TASK TEAM ON ANIMAL BIOSECURITY

appointed by

THE MINISTER OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT (DALRRD), MINISTER THOKO DIDIZA

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Executive summary

There are increasing concerns in South Africa about the deleterious effects of a number of outbreaks of major animal diseases in South Africa, with consequent severe negative socio-economic impacts. These include the loss of livelihoods for many poor communities and the loss of market access on local, national, and international markets. As a result, the Minister of Agriculture, Land Reform and Rural Development appointed a Task Team on Animal Health Biosecurity in September 2021 to address these concerns.

The Task Team investigated three issues: a) the change in the epidemiological evolution of animal disease challenges, b) the ability of the country to diagnose such diseases on time, and c) the preparedness of the country in putting in place realistic and scientifically justifiable remedial biosecurity measures. The main finding of the Task Team's deliberations was that the country was failing at all three of these tasks.

The Task Team set about its terms of reference in two main ways. First, we studied the reports from a series of external investigations into the issues at hand by the USDA, OIE and EU between 2007 and 2017, followed by action plans drawn up in 2004, 2015 and 2016 by the South Africa authorities to address the recommendations of these reports. These were studied in some detail. Second, a series of interviews were conducted with the major stakeholders in the livestock industry, including communal farmers. Our report therefore presents a summary of the views, concerns, and problems identified by stakeholders from government to the private sector, leaders of farming organisations and communal farmers. These views and opinions were corroborated and matched with findings contained in reports from external evaluators.

It is important to note that government and associated institutions do not own and are not custodians of animals within the production and marketing value chain. The system relies on the integrity, accurate and timely disclosure of all information about the health status of every animal by owners and others throughout the value chain. There are many instances where infected animals are not timeously detected for various reasons. These include animals hidden from dip tanks, lack of disclosure, non-compliance to permit requirements including at sale points and movement to other areas as well as co-mingling of infected with healthy animals. Accordingly, there's urgent need to implement corrective measures regularly and consistently to ensure compliance mainly through communication, awareness training, primary animal health care service delivery and regulatory enforcement.

The concerns raised by role players in the livestock industry of South Africa are directly linked with the lack of implementation of most recommendations listed in previous reports. The current crisis is clearly a manifestation of non-compliance by livestock owners and others in the value chain, as well as the inability of government and the network of associated institutions such as OBP, ARC-OVR, laboratories, and provinces to implement critical interventions to ensure animal biosecurity.

A common thread running through all the interviews of the Task Team with industry stakeholders, government officials, and research establishments, is that the veterinary system and animal biosecurity system is broken. In its current format and design, it poses a major threat to the future of inclusive growth in the livestock industry in South Africa. The evidence of the broken system can be ascribed to systemic (institutional) issues, legislative constraints, budget problems, a trust deficit, non-alignment between stakeholders, and execution and implementation failures. These aspects are manifested through the following:

- Poor and unscientific decision-making by officials
- Poor coordination between national and provincial governments and slow response to emergency situations
- Poor maintenance of red line and border fences, laboratory infrastructure and equipment and research facilities
- No risk analysis unit within DALRRD to be able to analyse diseases and relevant data for disease predictions and timely containment and preventative actions
- Non-availability of vaccines for notifiable diseases
- Poor disease surveillance and no early warning system
- Non-compliance by livestock owners in applying on-farm biosecurity measures to prevent the introduction or spread of animal diseases
- Lack of movement control of animals from infected areas
- Inadequate or non-compliance at points of animal sales to verify health status of animals
- A lack of understanding of harmonising of disease control needs with that of traditional beliefs and concepts in communal areas and in peri-urban areas of South Africa.

Throughout the Task Team's discussions there has been continuous reference to the provincialisation of veterinary services and lack of coordination between the national Director of Animal Health and the provinces. Some provinces such as Gauteng, Western Cape and Northern Cape operate reasonably well with very good inspection teams, very good diagnosis, and good laboratory systems, but for the rest – especially for those provinces with FMD control zones such as Limpopo, Mpumalanga and KZN – there are systemic failures. Each of the potential causes of the poor state of South Africa's animal biosecurity system is discussed in more detail in **Section 5 of the report and should be read with attention and care.** This is the core of our assessment of the problems with animal biosecurity in South Africa and boils down to six core problems or shortcomings:

- There is no clear chain of command, largely because of duplication and overlapping responsibilities in the management and coordination functions
- There is a lack of transparency in the policy formulation of veterinary operational policies, procedures, and notices
- There is a lack of contingency planning
- There is a lack of timeous communication of critical interventions

- The decision-making processes are characterised by a lack of trust between stakeholders, especially those between the public and private sectors
- A tendency to favour international obligations at all cost over domestic realities

The result is a disjuncture between plans and implementation of those plans. The Task Team has made a number of recommendations to address these shortcomings. These are classified in terms of their urgency. The most important are:

Short term recommendations

1. A meeting between the Minister and the MEC's of all provinces to discuss interim measures to establish the chain of command, allocation of funding, movement control, and the designation of responsibilities.
2. Urgently establish an animal health biosecurity plan which should include alternative options to ensure biosecurity such as vaccination to control the spread of disease
3. Activate Animal Health Biosecurity awareness programmes for livestock owners and handlers across the value chain, including on regulatory compliance requirements.
4. Actively enforce regulatory compliance for disease management throughout the value chain.
5. Reinstate a rigorous and effective system to control the movement of animals out of disease control areas. In the case of communal areas introduce a mechanism to work together with traditional leaders.
6. Re-activate the process to establish an animal disease emergency fund. This could be done by reserving a specified share of the national annual animal health budget in a contingency reserve. The necessary regulations will have to be developed and approval from Treasury will probably have to be obtained.
7. Activate public-private partnership agreements and market access during disease emergencies for each of the commodities impacted by diseases.
8. Immediately deal at national level with the state of disrepair of international and protection zone fences.
9. Review the structural arrangements across several Directorates within the national Department, especially in the Branch: Agricultural Production, Health, Food Safety, Natural Resources, and Disaster Management to eliminate duplication and to strengthen human and financial resources.
10. Evaluate and assess the management and leadership of key staff in the national and provincial veterinary offices.
11. Enforce corrective actions to address the vaccine shortage created by the various problems and dilemmas at the OBP.
12. Investigate alternative possibilities to expedite the production of FMD vaccine.
13. Establish an independent risk analysis structure/unit within the Department for the implementation of an early warning system.
14. Re-assess the dominant role of one advisor (Professional: Disease Control) to the Director Animal Health in decision-making and policy formulation to ensure greater participation by other members of the Directorate.

15. Re-evaluate all existing VPN's in collaboration with the relevant stakeholders in the various livestock industries.
16. Consider the establishment of a dedicated national response team to deal with disease emergencies.
17. Amend policy on the authorisation and delegation criteria for private veterinarians to conduct services for and on behalf of Government.
18. Reinstate the practice of using dipping tanks as a control point for animal biosecurity measures, disease surveillance and disease interventions.
19. Establish a livestock traceability system – LITS needs to be implemented immediately and linked with the animal health system.
20. Establish an advisory panel of stakeholders to assess and advise on Section 20 applications in terms of the Animal Diseases Act, 1984 for veterinary research, experiments, and vaccine production.
21. All food security programmes involving livestock and implemented by provinces or local governments should involve veterinarians and animal scientists.

Medium to long-term recommendations

1. Explore the possibilities of using the opportunity offered in Section 44(2) of the Constitution to address the lack of chain of command and centralised service delivery versus the preferred option of replacing the Animal Diseases Act 35 of 1984 by the Animal Health Act 7 of 2002. Implementation of the Animal Health Act is suggested as an immediate action as part of the Biosecurity Plan.
2. Re-evaluate the organisational structures of veterinary services in provinces to address the lack of service delivery and abolish the matrix organisational structure of service delivery.
3. Extensively review the Animal Diseases Act and its regulations to assess compliance with sound biosecurity criteria and international standards for disease control.

Overall assessment

This report presents to the Minister our assessment of the state of Animal Biosecurity in South Africa based on interviews of all stakeholders (including farmers) in the livestock industry and our own expert understanding of the current flaws in the system.

It is our observation that everyone – farmers, auctioneers, abattoirs, feedlots, industry bodies, veterinarians, education institutions, the Minister, Director-general, provincial authorities, traditional authorities – all agree that Animal Biosecurity in South Africa is in a crisis, and they all correctly diagnose the elements of the crisis. On top of that everyone agrees on the reasons for the crisis, but it seems there is no dedicated plan to deal with the crisis and no effort to implement the corrective actions that have been recommended time and again. There is thus a need for strong action, for consequence management and for a strong political will to affect change in leadership and to be results driven. These actions are needed, not only to improve the economic fortunes of all livestock producers, but to restore some pride in and amongst our veterinary and animal health officials.

To ensure sustainable success in the implementation of appropriate Animal Biosecurity measures all stakeholders, particularly livestock owners and handlers throughout the value chain must comply with regulatory requirements. Participants throughout the value chain must enforce biosecurity measures including through vigilant requirements of health certificates of animals and associated permits for movement control. Any non-compliance to biosecurity measures must not be tolerated, corrective actions mut be implemented by all stakeholders including through regulatory enforcement.

The discussions with stakeholders confirmed that in most provinces this observation, from the OIE performance audit, still holds:

“There is a lack of veterinarians in regular contact with farms and animals, especially in extensive commercial systems and in small holders or communal areas; there are also a limited number of veterinarians who conduct on-site inspections of animal processing facilities. This limits the ability to certify products and activities in compliance with OIE standards and/or import requirements and limits the expansion of export markets. It also reduces the sensitivity of the passive surveillance early detection system”.

Several EU and OIE inspection reports have made recommendations and assessments, but the main message is that:

“the main paradigm shift in animal health will be in convincing both policy makers and stakeholders of the need to promote more regular contact between farmers/animals and qualified veterinarians. This is required to increase the sensitivity and accuracy of disease surveillance, for early detection and rapid response, by involving more highly competent staff or officially delegated private veterinarians in the VS”

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1. INTRODUCTION

Animals and animal products represent the largest share of agricultural GDP in South Africa and contribute the largest source of protein to the diets of South Africans. In addition, animals represent a major source of both wealth and livelihoods for many South Africans in the traditional areas as well as the peri-urban agricultural sector. Consequently, the efficient prevention and management of animal diseases and maintenance of animal health is critical to support inclusive growth and employment creation in the agricultural sector and to protect individual livelihoods and national food security. Government cannot, and should not, compromise its role in this regard.

The critical role of government is well illustrated when the keystone roles of public veterinary services and animal health services in protecting this asset are considered. Government's primary role is to provide public good services that do not accrue to a single individual animal owner, but benefit the livestock system (commercial, smallholder and individual owners throughout the value chain) and economy as a whole, such as quarantine and meat inspection, control or eradication of major epidemic diseases, and veterinary public health and prevention. Thus, if government implements these services effectively and comprehensively it will ensure that the livelihood and economic survival of all livestock keepers is protected, flocks and herds are protected, and export market opportunities are created that will support inclusive growth of the sector. Government's role in animal biosecurity services is therefore an important equaliser and an important way to treat everyone equally, irrespective of size of their enterprise, their race, or gender. It is critical to act comprehensively, inclusively and across the board as diseases do not respect human induced artificial boundaries and classes.

Recently, there has been a concerning increase in outbreaks of several major animal diseases in South Africa, with consequent severe negative socio-economic impacts. The most notable impact has been the loss of livelihoods for many poor and disadvantaged communities and the loss of marketing opportunities on local, national, and international level. Outbreaks of foot and mouth disease (FMD) and African swine fever (ASF) for example have spread to areas in the country where both diseases have never occurred before. Recent renewed outbreaks of highly pathogenic avian influenza (HPAI) have added to the problem. The cumulative effect of these disease outbreaks is an increasing threat to food security and job creation and thereby delayed economic recovery and reconstruction amidst the Covid-19 pandemic.

Against this background and to address the challenges experienced with disease outbreaks as well as a general concern about the deteriorating state of South Africa's animal biosecurity status, the Minister of Agriculture, Land Reform and Rural Development appointed a Task Team on Animal Biosecurity in September 2021 and charged them with the responsibility to use the experiences gained and lessons learned with the current and ongoing outbreaks of FMD, ASF and HPAI, to provide advice on improving the application of animal health biosecurity interventions in South Africa.

1.1 OBJECTIVES AND TERMS OF REFERENCE

The terms of reference of the Task Team are based on information on the frequency, intensity, and management of recent and ongoing animal disease outbreaks in South Africa as a benchmark to propose corrective actions and collaborative strategies with role players in the private sector. The emphasis is to propose improved and where indicated, amended alternative biosecurity applications for animal disease control to facilitate sustainable livelihoods.

"Biosecurity" is generally viewed as an all-encompassing concept referring to relevant risks to human, animal and plant life and health, and to protection of the environment. All these domains are inextricably linked, which therefore requires an integrated approach to biosecurity at the national and provincial level. In addition, South Africa's approach towards biosecurity must be consistent with both national and international obligations. In this regard it is important to note that in the international veterinary community, biosecurity applications related to animal disease control primarily relate to the prevention of the introduction of an animal pathogen into a country or consequent establishment thereof, and the prevention of the spread of an animal pathogen from the country or an infected establishment.

This is in support of the OIE[1] Terrestrial Animal Health Code which defines animal health biosecurity as ***"a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population"*.**

In addition, globalisation, climate change and human behaviour such as urbanisation, have given pathogens numerous opportunities to colonise new territories and evolve into new forms as is the case with several animal diseases such as ASF, FMD and HPAI. This requires new disease control challenges, new methodologies, improved systems, better resources, and adequate leadership in preventing, managing, and controlling animal diseases.

Biosecurity measures are already incorporated and inherent in existing animal health and veterinary public health legislation in South Africa as well as the relevant specific and horizontal chapters in the OIE Terrestrial Animal Health Code (such as import risk assessment, regionalization, surveillance and monitoring, evaluation of veterinary services, and obligations and ethics in international trade). The Ministerial Task Team was established with the primary objective to explore the reasons for the escalation in disease outbreaks despite the availability of national and international prescripts and guidelines on animal health biosecurity.

With this focus in mind the Task Team considered issues that include the epidemiological evolution of the existing animal disease challenges, the ability of the country to diagnose the diseases on time, and its

[1] The official acronym for the World Organisation for Animal Health, formerly the Office International des Epizooties

preparedness in putting in place realistic and scientifically justifiable biosecurity measures and strategies to achieve a desirable outcome for stakeholders.

1.2 WORKING PROCEDURE OF THE TASK TEAM

The main business of the Task Team was to provide an independent assessment and understanding of the problems with animal biosecurity in South Africa. To execute its terms of reference the Task Team conducted confidential (virtual) interviews with 28 groups representing all dimensions of the livestock industry in South Africa. Due to Covid-19 restrictions, the Task Team could not conduct on-site examination and verification of documents. These interviews were, nevertheless, very informative and aligned well with our own expert understanding. It soon became very clear to the Task Team that all the discussions confirmed the same issues identified in various missions and other investigations done in South Africa over the last two decades. These reports as we show below already provide an important basis and context for understanding the current crisis.

The South African Veterinary Services has been subjected to several inspection and fact-finding missions during the past 15 years to evaluate either the entire scope of delivery of veterinary services or selective sections of service delivery. These inspection and audit missions were all conducted by experts from international organisations and institutions such as the OIE and European Union (EU). The most important that have a bearing on the mandate of this Task Team were the following:

- 2007: Evaluation of the FMD control strategies in South Africa – USDA - APHIS
- 2012: OIE PVS – Evaluation of the entire scope of veterinary service delivery in South Africa
- 2013: OIE – Evaluation of the FMD control measures following the application of South Africa for the re-instatement of zonal freedom for FMD
- 2014: OIE – Follow-up mission to assess if the control measures for FMD as recommended after the 2013 mission have been implemented
- 2014: OIE – PVS Gap Analysis mission following the recommendations of the PVS mission in 2012
- 2016: EU – Audit ostrich meat exports from RSA to EU
- 2017: EU – Audit of the control of residues in animals and animal products and control over veterinary medicinal products
- 2017: EU- Audit of the Animal Health and FMD control in South Africa

The Task Team also acknowledged with appreciation that all the missions conducted by the OIE, were on invitation by the Veterinary Services of South Africa. In response to these missions the Department of Agriculture and specifically the Directorate Veterinary Services, developed the following action plans:

- 2004 – Veterinary Services – a long-term mission
- 2015 – Animal Diseases Management Plan
- 2016 – South African Veterinary Strategy: 2016 – 2026

Concurrently with the work of the Task Team, the Bureau for Food and Agricultural Policy (BFAP) is facilitating a process with all value chain actors (NERPO, SAFA, RPO, RMAA) in the primary cluster of the Red Meat Industry to consider a long-term strategic plan. Amongst others the plan considers efforts to align the delivery of veterinary services in South Africa with the objectives of the National Development Plan, 2030, the AAMP (Agriculture and Agro-Processing Master Plan 2021 – 2030) and to compile a common vision, with practical objectives and the proposed critical structures, interventions, and public-private partnerships to support and excel the effective implementation of key biosecurity services and interventions required to implement the Red Meat Industry Strategy 2030.

In addition, DALRRD participated in the drafting of a report conducted under the auspices of the Academy of Science of South Africa (ASSAF). The aim of the study was to provide evidence-based scientific advice to South African policymakers on the state of biosafety and biosecurity in the country. The report, titled: "The State of Biosafety and Biosecurity in South Africa", provided recommendations on:

- Improving the capacity to detect and respond to infectious disease outbreaks (human and animal).
- Education and awareness raising.
- Ethical conduct in the handling and management of infectious agents, including in laboratories.
- Scientific openness and transparency.

To date, there is no evidence that DALRRD has considered any aspects of the report for implementation.

All the documents listed above contain details of the status of delivery of veterinary services in South Africa at different periods, the problems that were encountered, and red lights that were identified that need urgent attention. Above all, important recommendations were made to rectify errors and to move towards an internationally recognised and functional Veterinary Service that serves the interests of all stakeholders in South Africa.

The Task Team will thus not repeat what has been reported on before or further elaborate or analyse what has been said. These documents are all readily available from the DALRRD. The emphasis of this report is thus rather to try and establish what went wrong or is still needed to realise the noble ideals expressed in the reports above. In its analysis the Task Team also tried to establish the reasons for the lack of implementation of most of these recommendations, especially as they relate to the definition of animal health biosecurity adopted for the purpose of this assignment by the Minister.

We noted with great concern the lack of implementation of most recommendations listed in these reports. The current unprecedented spread of diseases such as FMD and ASF for example, is clearly a manifestation of the inability of government and the network of associated institutions such as OBP, ARC-OVR, laboratories, and provinces to implement critical interventions to ensure animal biosecurity. Non-compliance with several OIE standards to mitigate the risk of disease introduction and spread, has resulted in considerable damage to the future ambitions of the livestock industry in South Africa and therefore specifically harms the opportunities of black farmers and therefore harms the government's ambition of inclusive growth.

The Task Team liaised with other task teams such as those established for FMD, ASF and HPAI as well as with the national Directorates of Animal and Veterinary Public Health, Provincial Directorates of both disciplines, the ARC – Veterinary Research Institute, the University of Pretoria (Faculty of Veterinary Science), livestock farmers as well as a wide spectrum of other relevant stakeholders. Due to Covid-19 restrictions, all these meetings were conducted virtually in order to obtain information on disease management experiences, observations and possible solutions and proposals on biosecurity issues related to animal disease control in general and related to FMD, ASF and HPAI. The stakeholders and institutions interviewed are listed in Annexure A of this report.

1.3 ACKNOWLEDGEMENTS

The Task Team sincerely wishes to thank Minister Thoko Didiza for the trust bestowed in them to undertake this challenging task. It has been a good learning experience and we trust that the findings and recommendations of the Task Team will assist the Minister in guiding the future of veterinary service delivery in South Africa.

The Task Team is also deeply indebted to the 27 stakeholders listed in Annexure A of this report for their valuable verbal and written inputs. It is especially appreciated in the context that the Task Team, due to COVID-19 restrictions, did not have the opportunity for physical and face-to-face consultations and thus had to rely on written inputs and virtual discussions. The Task Team experienced, with sincere appreciation, that these inputs and discussions were very open and transparent, and conveyed a message of a common commitment to help to identify the constraints hampering the application of sound biosecurity measures and to propose workable solutions for the delivery of internationally acceptable veterinary services. The Task Team therefore also has an obligation towards the stakeholders to reflect their inputs in a transparent way within the report.

2. LEGAL MANDATES FOR THE DELIVERY OF VETERINARY SERVICES

The Task Team acknowledged that prior to 1994 and before the establishment of a democratic South Africa, the delivery of veterinary services was centralised with the heads of veterinary services in the provinces and the then so-called “Homelands”, under the direct control of the central office in Pretoria. In accordance with the Constitution of the Republic of South Africa (Act No. 108 of 1996) veterinary services became almost fully decentralised, making it a concurrent function to be performed by both national and provincial veterinary authorities. This resulted in the establishment of virtually “independent” veterinary services in each of the 9 provinces still performing the services under the directions of the Animal Diseases Act of 1984 and policy guidance of the national government, but now subject to the priority settings of each individual Provincial Government in terms of budget allocations, human resources, and infrastructure support. In several provinces, the transition phase created its own problems in terms of service delivery and disease control – in many instances some of these problems are not yet resolved as will be described in the report. It is however of some concern that South Africa is still faced with these transitional problems 28 years after the advent of democracy.

In Schedule 5 (Part A) of the Constitution, "abattoirs" and "veterinary services, excluding regulation of the profession" and in Schedule 5 (Part 8) "municipal abattoirs" are identified as functional areas of exclusive

provincial legislative competence, however the definition and scope of exclusive competence is not clearly defined. In Schedule 4 (Part A) "animal control and diseases" is identified as a functional area of concurrent national and provincial legislative competence. “Veterinary services” is also not defined, making the distinction even more vague. Section 156 of the Constitution further makes provision to assign these functions to municipalities. It is from sections 40(1), 40(2), 41(1), 44(2), 100 and 146 that the role and functions of the national authority can be identified by implication.

The Constitutional arrangements assign to the DALRRD the mandate to set the norms and standards for the delivery of veterinary services, national disease control programs and the control over the import of animals and animal products. The provincial veterinary authorities are primarily responsible for implementation and enforcement of the national veterinary services standards, thereby enabling the sanitary guarantees for both the import and export of animals and animal products in accordance with national and international norms and standards that must be provided by the national veterinary authority to international trade partners.

To this end, DALRRD and the provincial departments of agriculture signed a Memorandum of Agreement which would support the implementation of the spirit of the Intergovernmental Relations Framework Act, 2005 (Act 13 of 2005) in August 2008.

In short, the national department, for the most part, determines and prescribes the standards of what should be done, while provincial departments implement the prescripts of the national department. This relationship is glued together by a massive load of rules and regulations to be applied and adhered to by provincial veterinary services: several Acts and Regulations; standards of the OIE Terrestrial Animal Health Code and OIE Manual; EU Directives; and Veterinary Procedural Notices (VPN’s). There are currently 47 VPNs plus several other standard procedure notices. From a bureaucratic management point of view this could be perceived as acceptable except that no clear provision is made for auditing and monitoring the implementation of these prescripts and decisions. In addition, provinces continue to restructure Veterinary services without involvement of the National veterinary services.

Failures in the system result in a break in the chain of command. For example, the findings and evaluations in almost all the reports cited under 1.2 above indicate that the legal mandate or how the mandate is interpreted and subsequently applied or not applied, points to the core of the problem of veterinary services delivery in South Africa. We do not dispute any of these findings. In addition, there’s no evidence that DALRRD veterinary authorities dispute the findings. There is a break in the chain of command and a lack of uniform application of standard operating procedures which are in short, the main reasons for the perceived sub-standard delivery of veterinary services in South Africa. It is for example summed up as follows in one of the reports:

> “*The breaks in the chain of command negatively affect the authority and the capability of the VS in all relevant domains. This lowers the level of advancement and/or is described as a weakness in many of the critical competencies of the OIE PVS evaluation. This has also contributed to a loss of rigour in most official animal health programmes that can no longer be implemented in a consistent, compulsory and coordinated manner throughout the country*”.

It is the Task Team's view that this is very much still the reality and points to systemic failure of veterinary services in South Africa.

There are, in the view of the Task Team, three possible options that can be considered to address the apparent legal dilemma of the Constitutional prescripts overriding the powers for effective disease control imbedded in the Animal Diseases Act of 1984:

1. Maintain the *status quo* but have an in-depth discussion between national government and all provinces on Ministerial and MEC level in the spirit of the Intergovernmental Relations Framework Act, 2005 (Act 13 of 2005) to newly define the lines of responsibility and chain of command - especially as it relates to the control of outbreaks of major trade-sensitive animal diseases, zoonotic diseases, and veterinary public health.
2. Consider applying the legal mandate in terms of Article 44(2) of the Constitution in which Parliament may intervene, by passing legislation in accordance with section 76(1), with regard to a matter falling within a functional area listed in Schedule 5. This option can be taken when it is for example necessary to maintain essential national standards or to establish minimum standards required for the rendering of services or to prevent unreasonable action taken by a province which is prejudicial to the interests of another province or to the country. This would be a drastic step and would probably be only considered when a province or provinces completely fail or ignore the application of national standards for animal disease control.
3. To replace the current Animal Diseases Act, 1984 with the Animal Health Act, 7 of 2002. This Act was assented to after signature by the President on 30 July 2002 as published in the Government Gazette number 23675. However, implementation date was never proclaimed for publication in the Gazette. **the Animal Health Act of 2002 might provide possible solutions for several shortcomings identified by the Task Team and is very explicit** – for example:

    - Minister responsible for Agriculture (which includes animal health matters) who becomes responsible for the Animal Health Act may delegate responsibilities to provincial MEC's with conditions and may withdraw such powers.
    - Appointment of a national executive officer with powers of delegation to similarly appointed provincial executive officers and strong emphasis on private public partnership and cooperation. This delegation does not take away but further strengthen the harmonisation between the national and provincial governments on veterinary matters and disease control. This is also specific delegations and not automatically assigned functions to provincial veterinary assignees.
    - Strong emphasis on national monitoring of service delivery and withdrawal of authorisation in the event of failure of service delivery. Provincial executive officers thus remain accountable for disease control matters to the national executive officer.
    - Explicit guidelines on budget allocations.
    - Explicit responsibility and maintenance of international fences for disease control purposes.

- The uniform application of disease control standards and the monitoring thereof with clear guidelines on the application of chain of command.

We argue that the current broken system is a direct consequence of government failing to implement this approved Act. It is still a mystery why there remains an implicit resistance to implement a piece of legislation that was aimed to deal with all the flaws of the current system and that was approved by parliament and also assented into law.

3. MAIN FINDINGS AND RECOMMENDATIONS OF EVALUATIONS BY INTERNATIONAL ORGANISATIONS ON THE PERFORMANCE OF VETERINARY SERVICES IN SOUTH AFRICA

1. In section 1.2 above the eight most significant fact-finding and audit missions to South Africa to assess veterinary service delivery, or parts thereof, are listed. In all these reports there is a common thread of observations, concerns, and recommendations. It is not within the scope of this report to list and discuss them all in detail. Only the most critical issues related to biosecurity will therefore be briefly outlined. Some of these have already been described above, such as the inability to ensure optimal service delivery because of the break in the chain of command.

2. The lack of implementation and lack of auditing and monitoring of the implementation of standards feature very prominently in most of these reports. In the EU audit report on the control of FMD in the country, it is stated that *"In the absence of an operational assessment and verification of the application of the system in the field, the CCA [Central Competent Authority] cannot identify and correct the weaknesses in the system, and is not in a position to demonstrate the effective application of the system in order to deliver a reliable guarantee on the protection of the health status"* And also: *"The FMD surveillance and control system is supported by adequate documentary procedures developed at central level (veterinary procedural notices, guidelines for surveys, forms for reporting). However, no guidelines, contingency plans or set of procedures enabling staff to perform their task or report their activity in an adequate and consistent way were developed*."

3. Further, observations made by international experts clearly state that DALRRD has the sole mandate in setting national standards and the provincial authorities left with the responsibility for implementation. However, the observation was also made that when the train goes off the rails during the implementation phase, as with current unprecedented FMD outbreaks in Limpopo, KwaZulu-Natal, Gauteng, Free State and the similar unprecedented country-wide spread of ASF, the incorrect or non-application of standards at implementation level, are often given as a reason or excuse for the dilemma.

4. The urgent need for continuous oversight, auditing and monitoring of disease control interventions is a critical necessity for ensuring the effective application of biosecurity measures. The EU audit team of

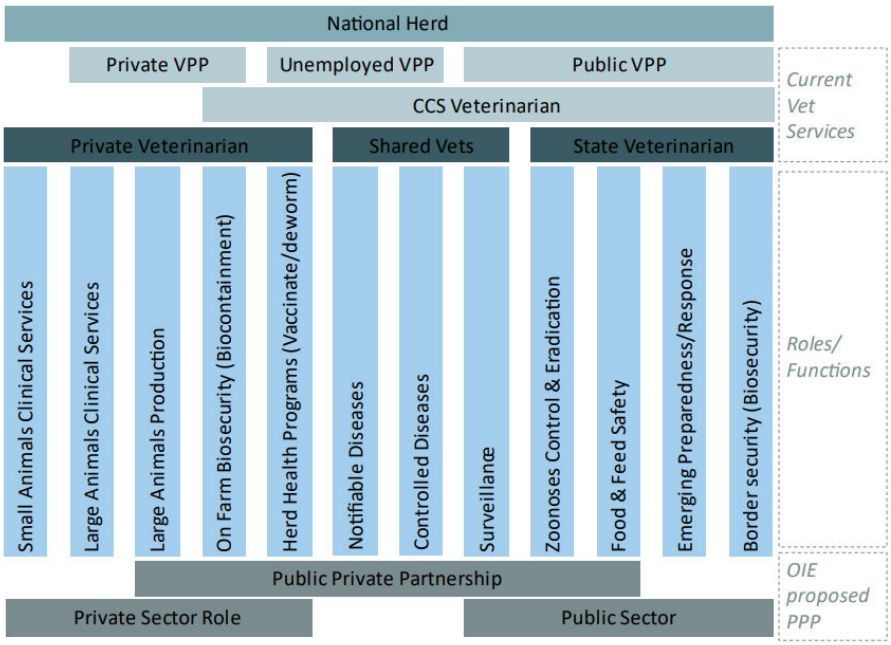
2017 was informed that: *"The MINTECH is in the process of establishing an audit committee in relation to disease controls. Meanwhile, the CCA appointed a state veterinarian in March 2017 dedicated to all FMD matters, including control and audit of the application of the FMD VPN in the affected provinces."* This ideal never materialised with consequent serious outbreaks of FMD in Limpopo and KZN following the EU visit in 2017, resulting in the loss of the FMD free zonal status of the country.

5. In all the reports the urgent need for movement control supported by a reliable animal identification system to support effective disease control, is emphasised - e.g., in the OIE Gap Analysis report: *"The main challenge will be to establish efficient and effective identification of animals and associated movement controls. This may include compulsory, life-long individual identification of cattle, which requires detailed operational planning in the medium term, including its financing by the cattle industry"*. The recent and ongoing outbreaks of FMD and ASF clearly demonstrated the lack of movement control and the resulting serious consequences. The LITS (Livestock and Animal Traceability and Identification System) with all its good intentions, is still not in operation with no clear indication on when and if this will happen. The LITS is supposed to ensure traceability from farm to fork, however with the current poor participation by Directorate Animal Health in the development of the system and to link it to animal disease control interventions more work still needs to be done.

6. In the reports of the two OIE audit missions and that of the EU to assess FMD control in South Africa, the veterinary service was urged to pay urgent attention to the repair and maintenance of international border fences which were found to be in a severe state of disrepair. Concern was also raised about the same state of disrepair of fences separating the infected areas from the protection zones (previously known as red-line fences) and the lack of visibility of veterinary services in respect of warning signs, borders of the different zones and movement or entry restrictions. The Task Team is concerned that very little has been done to rectify these shortcomings. These fences are very important guarantees to ensure or facilitate biosecurity (i.e., to prevent the introduction of disease and manage movement controls) and need to be urgently attended to.

7. It was indicated earlier that the Animal Health Act (Act 7 of 2002) provide more legal options for the authorisation and delegation of functions to be performed for example by private veterinarians or *"anyone with knowledge or interest in animal health"* as it is worded in the Act. The need for Government to put trust in the utilisation of private veterinarians and bring them on board through delegation and authorisation, is emphasised in several of these reports – *"the main paradigm shift in animal health will be in convincing both policy makers and stakeholders of the need to promote more regular contact between farmers/animals and qualified veterinarians. This is required to increase the sensitivity and accuracy of disease surveillance, for early detection and rapid response, by involving more highly competent staff or officially delegated private veterinarians in the VS"*

8. This need is also identified and illustrated in the draft Red Meat Strategy: 2030 where the functional relationship between public and private veterinarians is neatly presented graphically (see diagram below). This proposed dispensation would go a long way to improve the coverage and efficiency of veterinary services in South Africa.



Source: Red Meat Strategy, 2030

Note: VPP refers to Veterinary Private Practitioners

CCS refers to Compulsory Community Service

In more than one of the international reports it is concluded that the lack of official delegation to private veterinarians (except for export slaughterhouses) is a major weakness of the veterinary services. This failure to "open the shop" does not support the technical independence of the private veterinarians who undertake activities such as meat inspection, TB, and brucellosis testing. The implication is a perception of lack of trust or confidence in the ethics and professionalism of private veterinarians. This also prevents the veterinary services taking advantage of this available workforce, their physical resources, and networks to strengthen, develop and implement national control programmes and conduct national animal disease surveillance. The introduction of public-private partnerships with clear mandates, roles and responsibilities also aligns with the overall vision of the Agriculture and Agro-processing Master Plan that is currently being negotiated.

4. PROGRESS WITH THE IMPLEMENTATION OF THE VETERINARY STRATEGY (2016 -2026)

The Veterinary Strategy was developed in response to several international audit and inspection missions to South Africa (listed in section 1.2 above) to assess the delivery of veterinary services in South Africa. The consultation process to develop the Veterinary Strategy was very wide and involved all possible stakeholders, private and public, in the delivery of veterinary services in South Africa. The strategy when formally signed off, was with the common understanding that implementation by all role players would be a priority. No dedicated champion to lead the implementation was however appointed or identified.

The Strategic Plan is written in a normative manner indicating the *status quo* and what *should* be done and addressing the ideal or optimum outcome, but not *how*, *when* and by *whom* the many issues will be addressed. The last third part of the document also conveniently uses the definitions of the critical competencies of the PVS as a guideline or norm and simply aims for the ultimate (5 points) to improve shortcomings that were identified by the OIE experts.

The OIE PVS and Gap Analysis reports request in essence an institutional risk analysis by all stakeholders but especially by the DALRRD. Dealing with institutional risk when setting the strategy and working towards objectives has become increasingly accepted as an integral part of managing any organisation. It is also important to stress that risk management is much more than simply creating an inventory of risks that the veterinary services face: it should start with objectives; it should be reflected in the operational strategy; there should be a culture of risk management across the national and provincial spectrum and be integrated into the veterinary services practices at all levels. All staff should have the capability to participate in institutional risk management activities, and the veterinary services should continually monitor the effectiveness of its risk management as an indicator of its organisational performance. Institutional risk management should be integral to the application of the veterinary strategy – risks should be identified, analysed, evaluated, and treated. But most important: consulted and communicated with stakeholders and monitored and reviewed on a continuous basis.

When the veterinary strategy was announced, and as also indicated in follow-up actions for the implementation of the strategy, progress on the implementation must be reported to the Ministerial Technical Committee (MINTECH). The Task Team had insight in the minutes of the MINTECH meetings for the past 3 years and ascertained that, while the veterinary strategic plan was raised at some meetings, it was never discussed in detail and no progress plan/report was submitted for discussion. Most of the points identified in the strategic plan were not addressed, as can be seen in the table below.

TABLE 1: PROGRESS WITH THE IMPLEMENTATION OF THE VETERINARY STRATEGY 2016-2026

Core Strategy	Specific interventions	Time frame	Current status (Executed / in-progress /not executed)
	Establish specialised legal support team	Short	Not executed
Strengthening of the veterinary authority for better governance	Establish national risk analysis unit	Short	Not executed
	Develop system of authorisation	Short	Not executed
	Veterinary and para-veterinary professional development	Short	In-progress
	Develop joint programmes with stakeholders	Medium	Not executed
	Restore national chain of command for all aspects of veterinaryservices (changes in structuring)	Long	Not executed
	Address the challenges of implementation of the Animal Diseases Act (Act 35 of 1984)	Short	Not executed
Strengthening competenciesfor animal health	Improve animal disease surveillance system	Short	Not executed
	Run pilot project for brucellosis control in cattle (develop model)	Medium	In-progress
	Develop and implement control programmes for other animaldiseases	Medium	Not executed
	Establish effective and efficient administration for animal disease Control	Long	Not executed
Strengthening competencies for veterinary public health, feed, and foodsafety	Define veterinary services' contribution to the national antimicrobial resistance strategy framework	Short	Not executed
	Consult and implement VPH strategic implementation plan (Including IMI)	Short	In-progress
	Develop a single Veterinary Medicine Act	Medium	Not executed
	Revise Meat Safety Act (Act 40 of 2000)	Medium	Not executed
	Establish effective and efficient administration for food safetysystem	Long	Not executed
Strengthening competencies for veterinary laboratory diagnostics	Laboratory approval plan, including South African National Accreditation System (SANAS) accreditation, to be further developed and consulted	Short	Partially executed
	Expand laboratory capacity under veterinary services	Medium	Not executed

	Expand laboratory capacity under veterinary services	Long	Not executed
Development and implementationof an Animal and Products Identification, Strengthening competencies for animal welfare system	Policy for individual animal identification and value chain traceability to be developed and consulted	Short	In-progress
	Draft legislation	Short	In-progress
	Provide framework for animal identification	Short	In-progress
	Develop government-controlled database	Short	In-progress
	Implement legislation	Medium	Not executed
	Establish effective and efficient administration for AIRT system	Medium	Not executed
	Run pilot project on cattle	Medium	In-progress
Recording and Traceability (AIRT)	Comprehensive animal movement recording and relevant controls	Long	Not executed

Source: BFAP, (2022). Red meat industry strategy 2030.

5. TASK TEAM'S ASSESSMENT OF THE STATE OF THE SOUTH AFRICAN ANIMAL BIOSECURITY SYSTEM

All the provinces in South Africa were, and still are, affected by the outbreaks of the three major trade sensitive animal diseases FMD, ASF and HPAI that triggered the industry to approach the Minister to establish this Animal Health Biosecurity Task Team. Reports on the status of these three diseases are readily available from the national Directorate of Animal Health, the National Animal Health Forum (NAHF) and in very much detail also from the Ruminant Veterinary Association of South Africa (RuVASA). Details of the outbreaks of the different diseases will thus not be repeated here, apart from noting our concern about the lack of disease surveillance and proper controls to prevent the spread of these diseases.

As indicated in the Terms of Reference of the Task Team, the analysis of the issues related to these three diseases is used as a benchmark, as the occurrence of several other major animal diseases is equally a concern in terms of the negative effect on animal production, food safety, livelihood incomes and human health. The most important of these include bovine Brucellosis, which is currently spreading uncontrollably in especially the central, north-western, north- and south-eastern parts of the country; bovine tuberculosis in the same areas; canine rabies, with serious outbreaks and reported human deaths in the Eastern Cape Province but also with a high incidence amongst dogs in KZN and along the eastern parts of the country.

It is also concerning to note that, in addition to the current alarming animal disease status, several epidemiological predictions have raised the alarm for an expected upsurge in major vector-borne diseases due to the excessive rainfall in especially previously dry areas such as the Northern Cape, the northern part of the Western Cape, the Karoo region, and the central parts of the country in the Free State, northern KwaZulu-Natal, and Gauteng. It is especially diseases such as Rift Valley fever, bluetongue, Wesselsbron disease, Lumpy skin disease and African horse sickness, outbreaks of which in these ideal environmental conditions could cause serious problems, especially if there are no or insufficient vaccines available. This issue of vaccine production and availability is important and will also be addressed in a later section.

The focus for the Task Team is, however, more on what can we learn from the status of animal diseases related to the application of biosecurity measures, namely, to prevent the introduction of diseases and if introduced, to prevent the spread of diseases. It is not within the scope of this report to provide a detailed epidemiological analysis of all the major factors involved in this unfavourable situation. However, in analysing the *status quo* and taking cognisance of similar observations in the reports listed above; information provided by stakeholders during the many interviews, as well as reports provided to the Task Team, the following major observations can be noted:

1. The unprecedented spread of ASF to areas in the country where it never occurred before, eventually to now become endemic, and the occurrence of FMD in the previous free areas where the causative virus can be linked to similar outbreaks in Mpumalanga and Limpopo provinces. This has proved that the total lack of movement control of animals is the most important trigger mechanism for the current spread of these diseases. An important component associated with uncontrolled movements, is the movement of animals to and from cattle auctions and sale pens. Although the Biosecurity Rules for Livestock Agents was published in Government Gazette 43900 of 13 November 2020, there is insufficient resources to monitor the implementation thereof by Livestock agents or veterinary services. The recent spread of FMD from a cattle auction in Potchefstroom, North West province, the unacceptable delay in diagnosing the disease and the uncontrolled movement of infected animals from Limpopo province to North West, serves as good examples. Linked to this is also the inability to establish a national animal identification system incorporating animal health related data. In several reports for several years now, it is said or promised that the LITS (Livestock Identification and Traceability System) will be activated, but there has been no progress to date. Without such a system, no movement control can be enforced or even managed.

2. In one of the international mission reports it is clearly and correctly stated that: "*The broken chain of command resulted in delays and inconsistencies in the management of the last FMD and ASF outbreaks. Though the Constitution supports a national response in cases of emergency, the chain of command cannot be simply and quickly restored at local level for early detection and rapid*

response". It is thus important that outbreaks of certain animal diseases such as FMD and ASF outside the known control areas, should be defined as disease outbreaks of national importance and emergency and addressed with **speed and urgency.** The continuing prolonged negotiations between National and provinces result in delayed response to outbreak of animal diseases.

3. The country is in urgent need of a well-structured and dedicated national animal health surveillance system. Compulsory disease reporting is only a small component of disease surveillance, but mere reporting is more than often wrongly perceived as an acceptable or sufficient outcome for a surveillance system. There are sufficient role players to participate in a well-functioning surveillance system: public veterinarians (in animal and public health), animal health technicians and private veterinarians. The data provided monthly by the RUVASA is ample proof that private veterinarians are and should form a critical component of a national surveillance system. These sentiments are also echoed in the Red Meat Industry Strategy 2030 where private sector stakeholders identify some of the key operational functions of a national animal health system that could be supported by private sector if authorisation is provided by government. Several reports have urged the government to consider and approve the assignment or authorisation of private veterinarians to assist the state in disease surveillance, investigation of suspected control of animal disease outbreaks, where possible with appropriate remuneration. Disease surveillance should also be the core activity of the job description of animal health technicians (AHT) (as it used to be). This important responsibility of AHT's should be revived and their budgetary support and employment conditions should only be allocated to provincial level, and not to municipalities.

4. The network of laboratories in collaboration with provincial veterinary services and DALRRD must provide services for effective, efficient, and accurate diagnostics in a timely manner, particularly through ensuring proper sample collection and chain of custody to the laboratory.

5. Other major contributions to surveillance which need to be incorporated again include the dipping tank system in those areas where it was abandoned; the utilisation of dipping tank assistants and stockmen; employees in the livestock auctioneering industry and most importantly, also employees in the abattoir industry. Dipping facilities serve as a point of collation and dissemination of information. In addition, dipping services assist with the control of ticks and tick-borne diseases.

6. Animal health technicians should be provided with essential basic equipment to collate information, and this should be done in line with standards of the OIE. Compulsory Community services (CCS) programme should be utilised properly in order to strengthen the surveillance system.

7. In the EU inspection reports (and taken on board in the Veterinary Strategy) the need for a dedicated unit within the national Department to conduct risk analysis is listed as a priority. An epidemiological unit, as perceived by some, is not a risk analysis unit but merely one of the providers of data and information for risk analysis. There is an urgent need to appoint suitably trained risk analysts who can work in a multidisciplinary environment to assist decision-making, conduct disease predictions, and conduct risk assessments on operational policy decisions and directives (such as VPN's) before they are released for implementation.

8. In the recent outbreaks of ASF but also with the outbreaks of rabies, the effect of the "ruralisation" of the urban environment on disease control became evident and highlighted the truth that animal disease control in peri-urban areas and in so-called informal settlements has become a multi-disciplinary and multi-institutional responsibility and not only a veterinary service responsibility. People who migrate to the cities from the rural areas often take their animals along (livestock as well as household pets) and thereby constituting ticking time bombs for disease outbreaks and a nightmare for effective disease control. It has also become obvious with the ASF outbreaks in these areas that culling, and compensation is not a permanent solution. Public awareness in urban and peri-urban areas is urgently required for effective management of disease risks. Programmes that include multidisciplinary authorities (e.g., municipalities, human settlement, human health, etc.) are required to provide services that eliminate or reduce risk of disease transmission.

9. Culling of animals and compensation in the event of disease outbreaks is not always a quick or feasible solution to stop outbreaks or contain disease. In certain cases of small and limited and well lineated outbreaks, it could however, still be the most effective solution. However, a lesson was also learned with the FMD outbreaks in Vhembe in Limpopo Province and in KZN, where cultural beliefs and preferences are important factors in the decision-making process. In these circumstances – especially where movement cannot be effectively controlled such as in communal grazing systems, it calls for a re-evaluation of tested and proven alternative disease strategies such as vaccination. In addition, it requires working together with traditional leaders and other role players as it used to be. The current line of decision favours adherence to OIE standards for the maintenance or re-establishment of disease freedom status, when or when not to consider vaccination. The KZN FMD outbreak and the outbreaks in Limpopo already indicated that this policy is not in all circumstances compatible with the aim to prevent further spread of disease, to ensure local animal health stability and address marketing needs.

   The need to re-consider this policy was only realised very late with the FMD outbreaks in KZN as well as in Limpopo province. Only in 2022 it was decided by DALRRD to apply vaccination due to the realisation of the inability to efficiently control animal movements in communal areas. In KZN it was only decided in February 2022 (12 months after the outbreak was diagnosed in KZN) to apply

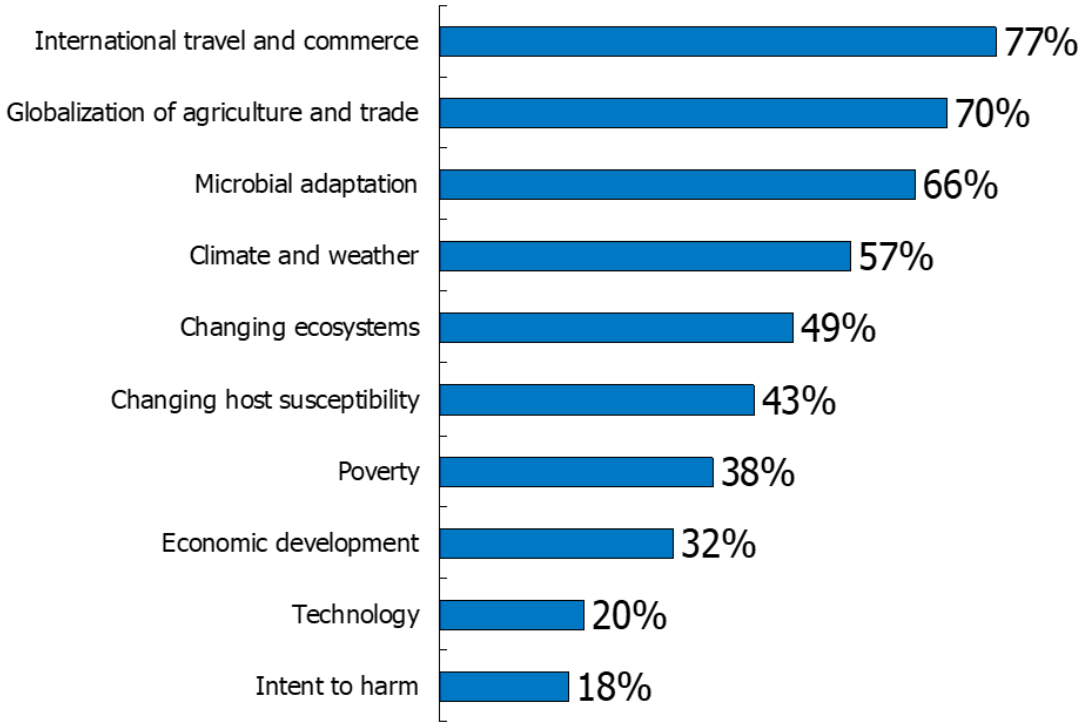
vaccination in the infected areas in the disease management area (DMA) and only in May 2022 also in areas in Limpopo province - more than a year after the disease was first diagnosed. This was despite several submissions made to DALRRD by FMD experts to consider the application of vaccination as a proven biosecurity measure in KZN and also in feedlots in the province to facilitate local trade and market access. The argument by DALRRD against this request was that the application of vaccination would endanger the application of South Africa to the OIE for reinstatement of FMD freedom. This argument was presented to the detriment of the local livestock industry while well-knowing that reinstatement of South Africa's FMD free status in view of the existing FMD outbreaks, would at least take another 3 to 4 years to realise.

In interviews with communal farmers in KZN they also expressed a concern about vaccination not being used as a preventative biosecurity measure to facilitate market access for their cattle.

10. An important issue related to biosecurity that was raised during interviews with stakeholders and notably with communal farmers and those provincial veterinary services experiencing outbreaks of FMD and especially ASF, was the need to attend to food security in areas affected by disease restrictions. Due to restrictions of animal movements, lack of market access and lack of trade, livestock owners resorted to illegal movements and marketing means to alleviate the need for food supply thereby contributing to a break in biosecurity and spread of disease. This was especially the case with the outbreaks of ASF in urban residential areas but also in rural areas that were subject to movement restrictions.

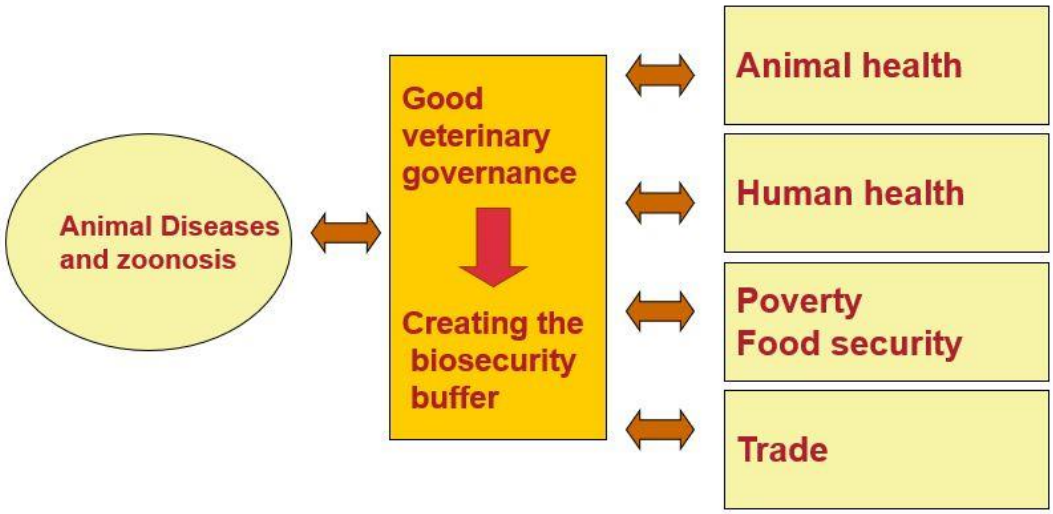
11. It is however important that the DALRRD as well as provincial veterinary authorities and stakeholders within the public-private partnership environment, should be aware and sensitised on the increasing threats to animal biosecurity – over and above those threats already mentioned. It must be realised that 60% of human pathogens are zoonotic; 80% of animal pathogens are multi-host; 75% of emerging diseases are zoonotic; 80% of agents having a potential bioterrorist use are zoonotic pathogens and that nearly all new human diseases originate from animal reservoirs. It must also be acknowledged that diseases can now spread faster across the world than the average incubation period of most diseases.

The most important trigger mechanisms threatening animal biosecurity are increased international trade, globalisation of agricultural trade, climate changes and the ruralisation of the urban environment. Over and above the threats mentioned above, policy decisions for animal disease control and establishing sound and effective biosecurity measures, should also consider these factors as graphically represented below:



From points 1 to 11 above it can be reasonably deducted that the application of measures within a national animal biosecurity plan are not only the responsibility of government, but a shared responsibility between the public and private partners. This partnership also includes livestock owners who plays a critical role in ensuring a sound animal health biosecurity system. In almost all the recent outbreaks of FMD and ASF, the main trigger was livestock owners not respecting the need to apply basic biosecurity measures such as movement control, presenting animals for inspection or having their animals vaccinated against diseases.

Good veterinary governance is essential to ensure the application of sound biosecurity measures:



It can also be reasonable deducted following the interviews with stakeholders that the evidence of the broken system can be ascribed to systemic (institutional) issues, legislative constraints, budget problems in several provinces, a trust deficit, non-alignment between stakeholders, and execution and implementation failures. These aspects are manifested through the following:

- Poor and unscientific decision-making by officials
- Lack of considering alternative biosecurity measures such as vaccination when indicated to prevent further spread of disease
- Poor coordination between national and provincial governments and slow response to emergency situations
- Poor maintenance of red line and border fences, laboratory infrastructure and equipment and research facilities
- No risk analysis unit within DALRRD to be able to analyse diseases and relevant data for disease predictions and timely containment and preventative actions
- Misplacement for the management of programmes (primary Animal health care, CCS and the LITS) programmes within the DALRRD
- Non-availability of vaccines for notifiable diseases
- Poor disease surveillance and no early warning system
- Lack of movement control to prevent disease spread
- Poor understanding of and lack of implementation of effective biosecurity measures by many livestock owners.

Throughout the Task Team's discussions there has been continuous reference to the provincialisation of veterinary services and lack of coordination between the national Director of Animal Health and the provinces. Some provinces such as Gauteng, Western Cape and Northern Cape operate reasonably well with very good inspection teams, very good diagnosis, and good laboratory systems, but for the rest – especially for those provinces with FMD control zones such as Limpopo, Mpumalanga and KZN – there are systemic failures.

DALRRD and the provinces are experiencing considerable challenges in dealing with the disease emergencies. This can be ascribed to several aspects (some of which we have covered earlier):

- Delayed diagnosis and notification and no early warning systems
- Delays in transmitting critical observations and laboratory results to the National Director of Animal Health
- Delays in instituting quick remedial or risk mitigation actions
- No emergency fund to deal with compensation payments for emergency culling, roadblocks, and purchase of critical consumables to manage the outbreaks
- No or weak liaison or cooperative actions with other supporting entities such as SAPD, SANDF, etc in dealing with the containment of major disease outbreaks.

- PFMA requirements also delay emergency procurements
- Limited availability of vaccines

We now discuss each of the potential causes of the poor unsatisfactory of South Africa's animal biosecurity system in more detail according to the main themes raised above.

5.1 Issues related to institutional design and structure

o Chain of command

In several of the audit reports on the delivery of veterinary services in South Africa the authors have noted the absence of and/or fragmented functionality of the chain of command for directing and implementing biosecurity measures for animal disease control. In practice it simply means that what is formulated as policy at the top level (DALRRD) travels in a fragmented way down the lines of authority and may or may not reach the point of execution or implementation at the lowest level as intended or may be implemented in a way not foreseen in the initial operational policy. The same also holds true for the reverse order: where advice or clarity for operational policy implementation is sought and passed up the line, it gets fragmented and never reaches the intended target of advice. Instructions or directives being fragmented on their way to the target audience also means that due to legal prescripts and constraints, decision-makers at various levels along the chain of command simply apply their own interpretation to a prescript or in some cases just simply ignore the instruction or prescripts.

There are for practical purposes, three main levels in the chain of command:

1) Within DALRRD where the Animal Production and Health Chief Directorate is divided into Animal Production, Veterinary Public Health, and Animal Health Directorates. The Animal Health Directorate comprises sub-directorates of Epidemiology, Disease Control, and Import and Export Policy. All operational policy matters and prescripts for national implementation originates within these directorates and sub-directorates and are passed down the line to the provincial veterinary services for implementation. In discussions with several stakeholders, they experienced that the various sections, for example within the Directorate Animal Health, function as separate entities and not in harmonisation or in support of each other. This has on more than one occasion resulted in either conflicting opinions being expressed by different officials, or conflicting prescripts passed down the chain of command for implementation.
2) Within the provincial veterinary structure, the same divisions and subdivisions exist as within the DALRRD headquarter structure. Instructions on operational policies issued by the DALRRD are passed on from the provincial structure to the state veterinary offices, abattoirs, and laboratories under state control. The chain of command appears most fragmented at this point. Several reasons for this state of affairs were put forward during discussions with provinces, including incorrect

interpretation or poor understanding of operational policies or prescripts; operational policy/procedures applied or not applied as seen fit by provincial veterinary services or on instruction of the provincial authorities; and lack of resources (financial or human).

3) Within the state veterinary structure at district and municipal level, the main components are the state veterinarian(s) and animal health technicians who work under direct instruction of the provincial veterinary authority. It is also at this level where operational policies are implemented for disease control and other purposes, disease surveillance conducted, and samples collected for surveillance and diagnostic purposes. The impression gained from stakeholders is that more often than not the operational policies are handed down the line without specific further explanation or instructions for implementation. No definite indication could be given of how intense and at what frequency the implementation of operational policies is monitored. The chain of command thus appears to be weakened and for all practical purposes broken where a matrix system is applied such as in Limpopo, Free State and Mpumalanga provinces. The problems in terms of biosecurity issues related to the matrix system is described later in this report.

○ Operational policy formulation

During the discussions of the Task Team with a wide representative grouping of stakeholders the issues surrounding the formulation of operational policies and procedures were raised several times, outlining especially the following concerns:

1. The consultative process in the formulation of veterinary procedures and operational policies is perceived as a closed system with little transparency and minimum participation by stakeholders.
2. Stakeholders such as industry groupings, representative forums such as NAHF and others, are consulted but not always actively involved in the final formulation of operational policies and procedures. They also very seldom receive feedback on whether their inputs were taken on board or them given an opportunity to review a draft of an intended operational policy. Scientific evidence to support an operational policy is seldom provided – the expectation is for DALRRD to conduct studies and use the data/information to justify the formulation of specific operational policies.
3. The operational policy making process followed in the national Directorate of Animal Health was perceived by several stakeholders as being a process conducted by two or three specific individuals and often dominated by the final opinion of one or two individuals. The decision-making process was in general also perceived to be very slow and bureaucratic.
4. No institutional risk analysis on draft operational policies is conducted to test stakeholder acceptance, to assess cost-effectiveness, relative advantage, maintenance, consistency, etc.
5. No system is in place to audit and monitor the implementation of operational policies or identification of operational policies once issued, for possible reviews.

6. A consistent complaint from stakeholders was that they are not consulted, or invited as was the case in the past, to take part in negotiations for export opportunities with potential importers – notably the European Union, Peoples Republic of China, and others.
7. Several stakeholders believed too much emphasis is placed on the prescripts in the Veterinary Procedural Notices (VPNs) and EU and OIE requirements rather than first considering the requirements in national legislation and regulations. It was stated that the perception was that maintenance of export status overrides local needs.

○ Lack of contingency planning

In several of the international audit reports, the lack of contingency planning and total absence of contingency plans, were highlighted as a critical shortage in the ability of the veterinary service on both national and provincial level to deliver and maintain service delivery and effectively apply biosecurity measures. This is closely linked to the absence of a functional risk analysis unit within DALRRD.

The lack of contingency plans was obvious during the recent outbreaks of ASF and FMD where both national and provinces were running around and taking *ad hoc* decisions which were not harmonised across provincial borders. It was and still is incorrectly stated and assumed that the VPN's on for example FMD and ASF, provide sufficient information to also fulfil the function of a contingency plan.

In the EU inspection report on FMD control in South Africa it is for example clearly stated that*: "The FMD surveillance and control system is supported by adequate documentary procedures developed at central level (veterinary procedural notices, guidelines for surveys, forms for reporting). However, no guidelines, contingency plans or set of procedures enabling staff to perform their task or report their activity in an adequate and consistent way were developed in Limpopo or KwaZulu-Natal".* Further in the report also: *"No national FMD contingency plan or protocol has been drawn, and it is the responsibility of each province to draw its own"* The only province that did have a satisfactory contingency plan was Mpumalanga.

Contingency plans assist in clarifying roles during outbreaks of diseases. Lack of contingency planning is closely linked to the absence of a functional risk analysis unit within DALRRD. It is critical for several reasons already indicated in this report that such a unit that is charged with the responsibility to play a leadership role in drafting and analysing contingency plans, among others, should be established within the structure of DALRRD.

○ Lack of transparency and communication

During our interviews with stakeholders the perception emerged that the main route for discussions or consultations with either the DALRRD or provincial Departments of Agriculture was either through the NAHF for arranging meetings with decision-makers at national or provincial level or by means of *ad hoc* consultations or when necessary, to pull political strings.

The general opinion expressed by stakeholders was that, although the NAHF is a representative consultative forum for the livestock industry in general, that they are listened to, and that their views are duly considered, but then their opinions, suggestions and recommendations are rarely taken into consideration or reflected in operational policy making. Further, feedback on the outcomes of the consultation(s) is lacking. For others the NAHF is seen as a pressure group and thus it is important to review the current systems and ensure that the forum is inclusive for all role players.

In terms of the linkage to biosecurity issues and the need to be able to do predictive risk analysis on possible disease occurrences, timely communication and where necessary consultation is essential. Little or no consultation apparently exists between the Epidemiology section in DALRRD and the RuVASA, which has the most comprehensive database on the interactive occurrence of animal diseases in the country other than providing information for publication on the RuVASA website. The need for a risk analysis unit at DALRRD to utilise and analyse available animal disease and epidemiological data for disease prediction and linking that to other variables such as the increasing influence of climatic changes has been noted before.

It was clear from almost all the discussions with stakeholders that there is an urgent need to have an open and always readily accessible discussion channel with decision-makers in veterinary services on both national and provincial level. However, it was also clear that this was generally perceived by most of the stakeholders as a channel with often limited access or opportunities for participation by outsiders.

The Task Team was also informed that contrary to past practice, industry groups are now seldom consulted or involved in discussions with international trade partners, particularly not for example in discussions with the European Union. Even if they do provide input for the establishment of export protocols, their opinions are not always acknowledged and not always incorporated into final export protocols with trade partners.

o Decision-making process

During our consultations, decision making emerged as part of a set of key issues that require attention. DALRRD has agreed on consultative fora, such as the NAHF, South African Poultry Association, South African Pork Producers Organisation, etc. Stakeholder consultations, particularly representing large numbers of role players are an essential element of good governance and service delivery. Farmer organisations like NAFU (National Agricultural Farmers Union) and AFASA (African farmers Association of South Africa) are apparently seldom consulted.

However, in many instances stakeholders expressed frustrations at the decision-making processes by the DALRRD and provincial authorities. Stakeholders perceive that consultation sessions have not been used to achieve common objectives, and that decisions in many instances differ from those agreed upon, without explanation. In addition, decision making on some of the measures appear to centre around two or three people

within the Directorate. There is no structured system in place for decision making, neither are decisions subjected to feasibility evaluations, cost-effectiveness or auditing and monitoring. In some instances, provincial veterinary services would take decisions only to be overridden by individuals in the national veterinary services.

During interviews with several stakeholders, concern was expressed on the apparent lack of trust between private citizens, stakeholder organisations and DALRRD veterinary services. Distrust between government veterinary service providers and other stakeholders was expressed in various formats during consultation sessions, particularly in respect of implementation of technical veterinary decisions. In several instances, decisions for implementation by veterinary service authorities were not communicated properly and then incorrectly implemented or not implemented at all.

Similarly, veterinary service authorities expressed distrust of animal owners to comply with disease outbreak management requirements. This results for example in unavailability of animal owners during routine surveillance inspections, illegal movement of animals and the presentation of false information.

It is the undisputable responsibility of managers in the veterinary service to ensure that all technical decisions for management of disease outbreak are scientifically sound and adhere to national legislation and regulations, the minimum standards of the OIE Terrestrial Animal Health Code and OIE Manual as reflected in national animal health legislation. This includes directives in the Veterinary Procedural Notices. However, the fragmented chain of command, as already described above, constrains the realisation of this ideal, especially at the level of implementation of disease control and biosecurity measures.

During recent and current disease outbreaks of ASF, DALRRD and provincial veterinary authorities have not clearly communicated decisions in respect of compensation for culling. Hesitancy and unacceptable delays in communicating the decisions creates mistrust with animal owners.

The Constitutional decentralization of governmental animal health services to provinces has further complicated the decision-making process resulting in nonconformance to national animal and veterinary public health legislation and prescripts. Provincial departments tend to take their own approach, applicable only to their regional circumstances, but some issues need wider country coordination (where all provinces comply to the same intervention strategies) for proper execution, since many of the interventions are indeed cross-border in nature and of national priority. For this reason, national government struggles to hold provincial departments accountable. Furthermore, some provincial departments do not have the required funding, or funding is not channelled in accordance with priorities for disease control. The national department also has little control over the ground-level allocation and utilisation of the funding.

o Management and coordination

A holistic overview of the organisational structure of the national DALRRD was conducted to assess to what extent the importance of biosecurity in agriculture and specifically animal health is addressed. Our focus was specifically on the Branch: Agricultural Production, Health and Food Safety, Natural Resources and Disaster

Management, and we conclude that the structure is rather confusing and certainly not reassuring. This Branch has 6 Chief Directorates of which one is a Chief Directorate Biosecurity, but with main purpose *"to manage the implementation of the provision of the Genetically Modified Organisms (GMO) legislation and other related processes to minimize the potential impact of Genetically Modified Organisms and diseases in human, animal, plant health and the environment".* Thus, there is no real biosecurity emphasis as specified in the TOR of this Task Team. The focus is on biosafety instead of biosecurity.

The Chief Directorate Inspection and Quarantine Services has a Directorate Inspection Services which is also responsible for rendering animal quarantine and inspection services - keeping in mind that the Directorate Animal Health also has a sub-directorate for import and export control. There is also a Directorate: Food Import and Export Standards with a sub-directorate: Biosecurity Promotion and Awareness, with main purpose to undertake promotions and awareness on food safety and cross cutting biosecurity issues with rural communities and issues affecting the trade in agricultural products. It even makes provision for the post of Assistant-director: Animal Health Promotion. Several of these directorates and sub-directorates even have a dedicated function responsible for Sanitary and Phytosanitary (SPS) matters for both plant and animal health.

The Task Team is not a team of organisational experts and cannot provide expert advice on possible restructuring possibilities or opportunities. There is thus no need to further analyse the national organisational structure other than to indicate that if the chain of command in veterinary services is perceived as fragmented, it is even more so within the structure of the national department. If there are so many decision-makers at national level on similar or related issues, provincial officials understandably become confused and choose to implement what they perceive as fit or understood.

The overall impression is that structurally within the DALRRD much provision has been made to prevent the introduction of unwanted plant and animal pathogens into the country. However, policies and plans don't guarantee implementation, therefore the main concern of the Task Team is the lack of attention to the application of and actual provision of biosecurity measures and resources to prevent the spread of pathogens from known infected foci inside the country or once introduced from outside our borders.

At grass-root level, the Task Team is convinced that the management of veterinary services requires urgent intervention in some areas to improve the status of service delivery. During interviews with the veterinary services personnel in provinces, the Task Team noticed symptoms of a mild and in some cases, a more severe low morale amongst staff members. There appears to be a lack of leadership in some cases with state veterinarians being demotivated. This was especially noticeable where outbreaks of FMD and ASF seem to go on and on, and in the view of some, out of control.

The Task Team is of the opinion that state veterinarians in general need urgent support to strengthen their feeling of belonging and pride in the importance of their mission and tasks. Continual restructuring at provincial

level and lack of resources all play a role, but not so much as the lack of appraisal and recognition and acknowledgement of belonging – especially by senior personnel in the provincial departments.

There have been reports where state veterinarians were unable or restricted to do their job because they did not have travel budgets, vehicles, fuel, or the necessary medicine. Newly qualified veterinarians are, in accordance with the Veterinary and Paraveterinary Act, required to do a 12-month period of Compulsory Community Service (CCS) under the custodianship of the Directorate of Veterinary Public Health at the DALRRD. During 2020 a total of 190 CCS veterinarians were deployed across the country but mostly to the more popular places rather than to facilities that may require their services more urgently (like the high risk FMD areas or the Eastern Cape with mainly communal livestock production).

The general impression was that the implementation of the CCS programme is not harmonised and does not entirely address the needs in provinces. When the program was introduced, it was intended to alleviate the shortage of veterinary services in remote rural areas. In some provinces such as the Western Cape the program is well managed and under control of the animal health manager of the province while in some other provinces the newly CCS entrants, who start off with high expectations, soon become frustrated when allocated managerial positions with mainly administrative tasks, minimum exposure, and no training.

5.2 Budgetary and human resource constraints

Budgetary constraints and staff vacancies are often blamed for the failure of the State to deliver world class veterinary services to protect the health of our livestock assets. Our analysis below clearly shows that there are substantive resources (human and financial) allocated to this critical role of the State but probably not enough given the size of the national herd and the vastness of our countryside. Given South Africa's fiscal position the issue at stake here is efficiency of resource use and the way resources are allocated, managed, and directed. The quality of management and the competency of staff also seems to be a factor contributing to the inefficiencies highlighted above. It is further a great pity that the State is unable to leverage the contribution from agricultural organisations and private veterinarians through this large financial and human resource outlay in support of animal biosecurity. This is something the livestock industry is willing to contribute to if a workable PPP arrangement can be crafted.

The discussions with stakeholders confirmed that in most provinces this observation, from the OIE performance audit, still holds:

> *"There is a lack of veterinarians in regular contact with farms and animals, especially in extensive commercial systems and in small holders or communal areas; there are also a limited number of veterinarians who conduct on-site inspections of animal processing facilities. This limits the ability to certify products and activities in compliance with OIE*

standards and/or import requirements and limits the expansion of export markets. It also reduces the sensitivity of the passive surveillance early detection system".

This observation has been confirmed as a key constraint for effective and efficient veterinary services. It also constrains the growth opportunities for the livestock industry as it seeks to export to high value markets in the EU and the USA. Increasing the number of accredited laboratories (approved and sanctioned by government) will go a long way in ensuring that South Africa complies with the requirements of the major importing nations. Further, improvements in the effectiveness of the laboratory network could enhance market access, serving as a contribution towards job creation and economic development. We discuss this in detail in a later section of the report.

Accordingly, there's need to review laboratory resources for the whole network, including financing, infrastructure, and human capacity and efficiency in procurement of consumables – particularly for diagnostic services for controlled and notifiable diseases. The current contract between DALRRD and ARC-OVR for diagnostic services needs review and alignment with appropriate resources, including effective and efficient service delivery.

DALRRD has specifically contracted the ARC-OVR on a long-term basis to conduct diagnostic and residue analytical tests, particularly on controlled and notifiable diseases. Annual allocations of ring-fenced funds are provided to ARC-OVR through the parliamentary grant. However, the signed contract is older than 20 years and does not provide for cost escalations in laboratory reagent consumables and upgrading of testing equipment. In the last 3 years DALRRD and ARC reviewed and negotiated a contract for laboratory diagnostic and analytical services, but this has not been concluded. This presents a risk for accurate, effective, and efficient laboratory diagnostic services, particularly where ARC cannot upgrade the equipment, which is likely to negatively affect veterinary services decision making.

Human resources

The structure of Veterinary Services at provincial level differs from one province to the other. Coordination of veterinary services in Gauteng and Western Cape provinces are done at the Chief Directorate level. Veterinary services in some provinces are coordinated at the Directorate level. Some Directors report to non-veterinarians such as extension officers or animal health technicians. Due to the lack of understanding the decision-making is delayed in eventually finding its way to the head of the provincial department.

In Limpopo, Free State and Mpumalanga provinces veterinary responsibilities are delegated to municipal authorities creating so-called matrix organisational structures. Animal health technicians who are traditionally accepted to be the first point of contact for disease surveillance and alerts now do not report such disease occurrences to the veterinary authorities but to municipal officials who do not have the technical ability and knowledge to make a sound judgement on the need for interventions or disease control actions. The veterinary director is therefore not in a position to work with or instruct animal health technicians or direct technicians to

perform certain duties or align veterinary priorities with that of other agricultural activities within municipalities. This has resulted in situations where veterinary activities are either delayed or not implemented at all with an upsurge of diseases especially in peri-urban and urban areas (e.g. rabies).

To negate the effects of the fragmented control and decision-making, DALRRD and Provincial Departments of Agriculture signed a Memorandum of Agreement which supported the implementation of the spirit of the Intergovernmental Relations Framework Act 2005 (Act 13 of 2005). However, this has had limited success in ensuring efficient and effective delivery of veterinary services or establishing a clear line of command. The Task Team were informed that in one particular instance a provincial director was suspended for applying instructions from the national veterinary services for disease control and movement controls, illustrating either the total misunderstanding of the chain of command or just bluntly ignoring the chain of command.

According to the Veterinary Strategy of 2016-2026, South Africa has insufficient veterinarians and para-veterinarians for the number of livestock units. One field veterinarian is required per 100 000 livestock unit, and one para- veterinary per 5000 livestock units. Furthermore, the delivery of veterinary services is skewed. 70% of registered SAVC veterinarians are in the private sector, of whom 70% are predominantly in urban small animal practices.

TABLE 2*: VETERINARIANS AND PARA- VETERINARIANS REGISTERED WITH THE COUNCIL IN TERMS OF THE VETERINARY AND THE PARA VETERINARY PROFESSIONS, 1982 (ACT NO 19 OF 1982*

Member Type	Total
Veterinary Specialists	**214**
Veterinarians	**3 485**
Compulsory Community Service Veterinarians	**226**
Animal Health Technicians	**1 444**
Veterinary Nurses	**725**
Veterinary Technologist	**363**
Registered & Authorized Veterinary Physiotherapists	**144**
Lab Animal Technologist	**15**
TOTAL	**6616**

As shown in Table 3 below, there are no veterinary specialists in the state to study epidemiology of animal diseases, conduct risk analysis and evaluate the socio-economic impact of outbreaks of animal diseases. This is a major shortcoming and could explain the lack of critical decision making.

TABLE 3: *VETERINARIANS AND PARA- VETERINARIANS EMPLOYED BY THE STATE AS AT 30TH SEPTEMBER 2021*

MEMBER TYPE	NW	LIM	KZN	GAU	MPU	EC	NC	FS	WC	DALRRD	TOTAL
Veterinary specialists	0	0	0	0	0	0	0	0	0	1	1
Veterinarians in AH	19	20	12	17	13	25	6	10	13	21	156
Veterinarians in VPH	1	5	3	14	2	7	2	1	7 (2+5)	2	43
Veterinarians in Labs, epi &Q	0	3	1	6 Labs, epi &Q	1	2	2	2	5	0	17
Veterinarians in CCS	11	10	13	18	23	22	7	0	17	0	121
AHT	117	99	159	15	99	289	33	44	36	22 + 1	914
Vet Nurses	0	0	0	0	0	0	0	0	0	0	0
Vet techs	10	12	18	0	7	8	3	6	13	2	79
Vet Physio	0	0	0	0	0	0	0	0	0	0	0
Lab A Techs	0	0	0	0	0	0	0	0	0	0	0
Meat insp	16	7	3	13	7	23	9	0	15	13 (VPHO)	106
TOTAL	174	156	209	83	152	376	62	63	106	62	

Sourced from provinces as at 30 September 2021. Note the table does not include vacant posts

The continuing changes in the configuration of the Department weakens systems in the technical units of Agriculture. With the opening of markets and increased trade, technical units like Veterinary services, Plant Health services were never capacitated. The unfortunate situation is that the support services (HR and administration) continue to grow proportionally and become centralised leaving technical people to do more administration than performing duties they were trained for.

Budgetary allocation

A quick analysis of the latest budget appropriation reports shows that government spends almost 50% (46%) of its agricultural budget on producer support and development. This is followed by 16% on administrative costs and 11% on veterinary services. Given the current fiscal pressure on Government's budget it is unlikely that the State will be able to expand operations and activities to ensure more comprehensive and effective services in the near future. Industry funding currently collected through the red meat statutory levy can be used to augment government's shortfalls, and drive growth in the industry, but the annual levy amount is insufficient to ensure that the required services and interventions happen at the right time, resulting in the

red meat industry not operating at its full potential. Innovative co-financing mechanisms must be explored to enhance the effectiveness, efficiency, and sustainability of veterinary services.

The breakdown of financial support to animal biosecurity in the 2020/21 Budget is highlighted in Table 4 below showing that most of the funds are allocated to Animal Health and Veterinary Public Health. When the funding per province is expressed per equivalent veterinary livestock units (cattle, sheep, goats and pigs) it illustrates how misaligned the funding and livestock numbers per province are. Gauteng, for example, receives on average R0.33 per year per livestock unit, while the Free State only receives R0.02.

TABLE 4: *AN OVERVIEW OF VETERINARY BUDGETS PER PROVINCE AND DALRRD (2020/21 AND 2021/22).*

Province	Approved adjusted budget for 2021/22					Estimated expenditure 2020/21		
	Animal Health	**Int Trade Facilitation**	**Vet Public Health**	**Diagnostic Services**	**Total**	**Total Estimate**	**Employee costs**	**Employee costs as %**
Western Cape	R52 405 000	R14 621 000	R8 292 000	R21 774 000	R97 092 000	R101 762 000	R71 740 000	70%
Eastern Cape	R266 126 000	R10 177 000	R17 232 000	R20 712 000	R314 247 000	R330 636 000	R248 220 000	75%
Northern Cape	R34 061 000	R1 240 000	R4 616 000	R8 102 000	R48 019 000	R45 249 000	R39 505 000	87%
Free State	R45 308 000	R1 584 000	R7 541 000	R15 635 000	R70 068 000	R63 199 000	R56 826 000	90%
North West	R107 391 000	R2 864 000	R11 225 000	R13 112 000	R134 592 000	R123 531 000	R99 667 000	81%
Gauteng	R55 962 000	R10 702 000	R22 537 000	R16 370 000	R105 571 000	R106 158 000	n/a	n/a
Limpopo	R31 983 000		R9 973 000	R11 036 000	R52 992 000	R57 603 000	R40 001 000	69%
Mpumalanga	R125 217 000		R29 959 000	R12 728 000	R167 904 000	R147 441 000	R113 972 000	77%
KZN	R187 377 000		R5 347 000	R30 171 000	R222 895 000	R218 427 000	R137 627 000	63%
Total All Provinces	**R905 830 000**	**R41 188 000**	**R116 722 000**	**R149 640 000**	**R1 213 380 000**	**R1 194 006 000**	**R807 558 000**	
DALRRD (Animal Production and Health)	**R65 808 245**		**R167 037 229**		**R232 845 474**	**R327 100 000**		

The total veterinary service expenditure budget for all provinces for the 2021/22 financial year amounts to R1.21 billion. If we add the DALRRD staff budget for the Directorate Animal Health and Directorate of Veterinary Public health of R232 million, the South African government is spending roughly R1.5 billion on animal biosecurity – in addition, the ARC-OVR operational budget is R109 million, including a ring-fenced R61,5 million for analytical and diagnostic services -- excluding the budget of OBP and other costs and consumables in DALRRD. The OIE PVS/Gap Analysis report stipulates a total budget requirement of R8.629 billion – around five times more than the current allocation. However, before one can question the optimum size of the budget the

fundamental question is whether the current funds are wisely spent and whether South African farmers and our economy is getting value for the money allocated.

It is critical the government consider clear policies on cost recovery within the public sector to help with the funding shortfall. One can for example consider variable handling of inspection fees and other activities over time and from area to area.

5.3 Laboratories, research, and vaccine production

Veterinary laboratories

South Africa's veterinary services are supported by a network of national and provincial laboratories under the control and management of various government authorities, as well as private sector facilities. According to the latest update on the website of the DALRRD, there are 70 DALRRD approved veterinary laboratories which include the ARC-OVI and 8 Regional Provincial Laboratories (PVL) of which each PVL oversee several satellite laboratories within each province. Of these 70 veterinary laboratories, 52 have SANAS accreditation. In some instances, the DALRRD accreditation and SANAS approval was withdrawn due to inadequate standards. The limitations experienced with the COVID-19 pandemic resulted in the expiry of some DALRRD approvals as no physical inspections could be conducted. In most of these instances, the expiry period was extended pending an opportunity for a physical inspection.

Both the SANAS and DALRRD approvals are for specific tests than can be performed subject to the expertise and facilities available. The ARC-OVI conducts the widest spectrum of tests being the central veterinary laboratory of the country. The ARC—OVR also host OIE Reference Laboratory status for African swine fever (ASF), African horse sickness (AHS), bluetongue, Foot and Mouth Disease (FMD), Rift Valley Fever (RVF), Sheep and goat pox, Lumpy Skin Disease (LSD) and rabies. In addition, the ARC-OVR has responsibility for research and development for diagnostic tools and vaccines.

Inter-laboratory proficiency testing is conducted in most PVL's and also between the ARC-OVR and the Faculty of Veterinary Science of the University of Pretoria and with international partner laboratories.

The Task Team did not have the opportunity to examine or evaluate the infrastructure and equipment in the laboratories, therefore an observation on the status of equipment or infrastructure is limited to the views of employees of veterinary services.

The laboratory network in provinces experiences several constraints related to resources (old and outdated equipment or lack of equipment or critical consumables) and human resources. Except for the Western Cape, the other provinces with laboratories indicated a high vacancy rate of laboratory state veterinarians. This has adverse implications on diagnostic services and ensuring guarantees related to biosecurity.

A general observation from stakeholder engagements suggests that provinces have not prioritised funding allocations for effective and functional laboratories. Accordingly, inadequate funding impacts upon ability to readily procure laboratory consumables and equipment. This presents challenges for provincial laboratories to provide accurate diagnostic test results timeously, which in turn adversely impacts the provision of veterinary services for disease management.

To ensure optimal use of available resources, it is important for provinces to evaluate the efficiency and effectiveness of available laboratories. It could be beneficial for provinces to rationalise multiple facilities and consolidate them into single dedicated laboratories with adequate personnel, equipment, and consumables. For example, the Eastern Cape could rationalise their multiple facilities into a single laboratory, reassign all personnel at the consolidated laboratory, including all the equipment. A similar approach could be applied in provinces such as Limpopo, Free State and Northwest. This would ensure an adequately resourced provincial laboratory that provides a broader range of accredited diagnostic tests for different diseases, with optimal use of equipment and improved skills and services.

The ARC-OVR at its Transboundary Animal Disease (TAD) diagnostic laboratory, a biosafety level 3 (BSL-3) facility, conducts diagnostic tests and routine surveillance tests for highly infectious endemic diseases such as FMD and ASF. However, there is a challenge in respect of turnover time for delivery of results to veterinary decision makers. Evidence indicates that on average, the ARC-OVR delivers diagnostic test results in 30 days instead of at least 36 hours or less. During recent major disease outbreaks with large numbers of samples to be processed, the responsiveness of the ARC to urgent requests to analyse samples significantly deteriorated. In such circumstances, the ARC-OVR cannot provide test results within reasonable times, frustrating veterinary decision making. During consultations the ARC-OVR asserted delays in conducting diagnostic tests were due to insufficient laboratory consumables occasions by onerous Public Finance Management Act (PFMA) requirements. The Task Team believes it is symptomatic of poor planning (failure to procure laboratory reagents timeously), lack of capacity (loss of skills due to resignations and inability to replace timeously) and sub-optimal equipment (ageing or obsolete). Reasons for the turnover of personnel have not been properly explained, except for sub-optimal remuneration in relation to competing private laboratories.

To provide a sustainable solution for disease management National Treasury provided R600 million towards enabling the ARC–OVR to manufacture FMD vaccines. The funds were primarily for skills and capacity development, diagnostic capability improvement and vaccine development and production infrastructure (design and construction of a BSL3 diagnostic and manufacturing facility). However, the ARC-OVR in the last 18 months to date not commenced with design and construction of the FMD vaccine manufacturing facility.

The provincial laboratories at Allerton (KZN) and Stellenbosch (WC) and some private laboratories provide diagnostic services for avian influenza, and together with the ARC-OVR serve as the primary reference laboratory. Most samples are tested by the ARC-OVR for avian influenza, providing an opportunity for inter-laboratory comparison with both Allerton and Stellenbosch. Other collaboration with the ARC-OVR include the Oudtshoorn laboratory for avian influenza as a mechanism to support decision making in the ostrich industry. A

brief review suggests that the network of laboratories capable of diagnostic services on avian influenza has the necessary resources and shares information for effective decision making.

The network of laboratories play an important role in animal disease diagnostics and surveillance. The Task Team has however learned that this role is seriously comprised by the rigidity of the State procurement system which is not able to handle the emergency procurement of laboratory consumables (e.g., chemicals, reagents, and testing kits etc) that are specific to the requirements of certain tests and in some instances linked with the equipment installed within the facility. This reality is caused by poor planning and no proper procurement process and sourcing – especially since there are limited (and mostly foreign) suppliers. A second contributing factor is the rules and requirements of the PFMA which makes it totally impossible to deal with emergency situations. This constrains the ability of government to act with urgency and with full information based on the test results in case of suspected disease outbreaks.

In terms of ASF the ARC-OVR serves as South Africa's reference laboratory for the OIE. This enables the ARC-OVR to collaborate with other reference laboratories in developing or improving diagnostic methodology for ASF; which in turn would enhance disease management. It appears there's a lack of collaboration between ARC–OVR and veterinary services of DALRRD and provinces in endeavours to create public awareness in managing the outbreak of ASF. In addition, there's no evidence of collaboration between the ARC-OVR and municipal authorities to provide training and awareness for effective management of ASF.

Since April 2020 DALRRD commissioned the Onderstepoort Biological Products Company (OBP) to procure and distribute FMD vaccine from the Botswana Vaccine Institute (BVI). In 2017 the European Commission conducted an audit on animal health controls for FMD in South Africa. One of the findings was recorded as follows:

"The vaccine purchased is a trivalent SAT1/SAT2/SAT3 vaccine. The vaccine is not registered in South Africa, and the order does not give any specification regarding quality or purity standards. No batch control documentation accompanies the vaccine, and no quality control is performed at reception other than temperature check during transport. The storage conditions are checked at central level; no information is available on the conditions and supervision of further transport to the provinces and to the field".

Batch quality control is conducted at the BVI before dispatch of vaccine. To date, measures to determine the quality or purity of the FMD vaccine and regular temperature checks for a cold chain have not been implemented by both ARC-OVR and OBP. Failure to ensure quality control, temperature checks during transport and during distribution in the provinces could be reasons for poor vaccine efficacy in the last 5 years. OBP as the current responsible party for the procurement and distribution of the FMD vaccine must implement measures for quality or purity standards, regular temperature checks during transportation and effective cold storage systems when distributing to the provinces in the field. DALRRD must implement measures towards ensuring the registration of the BVI vaccine as per all regulatory requirements of South Africa. It is strange and also a pity for the SADC region that there is also no reciprocity established between the BVI and OVI-ARC although both institutions host OIE Reference Laboratory status for FMD.

Onderstepoort Biological Products (OBP) and vaccine production

The OBP is an important role player for effective animal biosecurity, particularly as a sole supplier of essential vaccines and other biological products for animal diseases occurring in South Africa. During consultations it emerged that OBP has experienced significantly long delays in the delivery of veterinary medicines for vaccination against important diseases commonly found in Southern Africa. OBP used to have a capacity to manufacture 90 million doses of vaccines annually but typically now only produces around 22 million doses on average. Breakdown of the freeze drier, loss of critical staff and poor maintenance of the production plant all contributed to this underperformance and the shortage of vaccines in the country.

There is also a highly contested and public debate about the availability of vaccines. All industry organisations and veterinarians and retailers claim that vaccines are not available. On the other hand, OBP management denies this and has, as recent as 15 February 2022, issued the following statement: *"OBP can further confirm that vaccines currently required by the market are available through the various Retail Outlets and Veterinarians that sell OBP products"*.

The OBP statement of 15 February 2022 goes further and highlights production problems – which according to our knowledge were supposed to be fixed since 2014 when Treasury Funds of R500 million were allocated to OBP:

"The Board admits there have been production issues that can be attributed to a historical lack of plant maintenance as well as ongoing challenges relating to (among others) interrupted electricity supply and labour issues".

The fact that OBP management and Board has not allocated their profits for 15 years to maintenance and improvement of capital equipment and production facilities like any private company points to poor management and poor financial planning.

The 2019 Auditor General's findings on the funds allocated for infrastructure upgrade need to be reviewed, and the reasons for the failure to implement recommendations of the Moore Stevens Inc. forensic audit of the OBP board must be investigated.

The concern about the availability of vaccines and the contestation about the true situation is a major concern and harms the reputation and standing of OBP.

Veterinary training

The Task Team did not have the opportunity to investigate the training of Animal Health Technicians at the three institutions accredited for that purpose by the SAVC (UNISA, Northwest University and Tsolo Agricultural

College). However, all three these institutions were subject to a SAVC audit in 2019 with subsequent renewal of their SAVC accreditation.

The Task Team, however, did have the opportunity to have discussions with key management personnel at the Faculty of Veterinary Science at the University of Pretoria.

One of the major concerns of the Faculty of Veterinary Science is the lack of collaboration or open discussions with the academic and technical staff at the Faculty, and the DALRRD. In all the current disease outbreaks, the Directorate of Animal Health (DAH) has never reached out to the Faculty for assistance. The Faculty compared it with collaboration that was displayed by the Department of Health (DOH) during the Covid-19 pandemic as a stark contrast to how the DOH has managed COVID-19, where universities and research councils have worked together for the common benefit of the country.

It was indicated that the DALRRD is reluctant to be involved in training in controlled diseases to veterinary students as they argue that they are not being remunerated for these activities. This, taken into consideration and given that academics no longer working seriously on controlled diseases due to DAH permit (Section 20) requirements, and that staff are never invited to participate in control programmes, one must question whether the right control measure will even be conveyed to veterinarians in training. The veterinary services should work in collaboration with the Faculty to design and implement certificate courses and even “Train-the-trainer sessions” to sharpen disease control knowledge and technical skills.

Since DALRRD is not investing in accreditation of student laboratories, the Faculty indicated that there is a slow and dangerous decline in persons being trained to make a laboratory diagnosis of controlled veterinary diseases.

The Faculty feels very strongly that the DAH needs to trust in Public-Private Partnerships (PPPs) as a veterinary strategy towards disease control. The level of distrust of private veterinary practices by the DALRRD is not conducive to proper disease control.

One of the major obstacles encountered by the Faculty (as was also the case in discussions of the Task Team with the ARC-OVI) is to obtain Section 20 approvals for research in terms of the Animal Diseases Act. Decisions for approvals take excessively long and are sometimes refused without the needed scientific rationale. The result is that research on controlled animal diseases by the Faculty is almost non-existent. During the interview of the Task Team with the Directorate Animal Health, the directorate could not provide information on how Section 20 applications are dealt with. Applications would be referred to officials as and when required. There is no transparent system to support decision making. There are apparently some Institutions for which applications for Section 20 approvals were not even considered without any explanation at all. It is suggested to review the management and processing of Section 20 approvals in a manner similar what is applied under the Genetically Modified Organisms Act whereby a scientific advisory committee conducts the necessary evaluation and provides a scientific basis for a decision.

5.4 Application of international standards for disease control

The sanitary requirements for the export of animals and animal products from South Africa are in accordance with the sanitary guarantees required by the importing country. If, for example, importing countries are member of the OIE, the World Trade Organization (WTO) or of the EU, their sanitary prescripts and guarantees required are mostly (but not always) determined and dictated by their directives and animal health standards for the trade in animals and animal products of the OIE and within the criteria for trade outlined in the Agreement on Sanitary and Phytosanitary standards (SPS Agreement) of the WTO. South Africa is a signatory to all these agreements and must honour its commitments in this regard.

The stakeholders consulted by the Task Team, respect this relationship. However, the problem that stakeholders and notably those very much involved and dependent on export, have encountered in their relationship with the DALRRD is the failure or unwillingness to respect the principle of equivalence as outlined in Article 4 of the SPS Agreement of the WTO and confirmed in Article 5.3.3 of the OIE Code:

"The Terrestrial Code recognises equivalence by recommending alternative sanitary measures for many diseases, infections, and infestations. Equivalence may be achieved, for example, by enhanced surveillance and monitoring, by the use of alternative test, treatment or isolation procedures, or by combinations of the above. To facilitate the determination of equivalence, Member Countries should base their sanitary measures on OIE standards and guidelines".

And in Article 4 of the SPS agreement:

"Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures".

2. Members shall, upon request, enter into consultations with the aim of achieving bilateral and multilateral agreements on recognition of the equivalence of specified sanitary or phytosanitary measures".

In discussions with the ostrich industry for example, it was clear that the principle of equivalence is not respected. Furthermore, outbreaks of Avian Influenza in ostriches are reported to the OIE and restrictions imposed on ostrich farms, in contradiction to OIE requirements. For example, farms are incorrectly reported as infected on strength of only a serological test, while the OIE requires a Polymerase chain reaction (PCR) test for confirmation. It was said by the DALRRD that the epidemiology of the disease is different in ostriches than in poultry and that they (irrespective of the standards in the relevant OIE Code chapter) apply their own interpretation of diagnosing and reporting the disease in ostriches. However, ostriches are defined as birds in the OIE Code and the OIE manual, and no distinction is made by the OIE between the sanitary and diagnostic standards for ostriches and birds. Restrictions are further imposed by the DALRRD on farms surrounding the

index infected farm whether infected or not which, according to calculations by the South African Ostrich Business Chamber (SAOBC) resulted in losses in excess of R350 million over the past two years. If the principle of equivalence was applied in negotiations with the EU, this would not have happened.

The apparent fixation by DALRRD to adhere at all costs to OIE requirements although the situation at ground level may dictate otherwise or call for an amended but equivalent outcome, was also an important source of frustration for affected farmers and feedlot owners in the KZN outbreak of FMD. While it was obvious that the process to regain zonal freedom from FMD without vaccination for the RSA might take at least another 2 to 3 years and that vaccination was indicated to expedite containment of the disease in KZN (without affecting the eventual application for reinstatement of zonal freedom), this was refused with resultant excessive loss of income for many farmers and feedlots. The decision to vaccinate was only taken at a very late stage when it became clear that the movement of animals within communal areas cannot be effectively controlled thereby posing a source of further spread of the disease.

A disturbing observation by stakeholders was that international standards are perceived to receive preference by the DALRRD rather than the requirements of the Animal Diseases Act and Regulations – if and when convenient when confronted in the application of disease control measures. Member Countries of the OIE (such as South Africa) are supposed to harmonise their national legislation on animal and veterinary public health with the standards of the OIE. Such an exercise to ensure compliance of national legislation with the OIE Terrestrial Code and OIE Manual is critically necessary for good biosecurity practices and as a guarantee in legal disputes.

6.RECOMMENDATIONS OF THE TASK TEAM

Considering the information provided to the Task Team it is concluded that the biosecurity measures currently applied or not applied in South Africa presents a serious risk for the future of effective animal disease control in the country. The is acknowledged by the top management of DALRRD and correctly diagnosed in terms of critical failures at the pre-border level, failures at the border and critical issues at the post-border level. The critical question to us is: if the diagnosis is correct, why is nothing been done?

The evidence of the broken system of animal health is well documented in all the international mission reports and outlined by stakeholders but little was mentioned about the reasons behind the dysfunctionality of our veterinary and animal health system. Through its frank discussions with stakeholders across the spectrum, the Task Team was able to pinpoint some fundamental reasons behind the systemic failure of our animal health system. These are:

- Years of poor or inadequate decision making
- Years of neglect and mismanagement on especially provincial level
- Poor coordination
- Poor controls and enforcement of regulations
- Financial wastage and corruption in key institutions

- Wrong and improper allocation of financial and human resources
- Poor stakeholder management and collaboration with the private sector
- The lack of application of animal biosecurity measures by many livestock owners
- Non-compliance to biosecurity regulatory requirements by livestock owners and handlers throughout the value chain

The Task Team encourages the DALRRD to embrace collaborative initiatives between government (which must include provinces) and industry (private sector) and propose strategies and policy amendments to address biosecurity issues related to animal disease control in South Africa.

There is a strong willingness from the various industry bodies and private veterinarians to work with government. It is just a matter of the decisionmakers at national level to take the lead and develop a shared vision for animal biosecurity in South Africa. The private sector would like to be involved in critical decisions, assist with movement controls and diagnostic surveillance, and has signalled its willingness, through the Red Meat Industry Strategy:2030 to contribute funds and staff time to assist government in this huge task. It is therefore important that an organisation is established where all these resources, knowledge, expertise can be managed and coordinated under the auspices of DALRRD who will engage with trade partners and international standard setting organisations such as OIE and the WTO.

Finally, several recommendations have been made in the different sections of this report. However, the Task Team wishes to highlight the most critical and more specific issues in the short, medium, and long term. These issues cover institutional, regulatory, and managerial matters as well as resource needs.

Short term recommendations

1. A meeting between the Minister and the MEC's of all provinces to discuss interim measures to establish the chain of command, allocation of funding, movement control, and the designation of responsibilities.
2. Urgently establish an animal health biosecurity plan which should include alternative options to ensure biosecurity such as vaccination to control the spread of disease.
3. Activate Animal Health Biosecurity awareness programmes for livestock owners and handlers across the value chain, including on regulatory compliance requirements.
4. Actively enforce regulatory compliance for disease management throughout the value chain.
5. Activate public-private partnership agreements and market access during disease emergencies for each of the commodities impacted by diseases.
6. Re-activate the process to establish an animal disease emergency fund. This could be done by reserving a specified share of the national annual animal health budget in a contingency reserve. The necessary regulations will have to be drafted and approval from Treasury must be obtained.
7. Reinstate a system to control the movement of animals out of disease control areas.
8. Immediately deal at national level with the state of disrepair of international and protection zone fences.

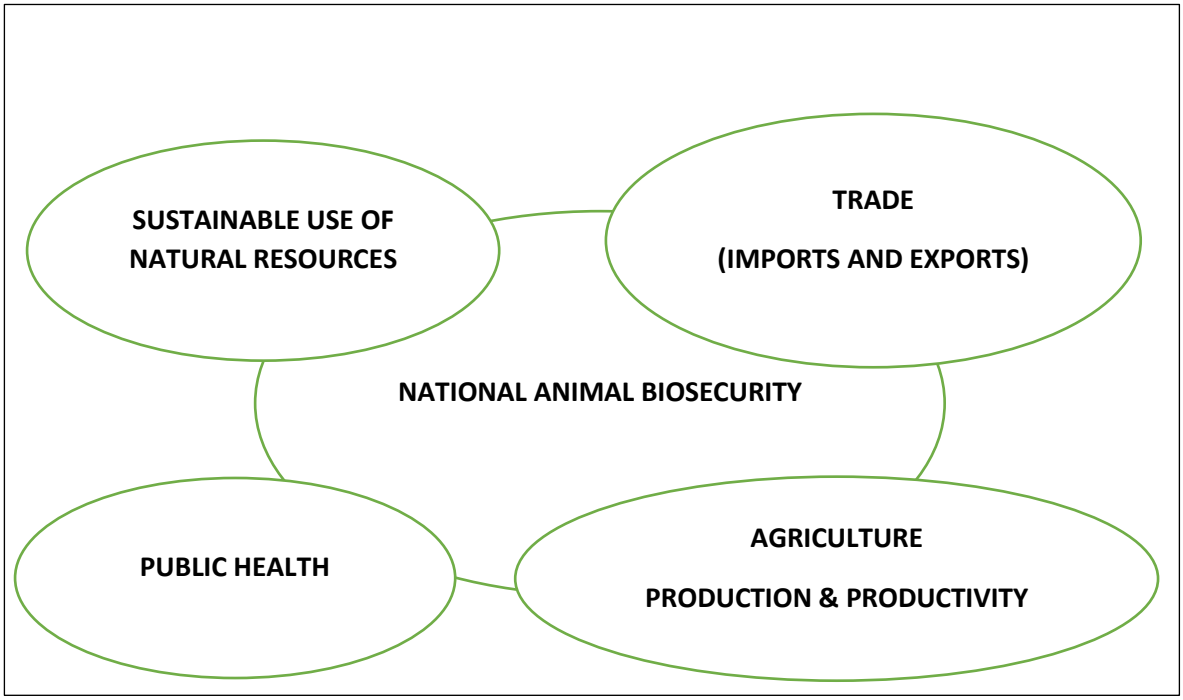
9. Review the structural arrangements across several Directorates within the national Department, especially in the Branch: Agricultural Production, Health, Food Safety, Natural Resources, and Disaster Management to eliminate duplication and to strengthen human and financial resources.
10. Evaluate and assess the management and leadership of key staff in the national and provincial veterinary offices.
11. Enforce corrective actions to address the vaccine shortage created by the various problems and dilemmas at the OBP.
12. There's need to ensure the ARC – OVR and provincial laboratories streamline their processes for procurement of consumables to ensure seamless service delivery
13. Investigate alternative possibilities to expedite the production of FMD vaccine.
14. Establish an independent risk analysis structure/unit within the national Directorate of Animal Health
15. Re-assess the dominant role of one advisor (Professional: Disease Control) to the Director Animal Health in decision-making and policy formulation.
16. Re-evaluate all existing VPN's in collaboration with the relevant livestock industries.
17. Consider the establishment of a dedicated national response team to deal with disease emergencies
18. Amend policy on the authorisation and delegation criteria for private veterinarians to conduct services for and on behalf of Government.
19. Reinstate the practice of using dipping tanks as a control point for animal biosecurity measures, disease surveillance and disease interventions.
20. Establish a livestock traceability system – LITS needs to be implemented immediately and linked with the animal health system.
21. Establish an advisory panel of stakeholders to assess and advise on Section 20 applications in terms of the Animal Diseases Act, 1984 for veterinary research, experiments, and vaccine production (for example – the system of the Advisory Committee under the Genetically Modified Organisms Act).
22. All food security programmes involving livestock and implemented by provinces or local governments should involve veterinarians and animal scientists.

Medium to long-term recommendations

1. Explore the possibilities of using the opportunity offered in Section 44(2) of the Constitution to address the lack of chain of command and centralised service delivery versus the preferred option of replacing the Animal Diseases Act 35 of 1984 by the Animal Health Act 7 of 2002.
2. Re-evaluate the organisational structures of veterinary services in provinces to address the lack of service delivery and abolish the matrix organisational structure of service delivery.
3. Extensively review the Animal Diseases Act and its regulations to assess compliance with sound biosecurity criteria and international standards for disease control.

Expected outcome/s of an effective Biosecurity

A functional and effective biosecurity system both at the national and provincial level must consider and respond to risks on public health, trade (both domestic and international), sustainable use of natural resources (environmental) and agricultural production (including productivity issues). This is because pests and diseases emanating from plants and animals have public health implications and may be due to the environment, trade, and agricultural production. Therefore, it is important to ensure that biosecurity outcomes take into consideration the inter-related issues emanating from trade, public health, environment, and production. Appropriate measures outlined above must ensure a biosecurity system that encompasses all aspects and associated risks to public health, trade, agriculture production and environment. This is illustrated below:



Reviewed and adapted from: FAO Legislative Study 96: Development of an analytical tool to assess biosecurity legislation (2007).

Overall assessment

This report presents to the Minister our assessment of the state of Animal Biosecurity in South Africa based on interviews of all stakeholders (including farmers) in the livestock industry and our own expert understanding of the current flaws in the system.

It is our observation that everyone – farmers, auctioneers, abattoirs, feedlots, industry bodies, veterinarians, education institutions, the Minister, Director-general, provincial authorities, traditional authorities – all agree that Animal Biosecurity in South Africa is in a crisis, and they all correctly diagnose the elements of the crisis. On top of that everyone agrees on the reasons for the crisis, but it seems there is no dedicated plan to deal with the crisis and no effort to implement the corrective actions that have been recommended time and again. There is thus a need for strong action, for consequence management and for a strong political will to affect change in

leadership and to be results driven. These actions are needed, not only to improve the economic fortunes of all livestock producers, but to restore some pride in and amongst our veterinary and animal health officials.

To ensure sustainable success in the implementation of appropriate Animal Biosecurity measures all stakeholders, particularly livestock owners and handlers throughout the value chain must comply with regulatory requirements. Participants throughout the value chain must enforce biosecurity measures including through vigilant requirements of health certificates of animals and associated permits for movement control. Any non-compliance to biosecurity measures must not be tolerated, corrective actions mut be implemented by all stakeholders including through regulatory enforcement.

The discussions with stakeholders confirmed that in most provinces this observation, from the OIE performance audit, still holds:

“There is a lack of veterinarians in regular contact with farms and animals, especially in extensive commercial systems and in small holders or communal areas; there are also a limited number of veterinarians who conduct on-site inspections of animal processing facilities. This limits the ability to certify products and activities in compliance with OIE standards and/or import requirements and limits the expansion of export markets. It also reduces the sensitivity of the passive surveillance early detection system”.

Several EU and OIE inspection reports have made recommendations and assessments, but the main message is that:

“the main paradigm shift in animal health will be in convincing both policy makers and stakeholders of the need to promote more regular contact between farmers/animals and qualified veterinarians. This is required to increase the sensitivity and accuracy of disease surveillance, for early detection and rapid response, by involving more highly competent staff or officially delegated private veterinarians in the VS”

Annexure A: Stakeholders interviewed

1. Red Meat Producers Organisation (RPO)
2. National Animal Health Forum (NAHF)
3. Red Meat Research and Development Trust (RMRDT)
4. South African Ostrich Business Chamber (SAOBC)
5. South African Pork Producers Organisation (SAPPO)
6. KwaZulu-Natal Agricultural Union (KWANALU)
7. National Wool Growers Association (NWGA)
8. South African Poultry Association (SAPA)
9. University of Pretoria (Faculty of Veterinary Science)
10. National African Farmers Union (NAFU)
11. African Farmers Association of South Africa (AFASA)
12. Onderstepoort Biological Products (OBP)
13. Agriculture Research Council- Onderstepoort Veterinary Research (ARC-OVR)
14. Red Meat Abattoir Association (RMAA)
15. Milk Producers Organisation (MPO)
16. Department of Agriculture Land Reform and Rural Development (DALRRD)
17. Gauteng Veterinary Services
18. KwaZulu-Natal Veterinary Services
19. Western Cape Veterinary Services
20. Northwest Veterinary Services
21. Limpopo Veterinary Services
22. Mpumalanga Veterinary Services
23. Northern Cape Veterinary Services
24. Eastern Cape Veterinary Services
25. SA Veterinary Council (SAVC) (written input only)
26. South African Equine Health and Protocols (SAEHP) NPC
27. Design Biologix
28. Interviews with randomly selected livestock farmers (communal, smallholder and commercial).