also threaten opportunistic livelihoods of communities dependent on rivers, forests and other natural resources that may become inaccessible. Reported foreign currency earnings derived from beef exports by countries with well-established disease risk management zones shows that zoning is a useful tool in managing trade-sensitive diseases and facilitating trade in livestock and livestock products. However, a country wishing to establish animal disease risk zones must mitigate some of the negative effects of biosecurity infrastructure such as veterinary fences.

Regional outlook on animal identification and traceability systems

22. Two different approaches to the identification of animals exist. In the first instance, one may have a system whereby all the animals belonging to a particular owner are identified with the same identification mark. The aim of such a system is to prove, beyond any reasonable doubt, the ownership of any animal in the herd or flock. The second approach to the identification of animals is to identify each animal within the herd or flock individually with a unique numbering system. The aim of such an approach is not to prove ownership, but to serve as a management tool in animal husbandry and for veterinary control measures.

23. In the SADC region, implementing a livestock identification and traceability system is by no means a new issue. Under the ACP-EU Lomé Convention, Botswana, Madagascar, Namibia, Swaziland and Zimbabwe have preferential export quotas to the EU under the Beef Protocol. Maintaining access to this market has led to implementing and further improving cattle traceability systems that provide equivalent traceability outcomes to systems implemented in the EU member states. These traceability systems are based on individual identification of cattle using identification devices ranging from conventional plastic ear tags to reticular boluses. Export to the EU stopped in Madagascar in the 1990's before the new requirements of the EU were enforced.

C. KEY FINDINGS – Botswana and Swaziland

Establishment of zoning

24. The key driver for establishment of zones in both Botswana and Swaziland is to promote the beef export industry. Establishment of zoning in Botswana and Swaziland from the late 1950's and 1960's respectively was based on FMD risk management, a disease that is of primary concern to trading partners in high value markets. A number of other zones were established to protect the FMD-free zone or export zones from the risk of incursion of FMD that would result in immediate suspension of exports.

25. Although zoning in both Botswana and Swaziland was primarily established to aid the risk management and control of FMD infection, the infrastructure and bio-security measures are utilised for the prevention of introduction and spreading of other diseases such as CBPP, lumpy skin disease and tick-borne diseases. Essentially zoning, surveillance activities, bio-security measures and animal movement controls in place in both countries allows opportunistic control of any other animal disease that spreads by contact with diseased animals

Legislative and administrative framework for zoning

26. In both countries the establishment and maintenance of zoning is provided for under the countries' veterinary legislation. Botswana's Diseases of Animals Cap 37:01 and the accompanying Diseases of Stock Regulations (DSR) of 1926 (as amended) and the Animal Diseases Act 7 of 1965 and Stock Disease Regulations (SDR) of 1933 (as amended) in Swaziland provide for the prevention and control of animal diseases, import and export controls, disease surveillance, quarantine of animals, bio-security measures and a wide range of other measures with respect to animal health.

27. Both countries have clear lines of communication and notification guided by standardised reporting forms. Heads of veterinary departments in both countries ultimately oversee the country's response to emergency disease outbreaks. During investigation of suspect cases of notifiable diseases field teams supported by experienced veterinarians use clinical signs, history and professional experience to determine further investigations.

28. Botswana and Swaziland have appropriate governance structures and extensive networks of trained field personnel supported by veterinarians to enable early detection, notification and rapid response in the event of incursion of FMD and CBPP.

29. The central veterinary laboratories in both Botswana and Swaziland are state owned and have clear and well structured governance. Ultimately the laboratories are accountable to the directors of the veterinary departments. There is good coordination with field veterinary services ensuring that appropriate samples are collected and transported in the correct media and sent to the laboratories.

Participation of key stakeholders

30. Establishment of zoning for trade-sensitive animal disease in both Botswana and Swaziland is currently driven by the veterinary authorities responding to the needs of beef export industries and secondly to assist with control of other infectious diseases of cattle, sheep and goats. Some historians have written that much earlier zoning in both countries was partly driven by demand from commercial ranchers whose enterprises depended on exports to neighbouring South Africa. Both countries consider zoning and related activities in the public good, and as a consequence there is little involvement of private business or citizens in funding of infrastructure or activities related to zoning.

Epidemiological surveillance to support zoning

31. The epidemiological surveillance strategies for trade-sensitive diseases in both Botswana and Swaziland are centered on strengthening the capabilities for early detection of threats to the disease free zones. A common strategic goal is to establish transparent and scientifically defensible surveillance systems that are acceptable to international trading partners. Both countries regard routine surveillance at planned regular animal gatherings such as dipping days and vaccination campaigns as the mainstay of their epidemiological surveillance systems. Field veterinary personnel have clear and well defined guidelines for all surveillance activities and reporting systems. Targeted surveillance employed by both countries ensures the collection of information on FMD, CBPP and BSE so that its absence in the free zones can be reliably substantiated.

32. The epidemiological surveillance activities carried out by veterinary field personnel in both countries have proven adequate in detecting incursions early and immediately notifying the veterinary authorities. Both regional and international beef export markets have accepted the levels of protection provided by both Botswana and Swaziland. This study concluded that due to the peculiar risks of possible introduction of FMD infection in to Botswana's beef export zones there seems to be heightened awareness of the disease than in Swaziland that has had relatively fewer FMD outbreaks in recent years. Botswana's surveillance strategies and activities for the detection of the presence of CBPP were considered adequate to gain international recognition as free of the disease agent.

33. Apart from the use of qualitative enquiries by field personnel in collecting epidemiological intelligence from farmers, there is limited use of participatory and qualitative research techniques in aiding animal disease surveillance in the two sample countries. Current surveillance activities could be boosted by continuous promotion of awareness of diseases manifestation among livestock owners and letting them know their obligation to report unusual clinical signs. More could be done in both countries to improve the collaboration between private veterinarians whose activities include food producing animal and wildlife practice to broaden the disease surveillance network. Disease reporting by private practitioners is largely not adequate despite their obligation to do so. Although the number of food animal private veterinarians is very small, they serve mostly commercial ranchers and feedlots who buy in cattle from many parts of both countries. Their contribution to the animal health information is therefore significant and is mandated by the veterinary laws in both countries.

34. Both countries have epidemiology units manned by highly qualified veterinary epidemiologists at MSc level who manage the information systems, analyse data and produce reports for internal use and fulfilling reporting obligations to the OIE, AU/IBAR and the SADC Secretariat. Suspected diseases in both countries are investigated immediately and outbreaks are reported to the OIE, trading partners and neighboring countries as soon as possible. This is a baseline requirement for establishing trust and demonstrating transparency.

Animal health information systems

35. Botswana and Swaziland have extensive systems for the collection, reporting, processing and analysis of animal health data for the purposes of supporting decision making with respect to animal disease control in general and specifically providing demonstrable evidence of the sanitary status of disease free zones. Their national disease reporting systems are based on the day-to-day disease investigation activities of veterinary field officers and diagnostic laboratories. Data collected by both field and diagnostic services include incident reports and monthly summary reports. Data submitted is often validated when laboratory results are received.

Bio-security measures to support zoning

36. Botswana and Swaziland both have bio-security measures in place to prevent, slow or limit the introduction and spread of the trade-sensitive TADs such as FMD in the whole or parts of the countries. There is heightened awareness among veterinary authority personnel on the bio-security measures necessary to keep specified diseases particularly from livestock populations in their disease free zones and to limit their spread when they occur. Intensified and very strict bio-security measures are introduced in the face of disease outbreaks. In areas where targeted diseases have been recently eliminated, bio-security measures are kept in place to prevent re-introduction of the disease agent or entry of other trade-sensitive diseases.

37. In both sample countries the costs of establishment of existing bio-security infrastructure to support zoning were paid for exclusively by the respective governments. Any future developments are expected to be largely funded by the governments as well. Most of the capital costs for the construction of infrastructure are funded through internal development budgets or capital project funds. There has been very little external support for funding bio-security measures. Recurrent budgets of the veterinary authorities fund the maintenance costs of bio-security measures. Although it must be acknowledged that bio-security measures are at herd, local and national level there was very little evidence of involvement of the private sector in funding bio-security costs. Establish and maintenance of zones for animal disease control and risk management may in some cases fail to yield positive internal rate of return when the costs are weighed against direct earnings from beef exports particularly during the early years of establishing the export zones. However, the benefits of zoning must be viewed in their totality.

Import risk assessment and controls

38. Scientifically defensible and transparent import risk assessments are a feature of modern international trade in products of animal origin. Both Botswana and Swaziland have conducted import risk assessments to estimate the risk of introduction of trade-sensitive TADs through the importation of live animals and products of animal origin. It was observed that both countries do not have the capacity to design computer model simulations to provide quantitative estimates of risk. However, the veterinary authorities of both countries were satisfied with the qualitative risk assessments conducted.

39. The integrity of the sanitary status of a country or zone with respect to a particular disease can be adversely affecting importation of livestock or livestock products from a country or zone of a lesser sanitary status. Apart from the probable risk of introduction of disease export status of the importing country or zone may be suspended or even lost resulting in devastating consequences beyond the livestock industry. A legal framework must be in place to ensure appropriate import controls in accordance with the SPS Agreement and OIE's guidelines on import controls for a specific disease.

Investigating disease outbreaks

40. The credibility of zoning is determined by the ability to investigate any suspicious cases of the disease for which zoning is intended to be established. A well-structured response to suspicion of incursion of a disease or disease-causing agent in an otherwise free zone or zone with low prevalence of the disease assures international trading partners of the credibility of the sanitary status of a country, zone or compartment. Botswana and Swaziland have contingency plans in place for trade-sensitive TADs that details how investigations of suspect cases are handled. Approaches to investigating suspected clinical cases are well documented in guidelines to investigation of specific diseases such as FMD, CBPP and BSE. Disease reports in both countries demonstrate evidence investigation of disease suspects.

Animal identification and traceability systems

41. The Government of Botswana implemented a mandatory Livestock Identification Trace-back System (LITS) from 2000. The overall aim of establishing the LITS is to ensure that cattle are individually identified and traced throughout their lifetime. The system has been introduced to enable Botswana to comply with EU traceability requirements for third countries. More than 80% of Botswana's beef exports are destined for the EU market. The LITS employs radio frequency reticular boluses to identify individual cattle with a unique number on a central computer database which enables Botswana's export abattoirs to verify individual cattle's eligibility for slaughter for the EU.

42. Until recently identification of animals has not been mandatory in Swaziland. Compliance with the old cattle branding law was voluntary. Along with branding cattle to identify ownership, a number of private individual identification and registration systems are in use mainly on TDL farms, government ranches, Royal farms and on most of dairy farms. Following enactment of new identification laws, Swaziland has identified cattle through hot-iron branding. The brands consist of a national symbol (a shield) and a dip tank area number thus enabling identification of cattle as originating from Swaziland and from a specific dip tank area. Swaziland is the process of implementing individual identification of cattle and setting up a traceability information system.

43. In both Botswana and Swaziland the other species of farm animals are not captured onto the branding systems and in the case of Botswana, the LITS. All cattle farmers, irrespective of the zone, are involved and in both countries registration is now mandatory. It is possible to trace an animal from the abattoir back to the herd of origin. Since Botswana has an animal identification system through the use of the reticular bolus, the tracing can be done to the level of an individual animal.

44. Because of the limited access to the government systems, the exporting abattoirs had to design and develop their own in-house software and the use of off the shelf software to meet the requirements of the international trading partners. In the case of the brand mark registration system the personal details of the owner (including national identification), the address, village, crush pen/dip tank area, the brand mark and configuration, and other details are captured. In Botswana this system is computerised but not yet in Swaziland. Both countries have a renewal system whereby the brand has to be renewed after a number of years. This is important as it ensures that the database is cleared out of "ghost" data. The data is therefore fairly accurate. Any transfer or cancellation of the brand mark has to be registered with the branding office.

45. As far as the Botswana LITS is concerned the brand mark is a vital link between the branding system and the individual identification of any animal belonging to a particular farmer. Before the bolus is registered on the LITS, the animal is positively identified with phenotypic information such as brand, sex, age, colour and colour patterns (off a drop-down list on the system). Although the system is not forgery proof, the data is fairly accurate. The lack of interactive connectivity between veterinary offices and the BMC results in a delay in updating the database. The movement permits issued in Swaziland forms the basis of the traceability

of an animal. Unfortunately there is no computerised system where movement permits are captured. The permits are merely filed in the various regional and district offices all over the country.

46. In neither of the two countries there is any link between the systems run by the veterinary authorities and the production data collected by the livestock production officers. Therefore performance recording, productivity of individual animals, and scientific selection programmes is not possible.

Funding the establishment and maintenance of ZAITS

47. The establishment and maintenance of zones and animal identification and traceability systems can demand substantial amounts of resources. The costs of establishment and maintenance of ZAITS are exclusively funded by both the Botswana and Swaziland governments through their departments of veterinary services. Implementing ZAITS for the purposes of animal disease risk management and control, and facilitating trade is regarded in both countries as public goods and therefore deserving of government funding.

48. Establishment of ZAITS in both countries involved the construction of an extensive network of veterinary fences and related infrastructure such as quarantine camps, establishment of epidemiological surveillance systems, bio-security measures and import controls, purchasing animal identification devices and equipment and developing traceability information systems. Investment costs are funded from capital budgets or targeted development funds. Maintenance costs are funded through the veterinary authorities' recurrent budgets.

D. EXPLORATORY FINDINGS – Zambia, Tanzania and Madagascar

Zambia

49. Although Zambia is considered as having potential for export, it is a net importer of beef and other products of animal origin. Within Zambia there are areas of deficiency in terms of the supply of beef due to restrictions owing to FMD and CBPP occurrence in the Southern and Western provinces respectively. These two provinces combined carry the largest proportion of the cattle population in the country.

50. The Government of Zambia has shown a political will to develop the livestock industry, including the strengthening of the infrastructure, the legislative and administrative framework, and the productivity of the livestock in the country.

51. There is a clear CBPP control and progressive eradication programme based on disease control zones. FMD is traditionally controlled by vaccination. Separation of the reservoir host Cape buffalo is considered impractical in the Southern Province due to cattle keepers' utilisation of grazing resources in the Kafue ecosystem.

52. Zambia has reported low volume beef exports to Angola, the Democratic Republic of Congo, Malaŵi and Tanzania. Some Zambian beef processors interviewed indicated that they were considering exports of beef to Ghana. In interviews with the veterinary authority there was no indication that sanitary requirements for the export of beef or live cattle to these markets demanded zoning to manage the risk of FMD and CBPP. However, zoning could be considered in order to consolidate the Zambian's beef industry position in these markets and perhaps widen the market opportunities.

53. It was found that beef prices in Zambia are proportionally much higher than those in countries to its south. It was not clear why the beef prices are so high.

54. Zoning for the purposes of export trade could be considered for the commercial cattle ranching areas in the central district. It was mentioned that this area had been discussed within the Department of Veterinary and Livestock Development but no conclusion had been reached at the time of the study. A number of diverse views were expressed about the merits of the establishment of zoning for regional and eventually international export trade in this area of the Central Province.

55. The case for zoning for export trade in the Central Province is supported by the following reasons: The commercial farms are relatively free from both FMD and CBPP. This status is easier to ascertain through testing the animals at the prescribed intervals since they are sedentary herds. If confirmed to be present, the elimination of infected cases is much easier. The farm boundaries forming the perimeters of private properties make it feasible to control animal movements into this area with little further investment in bio-security infrastructure. If exports are beneficial to farmers they could be asked to pay for some of the bio-security measures and disease surveillance. The cattle population can sustain cattle exports for a number of years without the need for importation of stock into the zone. However, risk mitigation measures could be considered in order to facilitate introduction of cattle from surrounding districts into the export zone without compromising the sanitary status that would have been achieved in this zone.

56. However, the current clinical and epidemiological surveillance system in Zambia is inadequate to assure importing countries that they are able to make a good estimation of the levels of occurrence or non-occurrence of diseases of concern. The reporting framework and ability to take control of animal disease is not adequate and there is no guarantee that all farmers will agree with restrictions and intrusiveness of surveillance activities to be put in place particularly during the exploratory phase. There are no established reporting protocols in place to ensure that trading partners are not put at risk of outbreaks of diseases.

57. Further it has to be considered that only a few wealthier farmers will be beneficiaries of the establishment of this export zone.

58. The study recommends utilisation of the road map in the consideration of several options for possible establishment of zoning for export trade in Zambia, starting with consolidating in existing regional markets and then progression towards meeting stringent requirements of high value international markets if it is necessary and sustainable.

Tanzania

59. Tanzania has the potential to sustain exports of beef to destinations within the region and beyond. A number of initiatives have been put in place by Tanzania to promote investment in the livestock sector with a focus on export trade.

60. Currently Tanzania has reported exports of beef to the Middle East, Democratic Republic of Congo, the Comoros Islands and Malaŵi, and live cattle to a number of destinations including a thriving trade with neighbouring Kenya.

61. A directorate specifically responsible for livestock identification, registration and a traceability system has been established in the Ministry of Livestock Development and has already undertaken a study to look into different options for setting up an animal identification and traceability system. The legislation has been approved in February 2009.

62. A desire to establish export zones to broaden beef marketing opportunities has been expressed by the veterinary authority. An area in the south-east of the country has been identified for possible development into a disease free zone.

63. The endemic occurrence of both CBPP and FMD in Tanzania presents unique challenges for the establishment of export zones along the model of Botswana and Swaziland for the purposes of accessing high value beef markets both regionally and internationally. Risk management and control of FMD, the most trade-sensitive animal disease is currently not a priority for the whole country.

64. There is a need for substantial government funding or external support for the control and risk management of both CBPP and FMD. The veterinary authority must have the necessary resources at its disposal and must be able to supervise the boundaries, maintain clinical and epidemiological surveillance and carry out the necessary diagnostic tests. The governance of veterinary services and resources allocated to the veterinary authority does not render the organisation effective in carrying necessary activities to support zoning.

65. The study recommends utilisation of the road map in the consideration of options for possible establishment of zoning for export trade in Tanzania, starting with regional markets and then progression towards meeting stringent requirements of high value international markets if it is necessary. The South Easter area of the country earmarked for zoning has many challenges be overcome in the establishment of an export zone. The challenges include the occurrence of Trypanosomiasis in this area, presence of CBPP and FMD countrywide and the lack of adequate surveillance and control of both diseases, and most significantly an underfunded veterinary authority whose organisational framework renders it less efficient.

Madagascar

66. The geography and the non-occurrence of FMD and CBPP on the island and its immediate neighbouring countries favours zoning in the area selected or any other part of Madagascar. The country is bounded by the Indian Ocean and thereby preventing straying of cattle onto the island. However, the veterinary authority does not have the necessary resources at its disposal to adequately supervise its borders.

67. Under the ACP-EU Cotonou Agreement, Madagascar had a preferential export quota to the EU. Between 1990 and 1997 Madagascar exported an average of around 700 tonnes of beef to the EU. Maintaining access to this market required the capacity to maintain clinical and epidemiological surveillance and carrying out the necessary diagnostic tests, adequate veterinary public health controls and an animal identification and traceability system. The recent PVS evaluation concluded that the structure of veterinary services and resources allocated to it renders the organisation unable to carry out its mandate to support necessary activities for zoning.

68. Madagascar is implementing animal identification to achieve traceability. However, in its current form the system will fail to achieve the desired outcomes. In order for Madagascar to set up a credible system of zoning in the area identified by the veterinary authority or any other part of the country, there is a need for an effective veterinary organisation and infrastructure with administrative structures and financial resources to adequately cover the development of the different actions required for zoning.

69. The Vohémar district in the north of Madagascar is considered as an export zone as it is largely surrounded by natural geographic barriers to limit animal movement.

70. The case for zoning for export trade in live cattle in Vohémar is supported by the fact that Madagascar is historically free from FMD, CBPP and most other trade-sensitive diseases that would be a hindrance to the exportation of live cattle. The natural boundaries around the proposed export zone make it feasible to control animal movements into this area with little investment in bio-security infrastructure. Historically livestock farmers in Vohémar exported live cattle to Mauritius between 1980 and 1995, and are supportive of the idea of reviving this export market and contributing financially to its realisation. The cattle population can sustain

cattle exports for a number of years without the need for importation of stock into the zone. However, risk mitigation measures could be considered in order to facilitate introduction of cattle from surrounding districts into Vohémar without compromising the achieved sanitary status for the zone.

71. There are a number of challenges and issues to be addressed to establish zoning in the Vohémar district of Madagascar: The organizational structure of the Directorate of Animal Health and Phytosanitary and resources allocated both at national and regional levels are not adequate for the official veterinary service to carry out its mandate. The clinical and epidemiological surveillance system in the proposed district as is the case in most parts of Madagascar is inadequate to assure importing countries of a good estimation of the levels of occurrence or non-occurrence of diseases of concern. The number of official veterinary staff in the proposed zone, the reporting framework and ability to take control of animal disease is not adequate. There are no effective border controls in the rest of the country due to limited resources allocated for this activity. Supervision and monitoring of Madagascar's coastline is largely inadequate including surveillance at high-risk entry ports into Madagascar. There was no evidence of farmers training and compliance with compulsory reporting requirements to ensure early detection of diseases. There no established reporting protocols in place to ensure that trading partners are not put at risk of outbreaks of diseases.

72. The road map will provide Madagascar with guidance to continue the planning for the establishment of zoning in the Vohémar district and approach it in a structured way to ensure that it is not only acceptable to international trading partners but that it is also sustainable.

E. GIS - Use of GIS data to support zoning

73. Geographic information system (GIS) data is very important for the establishment and maintenance of zoning and animal identification and traceability information systems. The study collected a wide range of GIS data from member countries visited. However, the availability was variable in all the countries. Data required was often not available at all or was only in the form exclusively as hard copies or in inaccessible electronic format.

74. In some member countries some of the data required could not made available as it was only obtainable to the study team at a very high cost despite that it was requested for exclusive use in this study. Generally the use of GIS in animal health risk management and disease control is limited in most countries visited.

F. THE ROAD MAP

75. The road map provide guidelines to establishment of zoning and animal identification and traceability information systems in the SADC region based partly on practical experiences observed in Botswana and Swaziland and on general principles of a zoning, animal identification and traceability system as stipulated in the OIE Terrestrial Code of 2008. Any country wishing to establish zoning for the purpose of export trade must approach it in a structured way. The road map to be presented in the final report is aimed at providing guidelines for the establishment of zoning. Areas covered in this road map will include the following:

76. In all three countries visited there are potential areas considered for zoning. However, feasibility studies and/or specific studies on certain areas have only started and progress is slow. Direct copying from existing zoning in the SADC region seems not to be appropriate as they have been established over a long time under different legal, technical and economic circumstances. However, from the available examples (Botswana, Namibia, Swaziland and South Africa) certain elements of the ZAITS can be used as a blueprint such as for the design of infrastructure, i.e. quarantine stations, fencing, etc. and the experience gained with setting-up the AITS.

77. Any country wishing to establish zoning for the purpose of export trade must approach it in a structured way. The road map summarised below is aimed at providing guidelines for the establishment of zoning is divided into five phases:
    - Initiation Phase
    - Planning Phase (technical and financial feasibility)
    - Decision Phase
    - Preparation Phase
    - Implementation Phase

78. Special attention has to be given to the Initiation and the Planning Phase. An official zoning steering project should be agreed and approved on Ministerial/Cabinet level. Since zoning is effecting long term investment in the infrastructure it has to be assured that all relevant stakeholders are included and resources for professional expertise and management of the planning process should be made available.

79. **Initiation Phase (Phase 1):** Expression of political will aiming the establishment of a zone for export trade in the country
    - Definition of an official zoning steering project agreed and approved on Ministerial/Cabinet level.
    - Setting-up a steering committee and identification of steering committee members/stake-holders/key drivers for setting-up the system.
    - Identification of a project director to manage the planning phase.
    - Acquisition of national or international donor funds for carrying out the planning phase.

80. **Planning Phase (Phase 2):** Analysis of feasible options for zoning and animal identification and traceability systems (Phase 2a) and analysis of cost-benefit for selected options (Phase 2b).

81. Defining purposes for zoning
    - Key drivers for establishment of zoning
    - Secondary benefits of zoning
    - Conducting a business case analysis

82. Identifying areas for possible zoning
    - Geographic description
    - Delineating the boundaries
    - Interfaces

83. Assessing the export potential of livestock production systems
    - Livestock production and marketing chains
    - Beef processing and marketing chains
    - Current and potential export markets

84. Animal health status
    - Epidemiological definition of the animal health status
    - Major threats to current sanitary status

85. Reviewing and revising policy and legislative framework
    - Animal health and production policy
    - Policy for transboundary animal diseases
    - Legal framework
    - Compulsory notification

86. Reviewing capacity and upgrading veterinary services
    - Governance of veterinary services
    - Effectiveness of the organisation and infrastructure
    - Staffing levels and competence
    - Structure for investigation and control of disease outbreaks
    - Epidemiological surveillance capacity
    - Holdings registration and animal identification
    - Veterinary public health controls
    - Import risk analysis
    - Quality assurance and export certification

87. Reviewing operational feasibility
    - Financial resources relative to the need
    - Effectiveness of boundary controls
    - Animal movement controls
    - Conducting surveillance
    - Animal traceability system
    - Import veterinary controls
    - Epidemiological surveillance support
    - Cooperation with police, industry and other organisations

88. Study of the financial feasibility
    - Analysis of costs (investment costs AITS, Recurrent costs for AITS, Fences Quarantine station costs, Disease control costs, Inspection and movement control)
    - Analysis of benefits of ZAITS (Incremental exports to EU/third countries, Defending national market against increasing imports, Reduced human health costs, Reduced losses in animal production, Reduced emergency costs for disease eradication)

89. **Decision Phase (Phase 3):** Decision making on the implementation of ZAITS

90. **Preparation Phase (Phase 4):** Preparation measures for the introduction of ZAITS
    - Setting-up a Zoning/AITS unit within the veterinary department
    - Preparation and adoption of legislation (Zoning/AITS legislation, book of rules)
    - Procurement and setting-up of fences, establishment of quarantine stations, control points
    - Procurement, testing and installation of animal I&R equipment and materials (including computer hardware and software, communications, ear tags, paper forms, etc.)
    - Training of all staff and participants and creation of awareness for all stakeholders

91. **Implementation Phase (Phase 5):** Implementation and roll-out of zoning measures including AITS
    - Application of animal health surveillance and bio-security measures
    - Roll-out of AITS in Zoning area (holding registration, first tagging, routine tagging of new born calves, movement recording)
    - Recognition by international agencies and trading partners

G. REPORTING TIMEFRAME

92. An Inception Report was submitted to the PRINT Livestock Project team in October 2008. Following submission of this Aide Memoire, the ADT Projekt team presented the study findings at Bloemfontein Spa, South Africa on the 18th of February 2009. Sections 1 and 2 of the draft final report were made available to the 15 Member States and also be handed to the PRINT Livestock team at the end of February 2009. On the 27th of February 2009 the country reports for Zambia, Tanzania and Madagascar were sent to the three member states in

question. Comments from Tanzania and the PRINT Project Livestock team were received by ADT Projekt by the 16th of March 2009 for finalisation of the report.

93. An electronic copy of the Final Report was delivered to the PRINT Project Livestock team on or before the 31st of March 2009. Printed copies of the report (20) were submitted to the PRINT office by the beginning of April 2009.

H. CONCLUSION

94. It is trusted that the output of his study will guide SADC member countries to consider creating animal disease risk management zones for export trade purposes. Zoning will support efforts to promote regional and international trade in livestock and livestock products. The trade in livestock and livestock products is considered to have great potential to contribute to the promotion of regional integration for economic growth. In order to ensure unimpeded regional trade in livestock and livestock products with minimal risks to animal and human health, SADC Member States must consider utilising zoning and animal identification and traceability systems as tools to demonstrate acceptable levels of protection to importing countries.

95. However, so far intra-regional trade of cattle and beef in the SADC region is limited to trade between certain groups of countries with a first group of countries who may export to all SADC countries (Botswana, Namibia, South Africa and Swaziland), a second group of countries who have limited trade with neighbouring countries (Zambia , Tanzania and Zimbabwe) and a third group of countries with very little or no beef export with countries in the region (Angola, Mozambique, Madagascar, Lesotho and the Democratic Republic of Congo). The trade of livestock is largely facilitated by bilateral veterinary agreements or on a case by case basis based on conditions on permits of the importing countries.

96. Regional trade standards in the SADC region should be based on international SPS procedures of equivalence, risk assessment, regionalisation and transparency and should follow OIE standards. However, regional trade standards should not be determined by the higher standards of the first group but should consider the application of appropriate standards for the implementation of zoning and animal identification and traceability systems achievable for all SADC Member States in a certain time frame without compromising the animal health status of Member States with relatively advanced systems.

97. One of the main objectives of the establishment of the PRINT Livestock Project and the development of the LIMS is the harmonisation of livestock production, development and export policies, strategies and legislation across the SADC region. In this context the provision and the exchange of information on animal health, animal production and livestock trade and marketing as well as the harmonisation of technical standards (for ex. laboratory tests) may support the building of trust between Veterinary Authorities in Member States.

98. Instead of focusing on the access to the European market Member States should look more for opportunities in the development of the regional market. During this study it became abundantly clear that in the past, Member States worked almost in isolation when creating zones, erecting fences, the implementation of bio-security measures and border controls, surveillance strategies, and animal identification and traceability systems. The result is that one finds zones and related activities up to the international border of a Member State and yet, on the other side of the border similar infrastructures and strategies are not in place or are completely different to that in the neighbouring Member State. So far, there is very little cooperation between Member States to harmonise TAD control policies, strategies and legislation in order to establish harmonised controls on both sides of the border. It is therefore recommended that SADC continues to further develop LIMS and establishes a regional centre of expertise to assist all Member States with the harmonisation mentioned above. It would also make sense to establish a regional inspection team to visit all the countries to do

PVS evaluations intra-regionally and also to assist with the establishment of measures and infrastructures that will be acceptable to all Member States to enhance intra-regional trade.