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Tool for the evaluation of Performance of Veterinary Services

OIE PVS Tool

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Sudan

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OIE - PVS EVALUATION REPORT

OF THE

VETERINARY SERVICES OF SUDAN

3rd to 21st January 2009

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List of Acronyms, Abbreviations & Special Terms

AGID	Agar Gel Immuno-Diffusion
AHA	Animal Health Auxiliary
AH&EDC	Animal Health and Epizootic Diseases Control
AOAD	Arab Organisation for Agricultural Development
APHIS	Animal and Plant Hygiene Inspection Service
ARIS	Animal Resources Information System
ARRC	Animal Resources Research Corporation
AU/IBAR	African Union, Inter African Bureau of Animal Resources
BSE	Bovine Spongiform Encephalopathy
BQ	Black Quarter
CAHW	Community Animal Health Worker
CAPE	Community-based Animal Health and Participatory Epidemiology
CAR	Central African Republic
CBPP	Contagious Bovine Pleuro Pneumonia
CDC	Centres for Disease Control
CE	Continuing Education
CPD	Continuing Professional Development
CVRL	Central Veterinary Research Laboratory
DFA	Disease Free Area
DMEU	Disease Monitoring and Evaluation Unit
ECF	East Coast Fever
ESS	Epidemio-surveillance system
DVS	Director of Veterinary Services
EU	European Union
FAO	Food and Agriculture Organisation
FMAR&F	Federal Ministry of Animal Resources and Fisheries
FMD	Foot and Mouth Disease
GDP	Gross Domestic Product
GNU	Government of National Unity
GOSS	Government of Southern Sudan
GVS	Government Veterinary Service
HPAI	Highly Pathogenic Avian influenza
HQ	Head Quarters
HS	Hemorrhagic Septicaemia
IAEA	International Atomic Energy Agency
IBR	Infectious Bovine Rhinotracheitis
IFAD	International Fund for Agricultural Development
IGAD	Inter-Governmental Authorities for Development
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
LDCC	Livestock Development and Co-ordination Committee
LESP	Livestock Epidemio-surveillance Project
LMMC	Livestock and Meat Marketing Corporation
LSD	Lumpy Skin Disease
LVO	Locality Veterinary Officer
MARF	Ministry of Animal Resources and Fisheries
MD	Mucosal Disease
MDTF	Multi Donor Trust Fund
MoH	Ministry of Health

MoST	Ministry of Science and Technology
NCD	Newcastle disease
NGO	Non Governmental Organization
NLSP	National Livestock Services Project
NRM	Natural Resource Management
NVRC	National Veterinary Research Centre
OIE	World Organisation for Animal Health
OIE-PVS	OIE Performance of Veterinary Services Evaluation Tool
OVI	Onderstepoort Veterinary Institute
PACE	Pan African Programme for the Control of Epizootics
PANVAC	Pan African Veterinary Vaccine Center
PARC	Pan African Rinderpest Campaign
PATTEC	Pan African Tsetse and Trypanosomiasis Eradication Campaign
PCR	Polymerase Chain Reaction
PDS	Participatory Disease Surveillance
PPD	Purified Protein Derivative
PPR	Peste des Petits Ruminants
PVS	Privatised Veterinary Service
QMHD	Quarantine and Meat Hygiene Department
RBT	Rose Bengal Test
RVF	Rift Valley Fever
SDD	Sudanese Dinar
SOP	Standard Operating Practices
SSMO	Sudanese Standards & Metrology Organization
STABEX	Système de Stabilisation des Recettes d'Exportation
STC	Specialized Technical Committee
SVMA	Sudan Veterinary Medical Association
SVC	Sudan Veterinary Council
SVO	Senior Veterinary Officer
TADs	Trans-boundary Animal Diseases
TBD	Tick Borne Diseases
TLU	Tropical Livestock Unit
U of K	University of Khartoum
VPH	Veterinary Public Health
VS	Veterinary Service(s)
VSB	Veterinary Statutory Body [as per OIE Code definition]
WHO	World Health Organization

Acknowledgement

The use of the OIE-PVS Tool for evaluation purposes by Dr Walter Masiga and Dr. Chris Daborn (hereinafter called the "OIE-PVS Team") has been formally authorized by the OIE.

The OIE-PVS Evaluation Team wishes to express its gratitude to the staff of the Sudan Veterinary Services Directorate and the other agencies and departments/ministries, and the individuals who freely gave of their time and experience to assist in this evaluation.

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PART I: EXECUTIVE SUMMARY

I.1 Introduction

A performance assessment of the Veterinary Service [VS] using the OIE - PVS Tool was conducted January 3rd to 21st 2009 by the OIE sponsored PVS Evaluation Mission. The assessment mission was conducted in response to a letter dated 15th March 2007 from the Under Secretary FMAR&F to the Director General of the OIE requesting an evaluation of the VS of Sudan using the PVS tool by a team of OIE certified PVS experts.

The evaluation began with a meeting with the Director General of Animal Health and Epizootic Diseases and senior staff of the Government Veterinary Service Directorate [GVS], to discuss the terms and objectives of the evaluation mission.

The OIE Evaluation Team visited sites and institutions (public and private sector) in the urban and rural areas of Sudan to discuss relevant matters with government officials, public and private sector veterinarians, livestock producers, traders, consumers and other stakeholders. The mission concluded with a presentation of preliminary findings to the Federal Ministry of Animal Resources and Fisheries and a closing meeting with the Minister of Animal Resources and Fisheries, State Minister and Senior GVS Staff on January 19th.

The main findings revolve around the importance of the livestock sector in Sudan for export trade and the initiatives needed to protect and develop that trade.

An overall assessment is that the Veterinary Service of Sudan is endowed with a good number of well qualified personnel and has a very large and valuable animal resource.

It is the OIE team's view that Sudan should do more to sustainably exploit its livestock resource as a major renewable national commodity and that the sector should receive adequate investment in order to develop and realise its full productive potential.

I.2 Key findings of the evaluation

I.2.A Human, Physical and Financial Resources

- There is an apparent top-heavy distribution of veterinary professional staff with more than 50% of the total staff complement based at Central Level.
- The majority of Private Veterinarians are engaged in the sales of drugs and other commercial activities. Very few are engaged in the delivery of clinical services.
- At community level the GVS is largely dependent on CAHWS for the delivery of primary animal health care, disease surveillance and reporting.
- More employment opportunities for veterinarians would be created if the livestock industry was developed commensurate with the size and potential productivity of the livestock population.
- There is no structured Continuing Education implemented by the state

veterinary service.

- There are implicit but not explicit linkages between the VS in North and South Sudan.
- Formalized and coordinated linkages between Veterinary Personnel and Community Animal Health Workers are often weak.
- A total of 110 fully equipped mobile clinics have been acquired and distributed, inclusive of 30 held in strategic reserve, to the State Veterinary Services. More units have been allocated to those States with large livestock populations.
- The PACE established information units and networks are still being maintained and functioning.
- Although there is an apparent imbalance in funding allocation to the livestock sector compared to the crops sector there does not appear to be any serious shortages of funds at Central Level.
- A small amount of revenue is generated from the sale of veterinary medicines and the meat inspection fees, but services and vaccinations are, by and large, provided free of charge.
- Salaries [inclusive of allowances] paid to FMAR&F staff are low compared to professionals in the Ministry of Science and Technology [MoST] and other Ministries.

I.2.B Technical Authority and Capability

- The Central Veterinary Research Laboratory [CVRL], Soba, has a wide range of modern diagnostic and vaccine production equipment, and laboratory facilities are maintained in excellent condition.
- The single storey vaccine production unit is housed in a separate building but is less than 100 metres from the diagnostic facility.
- The CVRL could benefit from adopting standardized operating practices (SOPs) and greater external oversight.
- Currently there are no veterinarians trained in risk analysis within the GVS. There are no databases or systems for animal identification or farm registration.
- A new export quarantine and holding facility has been constructed 60 kms south of Port Sudan to serve the important livestock export market to the Gulf and Middle East Countries
- The lack of an animal identification system hampers the ability to trace the origin of trade livestock.
- The epidemio-surveillance system established by PARC and followed by PACE is still in place and functioning.
- Sudan was recognized as a Rinderpest disease free country by the World Organization for Animal Health (OIE) in May 2008, confirming its competency in undertaking sero-surveillance.
- The GVS has the legal framework and financial support to respond rapidly to sanitary emergencies through an intact and functional chain of command.
- The GVS has internet communication with 9 out of 15 States in the North and the HQ at Juba in the South.
- The network of 3,355 CAHWs, established in many parts of the country, provides the GVS with an extremely valuable community based disease

surveillance network. Institutional recognition is strong but financial and management support is weak.

- There has been no documented case of the private sector being contracted to implement disease prevention, control and eradication programmes on behalf of the GVS.
- At all main Abattoirs, slaughter houses and slabs there is a GVS staff who undertakes carcass and visceral examination in accordance with approved procedures.
- Despite an apparently water-tight procedure for the regulation of veterinary medicines and biologicals there are reportedly malpractices occurring with counterfeiting and the retailing of substandard products at a lower price than recognised brands.
- The GVS regularly participates in OIE activities and has taken part in other regional groups that deal with emerging animal health issues.
- There is no early warning system in place for disease outbreaks although there are plans to put one in place.
- Many staff within the GVS benefit from the establishment of good electronic communications and there are plans to further extend such resources.
- There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

I.2.C Interaction with stakeholders

- There is a regular radio programme produced by the extension department where information concerning GVS activities and disease alerts can be broadcast.
- The Sudan Veterinary Medical Association [SVMA] produces a Journal, The Sudan Journal of Veterinary Science and Animal Husbandry, the first edition of which was produced in 1960.
- There is no nationally constituted or operative livestock forum, representative of all stakeholders, where issues of concern to the sector as a whole can be discussed and a consensus arrived at regarding direction, priorities or policy frameworks.
- There have been consultations with neighbouring countries concerning trans-boundary disease control and harmonisation of policies and practices. These interactions fall under the umbrella of the AU-IBAR.
- The Undersecretary, accompanied by a GVS delegation, regularly participates at the OIE General Session and in OIE Regional Commission meetings, and participates in relevant Regional meetings and committees.
- There are no public veterinary activities such as disease surveillance programmes or vaccination campaigns contracted out by the GVS to private veterinary service providers. By law vaccination of animals can only be performed by the GVS.
- The Sudan Veterinary Council [SVC] was established in 1949 and is the oldest council of professionals in Sudan.
- The quality and capability of the SVC leadership to deliver meaningful initiatives and policy is critical if it is to have a positive impact in improving conditions for veterinarians in Sudan.

- The SVC has the mandate to promote and regulate CPD programmes undertaken by veterinarians in Sudan.

I.2.D Access to Markets

- The FMRA&F, in cooperation with other agencies in the government of Sudan, has the authority and capability to actively participate in the preparation of national legislation and regulations.
- There is a broad ranging legal framework and a large professional body capable of ensuring stakeholder compliance with legislation and regulations although weaknesses in applying those regulations have been reported.
- The valuable livestock export market to the Gulf States and Middle East makes it critically important that the GVS ensures that the sanitary measures adopted take account of relevant international standards and are seen to be applied in a professional and transparent manner.
- The GVS exerts a high level of authority and capability for the purposes of certifying animals and animal products for export.
- There are no national traceability or animal identification programmes in place and no available database capacity to support such a programme.
- Animal movement certificates are required for animals going to slaughter or export but are issued without identification of the individual animals. Animals frequently change hands many times as they travel to slaughter and their origin and identity can be lost in this process.

I.3 Summarised Findings of the OIE-PVS Evaluation: Sudan

Critical competency	Level of advancement					
I. Human, Physical and Financial Resources						
I-1: Professional and technical staffing of the Veterinary Services						
A: Veterinary and other professionals (university qualification)	There is a systematic approach to defining job descriptions and formal appointment procedures for veterinarians and other professionals.				4	
B: Veterinary para-professionals and other technical personnel	The majority of technical positions at local (field) levels are occupied by personnel holding technical qualifications.			3		
I-2: Competencies of veterinarians and veterinary Para-professionals						
A: Professional competencies of Veterinarians	The veterinarians' practices, knowledge and attitudes usually allow undertaking specialized activities as may be needed by the VS.				4	
B: Competencies of veterinary para-professionals	The training of *veterinary para-professionals* is of a uniform standard that allows the development of only basic animal health competencies.			3		
I-3: Continuing education	The VS have access to CE (internal and/or external programmes) on an irregular basis but it does not take into account needs, or new information or understanding.		2			
I-4: Technical independence	The technical decisions are based only on				4	

	scientific evidence and are not changed to meet non-scientific considerations.					
I-5: Stability of structures and sustainability of Policies	There are generally only minor changes in the organisational structure of the public sector of the VS following a change in the political leadership and these have little or no effect on sustainability of policies.				4	
I-6: Coordination capability of the sectors and institutions of the Veterinary Services (public and private)	There are coordination mechanisms with a clear chain of command for some activities, but these are not coordinated / implemented throughout the country.			3		
I-7: Physical resources	The VS have suitable physical resources at national, regional and some local levels and maintenance and replacement of obsolete items occurs only occasionally.			3		
!-8 Funding	Funding for new or expanded operations is on a case-by-case basis.				4	
I-9: Contingency and compensatory funding	Contingency and compensatory funding arrangements with limited resources have been established; additional resources for emergencies may be approved but approval is through a political process.			3		
I-10: Capability to invest and develop	The VS regularly secures funding for improvements in operational infrastructure, through extraordinary allocations from the national budget or from other sources, but these are allocated with constraints on their use.			3		

II. Technical Authority and Capability						
II-1: Veterinary Laboratory diagnosis	In the case of new and *emerging diseases* in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.			3		
II-2: Laboratory quality assurance	All laboratories used by the public sector VS are using formal QA systems.			3		
II-3: Risk analysis	The VS compile and maintain data but do not have the capability to systematically assess risks. Some risk management decisions are based on scientific risk assessment.		2			
II-4: Quarantine and border security	The VS can establish and apply quarantine and border security procedures which systematically address legal pathways and illegal activities.				4	
II-5: Epidemiological surveillance						
A. Passive epidemiological surveillance	The VS conduct passive surveillance for some relevant diseases at the national level through appropriate networks in the field, whereby samples from suspect cases are collected and sent for laboratory diagnosis with evidence of correct results obtained. The VS have a basic national disease reporting system.			3		
B. Active epidemiological surveillance	The VS conduct active surveillance for some relevant diseases, apply it to all susceptible populations, update it regularly and report the results systematically.				4	
II-6: Early detection and emergency response	The VS have an established procedure to make timely decisions on whether or not a sanitary emergency exists. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies				4	

	through a chain of command. They have national contingency plans for some exotic diseases.					
II-7: Disease prevention, control and eradication	The VS implement prevention, control and eradication programmes for some diseases and/or in some areas with scientific evaluation of their efficacy and efficiency			3		
II-8: Veterinary public health and food safety	Management, implementation and coordination are generally undertaken in conformity with international standards only for export purpose and for products that are distributed throughout the national market.			3		
II-9: Veterinary medicines and veterinary biologicals	The VS has only limited capability to exercise administrative control (including registration) over the usage, including import and production, of veterinary medicines and veterinary biologicals.		2			
II-10: Residue testing	A comprehensive residue testing programme is performed for all animal products for export and some for domestic use.			3		
II-11: Emerging issues	The VS assess the risks, costs and/or opportunities of the identified emerging issues, including preparation of appropriate national preparedness plans. The VS have some collaboration with stakeholders and other agencies (e.g. human health, wildlife, animal welfare and environment) on emerging issues.			3		
II-12: Technical innovation	The VS have a specific programme to actively identify relevant technical innovations and international standards.			3		

III. Interaction with Stakeholders						
III-1: Communications	The VS maintain an official contact point for communications but it is not always up-to-date in providing information.			3		
III-2: Consultation with stakeholders	The VS maintain informal channels of consultation with stakeholders.		2			
III-3: Official representation	The VS actively participate in the majority of relevant meetings			3		
III-4: Accreditation/Authorisation/Delegation	The public sector of the VS has the authority and capability to accredit / authorise / delegate to the private sector, but there are no current accreditation / authorisation / delegation activities.		2			
III-5: Veterinary Statutory Body	The *VSB* regulates *veterinarians* and *veterinary para-professionals* only within certain sectors of the VS (e.g. public sector but not private sector veterinarians).			3		
III-6: Participation of producers and other stakeholders in joint programmes	Producers and other stakeholders are informed of programmes and assist the VS to deliver the programme in the field.		2			

IV. Access to Markets						
IV-1: Preparation of legislation and regulations, and implementation of regulations	The VS have the authority and the capability to participate in the preparation of national legislation and regulations, and to implement resultant regulations nationally.			3		
IV-2: Stakeholder compliance with legislation and regulations	If necessary, the VS impose appropriate penalties in instances of non-compliance			3		
IV-3: International harmonisation	The VS actively and regularly participate at the international level in the formulation, negotiation and adoption of international standards, and use the standards to harmonise national legislation,					5

	regulations and *sanitary measures*.					
IV-4: International certification	The VS develop and carry out certification programmes for certain animals, animal products, services and processes under their mandate in compliance with international standards.			3		
IV-5: Equivalence and other types of sanitary agreements	The VS have the authority to negotiate and approve equivalence and other types of sanitary agreements with trading partners, but no such agreements have been implemented.		2			
IV-6: Traceability	The VS do not have the capability to identify animals or animal products.	1				
IV-7: Transparency	The VS notify in compliance with the procedures established by these organisations.			3		
IV-8: Zoning	The VS have implemented biosecurity measures that enable it to establish and maintain disease free zones for selected animals and animal products, as necessary.			3		
IV-9: Compartmentalisation	As necessary, the VS can identify animal sub-populations with a distinct health status suitable for compartmentalisation.		2			

I.4 Summary of conclusions

I.4.A Human, physical and financial resources

- Review the Veterinary Service delivery system, inclusive of staff distribution, linkages and community based systems, in order to develop a more efficient, sustainable and functional system.
- Train more Veterinary Assistants and CAHWs.
- Address how to make the delivery of veterinary services financially attractive for field staff.
- Exploit the full potential of Sudan's livestock industry and well qualified and specialised cadre of veterinary professionals to sustainably increase GDP contribution by the sector.
- Create and foster explicit linkages between the Northern and Southern VS.
- Develop SVC mandate for promoting and regulating the uptake of CPD programmes by the veterinary profession in the Sudan. Resource the SVMA to organise and deliver CPD programmes for their members at National and Regional Levels.
- Develop systems of remuneration for VS staff that act as a positive performance incentive.
- Consider adopting a more aggressive cost recovery policy.
- Develop an effective advocacy that convinces the Government and Donor Community of the merit in providing investment funds of sufficient scale to enable the GVS, in partnership with other stakeholders, to realise the full livestock production potential of Sudan.

I.4.B Technical authority and capability

- A fundamental review is needed of the delivery of veterinary services in the Sudan to develop innovative, effective and sustainable practices. As part of this review dialogue should be initiated within the profession to develop consensus concerning the incorporation of private / public / community partnership approaches.
- The laboratory system needs improved quality controls, certification, accreditation and outside evaluation processes.
- At least two HQ GVS staff and one from each State should undergo a formal training course in risk analysis at a recognised centre of excellence.
- As part of a TAD initiative, harmonisation of animal disease control measures, inclusive of a regional animal identification system, should be discussed and agreed.
- Put in place the plans to establish an early warning system for epidemic and emerging diseases.
- Provision of computer and other forms of electronic media for disease data recording, analysis and reporting with access for all levels of professional and senior technical staff.
- Review current policy towards CAHWs and develop a policy that sustainably employs them as key frontline staff in disease surveillance and reporting and in those livestock systems where community based veterinary auxiliary personnel can play an important role.
- Expand national zoonotic disease surveillance programmes and increase the resources needed to control those diseases shown to be posing a significant risk to public health and the export market.
- Review and improve where necessary procedures for the detection and removal of cheap counterfeit veterinary products from the market.

I.4.C Interaction with stakeholders

- Develop strategies to exploit the full potential that present day desk top and mobile communications offer for staff knowledge development.
- Create a web site that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations
- Establish a “National Livestock Development Board”, representative of all stakeholders in the livestock sector to develop national livestock policy and agree to the strategies required to implement that policy.
- State Livestock Development Boards to be formed with one member represented on the National Board.
- Review the relationship of the private veterinary sector [PVS] with the GVS and ways and means explored to provide the PVS with income earning opportunities.
- Amend the regulation concerning the administration of vaccines to allow veterinarians registered with the SVC to deliver all types and kinds of GVS approved vaccines
- Implement pilot VS delivery programmes at Locality Level to test out new approaches including private / public / community partnerships.

- The SVC needs support to mount effective advocacy raising the profile of the Veterinary Profession in Sudan - emphasising the contribution it could be making in increasing livestock sector contribution to GDP.
- Regulations need to be published for the Veterinary Para-professionals and CAHWs.
- The SVC should be the recognised focal point for CPD development.

I.4.D Access to market

- To protect valuable livestock export markets the GVS should ensure that the sanitary measures adopted continue to take account of relevant international standards and are seen to be applied in a professional and transparent manner.
- Review all acts and regulations relating to livestock health, production and marketing and update where necessary publishing them in both Arabic and English.
- An assessment should be undertaken of the implementation and compliance with existing livestock health, production and marketing regulations and address any weaknesses identified.
- Put in place an animal identification system and national livestock database.
- Review existing passive surveillance systems and address weaknesses and / or implement new systems that consistently provide the GVS with accurate field disease information.

PART II: CONDUCT OF THE EVALUATION

At the request of the Government of Sudan, the Director General of the OIE, Dr. Bernard Vallat, appointed an independent OIE-PVS team consisting of Dr Walter Masiga (Team leader) and Dr Chris Daborn (Technical expert) to undertake an evaluation of the veterinary services of Sudan. The evaluation was carried out using the OIE standards contained in Chapters 3.1. and 3.2. of the OIE *Terrestrial Animal Health Code*, using the 2008 OIE *PVS Tool* to guide the procedures

The evaluation was carried out from 3rd to 21st January 2009.

Figure 1. Map of Sudan

II.1 The OIE PVS Tool

To help countries to establish their current level of performance, form a shared vision, establish priorities and carry out strategic initiatives, the OIE has developed an evaluation tool called the OIE *Tool for the Evaluation of Performance of Veterinary Services* (OIE *PVS Tool*[1]) which comprises four *fundamental components*:

- Human, physical and financial resources
- Technical authority and capability
- Interaction with stakeholders
- Access to markets.

These four *fundamental components* encompass 41 *critical competencies*, for each of which five qualitative levels of advancement are described. For each *critical competency*, a list of suggested indicators was used by the OIE Evaluation Team to help determine the *level of advancement*.

A glossary of terms is provided in Appendix 2.

This report follows the structure of the OIE *PVS Tool* and the reader is encouraged to consult that document to obtain an understanding of the context in which the Tool is used.

II.2 Objectives and scope of the evaluation

At the request of the Government of Sudan the Director General of the OIE appointed an independent OIE Evaluation Team comprising Dr Walter Masiga (Team leader) and Dr Chris Daborn (Technical expert) to undertake an evaluation of the veterinary services of Sudan.

The provisions of the OIE *Terrestrial Animal Health Code* (the *Terrestrial Code*), specifically Chapter 3.1. on Veterinary Services and Chapter 3.2. on the Guidelines for the Evaluation of Veterinary Services, set the framework for this evaluation. Relevant *Terrestrial Code* references are quoted for each critical competency.

For the purposes of this evaluation, the V*eterinary Services* include; the Directorate of Animal Health and Epizootic Diseases under the Federal Ministry of Animal Resources and Fisheries; the Animal Resources Research Corporation of the Ministry of Science and Technology; the Directorate of Veterinary Services under the Ministry of Animal Resources and Fisheries South Sudan. Aquatic animal health systems were not included in the evaluation.

This report identifies the strengths and weaknesses of the veterinary services of Sudan as compared to the OIE criteria for performance. The report also makes recommendations for priority actions to improve performance.

[1] Available at http://www.oie.int/eng/oie/organisation/en_vet_eval_tool.htm?e1d2

II.3 Country information (geography, administration, agriculture and livestock)

II.3.A Introduction

With an area of 2.5 million square kilometres, Sudan is the largest country in Africa and the ninth largest country in the world. Its vast area includes stretches of tropical forests, marshlands, mountains in the southern and central parts, to savannah, stone and sand deserts, and mountains in the north, east, and west. The Nile, with its fertile banks, runs throughout the country connecting its various parts. Sudan shares its extensive borders with nine countries and contains 60 percent of Africa's irrigated land. [Figure1] The border countries [total length of border given in brackets] are: Central African Republic [1,165 km], Chad [1,360 km], Democratic Republic of the Congo [628 km], Egypt [1,273 km], Eritrea [605 km], Ethiopia [1,606 km], Kenya [232 km], Libya [383 km] and Uganda [435 km] with 853 km of Coastline on the Red Sea. The country is divided into 25 states; 15 in the North and 10 in the South. Sudan is geographically and religiously diverse being multicultural, multiethnic, and multilingual, with 134 listed languages.

The country suffered the impact of 22 years of civil war from 1980 to 2002 when the Sudanese Peoples Liberation Army, representing interests in the South sought independence from the Khartoum based Government in the North. Peace talks gained momentum in 2002-04 with the signing of several accords. A final Naivasha peace treaty, effective for six years, was signed in January 2005 which granted 10 States in the South a degree of autonomy from the North. In 2011 a referendum will be held to determine the future composition of the Government of Sudan – either the creation of one unified Government with a Federation of States or as Northern and Southern Governments with an alignment of States to Northern and Southern Centres of Government

The climate is tropical to the south; arid desert to the north; with the rainy season varying by region (April to November). The terrain is generally a flat, featureless plain; with mountains in far south, northeast and west; and desert dominating the north. The lowest point is the Red Sea at 0 m and the highest, Mount Kinyeti at 3,187 m. Natural resources include petroleum; small reserves of iron ore, copper, chromium ore, zinc, tungsten, mica, silver, gold and hydropower. Arable land makes up 6.83% of the land area with just 0.18% under permanent crops [inclusive of 19,500 sq km of irrigated land]. Semi arid to arid rangeland, subject to dust storms and periodic persistent droughts makes up the remaining 93% of the land area. There are generally inadequate supplies of potable water; with wildlife populations that are threatened by excessive hunting; soil erosion; desertification and periodic drought. Over 40 percent of Sudan consists of pasture and forests. The area of grazing land is estimated at about 100 million hectares, while forests and scattered trees cover about 19 percent the country.

The human population was estimated in 2005 to be 40,187,486 persons comprising 43.2% in the 0-14 years age bracket, 54.5% 15-64 years and just 2.4% 65 years and over, with a population growth rate of 2.6%, infant mortality of 62.5 deaths/1,000 live births and life expectancy of 58.54 years. Major disease

risks for the human population include food or waterborne diseases: bacterial and protozoal diarrhoea, hepatitis A, schistosomiasis and typhoid fever; vector borne diseases: malaria, dengue fever, African trypanosomiasis (sleeping sickness) are high risks in some locations with water; contact diseases: respiratory disease and meningococcal meningitis. HIV / AIDS is reported at a prevalence of 2.3%.

Sudan has turned around a struggling economy with sound economic policies and infrastructure investments, but still faces formidable economic problems, starting from its low level of per capita output. From 1997 to date, Sudan has been implementing International Monetary Fund (IMF) macroeconomic reforms. In 1999, Sudan began exporting crude oil and in the last quarter of 1999 recorded its first trade surplus, which, along with monetary policy, has stabilized the exchange rate. Increased oil production, revived light industry, and expanded export processing zones helped sustain GDP growth at 6.4% in 2004. Agriculture production remains Sudan's most important sector, employing 80% of the work force, contributing 39% of GDP, and accounting for most of GDP growth, but many farms remain rain-fed and susceptible to drought. Livestock contributes 50% of the Agricultural GDP. Apart from the major contribution that livestock makes to GDP, livelihoods and income, livestock also provides for important social functions, manure for soil structure and fertility and draft power for tillage and transport. Currently one exported ram [US$150], a sustainable and renewable resource, earns 3 times the price of one barrel of oil [US $50].

The economy is, and for the foreseeable future will remain, highly dependent on two key economic sectors - oil and agriculture. Although revenue from oil sales [275,000 barrels per day with proven reserves of 1.6 billion barrels] is a major contributor to GDP, agriculture directly supports the livelihood of about 70% of the population providing for the food security and income generation of rural communities. In spite of the potential for national food self-sufficiency, importation of foodstuff remains high (20% of total imports). There is considerable potential to increase production from the agricultural sector particularly in the area of integrated livestock crop production systems.

The 25 states are divided into 134 localities. Each state is governed by a Wali (Governor) with 5-7 State Ministers and 3-8 Commissioners for the different local councils. Each state has administrative and fiscal autonomy. There are 25 Ministers for Agriculture, Animal Resources and Fisheries at state level. In some States there is a separate Ministry for Animal Resources whilst in other States, Animal Resources fall under a Ministry of Agriculture. In each state, there is a Veterinary Services Department run by a Director General assisted by four to five directors. A Field Veterinary Officer or Animal Health Technician runs the Veterinary Office in each locality assisted by Technical Staff. CAHWs, based at village level form the frontline of the veterinary service.

II.3.B Livestock Population

Sudan has reportedly the second largest livestock population in Africa, although it is important to note that the last complete census was undertaken 32 years ago in 1976. The figures as reported in table 1 below are therefore an estimate of the actual population. It might be assumed that livestock population figures would

have declined in the south during the protracted period of civil disturbance but contemporary reports suggest the opposite – that numbers of livestock actually increased. This was attributed to the mobility of the livestock resource, a survival strategy long practised by the pastoralists, and the improved preventive medicine services provided by the various animal health programmes initiated in the south during this period. Many commentators remark, in this context, on the contribution livestock made in providing food for rural populations throughout the disturbances and the beneficial impact of deploying CAHWs who played a major role in keeping Sudan on the OIE pathway for eventual declaration of freedom from rinderpest. The livestock population figures given in Table 1 show that in 2007 there were 41 million cattle; 50 million sheep and 43 million goats, 40 million poultry, 0.75 million horses, 7 million donkeys and 4 million camels.

Table 1 Summary of the livestock population per region in 2007

State / Region	Cattle	Sheep	Goats	Poultry	Horses	Donkeys	Camels
North Kordofan	584160	4072340	2318652	1665584	79936	736710	800558
South Kordofan	2599922	2041235	1867803	1178096	15082	316785	215290
West Kordofan	3410340	3935583	2061024	1949952	49771	663039	544159
North Darfour	674663	3657002	2855377	1218720	18853	780912	525512
South Darfour	4134369	3738044	2962722	1381216	260923	596735	99169
West Darfour	3973931	3798825	3477978	1259344	196069	898786	379725
Elgedarif	1016109	2066561	1043393	1381216	11312	552532	219528
Kassala	415494	952239	1219439	1299968	9049	316785	570859
Red sea	65821	354557	708477	1421840	11312	228380	297084
Blue Nile	4047979	4862496	3452215	1624960	15082	265215	189862
Sennar	1550903	1337186	1185089	1706208	11312	287317	103831
Elgezira	2348980	2405923	1683170	3249920	25640	891419	109764
White Nile	3426795	2456574	2305771	3087424	32427	456760	31361
Northern	329104	952239	1133563	1584336	1508	169443	43651
River Nile	98731	1002890	1189383	568736	2262	184177	101712
Khartoum	234487	430534	635482	9749760	9049	7367	5933
North upper Nile	1024336	673658	455143	974976	754	7367	0
Unity	1230026	1565116	1816277	934352	2262	0	0
Gongoli	1526220	1473944	1249496	853104	0	0	0
N.Bahr Elgazal	1645520	1352382	1687463	771856	1508	7367	0
W.Bahr Elgazal	1299961	1225754	1159326	406240	0	0	0
Albohairat	1365782	1296666	1515711	609360	0	0	0
Warab	1592041	1357447	1416954	568736	0	0	0
Bahr Elgabal	913264	1332121	1193676	487488	0	0	0
E.Eqatoria	925605	1078866	1172207	453168	0	0	0
W.Eqatoria	703460	1230819	1172207	203120	0	0	0
TOTAL	41,138,000	50,651,000	42.938,000	40,589,680	754,112	7,367,096	4,238,000

Agriculture is a major sector in the Sudanese economy. It is practised under four main farming systems - modern irrigated; rain-fed mechanical; rain-fed traditional and; the livestock-based sub sectors. Livestock production extends from the arid grazing areas of the north to the higher rainfall grazing areas of the south. The distribution of the livestock species is governed by the wide and diverse ecological conditions prevailing across the country, as well as by the social importance of livestock. This wealth is kept under many production systems including transhumance, traditional sedentary and the commercial.

Sudanese cattle are of two principal varieties: Baqqara and Nilotic. The Baqqara and two sub-varieties constitute about 80 percent of the country's total number of cattle. This breed is found chiefly in the western savanna regions and in fewer, although significant, numbers farther to the east from Aali an Nil to Kassala in Ash Sharqi. The Nilotic, constituting approximately 20 percent of all cattle, are common in the eastern hill and plains areas of south-eastern Al Istiwai, which are free of the tsetse fly, and in those parts of the Bahr al Ghazal and Aali an Nil lying outside the tsetse fly zone. Because of periodic rinderpest epidemics, the total number of cattle was relatively small until about 1930, when it stood at an estimated 2 million. A vaccination program begun about that time and mass inoculations during the succeeding decades resulted in a great increase in numbers, which by 1970 had reached about 12 million. In the vast areas used by pastoral herders (estimated to be 80 million to 100 million hectares), cattle husbandry is conducted in an economic, cultural, and social context that has evolved over generations. This includes an emphasis on increasing herd size as a strategy to ensure family security. Small surpluses (usually bulls) are available for subsistence use, exchange, or sale for local consumption or export. Cattle are also used for dowry and among the Nilotes for rituals. The numbers of cattle also help to establish or increase status and power of an individual in a society in which cattle are the measure of success.

Sheep are herded chiefly by transhumance in Darfur and Kurdufan. Large numbers are found in the drier areas at greater elevations than usual for cattle. Several breeds are raised, but the predominant and preferred breed is the desert sheep, which has both good weight and good milk yields. Villagers in Al Awsat also raise large numbers of sheep, mostly on a non-migratory basis. Fodder is obtained from crop residues on irrigated and rain-fed farms and from vegetation along the rivers and canals.

Goats, of which there are three principal breeds (Desert, Nubian, and Nilotic), are found throughout the country south of the northern desert areas. They are raised mainly by sedentary families for milk and meat. Goat meat, although less popular than mutton, forms part of the diet of most families, particularly those with low incomes. Goat milk is an important source of protein, and many families in urban areas keep a few goats for their milk.

Camels are largely concentrated in the desert and semi-desert regions of northern Darfur, northern Kurdufan, and southern Ash Sharqi. They are kept almost entirely by nomadic and semi-nomadic peoples, for whom these “ships of the desert” represent the preferred mode of transport. Camels are also important for milk and meat. Camel ownership and numbers are a source of prestige in nomadic societies.

In the irrigated areas alongside the Nile in Central and Northern Sudan, the dairy industry is developing rapidly. The government is promoting the industry in order to provide sufficient whole milk and reduce dependance on the importation of powdered milk.

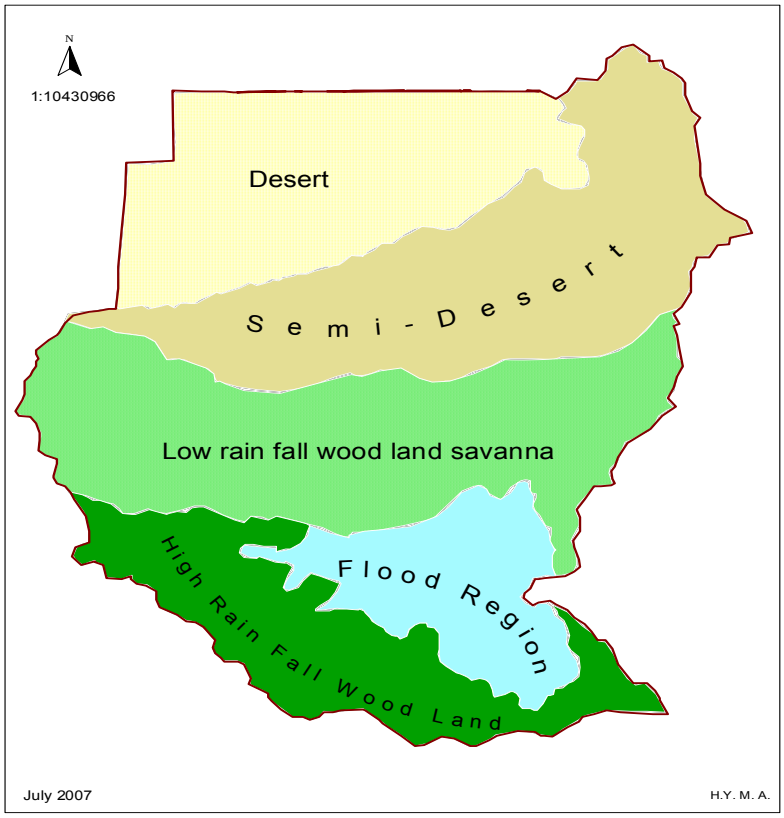
The distribution of livestock in Southern Sudan varies with the ecology of the various regions. Western Equatoria and the western part of Bahr el Ghazal are mainly rainforest and savannah forest, and are infested with tsetse fly. The main livestock kept in these areas are poultry, with small numbers of sheep and goats and very few cattle. The rest of Bahr el Ghazal, Upper Nile and Jonglei are composed of savannah forest, intersected by flood plains and swamps associated with the major rivers. These areas support agro-pastoralist tribes that keep cattle, sheep, goats and some chickens. Eastern Equatoria is mountainous to the west - supporting a mixed crop and livestock farming system, and semi-desert to the east - supporting pastoralist tribes that herd cattle and goats. The proportion of households owning cattle varies between regions. Very few households own cattle in Western Equatoria, in Northern Bahr el Ghazal approximately 60% own cattle whilst in Eastern Equatoria, Upper Nile, Jongolei and Lakes regions approximately 80% of households own cattle.

Livestock are an integral part of the culture and economy of the agro-pastoralist tribes of Southern Sudan, and provide a major proportion of their food needs. Milk, meat and blood provide 20-60% of food needs depending on region and season of the year. Cattle are kept in large numbers as a means of storing wealth, for bartering, for marriage payments and other social obligations, and as a means of survival during times of hardship. Livestock are bartered and sold in local markets and there is an active international trade in cattle into Kenya and Uganda, and north into the transition zone of Sudan. Sheep, goats and poultry are less culturally important but make a major contribution to food security especially for the poorer members of the community.

The distribution and density of livestock is strongly influenced by the agro – climatic zones with the highest numbers found in the low rainfall savanna and high rainfall woodland zones as shown in figures 2 and 3 below

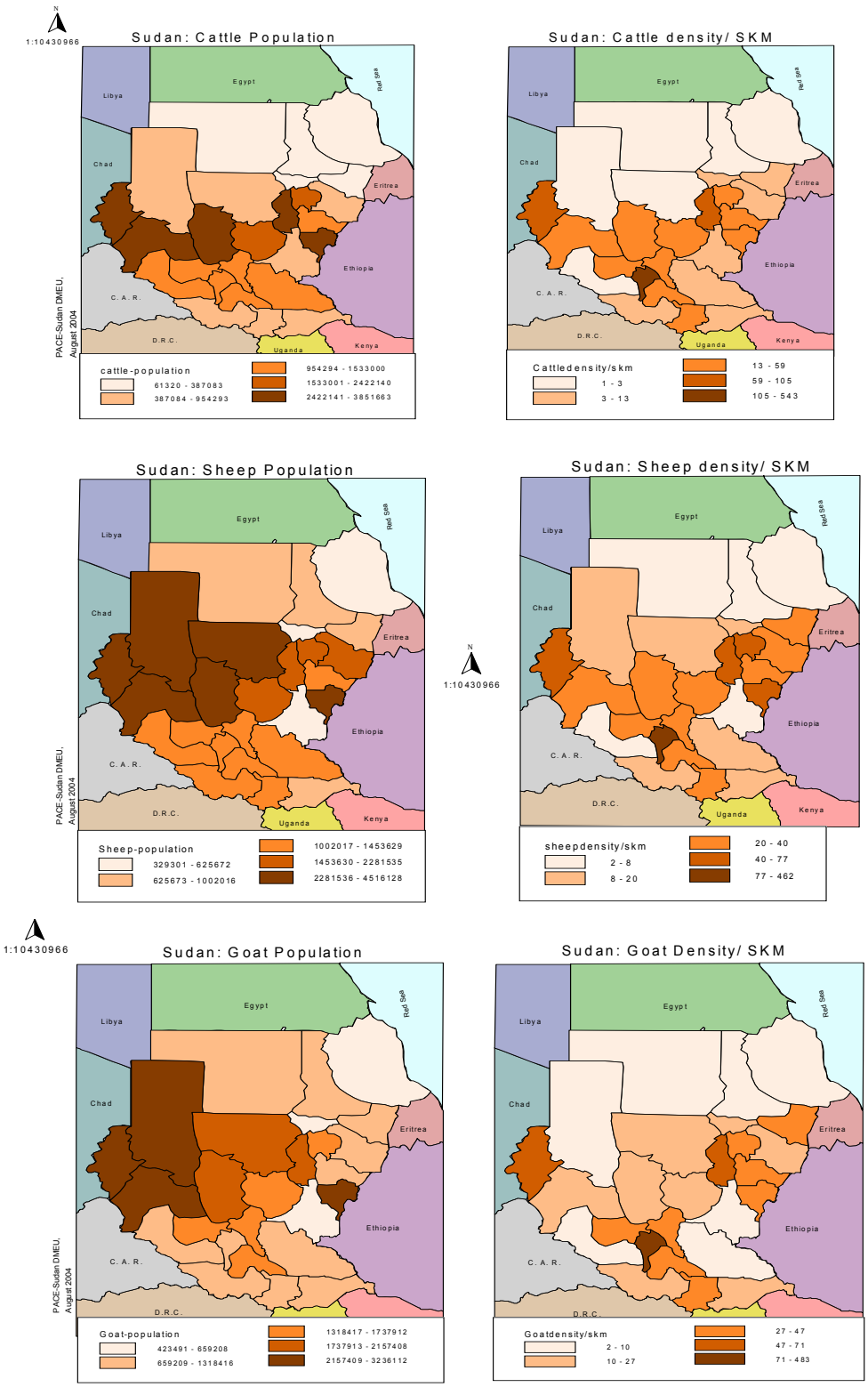
II.3.C Agro-ecological zone

Figure 2. Agro-ecological Zones of Sudan



The country has a wide climatic range varying from desert in the northern part of Sudan, where it seldom rains, through a southward belt of variable summer rainfall, to an almost equatorial type of rain in the extreme southwest, where the dry season is very short. Water has a special and all consuming significance in the arid and semi-arid regions of Sudan. Annual rainfall in the northern part of Sudan varies from close to zero to about 200 mm near the capital Khartoum. In the low rainfall savannah, it rains on average between 300-900 mm and in the high rainfall savannah between 900 - 1500 mm. The Nile, which is shared with 10 other countries, creates its own unique micro-environment as it traverses the length of the Sudan.

Figure 3 Livestock Population and Density



II.3.D The population and distribution of wildlife in the country

Of the thirteen families of wild animals in Africa, twelve are found in the Sudan. The population of wildlife includes 266 species of animals, 938 species of birds, 106 species of fish and 90 species of snakes. The estimated numbers of some wildlife species and their distribution are given in tables 2 and 3 below:

Table 2 Estimate of Wildlife population [1973]:

Species of wildlife	Estimated population	Distribution by Regions
Giraffe	13,300 head	D.N.P, Southern region & Radom N.P
Buffalo	14,600 head	D.N.P., R.N.P& southern region
Giant Eland	17,900 head	D.N.P., R.N.P & southern region
Elephant	13,000 head	D.N.P,R.N.P, South west of the country & southern region
Hartebeest	862,000 head	D.N.P.,R.N.P., B.N,W.N., & southern region
Gazelle	3.400,000 head	D.N.P., R.N.P,B.N., W.N., & middle and south of country
Warthog	Very high density	From middle towards the south of the country

* D.N.P - Dindir National Park; R.N.P. - Radoum National Park; B.N.- Blue Nile State W.N. - White Nile State

Table 3 Distribution of Wildlife Species:

State	Species found	Density
River Nile & Northern	Barbary sheep, Gazelle, Mountain goat & Vulps	Low
Kassala & Red sea & Gadarif	Gazelle, Barbary sheep, Elephants & Warthogs	Medium
White Nile	Waterbuck, Hartebeest, Ostrich, Warthogs, Gazelle	Medium
Al Gezeira & Blue Nile	Hartbeest, Buffalo, Gazelle, Warthogs, Antelope	Medium
Khartoum	Barbary sheep, Mountain gazelle,	Low
N.Kordufan & Darfur states	Gazelles, Roan antelope, Ostrich, Oryx & Dama-gazelle	High
S.Kordufan & Darfur National Parks	Elephant, Giraffe, Hartbeest, Gazelles, Buffalo	High
Dindir National Park	Buffalo, Gazelles, Reedbuck, Waterbuck, Elephant, Lions & Oryx	High
Radoum National Park	Buffalo, Gazelle, Elephants, Giraffe, Oryxs, Ostrich	High
Southern Region	All species of wildlife in Africa are there	High

Sudan was once famous for its large migratory population of white eared cob antelopes with a biomass rivalling that found in the Greater Serengeti Ecosystem. It is logical that Sudan should be considering programmes to conserve the biodiversity of its valuable wildlife resource and should look at Tanzanian and Namibian experiences in community-based Natural Resource Management (NRM) systems as a means of giving communities an economic incentive to partner with national wildlife conservation programmes. Integrated livestock wildlife management is a practical and traditionally practised approach that may well be appropriate for adoption in the Sudan. Separating wildlife from livestock has, in many cases, proven to be a counterproductive policy creating serious problems of accessing important dry season grazing areas for pastoralist peoples, livestock and wildlife alike.

Land use conflicts are potentially the biggest source of social tensions in many countries and the Sudan is no exception. The sources of conflicts are many but one significant issue is the competition for the use of the land for livestock grazing or crop production with the water sources often the focus of the dispute. Actions are in place in the Sudan to develop sensitive land use policies that give

users equitable access to natural resources with clearly demarcated zoning as necessary for crops and livestock production. Integrated systems would be the approach of choice for the fertile and productive lands bordering the course of the Nile.

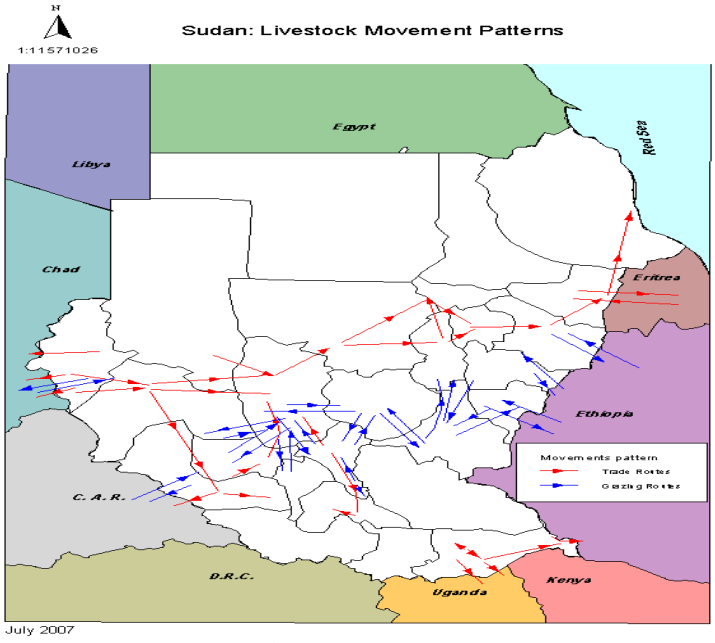
II.3.E Animal movement control and identification:

Three types of livestock movement are present in Sudan.

1. Trade Movement: Crossing the country either to large urban centres and / or to the port for export to the Middle East which takes place through quarantine stations where vaccinations, HS, BQ, anthrax, sheep pox, PPR and RVF are administered and RBT tests for brucellosis are conducted.
2. Grazing Movement: regular movement to the dry season grazing areas during the dry season and to the wet season settlements during the rainy season.
3. Trans-boundary movement of livestock: Practised seasonally with Eritrea, Ethiopia, Chad, Central African Republic (CAR) , Ethiopia, Uganda and Kenya

These livestock movement patterns are portrayed in Figure 4 below:

Figure 4. Livestock Movement in the Sudan



The Livestock Route and Veterinary Control Stations Act of 1974 provides for the regulation of the movement of trade animals inside the country, through control stations and checkpoints. Trade animals are inspected, vaccinated, and issued a health certificate at the veterinary stations that are manned by GVS staff at strategic checkpoints. Such measures are taken to monitor the health of migrant livestock and to control the risk of the spread of diseases. In the case of

a specified disease outbreak, the government enforces movement controls under the Epidemic Diseases of Animals Act, which was revised in 2001.

There is no national livestock identification system. Sedentary and nomadic herds are identified by branding and other marks according to tribal customs. Each tribe has an identifying symbol branded on the animal.

II.3.F Livestock marketing

a. Domestic markets

The livestock markets in Sudan function at three levels – primary [25], secondary [28] and terminal [4]. Most of the livestock production areas are situated some 600-1200 kms from the terminal markets. Cattle, camels, sheep and goats are moved, either by truck or on the hoof, from the main production areas in western and eastern Sudan to the secondary and terminal markets. Veterinary permits are issued for the movement of animals. There is direct veterinary supervision over all livestock markets. Animals are trekked from western Sudan along well-defined stock routes which have been improved with holding grounds and boreholes. Animal movement along traditional livestock routes is regulated by the Livestock Route and Veterinary Control Stations Act of 1974.

Table 4 Livestock Markets in Sudan

State	Primary Markets	Secondary Markets	Terminal markets
Greater Darfur	Genaina, Kabkabiya, Kutum, Buram, Forbaranga, Zalengey, Rihaid, El Burdi, Gimailaya	Nyala, El Fasher, El Diaein, Maleet	
Greater Kordofan	Dilling, El Mairam, Babanosa, El Tiboon, Hamrat El Sheikh, El Hajiz, El Mazroob, El Abbasia	El Obeid, Kadogli, El Khuwey, Ghibaish , El Nuhud	
White Nile	Kosti Rabak	El diwaim, El Jabalein, Kinana, Tandalti	
Blue Nile	El Roseris, El Mazmoom, Wad El Niel., El Dinder, Jabal yaboot, Abo Hojar , wad El Rakeen, wad El Nimir	Sennar El Damazein	
El Gedarif	El Hawata, Bazoorah, Um Kuraa, El Khiari	El Gedsarif El Showak	
Kassal	Aroma	Kassala	
Read Sea		Port Sudan	
El Gezeira	El Managil, Maatoog, Tambool	Wad Madani	
Khartoum	Abo Dilaig		El Muwailih
River Nile	Shandi	El Damar	
Northern		Dongola	
Upper Nile		Malakal	
Unity	Rebkona, Maiom	Bantiu	
East Equatoria		Torit, Kaboita	
Bahre el Jebel		Juba, Terekaka	Agoro, Naros, Yei
Lakes	Kaltok		
Jonglei	Bor		
Grand total	25	28	4

Attempts to introduce modern marketing practice where animals are purchased according to a transparent system of weight and grades have not yet been accepted by the livestock traders. The usual practice is to purchase by a discrete negotiating system offering a price based on the condition and size of the animal. Animals may change hands several times along the course of the chain from

producer to primary to secondary to terminal market to destination. The final sale price can be as much as 40% higher than the original purchase price. There is also a complex system of taxes payable at different parts of the chain. Apart from poor prices many producers have to wait some considerable time before they receive payment for animals they sell. Many buyers operate on a credit system usually offering 10% of the agreed price as cash at the time of purchase and the balance once the animal has been sold on, and which could be some period of time later. The World Bank, with finance from the Multi Donors Trust Fund (MDTF), is currently piloting some improved marketing initiatives and it is hoped that further, much needed and informed investment will be made into this fundamentally important part of the livestock industry.

b. Export Marketing:

Export livestock marketing is mainly organized and financed by the private sector after the dissolution of the Livestock and Meat Marketing Corporation (LMMC) in 1992. The LMMC was a government institution (1974-1992) that was responsible for livestock markets, animal transportation, holding grounds, animals in transit, collection and dissemination of market information and management of exported animals. Currently the situation is a free for all with traders competing for a share of the market.

The marketing chain comprises individual sales by producers, primary markets in the main production areas, secondary markets in towns in or near production areas, and terminal markets in big towns for final sale. The chain is dominated by merchants, mostly long established, operating through a net-work of agents, traders and brokers who arrange and organize purchases and movements from the producers to the major consumption and market centres.

Live sheep form the majority of exported animals. Some cattle and goats are exported, mainly to Yemen, Jordan and the Gulf states. Camels are trekked across the desert to Egypt and Libya. Quarantine measures for export animals are very tight with the minimum being 21 days after vaccination in the internationally recognized export zone 60 kms South of Port Sudan. There are now five modern export slaughterhouses. Exports are largely chilled whole sheep carcasses accounting for 90% of total meat export.

Sheep and mutton export: Most of the sheep exported from Port Sudan are first collected and fattened on the flats at Muweilih Terminal Market at Omdurman and then pass through Al Kadaro quarantine station before being transported by truck to Port Sudan quarantine station. However, small numbers of sheep are trekked directly to Port Sudan. Previously sheep were transported from Al Kadaro to Port Sudan by rail but the rail system has fallen into disrepair.

When the animals arrive at Muweilih from the production areas in the southern, western or central states, they have often walked for several weeks and are in poor condition. They remain on the sand flats at Muailih for several weeks (up to 2 months), with their stockmen, being fattened on sorghum, millet and oil seeds cake concentrate. When they reach marketable condition they are taken to the nearby sheep market and sold to traders, each of whom has 5-6 operators. From there the animals are moved to Al Kadaro quarantine station which is able to

house 70,000 sheep at a time before being trucked to the quarantine station at Port Sudan.

Mutton exports, on the other hand, take place mostly by air from Khartoum. The animals involved need to be between 10-15 kg for the Saudi market. These animals are brought to Al Kadaro by road and slaughtered at Al Kadaro abattoir (currently under rehabilitation) from which carcasses are loaded in cooled containers before being taken to Khartoum Airport for dispatch. A smaller quantity of mutton is exported from Nyala, south Darfur state.

Cattle and beef export: Live cattle exports take place from Port Sudan while beef is mostly exported by air from Khartoum and a small quantity from Nyala. Cattle, like sheep, are mostly trekked to Muweilih area near Omdurman. This, depending on the time of the year, may take up to 3 months. At Muweilih the animals are kept on the sand flats for approximately another 2 months in order to gain condition. They are fed on concentrates similar to those given to sheep as well as fodder purchased from dealers. When the cattle are in good condition they are taken to the nearby market and sold to traders. Most are slaughtered at a nearby, privately owned and run abattoirs.

Camel export: Camels are exported exclusively to Egypt, being trekked via one of three quarantine stations with Wadi Halfa as their final destination.

Quarantines and fulfilment of health requirements: The Ministry of Animal Resources and Fisheries has a Quarantine and Meat Hygiene Department (QMHD) the duty of which is to ensure that all live animal exports comply with the health requirements set by the importing country. This Department is also responsible for the *ante- and post- mortem* inspection at the export slaughterhouses of animals slaughtered for both export and local consumption.

In 1974 a large area of north-eastern Sudan, with Khartoum at its base, was established as a “disease free area”, DFA. The idea is that the personnel of the QMHD inspect animals on their way to export from their production areas and before they enter the DFA to assure their health status. They also vaccinate sheep against PPR, sheep pox, and anthrax before they enter the DFA. Cattle are vaccinated against anthrax and HS. Following this, the animal owners receive a certificate (they also need a certificate from the Department of Animal Health and Epizootic Diseases Control at the point of origin). Sheep are also tested serologically for brucellosis. Once animals are sold at Muweilih Terminal Market, they are moved to Al Kadaro quarantine station where they are vaccinated, held in pens for a minimum of three days before being transported to Port Sudan which usually takes two days. At Port Sudan the animals are again taken to the quarantine station for further inspection over a period of 5 days before final shipping to the port of destination.

Examining the constraints which affect improvement of livestock marketing: Livestock marketing is arranged traditionally. However, the procedures for marketing livestock seem to vary between states and from area to area at the state level. In some livestock markets, animals are auctioned, which is probably the most transparent method but may involve sizable fees; in others, private deals are made through the agency of one or more middlemen. This

second system can be discouraging to buyer and seller alike.

The markets lack infrastructure, organization and development. Poor roads and shortage of transport impede the movement of livestock and livestock products from producer centres to urban markets. The long chain of middlemen together with uncountable levies and taxes imposed by the local authorities erode most of the producers' market share.

Export opportunities for the Sudan are considerable, but several challenges need to be overcome if this potential is to be maximized. Some of these challenges concern the general policy environment and are beyond the control of the livestock sector to address requiring government intervention to resolve. The control of exports is strictly supervised by the Technical Committee for the Control of Exports and Imports of Livestock within the Federal Ministry of Animal Resources and Fisheries. These controls are fully coordinated with other concerned authorities such as Customs Authorities, Sudanese Specifications and Standards Authorities, and the Animal Resources Research Corporation.

Impact of Disease on Livestock Export : Attempts to have access to new markets in the Middle East are being hampered by demands for health guarantees with respect to FMD, RVF, Congo haemorhagic fever and West Nile virus. However, it appears that recent changes to the chapters dealing with FMD and RVF diseases in the OIE's Terrestrial Animal Health Code provide a more favourable environment for trade. Currently Sudan is conducting a massive surveillance programme for FMD supported by FAO. The aim of this surveillance programme is to update information about FMD serotypes in the country which will assist in the development of future control strategies.

The risk of introducing RVF into the Middle East remains a constraining factor for live export of sheep from Sudan. However, the new Terrestrial Animal Health Code chapter on RVF adopted by the International Committee of the OIE in May 2003 opens a way to address this concern through the use of vaccine and the provision that they are not slaughtered within 2 weeks post-vaccination.

Table 5 shows the numbers of animals exported in the years 1998 - 2006. The numbers exported in 2007 and 2008 have been dramatically reduced because of the ban imposed by Saudi Arabia and other Gulf States on the import of live animals from the Horn of Africa due to RVF.

Table 5 Export of animals in 1998 - 2006

Year	CAMELS		CATTLE			GOATS			SHEEP		
	MEAT	LIVE	MEAT		LIVE	MEAT		LIVE	MEAT		LIVE
	TON	HEAD	TON	HEAD	HEAD	TON	HEAD	HEAD	TON	HEAD	HEAD
1998	12	220	4,136	31,659	3,686	500	65,566	48,891	7,943	998,679	1,586,193
1999	23	65	,6093	41,089	435	442	59,433	40,501	9,508	1,516,706	1,616,363
2000	21	213	3,586	31,396	315	336	45,477	16,599	5,827	531,812	731,242
2001	10	97	2,350	13,33	-	312	44,367	13,883	4,855	437,210	1,5507
2002	12	114	1,714	7,990	2,655	36	4,843	15,209	7,140	656,398	1,602,638
2003	16.4	88423	1,78.2		184	221.3		57,639	7,837.1		1,315,399
2004			1,481.9		750	217.1		101,899	6,329.4		1,703,562
2005	15.6	77,534	15,168.8		501	4,219.8		85,488	4,722.6		1,408,935
2006	10,199	116,184				8,360	1,182	102,378	22,639	224,087	1,422,109

c. Trade in Hides and Skins

The Sudan is renowned for its tanning and leather industry. The value of export trade in raw and processed hides and skins was US $27,733,754 in 2004. Several streets in the Ormudaman Market specialise in the sale of finished leather goods. Table 6 outlines some statistics pertaining to this industry.

Table 6. Data on the Hides and Skins Industry in the Sudan [2004]

Quantity Hides:	From Zebu breeds 4 M pieces
Quantity Sheep:	From Desert Hair types 15 M Pieces
Quantity Goat:	From Desert and Nubian goats 13.5 M Pieces
Quantity Camel:	0.15 – 0.20 M Pieces
Annual Collection Level Hides:	90 – 95 %
Annual Collection Level Sheep:	95 %
Annual Collection Level Goat:	90 %
Annual Collection Level Camel:	90 %
Flaying Methods:	Hand flaying Mechanical flaying
Preservation Methods:	Air- drying: - ground, suspension, frames Wet salting Dry salting
Grading Systems, available grades and percentage of Each:	Grading: firsts, seconds, thirds and reject. Size: large, medium and small Grade %: I: cattle: 5 / sheep: 5 / goat: 5 / camel: 0 II: cattle: 20 / sheep: 15 / goat: 15 / camel: 0 III: cattle: 25 / sheep: 50 / goat: 40 / camel: 25 IV: cattle: 50 / sheep: 30 / goat: 40 / camel: 75
Hides & skins trade channels:	Large merchants and tanneries are the main buyers

	and pre- finance some of their agents/ dealers to collect the hides and skins on their behalf. Butcher (Farmer) - Small Collector (Villages, small towns, rural markets) - Large Collector (Town merchants at capitals of States) - Large Merchants
Market (%):	Sheep skins: local - 85%, international - 15% Goat skins: local - 75%, international - 25% Cattle: local - 50%, international - 50% Raw hides mainly go to Egypt, Syria, Turkey and China. Raw Skins go to East Asia, India and Pakistan. Processed good quality Hides/ Skins go to Italy and Spain and low quality go to India, Pakistan and Far East.
Annual Export Value (US$):	USD$ 27,733,754 (2004) Source: Hide/Skins Improvement Export Grading Inspection Records - Min. of Animal Resources & Fisheries
Average market Bovine price:	US$ 0.5 – 0.54/kg (green)
Average market Sheep price:	US$ 2.52 – 2.73/skin (wet salted)
Average market Goat price:	US$ 1.05 – 1.26/skin (wet salted)

d. Tanning

There were 23 tanneries in 2004 of which 19 were operational. The total installed capacity is 30 million skins and 1.875 million hides.

Table 7 Tanneries in Sudan

Number of Tanneries:	23
Installed tanning capacity:	30,000,000 Sheep and goat skins 1,875,000 Hides
Tanneries in Operation:	19
Utilized capacity:	(2004) Skins: 6,000,000 pieces Hides: 600,000 pieces
Output of the industry:	Product: Pickled: Cattle: 13,600 / Sheep: 905,121 Product: Wet blue: 502,718 / Sheep: 4,273,772 / Goat: 2,199,731 Product: Finished Leather: Cattle: 63,682 / Goat: 737,862
Number of employees:	Approx. 1,500
Market (%):	Sheep & Goat skins: - International: 90% of processed skins - Local: 10% of finished skins Hides: - 75% for International market - 25% finished for local industry.
Estimated Annual Export Value (US$):	27,733,754 (2004)

Other livestock industry activities include the following:

- Dairy and milk processing
- Animal feed manufacturing
- Marine and river fisheries and processing
- Poultry production

e. Livestock and Livestock Product Imports

The Sudan is largely self sufficient for meat and meat products although some animals for breeding purposes are imported. There are still shortfalls in other livestock products – notably dairy and poultry which are made good through imports. There is an opportunity to develop the sector to have the capacity and capability to substitute for these imports.

Table 8 Livestock and Livestock Product Imports [2008]

SPECIES	**Quantity**	**Country of Origin**
Cattle	99	Australia
Goats	200	Cyprus
PRODUCT		
Layer parent stock	90206	Holland
Broiler parent stock	304322	France-Jordan
Layer chicks	401520	Holland
Broiler chicks	534832	Holland , USABelgium ,
Broiler fertilized eggs	9950800	Jordan-Holland
Frozen chicken	24808	
Layer concentrate	6170.5	Belgium-Holland
Broiler concentrate	4429	Lebanon
Growers mash	1503.1	Austria-Belgium
Fish feed	119	
Minerals	19.5	
Premix	7028.8	
Soya been	81464	
Frozen Fish	251956.3	Uganda, Emirates, Holland, Turkey
Intestine	16406	Jordan
Frozen semen	12400	USA
Artificial insemination equipment	187942	
Premix for calves	6255	
Fish powder	32	
Frozen Chicken + meat	47863	

Animals (live pregnant heifers) have been imported via Khartoum air port from Netherlands, Germany and Republic of South Africa. Imports also include: racing horses (Saudi Arabia), pet birds and companion animals (dogs and cats). For any importation a veterinary import permit signed by the Undersecretary of the Federal Ministry of Animal Resources and Fisheries is required; and all live animals are subjected to quarantine for at least 21 days.

For cattle, the official veterinarians of the quarantine and meat inspection department ensure that the accompanying import documents (health certificate of the country of origin and producing establishment) are valid and that the cattle are healthy and are not showing signs of any notifiable diseases on the day of admission. Inspected cattle are released to the owners' farm where they are quarantined for 21 days. On the 22nd day the quarantine period is lifted from the farm. All the necessary information about the consignment is entered in the record book of the entry point. Livestock import permits are issued, and import arrangements are made following presentation of import documents from the Ministry of Foreign Trade.

The health certificate must be signed by the official/ authorized veterinarians of the country of origin. It should testify/give evidence that: The cattle did not show clinical signs of any notifiable disease on the day of embarkation; they have been quarantined for at least 21 days before embarkation; and they come from herds/ establishments free from the following diseases:

rinderpest, CBPP, lumpy skin disease, anthrax, vesicular stomatitis, bovine leucosis, paratuberculosis, BSE, brucellosis, malignant catarrhal fever, IBR, MD, leptospirosis, blue tongue, trichomonosis and genital campylobacteriosis.

Accompanying documentation should certify that they have been tested for the mentioned/ said diseases with negative results of the agreed upon diagnostic tests; they have been vaccinated with the stated vaccine type and method of vaccination.

Genetic material (semen, embryos):

Permits have been issued for the import of semen-straws from Saudi Arabia, USA and United Arab Emirates. The semen-straws are accompanied by a health certificate signed by the official authorized veterinarians in the country of origin indicating that: The donor animals did not show any clinical signs of disease on the day of collection. The donor animals' establishment or artificial insemination centre had not experienced within the last 21 days, any of the following diseases: rinderpest. FMD, tuberculosis, brucellosis, blue tongue, genital trichomoniasis, genital campylobacteriosis, and that the herds of the donor animals are free from brucellosis and tuberculosis.

On arrival, the semen is taken to the National Artificial Insemination Centre, General Directorate of Animal Production Development for quality and safety approval before release to the use of the importer.

Biologics:

Biologics are normally not imported into the country with the exception of some vaccines and a few diagnostic reagents:

Meat and other products (milk, meat products):

Spray dried and canned milk is imported for human consumption (Holland, Middle Eastern Oil countries) and concentrates containing fish-meal for poultry feed from Germany.

National standards: In the Sudan, the Sudanese Standards & Metrology Organization [SSMO] is the sole authority responsible for setting polices and standards for all food and consumer products manufactured in the Sudan for local use as well as export or import. The SSMO has adopted the system of the Specialized Technical Committees [STC] to produce standards. The STC include in its membership a group of multidisciplinary specialist and experts from the Scientific Research Institutes, Universities, Ministries, and the private sector.

II.3.G Slaughterhouses/slabs

There are approximately 35 operational slaughterhouses and 190 slabs in the country. Meat inspection is carried out by veterinarians and veterinary assistants through ante-mortem and post-mortem examinations.

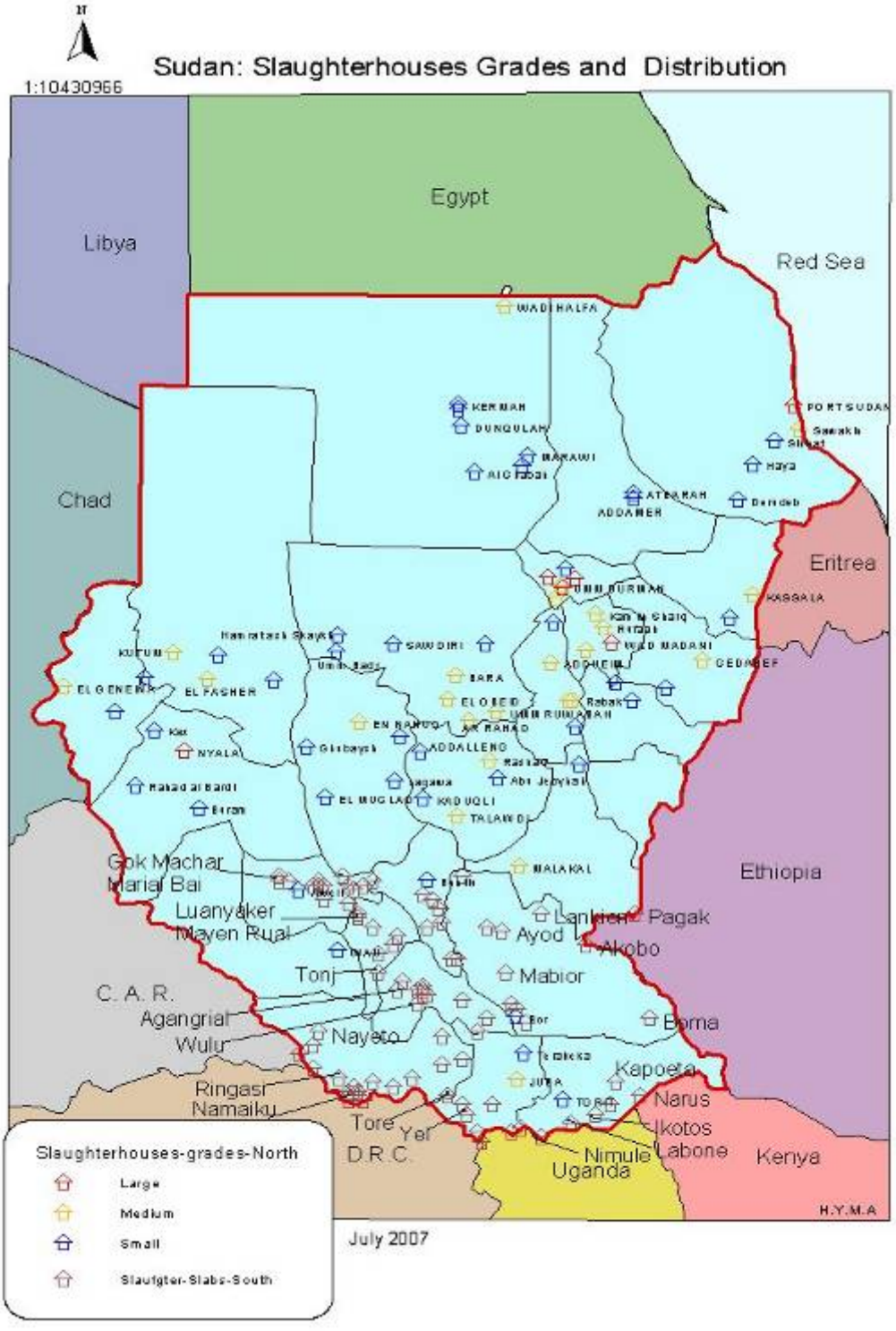
Table 9 Grade and Number of Slaughterhouses in Sudan

State	Slaughterhouse		Slaughter-slab	
Khartoum	5	Genawa, Om Durman, Kadro, Sharg El Nil, Sabaloga,	7	Jebel Aolia, Abo delig, Om Bada, Wad Rumli, Om Dawanban, El Sahafa, Aelafon
Northern	0		20	Dongola area (6), Golid, Daba (2), Karima, Marawe, El Gorare, Nori, Kurma, Bargeg, Halfa area (5), Argo,
River Nile	0		6	Atbara, Damar, Shendi, Abo Hamad, El Matama, Berber
Gazira	5	Madani,Hassaheisa Rufaa, El Kamlin, El Managil	30	Madani area(7), Hassaheisa area(4), Rufaa area(4), El Managilarea(5), El Kamlin area(10)
White Nile	4	Kosti, El Dewem, Rabak, Tandalti	20	Kosti area (10), Jabalin area (4), El Dewem area (2), El Getenna area (4)
Blue Nile	0		12	El Damazin (7), Roseris (2), Bao (2), El Kormuk
Kassala	2	Kassala, Halfa El Gadida	10	Aroma, Khashm El Girba, Wad El Helio, Wagar, El Gafalla, El Masnaa, Meki, Tandalai, Shajarab, Village 3
Red Sea	3	Port Suadn (2), Sawakin	7	Gabet, Garora, Agegetay, Marafet, Durdeb, Haya, Sinkat
Gadarif	3	Gadarif, El Fao, Village 13	8	Doka, Hawata, Mafaza, Village 18, 13, 15 and 3, Pasunda
Sennar	0		12	Sinja, Sennar, Dinder, Soki,, Abo Hojar , Mayerno, Wad Abbas, Salma, Hamadnallam, Dora, Kerkoj, El Nael,
North Kordofan	4	El Obeid, Om Rawaba, Bara, , El Rahad	17	Sodari, Om Badir, Hamrat El sheikh, Gabrat El Sheikh, Hamrat El Wiz, Tayba, Bara area (3), Om Rawaba area (8)
South Kordofan	2	Kadugli, Rashad	7	Diling area(3), Talodi area(3), Abogebeiha
West kordofan	1	El Nohood	6	Lagawa, Abo Zabad, Babanosa, El Muglad, El Fola, Ghebesh
North Darfur	1	El Fashir	9	El Fashir (20), Om Kadada (3), Malit (2), Kutum (2) Kebkabia
South Darfur	2	Nyala (2)	5	Kas, Eid El Firsan, Rehed El Birdi, Bram, El Deaein
West Darfur	1	El Genenna	1	Zalinge
Upper Nile	1	Malakal	1	Renk
Western B. El Ghazal	0		2	Wao (2)
Northern B. El Ghazal	0		1	Aweil
Warab				
Unity	0		1	Bantiu,
East Equatoria	0		1	Torit
West Equa toria				
Bahre el Jebel	1	Juba	5	Terekaka, Kator, Custom, Ghabat, Monoke
Lakes			1	Kaltok
Jonglei			1	Bor
Total	**35**		**190**	

There are a total of 4 designated export abattoirs. The Kadro abattoir is currently undergoing rehabilitation with a 4.6 million euro budget made available by the Ministry of Finance. Most meat is exported as whole carcases. There is a potential value added opportunity in supplying the market for vacuum packed meat cut into selected joints, cures and other forms.

The distribution of the slaughter facilities is shown in Figure 5 below.

Figure 5 Distribution of slaughter facilities in Sudan



II.4 Data requested and provided

A list of documents received before and during the PVS Evaluation mission by the Team is provided in **Appendix 6.**

A considerable amount of data concerning the functions and activities of the VS in Sudan was collected, as both hard and soft copies, and related papers accessed on the web. The FMAR&F provided, on arrival, a comprehensive amount of information in response to the request for baseline data sent by OIE.

Table 10 Categorisation of Documents consulted

Main document categories	Data available in the public domain	Data provided before arrival	Data accessible only on site
→ **Animal census:**			
o at 1st administrative level			*
o at 2nd administrative level			*
o other levels (if available)			*
o per animal species			*
o per production systems			*
→ **Organisations charts**			
o Central levels of the VS			*
o 2nd level of the VS			*
→ **Job descriptions in the VS**			
o Central levels of the VS			
o 2nd level of the VS			
→ **Legislations, regulations, decrees, etc.**			
o Animal health and public health			*
o Veterinary practice			*
o Veterinary statutory body			*
o Veterinary medicines and biologicals			*
→ **Veterinary census**			
o Global (public, private, vet, para-prof)			*
o Per level			
o Per function			
→ **Census of logistics and infrastructures**			*
→ **Activity reports**			*
→ **Financial reports**			*
→ **Animal health status**			*
→ **Evaluation reports**			
→ **Procedures, registers, letters, etc.**			*

II.5 Organisation of the evaluation

The evaluation of the veterinary services of Sudan was conducted from 3 - 21 January 2009. The Mission began with meetings with the Acting Under-Secretary and senior staff in the headquarters of the FMAR&F. These were followed, during the course of the mission, by meetings with laboratory, state and locality FMAR&F staff as well as private sector veterinarians, Veterinary Council and Veterinary Association members and other institutions and livestock sector stakeholders.

A programme for the mission was agreed, whereby the OIE-PVS Evaluation Team visited sites and institutions (public and private) in the cities and rural areas of Sudan including government veterinary offices, disease investigation stations, research institutes, laboratories, private veterinary companies, universities, abattoirs and farms.

The Team discussed issues of concern for the OIE-PVS with government officials, public and private sector veterinarians and veterinary para-professionals, academics and researchers, livestock producers, traders, consumers and other stakeholders, as described in the report.

The team remained as a two person unit though-out the mission and conducted as broad an evaluation as possible in the time available. In order to assess epidemiological surveillance and public-private stakeholder relationships, the team was able to visit Khartoum and its general environs, White Nile State, Red Sea State and Juba in Southern Sudan.

A closing meeting to discuss the overall conclusions and key recommendations of the evaluation was held on the 19th of January 2009 at the end of the mission. The meeting was attended by the Undersecretary and senior FMAR&F staff. At the closing meeting, the OIE Evaluation Team explained the process and timetable for the finalisation of the report, its OIE peer review and the circulation of the final draft version of the report to the FMAR&F for internal review and comment.

The mission concluded on the afternoon of 20th January with a luncheon hosted by the Minister [FMAR&F] the honourable Mohammed Ahmed Tahir Abo Klabish, the State Minister for Khartoum and senior FMAR&F staff. The Minister presented each member of the OIE team with a gift, appropriate for a Mzee, of a decorated ebony walking stick within a display case.

The list of main contacts with whom the Evaluation team held meetings, the names and addresses of the facilities visited, and the air travel itinerary of each team member are given in Appendix 3, Appendix 4 and Appendix 5 respectively.

II.6 Selection of sites and visits actually conducted

As described above, the Sudan is divided into 4 main agro-ecological zones, Desert, Semi-desert, Low rainfall savannah and High rainfall woodland, with a large flooded area of the Nile in the south of the country [the Sud]. The Mission determined its itinerary of visits to enable an appreciation of each zone, and to meet with GVS staff and livestock sector stakeholders within each of these zones.

The visits provided an excellent opportunity to view all components of the VS delivery system and understand, from a field perspective, the real needs and challenges faced by GVS, private sector and community service providers at State and Locality levels.

Appendix 4 provides the detailed list of visited sites and meetings actually conducted.

II.7 Veterinary Services Organisation in Sudan

II.7.A Introduction

The Sudan Veterinary Service has a long history as it was first formed in 1898 by British Army Veterinary Corps Officers and staffed by them until 1924 as part of the Sudan Defence Force. In 1924 the British Colonial Administration took on the responsibility for the delivery of veterinary services in the Sudan which they handed over to the Government of Sudan consequent to

independence which was gained in 1956. Today the veterinary services are administered and regulated by the Ministry of Animal Resources and Fisheries at Federal level. The Ministry is responsible for quarantine and national animal health matters including disease reporting and export and import certification. It also provides advice and coordination of national policy on animal production. At state level, the Ministry of Agriculture, Animal Resources and Fisheries is responsible for implementing the national policy on animal health matters.

Veterinary Services in Sudan are predominately delivered by the GVS with a significant number of CAHWs deployed in the rural areas. The private veterinary service is largely involved in the marketing of veterinary drugs with very few private veterinary clinics. By law private veterinarians are not allowed to vaccinate animals.

At National Level, disease surveillance and control is the responsibility of the FMAR&F whilst disease diagnosis research, and vaccination at both National and State levels are the responsibility of the Ministry of Science and Technology. In some States, the GVS is within a Ministry of Agriculture whilst in others, it is within a separate Ministry of Animal Resources. The basic administrative unit of the GVS is represented at locality level by a Locality Director of Animal Resources with field units in the form of veterinary clinics and dispensaries.

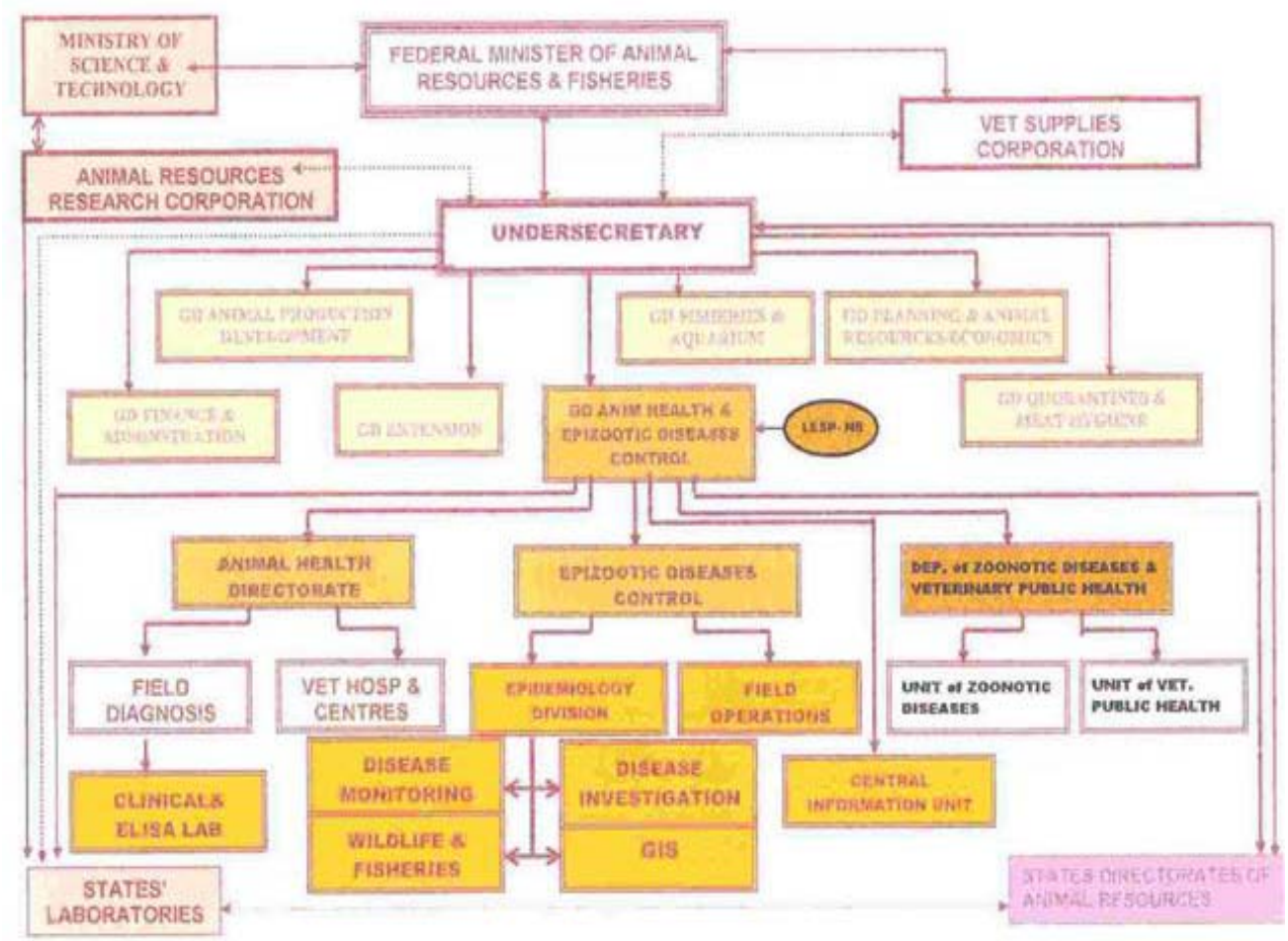
The mandate of the General Directorate of Animal Health and Epizootic Disease Control is to:

1. Identify priority health problems that affect animal and public health and develop short, medium, and long term control plans and strategies.
2. Compile, analyse and store information on animal health, epidemic and zoonotic diseases and wildlife conservation in coordination with all states. Seek to link states with a national database for animal health extending into regional and international networks.
3. Develop polices and laws governing disease surveillance and control of epidemic and zoonotic diseases and coordinate the implementation of programmes in cooperation with other actors.
4. Prepare reports on the animal health status in the country and submit them to global and regional organizations such as OIE, AU/IBAR, WHO and FAO.
5. Prepare animal health and epizootic disease programmes and solicit funding from local, international and other sources.
6. Strengthen the role of Sudan in global and regional organizations and harmonise cross border disease surveillance and livestock movement control.
7. Participate in the preparation of bilateral agreements in the field of animal health that address transboundary [TAD] diseases
8. Prepare plans and strategies, in collaboration with other stakeholders, leading to the declaration of freedom from specified diseases.
9. Prepare and apply laws and legislations that will lead to control and eradication of epidemic and zoonotic diseases.
10. Explore new approaches to achieve sustainable veterinary services, inclusive of private sector initiatives, and find viable solutions to the

provision of animal health services that upgrade traditional systems of livestock production.

11. Reinforce coordination with the Animal Resource Research Corporation promoting the production of quality vaccines, diagnoses and disease surveillance.
12. Strengthen coordination with the State Veterinary Services to control livestock disease epidemics and to provide support from federal resources as necessary.
13. Supervise and coordinate the activities of NGOs and international organisations operating in the field of epidemic and zoonotic diseases.
14. Hold coordination meetings and establish committees, with all actors in animal health, to review development plans, programmes and policies.

Figure 6. Simplified Organisational Chart of the FMAR&F



II.7.B Description of the Sectors and Institutions that Comprise the VS

The Federal Ministry of Animal Resources and Fisheries (FMAR&F) oversees all the veterinary activities at the national level, whilst the 25 State Ministries of Agriculture and Animal Resources are the authorized bodies to supervise the veterinary services at State level.

The Animal Resources Research Corporation (ARRC) of the Federal Ministry of Science and Technology (FMOST) is responsible for animal disease diagnosis, research into specific animal diseases and production of appropriate vaccines with a central laboratory networked with satellite regional veterinary laboratories.

Sudan Veterinary Council (SVC) - The SVC was established in 1946. All veterinarians are obliged to register in the council before given any license to practice their profession. The council is concerned about the delivery of good quality veterinary services. The SVC encourages the private participation of the veterinarians in animal health care delivery.

Sudan Veterinary Association (SVA) - It is an active professional association linked to all activities of the Ministry of Animal Resources and Fisheries. The SVA protects the interests and promotes the welfare of the veterinarians.

Veterinary Faculties - Sudan currently has ten universities with veterinary faculties. Seven produce some 750 graduate veterinarians per year while the remaining three are on course to produce their first graduates in the near future when a total output of more than 1,000 veterinary graduates per year will be produced.

Sudan Standards and Metrology Organization(SSMO). The SSMO is the standard setting and regulating body with 33 specialised technical committees dealing with specific sectors including Animal Health. The SSMO has published more than 300 standards adopted from international bodies such as ISO.

Private Veterinarians are mainly concerned with the provision of veterinary drugs and equipment.

Non Governmental Organizations (NGOs) - They are involved in the delivery of livestock services, especially animal health, in high risk areas.

Pastoralist Union - A national body representing the livestock owners in their different fields. The association promotes the welfare of the livestock owners and preserves their rights.

Livestock Exporters Association - This association includes the meat exporters, live animals exporters and hides and skin exporters. The members of this association produce animals or animal products for the export market. The association is influential in the formulation of export-friendly policies.

Community-based Animal Health Workers (CAHWS) - They provide primary animal health care in remote and marginalized communities under the

supervision of both the public and the private veterinary sectors. The community health workers are involved in general disease surveillance systems.

UN Agencies (e.g. FAO, UNDP, UNICEF, WHO) and the World Bank are the main stakeholders which provide technical assistance to Sudan in the field of disease surveillance, control and eradication.

Veterinary Professional Staff - FMAR&F and Private Sector

Currently there are currently 1,587 veterinarians [836 HQ and 751 field] in the Government Service [GVS] and 548 private veterinarians [Table 10].

Table 11 Veterinary Professional Staff FMAR&F and Private Veterinarians

	AH Disease Control		Vet Public Health		Total posts	Private
	Filled	Vacant	Filled	Vacant	Filled	
National VS						
HQ Staff	169	0	667	18	**836**	
State VS						
South Kordofan	15	0	35	0	**50**	18
North Kordofan	3	0	60	0	**63**	78
West Darfur	13	0	23	0	**36**	33
North Darfur	26	0	80	0	**106**	25
South Darfur					**0**	
Sennar	7	0	30	0	**37**	15
Gazera	15	0	127	0	**142**	83
Red Sea	8	0	12	0	**20**	3
Gadarif	16	0	37	0	**53**	17
Kassala	10	0	22	0	**32**	13
Kahrtoum					**0**	200
Blue Nile	14	0	15	0	**29**	20
White Nile	8	0	59	0	**67**	40
Northern	8	0			**8**	3
River Nile	19	0	89	0	**108**	
SubTotal SVS Staff	**162**	**0**	**589**	**0**	**751**	**548**
Total GVS Staff	**331**	**0**	**1,248**	**18**	**1,587**	

It was reported that there are just 18 vacancies in the Government Veterinary Service and all veterinary and other professional positions are occupied by appropriately qualified personnel at all levels. The Federal Government recently recruited an additional 500 veterinarians who are currently reporting for duty in Khartoum awaiting training and posting. From these figures there is an apparent top-heavy distribution of veterinary professional staff with more than 50% of the total staff complement based at the Central Level.

The majority of Private Veterinarians are engaged in the sales of drugs and other commercial activities. Very few are engaged in the delivery of clinical services.

Considering that the international standards for veterinary surgeons for

developing countries is given as 1 veterinarian for 20,000 Tropical Livestock Units [TLU] the numbers of field veterinarians required for Sudan can be calculated to be 2,500 which is 1,750 more than are currently deployed. Considering that a significant proportion of the field veterinarians are located at State HQs [Table 12] there is in reality an even greater deficiency of field veterinarians.

Table 12 Deployment of State Veterinarians in 15 States of Sudan

Name of State / Locality	Nos Vets	Name of State / Locality	Nos Vets	Name of State / Locality	Nos Vets	Name of State / Locality	Nos Vets	Name of State / Locality	Nos Vets
N. Kordofan		S. Kordofan		N. Darfor		S. Darfor		W. Darfor	
Sheikan	11	Alsalam	14	Elwaha	6	Tulis		Elginina	3
Abuzabad	4	Lagawa	3	Melliet	3	Adila		Habilla	1
Gebash	5	Kadgli	12	Umkedada	5	Bahralarab		Gubie	1
Elnehood	6	Eldalng	7	Elfasher	11	eldein		Forbranga	1
Sudary	5	Rashad	4	Elmalha	4	abomataric		Tandusi	1
Gabrat	5	Ubojibiha	4	Eltina	3	abojabra		Umdukhun	1
elshiek	6	Taludi	3	Darelsalam	4	frdos		Wadysalh	1
Bara	6	Kilik	1	Klendu	3	eddelfursan		Deleg	1
Um rawaba	4	Abyi	4	Elsrish	1	kass		Amar	1
Wadbanda	72	Total	52	Gamra	2	rehid elberdi		Zalinji	3
Total				Kabkabia	3	nyala		Kolbos	2
				Altouina	2	buran		Kirink	1
				Allitt	2			Total	17
				Total	53				
Gadarif		Kassala		Red Sea		Blue Nile		Sennar	
Gadarif	10	Kassala	19	Port Sudan	5	Eldmazin	2	Sennar east	8
Glabat	4	Nahratbara	4	Haya	1	Elrosires	2	Singa	9
elshargia	1	Seteet	1	Tokar	1	Gessan	2	Wadelneile	6
Glabat	1	Gash	5	Soakin	1	Bao	1	Abuhujar	5
elgharbiat	3	Newhalfa	7	Sinkat	1	Alkrmok	2	Elsuki	3
Fashaga	3	Total	40	Algonb	3	Total	9	Elddender	4
Rahad	1			Total	12				1
Fao	3							total	36
Gala elnahal	2								
Wast elgadarif	2								
Gorisha									
Elbutana	30								
Total									
White Nile		Northern		River Nile		Khartoum		Gazera	
Kosti	15	Marawei	8	Shendi	22	Umdrman			
Elgablain	3	Dongola	3	Elmatama	12	Umpda			
Elgetaina	4	Halfa	2	eldamar	15	Gabel awlia			
Eldeum	26	Aldaba	2	Atbra	23	Bahrry			
Rabk	9	Dalgu	1	Berber	10	Karry			
Alsalam	2	Elgolid	1	AbuHamed	7	Sharg alnil			
ummahani	2		17		98	total	162		142
	61								

II.7.C Veterinary para-professional and other technical personnel

Currently there are 145 [76 HQ and 69 field] public service veterinary para - professionals as listed in table 13.

Table 13 Veterinary Para-Professional Staff FMAR&F

	AH Control	Disease	Vet Health	Public	Totals
National VS	Filled	Vacant	Filled	Vacant	
HQ Staff	12	2	50	12	**76**
State VS					
South Kordofan	1	0	4	0	**5**
North Kordofan	1	0	5	0	**6**
West Darfur	1	0	2		**3**
North Darfur	0	0	0	0	**0**
South darfour					**0**
Sennar	1	0	2	0	**3**
Gazera	7	0	10	0	**17**
Red Sea	1	0	3	0	**4**
Gadarif	2	0	4	0	**6**
Kassala	4	0	5	0	**9**
Kahrtoum					**0**
Blue Nile	2	0	3	0	**5**
White Nile	1	0	6	0	**7**
Northern	0	0			**0**
River Nile	1	0	7	0	**8**
Total SPP Staff	**22**	**0**	**47**	**0**	**69**
Total Staff	**34**	**2**	**97**	**12**	**145**

The training facilities for veterinary para-professionals at Omdurman in Khartoum were closed in 1996. Since that time there has been no new recruitment of this cadre of VS staff and the numbers in employment have dramatically reduced to the point where there are very few in comparison to the professional cadre.

At community level the GVS is largely dependent on CAHWS for the delivery of primary animal health care, disease surveillance and reporting. There are 3,000 CAHWs distributed throughout the country. CAHWs function well when adequately supported with donor funding but the system collapses once this support is withdrawn. Without remunerated support the more educated CAHWs find employment in other areas.

There are 83 mobile units for field disease surveillance, treatment, extension and vaccination plus a further 30 units held in strategic reserve in Khartoum to be utilised as and when disease emergencies occur. It is planned to the increase the

number to 150 units in total.

The deployment of Professional, Para Professional Technical and Community Veterinary Staff for Southern Sudan is listed in Table 14 below.

Table 14 Staff Numbers in Southern Sudan

State	Vets	Technicians	Vet Asst	SPs	AHAs	CAHWs	Support staff	Lab Tech
Upper Nile	10(3NGO)	22	3	15	32	320	12	0
Unity	9(4NGO)	0	0	8	9	119	56	0
NBGs	3(2NGO)	0	4	11	18	196	14	0
WBGs	6	18	22	27	0	99	118	1
Lakes	5(1NGO)	4	6	13	19	294	26	1
EES	6(3NGO)	0	8	12	13	271	0	1
WES	1		4	8	12	240	30	
CES	5 (1FAO)	1	8	12	2	0	57	1
Jonglei	3(2NGO)	1	0	14	3	41	2	0
Warrap	6(2NGO)	0	2	21	19	248	7	0
Total	**54(18NGO)**	**46**	**57**	**141**	**127**	**1828**	**322**	**4**

II.7.D Community Animal Health in Sudan

Background: The community-based Animal Health delivery is not a new phenomenon in Sudan, but rather a re-invention of an approach that was used in the early 1950's as a means of providing services closer to the community. The early CAHWs were referred to as (Muhafiz or Muhasim) and continued with their services till the 1970's. The Muhafiz / Muhazim were accorded high regard within their communities and as such gained employment with the local government, while undergoing supervision by the veterinary authorities. They were not trained but gained experience on the job.

In the late 1980's, the need for Community based service providers arose again due to civil disturbances which, combined with drought, tribal conflicts, difficult terrain and nomadism, challenged conventional GVS delivery. In response to these factors, the CAHW delivery system was re-introduced by the NGOs who were working in those areas.

An agreement between AU/IBAR and the FMAR&F outlined the collaboration needed to implement a CAHW system. With support from CAPE and PACE Sudan, the following recommendations were developed:

1. Revision of national legislation concerning veterinary services in Sudan to enable the work of private veterinary paravets including CAHWs.
2. Establishment of a CAH unit within the department of Animal Health and Epizootic Diseases Control Directorate.
3. Establishment of a working group to take forward the training of vets involved in CAH.

The Undersecretary of FMAR&F formally approved the creation of a CAH unit within the Department of Animal Health and Epizootic Diseases Control with the following mandate:

1. Identify and promote best practice in CAH in accordance with international standards and OIE guidelines.
2. Harmonize and coordinate CAH approaches throughout Sudan through

the development of guidelines based on best practice and including harmonized training curricula.
3. Coordinate, monitor and evaluate CAHWs activities nationally.
4. Promote CAH approaches and encourage private veterinary involvement in CAH.
5. Advise on CAH policy and strategy as regulated.
6. Identify research needs for development of CAH policy and legislation.
7. Ensure proper collaboration between all stakeholders.
8. Assist in registration and regulation and drafting of legislation as necessary.
9. Identify new opportunity for the CAHWs programme.
10. Collect information and keep records for different CAH projects in Sudan.
11. Create channels for consultation and coordination.

A Committee was formed by the Minister of FMAR&F to develop a legal framework for CAHWs. The committee reviewed the laws and legislations of the veterinary profession and studied the experiences of other African Countries (Kenya, Zambia and Tanzania)

The Committee noted that the Sudanese Veterinary Council (SVC) ACT Subject (18), Item (4) states “The SVC, if necessary, can register any group of people to do veterinary work, this registration can be on a temporary or permanent basis”.

The committee recommended that the regulation of the work of CAHWs should be at the State level and the SVC should identify and specify the job descriptions of CAHWs.

The committee also recommended that:

1. There should be a National Unified Curriculum for the training of CAHWs using a standardised Training Manual for Primary Animal Health Care.
2. There should be an adequate level of supervision and monitoring, with coordination by implementing agencies (NGOs).
3. The reporting system should be strengthened from the field, to implementing agencies, to veterinary authorities in the State, to the Centre - using an agreed format and schedule.
4. CAHWS to be provided with all the necessary resources.

Table 15 Number of CAHWs in Sudan

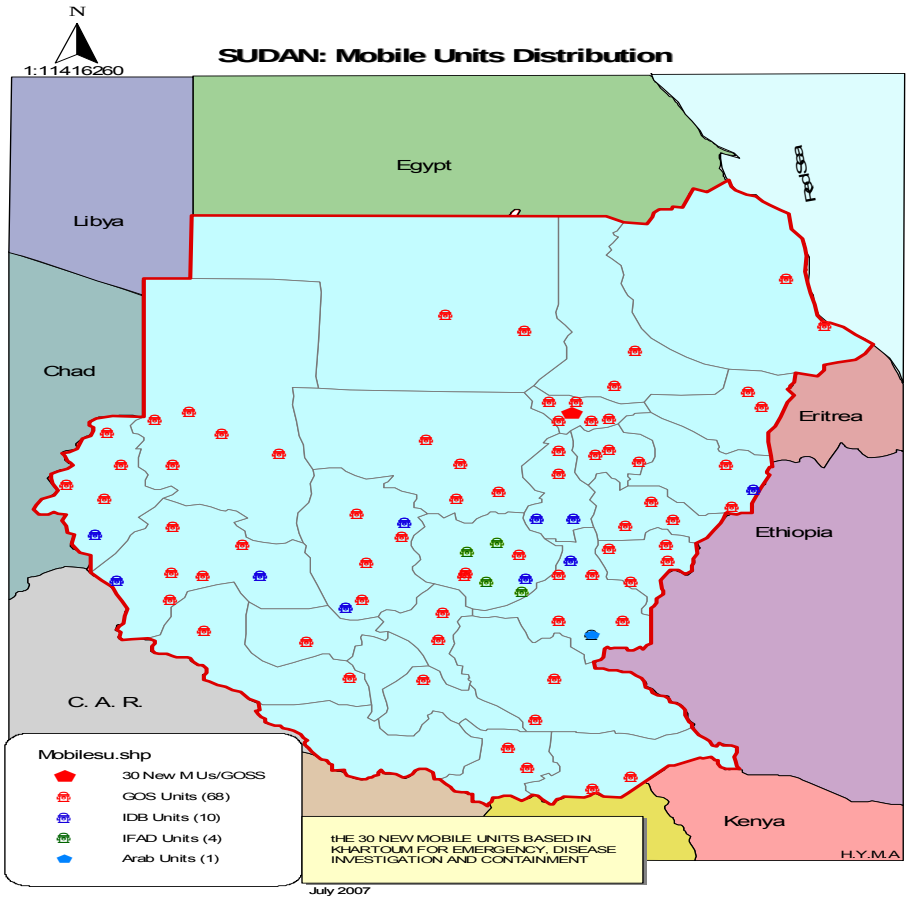
STATE	CAHWs
Northern Kordofan	312
West Kordofan	304
South Kordofan	420
North Darfur	246
West Darfur	Ni
South Darfur	39
White Nile	74
Blue Nile	143
Gezira	25
Sennar	20
Gadarif	38
Kassala	261
Red Sea	Ni
Northern	0
River Nile	73
Khartoum	0
Southern Sudan	1400
Total	3355

II.7.E Physical resources

At central level [Animal Health (AH) and Laboratory] there are adequate physical resources including buildings, transport, telecommunications, cold chain, and other relevant equipment (e.g. computers). The AH Dept holds a strategic reserve of 30 mobile veterinary clinics to be used anywhere in the country

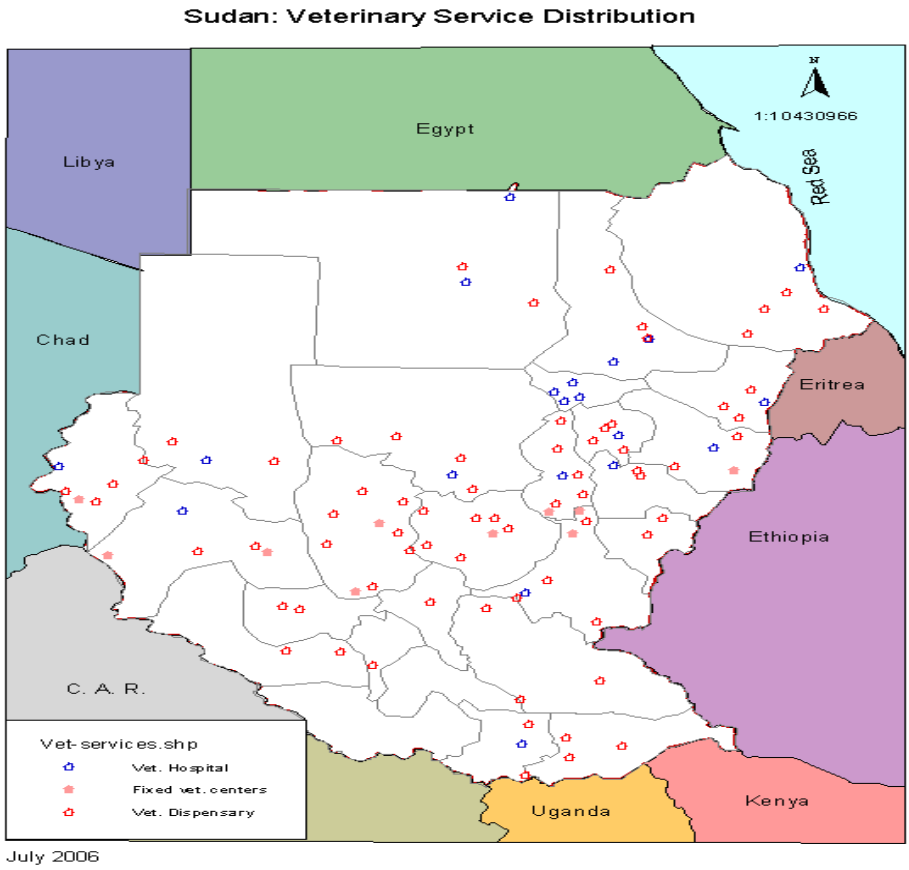
A total of 110 fully equipped mobile clinics have been acquired and distributed, to the State Veterinary Services, less 30 held in strategic reserve in the case of an epidemic disease outbreak or other emergency requiring immediate veterinary intervention. More units have been allocated to those States with large livestock populations.

Figure 7 Distribution of Mobile Clinics in Sudan



The Department of Animal Health and Epizootic Disease, at Soba, has an excellent physical facility with an ample number of well proportioned rooms in a two winged double storey building, containing offices, work rooms, and meeting rooms. Nine out of fifteen States in North Sudan are submitting their reports electronically. The PACE established Information units and networks are still being maintained and functioning.

Figure 8 Distribution of VS Physical Infrastructure in Sudan



The GVS in the South of Sudan has recently moved into a new prefabricated Ministry Headquarters but much of the infrastructure destroyed during the civil unrest has yet to be restored. Table 16 below lists the resources currently available to the VS in Southern Sudan

Table 16 Physical VS Resources in Southern Sudan

State	Lorries	Cars	Mobile unit	Motor bikes	Motor boat	Bicycles	Fridges
Upper Nile	2	3	4		1	0	5
Unity	0	0	2		0	0	9
NBEGs	0	4	0	4	1	0	10
WBEGs	1	5	1	4	0	0	5
Lakes	0	5	1	4	0	100	12
EES	0	1	2		0	2	5
WES	0	5	0	4	0	50	5
CES	0	2	2	4	0	1	10
Jonglei	0	3	1		0	0	7
Warrap	0	6	0	4	0	0	4
Total	**3**	**32**	**11**	**24**	**2**	**152**	**72**

Although there is an apparent imbalance in funding allocation to the livestock

sector compared to the crops sector - the MoA receives 90% more funding despite the fact that both sectors contribute an equal amount to GDP - there does not appear to be any serious shortages of funds at Central Level. The additional funds made available to the GVS through donor supported programmes [Table 17] compensate for any shortfall in the budget [calculated to amount to 35.5 million dollars over a 3 year period]. Much of the money has been consumed in disease surveillance, preparedness and control activities while relatively little has been used to invest in creating sustainable VS programme activity.

It was stated that the GVS normally receives 100% of its Salary requirements, 50 % of its operational allocation and only 10% of its development provision. The mission was informed that salaries paid to GVS staff are low, with a senior veterinary officer being paid US $300 per month as compared to medical and research counterparts in MoST who earn up to US $500 per month. There is also a differential in the amount of allowances payable to GVS staff in different departments.

A small amount of revenue is generated from the sale of veterinary medicines and meat inspection fees, but services and vaccinations are by and large provided free of charge. One complaint is that revenue earned by the Veterinary Laboratory services has to be remitted to the Ministry of Finance of which only a small fraction is returned in the form of operating and development budget. There are no funds available to enable the GVS to outsource activities to the private sector.

Table 17 Donor funded livestock programmes

Donor	Project Title	Budget (US$ million)	Period	Location
USA/ FAO	Emergency Assistance for Detection and Response to Avian Influenza Epidemic in Sudan: Surveillance of the impact of Animal-Human Interaction, and Supporting laboratory capacity to conduct Animal Disease Surveillance and Diagnosis	0.41	2007	**Southern Sudan:** all
FAO	Preparedness for Animal Disease Control and Vaccination at Points of Entry into Southern Sudan	0.3	2007	**Southern Sudan:** all
USA/ FAO	Emergency Assistance to Livestock-owning Communities in Southern Sudan	0.7	2007	**Southern Sudan:** all
USAID	Creating Model Private Sector Cattle Marketing and Dairy Cooperatives and Livestock Policy Dialogue in Bahr El Ghazal Region in Southern Sudan	2.6	(2005-2008)	**Southern Sudan:** Bahr El Ghazal
EC	LESP- Livestock Epidemio-Surveillance Project	€6 M	4 years	Whole country
MDTF	Livestock and Fisheries Development Project	42 of which 20 MDTF contribution		All ten states of Southern Sudan,
EC	Bahr el Ghazal Livestock Marketing Project	(5.3)	4 (fm 2007	**Southern Sudan:** Northern Bahr el Ghazal;
EC	Livestock Policy Expert	€200,000	I year	**Juba**

II.7.G The Sudan Veterinary Council

The Sudan Veterinary Council [SVC] was established in 1949 and is the oldest council of professionals in Sudan. The Veterinary Council ordinance was signed in 1954 by R.G Howe, Governor General of Sudan. It was amended in 1995 and 2004.

Extracts from the SVC Act 2004:-

- The seat of the council shall be in Khartoum.
- The council shall be responsible to the Council of Ministers.
- The council shall consist of a chairman, deputy-chairman, secretary-general and 23 other members – the majority being veterinarians.

Functions and powers of the council:

- Organize, promote and control the practice of the veterinary profession.
- Specify the qualifications necessary for registration onto the register.
- Co-ordinate, with higher education and scientific research authorities, the curricula of veterinary education.
- Register applicants according to specified conditions.
- Investigate professional misconduct.
- Register all persons qualified for registration.

II.7.H The Sudan Veterinary Medical Association

The Sudan Veterinary Medical Association [SVMA] was formed in 1946 with the purpose of representing the interests of the veterinary profession in various fields of work including government, the private sector, research and academia. There are currently some 7,000 registered members of which at least half work overseas mostly in the Gulf States such as Saudi Arabia and Qatar. There are 18 branch associations of the SVMA which provide one representative to serve on the General Council. The executives for the General Council serve a 5 year term and are elected at the annual Conference, which is held in a different State each year. The SVMA is a member of the African Veterinary Association, General Federation of Arab Veterinarians and the World Veterinary Association as well as a member of the Sudan "General Council of Professional Associations".

The SVMA is well established, owning its own large block of land [6,000 sq metres] which was gifted to the association by the President of Sudan following his attendance at the 1971 annual conference. This act shows how highly esteemed the veterinary profession in the Sudan is, recognising its very important role in protecting the valuable livestock sector. The SVMA formed a fund raising committee and within 3 years raised sufficient funds to build and complete what is now the Association headquarters comprising meeting rooms, offices and library. Some rooms are let for income generation and the grounds are also used for large receptions such as weddings.

The SVMA plays a major advocacy role for the interests of the veterinary profession with 4 members serving on the Veterinary Council, and actively supports a number of Societies including – Animal Welfare, Poultry Science,

Camel, Wildlife, Large Animal, Microbiology, and Equine. The SVMA currently provides the executive for the African Veterinary Association with Dr Hashim, the President of the SVMA, serving as the General Secretary. The SVMA has also organised a number of training courses, including equine medicine, meat hygiene, IT and surgical procedures. Although members contribute to the cost of the courses they attend, the association lacks the funds to organise more frequent training sessions.

II.7.I Communication Unit

A communication unit was established by PARC in 1992 within the General Directorate of Animal Health & Epizootic Diseases Control The unit functions to highlight the activities of the General Administration of Animal Health and Epizootic Diseases Control [AH&EDC] inclusive of:

- Strengthening information exchange between the AH&EDC as the technical authority and the livestock owners as the beneficiaries of animal health services.
- Increasing awareness of local, national, regional and global efforts for the control of epizootics.
- Extending information to livestock keepers concerning epizootic diseases, vaccination and other programmes.
- Co-ordinating communication activities at centre and state levels.

There are 5 Communication Sub – units:

1. Written Programs: production of leaflets, posters, news letter, books, booklets
2. Audio programs: Include lectures, participation in radio, recorded information, direct field meetings
3. Visual Programs: Include the documentation by video, photography, TV and net
4. States and Emergency Programs: Include coordination between centre and states to harmonies on communication programs aims to make simplified messages fit with the target groups to unify the communication of national and local messages
5. Internal and external programs: Including activities such as participating in vaccination other disease control campaigns

Communication at State level is the responsibility of State Communications Coordinators who ensure harmonisation of messages with those from the Central Communications Unit. Activities at State level include:

- Implementation of training courses and communication workshops
- Press releases with important information highlighted in daily newspapers
- Effective participation in communication programmes involving local and national TV and radio stations
- Provision of communication materials (leaflets, posters…)
- Coordination with the extension units at both central and state level.

II.8 Animal Disease Situation in Sudan

II.8.A Introduction

Diseases are an important constraint to increasing livestock production in Sudan. One of the main functions of the FMAR&F is to control, and if possible eradicate, the major epizootic diseases. Disease control strategy and policy is defined taking into consideration the socio-economic impact of animal diseases on the population and on the national economy, and drawing on the experience gained from previous disease control campaigns. The importance of coordinating activities with neighbouring countries, supported by quality vaccines, delivered by properly organised campaigns for the control of TADs, is recognized.

The following lists the legislation in force that regulates the management of the Animal Health and Animal Production functions of the FMAR&F:

- The Animal Diseases Act (1902; updated 2001).
- Veterinary Health Quarantine for Export and Import of Livestock and Meat Act (1913; updated 2004).
- Meat Inspection and Hygiene Act (1974).
- Animal Production Act (1998) (proposal).
- The Diseases Free Zone Act (1973; updated 1993).
- Livestock Route and Veterinary Control Stations Act (1974; updated 1993).
- The Veterinary Council Act (1954; updated 1995).
- Veterinary Supplies General Corporation Act (1998).
- Skin and Hide Act (1954; updated in 1997).
- The Pharmaceuticals and Poisons Act (2001).

The GVS has the ability to assess disease status and control efforts on a scientific basis facilitated by an extensive and well resourced veterinary infrastructure. However, the numbers of disease outbreaks reported by the FMAR&F seem to be extremely few in relation to the size of the country and livestock population. In 2008, Sudan was recognized as a rinderpest infection free country by OIE which was a remarkable achievement considering the period of civil unrest that affected the country. Sudan also demonstrated competent disease response capability in dealing with the suspected outbreak of RVF in 2007 and that of HPAI in 2006

There has been no documented case of the private sector being contracted to implement disease prevention, control and eradication programmes on behalf of the GVS. The role and value of CAHWS as support staff for disease prevention, control and eradication programmes has been recognised and supported by several development aid initiatives but their activity, under current policy and legal frameworks, is proving unsustainable.

A survey of the pastoralist communities in the Sudan revealed the following list of diseases considered to be of importance in constraining livestock production: fascioliasis, HS, FMD, CBPP, BQ, anthrax, brucellosis, PPR, trypanosomiasis and TBDs [ECF, theileriosis, anaplasmosis].

II.8.B Summary of the Status of Important Livestock Diseases in the Sudan

Avian Influenza: The Disease was first reported in March 2006 and diagnosis confirmed on 17th April 2006. By the 18th of April 2006 the disease was confirmed in three foci in Khartoum and Gazira states. Up to 1,200,000 birds died / were slaughtered in 216 farms in Khartoum state whereas in Gazira state, around 100 000 birds died / were slaughtered in 5 farms. Stamping out measures were applied (slaughtering and burying). Quarantine; movement control within the state and between the states; zoning and bio-security measures and disinfection of infected premises / establishments were also carried out.

In August 2006, six more confirmed cases (in one focus) of the disease were identified in Juba town, Central Equatoria State, South Sudan 1600 Km south of Khartoum. All cases were reported in backyard chicken. Limited targeted vaccination was conducted in breeding farms.

The Government contributed funds to compensate up to 40% of the direct losses due to HPAI. It was estimated that total losses to the poultry industry amounted to 7.1 Billion Sudanese Dinars (equivalent to 35.5 Million US$) which included losses related to deaths and depopulation of birds, rent of farms, workers salaries, deterioration in products prices, and loss of business. By the 25th of November 2007, the country officially communicated to OIE that it regained its HPAI free status.

Foot and Mouth Disease (FMD): FMD in Sudan was first officially confirmed as present in 1964 although reports indicate that the disease was present at the turn of the century when Augustus John Williams, a veterinary surgeon [Dick Vet Edinburgh graduate] seconded to the Egyptian Army for service in the Sudan, described a virulent outbreak of foot and mouth disease.

The disease is endemic in Sudan and is reported almost every year during the cool months of the year. In indigenous cattle, FMD is no more than a nuisance. It generally causes lesions in the mouth and to a lesser extent, foot lesions that clear up in less than a week. However, in cattle which are to be exported, it is of great importance, and the presence of the disease in the export quarantines always necessitates their closure. FMD is a serious condition in exotic or crossbred cattle. Four of the seven known serotypes of FMD have been reported in the Sudan. These are the European types 'O, A', and African types SAT 1 and SAT 2. Although all cloven-hoofed animals are susceptible to FMD, in Sudan the disease is only reported in cattle. It has never been reported in sheep or goats, despite these species being in close contact with infected cattle.

A laboratory confirmed case of FMD occurred in 2005 where the virus serotype was identified as O/manisa. Following this, it was decided to make a massive surveillance for FMD in order to update information, undertake virus typing and start a comprehensive vaccination programme. In the year 2008, eight outbreaks of FMD were reported, three in Gadarif (Eastern Sudan), one in Khartoum, one in Gezira (Central Sudan), two in Eldamer and one in Shendi (Northern Sudan).

Contagious Bovine Pleuro Pneumonia (CBPP): CBPP is considered to be a serious enzootic disease of cattle in Sudan and other countries in Africa. It

causes economic losses among cattle in the form of debilitation and death of infected animals. Moreover this disease constitutes a threat to Sudan's livestock export trade to foreign markets. Precautionary measures for control of the disease mainly include restriction of movement, segregation, quarantine of infected herds and annual vaccination.

The LESP project supported the completion of a field trail on CBPP to test a newly developed allergic skin test for the detection of CBPP carrier animals. The study was carried out in collaboration with the International Atomic Energy Agency [IAEA] Vienna. Unfortunately, the field test did not provide promising results. The final report was submitted to IAEA in February 2008. In August 2008, the project also supported the collection of sera and lung samples from CBPP infected cattle for isolation of the circulating field strains possibly to be used for local production of CBPP vaccine at CVRL in Soba. A veterinary team collected altogether (87) sera and (9) lung tissue samples from suspected cattle in South Kordofan State during a one week field mission and delivered them to the CBPP Reference Laboratory at CVRL for further studies (culturing and identification of the strains). No outbreaks of CBPP were recorded from 1.1.2008 to 30.10.2008. A total 248, 974 head of cattle were vaccinated against the disease.

Rift Valley Fever (RVF): Rift Valley Fever, one of the most important viral diseases affecting humans and animals, is transmitted by mosquitoes and other insects. The virus affects sheep, cattle and goats, causing deaths in lambs and calves, and abortion storms in pregnant females. The disease in Sudan was last reported in animals in 1973, and was limited to areas of the White Nile State. The World Organization for Animal Health (OIE) was officially informed.

Following an outbreak of RVF in Saudi Arabia in 2000, there was a ban on the import of live animals from the Horn of Africa and the Sudan that had a major impact on the export trade from these countries. Following reported human cases of RVF in White Nile State in May 2008, 25 sero-surveillance teams were organised to cover 15 states of the country from 1st June to the end of August 2008. The team collected 3,993 serum samples. Samples were randomly selected following the OIE guidelines. Samples were tested for RVF IgG antibodies using an ELISA. Of the 3,993 animals tested 3,878 were negative, 112 positive (The positive animals had been vaccinated late in 2007 using an inactivated RVF vaccine) and 3 samples were rejected.

Clinical surveillance in the central states was conducted (White Nile, Sinnar and Gezira states) from 14 to 21 September 2008 to assess the disease situation. The surveillance teams did not report any suspected signs indicative of RVF within the herds examined, nor did the owners that were interviewed report any signs of the disease since the beginning of 2008. Animal owners were interviewed to establish if they had witnessed any signs of abortion among their herds or any deaths of newly born animals. Entomological surveillance took place concurrently with the clinical surveillance and showed no abnormal insect prevalence.

Based on the negative findings of the serological, clinical, climatic and entomological surveillance conducted in the country and with reference to

Article 8.12.3 of the Terrestrial Animal Health Code, Sudan was declared free from RVF disease on 14/11/2008.

Rinderpest (RP): The OIE recognized Sudan as free from rinderpest infection during the 76th meeting of the General Assembly held in Paris in May 2008. The OIE recognition is a major success in the fight to eradicate rinderpest from the globe in 2010. Sudan will confirm annually that the epidemiological situation has remained unchanged.

Peste des Petits Ruminants (PPR): PPR was observed for the first time in Sudan in February 1971. During the period 1.1.2008 – 30.10.2008, 21 outbreaks were recorded and 1,621,122 sheep were vaccinated against the disease.

Lumpy Skin Disease (LSD): The disease was first reported in Sudan in 1971, and again in 1978/79. A virus related to the arthropod borne poxvirus of sheep and goats causes the disease. It kills indigenous cattle only occasionally, but is of greater importance in exotic cattle. Little can be done to control it under Sudanese conditions. Exotic cattle were vaccinated with an alternative sheep pox vaccine which ultimately resulted in cessation of infection. During the year 2008, 6 outbreaks of LSD were clinically recorded (2 in River Nile, 2 in Khartoum and 2 in Northern). 481,181 head of cattle were vaccinated against the disease.

Blue Tongue: Anti-bodies against the virus causing blue tongue were detected in surveys made in the vicinity of Khartoum in 1973. The last outbreak was in 1982. There was no report of the disease during the year 2008.

Sheep Pox: This disease is endemic in the Sudan and only occasionally causes mortality in indigenous sheep. Annual vaccination against sheep pox is widely practiced. 16 clinically diagnosed incidences were recorded during the year 2008. No laboratory confirmation has been made. 1,623,998 head of sheep were vaccinated during this period.

African horse sickness: This disease was not reported during the year 2008.

Newcastle Disease: One confirmed outbreak was reported during the year 2008. 1,000 cases were recorded. The outbreak was diagnosed on clinical signs alone.

Anthrax: There was no incidence of the disease reported during the year 2008. The disease was brought under control through annually intensive vaccination programmes. During the year, 1,165,547 animals were vaccinated against the disease.

Rabies: Although rabies has continued to be a serious public health risk in the country, during the period 1.1.2008 – 30.10.2008, only 1 confirmed case of rabies was recorded. 306 dogs were vaccinated during this period.

Brucellosis: The disease is endemic in the Sudan; during the period 1.1.2008 – 30.10.2008, 3 outbreaks were reported.

Haemorrhagic Septicaemia (HS): HS is an endemic disease in Sudan. Due to an intensive vaccination programme the disease was brought under control.

During the period 1.1.2008 – 30.10.2008, 4 outbreaks were recorded. 2,216,599 cattle were vaccinated during this period.

Theileriosis: The disease continues to constitute a great hazard to livestock in the country. 13 clinically diagnosed outbreaks of theileriosis were reported during the period 1.1.2008 – 30.10.2008 involving 523 cases.

Trypanosomosis: Although no cases were reported during the period 1.1.2008 – 30.10.2008, trypansomosis continues to be one of the important economical diseases, where sustained application of chemotherapy is required in order to control the disease in the affected areas.

Blackquarter (BQ): Blackquarter is an endemic disease in Sudan. The disease was not reported during the period 1.1.2008 – 30.10.2008. During the year 1,071,947 cattle were vaccinated.

Bovine anaplasmosis: 3 outbreaks were reported during the period 1.1.2008 – 30.10.2008. The outbreaks were clinically diagnosed.

Ovine anaplasmosis: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

Babesiosis: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

Fowl pox: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

Gumbero: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

E coli: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

Heart water: 1 outbreak was reported during the period 1.1.2008 – 30.10.2008. The outbreak was clinically diagnosed.

Table 18 Disease outbreaks recorded in cattle from 1999 to May 2007

Disease	Outbreaks reported									Total	
	1999	2000	2001	2002	2003	2004	2005	2006	2007*		%
Black quarter	5	12	4	11	15	17	10	5	1	80	14.4
Brucellosis	0	0	0	0	0	13	2	1	0	16	2..9
Theileriosis	1	6	0	6	6	21	4	1	2	47	8.5
Babesiosis	0	0	0	1	0	5	1	1	0	8	1.4
MCF	0	0	0	0	1	4	2	0	0	7	1.3
Anthrax	7	7	3	9	8	1	9	0	1	45	8.1
Rabies	1	0	0	0	1	1	4	0	0	7	1.3
Trypanosomosis	0	0	0	0	2	3	1	2	0	8	1.4
Anaplasmosis	0	0	0	1	0	3	1	1	1	7	1.3
HS	8	13	3	23	22	20	18	4	2	113	20.2
FMD	10	3	4	16	25	22	11	7	6	104	18.7
Lumpy skin disease	8	4	0	2	2	2	9	7	14	48	8.6
CBPP	4	4	4	3	10	15	6	3	1	50	9.0
ECF									1	1	0.2
Inconclusive							15			15	2.7
Total	44	49	18	72	92	127	100	32	30	556	100

II.8.C Disease Reporting

Table 19 shows the number of disease reports received by the AH&EDC department of FMAR&F in the period 2004 to 2007 where returns of up to 80% have been achieved in North Sudan.

Table 19 Monthly disease reports received 2004 - 2007

FEDERAL STATES	Monthly disease reports received from localities/ counties											
	2004			2005			2006			Jan.- June 2007		
NORTH SUDAN	No. Localities / coun-	Reports received per month		No. Localities / coun-	Reports received per month		No. Localities / coun-	Reports received per month		No. Localities / coun-	Reports received per month	
		No.	%		No.	%		No.	%		No.	%
Khartoum	7	77	92	7	83	98.8	7	77	91.7	7	42	100
Northern	4	31	65	4	48	100	4	47	97.9	4	20	83
River Nile	6	69	96	6	72	100	6	72	100	6	30	83
Gezeira	7	84	100	7	83	98.8	7	84	100	7	42	100
White Nile	4	39	81	4	42	87.5	4	44	91.7	4	24	100
Blue Nile	4	48	100	4	48	100	5	56	93.3	5	25	83
Sinnar	3	36	100	3	36	100	3	33	91.7	3	12	67
Red Sea	4	8	17	3	30	83.3	3	15	41.7	3	0	0
Kassala	4	41	68	4	48	100	4	48	100	4	24	100
Gedarif	5	26	43	5	59	98.3	5	60	100	5	25	83
West Darfur	3	16	44	4	1	2.1	4	16	33.3	5	18	60
North Darfur	5	48	80	5	54	90	6	61	84.7	6	12	33
South Darfur	9	41	36	9	79	73	7	69	82.1	7	42	100
North Kordofan	5	48	80	5	55	91.7	9	99	91.7	9	54	100
West Kordofan*	5	40	67	5	34	56.6	0		--	0		--
South Kordofan	5	60	100	5	60	100	9	10	9.3	9	0	0
West Bahr Al Ghazal	3	20	83	3	30	83.3	0	--	--	0	--	--

North Bahr Al Ghazal	1	11	92	1	8	66.7	0	--	--	0	--	--
Unity	1	8	67	4	40	83.3	0	--	--	0	--	--
Upper Nile	8	2	2.1	8	8	8.3	0	--	--	0	--	--
Bahr Al Jabel	3	18	75	2	15	62.5	0	--	--	0	--	--
East Equatoria	1	5	42	1	8	66.7	0	--	--	0	--	--
West Equatoria	0	0	0	1	5	41.7	0	--	--	0	--	--
Lakes	1	10	83	1	9	75	0	--	--	0	--	--
Warap	1	10	83	1	10	83.3	0	--	--	0	--	--
Jongolei	3	34	94	3	6	16.7	0	--	--	0	--	--
Subtotal A	**102**	**830**	**68**	**105**	**971**	**77**	**83**	**791**	**79**	**84**	**370**	**73.4**
SOUTH SUDAN												
Western Bahr Al Ghazal	2	0	0	2	12	50	3	0	0	3	10	56
Northern Bahr Al Ghazal	5	23	38	5	20	33	5	17	28	5	0	0
Unity	8	8	8	8	28	29	9	40	37	9	0	0
Upper Nile	9	1	1	9	4	4	12	27	19	12	0	0
Central Equatoria	5	25	42	5	41	68	6	39	54	6	4	11
East Equatoria	4	21	44	4	14	29	7	18	21	9	0	0
West Equatoria	7	33	39	7	22	26	7	55	65	10	0	0
Lakes	4	7	15	4	6	13	8	10	10	8	0	0
Warap	7	26	31	7	27	32	6	16	22	6	0	0
Jongolei	10	13	11	10	30	25	11	23	17	11	12	18
Subtotal B	**61**	**157**	**21**	**61**	**204**	**28**	**74**	**245**	**28**	**79**	**26**	**7**
TOTAL	**163**	**987**	**50**	**166**	**1175**	**59**	**157**	**1036**	**55**	**163**	**396**	**44**

II.8.D Disease Surveillance

The GVS is undertaking both active and passive surveillance programmes with support from the EU funded "Livestock Epidemio-surveillance Project" (LESP) that is scheduled to continue until the end of 2010. The programme will complete and sustain relevant epidemio-surveillance activities started by the PACE Sudan project, and will address new areas of intervention, e.g. control of FMD and HPAI as well as providing support to the FMAR&F in the development of relevant strategies for disease control and improved delivery of animal health services.

The LESP assisted Sudan to complete the Rinderpest eradication pathway in Sudan by 2008 and to ensure that the national epidemio-surveillance system [ESS] is made sustainable for the control of priority diseases through improvement of related animal health issues, enabling better access to local and international markets. The project is financed from STABEX with in total EUR 6.0 million to be utilised simultaneously through the northern and the southern sub-projects.

The northern sub-project started operation on 21st August 2007 being implemented by the AH&EDC Directorate/ FMAR&F through Direct Labour (Direct Decentralized Operations) with an operational budget of EUR 2.45 million of which 2,786,789.00 Sudanese Dinar (SDD) (equivalent to 1,021,290.00 €[2]) has been allocated for the implementation of PE Year 1.

The expected results of the LESP-NS can be summarized as follows:

- Result 1: Sudan is recognized by OIE as free of Rinderpest infection in May 2008.
- Result 2: The ESS is efficiently used and is an integral and sustainable unit within the Government of National Unity [GNU] Administration.
- Result 3: Action plans for improvement of the control of the main infectious animal diseases (i.e. HPAI, CBPP, FMD, PPR, RVF, and TBDs) as well as priority animal health related issues are formulated and supported for implementation by the Sudanese Administration, thereby enhancing rural economies and enabling greater market opportunities.

II.8.E Disease situation in South Sudan

Table 20 Disease outbreak reports received Jan – December, 2008

State	Disease report	New or follow-up	Date investigated	Location	Species affected	Final diagnosis	Control measures
EES	RVF	New	10/2/08	Kapoeta North	Cattle sheep goats	Lab +ve IGg	Nil
	ECF	New	10/02/08	Torit	Cattle	clinical	Treatments
	HPAI	New	13/03/08	Kapoeta East	Wild doves	Lab result awaited b	Nil
	ECF	New	24/06/08	Murahatiha	Cattle		Nil
Jonglie	HS	New	24/03/08	Duk	Cattle	clinical	Vaccination
	HS	New	12/03/08	Ayod	Cattle	Clinical	Vaccination
	ECF	New	05/07/08	Bor	Cattle	Clinical	Treatments
	ECF	New	02/07/08	Bor	Cattle	Clinical	Treatment s
	HS	Follow up	28/08/08	Pachalla	Cattle	Clinical	Treatments
	ECF	Follow up	14/09/08	Bor	Cattle	Clinical	Treatments
	ECF	Follow up	26/09/08	Bor	Cattle	Clinical	Treatments
	CBPP	Follow up	15/07/08	Jale	Cattle	Clinical	Treatments
Upper Nile	Mixed infection	Follow-up	25/05/08	Renk/ Melut	Cattle sheep/goat s	Lab result awaited	Vaccination treatments
	Mixed infection	Follow up	24/05/08	Renk/Melut	Cattle	Lab result awaited	Treatments
WBGs	BQ	New	29/20/08	Ayaka North	Cattle	Clinical	Treatments
Warrap	SE	New	20/04/08	Pantit , Gogrial West	Cattle	Clinical , lab results awaited	Treatments
	BQ	New	12/05/08	Ayen	Cattle	Clinical	Treatments
	BQ	Follow up	21/11/08	Akon	Cattle	Clinical	Treatments
Lake	BQ	New	08/05/08	Awerial	Cattle	Clinical	Treatments/ vaccination
NBG	SE	New	05/06/08	Udom	Cattle	Clinical	Treatment
	MCF	New	02/07/08	Udom	Cattle	Clinic	treatments
CES	ECF	Follow up	14/08/08	Wandurba	Cattle	Clinic	Treatments
WES	BQ	Follow up	18/08/08	Lozole	Cattle	Clinic	Treatments

Table 21 Number of animal vaccinated Jan – December, 2008

State	CBPP	HS	Blanthrax	PPR	CCPP	Sheep pox	NCD	Rabies
Lakes	0	100	2400	400	0		1000	3
Jonglei	820	200	425	516				
CES	21	100						
EES	3167				274			70
NBEG	12,200	25,825	48,600	10,707	500		4,035	
Unity	47331	147240	42032	2547	0	2547	3079	
WES	No report							
U Nile	14600	59820	43550	23700	0	28850	0	
Warrap	9288	30747	48448	7685			6771	
WBEG		5000	5000					9
Total	**87,427**	**269,032**	**190,455**	**45,555**	**774**	**31,397**	**14,885**	**82**

Table 22 Number of cattle treated in the states Jan – December, 2008

State	CBPP	HS	BQ	Tryps	ECF	Int-para	Ext-para
CES	116	25	186	83	289	324	329
EES	330	108	15	203	310	198	47
Jonglei	1000	0	0	390	0	750	0
Warrap	899	1730	1730	8749	0	17650	45815
Unity	No report						
WBEG	129	0	0	75	0	85	34
NBEG	101	15	0	235	0	109	273
Lakes	1339	208	198	843	0	3629	323
U Nile	101	15	0	235	0	109	273
WES	No report						
Total	**4015**	**2101**	**2129**	**10813**	**610**	**22854**	**47094**

Table 23 Sheep and goats treated in the states Jan – December, 2008

State	CCPP	Int. parasite	Ticks	Mange
CES	94	318	242	42
EES	444	724	43	148
Jonglei	0	0	0	0
Warrap	0	0	0	0
Unity	0	0	0	0
WBEG	0	0	0	0
NBEG	0	0	0	0
Lakes	1850	2420	68	1188
Upper Nile	156	69	68	50
WES	0	0	0	0
Total	**2544**	**3531**	**421**	**1428**

Table 24 Meat Inspection Data Jan – June 2008

State	Cattle	Sheep	Goats
Lakes	3757	3585	2226
Jonglei	2802	2118	2150
CES	7827	1329	2620
EES			
NBEG		257	566
Unity			
WES		185	162
Upper Nile	5631	8237	4245
Warrap	670	101	117
WBEG	10234	4578	2513
Total	**32,841**	**20,634**	**14,856**

II.8.F Laboratory Services

Laboratory Services fall under the direction of the Animal Resources Research Corporation [ARRC] of the Ministry of Science and Technology [MoST]. ARRC has 18 laboratories - a central one in Soba and 17 regional laboratories. Their mandate is disease diagnosis and field surveys; vaccine production; applied research and training. There is an animal production research station in Khartoum and 10 state research stations. There are also 6 fisheries research stations, a central one and 5 in the states, and one camel research station in Gazeria. There are 3 wildlife research stations, one in Khartoum and the remaining two in the regions.

The Central Veterinary Research Laboratory [CVRL], Soba, carries out disease diagnosis, investigation, vaccine production for viral [e.g. ND, FMD, RVF, PPR], bacterial [brucella] and mycoplasma [CBPP]. They also carry out applied research and training.

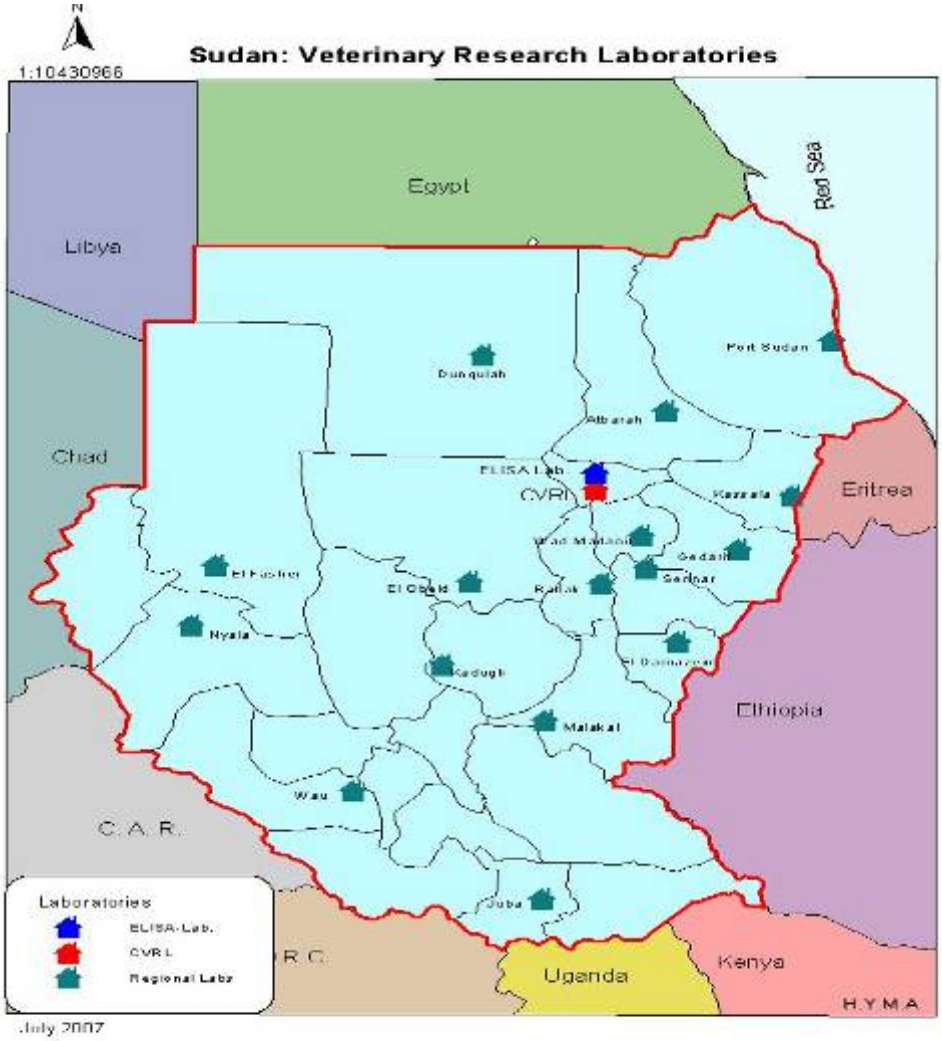
Figure 9 CBPP Vaccine Vials produced at the CVRL, Soba

Revenue from vaccine sales is remitted to the Ministry of Finance but only a fraction of this income is returned to the CVRL by way of budgetary allocation. The Mission was extremely impressed with the diagnostic facilities at the Brucella Laboratory which has both PCR and ELISA capability. Until recently, quality assurance was carried out by PanVac Debre Zeit Ethiopia,. The mission was informed that this function is now undertaken internally. The team did not see any written SOPs.

The CVRL Soba has networks with a number of international laboratories in Europe [Padova, Pirbright] and Africa [Onderstepport, KARI Muguga, and PANVAC].

It was noted that there were private laboratories dealing with poultry diseases.

Figure 10 Distribution of the Veterinary Research Laboratories in Sudan



PART III: RESULTS OF THE EVALUATION

This evaluation identifies the strengths and weaknesses of the veterinary services in Sudan.

FUNDAMENTAL COMPONENTS	
1.	HUMAN, PHYSICAL AND FINANCIAL RESOURCES
2.	TECHNICAL AUTHORITY AND CAPABILITY
3	INTERACTION WITH STAKEHOLDERS
4.	ACCESS TO MARKETS

Veterinary Services (VS) are recognised by the OIE as a 'global public good'. OIE Members, recognising the important role and responsibilities of VS, should provide the necessary human and financial resources so that the VS can effectively perform its functions.

This OIE-PVS Evaluation examined the critical competencies within the four fundamental components, listed strengths and gaps and established the current level of advancement for each critical competency. The rationale for deciding these levels of advancement is explained using referenced evidence (see Appendix 6).

III.1 FUNDAMENTAL COMPONENT 1: HUMAN, PHYSICAL AND FINANCIAL RESOURCES

This component of the evaluation appraises the institutional and financial sustainability of the Veterinary Services as evidenced by the level of professional/technical and financial resources available and the capacity to mobilize these resources. It comprises ten critical competencies:

Critical competencies

Section I-1	**Professional and technical staffing of the Veterinary Services**
	A. Veterinary and other professionals (university qualification)
	B. Veterinary para-professionals and other technical personnel
Section I-2	**Competencies of veterinarians and veterinary para-professionals**
	A. Professional competencies of veterinarians
	B. Competencies of veterinary para-professionals
Section I-3	**Continuing education**
Section I-4	**Technical independence**
Section I-5	**Stability of structures and sustainability of policies**
Section I-6	**Coordination capability of the sectors and institutions of the VS**
Section I-7	**Physical resources**
Section I-8	**Funding**
Section I-9	**Contingency and compensatory funding**
Section I-10	**Capability to invest and develop**

Terrestrial Code References:

Points 1-6, 8 and 13 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / Independence / Impartiality / Integrity / Objectivity / General organisation / Procedures and standards / Human and financial resources.
Article 3.2.2. on Scope.
Point 1 and 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Point 2 of Article 3.2.4. on Evaluation criteria for quality system: "Where the Veterinary Services undergoing evaluation… than on the resource and infrastructural components of the services".
Article 3.2.5. on Evaluation criteria for human resources.
Points 1-3 of Article 3.2.6. on Evaluation criteria for material resources: Financial / Administrative / Technical.
Points 3 and Sub-point d) of Point 4 of Article 3.2.10. on Performance assessment and audit programmes: Compliance / In-Service training and development programme for staff.
Article 3.2.12. on Evaluation of veterinary statutory body.
Points 1-5 and 9 of Article 3.2.14. on Organisation and structure of Veterinary Services / National information on human resources / Financial management information / Administration details / Laboratory services / Performance assessment and audit programmes.

I-1 Professional and technical staffing of the Veterinary Services *The appropriate staffing of the VS to allow for veterinary and technical functions to be undertaken efficiently and effectively.* **A. Veterinary and other professionals (university qualification)**	**Levels of advancement**
	1. The majority of veterinary and other professional positions are not occupied by appropriately qualified personnel.
	2. The majority of veterinary and other professional positions are occupied by appropriately qualified personnel at central and state / provincial levels.
	3. The majority of veterinary and other professional positions are occupied by appropriately qualified personnel at the local (field) level.
	4. There is a systematic approach to defining job descriptions and formal appointment procedures for veterinarians and other professionals.
	5. There are effective management procedures for performance assessment of veterinarians and other professionals.

Terrestrial Code References (s):
Points 1-5 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / Independence / Impartiality / Integrity / Objectivity.
Points 6 and 13 of Article 3.1.2. on Fundamental principles of quality: General organisation / Human and financial resources.
Article 3.2.5. on Evaluation criteria for human resources.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 1-2 and 5 of Article 3.2.14. on Organisation and structure of Veterinary Services / National information on human resources / Laboratory services.

Findings:

Currently there are 1,605 [854 HQ and 751 field] public service veterinarians and 548 private veterinarians in the Veterinary Service [VS] of Sudan.

It was reported that there are 18 vacancies in the Veterinary Public Health section of the Government Veterinary Service and that all other veterinary and other professional positions are occupied by appropriately qualified personnel at all levels.

There is an apparent top-heavy distribution of veterinary professional staff with more than 50% of the total staff complement based at Central Level, although it should be noted that 60% of these are recently recruited staff who are awaiting field posting.

The majority of Private Veterinarians are engaged in the sales of drugs and other commercial activities; very few are engaged in the delivery of clinical services.

Strengths:

A large well qualified body of veterinary professionals.

Weaknesses/ Gaps:

Top heavy distribution of veterinary professional staff.

Recommended priorities for action:

Review Veterinary Service delivery system, inclusive of staff distribution, linkages and community based systems in order to develop a more efficient, sustainable and functional system.

I-1 Professional and technical staffing of the Veterinary Services *The appropriate staffing of the VS to allow for veterinary and technical functions to be undertaken efficiently and effectively.* **B. Veterinary para-professionals and other technical personnel**	**Levels of advancement**
	1. The majority of technical positions are not occupied by personnel holding technical qualifications.
	2. The majority of technical positions at central and state / provincial levels are occupied by personnel holding technical qualifications.
	3. The majority of technical positions at local (field) levels are occupied by personnel holding technical qualifications.
	4. The majority of technical positions are effectively supervised on a regular basis.
	5. There are effective management procedures for formal appointment and performance assessment of *veterinary para-professionals.*

Terrestrial Code References (s):

Points 1-5 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / Independence / Impartiality / Integrity / Objectivity.
Points 6 and 13 of Article 3.1.2. on Fundamental principles of quality: General organisation / Human and financial resources.
Article 3.2.5. on Evaluation criteria for human resources.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 1-2 and 5 of Article 3.2.14. on Organisation and structure of Veterinary Services / National information on human resources / Laboratory services.

Findings:

Currently there are 145 [76 HQ and 69 field] public service veterinary para-professionals.

The training facilities for veterinary para-professionals were closed in 1996 since the VS finally realized that the curriculum is not coping with the new international standards. In addition it is difficult to find the suitable candidates to join these training facilities. Also the graduated trainers' certificates receive no recognition from the Ministry of Higher Education. Since that time there has been no new recruitment of this cadre of VS staff and the numbers in employment have dramatically reduced to the point where there are very few in comparison to the professional cadre.

Consequently, all the universities created technical institutes from which technicians with diploma degree will graduate. One of these institutes is technical instates for veterinary technicians at both Universities of Khartoum and Sudan for Science and Technology. The numbers which graduate annually range between 30 - 45 technicians. This will contribute to minimizing the gap.

At community level the GVS is largely dependent on CAHWS for the delivery of primary animal health care, disease surveillance and reporting although this activity can also be covered by missions from the public veterinary services.

There are more than 3,000 CAHWs distributed throughout the country. CAHWs function well when adequately supported with donor funding but the system collapses once this support is withdrawn. Without remunerated support the more educated CAHWs leave their work and find employment in other areas.

Strengths:

A large number of trained CAHWs.

Weaknesses/ Gaps:

Few Veterinary Assistants and many non-performing CAHWs

Recommended priorities for action:

- Train more Veterinary Assistants.
- Address how to make the delivery of veterinary services financially attractive for field staff.

I-2 Competencies of veterinarians and veterinary para-professionals *The capability of the VS to efficiently carry out their veterinary and technical functions; measured by the academic qualifications of their personnel in veterinary, other professional and technical positions*[3]. **A. Professional competencies of veterinarians**	**Levels of advancement**
	1. The veterinarians' practices, knowledge and attitudes are of a variable standard that usually allow for elementary clinical and administrative activities of the VS.
	2. The veterinarians' practices, knowledge and attitudes are of a uniform standard that usually allow for accurate and appropriate clinical and administrative activities of the VS.
	3. The veterinarians' practices, knowledge and attitudes usually allow undertaking all professional/technical activities of the VS (e.g. epidemiological surveillance, early warning, public health, etc.).
	4. The veterinarians' practices, knowledge and attitudes usually allow undertaking specialized activities as may be needed by the VS.
	5. The veterinarians' practices, knowledge and attitudes are subject to regular updating, or international harmonisation, or evaluation.

Terrestrial Code References (s):

Points 1-5 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / Independence / Impartiality / Integrity / Objectivity.
Points 6 and 13 of Article 3.1.2. on Fundamental principles of quality: General organisation / Human and financial resources.
Article 3.2.5. on Evaluation criteria for human resources.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 1-2 and 5 of Article 3.2.14. on Organisation and structure of Veterinary Services / National information on human resources / Laboratory services.

Findings:

All veterinarians in the GVS have a minimum of a bachelors degree from a SVC recognised Veterinary Faculty.

A number of GVS staff have specialised qualifications in various disciplines.

There are 4 established veterinary faculties with 3 more that have already admitted students whilst another 3 are in the pipeline. This will create a total of 10 veterinary Faculties in Sudan. The total number of students qualifying from the existing 7 schools is in the order of 500 to 700 graduates per year and this number will rise to 1000 graduates per year once the full complement of 10 schools is in operation.

More employment opportunities for veterinarians would be created if the livestock industry was developed commensurate with the size and potential productivity of the livestock population.

The Veterinary Faculty at the University of Khartoum utilises external examiners from Egypt. There is no external accreditation of the academic audit procedures undertaken by the Veterinary Council.

Strengths:

A full complement of properly qualified professional veterinarians.

[3] Not all professional positions require an academic degree. Nonetheless, the proportion of academic degrees serves as an indicator of professional excellence within the VS.

A large livestock population that has the potential to be developed into a sustainable and renewable commodity creating an industry capable of absorbing many veterinarians.

A large number of veterinary faculties.

Weaknesses/Gaps:

Insufficient employment opportunities for the number of veterinary graduates being produced.

No external accreditation of the academic audit procedures undertaken by the Veterinary Council.

Recommended priorities for action:

Exploit the full potential of Sudan's livestock industry and support a well qualified and specialised cadre of veterinary professionals to sustainably increase GDP contribution by the sector.

I-2 Competencies of veterinarians and veterinary para-professionals *The capability of the VS to efficiently carry out their veterinary and technical functions; measured by the academic qualifications of their personnel in veterinary, other professional and technical positions*[4]. **B. Competencies of veterinary para-professionals**	**Levels of advancement**
	1. The majority of *veterinary para-professionals* have no formal entry-level training.
	2. The training of *veterinary para-professionals* is of a very variable standard and allows the development of only limited animal health competencies.
	3. The training of *veterinary para-professionals* is of a uniform standard that allows the development of only basic animal health competencies.
	4. The training of *veterinary para-professionals* is of a uniform standard that allows the development of some specialist animal health competencies (e.g. meat inspection).
	5. The training of *veterinary para-professionals* is of a uniform standard and is subject to regular evaluation and/or updating.

Terrestrial Code References (s):

Points 1-5 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / Independence / Impartiality / Integrity / Objectivity.
Points 6 and 13 of Article 3.1.2. on Fundamental principles of quality: General organisation / Human and financial resources.
Article 3.2.5. on Evaluation criteria for human resources.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 1-2 and 5 of Article 3.2.14. on Organisation and structure of Veterinary Services / National information on human resources / Laboratory services.

Findings:

The training of Veterinary para-professionals ceased in 1996.

There are a reported total of 3,335 CAHWs in the Sudan though the actual number delivery primary animal health care is likely to be considerably smaller than this number.

The Veterinary Council has drafted a legal framework for CAHWs and national standards for training have also been drafted.

Strengths:

The large number of trained CAHWs.

Weaknesses/Gaps:

Inadequate number of veterinary paraprofessionals.

No formalised and sustainable system for supporting CAHWs.

Recommended priorities for action:

- Train more veterinary para-professionals.
- Introduce a formalised and sustainable system for supporting CAHWs.

[4] Not all professional positions require an academic degree. Nonetheless, the proportion of academic degrees serves as an indicator of professional excellence within the VS.

I-3 Continuing education (CE)[5]	Levels of advancement
The capability of the VS to maintain and improve the competence of their personnel in terms of relevant information and understanding; measured in terms of the implementation of an annually reviewed training programme.	1. The VS have no access to continuing veterinary, professional or technical education.
	2. The VS have access to CE (internal and/or external programmes) on an irregular basis but it does not take into account needs, or new information or understanding.
	3. The VS have access to CE that is reviewed annually and updated as necessary, but it is implemented for less than 50% of the relevant personnel.
	4. The VS have access to CE that is reviewed annually and updated as necessary, and it is implemented for more than 50% of the relevant personnel.
	5. The VS have up-to-date CE that is implemented for all relevant personnel.

Terrestrial Code References (s):

Points 1, 6 and 13 of Article 3.1.2. on Fundamental principles of quality: Professional judgement / General organization / Human and financial resources.
Article 3.2.5. on Evaluation criteria for human resources.
Sub-point d) of Point 4 of Article 3.2.10. on Veterinary Services administration: In-Service training and development programme for staff.
Point 9 of Article 3.2.14. on Performance assessment and audit programmes.

Findings:

No structured CE is implemented in the GVS. However some CE activities take place at national and international level taking into account specific needs as well as available new information.

The northern PACE Sudan project provided altogether (53) training courses of about 1-week duration on PDS, disease reporting, diagnosing of livestock diseases, participatory epidemiology and laboratory diagnosis for 894 trainees (state-based vets, vets from HQ and CAHWs) from February 2003 to October 2006. LESP-NS provides on average 12 - 15 1-week training courses on relevant topics to about 200 trainees per annum.

The Veterinary Faculties make provision for in-service refresher training programmes for encouraging further skills development but there is no formal requirement for veterinarians to undertake such training. There are ad hoc further training opportunities offered to professional and technical staff, often linked to a specific donor funded programme.

The Veterinary Faculties offer further training through MSc and PhD degree research programmes. The University of Sudan also offers taught MSc programmes in Biochemistry, Microbiology and Tropical Animal Health.

Strengths:

Availability of Veterinary Faculties where further degree studies are on offer.

[5] Continuing education includes Continuous Professional Development (CPD) for veterinary, professional and technical personnel.

Weaknesses/Gaps:

Continuing Education (CE) is not reviewed annually, nor updated as necessary and no structured CE is generally implemented in the VSD.

Recommended priorities for action:

SVC to develop its mandate for promoting and regulating the uptake of CPD programmes by the veterinary profession in the Sudan.

The SVMA to be resourced to organise and deliver CPD programmes for their members at National and Regional Levels.

I-4 Technical independence	Levels of advancement
The capability of the VS to carry out their duties with autonomy and free from commercial, financial, hierarchical and political influences that may affect technical decisions in a manner contrary to the provisions of the OIE (and of the WTO SPS Agreement where applicable).	1. The technical decisions made by the VS are generally not based on scientific considerations.
	2. The technical decisions take into account the scientific evidence, but are routinely modified to conform to non-scientific considerations.
	3. The technical decisions are based on scientific evidence but are subject to review and possible modification based on non-scientific considerations.
	4. The technical decisions are based only on scientific evidence and are not changed to meet non-scientific considerations.
	5. The technical decisions are made and implemented in full accordance with the country's OIE obligations (and with the country's WTO SPS Agreement obligations where applicable).

Terrestrial Code References (s):
Point 2 of Article 3.1.2. on Fundamental principles of quality: Independence.

Findings:

There is no evidence of political interference with the decision making process within the GVS although there has been a significant impact on VS infrastructure and functionality as a consequence of the prolonged civil unrest in Southern Sudan. The peace accord has resulted in a division of the VS into Northern and Southern components with the Undersecretary, based in Khartoum, remaining as the overall authority and OIE Delegate.

The VS is divided into 25 State entities each with its own DVS. In some states, particularly those with large livestock populations, a separate Ministry of Livestock has been established. In other states, however, Livestock Services have been integrated with crop production under a unified Ministry of Agriculture. Such an arrangement may not be in the best interests of VS technical independence.

Where animal disease control decisions are taken by the professional members of the GVS, they are based on scientific evidence. Examples are: Rinderpest Eradication, CBPP control, HPAI surveillance programme; immunisations against diseases such as RVF, PPR etc.

Strengths:

Predominance of Veterinary Professionals in positions of authority for VS decision making.

Weaknesses/Gaps:

Where the GVS is placed within a Ministry of Agriculture there is the prospect for a non-veterinarian being the Undersecretary.

Recommended priorities for action:

In order to strengthen scientific decision taking processes the OIE-PVSD Team recommends that the OIE Terrestrial Animal Health Code be made available to all provincial veterinary offices.

I-5 Stability of structures and sustainability of policies *The capability of the VS to implement and sustain policies over time.*	Levels of advancement
	1. Substantial changes to the organisational structure and/or leadership of the public sector of the VS frequently occur (e.g. annually) resulting in lack of sustainability of policies.
	2. Substantial changes to the organisational structure and/or leadership of the public sector of the VS occur less frequently (e.g. biannually) resulting in lack of sustainability of policies.
	3. The organisational structure of the public sector of the VS is substantially changed each time there is a change in the political leadership and this has negative effects on sustainability of policies.
	4. There are generally only minor changes in the organisational structure of the public sector of the VS following a change in the political leadership and these have little or no effect on sustainability of policies.
	5. The organisational structure of the public sector of the VS generally remains stable for longer periods (e.g. 5 years) and is only modified based on an evaluation process, with little or no effect on the sustainability of policies.

Terrestrial Code References (s):
Point 1 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Point 9 of Article 3.2.14. on Performance assessment and audit programmes.

Findings:

The post of Undersecretary of the FMAR&F has been characterised by a succession of long serving incumbents, mirrored by staff in senior management positions, providing stability to the structure and function of the GVS.

The GVS and other public sector stakeholders are working to a livestock development policy and strategy that has a 25 year term.

There is documentation of position responsibilities and the presence of a system for monitoring performance of veterinarians and veterinary paraprofessionals. This provides for the monitoring of the efficiency, and thus stability, of the policies and programs of the veterinary services.

Strengths:

The post of Undersecretary and senior management of the FMAR&F has been characterised by a succession of long serving incumbents.

There is documentation of position responsibilities and a system for monitoring the performance of veterinarians and veterinary paraprofessionals.

Weaknesses / Gaps: Nil

Recommended priorities for action : Nil

I-6 Coordination capability of the sectors and institutions of the Veterinary Services (public and private) The capability of the VS to coordinate national activities, including disease control and eradication programmes, food safety programmes and responses to emergency situations.	Levels of advancement
	1. There is no coordination.
	2. There are informal or irregular coordination mechanisms for some activities, with an unclear chain of command.
	3. There are coordination mechanisms with a clear chain of command for some activities, but these are not coordinated / implemented throughout the country.
	4. There are coordination mechanisms with a clear chain of command at the national level for most activities, and these are uniformly implemented throughout the country.
	5. There are agreed coordination mechanisms that can be implemented as necessary to address all activities.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and Standards.
Article 3.2.2. on Scope.
Points 1 and 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.

Findings:

In cases of rapid emergency and /or other important animal disease control, eradication, surveillance and prevention activities and/or measures, the Undersecretary RMAR&F has direct authority of command. There is a potential weakness where the VS falls under a State Ministry of Agriculture.

There are implicit but not explicit linkages between the Northern and Southern VS

There is GVS capacity to coordinate the services delivered by a privatised veterinary sector complemented by a functioning Veterinary Council [SVC] and Veterinary Medical Association [SVMA] However there are few established private veterinary clinics so there is relatively little by the way of veterinary privately delivered clinical activity for the GVS to coordinate.

Formalized and coordinated linkages between Veterinary Personnel and Community Animal Health Workers are seen as a very important means of improving access to VS for the more extensive livestock producing areas. However these linkages are often weak.

Strengths:

There are established coordination mechanisms that can be implemented as necessary to address all activities.

Weaknesses/Gaps:

There is a potential weakness where the VS falls under a State Ministry of Agriculture.

Implicit but not explicit linkages between the Northern and Southern VS.

Weak linkages with the CAH.

Recommended priorities for action:

Create and foster explicit linkages between the Northern and Southern VS; strengthen linkages with the CAH.

I-7 Physical resources *The access of the VS to relevant physical resources including buildings, transport telecommunications, cold chain, and other relevant equipment (e.g. computers).*	Levels of advancement
	1. The VS have no or unsuitable physical resources at almost all levels and maintenance of existing infrastructure is poor or non-existent.
	2. The VS have suitable physical resources at national (central) level and at some regional levels, and maintenance and replacement of obsolete items occurs only occasionally.
	3. The VS have suitable physical resources at national, regional and some local levels and maintenance and replacement of obsolete items occurs only occasionally.
	4. The VS have suitable physical resources at all levels and these are regularly maintained.
	5. The VS have suitable physical resources at all levels (national, sub-national and local levels) and these are regularly maintained and updated as more advanced and sophisticated items become available.

Terrestrial Code References (s):

Point 2 of Article 3.2.4. on Evaluation criteria for quality system: "Where the Veterinary Services undergoing evaluation… than on the resource and infrastructural components of the services".
Points 2 and 3 of Article 3.2.6. on Evaluation criteria for material resources: Administrative / Technical.
Point 3 of Article 3.2.10. on Performance assessment and audit programmes: Compliance.
Point 4 of Article 3.2.14. on Administrative details.

Findings:

At central level [AH and Laboratory] there are adequate physical resources including buildings, transport, telecommunications, cold chain, and other relevant equipment (e.g. computers).

No inventory of physical resources including buildings, transport, telecommunications, cold chain, and other relevant equipment was seen.

The Animal Health Department holds a strategic reserve of 30 mobile veterinary clinics to be used anywhere in the country in the case of an epidemic disease outbreak or other emergency requiring immediate veterinary intervention.

A total of 110 fully equipped mobile clinics have been acquired and distributed, less 30 held in strategic reserve, to the State Veterinary Services. More units have been allocated to those States with large livestock populations.

The Dept of Animal Health and epizootic Disease, at Soba has an excellent physical facility with an ample number of well proportioned rooms in a two winged double storey building, containing offices, work rooms, and meeting rooms.

There are a good number of offices with modern computing equipment and 9 out of 15 States in North Sudan are submitting their reports electronically. The PACE programme established Information units and networks are still being maintained and functioning.

The GVS in Southern Sudan has recently moved into a new prefabricated Ministry Headquarters but much of the infrastructure destroyed during the Civil unrest has yet

to be restored.

Strengths:

The GVS, in general, has excellent physical facilities, transport, telecommunications, cold chain, and other relevant equipment.

Each State has at least two mobile clinics.

Weaknesses/Gaps:

It was reported that the provision and use of transport is a constraint in some States and Localities [Payamas in the South].

Recommended priorities for action:

Undertake an inventory of field, cold chain, office and transport needs and redress any deficiencies found.

I-8 Funding	Levels of advancement
The ability of the VS to access financial resources adequate for their continued operations, independent of political pressure.	1. Funding for the VS is neither stable nor clearly defined but depends on resources allocated irregularly.
	2. Funding for the VS is clearly defined and regular, but is inadequate for their required base operations.
	3. Funding for the VS is clearly defined and regular, and is adequate for their base operations, but there is no provision for new or expanded operations.
	4. Funding for new or expanded operations is on a case-by-case basis.
	5. Funding for all aspects of VS activities is adequate; all funding is provided under full transparency and allows for full technical independence.

Terrestrial Code References (s):
Point 13 of Article 3.1.2. on Fundamental principles of quality: Human and financial resources.
Point 1 of Article 3.2.6. on Evaluation criteria for material resources: Financial.
Point 3 of Article 3.2.14. on Financial management information.

Findings:

Although there is an apparent imbalance in funds allocation to the livestock sector compared to the crops sector there does not appear to be any serious shortages of funds at Central Level. The additional funds made available to the GVS through donor supported programmes compensate for any shortfall in the budget [calculated to amount to 35.5 million dollars over a 3 year period].

It was stated that the GVS normally receives 100% of its Salary requirements, 50 % of its operational allocation and only 10% of its development provision.

A significant inflow of donor funds has been received in response to the threat posed by avian influenza. Much of the money has been consumed in disease surveillance, preparedness and control activities and relatively little has been used to invest in regenerating VS operational capacity or to create sustainable VS programme activity.

A small amount of revenue is generated from the sale of veterinary medicines and the meat inspection fees, but services and vaccinations are, by an large, provided free of charge.

There are no funds available to enable the GVS to outsource activities to the private sector.

Salaries [inclusive of allowances] paid to FMAR&F staff are low compared to professionals in the MoST and other Ministries.

Strengths:

The GVS is in receipt of a substantial amount of donor funding, particularly for programmes in the south.

Weaknesses/ Gaps:

Salaries paid to GVS staff in the FMAR&F do not provide an adequate performance

incentive.

No funds available to contract out the delivery of VS to the private and community sector.

Recommended priorities for action:

Develop systems of remuneration that act as a positive performance incentive.

Consider adopting a more aggressive cost recovery policy.

I-9 Contingency and compensatory funding	Levels of advancement
The capability of the VS to access extraordinary financial resources in order to respond to emergency situations or emerging issues; measured by the ease of which contingency and compensatory funding (i.e. arrangements for compensation of producers in emergency situations) can be made available when required.	1. No contingency and compensatory funding arrangements exist and there is no provision for emergency financial resources.
	2. Contingency and compensatory funding arrangements with limited resources have been established, but these are inadequate for expected emergency situations (including emerging issues).
	3. Contingency and compensatory funding arrangements with limited resources have been established; additional resources for emergencies may be approved but approval is through a political process.
	4. Contingency and compensatory funding arrangements with adequate resources have been established, but in an emergency situation, their operation must be agreed through a non-political process on a case-by-case basis.
	5. Contingency and compensatory funding arrangements with adequate resources have been established and their rules of operation documented and agreed with stakeholders.

Terrestrial Code References (s):
Point 13 of Article 3.1.2. on Fundamental principles of quality: Human and financial resources.
Point 1 of Article 3.2.6. on Evaluation criteria for material resources: Financial.
Point 3 of Article 3.2.14. on Financial management information.

***Findings*:**

Funds for these purposes are available from the Ministry of Finance and are released in response to emergency situations on a case by case basis.

Weaknesses/Gaps:

Delays may occur in gaining access to emergency or contingency funds.

Recommended priorities for action:

Contingency and compensatory funding for immediate emergency needs should be held at the FMAR&F with a clear channel by which additional funding can be accessed as required.

I-10 Capability to invest and develop *The capability of the VS to access additional investments, over time, that leads to a sustained improvement in the VS.*	Levels of advancement
	1. There is no capability to improve the operational infrastructure of the VS.
	2. The VS occasionally develops proposals and secures funding for improvements in operational infrastructure through extraordinary allocations.
	3. The VS regularly secures funding for improvements in operational infrastructure, through extraordinary allocations from the national budget or from other sources, but these are allocated with constraints on their use.
	4. The VS secures adequate funding for the necessary improvements in operational infrastructure through extraordinary allocations, including from stakeholders.
	5. The VS routinely secures adequate funding for the necessary improvements in operational infrastructure.

Terrestrial Code References (s):
Point 13 of Article 3.1.2. on Fundamental principles of quality: Human and financial resources.
Point 1 of Article 3.2.6. on Evaluation criteria for material resources: Financial.
Point 3 of Article 3.2.14. on Financial management information.

Findings:

The VS routinely secures adequate funding for the necessary improvements in operational infrastructure.

Weaknesses/Gaps:

Insufficiency of funds to invest and develop.

Recommended priorities for action:

Develop an effective advocacy that convinces the Government and Donor Community of the merit in providing investment funds of sufficient scale to enable the GVS to realise the full livestock production potential of Sudan.

III.2 FUNDAMENTAL COMPONENT II: TECHNICAL AUTHORITY AND CAPABILITY

This component of the evaluation appraises the authority and capability of the VS to develop and apply sanitary measures and science-based procedures supporting those measures. It comprises twelve critical competencies.

Critical competencies:

Section II-1	**Veterinary laboratory diagnosis**
Section II-2	**Laboratory quality assurance**
Section II-3	**Risk analysis**
Section II-4	**Quarantine and border security**
Section II-5	**Epidemiological surveillance**
	A. Passive Epidemiological surveillance
	B. Active Epidemiological surveillance
Section II-6	**Early detection and emergency response**
Section II-7	**Disease prevention, control and eradication**
Section II-8	**Veterinary public health and food safety**
Section II-9	**Veterinary medicines and veterinary biologicals**
Section II-10	**Residue testing**
Section II-11	**Emerging issues**
Section II-12	**Technical innovation**

Terrestrial Code References:

Chapter 2.1. on Risk analysis: General considerations.
Chapter 2.2. on Guidelines for import risk analysis.
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General Organisation / Procedures and standards.
Point 1 of Article 3.2.4. on Evaluation criteria for quality systems.
Point 3 of Article 3.2.6. on Evaluation criteria for material resources: Technical.
Points 1 and 2 of Article 3.2.7. on Functional capabilities and legislative support: Animal health and veterinary public health / Export/Import inspection.
Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems.
Points 1-5 of Article 3.2.9. on Veterinary public health controls: Food hygiene / Zoonoses / Chemical residue testing programmes / Veterinary medicines/ Integration between animal health controls and veterinary public health.
Sub-point f) of Point 4 of Article 3.2.10. on Veterinary Services administration: Formal linkages with sources of independent scientific expertise.
Points 2 and 5-7 of Article 3.2.14. on National information on human resources / Laboratory services / Functional capabilities and legislative support / Animal health and veterinary public health controls.
Chapters 6.5. to 6.8. on Antimicrobial resistance.
Chapter 6.2. on Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection.

II-1 Veterinary laboratory diagnosis *The authority and capability of the VS to identify and record pathogenic agents, including those relevant for public health, that can adversely affect animals and animal products.*	Levels of advancement
	1. Disease diagnosis is almost always conducted by clinical means only, with laboratory diagnostic capability being generally unavailable.
	2. For major zoonoses and diseases of national economic importance, the VS have access to and use a *laboratory* to obtain a correct diagnosis.
	3. For other zoonoses and diseases present in the country, the VS have access to and use a laboratory to obtain a correct diagnosis.
	4. For diseases of zoonotic or economic importance not present in the country, but known to exist in the region and/ or that could enter the country, the VS have access to and use a *laboratory* to obtain a correct diagnosis.
	5. In the case of new and emerging diseases in the region or world, the VS have access to and use a network of national or international reference laboratories (e.g. an OIE Reference Laboratory) to obtain a correct diagnosis.

Terrestrial Code References (s):

Point 8 of Article 3.1.2. on Fundamental principles of quality: Procedures and standards.
Point 3 of Article 3.2.6. on Evaluation criteria for material resources: Technical.
Point 5 of Article 3.2.14. on Laboratory services.

Findings:

The Central Veterinary Research Laboratory [CVRL] Soba has an adequate supply of reagents, a wide range of modern diagnostic and vaccine production equipment and all laboratory facilities are maintained in excellent condition. There is an electricity sub station on site with a large back-up generator in case of power failure. The single storey vaccine production unit is housed in a separate building less than 100 metres from the 3 storey diagnostic facility.

The number of staff at these laboratories is adequate and many have been in place for a long time and gained considerable experience in their fields. Samples are handled properly with appropriate collection and submission procedures, inclusive of preservation, temperature control, storage (cold chain).

Diagnostic procedures include gross post mortem; microscopy; culture and isolation; serology including ELISA; PCR. Results are reported to the Central and State VS in a timely manner. The State Laboratories exhibit a far more basic level of diagnostic capacity but still demonstrated a positive attitude to the collection and examination of samples.

The PACE programme established an ELISA laboratory within the AH & DC offices at Soba - used for rinderpest serology and can be used for sero-surveillance of other diseases.

The Laboratory in Juba has recently been constructed and is in the process of being furnished and equipped. They are in the process of establishing both ELISA and PCR capability.

There are private laboratories that handle samples for poultry diseases.

The laboratory could be used more and this might be achieved through contracted

field activity – ideally by way of public/private/community partnerships.

Strengths:

A very well resourced and operated laboratory system.

Weaknesses:

There is a risk of cross contamination between the diagnostic facility and the vaccine production unit because of the proximity of the two facilities.

Recommendations:

Computerise, and link to a central database, the recording of samples, results of tests and reporting of findings.

The vaccine production facility should not be accessed by those who are carrying out different diagnostic tests to prevent any contamination and/or cross contamination

Consider the merits of operating the laboratories as a privatised entity [ie as a Veterinary Laboratory Agency] or the contracting out of certain diagnostic procedures [ie poultry disease diagnosis] to a specialist private laboratory.

II-2 Laboratory quality assurance *The quality of laboratories (that conduct diagnostic testing or analysis for chemical residues, antimicrobial residues, toxins, or tests for, biological efficacy, etc.) as measured by the use of formal QA systems and participation in relevant proficiency testing programmes.*	Levels of advancement
	1. No laboratories used by the public sector VS are using formal QA systems.
	2. Some laboratories used by the public sector VS are using formal QA systems.
	3. All laboratories used by the public sector VS are using formal QA systems.
	4. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA systems.
	5. All the laboratories used by the public sector VS and most or all private laboratories are using formal QA programmes that meet OIE, ISO 17025, or equivalent QA standard guidelines.

Terrestrial Code References (s):

Point 8 of Article 3.1.2. on Fundamental principles of quality: Procedures and standards.
Point 1 of Article 3.2.4. on Evaluation criteria for quality systems.
Point 3 of Article 3.2.6. on Evaluation criteria for material resources: Technical.
Point 5 of Article 3.2.14. on Laboratory services.

Findings:

External quality assurance systems are not routinely applied for diagnostic tests or vaccine production.

The CVRL could benefit from adopting standardized operating practices (SOPs) and greater external oversight.

Bio-safety at the CVRL was to a high standard.

Weaknesses:

External quality assurance systems are not routinely applied for diagnostic tests or vaccine production.

Recommendations:

The laboratory system needs improved quality controls, certification, accreditation and outside evaluation processes.

II-3 Risk analysis	Levels of advancement
The authority and capability of the VS to base its risk management decisions on a scientific assessment of the risks.	1. Risk management decisions are not usually supported by scientific risk assessment.
	2. The VS compile and maintain data but do not have the capability to systematically assess risks. Some risk management decisions are based on scientific risk assessment.
	3. The VS can systematically compile and maintain relevant data and carry out risk assessment. Scientific principles and evidence, including risk assessment, generally provide the basis for risk management decisions.
	4. The VS systematically conduct risk assessments in compliance with relevant OIE standards, and base their risk management decisions on the outcomes of these risk assessments.
	5. The VS are consistent in basing sanitary decisions on *risk analysis*, and in communicating their procedures and outcomes internationally, meeting all their OIE obligations (including WTO SPS Agreement obligations where applicable).

Terrestrial Code References (s):
Chapter 2.1. on Risk analysis: General considerations.
Chapter 2.2. on Guidelines for import risk analysis

Findings:

Currently there are no veterinarians trained in risk analysis within the GVS. There are no databases or systems for animal identification or farm registration.

Although the formal use of risk analysis is limited, there is an awareness of the need to base animal health decisions on scientifically supported information.

The assessment of the quality and acceptability of any given veterinary product is shared between three different institutions – SSMO, PPB and the ARRC. It was reported that despite the apparent emphasis on quality of any product being marketed in the Sudan some substandard products are still getting onto the market – particularly where there is a price incentive.

Strengths: Nil

Weaknesses:

No documented procedure for a formal decision making process, based on risk analysis, was presented and no members of the staff are trained in this function.

There are no databases, inclusive of animal identification and farm registration systems, or records maintained for this purpose.

Recommendations:

At least two HQ GVS staff and one from each State should undergo a formal training course in risk analysis at a recognised centre of excellence.

II-4 Quarantine and border security *The authority and capability of the VS to prevent the entry and spread of diseases and other hazards of animals and animal products.*	Levels of advancement
	1. The VS cannot apply any type of quarantine or border security procedures for animals or animal products with their neighbouring countries or trading partners.
	2. The VS can establish and apply quarantine and border security procedures; however, these are generally based neither on international standards nor on a *risk analysis*.
	3. The VS can establish and apply quarantine and border security procedures based on international standards, but the procedures do not systematically address illegal activities relating to the import of animals and animal products.
	4. The VS can establish and apply quarantine and border security procedures which systematically address legal pathways and illegal activities.
	5. The VS work with their neighbouring countries and trading partners to establish, apply and audit quarantine and border security procedures which systematically address all risks identified.

Terrestrial Code References (s):

Point 8 of Article 3.1.2. on Fundamental principles of quality: Procedures and standards.
Point 2 of Article 3.2.7. on Functional capabilities and legislative support: Export/Import inspection.
Points 6 and 7 of Article 3.2.14. on Functional capabilities and legislative support and Animal health and veterinary public health controls.

Findings:

A new export quarantine and holding facility has been constructed 60 kms south of Port Sudan to serve the important livestock export market to the Gulf and Middle East Countries.

Internal border control posts exist between states and are manned 24hours. All non-vaccinated animals are held for 3 days and vaccinated against HS, BQ, PPR and Anthrax.

The lack of an animal identification system hampers the ability to trace the origin of trade livestock.

Strengths:

There are permanent VSD staff assigned to the state border control points, airports and seaport.

There are established border posts and quarantine stations at each of the major borders with a number of inter state quarantine stations.

Weaknesses:

The lack of an animal identification system hampers the ability to identify the source of trade livestock.

Recommendations:

As part of a TAD initiative, harmonisation of animal disease control measures, inclusive of a regional animal identification system, should be discussed and agreed.

II-5 Epidemiological surveillance *The authority and capability of the VS to determine, verify and report on the sanitary status of the animal populations under their mandate.* **A. Passive epidemiological surveillance**	**Levels of advancement**
	1. The VS have no passive surveillance programme.
	2. The VS conduct passive surveillance for some relevant diseases and have the capacity to produce national reports on some diseases.
	3. The VS conduct passive surveillance for some relevant diseases at the national level through appropriate networks in the field, whereby samples from suspect cases are collected and sent for laboratory diagnosis with evidence of correct results obtained. The VS have a basic national disease reporting system.
	4. The VS conduct passive surveillance and report at the national level on most relevant diseases. Appropriate field networks are established for the collection of samples and submission for laboratory diagnosis of suspect cases with evidence of correct results obtained. Stakeholders are aware of and comply with their obligation to report the suspicion and occurrence of notifiable diseases to the VS.
	5. The VS regularly report to stakeholders and the international community (where applicable) on the findings of passive surveillance programmes.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.

Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems.

Sub-points a) i), ii) and iii) of Point 7 of Article 3.2.14. on Animal health: Description of and sample reference data from any national animal disease reporting system controlled and operated or coordinated by the Veterinary Services / Description of and sample reference data from other national animal disease reporting systems controlled and operated by other organisations which make data and results available to Veterinary Services / Description and relevant data of current official control programmes including:… or eradication programmes for specific diseases.

Findings:

Passive and active surveillance programmes exist for important livestock diseases. The epidemio-surveillance system established by PARC and followed by PACE are still in place and functioning. GVS staff are well distributed throughout the country, down to the locality level with professional resources in place supported by appropriate logistics.

The VS conduct passive surveillance and report at the national level on most relevant diseases. Appropriate field networks are established for the collection of samples and submission for laboratory diagnosis of suspect cases with evidence of correct results obtained. Stakeholders are aware of and comply with their obligation to report the suspicion and occurrence of notifiable diseases to the VS.

II-5 Epidemiological surveillance *The authority and capability of the VS to determine, verify and report on the sanitary status of the animal populations under their mandate.* **B. Active epidemiological surveillance**	**Levels of advancement**
	1. The VS have no active surveillance programme.
	2. The VS conduct active surveillance for some relevant diseases (of economic and zoonotic importance) but apply it only in a part of susceptible populations and/or do not update it regularly.
	3. The VS conduct active surveillance for some relevant diseases and apply it to all susceptible populations but do not update it regularly.
	4. The VS conduct active surveillance for some relevant diseases, apply it to all susceptible populations, update it regularly and report the results systematically.
	5. The VS conduct active surveillance for most or all relevant diseases and apply it to all susceptible populations. The surveillance programmes are evaluated and meet the country's OIE obligations.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems.
Sub-points a) i), ii) and iii) of Point 7 of Article 3.2.14. on Animal health: Description of and sample reference data from any national animal disease reporting system controlled and operated or coordinated by the Veterinary Services / Description of and sample reference data from other national animal disease reporting systems controlled and operated by other organisations which make data and results available to Veterinary Services / Description and relevant data of current official control programmes including:… or eradication programmes for specific diseases.

Findings:

The VS conduct active surveillance for some relevant diseases, apply it to all susceptible populations, update it regularly and report the results systematically.

Strengths:

There have been some good local surveillance programs for a variety of important livestock diseases.

There are GVS staff well distributed throughout the country down to the locality level that facilitate long term surveillance programmes.

Sudan was recognized as Rinderpest infection free country by World Organization for Animal Health (OIE) in May 2008 confirming its competency in undertaking sero-surveillance.

Weaknesses:

Institutional, organisational and funding weaknesses prevent the use of Community based veterinary auxiliary personnel as frontline disease surveillance and reporting agents.

A tendency to use clinical rather than laboratory diagnosis for certain disease conditions experienced at field level

Recommendations:

Develop a policy that mobilises the livestock disease surveillance and reporting potential

of community based veterinary auxiliary personnel.

Advocate for a successor to PACE with a focus on transboundary disease surveillance and control – [perhaps PACT – Pan African Control of Transboundary-disease] sustaining epidemio-surveillance networks.

II-6 Early detection and emergency response *The authority and capability of the VS to detect and respond rapidly to a sanitary emergency (such as a significant disease outbreak or food safety emergency).*	**Levels of advancement**
	1. The VS have no field network or established procedure to determine whether a sanitary emergency exists or the authority to declare such an emergency and respond appropriately.
	2. The VS have a field network and an established procedure to determine whether or not a sanitary emergency exists, but lack the necessary legal and financial support to respond appropriately.
	3. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies, but the response is not coordinated through a chain of command.
	4. The VS have an established procedure to make timely decisions on whether or not a sanitary emergency exists. The VS have the legal framework and financial support to respond rapidly to sanitary emergencies through a chain of command. They have national contingency plans for some exotic diseases.
	5. The VS have national contingency plans for all diseases of concern through coordinated actions with all stakeholders through a chain of command.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems.
Sub-point a) of Point 7 of Article 3.2.14. on Animal health and veterinary public health controls: Animal health.

Findings:

The GVS has an extensive field network with established procedures to determine whether or not a sanitary emergency exists, and have the necessary communication, legal and financial support to respond quickly and with appropriate follow up. Resources enhance the ability of GVS to detect and respond to outbreaks of significant animal diseases.

The GVS has an established procedure to make timely decisions on whether or not a sanitary emergency exists. The GVS has the legal framework and financial support to respond rapidly to sanitary emergencies through an intact and functional chain of command.

When a report comes into a State Veterinary Office of a suspected disease outbreak a team, comprising MAR&F and MoST staff is assembled to undertake a field investigation. If the findings prove significant the event is reported to the Federal Authorities in Khartoum for their instructions concerning further action.

The GVS uses all forms of communication – landline, mobile phone, fax and email in order to inform State VS Staff of any emergency disease event. The GVS has internet communication with 9 out of 15 States in the North and the HQ at Juba in the South.

The GVS has not established a publicly available webpage to communicate animal health status and provide access to requirements for import. The Tanzanian VS has a very good example of such a facility [www.mifugo.go.tz].

The network of 3,355 CAHWs established in many parts of the country provides the GVS with an extremely valuable community based disease surveillance network.

Institutional recognition is strong but the support provided is weak.

There is no early warning unit in place for disease outbreaks although there are plans to put one in place. The GVS has access to early warning systems through:

- The Arab Organization for Agricultural Development regional early warning system,
- The Department of Animal Health and Epizootic Diseases Control which has an early warning system that includes GIS and risk management unit,where all diseases investigations and surveillance mission are digitized and information analyzed.
- The Civil Defense Department at the Ministry of Interior where there is a department for disaster management dealing with monitoring and management of different crisis and disasters GVS is an active member in this unit.

Strengths:

The GVS has an extensive field network with established procedures to determine whether or not a sanitary emergency exists, has access to early warning systems and has the necessary communication, legal and financial support to respond quickly and with appropriate follow up.

Weaknesses:

Support for the CAHW network is weak.

There is no early warning unit in place for disease outbreaks.

Recommendations:

Review current policy towards CAHWs and develop a policy that sustainably employs them as key frontline staff in those livestock systems where community based veterinary auxiliary personnel can play an important role.

Establish internet communication and a publicly available webpage to allow direct communications with field staff and to allow staff and other stakeholders access to current disease status reports.

Proceed with all speed possible with the plans to establish an early warning unit at the AH&DEC.

II-7 Disease prevention, control and eradication The authority and capability of the VS to actively perform actions to prevent, control or eradicate OIE listed diseases and/or to demonstrate that the country or a zone are free of relevant diseases.	Levels of advancement
	1. The VS have no authority or capability to prevent, control or eradicate animal diseases.
	2. The VS implement prevention, control and eradication programmes for some diseases and/or in some areas with little or no scientific evaluation of their efficacy and efficiency.
	3. The VS implement prevention, control and eradication programmes for some diseases and/or in some areas with scientific evaluation of their efficacy and efficiency.
	4. The VS implement prevention, control and eradication programmes for all relevant diseases but with scientific evaluation of their efficacy and efficiency of only some programmes.
	5. The VS implement prevention, control and eradication programmes for all relevant diseases with scientific evaluation of their efficacy and efficiency consistent with relevant OIE international standards.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1-3 of Article 3.2.8. on Animal health controls: Animal health status / Animal health control / National animal disease reporting systems.
Sub-point a) of Point 7 of Article 3.2.14. on Animal health and veterinary public health controls: Animal health.

Findings:

The GVS has the ability to assess disease status and control efforts on a scientific basis facilitated by an extensive and well resourced veterinary infrastructure. The number of disease outbreaks reported by the FMAR&F seems to be extremely few in relation to the size of the country and livestock population.

In 2008, Sudan was recognized as a rinderpest infection free country by OIE which was a remarkable achievement considering the period of civil unrest that affected the country. Sudan also demonstrated competent disease response capability in dealing with the suspected outbreak of RVF in 2007 and the outbreak of HPAI in 2006.

There has been no documented case of the private sector being contracted to implement disease prevention, control and eradication programmes on behalf of the GVS.

The role and value of CAHWS as support staff for disease prevention, control and eradication programmes has been recognised and supported by several development aid initiatives but their activity, under current policy and legal frameworks, is proving unsustainable.

Strengths:

The GVS has the human resources and capacity to design prevention, control and eradication programmes for selected diseases and has the expertise to assess their disease control efforts on a scientific basis.

The GVS was able to achieve OIE recognition for rinderpest disease free country status in 2008.

Weaknesses:

CAHWs are not sustainably supported.

The private sector has not been given sanitary mandates.

Recommendations:

A fundamental review is needed of the delivery of veterinary services in the Sudan to develop innovative, effective and sustainable practices.

A dialogue should be initiated to develop consensus within the profession concerning the incorporation of private / public / community partnership approaches as a fundamental component of any new approach.

II-8 Veterinary public health and food safety *The authority and capability of the VS to implement, manage and coordinate veterinary public health measures, including programmes for the prevention of specific food-borne zoonoses and general food safety programmes.*	**Levels of advancement**
	1. Management, implementation and coordination are generally not undertaken in conformity with international standards.
	2. Management, implementation and coordination are generally undertaken in conformity with international standards only for export purpose.
	3. Management, implementation and coordination are generally undertaken in conformity with international standards only for export purpose and for products that are distributed throughout the national market.
	4. Management, implementation and coordination are generally undertaken in conformity with international standards for export purpose and for products that are distributed throughout the national and local markets.
	5. Management, implementation and coordination are undertaken in full conformity with international standards for products at all levels of distribution (throughout the national and local markets, and direct sales).

[Note: This critical competency primarily refers to inspection of unprocessed animal products (e.g. meat, milk and honey). It may in some countries be undertaken by an agency other than the VS.]

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1-5 of Article 3.2.9. on Veterinary public health controls: Food hygiene / Zoonoses / Chemical residue testing programmes / Veterinary medicines/ Integration between animal health controls and veterinary public health.
Points 2, 6 and 7 of Article 3.2.14. on National information on human resources / Functional capabilities and legislative support / Animal health and veterinary public health controls.
Chapter 6.2. on Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection

Findings:

The GVS has the authority, as required by OIE standards, to manage meat inspection activities. At all main Abattoirs, slaughter houses and slabs there are GVS staff who undertake carcase and visceral examination in accordance with approved procedures.

The responsibility for this activity falls under the Director of Zoonotic Disease and Public Health, a department within FMAR&F.

The slaughter facility visited at Kosti, White Nile State was open air, well maintained and provided with holding pens, slaughter gantries and drainage. However the design was below acceptable animal welfare standards in that animals need to be physically handled from the collecting pens to the slaughter slab where they are killed in full view of other animals.

Strengths:

All meat inspection is carried out by GVS staff although it is working under relatively poor infrastructure and limited legislative measures.

Weaknesses:

The GVS does not have the authority to inspect for food safety.

Animal welfare at urban slaughter facilities does not meet international standards

Recommendations:

Develop national zoonotic disease surveillance programmes and provide the resources

needed to control those diseases shown to be posing a significant risk to public health and the export market.

Review the adequacy of current measures to protect food safety and bring those elements as deemed appropriate under the function and responsibility of the GVS.

Bring animal welfare practice at urban slaughter facilities up to international standards

II-9 Veterinary medicines and veterinary biologicals *The authority and capability of the VS to regulate veterinary medicines and veterinary biologicals.*	Levels of advancement
	1. The VS cannot regulate the usage of veterinary medicines and veterinary biologicals.
	2. The VS has only limited capability to exercise administrative control (including registration) over the usage, including import and production, of veterinary medicines and veterinary biologicals.
	3. The VS exercise quality control (technical standards) over the import, production and distribution of veterinary medicines and veterinary biologicals.
	4. The VS exercise complete control over registration, sale and usage of veterinary medicines and veterinary biologicals.
	5. The VS implement systems to monitor the use of veterinary medicines, veterinary biologicals and their side effects (pharmacovigilance).

Terrestrial Code References (s):

Point 8 of Article 3.1.2. on Fundamental principles of quality: Procedures and standards.
Points 3 and 4 of Article 3.2.9. on Veterinary public health controls: Chemical residue testing programmes / Veterinary medicines.
Sub-point a) ii) of Point 6 of Article 3.2.14. on Animal health and veterinary public health: "Assessment of ability of Veterinary Services to enforce legislation".
Chapters 6.5. to 6.8. on Antimicrobial resistance.

Findings:

All veterinary drugs are imported as there is no local manufacturer.

Veterinary Medicines and biologicals are regulated by SSMO, PPB and ARRC. There is no formal mechanism to coordinate the work of these three bodies although we observed that there was good working relationships between them. This was largely due to the fact that all the senior staff in the 3 institutions are veterinarians.

Veterinary Medicines and biologicals are registered by the PPB in consultation with the SSMO and ARRC – using their facilities to undertake specific assays and quality assurance as necessary.

Despite an apparently water-tight procedure for the regulation of veterinary medicines and biologicals there are reportedly malpractices occurring with counterfeiting and the retailing of substandard products at a lower price than recognised brands.

The ARRC is the sole manufacturer of the locally produced veterinary vaccines used in the Sudan. RVF vaccine is imported from Onderstepoort, SA.

Distribution outlets and sales points for veterinary medicines are in the private sector.

Strengths:

All veterinary medicine and biologicals are imported under permit.

Weaknesses:

There are reportedly imports of cheap counterfeit drugs bypassing the regulatory authorities.

Recommendations:

Review and improve where necessary procedures for the detection and removal of cheap counterfeit veterinary products from the market.

II-10 Residue testing	Levels of advancement
The capability of the VS to undertake residue testing programmes for veterinary medicines (e.g. antimicrobials and hormones), chemicals, pesticides, radionuclides, metals, etc.	1. No residue testing programme for animal products exists in the country.
	2. Some residue testing programme is performed but only for selected animal products for export.
	3. A comprehensive residue testing programme is performed for all animal products for export and some for domestic use.
	4. A comprehensive residue testing programme is performed for all animal products for export and/or internal consumption.
	5. The residue testing programme is subject to routine quality assurance and regular evaluation.

[Note: This critical competency may in some countries be undertaken by an agency or agencies other than the VS.]

Terrestrial Code References (s):

Points 3 and 4 of Article 3.2.9. on Veterinary public health controls: Chemical residue testing programmes / Veterinary medicines.
Sub-points b) iii) and iv) of Point 7 of Article 3.2.14. on Veterinary public health: Chemical residue testing programmes / Veterinary medicines.
Chapters 6.5. to 6.8. on Antimicrobial resistance.

Findings:

Residue testing as required is undertaken by the SSMO

Strengths:

Facility to undertake residue testing are available and accessible in the country.

Weaknesses: Nil

Recommendations: Nil

II-11Emerging issues *The authority and capability of the VS to identify in advance, and take appropriate action in response to likely emerging issues under their mandate relating to the sanitary status of the country, public health, the environment, or trade in animals and animal products.*	**Levels of advancement**
	1. The VS do not have procedures to identify in advance likely emerging issues.
	2. The VS monitor and review developments at national and international levels relating to emerging issues.
	3. The VS assess the risks, costs and/or opportunities of the identified emerging issues, including preparation of appropriate national preparedness plans. The VS have some collaboration with stakeholders and other agencies (e.g. human health, wildlife, animal welfare and environment) on emerging issues.
	4. The VS implement, in coordination with stakeholders, prevention or control actions due to an adverse emerging issue, or beneficial actions from a positive emerging issue. The VS have well-developed formal collaboration with stakeholders and other agencies (e.g. human health, wildlife, animal welfare and environment) on emerging issues.
	5. The VS coordinate actions with neighbouring countries and trading partners to respond to emerging issues, including audits of each other's ability to detect and address emerging issues in their early stages.

Terrestrial Code References (s):
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General Organisation / Procedures and standards.
Point 1 of Article 3.2.7. on Functional capabilities and legislative support: Animal health and veterinary public health.

Findings:

The GVS regularly participates in OIE activities and has taken part in activities of other regional groups that deal with emerging animal health issues.

Individual veterinarians participate in international meetings related to emerging diseases and environmental issues.

Strengths:

There is strong institutional awareness within the GVS management of the need to identify in advance, and take appropriate action in response to likely emerging issues under their mandate.

GVS participates in OIE and regional meetings.

Weaknesses:

Although there are early warning systems accessible for disease outbreaks, lack of resources may sometimes prevent the VS from implementing emergency plans..

Recommendations:

Put in place the plans to establish an early warning unit for epidemic and emerging diseases and ensure availability of adequate resources at all times to enable effective response to outbreaks of designated diseases

II-12Technical innovation *The capability of the VS to keep up-to-date with the latest scientific advances and to comply with the standards of the OIE (Codex Alimentarius Commission where applicable).*	**Levels of advancement**
	1. The VS have only informal access to technical innovations, through personal contacts and external sources.
	2. The VS maintain a database of technical innovations and international standards, through subscriptions to scientific journals and electronic media.
	3. The VS have a specific programme to actively identify relevant technical innovations and international standards.
	4. The VS incorporate technical innovations and international standards into selected policies and procedures, in collaboration with stakeholders.
	5. The VS systematically implement relevant technical innovations and international standards.

Terrestrial Code References (s):

Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General Organisation / Procedures and standards.
Point 3 of Article 3.2.8. on Animal health controls: National animal disease reporting systems.
Sub-point f) of Point 4 of Article 3.2.10. on Veterinary Services administration: Formal linkages with sources of independent scientific expertise.
Points 6 and 7 of Article 3.2.14. on Functional capabilities and legislative support / Animal health and veterinary public health controls.

Findings:

Many staff members within the GVS benefit from the establishment of good electronic communications and there are plans to further extend such resources. GVS staff have attended a variety of sponsored training and appear eager to learn new skills.

The GVS has access to free publications and scientific updates from the international organizations in which they participate. This could serve as the basis for further development of electronic access and resources for on-line CPD.

There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

There are working formal and informal coordination procedures between the FMAR&F and agencies such as the ARRC, SSMO and other academic and research institutes which are often facilitated through the work of the SVC and SVMA.

Strengths:

Plans to develop good electronic communications.

There are working formal and informal coordination procedures between the FMAR&F and agencies such as the ARRC, SSMO and other academic and research institutes which are often facilitated through the work of the SVC and SVMA.

Weaknesses:

There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

Recommendations:

It should be highly recommend that emphasis be placed on the development of computer and electronic media with access supported for all levels of professional and technical staff.

III.3 FUNDAMENTAL COMPONENT III: INTERACTION WITH STAKEHOLDERS

This component of the evaluation appraises the capability of the VS to collaborate with and involve stakeholders in the implementation of programmes and activities. It comprises six critical competencies.

Critical competencies:

Section III-1	**Communications**
Section III-2	**Consultation with stakeholders**
Section III-3	**Official representation**
Section III-4	**Accreditation / Authorisation / Delegation**
Section III-5	**Veterinary Statutory Body**
Section III-6	**Participation of producers and other stakeholders in joint programmes**

Terrestrial Code References:

Points 6, 8 and 12 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards / Communication.
Point 9 of Article 3.2.1. on General considerations.
Points 2 and 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Sub-point b) of Point 2 of Article 3.2.6. on Administrative resources: Communications.
Article 3.2.11. on Participation on OIE activities.
Article 3.2.12. on Evaluation of the veterinary statutory body.
Points 4, 7 and Sub-Point g) of Point 9 of Article 3.2.14. on Administrative details / Animal health and veterinary public health controls / Sources of independent scientific expertise.

III-1 Communications *The capability of the VS to keep stakeholders informed, in a transparent, effective and timely manner, of VS activities and programmes, and of developments in animal health and food safety.*	Levels of advancement
	1. The VS have no mechanism in place to inform stakeholders of VS activities and programmes.
	2. The VS have informal communication mechanisms.
	3. The VS maintain an official contact point for communications but it is not always up-to-date in providing information.
	4. The VS contact point for communications provides up-to-date information, accessible via the internet and other appropriate channels, on activities and programmes.
	5. The VS have a well developed communication plan, and actively and regularly circulate information to stakeholders.

Terrestrial Code References (s):
Point 12 of Article 3.1.2. on Fundamental principles of quality: Communication.
Sub-point b) of Point 2 of Article 3.2.6. on Administrative resources: Communications.
Point 4 of Article 3.2.14. on Administrative details.

Findings:

The FMAR&F has a Directorate of Extension which is based at the Ministry HQ and is equipped to formulate and extend messages to all stakeholders throughout the country. There is a regular radio programme produced by the extension department where information concerning GVS activities and disease alerts can be broadcast.

An important means of two-way communication with the livestock keepers is provided by the VA/CAHW network.

The Sudan Veterinary Medical Association [SVMA] produces a Journal, The Sudan Journal of Veterinary Science and Animal Husbandry, the first edition of which was produced in 1960. The SVMA also produces proceedings of its conferences which are held once every year.

There is a Poultry Chamber of Commerce that is very active and has representative on the National HPAI steering committee. There is a Pastoralist Union, which has a strong lobby with Government having a representative in Parliament. The Union has its HQ in Khartoum and branches in all the important livestock keeping states. The union undertakes, on behalf of the GVS, awareness campaigns for vaccination programmes.

The GVS is not facilitating its staff to exploit the full potential that present day desk top and mobile communications offer, particularly for electronic text and data transfer as well as web browsing. The latter offers veterinary staff the opportunity to undertake their own tailored CPD in their own time and pace.

There is a proposal to install internet connections in each State Veterinary Office, with 9 out of 16 offices currently connected. The use of internet connections can significantly improve communications between central and State levels and between North and Southern Sudan. The GVS does not as yet operate a web site though there is one operated by FMAR&F [www.marf.gov.sd] and also by the MoST [www.most.gov.sd]. One country, Tanzania, has a web site which provides a range of valuable information concerning the functions of its VS at www.mifugo.go.tz. This may be viewed as a model for the GVS.

Strengths:

The GVS Extensions Department has produced leaflets, newsletters, flip charts, posters and radio programmes of excellent quality.

An important means of two-way communication with the livestock keepers is provided by the VA/CAHW network.

The Sudan Journal of Veterinary Science and Animal Husbandry provides updated scientific information for the Veterinary Profession of Sudan, stakeholders in the region and internationally.

Weaknesses / Gaps:

The GVS is not facilitating its staff to exploit the full potential that present day desk top and mobile communications offer.

There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

Recommended priorities for action:

Develop strategies that exploit the full potential of present day desk top and mobile Information Technology to enhance VS staff knowledge and skills.

The website operated by FMAR&F (www.marf.gov.sd) needs further support and technical input to communicate animal health status of the Sudan and avail information concerning activities, reports and regulations in livestock sector.

III-2 Consultation with stakeholders *The capability of the VS to consult effectively with stakeholders on VS activities and programmes, and on developments in animal health and food safety.*	Levels of advancement
	1. The VS have no mechanisms for consultation with stakeholders.
	2. The VS maintain informal channels of consultation with stakeholders.
	3. The VS maintain a formal consultation mechanism with stakeholders.
	4. The VS regularly hold workshops and meetings with stakeholders.
	5. The VS actively consult with and solicit feedback from stakeholders regarding proposed and current activities and programmes, developments in animal health and food safety, interventions at the OIE (Codex Alimentarius Commission and WTO SPS Committee where applicable), and ways to improve their activities.

Terrestrial Code References (s):
Point 12 of Article 3.1.2. on Fundamental principles of quality: Communication.
Point 2 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Point 4 and Sub-Point g) of Point 9 of Article 3.2.14. on Administrative details and on Sources of independent scientific expertise

Findings:

There is no nationally constituted or operative livestock forum, representative of all stakeholders, where issues of concern to the sector as a whole can be discussed and a consensus arrived at regarding direction, priorities or policy frameworks.

The Annual Sudan Veterinary Medical Association Congress, which is open to VS personnel and invited stakeholders, provides a good opportunity for debate and dialogue on matters concerning the livestock sector as a whole.

There have been consultations with neighbouring countries concerning trans-boundary disease control and harmonisation of policies and practices. These interactions fall under the umbrella of AU-IBAR.

Strengths:

An active SVMA ensuring views of the VS personnel are aired and advocated for.

An annual SVMA congress that offers stakeholders an opportunity to receive updated information on GVS activity and to raise their own matters of concern.

Weaknesses / Gaps:

No nationally constituted or operative livestock forum, representative of all stakeholders in the livestock sector.

Recommended priorities for action:

Government support should be sought to enable the formation of regular meetings and broad ranging consultative agenda of a “National Livestock Development Board”, representative of all stakeholders in the livestock sector.

State Livestock Development Boards to be formed with one member represented on the National Board.

III-3 Official representation	Levels of advancement
The capability of the VS to regularly and actively participate in, coordinate and provide follow up on relevant meetings of regional and international organisations including the OIE (and Codex Alimentarius Commission and WTO SPS Committee where applicable).	1. The VS do not participate in or follow up on relevant meetings of regional or international organisations.
	2. The VS sporadically participate in relevant meetings and/or make a limited contribution.
	3. The VS actively participate[6] in the majority of relevant meetings.
	4. The VS consult with stakeholders and take into consideration their opinions in providing papers and making interventions in relevant meetings.
	5. The VS consult with stakeholders to ensure that strategic issues are identified, to provide leadership and to ensure coordination among national delegations as part of their participation in relevant meetings.

Terrestrial Code References (s):
Article 3.2.11. on Participation on OIE activities.
Point 4 of Article 3.2.14. on Administrative details.

Findings:

The Undersecretary, accompanied by a GVS delegation, regularly participates at the OIE General Session and in OIE Regional Commission meetings, and participates in relevant Regional meetings and committees.

There is no circulation of draft OIE standards for stakeholder comment, or of newly adopted standards.

Strengths:

The VSD regularly participates in OIE meetings.

Weaknesses Gaps:

No circulation of draft OIE standards for stakeholder comment, or of newly adopted standards.

Recommended priorities for action:

Circulation of draft OIE standards or of newly adopted standards for stakeholder comment.

[6] *Active participation* refers to preparation in advance of, and contributing during the meetings in question, including exploring common solutions and generating proposals and compromises for possible adoption.

	Levels of advancement	
III-4 Accreditation / authorisation / delegation *The authority and capability of the public sector of the VS to accredit / authorise / delegate the private sector (e.g. private veterinarians and laboratories), to carry out official tasks on its behalf.*	1.	The public sector of the VS has neither the authority nor the capability to accredit / authorise / delegate the private sector to carry out official tasks.
	2.	The public sector of the VS has the authority and capability to accredit / authorise / delegate to the private sector, but there are no current accreditation / authorisation / delegation activities.
	3.	The public sector of the VS develops accreditation / authorisation / delegation programmes for certain tasks, but these are not routinely reviewed.
	4.	The public sector of the VS develops and implements ac creditation / authorisation / delegation programmes, and these are routinely reviewed.
	5.	The public sector of the VS carries out audits of its accreditation / authorisation / delegation programmes, in order to maintain the trust of their trading partners and stakeholders.

Terrestrial Code References (s):
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Point 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.

Findings:

There are no public veterinary activities such as disease surveillance programmes or vaccination campaigns contracted out by the GVS to private veterinary service providers. By law vaccination of animals can only be performed by the GVS.

The GVS has delegated the sale of veterinary medicines to the private sector and it is this activity that employs the majority of private veterinarians in Sudan.

There is only one private veterinarian operating in S Sudan.

Weaknesses / Gaps:

Absence of any form of sanitary mandate for private veterinarians to operate in rural livestock owning areas.

Recommended priorities for action:

Undertake wide ranging consultation within the profession to review current VS delivery practice with view to adopting new approaches including private / public / community partnerships.

Review the relationship of the private veterinary sector with the GVS and ways and means explored to minimise duplication of effort and maximise opportunities for income earning activity.

Implement pilot VS delivery programmes at Locality Level to test out new approaches including private / public / community partnerships.

III-5 Veterinary Statutory Body *The Veterinary Statutory Body (VSB) is an autonomous authority responsible for the regulation of the veterinarians and veterinary para-professionals. Its role is defined in the Terrestrial Code.*	Levels of advancement	
	1.	There is no legislation establishing a *VSB*.
	2.	There is a *VSB*, but it does not have legislated authority to make decisions nor to apply disciplinary measures.
	3.	The *VSB* regulates *veterinarians* and *veterinary para-professionals* only within certain sectors of the VS (e.g. public sector but not private sector veterinarians).
	4.	The *VSB* regulates *veterinarians* and *veterinary para-professionals* throughout the VS.
	5.	The *VSB* is subject to evaluation procedures in respect of autonomy, functional capacity and membership representation.

Terrestrial Code References (s):
Point 9 of Article 3.2.1. on General considerations.
Article 3.2.12. on Evaluation of the veterinary statutory body.

Findings:

The Sudan Veterinary Council [SVC] was established in 1949 and is the oldest council of professionals in Sudan

The SVC operates under the legislative framework of the "Veterinary Council Act" enacted in 1954 and amended in 1995 and 2004.

The SVC reports to the Council of Ministers from where they receive their funding. They are regularly consulted by the Council of Ministers on matters of policy concerning the veterinary profession in Sudan.

The SVC does not at present have an adequate office space although there are plans to build a new purpose built facility. The quality and capability of the SVC leadership to deliver meaningful initiatives and policy is critical if it is to have a positive impact in improving conditions for veterinarians in Sudan.

The SVC has the mandate to promote and regulate CPD programmes undertaken by veterinarians in Sudan.

Regulations have been prepared but not published for para-professionals and CAHWs.

Strengths:

The SVC operates under a clear and generally adequate legislation as provided by the Veterinary Surgeons Law, 1954 updated 1995 and 2004 and reports directly to the Council of Ministers.

The SVC has the potential to play an extremely important role in influencing the development of the VS in Sudan and in this context they are regularly consulted by the GVS

Weaknesses / Gaps:

The SVC does not at present have adequate office space

There are no published regulations for veterinary para-professionals and CAHWs

Recommended priorities for action:

The SVC needs new, more effective advocacy raising the profile of the Veterinary Profession in Sudan - emphasising the contribution it could be making in increasing livestock sector contribution to GDP.

The SVC should consider developing partnerships and linkages with leading international veterinary councils in the world. This will help to exchange experiences and mutual benefits with these councils.

Regulations need to be published for the Veterinary Para-professionals and CAHWs.

The SVC should be the recognised focal point for CPD development.

Plans to build new office premises should be brought forward.

	Levels of advancement
III-6 Participation of producers and other stakeholders in joint programmes *The capability of the VS and stakeholders to formulate and implement joint programmes in regard to animal health and food safety.*	1. Producers and other stakeholders only comply and do not actively participate in programmes.
	2. Producers and other stakeholders are informed of programmes and assist the VS to deliver the programme in the field.
	3. Producers and other stakeholders are trained to participate in programmes and advise of needed improvements, and participate in early detection of diseases.
	4. Representatives of producers and other stakeholders negotiate with the VS on the organisation and delivery of programmes.
	5. Producers and other stakeholders are formally organised to participate in developing programmes in close collaboration with the VS.

Terrestrial Code References (s):
Point 12 of Article 3.1.2. on Fundamental principles of quality: Communication.
Points 2 and 7 of Article 3.2.3. on Evaluation criteria for the organisational structure of the Veterinary Services.
Point 7 of Article 3.2.14. on Animal health and veterinary public health controls.

Findings:

There are joint programmes implemented with stakeholders mediated largely through projects and NGOs.

Stakeholders do comply with the annual mass vaccination campaigns as evidenced by reported vaccination figures. Equally it is evident that stakeholders comply with sample-taking for animal disease surveillance purposes whenever such activities are undertaken at regional or district level.

Strengths:

Joint programmes implemented with stakeholders mediated largely through projects and NGOs.

Weaknesses:

No evidence of joint programmes between the GVS with stakeholders was presented.

Recommended priorities for action:

Encourage and facilitate participation of producers and other stakeholders in joint programmes whenever possible.

III.4 FUNDAMENTAL COMPONENT IV: ACCESS TO MARKETS

This component of the evaluation appraises the authority and capability of the VS to provide support in order to access, expand and retain regional and international markets for animals and animal products. It comprises nine critical competencies.

Critical competencies:

Section IV-1	**Preparation of legislation and regulations, and implementation of regulations**
Section IV-2	**Stakeholder compliance with legislation and regulations**
Section IV-3	**International harmonisation**
Section IV-4	**International certification**
Section IV-5	**Equivalence and other types of sanitary agreements**
Section IV-6	**Traceability**
Section IV-7	**Transparency**
Section IV-8	**Zoning**
Section IV-9	**Compartmentalisation**

Terrestrial Code References:

Chapter 5.1. on General obligations related to certification.
Chapter 5.2. on Certification procedures.
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Chapter 4.3. on Zoning and compartmentalisation.
Chapter 5.3. on OIE procedures relevant to the Sanitary and Phytosanitary Agreement of the World Trade Organization.
Points 1 and 2 of Article 3.2.7. on Functional capabilities and legislative support: Animal health and veterinary public health / Export/import inspection.
Points 1 and 3 of Article 3.2.8. on Animal health controls: Animal health status / National animal disease reporting systems.
Sub-point g) of Point 4 of Article 3.2.10. on Veterinary Services administration: Trade performance history.
Article 3.2.11. on Participation in OIE activities.
Points 6 and 10 of Article 3.2.14. on Functional capabilities and legislative support / Membership of the OIE.
Chapter 4.1. on Identification and traceability of live animals: General principles.
Chapters 5.10. to 5.12. on Model international veterinary certificates for international trade in live animals, hatching eggs and products of animal origin.

IV-1 Preparation of legislation and regulations, and implementation of regulations *The authority and capability of the VS to actively participate in the preparation of national legislation and regulations, and to implement animal health and food safety regulations for animals, animal products and processes under their mandate.*	Levels of advancement
	1. The VS have neither the authority nor the capability to participate in the preparation of national legislation and regulations, and implement resultant regulations.
	2. The VS have the authority and the capability to participate in the preparation of national legislation and regulations, but cannot implement resultant regulations nationally.
	3. The VS have the authority and the capability to participate in the preparation of national legislation and regulations, and to implement resultant regulations nationally.
	4. The VS consult their stakeholders in participating in the preparation of national legislation and regulations, and in implementing regulations to meet national needs.
	5. The VS consult their stakeholders in implementing regulations to meet international trade needs.

Terrestrial Code References (s):
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1 and 2 of Article 3.2.7. on Functional capabilities and legislative support: Animal health and veterinary public health / Export/import inspection.
Point 6 of Article 3.2.14. on Functional capabilities and legislative support.

Findings:

The FMRA&F, in cooperation with other agencies in the government of Sudan, has the authority and capability to actively participate in the preparation of national legislation and regulations.

Strengths:

The FMRA&F has the authority and capability to actively participate in the preparation of national legislation and regulations.

Weaknesses / Gaps:

Some acts require revision and updating.

Recommended priorities for action:

Review all acts and regulations and update where necessary publishing them in both Arabic and English.

	Levels of advancement
IV-2 Stakeholder compliance with legislation and regulations *The authority and capability of the VS to ensure that stakeholders are in compliance with animal health and food safety regulations under the VS mandate.*	1. The VS have no programme to ensure stakeholder compliance with relevant regulations.
	2. The VS implement a programme consisting of inspection and verification of compliance with regulations relating to animals and animal products, report instances of non-compliance, but generally do not take further action.
	3. If necessary, the VS impose appropriate penalties in instances of non-compliance.
	4. The VS work with stakeholders to minimise instances of non-compliance.
	5. The VS carry out audits of their compliance programme.

Terrestrial Code References (s):
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Points 1 and 2 of Article 3.2.7. on Functional capabilities and legislative support: Animal health and veterinary public health / Export/import inspection.
Point 6 of Article 3.2.14. on Functional capabilities and legislative support.

Findings:

Regulations that relate to animal health and food safety include: Pharmaceuticals and Poisons Act (2001); Animal Diseases Act (1902; updated 2001); Veterinary Health Quarantine for Export and Import of Livestock and Meat Act (1913; updated 2004); Meat Inspection and Hygiene Act (1974); Animal Production Act (1998) (proposal); Diseases Free Zone Act (1973; updated 1993); Livestock Route and Veterinary Control Stations Act (1974; updated 1993); Veterinary Council Act (1954; updated 1995); Veterinary Supplies General Corporation Act (1998); and Skin and Hide Act(1954; updated in 1997).

There are few technical staff at the critical livestock keeper / CAHW interface.

Strengths:

A broad ranging legal framework and a large professional body capable of ensuring stakeholder compliance with legislation and regulations.

Weaknesses / Gaps:

Lack of technical staff at the critical livestock keeper / CAHW interface

Recommended priorities for action:

Train and recruit more technical staff to occupy key supervisory positions.

An assessment should be undertaken of the implementation of and compliance with existing regulations and address any weaknesses identified.

IV-3 International harmonisation *The authority and capability of the VS to be active in the international harmonisation of regulations and sanitary measures and to ensure that the national legislation and regulations under their mandate take account of relevant international standards, as appropriate.*	Levels of advancement
	1. National legislation, regulations and *sanitary measures* under the mandate of the VS do not take account of international standards.
	2. The VS are aware of gaps, inconsistencies or non-conformities in national legislation, regulations and *sanitary measures* as compared to international standards, but do not have the capability or authority to rectify the problems.
	3. The VS monitor the establishment of new and revised international standards, and periodically review national legislation, regulations and *sanitary measures* with the aim of harmonising them, as appropriate, with international standards, but do not actively comment on the draft standards of relevant intergovernmental organisations.
	4. The VS are active in reviewing and commenting on the draft standards of relevant intergovernmental organisations.
	5. The VS actively and regularly participate at the international level in the formulation, negotiation and adoption of international standards, and use the standards to harmonise national legislation, regulations and *sanitary measures*.

Terrestrial Code References (s):
Article 3.2.11. on Participation in OIE activities.
Points 6 and 10 of Article 3.2.14. on Functional capabilities and legislative support and on Membership of the OIE.

Findings:

The GVS has the authority and capability to be active in the international harmonisation of regulations and sanitary measures and to ensure that the national legislation and regulations under their mandate take account of relevant international standards, as appropriate.

The GVS does monitor the establishment of new and revised international standards and participate in OIE processes.

The valuable livestock export market to the Gulf States and Middle East makes it critically important that the GVS ensures that the sanitary measures adopted take account of relevant international standards and are seen to be applied in a professional and transparent manner.

Strengths:

The GVS has the authority and capability to be active in the international harmonisation of regulations and sanitary measures.

Weaknesses / Gaps: Nil

Recommended priorities for action:

To protect valuable livestock export markets the GVS should ensure that the sanitary measures adopted continue to take account of relevant international standards and are seen to be applied in a professional and transparent manner.

IV-4 International certification *The authority and capability of the VS to certify animals, animal products, services and processes under their mandate, in accordance with the national legislation and regulations, and international standards.*	Levels of advancement
	1. The VS have neither the authority nor the capability to certify animals, animal products, services or processes.
	2. The VS have the authority to certify certain animals, animal products, services and processes, but are not always in compliance with the national legislation and regulations and international standards.
	3. The VS develop and carry out certification programmes for certain animals, animal products, services and processes under their mandate in compliance with international standards.
	4. The VS develop and carry out all relevant certification programmes for any animals, animal products, services and processes under their mandate in compliance with international standards.
	5. The VS carry out audits of their certification programmes, in order to maintain national and international confidence in their system.

Terrestrial Code References (s):

Chapter 5.2. on Certification procedures.
Points 6 and 8 of Article 3.1.2. on Fundamental principles of quality: General organisation / Procedures and standards.
Point 2 of Article 3.2.7. on Functional capabilities and legislative support: Export/import inspection.
Sub-point b) of Point 6 of Article 3.2.14. on Functional capabilities and legislative support: Export/import inspection.
Chapters 5.10. to 5.12. on Model international veterinary certificates for international trade in live animals, hatching eggs and products of animal origin.

Findings:

The GVS exerts a high level of authority and capability for the purposes of certifying animals and animal products for export. The principal market is the Gulf States and the Sudan must be very responsive to the animal health requirements of the importing countries in order to retain market share. There is considerable competition from other countries and failure to comply can result in a serious loss in export business.

Strengths:

The GVS exerts a high level of authority and capability for the purposes of certifying animals and animal products for export.

Weaknesses / Gaps:

Lack of animal identification system and national livestock database

Recommended priorities for action:

Put in place an animal identification system and national livestock database.

IV-5 Equivalence and other types of sanitary agreements *The authority and capability of the VS to negotiate, implement and maintain equivalence and other types of sanitary agreements with trading partners.*	Levels of advancement
	1. The VS have neither the authority nor the capability to negotiate or approve equivalence or other types of sanitary agreements with other countries.
	2. The VS have the authority to negotiate and approve equivalence and other types of sanitary agreements with trading partners, but no such agreements have been implemented.
	3. The VS have implemented equivalence and other types of sanitary agreements with trading partners on selected animals, animal products and processes.
	4. The VS actively pursue the development, implementation and maintenance of equivalence and other types of sanitary agreements with trading partners on all matters relevant to animals, animal products and processes under their mandate.
	5. The VS actively work with stakeholders and take account of developments in international standards, in pursuing equivalence and other types of sanitary agreements with trading partners.

Terrestrial Code References (s):

Point 6 of Article 3.1.2. on Fundamental principles of quality: General organisation.
Sub-point g) of Point 4 of Article 3.2.10. on Veterinary Services administration: Trade performance history.
Chapter 5.3. on OIE procedures relevant to the Sanitary and Phytosanitary Agreement of the World Trade Organization..

Findings:

The broad legislative framework is in place to support this function and the veterinary services take note of international standards when establishing standards for export and import of livestock and livestock products.

Strengths:

The broad legislative framework is in place to support this function.

Weaknesses / Gaps: Nil

Recommended priorities for action: Nil

IV-6 Traceability *The authority and capability of the VS to identify animals and animal products under their mandate and trace their history, location and distribution.*	Levels of advancement
	1. The VS do not have the capability to identify animals or animal products.
	2. The VS can document the history of some animals and animal products.
	3. The VS have procedures in place to identify and trace selected animals and animal products as required for disease control and food safety purposes, in accordance with relevant international standards.
	4. The VS and their stakeholders have coordinated national procedures in place that can identify and trace animals and animal products as required for disease control and food safety purposes.
	5. The VS, in cooperation with their stakeholders, carry out audits of their traceability procedures.

Terrestrial Code References (s):
Chapter 4.1. on Identification and traceability of live animals: General principles.

Findings:

There are no national traceability or animal identification programme in place and no available database capacity to support such a programme. Animal movement certificates are required for animals going to slaughter or export but are issued without identification of the individual animals. Animals frequently change hands many times as they travel to slaughter and their origin and identity can be lost in this process.

At the point of export animals are ear tagged to show that they have been vaccinated.

Strengths: Nil

Weaknesses / Gaps:

No livestock identification system

Recommended priorities for action:

Put in place a livestock identification system linked to a national data base.

A study tour to other livestock exporting countries in Africa to observe the livestock identification system and other controls on the export of livestock and livestock products.

IV-7 Transparency *The authority and capability of the VS to notify the OIE of their sanitary status and other relevant matters (and to notify the WTO SPS Committee where applicable), in accordance with established procedures.*	Levels of advancement
	1. The VS do not notify.
	2. The VS occasionally notify.
	3. The VS notify in compliance with the procedures established by these organisations.
	4. The VS regularly inform stakeholders of changes in their regulations and decisions on the control of relevant diseases and of the country's sanitary status, and of changes in the regulations and sanitary status of other countries.
	5. The VS, in cooperation with their stakeholders, carry out audits of their transparency procedures.

Terrestrial Code References (s):

Chapter 5.1. on General obligations related to certification.

Points 1 and 3 of Article 3.2.8. on Animal health controls: Animal health status / National animal disease reporting

Findings:

The GVS recognises the importance of being transparent in matters relating to the sanitary status of the national herd and takes all steps possible to inform OIE and trading partners of any detected disease outbreak.

GVS reports to the OIE were examined and showed that annual and semi annual reports have been regularly filed. In 2006, the GVS reported the first case of HPAI, which they reported in a timely manner and provided extensive follow-up reports until the outbreak was resolved.

There were human cases of RVF detected in 2007 but no animal case was detected or reported.

Strengths:

The GVS submits regular reports to the OIE that can be seen on the OIE available WAHID.

Weaknesses / Gaps:

The apparent failure of surveillance systems to detect animal cases of RVF.

Recommended priorities for action:

Review existing passive surveillance systems and address weaknesses and / or implement new systems that consistently provide the GVS with accurate field disease information.

IV-8 Zoning *The authority and capability of the VS to establish and maintain disease free zones, as necessary and in accordance with the criteria established by the OIE (and by the WTO SPS Agreement where applicable).*	Levels of advancement	
	1.	The VS cannot establish disease free zones.
	2.	As necessary, the VS can identify animal sub-populations with distinct health status suitable for zoning.
	3.	The VS have implemented biosecurity measures that enable it to establish and maintain disease free zones for selected animals and animal products, as necessary.
	4.	The VS collaborate with their stakeholders to define responsibilities and execute actions that enable it to establish and maintain disease free zones for selected animals and animal products, as necessary.
	5.	The VS can demonstrate the scientific basis for any disease free zones and can gain recognition by trading partners that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).

Terrestrial Code References (s):
Chapter 4.3. on Zoning and compartmentalisation.

Findings:

Zoning was applied during the course of the Rinderpest eradication programme.

Disease free zones for export have been created.

Strengths:

Ability to create zones for disease control and export purposes.

Weaknesses / Gaps: Nil

Recommended priorities for action: Nil

IV-9 **Compartmentalisation** *The authority and capability of the VS to establish and maintain disease free compartments as necessary and in accordance with the criteria established by the OIE (and by the WTO SPS Agreement where applicable).*	**Levels of advancement**
	1. The VS cannot establish disease free *compartments*.
	2. As necessary, the VS can identify animal sub-populations with a distinct health status suitable for compartmentalisation.
	3. The VS have implemented biosecurity measures that enable it to establish and maintain disease free *compartments* for selected animals and animal products, as necessary.
	4. The VS collaborate with their stakeholders to define responsibilities and execute actions that enable it to establish and maintain disease free *compartments* for selected animals and animal products, as necessary.
	5. The VS can demonstrate the scientific basis for any disease free *compartments* and can gain recognition by other countries that they meet the criteria established by the OIE (and by the WTO SPS Agreement where applicable).

Terrestrial Code References (s):

Chapter 4.3. on Zoning and compartmentalisation.

Findings:

Compartmentalisation not applied at this stage

PART IV: SUMMARY OF KEY RESULTS AND CONCLUSIONS

I. HUMAN, PHYSICAL AND FINANCIAL RESOURCES

I-1.A Professional Staffing of the VSD

***Strengths*:** A large well qualified body of veterinary professionals.
Weaknesses: Top heavy distribution of veterinary professional staff
Recommended priorities for action: Review Veterinary Service delivery system, inclusive of staff distribution, linkages and community based systems, in order to develop a more efficient, sustainable and functional system.

I-1.B. Veterinary para-professional and other technical personnel staffing

Strengths: A large number of trained CAHWs.
Weaknesses/ Gaps: Few Veterinary Assistants and many non-performing CAHWs
Recommended priorities for action: Train more Veterinary Assistants. Address how to make the delivery of veterinary services financially attractive for field staff.

I-2. A. Professional competencies of Veterinarians

Strengths: A full complement of properly qualified professional veterinarians. A large livestock population that has the potential to be developed into a sustainable and renewable commodity creating an industry capable of absorbing many veterinarians. A large number of veterinary faculties.
Weaknesses/Gaps: Insufficient employment opportunities for the number of veterinary graduates being produced. No external accreditation of the academic audit procedures undertaken by the Veterinary Council.
Recommended priorities for action: Exploit the full potential of Sudan's livestock industry and support a well qualified and specialised cadre of veterinary professionals to sustainably increase GDP contribution by the sector.

I-2.B. Competencies of Veterinary Para-professionals

Strengths : The large number of trained CAHWs.
Weaknesses/Gaps: Inadequate number of veterinary paraprofessionals. No formalised and sustainable system for supporting CAHWs.
Recommended priorities for action: Train more veterinary para-professionals. Introduce a formalised and sustainable system for supporting CAHWs.

I-3. Continuing Education

Strengths: Availability of Veterinary Faculties where further degree studies are on offer.
Weaknesses/Gaps: Continuing Education (CE) is not reviewed annually, nor updated as necessary and no structured CE is generally implemented in the VSD.

Recommended priorities for action: SVC to develop its mandate for promoting and regulating the uptake of CPD programmes by the veterinary profession in the Sudan. The SVMA to be resourced to organise and deliver CPD programmes for their members at National and Regional Levels.

I-4. Technical independence

Strengths: Predominance of Veterinary Professionals in positions of authority for VS decision making.
Weaknesses/Gaps: Where the GVS is placed within a Ministry of Agriculture there is the prospect for a non-veterinarian being the Undersecretary.
Recommended priorities for action: In order to strengthen scientific decision taking processes the OIE-PVSD Team recommends that the OIE Terrestrial Animal Health Code be made available to all provincial veterinary offices.

I-5. Stability of structures and sustainability of policies

Strengths: The post of Undersecretary and senior management of the FMAR&F has been characterised by a succession of long serving incumbents. There is documentation of position responsibilities and a system for monitoring the performance of veterinarians and veterinary paraprofessionals.
Weaknesses / Gaps: Nil
Recommended priorities for action: Nil

I-6. Coordination capability of the Veterinary Services (public and private)

Strengths: There are established coordination mechanisms that can be implemented as necessary to address all activities.
Weaknesses/Gaps: There is a potential weakness where the VS falls under a State Ministry of Agriculture. Implicit but not explicit linkages between the Northern and Southern VS. Weak linkages with the CAH.
Recommended priorities for action: Create and foster explicit linkages between the Northern and Southern VS. Strengthen linkages with the CAH.

I-7. Physical resources

Strengths: The GVS, in general, has excellent physical facilities, transport, telecommunications, cold chain, and other relevant equipment. Each State has at least two mobile clinics.
Weaknesses/Gaps: It was reported that the provision and use of transport is a constraint in some States and Localities [Payamas in the South].
Recommended priorities for action: Undertake an inventory of field, cold chain, office and transport needs and redress any deficiencies found.

I-8. Funding

Strengths: The GVS is in receipt of a substantial amount of donor funding, particularly for programmes in the south.
Weaknesses/ Gaps: Salaries paid to GVS staff in the FMAR&F do not provide an

adequate performance incentive. No funds available to contract out the delivery of VS to the private and community sector.
Recommended priorities for action: Develop systems of remuneration that act as a positive performance incentive. Consider adopting a more aggressive cost recovery policy.

I-9. Contingency and compensatory funding

Weaknesses/Gaps: There is no mechanism for the rapid access to emergency or contingency funds.
Recommended priorities for action: Contingency and compensatory funding for immediate emergency needs should be held at the FMAR&F with a clear channel by which additional funding can be accessed as required.

I-10. Capability to invest and develop

Weaknesses/Gaps: Insufficiency of funds to invest and develop.
Recommended priorities for action: Develop an effective advocacy that convinces the Government and Donor Community of the merit in providing investment funds of sufficient scale to enable the GVS to realise the full livestock production potential of Sudan.

II. TECHNICAL AUTHORITY AND CAPABILITY

II-1. Veterinary laboratory diagnosis

Strengths: A very well resourced and operated laboratory system.
Weaknesses: There is a risk of cross contamination between the diagnostic facility and the vaccine production unit because of the proximity of the two facilities.
Recommendations: Computerise, and link to a central database, the recording of samples, results of tests and reporting of findings. Consider the merits of operating the laboratories as a privatised entity [ie as a Veterinary Laboratory Agency] or the contracting out of certain diagnostic procedures [ie poultry disease diagnosis] to a specialist private laboratory.

II-2. Laboratory quality assurance

Weaknesses: External quality assurance systems are not routinely applied for diagnostic tests or vaccine production.
Recommendations: The laboratory system needs improved quality controls, certification, accreditation and outside evaluation processes.

II-3. Risk analysis

Strengths: Nil
Weaknesses: No documented procedure for a formal decision making process, based on risk analysis, was presented and no members of the staff are trained in this function. There are no databases, inclusive of animal identification and farm registration systems, or records maintained for this purpose.
Recommendations: At least two HQ GVS staff and one from each State should undergo a formal training course in risk analysis at a recognised centre of excellence.

II-4. Quarantine and border security

Strengths: There are permanent VSD staff assigned to the state border control points, airports and seaport. There are established border posts and quarantine stations at each of the major borders with a number of inter state quarantine stations.
Weaknesses: The lack of an animal identification system hampers the ability to identify the source of trade livestock.
Recommendations: As part of a TAD initiative, harmonisation of animal disease control measures, inclusive of a regional animal identification system, should be discussed and agreed.

II-5. Epidemiological surveillance

Strengths: There have been some good local surveillance programs for a variety of important livestock diseases. There are GVS staff well distributed throughout the country down to the locality level that facilitate long term surveillance programmes. Sudan was recognized as Rinderpest disease free country by World Organization for Animal Health (OIE) in May 2008 confirming its competency in undertaking sero-surveillance.

Weaknesses: Institutional, organisational and funding weaknesses prevent the use of Community based veterinary auxiliary personnel as frontline disease surveillance and reporting agents. A tendency to use clinical rather than laboratory diagnosis for certain disease conditions experienced at field level
Recommendations: Develop a policy that mobilises the livestock disease surveillance and reporting potential of community based veterinary auxiliary personnel. Advocate for a successor to PACE with a focus on transboundary disease surveillance and control – [perhaps PACT – Pan African Control of Transboundary-disease] sustaining epidemio-surveillance networks.

II-6. Early detection and emergency response

Strengths: The GVS has an extensive field network with established procedures to determine whether or not a sanitary emergency exists, and have the necessary communication, legal and financial support to respond quickly and with appropriate follow up.
Weaknesses: Support for the CAHW network is weak. There is no early warning system in place for disease outbreaks
Recommendations: Review current policy towards CAHWs and develop a policy that sustainably employs them as key frontline staff in those livestock systems where community based veterinary auxiliary personnel can play an important role. Establish internet communication and a publicly available webpage to allow direct communications with field staff and to allow staff and other stakeholders access to current disease status reports. Proceed with all speed possible with the plans to establish an early warning unit at the AH&DEC.

II-7. Disease prevention, control and eradication

Strengths: The GVS has the human resources and capacity to design prevention, control and eradication programmes for selected diseases and has the expertise to assess their disease control efforts on a scientific basis. The GVS was able to achieve OIE recognition for rinderpest disease free country status in 2008.
Weaknesses: CAHWs are not sustainably supported. The private sector has not been given sanitary mandates.
Recommendations: A fundamental review is needed of the delivery of veterinary services in the Sudan to develop innovative, effective and sustainable practices. A dialogue should be initiated within the profession to develop consensus concerning the incorporation of private / public / community partnership approaches as a fundamental component of any new approach.

II-8. Veterinary public health and food safety

Strengths: All meat inspection is carried out by GVS staff.
Weaknesses: The GVS does not have the authority to inspect for food safety. Animal welfare at urban slaughter facilities does not meet international standards.
Recommendations: Develop national zoonotic disease surveillance programmes and provide the resources needed to control those diseases shown to be posing a significant risk to public health and the export market. Review the adequacy of current measures to protect food safety and bring those elements as deemed appropriate under the function and responsibility of the GVS. Bring animal welfare practice at urban slaughter facilities up to international standards.

II-9. Veterinary medicines and veterinary biologicals

Strengths: All veterinary medicine and biologicals are imported under permit.
Weaknesses: There are reportedly imports of cheap counterfeit drugs
Recommendations: Review and improve where necessary procedures for the detection and removal of cheap counterfeit veterinary products from the market.

II-10. Residue testing

Strengths: Facility to undertake residue testing are available and accessible in the country.
Weaknesses: Nil
Recommendations: Nil

II-11. Emerging issues

Strengths*:* There is strong institutional awareness within the GVS management of the need to identify in advance, and take appropriate action in response to likely emerging issues under their mandate. GVS participates in OIE and regional meetings.
Weaknesses: There is no early warning system in place for disease outbreaks.
Recommendations: Put in place the plans to establish an early warning system for epidemic and emerging diseases.

II-12. Technical innovation

***Strengths*:** Plans to develop good electronic communications. There are working formal and informal coordination procedures between the FMAR&F and agencies such as the ARRC, SSMO and other academic and research institutes which are often facilitated through the work of the SVC and SVMA.
Weaknesses: There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.
Recommendations: It should be highly recommend that emphasis be placed on the development of computer and electronic media with access supported for all levels of professional and technical staff.

III. INTERACTION WITH STAKEHOLDERS

III-1. Communications

Strengths: The GVS Extensions Department has produced leaflets, newsletters, flip charts, posters and radio programmes of excellent quality. An important means of two-way communication with the livestock keepers is provided by the VA/CAHW network. The Sudan Journal of Veterinary Science and Animal Husbandry provides updated scientific information for the Veterinary Profession of Sudan, stakeholders in the region and internationally.
Weaknesses / Gaps: The GVS is not facilitating its staff to exploit the full potential that present day desk top and mobile communications offer. There is no publicly available GVS webpage that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

Recommended priorities for action: Develop strategies that exploit the full potential of present day desk top and mobile Information Technology to enhance VS staff knowledge and skills. Create a web site that communicates the animal health status of the Sudan or where information can be found concerning activities, reports and regulations.

III-2: Consultation with stakeholders

Strengths: An active SVMA ensuring views of the VS personnel are aired and advocated for. An annual SVMA congress that offers stakeholders an opportunity to receive updated information on GVS activity and to raise their own matters of concern.
Weaknesses / Gaps: No nationally constituted or operative livestock forum, representative of all stakeholders in the livestock sector.
Recommended priorities for action: Establish a "National Livestock Development Board", representative of all stakeholders in the livestock sector to develop national livestock policy and agree the strategies required to implement that policy. State Livestock Development Boards to be formed with one member represented on the National Board.

III-3: Official representation

Strengths: The VSD regularly participates in OIE meetings.
Weaknesses Gaps: No circulation of draft OIE standards for stakeholder comment, or of newly adopted standards.
Recommended priorities for action: Circulation of draft OIE standards or of newly adopted standards for stakeholder comment.

III-4: Accreditation/Authorisation/Delegation

Weaknesses / Gaps: Absence of any form of sanitary mandate for private veterinarians to operate in rural livestock owning areas.
Recommended priorities for action: Undertake wide ranging consultation within the profession to review current VS delivery practice with view to adopting new approaches including private / public / community partnerships. Review the relationship of the private veterinary sector [PVS] with the GVS and ways and means explored to minimise duplication of effort and maximise opportunities for income earning activity. Implement pilot VS delivery programmes at Locality Level to test out new approaches including private / public / community partnerships.

III-5: Veterinary Statutory Body

Strengths: The SVC operates under a clear and generally adequate legislation as provided by the Veterinary Surgeons Law, 1954 updated 1995 and 2004 and reports directly to the Council of Ministers. The SVC has the potential to play an extremely important role in influencing the development of the VS in Sudan and in this context they are regularly consulted by the GVS.
Weaknesses / Gaps: The SVC does not at present have adequate office space. There are no published regulations for veterinary para-professionals and CAHWs.
Recommended priorities for action: The SVC needs support to mount effective advocacy raising the profile of the Veterinary Profession in Sudan - emphasising the contribution it could be making in increasing livestock sector contribution to GDP. Regulations need to be published for the Veterinary Para-professionals and CAHWs. The SVC should be the

recognised focal point for CPD development. Plans to build new office premises should be brought forward.

III-6: Participation of producers and other stakeholders in joint programmes

Strengths: Joint programmes implemented with stakeholders mediated largely through projects and NGOs.
Weaknesses: No evidence of joint programmes between the GVS with stakeholders was presented.
Recommended priorities for action: Encourage and facilitate participation of producers and other stakeholders in joint programmes whenever possible.

IV. ACCESS TO MARKETS

IV-1 Preparation of legislation and regulations, and implementation of regulations

Strengths: The FMRA&F has the authority and capability to actively participate in the preparation of national legislation and regulations.
Weaknesses / Gaps: Some acts require revision and updating.
Recommended priorities for action: Review all acts and regulations relating to livestock health, production and marketing and update where necessary publishing them in both Arabic and English.

IV-2 Stakeholder compliance with legislation and regulations

Strengths: A broad ranging legal framework and a large professional body capable of ensuring stakeholder compliance with legislation and regulations.
Weaknesses / Gaps: Lack of technical staff at the critical livestock keeper / CAHW interface.
Recommended priorities for action: Train and recruit more technical staff to occupy key supervisory positions. An assessment should be undertaken of the implementation and compliance with existing livestock health, production and marketing regulations and address any weaknesses identified.

IV-3 International harmonisation

Strengths: The GVS has the authority and capability to be active in the international harmonisation of regulations and sanitary measures.
Weaknesses / Gaps: Nil
Recommended priorities for action: To protect valuable livestock export markets the GVS should ensure that the sanitary measures adopted continue to take account of relevant international standards and are seen to be applied in a professional and transparent manner.

IV-4 International certification

Strengths: The GVS exerts a high level of authority and capability for the purposes of certifying animals and animal products for export.
Weaknesses / Gaps : Lack of animal identification system and national livestock database.
Recommended priorities for action: Put in place an animal identification system and national livestock database.

IV-5 Equivalence and other types of sanitary agreements

Strengths: The broad legislative framework is in place to support this function.
Weaknesses / Gaps: Nil
Recommended priorities for action: Nil

IV-6 Traceability

Strengths: Nil
Weaknesses / Gaps: No livestock identification system
Recommended priorities for action: Put in place a livestock identification system linked to a national data base. A study tour to other livestock exporting countries in Africa to observe the livestock identification system and other controls on the export of livestock and livestock products.

IV-7 Transparency

Strengths: The GVS submits regular reports to the OIE that can be seen on the OIE available WAHID.
Weaknesses / Gaps: The apparent failure of surveillance systems to detect animal cases of RVF.
Recommended priorities for action: Review existing passive surveillance systems and address weaknesses and / or implement new systems that consistently provide the GVS with accurate field disease information.

IV-8 Zoning

Strengths: Ability to create zones for disease control and export purposes.
Weaknesses / Gaps: Nil
Recommended priorities for action: Nil

IV-9 Compartmentalisation

Compartmentalisation not applied at this stage

PART V: APPENDICES

Appendix 1: Organisation of the OIE/PVS evaluation of the VS Sudan

Component	Detail
Assessors Team	Team leader: Dr Walter Masiga Technical expert: Dr Chris Daborn
References and Guidelines	OIE Terrestrial Animal Health Code (especially Chapters 3.1. and 3.2.) OIE PVS tool for the evaluation of performance of VS • Human, financial and physical resources • Technical capability and authority • Interaction with stakeholders • Access to the market.
Dates	3rd – 21st January 2009
Language	English
Services evaluated	Veterinary services of Sudan as defined in the OIE Terrestrial Animal Health Code. [Not inclusive of aquatic animals]
Activities analysed	All activities related to animal and veterinary public health including : Field activities; Animal health; Quarantine (all country borders); Epidemiology; Control and inspection; Data and communication; Diagnostic laboratories; Research; Initial and continuous training; Organisation and finance
Persons met	Detailed in appendix 3
Sites visited	Detailed in appendix 4
Approach	Consultation of data and documents; Field trips; Interviews and meetings with VS staff and stakeholders ; Analysis of processes;
Assistance provided by VSD Sudan	Inclusive of: Provision of missing data; Administrative authorisation to visit sites; Logistic arrangements, Internal travel inclusive of air flights
Reports	A power point summary presented at the closing session. A final report by one month after completion of the field visit will be sent to OIE for peer-review. The current levels of advancement of each critical competence will be described by assessors and references provided as appropriate to justify findings. General recommendations may be provided depending on the context of the evaluation.
Confidentiality and publishing of results	The results of the evaluation are confidential between the country and the OIE. They can be released only with formal agreement of the evaluated country.

Appendix 2: Glossary of terms

Terms defined in the *Terrestrial Code* that are used in this publication are reprinted here for ease reference.

Border post: means any airport, or any port, railway station or road check-point open to *international trade* of *commodities*, where import veterinary inspections can be performed.

Compartment: means an animal *subpopulation* contained in one or more *establishments* under a common biosecurity management system with a distinct health status with respect to a specific *disease* or specific *diseases* for which required *surveillance*, control and biosecurity measures have been applied for the purposes of *international trade.*

Competent Authority: means the *Veterinary Authority* or other Governmental Authority of a Member, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the *Terrestrial Code* in the whole country.

Emerging disease: means a new *infection* resulting from the evolution or change of an existing pathogenic agent, a known *infection* spreading to a new geographic area or *population*, or a previously unrecognized pathogenic agent or disease diagnosed for the first time and which has a significant impact on animal or public health.

Equivalence of sanitary measures: means the state wherein the *sanitary measure(s)* proposed by the *exporting country* as an alternative to those of the *importing country*, achieve(s) the same level of protection.

International veterinary certificate: means a certificate, issued in conformity with the provisions of Chapter 5.2., describing the animal health and/or public health requirements which are fulfilled by the exported *commodities.*

Laboratory: means a properly equipped institution staffed by technically competent personnel under the control of a specialist in veterinary diagnostic methods, who is responsible for the validity of the results. The *Veterinary Authority* approves and monitors such laboratories with regard to the diagnostic tests required for *international trade.*

Notifiable disease; means a *disease* listed by the *Veterinary Authority*, and that, as soon as detected or suspected, must be brought to the attention of this *Authority*, in accordance with national regulations.

Official control programme of live animals: means the operations whereby the *Veterinary Services*, knowing the location of the *animals* and the identity of their owner or responsible keeper, are able to apply appropriate animal health measures, as required.

Official Veterinarian: means a veterinarian authorised by the *Veterinary Authority* of the country to perform certain designated official tasks associated with animal health and/or public health and inspections of *commodities* and, when appropriate, to certify in conformity with the provisions of Chapters 5.1. and 5.2. of the *Terrestrial Code.*

Official veterinary control: means that the *Veterinary Authority* knows the location of the *animals* and the identity of their owner or responsible keeper and is able to apply appropriate animal health measures, as required.

Risk analysis: means the process composed of *hazard identification*, *risk assessment*, *risk management* and *risk communication.* [See Section 2 of the *Terrestrial Code.*]

Sanitary measure: means a measure, such as those described in various Chapters of the *Terrestrial Code,* destined to protect animal or human health or life within the territory of the OIE Member from *risks* arising from the entry, establishment and spread of a *hazard*.

Surveillance: means the systematic ongoing collection, collation, and analysis of information related to animal health and the timely dissemination of information to those who need to know so that action can be taken.

Terrestrial Code: means the OIE *Terrestrial Animal Health Code.*

Veterinarian: means a person registered or licensed by the relevant *veterinary statutory body* of a country to practice veterinary medicine/science in that country.

Veterinary Authority: means the Governmental Authority of a Member, comprising *veterinarians*, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in *the Terrestrial Code* in the whole country.

Veterinary para-professional: means a person who, for the purposes of the *Terrestrial Code*, is authorised by the *veterinary statutory body* to carry out certain designated tasks (dependent upon the category of *veterinary para-professional)* in a country, and delegated to them under the responsibility and direction of a *veterinarian.* The tasks authorized for each category of *veterinary para-professional* should be defined by the *veterinary statutory body* depending on qualifications and training, and according to need.

Veterinary Services: means the governmental and non-governmental organisations that implement animal health and *welfare* measures and other standards and recommendations in the *Terrestrial Code* in the territory. The Veterinary Services are under the overall control and direction of the *Veterinary Authority*. Private sector organisations, *veterinarians* or *veterinary paraprofessionals* are normally accredited or approved to deliver functions by the *Veterinary Authority.*

Veterinary statutory body: means an autonomous authority regulating *veterinarians* and *veterinary para-professionals.*

Appendix 3. List of persons met or interviewed

Name	Position
FMAR&F	
Hon. Mohammed Ahmed Tahir Abo Klabish	Minister, Federal Ministry of Animal Resources and Fisheries
Dr. Mohammed Abdel Razig	Under Secretary, Federal Ministry of Animal Resources and Fisheries
Dr. Awad Al Karem Abdallah Mohammed	DG. Animal Production Department
Prof. Musa Teben	DG. Ministry Science and Technology
Dr. Ibrahim Hassan	DG. Animal Health & Epizootic Disease Control
Dr.Khalid Eltigani Mzein	Executive Director of the Ministerial Office
Dr. Ali Ali Elmahdi	Executive Manager of Undersecretary Office
Dr. Somaya Taha	Head of the Information Unit
Sania Badawi Ali	
Dr Eftalik Ahmed A/Rahman	Head Disease Investigation, Surveillance and Monitoring Unit
Dr Ismail Adam Yaagoub	Director Epizooitic Disease Control Dept
Dr Alanja Ahmed Moh	Head ELISA Unit
Dr Faiza A/Karim Moh	Head Communication Unit, CAH Coordinator
Dr Nadia Camel Aldein	Head of Field Operation Unit
Dr Amif Obied Yousif	LESP Support unit
Dr Salah El dir Osman	Khartoum Veterinary Hospital
Dr Ahmed Mustapha Hassan	Former Undersecretary FMAR&F
Dr Haitham Fadalla Eltayeb	Epidemiology Division, Disease outbreak investigation unit
FAO	
Dr El Mardi Osman ibrahim	Senior Livestock Officer FAO
Dr Abdul Rahmin M Noor	Livestock Officer FAO
World Bank	
Mr Abderrahim Fraiji	Acting country Manager World Bank
Ms Yousa Abdelrahim	Execuritve Assistant World Bank
Veterinary Faculty, U of K	
Prof Abdelhafiz H Nimir	Dean, Vet Faculty University of Khartoum
Prof Sharaf Eldin A Makawi	Deputy Dean, Vet Faculty University of Khartoum
Dr Abdel wahid Saud Ali	Head. Dept Prev Med. Vet Faculty University of Khartoum
SSMO	
Professor Mohamed Harbi	Director General SSMO
Ms Maha MM Khair	Acting director Standards Specification Dept SSMO
Ms Mayada M Elhassan A. Elkariem	Acting director Technical Committee Dept SSMO
Prof Hashim Mohamed Elhadi	Chairman Vet Medicine Registration Committee FBPB
Dr Al Rahman Mustafa	Head Dept Vet Medicine Registration FBPB
Animal Resources Services Co Ltd	
Dr Isam Sidig Abdel Salam	General Director Animal Resources Services Co Ltd
Sudan Veterinary Council	
Dr Hassan Ibrahim Khatab	Chairman Sudan Veterinary Council
Dr Samir Abdul Rasoul ali	Secretary General SVC
Pharmacy and Poisons Board	
Prof. Hashim M. Elhadi	President Veterinary Medicine Registration Committee
Prof. Kamal Siddig	Member of Registration Committee
Dr. Abdel rahman Mustafa	Head Department of Veterinary Registration
Dr. Habab Ibrahim	Department of Veterinary Medicine Registration

Dr. Zehor Yahya	Department of Veterinary Medicine Registration
CVRL	
Dr. Musa Tibin Musa Adam	Directorate General Animal Resources Research Corporation
Dr.Awad Mahgoup	Deputy Directorate& ARRc
Dr. Muawia Elhassan	Director of Administration finance
Dr. Hassan A/Rahim	Director of Animal Research Lab
Dr. AlRahman Magzob	Director of Animal Production Research Centre
Zakia Abbas Moh.	CVRL
Amel Moustafa Moh	CVRL
Ahmed Hassein	CVRL , Supporting Unit
Pro AbdelElmutale Shallali	Director CVRL
Presentation FMAR&F	
Dr. Ahmed M. Hassan	Private Veterinary Consultant
Dr. Ab. Mohamed	DG Fisheries Directorate MAR&F
Dr. Awatif Siddig	Veterinary Researcher/ FAO Khartoum
Dr. Nada Mohmed	Provide / FAO
Dr. Khalid Eltigani Mohammed	MAR&F
Dr. Ammar Elshikh Idris	MAR&F Planning and Economics Department
Dr. Somia A. Taha	MAR&F l Animal Health of Epizootic Diseases Control
Dr. Isam Eldin Suliman	Minister Office
Dr. Sania Badawi Ali	MAR&F
Dr. Ahmed Ali Elmhdi	Under Secretary Office
Dr. Mamun Abwd	Diverter public relation
Pro. Mohammed	
Kosti, White Nile State	
Dr Ibrahim Hassan Ahmed	Director General. Animal Resources
Dr Rusha Ali Omer	Dept of Extension
Dr Adil Hassan Hussein	Dept Animal Production
Dr Osman Hassan Suliman	Director. Animal Health and Disease Control
Dr Tariq Mohammed Noureldin	Director, Rabak Veterinary Research Laboratory
Dr Afaf Saccel	Report and Information Department
South Sudan	
Dr. Sesto Kumba	Minister of MARF/ GOSS
[Dr. Makuei M. Kaang	Under secretary MARF/ GOSS
Dr .Agol Malak	DG of Veterinary Service MARF/ GOSS
Dr. Jacob Korok	Director of Veterinary Service
Dr. Daivid Adwok	Director of veterinary service delivery
Dr. Breneo B. Ochi	Director of Research Laboratory
Dr. Mary Joseph	Communication unit /MARF/ GOSS
Dr. Suma Francis	DG of Animal Health / Central Equatoria State
Dr. Peter Anderia	Director of Animal Health/ Central Equatoria State
Dr. John Fonceino	Clinician/ Central Equatoria State

Appendix 4: List of facilities and locations visited

3rd th January 2009

Place: Khartoum - Team arrival

4th January 2009

Place: Khartoum
Facility: Federal Ministry of animal Resources & Fisheries
Topic: General information and finalisation of itinerary

5th January 2009

Place: Soba
Facility: Animal Health and Epizootic Disease Control Directorate
Topic: Introduction of Mission. Discussion and Tour of Facility

6th January 2009

Place: Khartoum
Facility: FAO
Topic: Courtesy Visit. Briefing on FAO Livestock Programmes in the Sudan

Facility: World Bank
Topic: Courtesy Visit. WB perspective on the Sudan Livestock Sector

Facility: Vet Faculty University of Khartoum
Topic: Veterinary Graduate Training and discussion on continuing education

7th January 2009

Place: Khartoum
Facility: Sudan Standards and Metrology Bureau
Topic: Standards and regulation of standards

Facility: Pharmacy and Poisons Board. Dept Veterinary Drug Registration
Topic: Registration of Vet Drugs and biologicals

Facility: Animal Resources Services Co Ltd
Topic: Role of Private Sector in Veterinary Services delivery

8th January 2009

Place: Khartoum
Facility: Animal Resources Research Corporation
Topic: Livestock Research, Disease diagnosis and Vaccine Production

Place: Soba

Facility: Central Veterinary Research Laboratory
Topic: Veterinary diagnostics, Applied Research and Vaccine production

Place: Khartoum
Facility: Federal Ministry of Animal Resources and Fisheries
Topic: Power-point presentation of the PVS Tool by OIE Team to GVS staff

9th January 2009

Work on mission report. Lunch with Dr Ahmed Mustapha Hassan the previous Undersecretary for FMAR&F

10th January 2009

Place: Khartoum
Facility: Sudan Veterinary Medical Association
Topic: Role and function of the SVMA

Facility: Sudan Veterinary Council
Topic: Role and function of the SVC

11th January 2009

Place: Kosti, White Nile State
Facility**:** State Veterinary HQ
Topic: Organisation of VS in White Nile State

12th January 2009

Place: Kosti, White Nile State
Facility**:** Visit various VS infrastructure - clinic, stores, slaughter facility, feedlot,vaccination and holding centre, livestock movement check point, locality vet office, state laboratory
Topic: Delivery of VS in White Nile State

Pm return to Khartoum

13th January 2009

Am – preparation of draft report
Pm - Depart for Port Sudan by air

14th January 2009

Place: Port Sudan, Red Sea State
Facility**:** Office of the DG MAR&F**.** Visit various VS infrastructure - Field Clinic, Locality Vet Office, Sawarkin Port - quarantine and livestock export facility
Topic: Organisation of VS in White Nile State and control of livestock export trade

Pm return to Khartoum

15th January 2009

Place: Juba, South Sudan
Facility: Meeting with Minister MARF, US MARF and briefing with DG VS MARF, GOSS.
Topic: Organisation and Delivery of VS in South Sudan

16th January 2009

Place: Juba, South Sudan
Facility: Meeting Office of DG Animal Health and Disease Control Central Equatorial State. Visit Juba Town Veterinary Clinic, Juba Laboratory, PVS presentation and discussion on VS delivery in S Sudan
Topic: Organisation and Delivery of VS in Central Equatorial State.

Facility: Meeting with private veterinarian atMission Hotel
Topic: Privatisation of the Delivery of VS in S Sudan

17th January 2009

Am Return to Khartoum

Draft report and preparation for de-briefing presentation

18th January 2009

Draft report and preparation for de-briefing presentation

19th January 2009

Place: Khartoum
Facility: FMAR&F
Topic: Meeting with the Minister. Presentation of Preliminary Findings

20th January 2009

Place: Khartoum
Facility: Kadaro Slaughter House
Topic: Standards for export of meat

Place: Khartoum
Facility: World Bank
Topic: Livestock development in Sudan

21st January 2009

End of Mission – Depart Sudan.

Appendix 5: Air travel itinerary

Day	Date	From	To	Flight No	Depart	Arrive
Dr Walter Masiga and Dr Chris Daborn						
Saturday	3/01/2009	Nairobi	Khartoum	KQ 320	15.20	20.10
Tuesday	13/01/2009	Khartoum	Port Sudan	SD208	15.00	16.15
Wednesday	14/01/2009	Port Sudan	Khartoum	SD209	17.00	18.15
Thursday	15/01/2009	Khartoum	Juba	M7 320	7.00	9.00
Saturday	17/01/2009	Juba	Khartoum	M7 321	11.00	13.00
Wednesday	21/01/2009	Khartoum	Nairobi	KQ 321	04.10	7.05

Appendix 6: List of documents used in the PVS evaluation

Authors	Title	Hard	Soft
FMAR&F	Application for Freedom from Rinderpest Infection on a Country-wide Basis -		*
IGAD	Key Issues for Livestock and Pastoralism in Sudan		*
Sudan Vet Council	Overview of the Veterinary Service in the Sudan		*
World Bank - MDTF	Southern Sudan: Livestock and Fisheries Development Project		*
Jones B et al	Community-Based Animal Health Services in Southern Sudan: The Experience So Far		*
Dr. Amira O Yousif	Chocolate cake from dying Cows		*
FAO	Fisheries Profile of the Sudan		*
FMAR&F	Leaflet - Improved Production System. Josti. White Nile State. Sudan		*
World Bank	Improving Livestock Production and Marketing Project		*
OIE	Livestock Disease Profile [2004]		*
USAID	Livestock in Sudan		*
Ministry of Industry	Country Facts		*
WANA NARS	The National Agricultural Research System Of Sudan (1999)		*
FMAR&F	A press release on Rift Valley Fever Disease in Sudan		*
OIE	Seminar on Good Governance of Veterinary Services Bamako-Mali, 11-13 December 2008 - Recommendations		*
SSMO	SSMO Role In Food Safety - Power Point Presentation		*
FMAR&F	Community Animal Health in Sudan		*
FPPB	General Requirements for the registration of pharmaceutical products and veterinary drug importation	*	
ARSC	Statistics for Livestock Markets in Sudan - 2004	*	
GoS	Veterinary Council Act 1995	*	
FMAR&F	Mobile Veterinary Units Specifications	*	
LESP	Northern Sub-project]LESP-NS]	*	
SVC	Sudan Veterinary Council Manifesto	*	
FMAR&F	Community Animal Health in Sudan - Report	*	*
FMAR&F	Rift Valley Fever in the Sudan	*	*
MDTF	Livestock Marketing in East and Central Sudan	*	
GOSS	AR Sector Policy and Strategic Plan 2006 - 2011	*	