AMU Report

Findings of the stock-taking exercise in the Arab Maghreb Union

INTEGRATED REGIONAL COORDINATION MECHANISM

IRCM

For the prevention and control of Trans-boundary Animal Diseases and Zoonoses in Africa

December 2010
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Acknowledgments

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We are grateful to the Secretariat of the Arab Maghreb United (AMU) for supporting the stock taking exercise and embracing the IRCM concept of a sharing vision that TADs and Zoonoses can only be effectively prevented and controlled by strengthening institutional capacities and strengthening ownership by African institutions. Special thanks to Dr Ahmed Srikah and Dr Mohamed Ismaïl of the Direction of Food Safety for their availability without forgetting Mr Ahmed Chahir, WHO Projects Coordinator Morocco.

The development of the IRCM could not have been feasible without the support and participation of our international technical partners. For these important roles and their anticipated role in its implementation, we are thankful to the Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE) and the World Health Organization (WHO).

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Lastly, to all the women and men who made it possible to develop the IRCM, I say thank you. Posterity and the people of Africa will reward your sweat.

Prof. Ahmed El-Sawalhy

Director/Head of Mission
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Recommended citation

<table>
<thead>
<tr>
<th>Acronym</th>
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<tr>
<td>AEC</td>
<td>African Economic Community</td>
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<tr>
<td>AI</td>
<td>Avian Influenza</td>
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<td>AI.COMM</td>
<td>USAID’s Avian Influenza Communication</td>
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<td>AHI</td>
<td>Avian and Human Influenza</td>
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<td>AHS</td>
<td>African horse sickness</td>
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<td>Alive</td>
<td>ALive Platform, Partnership for Livestock Development, Poverty Alleviation &amp; Sustainable Growth in Africa</td>
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<td>AMU</td>
<td>Arab Maghreb Union</td>
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<td>ARIS</td>
<td>Animal Resources Information System</td>
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<td>ASF</td>
<td>African swine fever</td>
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<td>AU</td>
<td>African Union</td>
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<td>AUC</td>
<td>African Union Commission</td>
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<td>AUC/DSA</td>
<td>African Union Commission/ Department of Social Affairs</td>
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<td>AU-IBAR</td>
<td>Africa Union Inter-African Bureau for Animal Resources</td>
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<tr>
<td>BSE</td>
<td>Bovine Spongiform Encephalopathy</td>
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<td>BTB</td>
<td>Bovine tuberculosis</td>
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<td>CBPP</td>
<td>Contagious Bovine Pleuro-Pneumonia</td>
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<td>CDC</td>
<td>Centre for Disease Control</td>
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<td>CCPP</td>
<td>Contagious Caprine Pleuro-pneumonia</td>
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<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
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<tr>
<td>CSF</td>
<td>Classical Swine Fever</td>
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<tr>
<td>CVO</td>
<td>Chief Veterinary Officer</td>
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<td>DPSA</td>
<td>Direction de la Production et de la Santé Animales (DRC)</td>
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<td>DPT</td>
<td>Digital Pen Technology</td>
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<td>EAC</td>
<td>East African Community</td>
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<td>European Commission</td>
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<td>ECOSOCC</td>
<td>Economic, Social and Cultural Council of the African Union</td>
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<td>ECTAD</td>
<td>Emergency Centre for Trans-boundary Animal Diseases</td>
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<td>EPP</td>
<td>Emergency Preparedness Plan</td>
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<td>EID</td>
<td>Emerging Infectious Diseases</td>
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<td>ERAD</td>
<td>Emerging and Re-emerging Animal Diseases</td>
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<td>EU</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FMD</td>
<td>Foot and Mouth Disease</td>
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<tr>
<td>FTA</td>
<td>Free Trade Area (SADC)</td>
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<td>GDP</td>
<td>Gross domestic product</td>
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<tr>
<td>GF-TAD</td>
<td>Global Framework for the progressive control of Trans-boundary Animal Diseases (FAO &amp; OIE)</td>
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<tr>
<td>GLEWS</td>
<td>FAO, OIE &amp; WHO - Global Early Warning and Response System for Trans-boundary animal Diseases including Zoonoses</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>HIV/AIDS</td>
<td>Acquired Immuno-deficiency virus/ acquired immune-deficiency syndrome</td>
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<td>HPAI</td>
<td>Highly Pathogenic Avian Influenza</td>
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<tr>
<td>IDSRI</td>
<td>Integrated Disease Surveillance and Response</td>
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<tr>
<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<td>IHR</td>
<td>International Health Regulations</td>
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<td>International Livestock Research Institute</td>
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<td>INAP</td>
<td>Integrated National Action Program</td>
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<td>IPPC</td>
<td>International Plant Protection Convention</td>
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<td>IGAD’s regional HIV/AIDS partnership program</td>
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<td>IRCM</td>
<td>Integrated Regional Coordination Mechanism</td>
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<td>ISSB</td>
<td>International Standard Setting Body</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<td>JTF</td>
<td>Joint Task Force</td>
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<td>LSD</td>
<td>Lumpy Skin Disease</td>
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<td>MSF</td>
<td>Malignant catarrh fever</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MoU</td>
<td>Memorandum of understanding</td>
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<td>NGO</td>
<td>Non-Governmental Organizations</td>
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<td>ND</td>
<td>Newcastle Disease</td>
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<td>NMTP</td>
<td>National Medium Term Priority Plan</td>
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<td>National Taskforces</td>
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<td>OCHA</td>
<td>Office for the Coordination of Humanitarian Assistance</td>
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<td>OFFLU</td>
<td>Joint OIE-FAO global network of expertise on animal influenzas</td>
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<tr>
<td>OIE</td>
<td>World Organization for Animal Health</td>
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<td>OWOH</td>
<td>One World One Health</td>
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<td>PIC</td>
<td>Pandemic Influenza Contingency</td>
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<td>PPE</td>
<td>Personal Protection Equipment</td>
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<td>PPR</td>
<td>Peste des Petits Ruminants</td>
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<td>PS</td>
<td>Partner States</td>
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<td>PVS</td>
<td>Performance of Veterinary Services</td>
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<td>QA</td>
<td>Quality-Assurance</td>
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<td>RAHC</td>
<td>Regional Animal Health Centre</td>
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<td>RBD</td>
<td>Rwanda Development Board</td>
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<td>REC</td>
<td>Regional Economic Community</td>
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<td>VF</td>
<td>Rift Valley Fever</td>
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<td>SG</td>
<td>Secretary General</td>
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<td>SOPs</td>
<td>Standard Operating Procedures</td>
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<td>SPS</td>
<td>Sanitary and Phyto-Sanitary Agreement (WTO)</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<td>STCs</td>
<td>Specialized Technical Committees</td>
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<td>STIs</td>
<td>Sexually transmitted infections</td>
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<td>TA</td>
<td>Technical Assistance</td>
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<td>TADs</td>
<td>Trans-boundary Animal Diseases</td>
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<td>TANAPA</td>
<td>Tanzania National Parks</td>
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<td>TAWIRI</td>
<td>Tanzania wildlife Research Institute</td>
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<tr>
<td>TCP</td>
<td>Technical Cooperation Project (FAO)</td>
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<td>TWGs</td>
<td>Technical working groups</td>
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<td>UNEP</td>
<td>United Nations Environmental program</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UNISIC</td>
<td>UN System Influenza Coordinator</td>
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<tr>
<td>UN-CHRA</td>
<td>United Nation’s Office for the Coordination of Humanitarian Affairs</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>UWA</td>
<td>Uganda Wildlife Authority</td>
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<tr>
<td>VS</td>
<td>Veterinary Services</td>
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<tr>
<td>VSB</td>
<td>Veterinary Statutory Body</td>
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<td>WAHIS</td>
<td>World Animal Health Information System</td>
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<tr>
<td>WAHID</td>
<td>World Animal Health Information Database</td>
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<tr>
<td>WCS</td>
<td>Wildlife Conservation Society</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>World Trade Organization</td>
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<td>WVU</td>
<td>Wildlife Veterinary Units</td>
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Executive Summary

The IRCM stocktaking and analysis mission to the Arab Maghreb Union (AMU) Secretariat General in Rabat was undertaken from 14 to 16 December 2010 with a stakeholder consultative workshop held on 3-4th October 2010 in Cairo. The task involved literature review, interviews with key personnel at the AMU General Secretariat, collaborating institutions, cooperating partners and feedback from the consultative workshop. The following is a summary of the main findings, conclusions and recommendation.

AMU is a regional inter-governmental Union of the five Maghreb Countries in Northern Africa: Algeria, Libya, Mauritania, Morocco and Tunisia, which was created in 1989 in Marrakesh (Morocco).

In accordance with the Treaty establishing UMA, the Union is governed by a Presidential Council, composed of the Heads of State on the Member States, which is the highest body. The Union is also provided with a Committee of Ministers of Foreign Affairs which is to prepare the sessions of the Presidential Council and examine questions raised by the Specialized Ministerial Committees. Other bodies of UNA are the Consultative Council (based in Alger), a Judicial Court (based in Nouakchott) and the Maghreb Bank for Commerce and Foreign Trade (based in Tunis). The organs of the Union are supported by a permanent General Secretariat.

The OIE missions for the assessment of the Performance of Veterinary Services (PVS) in the Region included Algeria (), Libya (), Mauritania (), Morocco () and Tunisia ()

Regional Economic Communities (RECs) as one of the anchoring ideals of African unity are recognized as AU’s building blocks for regional and continental economic integration with the potential to resolve the continent’s major economic constraints and development issues that transcend national boundaries. They are therefore the ideal institutions in which to anchor regional coordination mechanisms specifically targeting the prevention and control of animal and human influenza (AHI), transboundary animal diseases (TADs) and other zoonoses.

An Integrated Regional Coordination Mechanism (IRCM) for the prevention and control of TADs and zoonoses is proposed. The IRCM aims at strengthening the capacity of IGAD and other RECs to coordinate and harmonize disease prevention and control actions implemented by Member States through capacity building, promotion of inter-sectoral coordination and institutionalization of coordination procedures and practices while promoting the “One Health” concept. The need for such a mechanism has been expressed at several fora in Africa and globally, especially after the waves of outbreaks of the Highly Pathogenic Avian Influenza (HPAI) subtype H5N1 that started in 1997 and the appearance of Severe Acute Respiratory Syndrome (SARS) in 2002 and the pandemic caused by the novel A (H1N1) influenza virus in 2009.
Trans-boundary animal diseases (TADs) and zoonoses, including emerging diseases, represent a major constraint to the development of the predominantly rural economy of the African continent. Twelve of the major animal diseases are present in Africa. Animal diseases alone are responsible for 20% loss in production thus impacting negatively on human health in terms of malnutrition and deficiency of protein and micro-nutrients derived from milk, eggs and meat. Most diseases that affect humans directly are caused by multi-host pathogens, and majority (816 out of 1407) is shared with animals and is therefore classified as zoonotic. Indeed, TADs and zoonoses also present a major barrier to international, regional and domestic trade. The threats of emerging and re-emerging infectious diseases are likely to increase in response to intensification of animal production to meet the demand of rapidly growing urban communities, faster movement of people and livestock across national and regional boarders and ecosystems, amplified interaction between domestic and wild animals, and the increased commercialization and consumption of bush meat and other wildlife products. Furthermore, global warming and climate change are encouraging the spread of pests and invasive species and could increase the range of some diseases.

Enhanced capacity for early disease detection at the source, and the ability to promptly activate preventive and control measures are crucial for managing the risks associated with emerging and re-emerging infectious diseases. Addressing the complex and diverse factors that cause the emergence and dissemination of infectious diseases requires effective inter-sectoral collaboration and coordination at the biological, social, economic and political levels. Better control of TADs and zoonoses should enhance the free movement of people and goods within the Regional Economic Communities (RECs) and the continent thus leading to effective regional and continental economic integration.

The Organization of African Unity (OAU) Charter and the Constitutive Act establishing the African Union embraced and recognized the need for an inter-African cooperation and integration in order to achieve the objectives of socio-economic and political development and stability of the continent. However, the challenges are very huge because, compared to other developing continents Africa has the largest number of countries characterized by small national markets, limited economic competitiveness, under-development infrastructure and high production costs. These factors hinder the development of viable agricultural industries and limit inter-African and global trade. Moreover, Africa faces many emerging challenges including diseases, climate change, conflict, technological advancements, and regionalism amid globalization. African leaders recognize now more than ever the urgency of accelerating integration with a view to resolving these constraints in order to create a united and prosperous Africa. The Lagos Plan of Action and the Abuja Treaty establishing the African Economic Community (AEC) spell out the economic, political and institutional mechanisms for attaining this vision.

The Regional Economic Communities (RECs) are recognized as African Union’s building blocks for regional and continental economic integration. Furthermore, the United Nations considers building the capacity of the RECs as one of the primary instruments needed to achieve a multi-sectoral response to the Food Crisis Challenge in Africa as well as that of the Climate Change. For this reason, the Economic Commission for Africa (ECA) in consultation with other UN
Agencies and the AUC has initiated a dialogue with RECs to establish coordination mechanisms at REC level referred to as Sub-regional Coordination Mechanisms (SRCM). The SRCM are intended to minimize fragmentation, reduce transaction costs, realize economies of scale, and ensure a more coordinated and coherent UN System-wide support to regional integration efforts and agenda.

The RECs are therefore ideal institutions to lead the development and implementation of the regional coordination mechanisms specifically targeting the prevention and control of AHI, TADs and other zoonoses. Such mechanisms can greatly enhance the capacities of PS to counter disease threats and promote inter-regional and international trade in livestock commodities, thus contributing to regional integration. This fits well with the overarching development frame for the African continent shaped by the New Partnership for Africa’s Development (NEPAD) and the Comprehensive Africa Agriculture Development Program (CAADP).

An Integrated Regional Coordination Mechanism (IRCM) for the prevention and control of TADs and Zoonoses in line with the political and development agenda of the AU, is proposed. The mechanism aims to strengthen the capacity of RECs to coordinate and harmonize disease prevention and control actions implemented by PS through capacity building, promotion of inter-sectoral coordination and institutionalization of coordination procedures and practices. The Mechanism will focus initially on a limited number of TADs and zoonoses prioritized by the RECs. The medium-term objective is to expand the IRCM’s scope to address other relevant TADs and zoonoses, and as such the Mechanism will be instrumental in promoting the “One Health” concept at national, regional and continental levels. The IRCM model could be expanded in the future to address other animal resources and NRM issues.

1.2 Rationale and methodology

Livestock rearing is an important social and economic activity in the predominantly rural African continent, which is blessed by extensive and diverse ecosystems and terrain suitable for livestock farming. The domestic animal resources are very diverse including but not limited to cattle, chickens, ducks, goats, pigs, equines (horses and donkeys), turkeys and ostriches. Traditionally, farm animals are a source of food, skins, fertilizer, traction power, medicine and other raw materials. Overall, the livestock sector contributes to about one third of the continent’s agricultural GDP. In spite of its significant potential livestock production in Africa is constrained by a multitude of technical, socio-economic and climatic factors. For example, domestic livestock raising in the vast trypanosomiasis infected areas is limited to small numbers of poor performing indigenous species. Also there are several diseases transmitted from wild life to domestic animals.

The need to strengthen inter-sectoral collaboration and improve regional coordination in the prevention and control of TADs and zoonoses has been expressed at several fora in Africa and globally, especially after the outbreaks of the Highly Pathogenic Avian Influenza (HPAI) subtype H5N1 that started in 1997 and the appearance of Severe Acute Respiratory Syndrome (SARS) in 2002. HPAI’s zoonotic nature and its potential to change into a form that is highly transmissible between humans sparked a global pandemic threat that has largely driven its control efforts since 2003.
As part of the global HPAI control effort, the African Union Interafrican Bureau for Animal Resources (AU-IBAR) organized two technical meetings\(^1\) in 2009. The objective of the meetings was to raise awareness of the pandemic threat among the decision makers, technical experts, international organizations, and development partners at national, regional and continental level. The Addis Ababa meeting was held immediately after the declaration of a pandemic caused by the novel A (H1N1) influenza virus, and was attended by 119 participants from 48 African States, and representatives from several Donors, international and regional organizations (EC, USAID, WHO, FAO, WCS, UN-OCHA, OIE, CDC, IFPRI and EAC). The main aim of this meeting was to raise awareness among the policymakers on the impact of Avian and Human Influenza (AHI), advocate for more support and better coordination of interventions in Africa, share experiences and lessons learned and build consensus on how to strengthen coordination mechanisms for prevention and control of AHI and other zoonoses in Africa.

The deliberations of the Addis Ababa meeting underscored the need for stronger inter-sectoral collaboration and effective regional coordination in the control of AHI as well as other TADs and zoonoses. A major recommendation was to develop an integrated regional coordination mechanism (IRCM) for the prevention and control of TADs and Zoonoses in Africa at REC and Inter-REC levels. The plan for the development of the IRCM was established after a series of meetings organized by, AU-IBAR which involved AUC’s Department of Social Affairs, FAO, OIE and WHO. The process for development of the mechanism, specific guidelines and the terms of reference for a team of experts to undertake the review of RECs as the initial phase prior to the IRCM formulation are attached (Annex 1). This stocktaking and analytical report is a product of the AMU review exercise, based on a desk-top analysis of existing documents and the dialogue with AMU General Secretariat and its Member States (MS), and other stakeholders.

The Overview of the performance of Veterinary Services presented for the AMU Member States is based on the reports from PVS Evaluations. The OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool) was developed with the aim of supporting the NVSs to establish their level of performance, identify gaps and weaknesses in their ability to comply with OIE international standards, and to form a shared vision with stakeholders (including the private sector), with the goal of establishing priorities and securing the investments needed to carry out strategic initiatives. The PVS Evaluations are conducted by OIE upon request from the country and the report obtained is considered confidential unless authorized by the country for sharing with others.

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\(^1\)Addis Ababa meeting, 18-21 August 2009; and Naivasha meetings, 18-21 October 2009. Both meetings were organized through the Support Program to Integrated National Action Plans on Avian and Human Influenza (SPINAP-AHI),
PART II: MAIN FINDINGS

1. General overview of AMU

1.1 Socio-economic situation

The AMU has a combined population of more than 86 million people, a total land area of more than six million Km² and combined Gross Domestic Product of $ 381 billion (2009 estimates).

The AMU Member States (MS) are very diverse and have different resources, opportunities and problems in as much as they have commonalities. As shown in Table 1, MS vary in land resources, economic parameters (e.g. agricultural GDP, overall GDP), and population density and in the extent by which each country is achieving the MDGs (poverty reduction, education, health, gender equality, child mortality, etc). Also, the MS differs in the extent by which post independence experiences have impacted on demography, political and civil stability. The HDI is generally medium in all UMA countries (0.520-0.847). There is also wide gap between countries in per capita GDP (13,982 USD to 1,177 USD). These facts underscore the challenges facing the UMA to achieve effective integration. However, UMA’s record and strive to strengthen its governance and coordination structures are an encouraging assurances that it could play a very important role in advancing the economic development in the region through collaboration and integration.

<table>
<thead>
<tr>
<th>Country</th>
<th>Surface (Km²)</th>
<th>Population (1,000)</th>
<th>HDI (2007)</th>
<th>GDP (Million US$)</th>
<th>GDP per capita (US$)</th>
<th>Agriculture GDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>2,381,741</td>
<td>34,895</td>
<td>0.754</td>
<td>158,974</td>
<td>4,625</td>
<td>8.1</td>
</tr>
<tr>
<td>Libya</td>
<td>1,759,540</td>
<td>6,420</td>
<td>0.847</td>
<td>87,854</td>
<td>13,982</td>
<td>2.1</td>
</tr>
<tr>
<td>Mauritania</td>
<td>1,025,520</td>
<td>3,291</td>
<td>0.520</td>
<td>3,771</td>
<td>1,177</td>
<td>13.8</td>
</tr>
<tr>
<td>Morocco</td>
<td>710,850</td>
<td>31,993</td>
<td>0.654</td>
<td>88,642</td>
<td>2,805</td>
<td>15.5</td>
</tr>
<tr>
<td>Tunisia</td>
<td>163,610</td>
<td>10,272</td>
<td>0.769</td>
<td>42,457</td>
<td>4,067</td>
<td>11.6</td>
</tr>
<tr>
<td>Total</td>
<td>6,041,261</td>
<td>86,871</td>
<td></td>
<td>381,698</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Socio-economic data of UMA MS

1.2 Structure and Governance

The Arab Maghreb Union (AMU) was created in 1989 in Marrakesh (Morocco)

The main objectives of UMA are to:

- Strengthen the fraternal bonds which unite the Member States and their peoples;
- Achieve progress and prosperity in the societies forming these countries and defend their rights;
- Contribute towards preserving peace based on justice and right;
- Pursue a common policy in various fields;
- Work progressively towards achieving the free movement of persons, services, goods and capital amongst the Member States.
In order to achieve its objectives, UMA has established the following bodies:

- **The Presidential Council** composed of the Heads of state of the Member States is the only body empowered to take decisions. The Council meets once a year and the presidency is held for a period of one year by each of the Heads of the Member States in turn. Since its inception the Presidential Council has met six times, the last one in Tunis in April 1994. The Prime Ministers or acting Prime Ministers of the Member States may meet whenever it may be necessary.

- **The Committee of Ministers** of Foreign Affairs is mandated with the task of preparing the sessions of the Presidential Council and examining questions laid before it by specialized Ministerial Committees.

- **The Specialized Ministerial Committees** are responsible for policy decisions, grouped under four main committees (Human resources, Infrastructures, Economy and Finance, and Food Security). Under the Committee on Human resources, a ministerial council on Health is established. Under the Food Security Committees, specialized bodies have also been established, namely two authorities (Cereal and pulses, and Research, training and extension), two permanent Committees (Veterinary Services and Control of Desertification and sustainable development of the environment) and four working groups (Agricultural policies and trade in agricultural products; quarantine and plant protection; fisheries and marine resources; and rationalization of water use in agriculture). The Committees of the Union Affairs, composed of a Minister of Maghreb Union Affairs from each Member Country, is responsible for monitoring the work of the Union and reporting to the Committees of Ministers of Foreign Affairs.

- **The Consultative Council**, based in Alger, is composed of twenty representatives from each Country and is responsible for providing an opinion on any decision which the Presidential Council may lay before it and may, if necessary, submit to the Council recommendations which it judges relevant in the strengthening the Union's action and contributing towards achieving its objectives.

- **The Judicial Commission**, based in Nouakchott and composed of two judges from each Member Country, is empowered to judge any dispute concerning the interpretation and the application of the Union’s Treaty.

The **General Secretariat** is headed by a Secretary General appointed by the Presidential Council. The organizational structure of UMA’s General Secretariat is illustrated in Figure 1.
The development agenda of UMA in the Food Security sector is shaped by the Action Plan 2011-2020 for the execution of the agricultural strategic vision for Maghreb 2030. The Action Plan 2011-2020 is structured along three main priority areas, namely:

- increased production of cereals and income for the farmers of Maghreb through an increased productivity supported by research and investments;
- reduction of volatility of cereal prices through a more efficient supply and distribution channels and a better utilization of financial instruments to cover risks associated with trade within the Maghreb area;
- improved regional cooperation for the sustainable management of natural resources, the control of transboundary pests, food safety and reduction in the use of pesticides.

On the basis of the recommendations made in Fez in 2008 and the work carried out in 2010 by UMA experts, six specific programs have been elaborated. Most programs are focusing on cereal crops, markets and sustainable management of natural resources. Only one program is addressing the control of transboundary pests and animal diseases, in order to reduce risks associated with the increased cross border movements of plants, animals and food items. This program has two main components, one promoting the harmonization of phytosanitary measures, animal health measures, safety standards and control of pesticides. The other component is addressing the surveillance and control of plant pests and trans-boundary animal diseases.
2. **Animal Health**

2.1 **Overview of the livestock sector**

2.1.1 **Importance of the livestock sector**

A big part of the UMA region has climate that does not support livestock rearing in particular the extensively managed ones. However, between the five countries in the region the importance of livestock is highly variable. Data from 2008 (Table 3.1), show that the region boasts 2.1 million heads of Camels, over 5.4 million cattle, nearly 58 million sheep, 17.3 million goats, nearly 20,000 pigs and over 384 million chickens. There is a skewed distribution of the livestock species within the region. For instance over 70% of camels in the region were found in Mauritania. Similarly over 74% of chickens in the region are contributed by only Algeria and Morocco. Sheep distribution is skewed towards Algeria and Morocco with the two contributing over 64%.

<table>
<thead>
<tr>
<th>Country</th>
<th>Camels (1000)</th>
<th>Cattle (1000)</th>
<th>Sheep (1000)</th>
<th>Goats (1000)</th>
<th>Pigs (1000)</th>
<th>Poultry (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>295.1</td>
<td>164.1</td>
<td>19946.2</td>
<td>3751.4</td>
<td>5.7</td>
<td>125</td>
</tr>
<tr>
<td>Libya</td>
<td>47</td>
<td>130</td>
<td>4500</td>
<td>1265</td>
<td>na</td>
<td>25</td>
</tr>
<tr>
<td>Mauritania</td>
<td>1495</td>
<td>1627.53</td>
<td>8850</td>
<td>5610</td>
<td>na</td>
<td>4.3</td>
</tr>
<tr>
<td>Morocco</td>
<td>45</td>
<td>2814</td>
<td>17077.7</td>
<td>5177.9</td>
<td>8</td>
<td>160</td>
</tr>
<tr>
<td>Tunisia</td>
<td>235</td>
<td>694.7</td>
<td>7300.94</td>
<td>1496.3</td>
<td>6</td>
<td>70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2117.1</strong></td>
<td><strong>5430.33</strong></td>
<td><strong>57674.84</strong></td>
<td><strong>17300.6</strong></td>
<td><strong>19.7</strong></td>
<td><strong>384.3</strong></td>
</tr>
</tbody>
</table>

Table 3.1 Livestock production data of UMA Member States, 2008

2.1.2 **Production and Trade**

Data from FAOSTAT shows that the UMA region produced over 0.39 million metric tones (MT) of beef, 0.04 m MT of camel meat, 0.9 m MT of chicken meat, 0.07 m MT of goat meat, 0.4 m MT of mutton, 883 MT of pork, 0.6 m MT of hen eggs and over 4.5 million liters of whole cow milk (Table 3.2). The total meat production in the region was standing at over 1.8 million metric tonnes.

In terms of trade in livestock, the 2008 (FAO STAT) records show that the region imported over 34,000 heads of cattle, over 778 goats, and nearly 7.5 million chickens.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>127000</td>
<td>4500</td>
<td>254000</td>
<td>1,500,000</td>
<td>14200</td>
<td>185,000</td>
<td>128</td>
<td>187,000</td>
</tr>
<tr>
<td>Libya</td>
<td>6300</td>
<td>5000</td>
<td>100000</td>
<td>130000</td>
<td>6000</td>
<td>6000</td>
<td>28000</td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>25800</td>
<td>22500</td>
<td>4464</td>
<td>126000</td>
<td>14550</td>
<td>5430</td>
<td>24750</td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>170000</td>
<td>2520</td>
<td>440000</td>
<td>1700000</td>
<td>22000</td>
<td>244000</td>
<td>600</td>
<td>120000</td>
</tr>
<tr>
<td>Tunisia</td>
<td>62100</td>
<td>1440</td>
<td>102500</td>
<td>1046000</td>
<td>10500</td>
<td>89000</td>
<td>155</td>
<td>52200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>391200</strong></td>
<td><strong>35960</strong></td>
<td><strong>900964</strong></td>
<td><strong>4502000</strong></td>
<td><strong>67250</strong></td>
<td><strong>583430</strong></td>
<td><strong>883</strong></td>
<td><strong>411950</strong></td>
</tr>
</tbody>
</table>

Table 3.2 Food Supply from Livestock in the UMA region, 2008
<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Goats</th>
<th>Pigs</th>
<th>Sheep</th>
<th>Chickens (1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>4345</td>
<td></td>
<td>0</td>
<td>0</td>
<td>3242</td>
</tr>
<tr>
<td>Libya</td>
<td>10133</td>
<td>754</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mauritania</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>Morocco</td>
<td>9685</td>
<td></td>
<td></td>
<td>0</td>
<td>3187</td>
</tr>
<tr>
<td>Tunisia</td>
<td>10032</td>
<td>24</td>
<td></td>
<td>892</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>34195</td>
<td>778</td>
<td>0</td>
<td>0</td>
<td>7359</td>
</tr>
</tbody>
</table>

Table 3.3 Livestock imports (Heads) in the UMA, 2008.

Data on export were very scanty and this was further elaborated by the director of Food Security at UMA Dr. Ahmed Srikah who pointed out at little or no livestock export from the region. Data from FAOSTAT 2008 shows only Mauritania exported goats (135,000 heads) and sheep (320,000 heads) while Morocco exported chickens (4,000 heads).

**Stakeholders in the value chain**

Stakeholders in the value chain includes producers (pastoralists especially in Mauritania, established ranch owners in the Morocco, traditional poultry keepers and established poultry companies), middlemen, transporters, traders, processors, government organs, service providers, NGOs and consumers. Some of these stakeholders especially the producers and traders are organized in associations/organizations to help them on matters relevant to them. The most established of these stakeholders is the Maghreb farmers’ Union which is regional and is heavily involved in various matters pertaining to Agriculture in the region.

**Regulatory frameworks governing livestock trade at cross-border and REC levels**

Individual countries subscribe to national laws and regulations on matters related to cross-border livestock trade. The individual countries also adhere to international regulations and standards on livestock trade as advanced by OIE and WTO.

**Distribution channels and potential role in transmission of TADs and zoonoses**

The key distribution channels for livestock in the region include periodic live animal markets mostly for ruminants and traditionally raised poultry. There are other distribution channels that are specific for such animal species as pigs and commercial broilers which do not normally appear in the periodic livestock markets. All these distribution channels follow both the official (with certifications and movement permits) and at times the non-official routes. In most of the UMA MS, animal slaughter and processing for food is carried out in certified abattoirs. Home slaughter is very common especially during religious festivals for small ruminants, poultry and even cattle and dromedaries. There is therefore very high potential for incursions of exotic diseases to the region through importation of livestock from Europe.

**Annual volume of cross border trade and within REC**

The volume of cross border livestock trade in the UMA region is not well documented. Data from the International Trade Centre (ITC, 2008) shows very little on livestock export but more on imports (as indicated by the amount of money
changing hands). For instance the total import bill for the UMA region attributable to livestock trade was over US$ 77 million. On the other hand exports yielded a paltry US$ 4.3 million showing clearly that there was higher inward volume that outwards. Lack of information on cross border livestock trade is a major concern in prevention and control of TADs and zoonoses in the region since live animals that are traded are a potential sources of infections.

2.1.3 Bio-security measures

Although there is no regional biosecurity strategy or guidelines, each of MS have their own biosecurity measures which was developed as part of the preparedness and response to HPAI in their respective countries. Individual countries also practice quarantine, certification of livestock movements, ante- and post-mortem inspections as means of preventing diseases incursions and spread. However, most of the biosecurity practices are not directly supported by the existing legal frameworks and hence implementation is difficult to enforce.

2.2 Overview of the Wildlife sector

2.2.1 Importance of the wildlife sector

State of biodiversity and wildlife in UMA

The AMU region is ecologically dominated by the Sahara. In the north, along the coast of Libya, Tunisia, Algeria and Morocco, is a narrow zone of Mediterranean evergreen forest that transitions southwardly through a short semi-arid stretch to the extreme arid ecosystem of the Sahara desert. The Atlas mountain range also lies in the north of the region extending about 2,500 km (1,500 miles) through Morocco, Algeria, and Tunisia. The mountain range traps moisture from the Mediterranean Sea and the Atlantic Ocean resulting in relief rainfall which supports rivers, forests and farmlands on the windward side while cutting off the Sahara Desert to the south (leeward side) from the moisture of the sea.

The region is therefore characterized by relatively few species of wildlife (Table 2) and much lower concentrations than are found in sub-Saharan Africa. Many species that are well adapted to the arid, semi-arid and Mediterranean ecological conditions are, however, found in the region with variation across the countries. Notable mammals include wild boars, jackals, foxes, leopards, panthers, hyenas, cheetah, Guinea baboons, Barbary macaque, Dorcas gazelles, Dama gazelles, Barbary sheep, red deers among others. Higher concentrations of the larger mammals are found in the more forested highland regions of some countries and in a few protected areas. In addition, there are many species of rodents, reptiles, bats, and hundreds of bird species including migratory ones. Some of the countries bordering the Mediterranean Sea such as Morocco have important nesting sites for migratory birds from Europe, which are protected by international conventions.

Climatic desiccation, overhunting and habitat loss has led to depletion of the large African mammals such as ostrich, addax, gazelles and cheetah from areas where they were previously common and many of them are now endangered. Species like the Scimitar-horned oryx, Barbary lion and the brown Atlas bear are extinct from the wild.
<table>
<thead>
<tr>
<th>Country</th>
<th>Protected areas</th>
<th>Number of species</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Area (000 ha)</td>
</tr>
<tr>
<td>Algeria</td>
<td>27</td>
<td>11,888</td>
</tr>
<tr>
<td>Libya</td>
<td>7</td>
<td>123</td>
</tr>
<tr>
<td>Mauritania</td>
<td>4</td>
<td>250</td>
</tr>
<tr>
<td>Morocco</td>
<td>25</td>
<td>471</td>
</tr>
<tr>
<td>Tunisia</td>
<td>38</td>
<td>239</td>
</tr>
</tbody>
</table>

Table 2: Protected areas and biodiversity distribution in the AMU countries (WRI)

### 2.2.2 Wildlife contribution

The contribution of the wildlife sector to the AMU economy is insignificant and not a priority in regional programming. The sector falls under the Environment section of the Food and Security directorate which deals with broad environmental issues. There are no specific strategies on biodiversity conservation at Secretariat level. The main concerns are the fight against desertification and the control of desert locusts.

### 2.2.3 Role of wildlife in the epidemiology of AHI, TADs and other zoonoses

The degree of wildlife-livestock-human interaction in AMU is generally low and only more pronounced in the forested highland areas of some countries (Morocco, Algeria), which have higher concentrations of wildlife. In these areas interaction occurs seasonally when livestock are moved to higher altitudes in search of pasture. Some of the Member States have regulated hunting whereby human-wildlife interaction can be envisaged to take place through handling of carcasses of hunted animals. Wildlife is regarded as a possible victim rather than a vector or reservoir of livestock diseases in AMU possibly due to their relatively low concentration. However, as with sub-Saharan Africa the wildlife-livestock-human interaction in the region could have many implications on ecosystems including sharing several diseases which impact directly and indirectly on humans (Table 3). The role of the more common smaller mammalian species such as bats and rodents should be studied more as it could have greater implications than conventional game.
Wild animals are natural reservoirs for several diseases that affect the livestock economy and the livelihoods of rural communities. These diseases include foot and mouth disease (FMD), malignant catarrh fever (MSF); African swine fever (ASF) and African horse sickness (AHS). Rinderpest is a typical example of a disease primarily maintained in livestock but has serious negative impact on wildlife, and its eradication underscores the extent of the effort and resources needed for the containment and eradication of other key diseases such as Peste de petit ruminant (PPR), Rift Valley Fever (RVF) and FMD. In this respect, the key role played by wildlife sero-surveillance in the Rinderpest eradication process should to be considered as an approach which needs to be sustained in other control attempts.

Although the role of wildlife in the epidemiology of many diseases is not clear, wild animals are known to be susceptible to many diseases that affect domestic animals and may serve as epidemic, multiplier, endemic or maintenance hosts (Table 4) as briefly discussed below.

Often when there are contacts between livestock and wildlife, susceptible wild animals become infected following outbreaks of disease among the domestic animals. The disease dies off naturally in the wildlife population once it has been controlled in the domestic species. In such cases wild animals act as epidemic hosts of the disease agent. Wildlife infected this way may or may not manifest overt disease. In cases where they develop overt disease it may be accompanied with a wide range of mortality depending on the type of disease and species of animal involved. In cases where no overt disease develops the only evidence of infection is usually the presence of disease specific antibodies following the outbreak.

On the other hand, wild animals can serve as multiplier or epidemic hosts for some diseases such as Rinderpest and anthrax. The pathogens replicate efficiently in the hosts with subsequent enhanced transmission to other species either by contact or through environmental contamination.
Wild animals can also serve as **endemic hosts** of certain diseases causing infection at any time of the year. Examples are theileriosis, trypanosomiasis, cowdriosis and FMD among others. These types of diseases usually cause no mortality in the wildlife species although they may cause varying degrees of mortality among the domestic species.

Also the wild animals serve as **maintenance hosts** for some diseases such as FMD and bovine tuberculosis (BTB). The diseases are maintained in parts of the tissues of the host animal and could remain dormant for many years and be released from time to time to infect susceptible communicable animals. In such cases, eradicating the disease is a major challenge.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Notable species</th>
<th>Epidemiological role</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMD</td>
<td>Buffalo, impala, wildebeest,</td>
<td>Epidemic host</td>
<td>Low</td>
</tr>
<tr>
<td>Anthrax</td>
<td>Kudu, impala</td>
<td>Multiplier epidemic hosts</td>
<td>High</td>
</tr>
<tr>
<td>Bovine TB</td>
<td>Buffalo, kudu</td>
<td>Epidemic hosts</td>
<td>Moderate</td>
</tr>
<tr>
<td>PPR</td>
<td>Gazelle, oryx, ibix</td>
<td>Epidemic host</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rinderpest</td>
<td>Eland, kudu, bushbuck, giraffe,</td>
<td>Epidemic host</td>
<td>High</td>
</tr>
<tr>
<td>Brucellosis</td>
<td>Buffalo</td>
<td>Epidemic host</td>
<td>Low</td>
</tr>
<tr>
<td>Ticks and TBDs</td>
<td>Eland, buffalo, impala</td>
<td>Multiplier endemic host</td>
<td>Low</td>
</tr>
<tr>
<td>Internal parasites</td>
<td>Grazing ungulates</td>
<td>Multiplier endemic host</td>
<td>Low</td>
</tr>
<tr>
<td>Canine distemper</td>
<td>Lions, wild dogs</td>
<td>Epidemic host</td>
<td>High</td>
</tr>
<tr>
<td>Rabies</td>
<td>Yellow mongoose, bat-eared</td>
<td>Endemic hosts</td>
<td>None</td>
</tr>
<tr>
<td>Ebola</td>
<td>Monkey, gorillas, chimps</td>
<td>Epidemic host</td>
<td>None</td>
</tr>
<tr>
<td>Heart water</td>
<td>Eland, springbuck, lechwe,</td>
<td>Endemic hosts</td>
<td>None</td>
</tr>
<tr>
<td>Trypanosomiasis</td>
<td>Bushbuck</td>
<td>Multiplier endemic host</td>
<td>None</td>
</tr>
<tr>
<td>LPAI</td>
<td>Water birds</td>
<td>Maintenance host</td>
<td>None</td>
</tr>
</tbody>
</table>

**Table 4**: The role of wildlife in the epidemiology of common diseases in Africa

### 2.2.4 Wildlife health services

Information on the status of wildlife health services in AMU is not readily available. It would seem, however, that wildlife management and biodiversity conservation programs have not been given priority in the region. Wildlife health services are therefore likely to be similarly poorly developed or non-existent.
2.3 Status and impact of AHI, TADs and other Zoonoses

2.3.1 Status and impact of AHI outbreaks

AMU has never experienced HPAI outbreak in any of its MS, but the AMU Council of Ministers met just before the introduction of the disease in Africa to consider actions needed in the event of an outbreak. In 2006 when the first HPAI occurred in Africa people in the AMU region did not want to eat poultry meat and AMU had to come up with coordinated awareness programmes which were then implemented at MS level to reverse the situation and create the confidence that poultry meat was safe.

Although the region has not had an HPAI outbreak, its proximity to Egypt where HPAI is endemic is a concern. The region has however a Plan of Action on HPAI to address the disease in the event of an outbreak. The same Plan was used during the NIHI outbreak and this plan is implemented at country level. In addition, a TCP was initiated by FAO to help the region in implementing the regional plan, but the TCP was never finalized for implementation.

2.3.2 Status and impact of TADs outbreaks

The AMU has a fairly stable TADs and zoonoses situation compared to other RECs in Africa. The regional work relating to TADs and zoonoses coordination is handled by the AMU Permanent Veterinary Committee. Diseases that have been listed as a priority in the region include foot and mouth, bluetongue, Highly Pathogenic Avian Influenza, brucellosis, sheep pox and pest des petits ruminant. There is a general belief that the vast Sahara desert forming the southern boundaries of several AMU MS’s serves as a formidable barrier for disease transmission from the sub-Saharan region; but surveillance programmes to confirm this have been limited. There is therefore a weak surveillance programme between AMU and its sub-Saharan neighbours and most efforts have been centred on surveillance between AMU and its northern neighbours in southern Europe covering countries such as Spain, France, Portugal, Italy and France. Although not a member of AMU, Egypt has been included in the Maghreb/Mediterranean TADs surveillance programmes to complete the barrier to southern Europe.

At a conference organized by the AMU Secretary General on the Maghrebian Agriculture which took place from 30th June-2nd July 2008, the Working Group on Challenges of the Maghrebian Agriculture made a recommendation on animal health and pest control to implement two projects under the Regional Programme on Food Security in the Maghreb, and these are the Strengthening Coordination and Control Procedures as well as the fight against animal diseases and the other was on Development of Phytosanitary Controls. These recommendations recognize animal diseases as an important impediment to the development of the Maghrebian Agriculture.

A brief summary of animal diseases occurrence in the Maghrebian region is given below. Unfortunately the Maghreb MS’s do not report animal disease occurrences regularly to AU-IBAR for compilation of the Pan African Animal Health Yearbook as is done by countries from other regions of Africa and this has resulted in paucity of information on disease occurrences in the AMU region.

Bluetongue
From OIE notifications, bluetongue is the most widely notified disease in some Maghrebian MS's such as Morocco and Algeria. Bluetongue is reported to have appeared in North Africa in about December 1999 when the disease was reported in Algeria with subsequent cases in Tunisia in 2000.

In July 2009, an outbreak of bluetongue re-occurred in Morocco after a long period of absence. Eleven provinces were affected with 231 cases in at least 56 farms which were affected.

Vaccination was adopted as the primary strategy for managing the outbreak and more than 23 million sheep and goats were vaccinated. In addition to vaccination, arthropods control, quarantining, and modified stamping-out were also applied to control the outbreak. Morocco aims at eradicating this disease in the long term.

In Algeria the current outbreak of bluetongue was first notified to the OIE in August 2010; and is reported to be countrywide and to be affecting mostly sheep. Control measures applied include arthropods control, dipping and spraying of affected animals. Unlike in Morocco, vaccination is prohibited in Algeria.

It is not clear what informed the two AMU MSs to adopt different strategies for the control of the bluetongue outbreaks in their individual countries. Bluetongue is also endemic in Mauritania with periodic outbreaks.

The situation regarding bluetongue in the other two AMU MSs is not clear although there are no recent notifications on outbreaks in these countries.

**Foot and Mouth Disease**

Three AMU countries have not had an outbreak of FMD for a long time and have been urged to prepare country dossiers for submission to the OIE for disease freedom. These are Morocco, Algeria, and Tunisia. The FMD situation in Libya and Mauritania is a concern to the region because of the border situation with their southern neighbors, but these countries have also been urged to undertake in-country disease surveillance programme and border controls to improve their status to the level of the other three AMU countries.

**Pest des Petits Ruminant**

This disease is considered a priority in the AMU region and has been recently introduced in Morocco and it occurs in Mauritania as well. Information on the extent of the problem could not be found.

As a recommendation, AU-IBAR should encourage AMU MS to submit animal disease information like other African regions in order to help understand the extent of animal diseases in the continent. Furthermore, communication between AU-IBAR and AMU should be improved.

**2.3.3 Status and impact of other Zoonoses outbreaks**

Although not of major concern, the only other zoonoses mentioned is rabies, but the extent and nature of the problem is not yet ascertained.
2.4 Overview of the performance of Veterinary Services in AMU Member States

Since the launch of the global assessment programme of the VS by the OIE in 2006, the PVS tool was the subject of continuous updates taking into account the evolution of the Animal Health Code of the OIE. Furthermore, improvements were made to the tool on the basis of PVS experts’ experience collected by the OIE. To date, the PVS tool is in its fifth edition (2010). The evaluator manual, which contains information and procedures for conducting a PVS evaluation, is in its third edition (2009).

To take advantage of the improvements mentioned above, the version of reference that will be used in this report (number and title of the CC) will be the last version, i.e. that of 2010 with 46 critical skills (14 for the first fundamental component, 17 for the second, 7 for the third and 8 for the fourth).

Between 2006 and 2010, the basic structure of the PVS tool with 4 basic components (human, physical and financial resources, authority and technical capacity; interaction with relevant stakeholders; access to markets) did not change. The most notable changes have been made in the second edition of the tool and then in the Fifth Edition. These country assessments were conducted according to the calendar and on the basis of the editions of the PVS tool following:

<table>
<thead>
<tr>
<th>Pays</th>
<th>Dates de la mission PVS</th>
<th>Version of the PVS tool used</th>
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</thead>
<tbody>
<tr>
<td>Alegria</td>
<td>15 - 29 April 2007</td>
<td>1</td>
</tr>
<tr>
<td>Tunisie</td>
<td>11 - 23 June 2007</td>
<td>1</td>
</tr>
<tr>
<td>Morocco</td>
<td>9 - 21 July 2007</td>
<td>1</td>
</tr>
<tr>
<td>Mauritania</td>
<td>19 - 31 January 2008</td>
<td>2</td>
</tr>
<tr>
<td>Libya</td>
<td>26 July – 6 August 2009</td>
<td>4</td>
</tr>
</tbody>
</table>

The use of the 2010 version to analyze the reports of the UMA zone elaborated on the basis of the previous versions will result in the following consequences

- highlight the new CCs that require a follow up PVS mission to delineate a level of advancement;
- to reduce to 35 the CCs common to the 5 North African countries for the regional analysis presented in this report.

The methodology adopted for the regional analysis of the 5 PVS reports was as follows:

1) To resume the findings made in the 5 reports, CC by CC to establish a stocktaking of the regional situation following the logic of the PVS tool.
2) Establish for each critical competency recommendations on the reflections and actions that should be carried out at the regional level through the AMU;
3) Propose priority interventions to grasp at the regional level on the basis of the findings made in the preceding paragraph.

The analysis was exclusively conducted on the basis of available data in the PVS (qualitative) evaluation reports. This report doesn’t therefore prejudice possible developments which could be made to the OAS since the completion of
assessments. It is not excluded also that certain data are not totally accurate. In this case, it could be considered a posteriori to readjust some findings of the study on the basis of additional information that would be supplied by the concerned MS.

### 2.4.1 Human, physical and financial resources

#### I.1.A. Composition: veterinarians and other professionals and I.1.B. Composition: para-professionals veterinarians and others

Two countries out of five have a NA for these CC added to the PVS from 2008 (Mauritania and Libya) tool. For the other three countries in the region, the NAs of this CC need to be completed during the PVS monitoring missions that should be encouraged. For Mauritania and Libya, most positions of veterinary sciences or other disciplines are occupied by well qualified staff at the central, State and provincial levels (even local). In Libya, 127 veterinarians are working at the central level and more than two veterinarians are assigned to each province (there are 22 provinces).

The report refers to problems of poor distribution of veterinarians in the territory. In Mauritania, 33 veterinarians are fully or partially assigned to tasks related to VS missions in the public service and there would be 50 veterinarians working in private sector (NGOs and development projects). Although a significant number of positions is vacant at the regional level and insufficient workforce at central level, many young veterinarians are currently unemployed (50) and the level of recruitment is very low (three recruitments since 1993). The training school of veterinary para-professionals in Mauritania (Kaedi School) is no longer providing training degree since 15 years and a large part of these agents is currently at the end of career. The risk of veterinary para-professionals deficiency is very high in the short term (there are currently almost 90 veterinary para-professionals which seems particularly insufficient).

For the other countries (Morocco, Algeria, Tunisia), the composition of the VS is detailed although reports date from 2007. If it appears that the veterinarian workforces in Morocco are insufficient compared with the tasks allocated to the VS (291 veterinarians in the public sector), it is not the case in Algeria where the VS can count on a large number of veterinarians (9007 veterinarians registered since 1969 including 1400 in the public sector) assisted by 500 to 600 senior technicians for health or animal production. In Morocco, this deficiency is aggravated since the “Voluntary Definitive Departure” program of the Moroccan public service in 2005. In some external services or certain regional laboratories, about 50% of the workforce (more experienced), have opted for the early retirement. In addition, there are in Morocco 950 breeding technicians assigned to the VS where they are the main human resources. They are polyvalent (animal health and food safety) and are working under the supervision of a veterinarian (including meat inspection). As for the public veterinary workforce of technicians are insufficient compared with the tasks allocated to the Moroccan VS.

The situation is critical because the average age of livestock technicians exceeds fifty years; massive departures in retirement are planned in the coming years. In Algeria, about 1400 veterinarians are used by the veterinary administration and 4300 installed private veterinary clinics and offices. A significant number work as employees of pharmaceutical companies and units for breeding or processing of animal products, but it seems that a substantial number today encounters difficulties to find a job in the livestock sector. In Tunisia, the number of veterinarians is 229 in regional administration, 21 in Central and 29 in laboratories. 482 Auxiliaries are divided into the following categories: 182
technicians, 226 providers; 74 agents of food hygiene. The absolute number is quite satisfactory, but the report mentions that positions remain vacant in central administration.

Except for Algeria, deficits are globally quantitative (global for Morocco and Mauritania, at the central level for Tunisia and in the field for Libya).

Comments and recommendations:

- The composition of scientific and technical staff of veterinary services is essential for the achievement at both central (state or province) and local levels
- The VS should implement, in partnership with the professional organisations and relevant departments (education) management measures when expecting the composition of the veterinarians and para-professionals veterinarians both for the public and private sectors.
- An OIE mission for PVS gaps analysis has to be considered in order to define the optimum composition of the VS and the budget needed to fund the training and the possible recruitment of agents. This is in the frame of strengthening the VS over five years (except in Mauritania where the mission took place in February 2010).

I.2.A Veterinarians Professional competencies and I.2.B. Veterinary paraprofessional's competencies

Two groups of countries seem to be distinguished: a first group (Morocco, Algeria, Tunisia) with NA ranging from 3 to 4 and a second group (Mauritania, Libya) with a NA ranging from 1 to 2 (except paraprofessionals in Mauritania with a NA 4 but this is unsure since the training school of paraprofessionals has stopped forming agents since 15 years).

In General, there are two veterinary faculties in Libya, a veterinarian school in Tunisia (referred to as "high level" in the PVS report), a veterinary school and five veterinary University institutes in Algeria and an Agronomic and Veterinary Institute in Morocco. Veterinarians in Mauritania are trained abroad. In Algeria, significant differences in training between the Veterinary school and the 5 academics institutes forming veterinarians are reported, due to inadequacy of teachers and the lack of practical trainings. According to the PVS report, too many veterinary schools produce too many finalists with a risk of “decredibilization” of the diplomas.

The practical Training is often reported as insufficient, particularly at university level. The PVS Tunisia report states that students are recruited through competitive examination after a preparatory class (or through files for 10%). Supervision is considered as excellent with 49 professors of whom 45 are full-time. Tunisia produces all of its own veterinarians and the level of skills is very satisfying for veterinarians. The report however shows the problem of age distribution in the professional body and whose renewal is likely to be brutal. In Morocco, selection for admission at the Agronomy and Veterinary Institute Hassan II (IAV) and the entrance to the veterinary industry is severe. Ultimately promoting veterinarians each year brings together some fifty individuals. The training lasts six years and generally corresponds to the curriculum issued by the European schools. The disciplinary division is close to those existing in Europe and the ambition is to form a versatile veterinarian both with high scientific and technical levels and recognized for his clinical and professional skills. The IAV and its faculty are well integrated into international and regional academic
networks. Morocco's report also mentions that "all veterinarians encountered by the experts were deemed competent and versatile."

As for the veterinary paraprofessionals training, it is rudimentary in Libya (short courses), abandoned in Mauritania (since 15 years), homogeneous and lasts 2 years at the breeding Royal Institute of Kenitra (Morocco), of good quality in Algeria (grade of a Senior Production Technician or Animal Health) and not detailed in the Tunisia PVS report.

The existence of certain group of veterinary para-professionals is reported of whom the number and the qualifications are unknown (Libya). This joints the lack of differentiation problem in the field whereby the functions of various professional groups working in the field of animal health. People with low or no qualifications sometimes abuse the term "veterinarian". This problem seems rather marginal in North Africa. The lack of job description sheet including the requirements for qualification and experience is pointed out in some reports (Libya or Mauritania, for example).

Comments and recommendations:

Human resources constitute a major limiting factor in the quality of VS because they affect the ability of all assigned missions to the VS that are dealt with in the various critical skills of the PVS tool. It is therefore a strategic point to treat with a high degree of priority at each State level while keeping in mind that the impact of a policy in this area will not be noticeable in the medium or long term.

In addition to the essential long delay in the training of executives and professionals of high level, the management of budgetary issues to ensure recruitments tailored to needs, the adapting of the legal framework including setting employment frameworks and statutes for the public service; the establishment of a conducive environment to the installation and maintenance of high level professionals of the private sector in the field, will be the issues to be addressed at each State level. As such, countries that have benefited from an OIE mission for PVS gaps analysis may, according to the priorities of the country, be usefully based on these facts of the analysis needs.

- Organize a working group within AMU to study issues of professional qualifications in order to first establish conditions of recognition and equivalence of diplomas and titles for veterinarians, and secondly for the different categories of veterinary paraprofessionals that will have to be specified. This group could be composed of representatives of veterinary authorities, veterinary statutory bodies and major institutions in charge of VS officers in the region. The minimum content of the training curriculum for these various categories of professionals could be established in this framework.

An OIE twinning project between an institution dedicated to the training of veterinarians in the region and an OIE Collaborating Centre for veterinary or official veterinarians training could be envisaged with a view to create a regional pole of competence in veterinary training for North Africa (training of official veterinarians and establishment of regional continuous training modules, see next point).

In parallel, it would be convenient; taking into account the requirements set out in the OIE Code; to define for each identified professional category, the main functions related to VS that could be assigned to them, both in terms of
practice of veterinary medicine and realization of official missions for inspection and certification. These elements should be incorporated into national or community laws while ensuring if needed, the establishment of some transitional provisions allowing a gradual regularization of the situation.

I-3. Continuous training

The existing situation is homogeneous: a real program of training for staff of VS has not been set up and there is no budget line for this activity. Timely access to training provided by technical partners is reported for VS and laboratory officials from central government. That training doesn’t always correspond to real needs of these agents.

Comments and recommendations:

In addition to the initial training, continuous training is essential to allow agents to maintain their scientific and technical knowledge up to date throughout their careers, to adapt to new functions or areas requiring special skills and participate actively in the process of changing missions and structures of the SV. It is also a motivator of staff and a way to harmonize practices within a state or region. The training involved the fact that the staffs of SV have the power of discernment necessary in their professional judgments. This is a fundamental principle of the quality of SV, set out in Chapter 3.1 of the Code.

In addition to the training of OIE Delegates and focal points developed in Africa since 2006 by the OIE, identify training modules that could be organized at regional level in key areas of the OAS, whether administrative, legal scientific or technical and define the objectives and content of training. This could be achieved by the working group's recommendations mentioned in the previous paragraph with the support of an institution in the UMA region dedicated to training veterinarians and an OIE Collaborating Centre on training. The organization of regular training sessions open to all officials of Member of States on specific themes would have the advantage of allowing officers to receive the same level of education, to harmonize their knowledge and practices and to form a network in which they can continue to exchange and share experiences at the regional level. The arrangements for providing such training should be considered: it would be good to distribute these different regional trainings between countries.

UMA could also work in collaboration with these same actors in the development of teaching kits suitable for larger scale dissemination of knowledge, which will permit to gather available resources and ensure all countries have access to quality training tools well adapted to the regional context.

I-4. Technical independence

The level of the CC is generally high and globally homogenous throughout the region. However, from a theoretical point of view, the current organization as described in the UMA PVS reports of does not exclude the possibility of deviation from the chain of command or duplication by giving authorities more powers on the same subject. Apart from Algeria, the organization of SV does not generally correspond to the principle of direct chain of command recommended in the Code: it appears that the veterinary authority does not have staffs that are dedicated to the governing powers in the veterinary field and under his direct authority, or financial resources to adapt resources to needs. The public SV in the region are sometimes considered, to varying degrees (including Mauritania), as providers of
services to farmers and not as agents in charge of establishing the rules and check their uniform application in the territory (application of enforcement measures and administrative and judicial police). The lack of direct authority from the central level down to the ground does not usually guarantee swift and uniform actions nor carry out effective monitoring and training of staff (except Algeria).

In some fields (including border inspection, the veterinary drug and food safety) where several departments or ministries are involved, a lack of definition of the competent authorities, the authority of agents and means of inter-departmental coordination is also noted. This is to be linked with the legislation, which, incomplete or obsolete in some countries (see also IV-1 and CC VI-2 on this point), does not provide a sound basis for decision making and stain objectivity and impartiality of the officers in charge of inspections and certifications.

To these difficulties are compounded an overall lack of financial and physical resources. The lack of appropriate infrastructure and equipment not suitable (e.g. slaughterhouses, border inspection posts, cold chain, means of travel and communication) impair the efficient implementation of missions. Operating costs are not always provided to the field level, resulting in the fundraising by the agents through the creation of private activities. These acts are contrary to the principle of independence (conflicts of interest) and lead to unfair competition vis-à-vis private veterinarians.

Comments and recommendations:

- An organizational framework responds to the principle of direct chain of command with a defined central veterinary authority having authority over officers clearly identified at the field level and responsive budgets for the realization of their missions is necessary to ensure respect for the fundamental principle of independence of SV. A comprehensive and flexible legal basis responsive to national and regional context is also essential.
- The technical independence is a necessary condition for the implementation of a rapid response to health crises and effective management of health programs on the whole territory. It is also a basic criterion for establishing a relationship of trust between trading partners. Regardless of this high level of CC in the region, major reforms at the national level in countries of the UMA space are needed.

Recommendations:

- Continue, at the UMA level, the work started on Community legislation (conventions and protocols signed between 1992 and 1994) in matters of animal health and food safety of animal origin for specifying the role of the veterinary authority, to frame the tasks related to SV and conditions of their application.
- Develop information campaigns to explain to a high political level the role of SV as agreed by the OIE, the basic mission of the public SV and technical independence criteria.
- Monitor progress in each State on the establishment of an organization with the principle of direct chain of command and a specific funding covering all activities of public SV.
I-5. Stability of structures and political durability

The level of the CC is generally homogeneous and particularly high in the region (optimum level in Morocco, Algeria and Tunisia). This particular high level reflects the stability of the organization of the public part of the VS and the stability of sanitary programs.

Comments and recommendations:

A relatively stable structure is necessary for developing and implementing sanitary policies, and to assess its effectiveness. It should be mentioned that the CC does not consider (judge) so far the relevance of the organization or sanitary programs in place.

Through communication activities with the Ministers concerned, the AMU could encourage the adoption of institutional reforms needed to improve the organization and operation of SV in accordance with international standards.

I-6. A. Internal coordination (chain of command) I-6.B. External coordination

The CC session appeared in the 2010 PVS edition so that no PVS report separates the internal and external coordination. However, the difficulties encountered in the previous point about the chain of command as well as the gaps in regulatory bases are responsible for some of the shortcomings in the coordination of sectors and institutions related to SV (internal coordination). In terms of coordination, two groups of countries differ if one refers to the NA assigned to countries in North Africa: Morocco, Algeria and Tunisia on one hand (NA between 3 and 4) and Mauritania and Libya on the other (NA evaluated at 2).

Coordination actions, however, were noted in the context of the completion of mandatory prophylaxis, surveillance activities for some diseases (involving the coordination of internal SV), programs of information (e.g. rabies in Morocco) as well as an occasion of the preparation of plans to control a number of animal diseases (zoonoses i.e. avian flu mainly involving several jurisdictions and professional organizations).

Apart from these points, there was a real lack of coordination (external coordination) with other departments including the Ministry of Health in charge of common tasks related to veterinary medicine (Tunisia, for example), inspection and certification of foodstuffs including food import (Libya, for example); customs, essential in the context of import controls, environmental services, generally responsible of actions related to wildlife, area presenting the importance in monitoring of certain animal diseases, and the security forces, essential partners in support of VS to monitor the application of sanitary rules and address violations. In Tunisia, for example, there is a clear lack of coordination between services in areas such as animal identification and sanitary food safety. As such, the collapse of the sanitary inspection of animal products between different structures (ministries, municipalities, private agents ...) that performs according to different terms and objectives with staff sometimes without technical expertise is not satisfactory in terms of sanitary food safety of animal origin.

The fact that VS officers maintain informal relations at the field level with their colleagues from other services is laudable; however, this does not replace a formal coordination at the central level that permits a clear and homogenous distribution of tasks in a territory.
Comments and recommendations:

- There is an overall lack of clarity and understanding of the extent of governing powers within the VS in countries. These services are often confined to a limited role in animal health. The lacks of administrative, regulatory and technical VS authorities are all factors affecting the coordination with other departments or ministries.
- Once the veterinary authority does not have the entire veterinary field under his direct responsibility (frequent case of inspection of food of animal origin), it is necessary that formal mechanisms for consultation and coordination are put in place. It is at a high level that relations must be arbitrated between ministries and the scope of the different services: it is indeed necessary to seek complementarities and synergies and avoid duplications that involve additional costs for the state and operators and a lower efficiency.

Recommendations:

- It would be helpful if the AMU, which needs to have a precise knowledge of the mandates of its partners, has an inventory of all national authorities involved in the fields of animal health and sanitary safety of food of animal origin as well as the mandates that has been conferred to them. States should formally notify the AMU for each key area (animal health, sanitary food safety, veterinary drugs, import and export of animals and food of animal origin) the competent authority in charge. This state should be updated during reforms in each country.
- Furthermore, under that power, it is necessary that each state member adopts a National Coordinating Committee of SPS issues and related matters.

I-7. Physical resources

The NA of the CC remains to be completed for Morocco, Algeria and Tunisia during PVS monitoring missions that should be encouraged. In Mauritania, the VS has physical resources that are not adapted to most levels and the maintenance of available infrastructure is poor. The PVS report mentions a purchase of communication material (with internet) acceptable at the central level. On the ground, local, aging or non-existent, lack of veterinary equipment (inspection equipment, autopsy, treatment and cold), lack of water and electricity subscription and cold chain very irregular are mentioned.

The situation in Libya seems generally quite similar to that described in the Morocco, Algeria and Tunisia reports, namely physical resources appropriate to the overall national and regional level (and at some local level) but maintaining these resources, and the replacement of obsolete parts, is only occasional. For example, the report indicates that Tunisia offices are neither heated nor air conditioned at a major border inspection post or the lack of vehicle (or vehicles sometimes in poor condition).

Comments and recommendations:

- The quality of physical resources and their effective management (buildings, communications facilities, computers and peripherals, a means of transport, cold chain and specific equipment, etc.) are essential and necessary aspects to have effective operational VS. If the question of physical resources must be considered primarily for public service,
equipment and depreciation should also be addressed for the private sector particularly in defining levels of compensation under the sanitary mandate in order to ensure that the National Veterinary mesh (and therefore the quality of supervision) will be effective and sustainable.

- To define the necessary requirements in terms of physical resources and to specify the necessary budget as part of a plan to strengthen the VS, a OIE mission for the PVS gap analysis should be considered in all countries of the AMU region (except in Mauritania where the mission took place in February 2010).

1.8. Operating funding

The Funding of VS in the region is regular in all countries. However, it is unsuitable for required elementary operations (epidemiological surveillance, early warning and rapid response, veterinary public health), except in Morocco and Libya, where there is no prevision of funding for the expansion of operations or the implementation of new operations.

In Tunisia, the level of funding is insufficient and the mobilization of funds is not autonomous in the region. In Algeria, it is difficult to know the exact share of the budget allocated to the VS as the VS management is not individualized in their trusteeship ministry. The VS, however, have substantial financial resources to carry out health programs, investments and new or expanded operations.

In Mauritania, only central services benefit from its own budget line in contrast to VS decentralized whose budget depends on the Regional Delegations, and they themselves have very insufficient budgets.

Comments and recommendations:

- To assess the necessary financial resources of VS for the realization of their missions, the PVS gap analysis conducted by the OIE will provide valuable support to countries to enable them to estimate the cost of actions to implement in order to achieve the objectives of strengthening the VS set, in terms of operational budget and investment.

- Promote the implementation a OIE mission on PVS gap analysis in each country in the region and seek financial support from national authorities and donors on the basis of these reports and a roundtables of donors can be held to present the results of the OIE mission on PVS gap analysis (except in Mauritania where the mission took place in February 2010).

1-9. Funding for Emergency situations

The resources and mechanisms for access to financing in the case of emergency situations are nonexistent in 3 of the 5 countries. This implies a reduction of capacity for early detection and rapid response to diseases and a lack of guaranteed compensations for farmers. In the other two countries, the “Fund for agricultural development” in Morocco and the “Fund for animal health promotion and phytosanitary protection” in Algeria can be mobilized by the VS; these resources are reported as being sufficient.
Comments and recommendations:

- The efficiency of VS resides particularly in their ability to cope with health emergency situations. Shortcomings at this level endanger all neighboring countries and undermine investments and efforts consented in improving animal health.
- Compensation for breeders in case of culling of animals is a key factor for reporting suspicious disease to the veterinary authorities. A lack of transparency leads to an increased risk of spread of diseases and therefore an additional cost in their subsequent management.
- It should be evaluated at the AMU level the feasibility of establishing a special fund for emergency support to Member States facing health crises and conditions of use of such a fund in supplement to the national resources.

I-10. Investments financing

Investments in the region are variable; they are regular in Algeria and Morocco and casual in Mauritania, Tunisia and Libya. Different funding sources are mentioned in the reports from special investment funds, funds raised at the central level or kickstart funds at local level (e.g. Algeria). International supports are also mentioned (the World Bank in Tunisia, for example) with a limiting factor due to the fact that these investments do not include, in the case of Tunisia, depreciation or maintenance of credit which has resulted in balance problems to worry about in short term with no real lasting improvement.

Comments and recommendations:

- The VS must be able to follow the scientific and technical developments and therefore enjoy opportunities to modernize their methods and structures. It should also ensure that the depreciation costs of investments are taken into account in the current VS budgets to maintain its minimum gains.
- The OIE PVS gap analysis missions provide an order of magnitude of investments required and the amounts corresponding to their depreciation or replacement that are written down in the operating budgets. Countries will then gain in using these reports as a basis for negotiations to improve their structures and methods.

Recommendation: To promote the implementation of OIE PVS gap analysis missions in each country of the AMU region with the purpose of subsequent financial support from national authorities and donors on the basis of these reports (except in Mauritania where the mission took place in February 2010).
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<td>I.1.A. Composition: Veterinarians and other professionals (university qualifications)</td>
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<td>I.1.B. Composition: paraprofessionals veterinarians and other technical staffs</td>
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<td>I-3. Continued training</td>
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<td>I-5. Stability of structures and durability of politics</td>
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<td>I-6.A. Internal Coordination (chain of command)</td>
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<td>I-6.B. External Coordination</td>
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<td>I-7. Physical Resources</td>
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<td>I-8. Financing of operations</td>
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<td>3 (m)</td>
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<td>I-9. Financing of emergency situations</td>
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<td>I-10. Financing of investments</td>
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### 2.4.2 Technical authority and capability

#### II-1. Diagnoses established by the Veterinary Laboratories

The possibility to perform analysis is based primarily on the capacity of VS to effectively carry out and send samples to laboratories. This critical skill is highly related to the CC-II5.A and B (epidemiological surveillance) and and II-6 (early detection and rapid response).

In general, the NA of that CC in North Africa show real skills in this area except in Mauritania where the national laboratory is experiencing a number of problems (old premises to be completely renovated, lack of equipments, insufficient budget, etc.). In Libya, there is no national referral laboratory but two laboratories at the central level where routine activities are not available (insufficient monitoring plans) despite adequate equipment and staff with basic skills.

In Morocco, Algeria and Tunisia, the laboratories have expertise, equipment and ability to diagnose most diseases with zoonotic or economic importance. For diseases not present in the country but could enter the region, national laboratories have diagnostic capabilities (FA and IA for example) or are connected with European referral laboratories.

In Algeria, it is reported that the capacity of laboratories are currently under-exploited by the SV in particular for the monitoring programs of brucellosis, rabies and tuberculosis, and this despite the gratuity of services (Cfr interaction...
with stakeholders in order to strengthen). Networks of regional veterinary laboratories are mentioned in the PVS reports (except Mauritania) without the relevance of these networks being generally analyzed.

**Comments and recommendations:**

- Diagnostic capacities should be made possible at the national levels for endemic diseases in the region. It is however not necessary for all States to maintain high-level structures, equipments and skills for advanced diagnostics using techniques of reference for all these diseases and for certain exotic diseases.
- If at each state the level, procedures for sampling and transport of samples must be established as well as a network of laboratories put in place (central and regional where appropriate), it would also be useful at regional level such as AMU community referral laboratories be identified (centers of competency) to reliably and rapidly respond to the needs of specific diagnosis, manage inter-laboratory tests in the region, to carry out epidemiological analysis and provide support to national laboratories if needed.

**Recommendations:**

- Launch a thinking line on the creation and formalization of a regional network of referral laboratories, define their mandate and identify possible support mechanisms to carry out these activities. It will be necessary to use information already available through the established networks in the North African region by CIRAD or FAO. Diagnostic methods of mandatory notifiable diseases used by the laboratories of the UMA countries should comply with OIE standards.
- Promote the use of twinning arrangements of the OIE between laboratories of AMU States Members and OIE worldwide referral laboratories for diseases identified as priorities in the region.

II-2. Quality Assurance of Laboratory

For three of the five countries in the region, the NAs of that CC still need to be completed during the PVS monitoring missions that should be encouraged. The quality assurance of laboratories, however, is generally addressed in all PVS reports and for example in Morocco, where the pursuit of the approach of lab quality assurance towards accreditation is reported. In Algeria or Libya, the establishment of a process of quality assurance is mentioned. In Tunisia, the laboratory of food control is under the quality assurance and pre-audit reports available show that accreditation can be obtained (the organizational aspect, continuing training, metrology, inter-laboratory testing was taken into account). In Mauritania, the report shows a quality assurance program for the use of brucellosis ELISA test in 1999 at the National Centre for Livestock and Veterinary Research (CNERV) which today does not applies formal quality assurance process.

**Comments and recommendations:**

- Incite the development of national programmes aimed to promote quality assurance of laboratories where they do not exist,
- Identify responsible for quality assurance in the national and / or regional veterinary laboratories
• Initiate, when it is not existent, an approach to writing job descriptions, writing procedures for collecting samples, submission of these and laboratory analysis,

• Organize, foresee and finance the participation of quality assurance managers to relevant training on quality assurance. These courses could be organized at the regional level, for example as part of a component of a twinning OIE on the ovine catarrhal fever (bluetongue) (FCO) that would aim at becoming regional.

II-3. Risk Analysis

Generally, there are shortcomings in terms of compiling and using data in the region. The Mauritania report points out an outline of risk assessment following the avian influenza crisis. This has also resulted in the training of relevant staff for this discipline. However, Mauritania and Libya do not have the required capacity to carry out a systematic risk analysis to assist in decision making (the collection, processing and dissemination of health information are not regularly formalized and capitalized). Although endowed with a "vigilance committee" for each animal zoonotic or emerging disease, the risk analysis conducted by Morocco does not always correspond to international standards and risk analysis in food safety is still not depth. In Tunisia, the creation of a National Center for Animal Health Watch will be an improvement if it has the necessary means.

Comments and recommendations:

• It is necessary to have reliable data and an ability of data processing to make valid risk analysis. Thus far the quality of health data is particularly based on the quality of epidemiological surveillance network and the availability of updated databases (CC II-5.A and B), the quality of laboratory diagnosis (CC II-1) and the knowledge of results of research carried out.

• In each country, there should be a minimum number of people in VS and in major research institutions that should be trained in risks analysis to provide a basis of reference experts. The organization of such training could be conducted under the auspices of the AMU, in partnership with the OIE.

• In the medium term the Member States of AMU could consider the establishment of a regional risk assessment Unit that can provide advices to AMU and to Member states to respond to requirements and specific needs. The development of an OIE twinning between a collaborating centre "risks analysis" and an institution in the region aspiring to become a regional center of excellence for this theme is to consider.

II-4. Quarantine and border security

Apart from Mauritania, where quarantine procedures and border security are not based on international standards, the VS of the AMU region are able to establish and implement procedures for quarantine and border security based on international standards, but these procedures do not systematically cover the activities related to illegal imports of animals and products of animal origin.

For example, Tunisia has 24 entry points including 12 terrestrial, 6 airports and 6 ports all with very variable importance. This number is high and corresponds to the fact that there is a veterinary inspection post associated with
each customs office. Even if violations are found in animal markets, a complete monitoring of the borders is not possible. The lack of animal identification does not permit a control of the origin of animals in the area. The NA 3 is nevertheless retained because of the competence of the veterinarians on duty and their involvement which partially offset the bad working conditions. Moreover, the implemented procedures allow systematic monitoring of imports and the system of import permits laying down the conditions required for the entry ensures minimum guarantees.

Comments and recommendations:

- Managing the movement of live animals and products of animal origin is a key issue in preventing the spread of pathogens. Presently, there is some control of these movements in the region even if illegal movements of animals are reported in the PVS reports. The lack of animal identification system does not guarantee the reliability of the certification.
- Given the national and regional specificities of these movements and their complexity, a detailed analysis of their situation (including study of the flow of imported animals and products, origins, etc.) should be considered to allow the development of strategies on the best possible distribution of various veterinary border posts.
- AMU through its permanent Maghreb Veterinary Committee (CVMP), in consultation with professional organizations, should seek to complement the existing Community legislation (Protocol No 7) charting the veterinary health conditions of import of live cattle and cattle meat from countries no members of AMU signed on 11.11.1992 and Protocol No. 8 establishing health conditions and veterinary trade of poultry and its components between AMU countries signed on 04/02 / 1994).

This would include completion of modalities fixing specific health conditions to comply with for allowing intra-community movements and imports of animals and products of animal origin from other countries, the minimum conditions of equipment and operation of the border inspection posts, as well as the obligations of States in terms of empowerment, training and monitoring of the officers in charge of these inspections.

- It will also be necessary to establish the principles of identification required for animals to move; otherwise any real health control of movement can be achieved (see CC II-13.A and B).

II-5.A. Passive Epidemiological surveillance and II-5.B. Active Epidemiological surveillance

The epidemiological surveillance is an essential tool to know the precise health status of the country and adopt relevant health policies, and also to detect early onset of severe diseases and respond rapidly. Epidemiological surveillance networks are in place in countries of the region: for example Mauritanian epidemiological surveillance network of animal diseases (REMEMA) in Mauritania or national epidemiological surveillance network of animal diseases (RENESMA) in Morocco. Activities carried out in countries and types of diseases monitored vary quite widely from one country to another. Whereas surveillance is mostly passive in Mauritania and Libya (with financial incentives for Libya), active surveillance programs have, however, been completed on time for the search of Rinderpest (or avian influenza) to obtaining the officially-free status. It is reported that there is no list of mandatory notifiable diseases in Libya.
In Morocco, the surveillance is essentially passive for notifiable diseases (list of 88 notifiable diseases). Active surveillance is subject to partial pilot program of prospection, for example tuberculin testing of cattle in the Souss region, monitoring the movement of FMD virus, FCO, sheep pox or viral arthritis by serological poll. The results are communicated through the monthly epidemiological bulletin but it is not routinely sent to the local epidemiological surveillance network (authorized veterinary technicians and veterinary public sector at local level). However, epidemiological surveillance is still suffering from the lack of legal framework for breeding, since the identification and registration of cattle farms, sheep and goats are limited to a few farms with intensive livestock farming. For agriculture belonging to the subsistence economy sector, the knowledge of farming is based on the experience of field staff (mandated veterinarians, veterinarians of public sector, livestock technicians, and inseminators).

In Algeria, since the spread of FMD in 1999, the VS have established, a program of epidemiological surveillance based on the mandatory declaration of contagious diseases and relying on the Organization of veterinary inspections of the Willayats network, the National Institute of Veterinary Medicine (INMV) lab network and the observatories set up in the south of the country, with the participation of private veterinarians. The data collected in Willayats are transmitted at the central level and processed by the health surveillance Bureau which ensures their epidemiological analyze and the dissemination of periodic information on the health situation of the country through the publication of monthly and annual health bulletins.

The VS also conduct tracking campaigns for cattle tuberculosis and brucellosis. Also, poultry diseases are being closely monitored on the basis of an approval system of farms and on a voluntary basis. Since 2005, in cooperation with the Directorate General of Forests, a surveillance of avian influenza based on the capture of wild birds and sample collection has been set up in the wetlands of the country. Finally, an active surveillance program was considered to ensure the detection of the six exotic priority diseases (FA, PPR, PPCB, FVR, Rinderpest and Fever of the Nile Valley) regarded as a risk of contamination, including from south borders of the country. The VS also regularly report the features of the health situation to international organizations of which Algeria is a member (OIE and FAO in particular), as well as neighboring countries and those with whom Algeria has signed health agreements.

In Tunisia, six diseases are targeted, four for the surveillance (FA, FCO, rabies, sheep pox) and two for the vigilance (PPR and Rinderpest). The epidemiological surveillance of animal diseases has been the subject of sustained efforts in the country and international aid has been well mobilized. The involvement of agents is noteworthy that gives real force to VS. Active surveillance programs were being developed. However, significant difficulties exist including the automobile park and communication network. Difficulties in transporting samples to laboratories are reported. Development and financing of health sector including through good management of the veterinary medicines are factors of significant improvement for the geographic coverage. Finally, the creation of a specialized public institution is envisaged (National center of animal health monitoring).

Comments and recommendations:

- The North African countries have benefited from various supports, whether the PACE program that has established or strengthened epidemiological surveillance networks in sub-Saharan Africa (Mauritania) or regional projects RADISCON (FAO, 29 countries including those in North Africa), FSP-epireg funded by France (Morocco, Algeria,
Tunisia) or a project of the World Bank in Tunisia. After these projects, the sustainability of activities undertaken, although variable, is generally disappointing. At the regional level, it is essential that countries are able to provide a homogenous quality of health information. The effectiveness of health policies and strategies to control diseases depend on the existence of reliable health data.

- The CC is linked to many others, including professional and technical competencies of VS staff (I.2.A and I.2.b), the continuous training (I-3), technical independence (I-4), funding (I-8, I-9, I-10), physical resources (I-7), laboratory diagnosis of diseases (II-1), risk analysis (II-3), identification and traceability (II-13 A and B) and legislation (IV.-I and IV-2). Reinforcing the capacity in epidemiological surveillance thus requires actions on all these CC and also directly impact on the capabilities of early detection and rapid response to emergency situations (II-6) and on transparency (IV-6).

**Recommendations:**

- On the basis of a regional coordination unit, to set up a regional network of epidemiological surveillance and develop a regional list of notifiable priority animal diseases,
- Harmonize and validate procedures for diseases concerned surveillance at regional level and organize processing and dissemination of health information using appropriate regional tools (website, newsletter)
- Develop the preparation, organization and financing of regional surveys on regional priority diseases,
- The Twinning of an OIE Collaborating Centre "animal epidemiological surveillance" with a North African regional institution aspiring to become a regional hub of expertise in this discipline could be developed following appropriate procedures for OIE twinning establishment;
- See also the recommendations of the CC II-7 (prevention, control and disease eradication).

**II-6. Early detection / rapid response to emergencies**

The level chosen for all countries corresponds to the existence of minimal networks in the field and established procedures for determining whether or not there a health emergency. Morocco and Algeria also have legal and financial support necessary to take appropriate measures. A large number of constraints described in the previous CC have direct repercussions on the CC.

In Mauritania and Libya reports indicate the lack of adequate and regular financial support or the lack of appropriate legal framework. These deficiencies impair the ability of early detection and rapid response to emergencies. Confirmation of outbreaks of PPCB, of FVR, of FA and rabies in Mauritania is, however, mentioned in the activities of the epidemiological surveillance network REMEMA. Apart from a document entitled "Operational Plan for Animal Health for the Prevention and Fight against Avian Influenza," no emergency plan is mentioned in the Mauritania PVS report.

In Tunisia, a national emergency plan adapted to local avian influenza plan has been developed. There are no other plans but they were expected to be put in place in 2007 under the UE twinning framework. There was no simulation exercise and the report mentions the lack of legal and financial means (including compensation).
In Algeria, national emergency plans for FMD and Avian Influenza are mentioned as the existence of a legal framework, a chain of command and a financial support needed to quickly respond to health emergencies. In Morocco, the VS have to their credit, successful experiences of early detection and rapid response to emergencies in the field of animal health (e.g. African horse sickness outbreaks in 1989, outbreaks of FMD in 1999). Outbreaks of PPR in 2008 are subsequent to the post-PVS evaluation. The situation is less advanced in terms of early detection in the field of food safety, where there are no similar examples.

Comments and recommendations:

- One of the essential conditions of early warning is the existence of trust between farmers and VS. This is based primarily on the guarantee to receive compensation for applying health measures such as slaughtering animals. When legal provisions, procedures and clearly defined financial capacity (access to emergency funds) are missing, the VS are not able to ensure full cooperation of farmers.
- Recommendations: prepare an emergency plan for all priority animal diseases and organize simulation exercises. Implement the recommendations of CC II-7 (prevention, control and eradication of diseases).

II-7. Prevention, control and eradication of diseases

The CC has only been evaluated for two countries; however, most of other reports partially address issues of prevention and control of animal diseases. For both evaluated countries and in a general manner, when there are official programs of prophylaxis against some endemic diseases, their scope is limited due to their application to only a fraction of animals or territory. At the regional level, the programs vary from one country to another, which, in terms of harmonizing prevention measures, control and eradication of diseases should be improved (e.g. FA for Morocco, Algeria, and Tunisia).

For example, in Mauritania it is reported the practice of annual vaccinations against CBPP, PPR, sheep pox and camel pox. About 500,000 head of cattle are vaccinated against PPCB per campaign out of a total estimated to 1.5 million heads. The immunization coverage remains relatively low. A first draft of a scientific approach to assess the effectiveness of such vaccination programs is implemented with prevalence surveys.

In 2006, Morocco vaccinated against FMD (2.4 million cattle), pox (15.4 million sheep), canine rabies (283,000 dogs owned), Bluetongue (7, 8M sheep), anthrax (388,000 ruminants), pox camelina (6,500 camels) and treated 6.4 million animals against parasites. We can also report vaccination against enterotoxaemia (3.3 million small ruminants), vaccination of poultry against fowl typhoid (1.7 million poultry), and vaccination of birds against avian influenza (106,000 animals) and screening of Tuberculosis (25,000 cattle).

In Tunisia, vaccination campaigns are conducted without interruption for several years (e.g. for sheep: FCO, sheep pox and brucellosis) and the organization of serological campaign have been reported to evaluate the outcome of the vaccination FA (cattle). With the introduction of the health mandate, the implementation rate of vaccinations increased from 60% to 90% in some regions (experiment in progress).
For Libya, the report states there is no sustainable plan of control or eradication. The problems reported are the lack of traceability and the lack of movement’s control.

In general, programs are not evaluated on the basis of scientific and economic analysis such as cost-benefit type in order to adjust and improve its efficiency. In Mauritania and Libya, the gaps in legislation concerning the registration of livestock, animal identification systems, precise description of health measures to prevent and control, penalties for non-compliance by breeders, are all factors that hinder the effectiveness of official veterinary checks. Any sanction against farmers was noted in the country. The limited involvement of professionals in curriculum development is another constraint to their application in the field.

Comments and recommendations:

Prevention, control and eradication of animal diseases are the foundation of the VS activities. A significant number of animal diseases are endemic in the countries of the region; however, due to lack of human and physical resources or appropriate regulatory bases, some programs against animal diseases control are limited in scope. The lack of harmonization of programs against animal diseases at regional level can also be discussed.

Given the ability of easy contamination of animals from one country to another because of the many transborders movements, a harmonization of prevention programs and control of priority diseases in the region combined with strict enforcement of health controls of livestock trade appear necessary to achieve a sustainable improvement in health status.

Main recommendations:

• Establish regulatory provisions related to territorial interconnections for the surveillance of animal diseases in all the AMU countries, in accordance with the OIE Code.
• The community legislation should incorporate essential principles for an effective disease surveillance, early detection and rapid response to emergency situations: this also includes issues of veterinary authority, direct chain of command, coordination of monitoring and surveillance of farms, implementation of official controls, obligations of farmers and other operators, preparation and updating of emergency plans as well as compensation of farmers when culling.
• Pooling resources: compile information sheets and other communication tools on the priority animal diseases developed by Member States targeting VS officials and farmers and the general public to improve their detection and reporting. Adapt them if necessary and make them available to all Member States.
• Harmonize the type of data to be collected to allow a regional analysis of health data. This will require an agreement on definitions of terms used (e.g. "epidemiological unit", "case", "hotspot", etc). Hotspot
• Harmonize the rules establishing measures that can be applied in case of suspicion and confirmation of notifiable diseases, a list of diseases for which an emergency plan should be prepared. AMU could have a role in the validation of such plans.
• In Mauritania, it is good to continue and strengthen immunization programs against PPCB, PPR and sheep pox and generalize an appropriate system of active surveillance (serology, surveillance at the slaughtering level) to assess the effectiveness of vaccination campaigns. The updating of statistical data on livestock is also recommended (livestock
census of the whole country) in order to plan the investment and technical activities in correlation with the field reality.

- In Libya, it is recommended to define a list of priority diseases including objectives for eradication and/or control. Based on this list and the appropriate legal support, the VS should develop and implement programs of prevention, control or eradication associated with a scientific evaluation of measures implemented on the basis of OIE international standards.

**II-8.A. Ante mortem, post mortem inspection and II-8.B. Inspection of the collection, transformation and distribution**

For three of the five countries in the region, the NA of that CC still need to be completed during the PVS monitoring missions that should be encouraged. The findings show, however, a very poor ability of VS to implement measures to protect public health, either through actions against zoonoses or hygiene control of food animal origin.

In Mauritania, despite the existence of a 1965 text on sanitary inspection and hygiene of food products of animal origin intended for human consumption, actions for animal health controls have remained very weak. Hygiene control of the products for local consumption is almost nonexistent. Ultimately, the VS intervene at the slaughterhouses level for meat inspection and at the border checkpoints, while modern dairy industry is growing and the population becoming urbanized and gradually changing its consumption habits.

In Morocco, the standard of sanitary food safety still suffers from implementation problems: meat inspection is carried out by veterinarians assisted by technicians in the 182 municipal slaughterhouses and by technicians in most of the 691 rural slaughterhouses. The Veterinary Administration has the authority to impose decisions, seizure of carcasses and offal presented for inspection at municipal and rural slaughterhouses. But VS do not have the ability to assure meat inspection in all the slaughterhouses in rural areas (which often work one day a week at the souk) and have little authority over the local authorities responsible for the management of slaughterhouses. The inspection of the entire food chain DAOA (meat, milk, eggs, seafood, shellfish and honey) is not totally effective (especially in trade channels through souks and street vending).

**Comments and recommendations:**

- Awareness of the role of VS in the field of veterinary public health is still limited in some countries and the extremely insufficient means allocated to them reflect this fact (Libya, Mauritania). Significant efforts will be needed at regional and national levels to advance towards an overall improvement in consumer protection, involving not only the VS but also other concerned public and private actors.

- The goal of regional harmonization of legal provisions in the field of prevention and fight against priority zoonotic diseases as well as in the field of food safety should continue. Reflect on ways to professionalize the operators in terms of food safety. Training of inspectors is also necessary and needs to be done based on the Community acts that have been adopted in this regard.

**II-9. Drugs and biological products for veterinary use**
In general, the situation is far from being under control in all countries: import channels and distribution are uncontrolled, use of self-medication is widespread particularly in view of the easy supply of drugs from parallel markets and the low level of awareness and knowledge of farmers. The VS and security forces actions against fraudulent channels and counterfeit products are very limited.

In Tunisia particularly, the veterinary drug can only be sold in detail in pharmacies. Pharmacies can only be held by pharmacists. Veterinarians can only hold products that are necessary for them to exercise their profession (Law 73-55 of 3 August 1973 organizing the pharmaceutical professions). Distribution of veterinary medicine is mainly done by pharmacists and secondarily by veterinarians as part of their practice. The Control of the distribution is made by the Ministry of Health and import of depend on the central pharmacy. Intervention of VS in the control of distribution by veterinarians is very limited. Parallel markets of drugs are indicated in the PVS report. The Veterinary Administration is in fact poorly represented in the commission that is in charge of issuance of marketing authorization (AMM =Autorisation de Mise sur le Marché) controlled by the Ministry of Health, and distribution of veterinary drugs is not controlled. Note that the lack of controls and sanctions reinforces the negative effects: the veterinary medicine is not distributed by the veterinarian or prescribed by him. Breeders buy freely the medications from pharmacies, from representatives of manufacturers or from the parallel market. The risks related to the presence of residues are important as is the loss of epidemiological information that could have been collected by vet.

In Mauritania or in Libya, the lack of regulation in the field of drugs and biological products for veterinary use limits the possibilities of control, both at the import and field levels, fostering certain drift in the distribution and marketing of veterinary medicinal product. In addition, no program of drug quality control or monitoring of residues in products of animal origin is reported.

In Morocco, there is still no public list of regulatory drugs and biological products for veterinary use (list expected for 2008). The National Laboratory of Veterinary Drug Control (LNCMV) exercises scientific and technical controls on registered drugs and biological products and issues the necessary permits. It has technical equipment and expertise related to its mission (126 AMM were issued in 2006, 9 inspections of good manufacturing practices, distribution of veterinary drugs and veterinary drug companies have been conducted).

Algerian VS have developed detailed regulations for administrative and technical control of imports, manufacture, packaging and distribution of drugs and veterinary biological products. They also have produced a dictionary of veterinary medicines and products authorized on the national territory and available for professionals. A project is under study with the assistance of the International Atomic Energy Agency (IAEA) to develop the capacity to control residues of antibiotics and anti parasites and assure relevant training for personnel.

**Comments and recommendations:**

The management of the veterinary drug is a major issue. It involved:

- The development of veterinary mesh of the territory contributing to a significant income of private veterinarians from the sale of drugs;
• The control of animal health, the quality of drugs being essential for effective treatment of diseases including zoonoses, and;
• The sanitary food safety through control of residues in animal products consumed.

At this stage it is necessary to:

• Ensure the inclusion of community texts at the national level (see in particular the Protocol signed on 6 November 1992 establishing the conditions of production, import and wholesale offers of animal drugs among AMU countries) and strengthen the implementation of AMU regulations on veterinary drug,
• To organize operations of communication focused on the veterinary medicine to reach farmers and consumers,
• Implementing harmonized programs of drugs quality control and monitoring of residues at AMU in order to have workable regional data to support future decisions on the implementation of tighter controls in this area or strengthening of legislation where appropriate.

II-10. Research of residues

Situation and key findings:

For three of the five countries in the region, the NAs of that CC need to be completed during PVS monitoring missions that should be encouraged. The research of residues of veterinary drugs (antibiotics and hormones, among others), chemicals, pesticides, radioactive substances, metals, etc… has not been initiated in Mauritania and Libya.

Comments and recommendations:

Establish a regional programme of quality control of drugs and a residue monitoring plan in order to obtain comparable and exploitable data at regional level; the tests should be performed by the same regional referral laboratories and even international in order to ensure reliability of results.

II-11. Emerging problems

Countries have limited capacity to anticipate emerging problems. If a follow up of national and international developments is realized, it does not generally lead to a risk analysis or to taking preventive measures in order to anticipate the occurrence of health, environmental or commercial problems. Lack of human or financial resources is reported several times. The creation of a National Center for Animal Health surveillance in Tunisia for example has as objectives, among others, to support this function.

Comments and recommendations:

• Emerging problems cover a wide range of areas. This may include health problems (e.g. occurrence of an emerging disease in the world), ethical / cultural (e.g. strengthening of requirements for breeding methods), environmental (e.g. modification of production systems, manure management to reduce environmental pollution …). They constitute
challenges for the VS that need to adapt to scientific and technical evolution, as well as to increasing consumer demands.

- Some emerging issues may only have a national scope; the ability to anticipate and solve these problems is related primarily to the effectiveness of national epidemiological surveillance networks and the maintenance of effective communication with beneficiaries.

**II-12. Technical Innovation**

Innovations take place in countries from time to time and come almost exclusively from projects and external investments, due to lack of sufficient budget allocated to the VS.

In Morocco, for example within the framework of international cooperation, a pilot project for cattle identification by microchip is conducted in the Souss region. However, access to information technology (email and internet) for officers serving in local services comes often from the willingness of the staff and equipment from home. It should be noted however that efforts including the modernization of communications (Internet access at the central level and sometimes regional) have been undertaken in the countries.

**Comments and recommendations:**

- It is worthwhile to assess the cost-benefit of planned investments in view of ensuring maintenance and renewal of acquired equipments.
- See the recommendations of the CC I-10 (financing of investments)

**II-13.A. Animal identification and movement control**

The split of the previous CC ("traceability") into two CC II-13A and II-13B is new and the NAs of this CC should be reevaluated during the PVS follow-up missions that should be encouraged. The animal identification is necessary for effective application of health programs, the establishment of a traceability of animals and their products up to the consumer level and therefore their certification for export.

- In Tunisia, for example, traceability is very incomplete and remains a major limiting factor. Animal identification and livestock (except industrial poultry) is scrappy. In Morocco, the identification and traceability is ensured only for horses of great value to be exported (by reporting, by blood groups, DNA or transponder; 86,649 horses registered in late 2007) and for some flocks. Private identification systems have been reported in Libya and the lack of identification in Mauritania. The Algerian VS can trace the course of some animals and products derived from them (organized and modern networks, poultry and milk networks).
Comments and recommendations:

- The lack of identification of livestock and/or animals undermines the implementation of programs to effectively prevent and fight against animal diseases. Given the important movements of animals between countries and difficulties in controlling the borders between countries, animal identification appears to be a necessary objective to be achieved to ensure a health control of livestock, reliable certification and effective control of animal movements.

- Launch a debate at the regional level on animal identification: establishing priorities for animal identification and traceability in line with the policies of prevention and control of animal diseases adopted at the AMU level and the context of animal trade in the sub-region. Costs related to different envisaged options should be evaluated. It would be desirable that on this basis AMU develops terms commonly applicable on animal identification. To ensure the commitment of farmers, incentives in the form of grant or financial benefits or in kind may be considered.

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2.4.3 Interaction with stakeholders

III-1. Communication

There is a unit or a person dedicated to communication within Mauritania, Morocco and Algeria VS which is not the case in Libya or Tunisia, where the VS follow informal mechanisms for communication with the beneficiaries.

In Morocco, for example, the VS have an information program for a few diseases of public health interest, such as rabies. The disease that still makes 20 victims per year, is subject to a communication program adapted to the social reality
of the country, implemented in consultation with relevant departments (Ministry of Interior, Ministry of Health). Audio tapes, recorded in local languages, are distributed in the souks to reach the illiterate population, main victim of rabies.

Comments and recommendations:

• Communication is an essential element of creating awareness to the beneficiaries (farmers, consumers). It requires special skills to be acquired gradually within the VS, as long as the outline of their mission, their organization and strategy will be established. The importance of communication is widely recognized by countries who do know the necessity and the effects.
• A strategy and a multi-yearly communication plan could be developed at regional level. Regional communication tools could also be achieved at national level by the VS (websites, newsletters, etc...).

III-2. Consultation with stakeholders

A consultation on the actions and programs exists generally with key professional representatives of organized sectors, however that consultation is still informal. It does not include procedures or reports relating to the provision of advices from the beneficiaries or elements permitting to gauge their consideration. The NA of that CC is uniform for the entire AMU region.

The Lack of professional national representative bodies has been reported on several occasions and is an impediment to the consultation of the beneficiaries. The capacity for initiative and proposal are reduced from these beneficiaries.

Comments and recommendations:

• Consultation is necessary to ensure the relevance and feasibility of actions to implement and ensure maximum adherence of the recipients.
• Launch a discussion at the regional level on ways to further empower farmers by supporting the creation of active and organized professional structures that form representative interlocutors of the profession to the veterinary authority.

III - 3. Official representation

The NAs for this CC show two groups of countries in the AMU region: a first group with 3 levels (Morocco, Algeria and Tunisia) and a second group with NAS estimated at 2 (Mauritania and Libya). Representatives of the VS of all countries, however, fairly participate regularly in OIE international meetings. Financial supports can be provided by donors to allow such movements. The VS are generally absent at important meetings of the Codex Alimentarius and the OMS as the focal points are often people from health and trade ministries.

Comments and recommendations:

• Since these PVS evaluations, several projects funded by the European Commission have emerged and are intended to strengthen the involvement of African states in the process of standards elaboration in the SPS domain. They should help to facilitate dialogue between states to achieve common proposals, thereby increasing the weight of countries in
the international arena. Regional economic communities have an important role to play in this area by acting as coordinators and driving forces in achieving this work.

- Ensure active participation of the VS at OIE official meetings and establish a mechanism for preparation and follow-up of international standard meetings (OIE, Codex Alimentarius, and the SPS Committee of OMS) at AMU National or regional level.

III-4. Accreditation / authorization / delegation

Apart from Libya where the public sector has neither the capacity nor the authority to accredit or authorize the private sector in order to delegate the performance of certain official duties this private sector, the NA of the other countries in the region have the ability to do so. For example in Morocco, the VSs delegate through the "sanitary mandate", epidemiological surveillance and prophylaxis missions to liberals veterinarians, so-called "authorized veterinarians," whose number is 536. If in Mauritania, the VSs have effectively initiated a process of delegation through the issuance of the health mandate, the delegation is still technically limited and relies on a fragile regulatory, technical and financial mechanism.

Comments and recommendations:

- The delegation of activities to private veterinarians is a means to keep them up and encourage the establishment of new private veterinarians in the area; another way is to ensuring control of the distribution of veterinary medicines. It is therefore necessary that an adequate remuneration of the delegated acts be assured and consequently should come out in the regular VS budget. The delegation of some activities also allows public VS to refocus their actions on other important priority areas.

- The Libya VS should study the possibility to delegate activities to private veterinarians.

III – 5. A. Authority of statutory veterinary body and III-5.B. Capacity of the statutory veterinary body

With the exception of Algeria and Mauritania, where the creation of a veterinary statutory body (OSV) is under consideration, the other three countries, Morocco, Tunisia and Libya have Veterinarians organizations. However, it is reported that in Libya, the OSV has no legal framework allowing him to "control" veterinarians.

In Tunisia, the OSV (Ordre des Services Vétérinaires) is particularly well structured. It may be noted, however, that the representation of private veterinarians is low and a shift towards their greater participation is desirable because the public sector is over represented (administration and teaching). The resources come from contributions, donations and property income (rental of part of the "house of veterinary"). The accounts are reviewed by an auditor and the “Ordre” is actively involved in training activities and offers post graduate courses. 1000 veterinarians are on the roster. To practice as private need verification of facilities to ensure performance in accordance with ethical rules. This control is carried out in Tunisia. The organization receives and processing complaints from individuals and colleagues and is referred to disciplinary proceedings. An information review is published but does not deal with para-veterinary profession that is not organized in Tunisia.
In Morocco, the national association of veterinarians (ONV=Ordre National des Vétérinaires) includes all veterinarians practicing in the Kingdom as privates, State services, local collectivities, in public institutions, as a teacher or in Royal Armed Forces. However, the veterinary para-professionals working in the veterinary services (livestock technicians) are not supervised by a statutory body.

**Comments and recommendations:**

- Orders have a very important role to play in ensuring quality of services of veterinarians and veterinary para-professionals as well as the respect of professional ethics. In terms of veterinarian competencies, the OIE has started work on the issue of training of veterinarians (World Conference held in Paris in October 2009 following differences and gaps of some veterinary curricula).

- In order to enable the mobility of animal health professionals in the AMU space, it would be necessary to establish the conditions for mutual recognition of professional qualifications invested in these missions. Concerning veterinarians, the results of work to be carried out by the OIE should provide the basis for the development of these criteria to meet regional and international requirements. Given the disparity in qualifications and skills of paraprofessionals who constitute the major part of those involved in animal health and veterinary public health in all countries, thinking about the professions should also include these categories.

**III - 6. Participation of producers and stakeholders in joint action programs**

Except for Morocco where programs are regular but are mainly bovine milk chains (irrigated area) and poultry, levels 1 and 2 correspond in other countries to the existence of specific action programs between the VS and the beneficiaries. These programs are not regularly updated.

In Algeria, the Veterinary Services and their beneficiaries have established such joint action programs accompanied by sporadic training actions (Aïd sans kystes, etc.)

Lack of professional bodies nationally representative constitutes a limiting factor for the realization of joint programs.

**Comments and recommendations:**

Consider a more active participation of VS in the promotion and the emergence of associations or professional organizations of health vocation (Inter professional Groups ...). See Recommendations CC 3.2 (consultation a).
III. INTERACTION WITH THE CONCERNED ACTORS

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2.4.4 Access to markets

IV - 1. Development of legislation and regulations

The NAs for this CC show two groups of countries in the AMU region, a first group with levels 3 (Morocco, Algeria and Tunisia) and a second group with NAs measured at 2 (Mauritania and Libya). The selected Level 2 corresponds to the existence of the involvement of VS in the preparation of legislation without being able to enforce the legislation.

In Libya, consultation with stakeholders for the preparation of texts is not subject to formal procedures and the preparation of legislation related to veterinary public health (abattoirs for example) is not a prerogative of the VS but the Ministry of Health. In Mauritania, a process for enactment of the Livestock Code (Law 2004-024) including a number of provisions correlated to the VS missions in Mauritania is in progress (epidemiological surveillance, organization of the veterinary profession, medicine and veterinary pharmacies, hygiene, control and health inspection and quality of animal products).

At the regional level, reports indicate texts that are inappropriate to the situation of countries and sometimes with significant gaps (e.g. lack of list of diseases to be declared mandatory, list of authorized medicine s, etc…)

The absence of relevant regulations and lack of administrative and penal procedures knowledge result in inadequate control and taint the credibility of veterinary inspectors. VS officers do not have law modules in their initial and continuous training leading to poor elaboration of texts and their application. Finally, VS lack human and financial resources to carry out field inspections.

Comments and recommendations:

- Realization of an OIE mission to support Veterinary legislation should provide a solid foundation for strengthening the legal and regulatory framework, including countries of NA 2. A better consultation of the beneficiaries in these countries would also improve the implementation of regulations and the reorganization of responsibilities in terms of veterinary public health. Such a consultation should be taken into consideration for Libya (transfer of responsibilities from the Ministry of Health to the Ministry of Agriculture that mobilizes the VS).
• Strengthening of legal knowledge for SV Staff involved in the drafting texts at national level and officers in charge of inspections is necessary (consider a regional training module on this subject, see CC I-3). In order to achieve harmonization in the application of Community legislation (see conventions and protocols concerning the livestock sector signed between 1992 and 1994, Chapter 1, presentation of AMU and veterinary actions in the region), AMU in partnership with OIE could invest in the training of a critical number of national referents able to relay these formations at the national level.

IV-2. Implementation of legislation and regulations, and compliance with relevant stakeholders

In Mauritania, the weakness of the current legislation and regulations limits the ability of VS to enforce the legislation. The regulations are therefore rarely applied by the beneficiaries. Parallel markets are developed and resources in terms of personnel, logistical and financial resources seem paltry given the magnitude of the task. The situation is similar in Libya where the PVS report describes a limited authority of VS, whose decisions are not always followed.

In Tunisia, Algeria and Morocco, the existing legislation seems to be respected in the area (including areas belonging to a market economy, i.e. inspection of fish products for example in Morocco). In Tunisia however, the current texts presents gaps in terms of penalties for violations and important areas are not adequately supervised. Field officers are unfamiliar with criminal procedure and terms of legal action. These skills are also underdeveloped in terms of training.

Comments and recommendations:

• Reconsideration of the role of VS officers as inspectors in charge of police missions appears to be essential. A change of culture must therefore take place to integrate the role of public VS basically seen as service providers to farmers.
• It is essential to include a training of these techniques and control procedures.

IV-3. International harmonization

The NAs for this CC show two groups of countries in the UMA region, a first group with levels above 3 (Morocco, Tunisia and Algeria) and a second group with NA valued at 2. The first group is actively involved in the harmonization of international regulations and sanitary measures (as part of a twinning program with the EU, for example in Tunisia), while Libya and Mauritania are aware of the shortcomings of their texts but are unable to solve the situation. In the second group of countries, these difficulties are related to quantitative and qualitative human resources.

Comments and recommendations:

• It is necessary that the AMU takes into consideration international standards in the elaboration of Community legislation in order to bring as much as possible the provisions applicable by all States Member of the UMA for international requirements.
• Quantitative and qualitative human resources must be mobilized in Mauritania and Libya for the international harmonization of regulations and sanitary measures. These resources must be integrated into the strategic plan for strengthening and compliance of Veterinary Services with quality standards of the OIE received from the PVS gap analysis (OIE PVS tool - gap analysis).
IV-4. International Certification

As for the international certification, the Moroccan, Algerian or Tunisian VS are recognized as competent authority by some countries for export certification. These include fish products or live horses destined for the EU. In Libya, the responsibility in terms of importing products of animal origin belongs to the Ministry of Health who occasionally consults VS. Certification procedures still need to be developed in most cases.

As regards to the exports of fish products (exports to the EU in particular) the competent authority may be different from the veterinary authority (e.g. Mauritania).

For terrestrial animals, which are mostly subject to movement between the States of the sub region, the sanitary conditions are not clearly established and / or known to agents that set out the certificates. However in the absence of animal identification, this certification cannot provide valid health guarantee.

Comments and recommendations:

A good organization and a well functioning of SV are required to ensure reliable certification requirements.

As countries will gradually be making good progress in terms of control and eradication of animal diseases, management of food safety, it will be legitimate for VS to claim that exporting countries provide health guarantees to protect these status and levels. Therefore, even within the AMU space, the capacity of free circulation of animals and / or products will be restricted and an update should be undertaken for a reliable certification. It is therefore necessary that efforts be made consistently to maintain this system to facilitate trade between countries in the region.

• Integrate into Community legislation the fundamental principles of certification, based on the OIE Code and the Codex Alimentarius. For Libya, it is essential to bear in mind that the VS have the responsibility of controlling licenses related to import animal products. See also the recommendations of the CC II-13.B on traceability. It seems crucial that an animal identification system be primarily applied to the transhumant animals; otherwise the animal movements that form the main factor in spread of animal diseases can not be controlled.

IV - 5. Equivalence agreements and other types of health agreements

It is pointed out that the Algerian, Moroccan, Tunisian or Libyan Veterinary Services have the authority to negotiate and approve equivalency agreements and other type of health agreements with their potential trading partners. Several of such agreements have been signed by Libya, Morocco or Algeria (thirty for Algeria, with Niger and Mali for example). For Mauritania, it is reported that the country didn’t have the opportunity to negotiate or to implement health agreements with partnering countries. It is noted that many animals move between countries without control. Some reports on established agreements with the EU regarding exports of fish products (e.g. Morocco and Tunisia), are also mentioned.
Comments and recommendations:

- The negotiation of equivalence agreements is based on the existence of health status and specific established regulatory requirements of countries involved. The capacity of countries to negotiate such agreements will go hand in hand with the progress to be made in the control and diseases eradication, obtaining of official health status, the improvement of food safety and related regulatory supports.
- Where needed, support countries seeking one or more official health status of the OIE to improve their ability to negotiate such agreements with potential business partners.

IV-6. Transparency

Apart from Libya, the selected level corresponds to the existence of notifications made by the VS in accordance with the procedures established by the OIE (and the WTO SPS Committee if applicable). If this desire for transparency is real and demonstrated by regular upwelling of information at the OIE level, the reports show that the quality and reliability of these data are still insufficient. This is due to the difficulties already described in section 2.4 on the epidemiological surveillance: lack of detection of diseases outbreaks or late detection due to non-performing epidemiological surveillance, imprecise diagnosis due to lack of laboratory capacities.

Comments and recommendations:

- Improving the capabilities of the VS to detect animal diseases will thus lead to an improvement of the quality of notifications and declarations done to international organizations.
- See above on the prevention, control and disease eradication.

IV-7. Zoning

No country has envisaged the establishment of zones, as no particular interest is found in terms of animals or products trade increase. So there is no legal framework incorporating these principles.

Comments and recommendations:

- Zoning requires the concentration of efforts in a given territory, in order to be able to clearly identify particular health status of animals present in that geographical area. The lack of animal identification is currently a major obstacle to the implementation of zoning.
- Evaluate the opportunity to incorporate into Community legislation the principles of health zones.

IV-8. Compartmentalization

No country had ever envisaged the establishment of compartments. There are also no regulations governing the application of the concept. Its implementation also faces the lack of animal identification problem.
Comments and recommendations:

- The establishment of compartments initiative usually returns to producers wishing to secure their marketing ability for animals or products. The implementation of procedures for the compartmentalization is very restrictive and the commercial benefits are not yet apparent to professionals in the region, this could explain their lack of commitment in this direction.

- Evaluate the opportunity of incorporating the principles of compartmentalization into the Community legislation.

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2.5 The role of UMA in strengthening veterinary service capacities

2.5.1 Legislative frameworks and harmonization

AMU is not involved in formulating any legislative framework for the region and each MS is responsible for its own instruments. There is however an initiative to come up with prototype legislations in which countries can use to update their own national instruments to make them in line with international norms. Directives taken at AMU level have to be translated into national legislation for implementation.

2.5.2 Coordination of MS veterinary services

All matters pertaining to TADs and zoonoses fall under the Department of Food Security which is hosted at the Arab Maghreb Union (AMU) headquarters. There is no specific desk officer responsible for livestock matters. Member States of AMU have resolved to have a lean structure and most work is done through national experts in MS.

AMU has a Permanent Veterinary Committee composed of five members chosen by each MS and the members of this committee do not necessarily have to be Chief Veterinary Officers in their countries, but they have to be nominated by the MS they represent in the committee. The committee is chaired by a member whose country is chairing the Presidency of AMU. The work pertaining to regional animal health and zoonoses matters are handled by this committee which is coordinated from the office of the Secretary General of AMU who provides logistical and coordination support to the meeting, but funding for attendance of meetings is by MS themselves. The Secretary General is also responsible for mobilizing resources and is the repository of all reports from the committee as well as storing information.
committee only deals with animal health matters and animal production issues are not addressed at AMU level. However individual MS are responsible for addressing production matters at country level. The committee meets at least twice a year, but when there is an emergency, committee meetings can be more often.

The agenda of the committee always has the following headings as standing items for reporting and deliberations:

- Animal health status in MS
- Assessment of the implementation of the action plan
- Continuous monitoring of Health Status in the region

The committee then develops an annual work plan that is approved by the Council of Ministers of Agriculture and the implementation of the work programme is monitored from the Secretary General’s office.

In addition to the Permanent Veterinary Committee, there are also four working groups and one of these groups is on Sanitary and Phytosanitary (SPS) matters. The working groups are composed of national experts in accordance with thematic topics being addressed and working groups are not permanent like the Permanent Veterinary Committee..

There are twelve Directives adopted by the AMU Council of Ministers on Agriculture and one of these Directives is dealing with animal diseases, especially foot and mouth (FMD) and Pest des Petits Ruminant (PPR) control in the AMU region. Once adopted by the AMU Council of Ministers on Agriculture, Directives must then be translated into national legislation for implementation.

There is also a Regional Programme on Food Security in the Maghrebian and in this programme, animal diseases feature prominently. From this regional programme, a project has been developed on coordination and strengthening of animal disease surveillance in the Maghreb region whose thrust is to harmonize animal disease surveillance in the region using TAD info as means for capturing and reporting disease events, and the project also aims at strengthening laboratory capacities in MS. The status of implementation of this project is not unknown.

In terms of sectoral coordination, it appears AMU through its current structure has given attention to TADs and zoonoses at regional level. The issue however appears to be inadequate capacity to comprehensively address the animal disease situation in the region as the general coordination office is manned by one person with severe dependency on national experts. This is however, said to be the decision of the AMU MS, s to have a lean regional structure and leave all implementation issues with MS.

**Recommendation:** AMU should consider establishing a livestock desk office at its headquarters to improve coordination of TADs and zoonoses in the region in line with many other regions in Africa.

**2.5.3 Regional Animal Health Networks**

The most important animal health network in the AMU region is the Mediterranean Animal Health Network, Réseau Méditerranéen de la Santé Animale (REMESA) composed of the five AMU MS (Algeria, Libya, Mauritania, Morocco and
Tunisia), Egypt and the southern European countries (France, Greece, Italy and Portugal). It is governed by a Joint Permanent Committee (JPC) composed of ten members who are the CVO’s of those countries involved, the OIE, FAO and a representative from the AMU, the European Union and relevant international organisations. AU-IBAR does not seem to be a member of REMESA and this creates a gap in information flow between the rest of Africa and AMU. REMESA is coordinated by a Regional Coordination Unit whose headquarters is in Tunis and are derived from the FAO staff from the RAHC and the OIE. The REMESA meets under the joint Presidency of the northern and the southern Mediterranean countries. The presidency of REMESA is always shared with one member from the southern and the other from the northern Mediterranean.

North African and the Mediterranean Region-Institutional Context

• Most of North African countries are middle income economies with relatively strong public services. The North African region is part of the neighborhood policy (ENP) of the EU, being one of the main partners of EC's cooperation programmes.
• EU support to North Africa provided within the scope of long term integration/upgrading partnerships rather than within a project based approach.
• Importance of bilateral aid (partnerships, twinning).
• Within the Mediterranean region there is increased trade and migrant flows among countries.
• There are similar natural characteristics (climate, geography)
• The area is a Geo-sanitary unit where specific diseases prevail
• In this context the enhancement of animal health services’ capacities for coordination should go beyond North Africa, and should include other neighboring countries in the Mediterranean and promote the integration into existing cross-border cooperation policies.

The objective of REMESA is to have southern and northern Mediterranean countries working together in fighting transboundary animal diseases and improved epidemiological surveillance for early detection of animal diseases. The specific objective of MEMESA is to build capacities of participating countries to fight animal diseases through a Mediterranean animal health network.

There are four sub-networks under REMESA and these are:

- REPIVET (Epidemio surveillance)
- RELAPSA (Laboratory)
- RECONSA (Animal Health Communication); and
- RESEPSA (Socio-Economic)
Although the network is not hosted and is also not under the authority of AMU, REMESA was conceived as a long term animal health epidemi-surveillance and laboratory network and long term support is expected from the EU or individual support by southern European countries in the network. The linkage between this network and AU-IBAR needs to be established in order to generate adequate animal health information for the region and Africa as a whole. There is no database on animal diseases at AMU and it is envisaged that countries will be trained on the use of TADInfo.

It is therefore recommended that AU-IBAR establishes linkage and request to be included in the membership of REMESA.

2.5.4 Emergency Management

AMU does not have any support mechanism to its MS in managing emergencies. Individual countries raise their own resources to deal with emergencies.

2.5.5 Cross border harmonisation

AMU does not have any activities for cross-border harmonization in its MS.
3. Human Health

3.1 Overview of the health delivery systems

The United Maghreb Arab is a low-middle income region except one of its MS. Health indicators show that the status of public health comes close to developing countries. Whereas some communicable diseases (malaria, tuberculosis, HIV/AIDS) are still prevalent in some of its MS (Mauritania, Libya) an epidemiological shift is being witnessed in the Region due to change in lifestyles. Non communicable diseases including cardiovascular diseases, diabetes, Hypertension, Cancer, Mental health, etc., are increasing and this is creating a double burden of both communicable and non communicable diseases. Health care coverage is very good in general (70 to 90%) comparing to the rest of African region but there are some disparities in access to health services due to geographical accessibility and social insurance. Although the Maternal mortality rate (MMR) for 100.000 live births (Morocco<227, Tunisia 60, Algeria 140, Libya 64, Mauritania<550) and under 5 years mortality rate per 1000 live births (Morocco<40, Tunisia 60, Algeria 40, Libya 19, Mauritania<117) * are still a concern, AMU MS have significantly improved the situation during the last 2 decades. Note that the average for the rest of African region is around 600 for the MMR and around 70 for the Under 5 years MR. Access to improved water varies between 80 to 100 % in majority of the MS and is only 45 and 64 respectively in rural and urban areas for Mauritania. Life expectancy oscillates between 68 years and 75 years for Tunisia, Morocco, Algeria and Libya but is a bit lower in Mauritania.

While health care is totally free in Libya, most countries have a health insurance policy leading to better health coverage. Despite the adequacy of health workforce (beyond WHO recommendations), majority of qualified health personnel are located in urban areas. Following available information, only Algeria has included Anthropozoonoses (hydatidose, rabies, brucellosis, anthrax, leptospirosis, plague, leishmaniasis), on the list of priority diseases. *(Source: www.who.int/countries)

3.1.1 International Health Regulations – IHR (2005) implementation

The International Health Regulations IHR (2005) is a legal instrument binding the 194 countries across the globe, including all the WHO Member States. The aim is to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide.

The IHR (2005), which entered into force on 15 June 2007, requires Member States to report certain disease outbreaks and public health events to WHO. To assure timely application in a harmonized manner, discussions were held with high level executives, who were also given strategic orientation. Compliance with the IHR (2005) requirements includes the strict respect of timeframe indicated below.
All UMA Member States have voluntarily and legally agreed that their relations with other states and territories, party to these regulations, the provisions of the international health regulations will govern their actions.

3.1.2 Policies and regulatory frameworks for prevention and control of epidemic and pandemics

A number of conventions related to prevention and control of epidemic and pandemics and other public health concerns have been signed by the Member States. Policies and frameworks are delineated in these conventions. Following are some of them (in French & English):


2. Convention relative à la médecine vétérinaire et la coopération dans le domaine de la santé animale entre les pays de l’UMA : 10/3/1991 à Ras Lanouf (Libye). [Convention relating to the veterinary medicine and the cooperation in the field of animal health between the countries of the AMU. Ras Lanouf, Libya, 10 March 1991].


5. Chartre maghrébine pour la protection de l’environnement et le développement durable. [Maghreb Charter for the protection of the environment and sustainable development]
3.1.3 Capacity of AMU to support MS in public health delivery systems

To date there are no formal regulation on the issue but there are some virtual projects. I.e. Purchase drugs and other medical products for the Region. Some of the Member States (Algeria, Tunisia) have the capacity to provide vaccines and other medical commodities to the other Member States.

3.2 Surveillance and laboratory services

3.2.1 Integrated Disease Surveillance & Response IDSR, International Health Regulations 2005 IHR-2005

The AMU Secretariat doesn’t have a data base that can provide comprehensive information on diseases surveillance in the different Member States. However, IDSR adaptation and implementation is technically supported by the World Health Organization (WHO) in each Country. The Health Information System (HIS) remains inadequate in some Member States. The lists of priority diseases are different from one country to another. Only Algeria has included Anthropozoonoses in the priority diseases. Nonetheless, all the countries have adapted IDSR strategy and have ratified the IHR (2005) and the implementation has been completed or is in progress. WHO is supporting the surveillance system in the region by organizing training at different levels.

3.2.2 Laboratory diagnostic capacity

In terms of institutions, availability of human resources and expertise, the majority of AMU Member States offer compelling opportunities especially regarding laboratories. In addition to referral laboratories associated to University hospitals, many other laboratories are found in the private sectors. Various analyses can be performed including virological expertise, bacteriology, toxicology, drug resistance, etc. Moreover, some laboratories (Institut Pasteur, Algeria) are producing and marketing vaccines and other biological products.

3.2.3 Outbreak investigation systems and capacity

At Secretariat level there is not a unit to investigate an outbreak or an emergency response team to react to an epidemic or a natural disaster. Nevertheless, each Member State has the capacity to investigate and respond promptly to an outbreak. Note that many epidemic diseases have been eradicated in the region; however, Member States are aware of emerging/re-emerging diseases and preparedness plan are elaborated accordingly.

3.2.4 Coordination of outbreak investigation with veterinary services

Apart some rare cases of epidemics (Plague in Algeria 2003, Crimean-Congo Hemorrhagic Fever and Cholera in Mauritania 2003 and 2005, Meningococcal disease and Human influenza in Morocco respectively in 2000 and 2003) the Region has witnessed very few epidemics. The AHI epidemic has been an opportunity for both veterinarians and public health specialists to coordinate efforts in order to efficiently combat the disease. Although this coordination has been lessened since the outbreak has declined, there is a need to reactivate the collaboration in line with the “One Health” Concept.
3.2.5 Regional Networks

While a lot of opportunities are offered to MS to develop associations, there is no formal networking established between countries. However, an initiative of linking national laboratories and sharing experiences is under consideration. In the same order of ideas, most of AMU Member States provide different medical specialties and could complete each other by exchanging patients instead of transferring them out of the region. As mentioned ahead, the region is considering purchasing drugs and other medical commodities for all member states. Vaccines production in one of the MS could be strengthened and be an opportunity for procurement for all MS.

3.3 Epidemic and pandemic preparedness and response measures

3.3.1 Capacity of health institutions, structures and systems

There are opportunities to develop and to strengthen cooperation between the countries in the region. Some institutions (Algeria) such as the National Institute of Public health with 5 regional health observatories, the National Blood Agency that collaborates with the Regional Office in Tele-training of personnel from Transfusion Centers; production and marketing of vaccines and biological products; Referral Public Health laboratories, etc. Tunisia and Morocco have also specific institutions i.e. Institute of Epidemiological Surveillance (Joint project Morocco & World health Organization) that are an asset for the region. There are contingency plans (AHI) at country levels including nuclear disaster (Algeria) and a regional (Algeria, Tunisia, Egypt, Morocco) disaster management plan funded by the DREF (Disaster Relief Emergency Fund) under IFRC supervision. Chapter V of UMA Charter recognizes the importance of cooperation in disaster management and a legal framework has been agreed on and signed by all MS. [Quotation: “Conscients des graves conséquences des catastrophes écologiques et reconnaissant l'importance de la coordination dans ce domaine, les Etats membres de l'UMA s'engagent à assurer une meilleure coordination au niveau de leurs plans et programmes de lutte contre les catastrophes et les accidents écologiques d'urgence et à circonscrire les dommages présents et futurs par l'adoption à cet effet, de mesures législatives, réglementaires et pratiques”]

Other emergency structures such as the “Orsec” plan (Mauritania), (“Orsec” stands for organisation des secours, i.e. "rescue organization"), the United Nations system are found in the region.

3.3.2 Partnerships

The main development partners involved in the health sector are the World Bank, the African Development Bank, the European Union, the German cooperation, the Spanish cooperation, the French cooperation, the United Arab Emirates, the people’s Republic of China, the United Nations Agencies and particularly the World Health Organization (WHO), the United Nations Funds for children (UNICEF), the United Nations Funds for the Population(UNFPA), the World Food Program (WFP), The Islamic Development Bank (IDB), the Arab Fund for Economic and Social Development (AFESD).

UMA member States are affiliated to the Mediterranean Zoonoses Control Centre (MZCC) that was established by WHO in 1979 in Athens, Greece.

Strengthening of international cooperation is institutionalized in the UMA charter.
3.3.3 UMA capacity to cooperate and interact with PH services of MS and other RECs

While there is not a public health desk (and that doesn’t seem to be an option) in the UMA Secretariat, there is a Technical Working Groups (TWGs) responsible for handling public health matters. Many conventions and protocols related to cooperation and coordination in public health have been signed by MS. Meetings at a high level have been held in order to harmonize public health policies within MS.

3.3.4 Disease information sharing and communication mechanisms

There is a need to update the communication strategy in order to incorporate information on zoonotic diseases. Also an epidemiological bulletin including the evolution of priority diseases in the region needs to be promoted. Moreover, information sharing on new medical techniques, new capacity developments, medical specialties, etc., from MS through a common website will be an asset to ease the networking among MS and the region.
4. Communication

4.1 Public Awareness

4.1.1 Existence of communication plans/strategies in MSs and REC (human and animal health sectors)

With the HPAI-endemic Egypt in the neighborhood, all UMA countries have developed communication strategies on HPAI within their national action plans. At the regional (REC) level, a regional plan of action for HPAI was put in place in 2006, though it should be pointed out that the region has so far been free from H5N1 incursions. This Plan was used during the global pandemic H1N1 novel influenza 2009.

There is no evidence of formalized communication strategies for the prioritized diseases in northern African countries: rabies, Peste des petits ruminants (PPR), brucellosis, bluetongue (BT), sheep pox, tuberculosis, foot and mouth disease, Rift Valley fever and equine fever. This notwithstanding, the outbreaks of these diseases have equally been addressed including through communication and public awareness campaigns at national levels.

4.1.2 Existence of recent or on-going media campaigns on AHI, ERADs and other Zoonoses

In late 2008, the Maghreb region suffered outbreaks of Peste des petit ruminants (PPR), more acutely in Algeria. A robust public awareness campaign including sensitization accompanied the exercise as millions of sheep and goats were vaccinated in the region.

Following the global incursions of H5N1 HPAI, there were coordination meetings between ministries of livestock and public health within the region. Each country carried out public awareness campaigns on TV, newspapers, etc where the prime ministers or ministers ate chicken in public and in the glare of the media to show the public that it was safe to eat poultry and poultry products as most people were shunning these.

With the coming of the global pandemic H1N1 Novel Influenza in 2009, as already stated above, the action plan that had been developed for H5N1 HPAI was used with similar communication and awareness campaign approaches employed to curb the spread of the virus. In 2009, simple messages were prepared especially targeting the high risk population segment (regional travelers).

4.1.3 Coordination mechanisms for communication and awareness campaigns

Due to the working approach of UMA whereby the Member States are responsible for carrying out the activities on TADs at their levels, there is no coordination mechanism at the UMA level for overseeing communication and awareness campaigns. Such mechanisms are limited to the level of the countries.

Nevertheless, a regional coordination mechanism for animal health communication exists in the form of the North African Communication Network for avian influenza and other transboundary animal diseases (RECOMSA), integrated operating under the aegis of REMESA initiative and animated by FAO-ECTAD/OIE/RAHC regional units for northern Africa, based in Tunis, Tunisia.
4.1.4 Advocacy and outreach

Within the northern African region, there exists adequate information about transboundary animal diseases, accompanied by prioritization of resource allocation for their prevention and control. Countries in the region (except for Mauritania) have dedicated reasonable resources for animal health as well as to their national veterinary services.

In this scenario, minimal advocacy for resource allocation – particularly for prevention of TADs - will be required. However, with the HPAI endemic Egypt in the backyard of UMA, there is a need to continue raising awareness of possible spread of the disease into the region, as part of the surveillance measures.

4.1.5 Level of education/literacy

Based on adult literacy rates data from the United Nations Educational, Scientific and Cultural Organization (UNESCO) the literacy level in the region is as follows:

<table>
<thead>
<tr>
<th>UMA Country</th>
<th>Literacy %</th>
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<td>Algeria</td>
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<tr>
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<td>Morocco</td>
<td>52</td>
</tr>
<tr>
<td>Tunisia</td>
<td>74</td>
</tr>
</tbody>
</table>

Source: UNESCO Institute for Statistics 2007a

From the statistics, the UMA region is among the most literate in the whole continent. With one common language – Arabic – the process of education and eventually; of communication is greatly enhanced. It also makes it easier to develop common awareness messages for the entire region.

4.2 Technical capacities

4.2.1 Ability of AMU to provide technical assistance to MSs Animal health communication systems

As already mentioned before, there exists no mechanism or specific unit responsible for coordinating animal health communication or awareness campaigns at the AMU Secretariat level. Such functions are left to individual Member States in the region and that has been undertaken with assistance from international partners (FAO, AU-IBAR, OIE, WHO, UNICEF, etc).

AMU member states, however, are able to tap into the RECOMSA network, as well as regional units of FAO/ECTAD and OIE based in Tunis, for technical assistance on animal health communication.

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2 The Assessment methodology combines direct national estimates with recent estimates based on its global age-specific literacy projections model developed in 2007. The % are rounded up to the nearest figure.
Indeed the context in the region does not aim at replacing the essential baseline work that each country in AMU undertakes, which is always sovereign on its decisions in regards to epidemiological surveillance, diseases control or animal health information exchanges outside of its borders.

### 4.2.2 Presence of communication units in national veterinary services

National veterinary services of most of the UMA countries have reasonably adept capacity to undertake adequate activities in animal health communication. Their capacity in animal health communication is generally good and well funded (as already stated above in advocacy and outreach) though disparity exists from one country to another.

What may be considered a challenge is the question of well trained human resources in animal health communication. There is no clear indication whether the national veterinary services in UMA countries have specific experts on communication.

### 4.2.3 Resources allocated to Communication

In most situations, allocation of resources to communication activities and initiatives in the prevention and control of TADs is dependent upon the overall budget available for other activities.

In the case of UMA countries, as already stated, these activities have been modestly supported with required financial resources. It appears from the interactions had with the Director of Department of Food Security Directorate at UMA Secretariat; that sizeable resources were allocated to communication and public awareness activities in the region in response to recent outbreaks of TADs in the UMA countries.

### 4.2.4 Capacity in Information and Communication Technologies (ICTs)

Even though the concept of ICTs encompasses other information and communication technologies beyond merely computer technology or internet connectivity, for our present purpose, however, we shall limit ourselves to internet connectivity.

Internet connectivity in northern Africa region is fairly good and probably one of the best in Africa. The region has well developed communication infrastructure with satellite televisions, newspapers and good internet connectivity as already stated.

At the secretariat level, UMA is currently working on improving and putting in place an information system and a database, with several companies already contracted to work on different components. Within these databases, the one on animal health is the most advanced and foresees an integration/ linkage with the REMESA as well as individual countries’ databases and information systems.
4.3 Mass media environment

4.3.1 Mass media coverage of AHI, ERADs and other Zoonoses at MS and REC levels

In 2008, Morocco declared an outbreak of PPR (which was thought to have affected also the Tunisian side bordering Morocco). It was the first time PPR outbreak was reported in the country, so local and regional media animatedly covered the events as the country embarked on sensitizing the veterinary personnel in the country and eventually rolled out a general public awareness campaign. It is important to note that the outbreak had occurred just shortly before an important Islamic feast where small ruminants are slaughtered. The public had, therefore, to be assured of food safety. TV was used massively in the public awareness campaign that followed the control measures.

At the REC level, there has been no region-wide mass media coverage of TADs outbreaks, except for the Moroccan PPR outbreaks in 2008. Outbreaks such as FMD (Morocco, Algeria and Tunisia are free); swine influenza, etc have mainly been reported in national media.

4.3.2 Information products generated

Recent public awareness campaigns on avian influenza, swine influenza, PPR, FMD in the region has seen the production of various information and public awareness products such as TV shows, newspaper articles, posters and billboards, etc. Most of these were in Arabic and in some cases with French translation as well.

4.3.3 Functionality of communication networks, including the involvement of the NGO sector

In the framework of the Mediterranean Animal Health Network (REMESA), four other technical sub-networks have been established as part of the same initiative to harmonize, energize and facilitate the operation and activities: the Animal Health Laboratories Network (RELABSA), the Veterinary Epidemiology-surveillance Network (REPIVET), the Animal Health Communication Network (RECOMSA) and the Animal Health Socio-Economics and Production Systems Network (RESEPSA).

The RECOMSA has been spearheaded by the FAO-OIE/RAHC-NA regional unit and involves members of multidisciplinary communication national teams. The main objectives of the network are to:

- Dynamize the national animal health communication networks through emulation of models and relevant information exchange, and the training of national networks officers (regional focal points of communication);
- Offer technical support to the networks through guaranteeing training; providing equipment, materials and protocols; and assuming joint coordination in communication;
- Harmonize the networks structure (especially articulation between animal health services and public health services, the animal production sector and other civil society actors) and support the implementation of realistic and operational strategic surveillance plans (including key performance indicators).
The aim is to develop areas of collaboration and exchange, and a range of professional links between communications teams, veterinarians, public health staff, professionals of animal production sector and other civil society actors; including NGOs.
5. Coordination

5.1 Sectoral coordination within AMU

The coordination of issues pertaining to animal resources is governed by the Specialized Ministerial Committee for Food Security, established in January 1990. Issues pertaining to animal health are coordinated by the Permanent Veterinary Committee of Maghreb that is responsible for:

- Defining action plans for animal health in the Maghreb;
- Harmonizing veterinary legislation;
- Ensuring health and safety of animal and products of animal origin;
- Harmonizing legislation governing the registration and distribution of veterinary pharmaceuticals

Coordination is also assisted by the establishment of an epidemiology-surveillance network for the:

- Regular dissemination of data on TADs
- Dissemination of information on animal movements, especially across borders
- Alert in case of outbreaks
- Harmonization and coordination of emergency interventions

The regulatory framework for animal resources is governed by an agreement, enacted by the AMU Presidential Council in 1991, concerning cooperation in veterinary matters. The agreement addresses the followings:

- Protection and improvement of animal resources
- Harmonization of veterinary legislations
- Improvement of surveillance and control measures for Trans-boundary animal diseases.

Specific directives have been developed by Permanent Veterinary Committee and adopted by the Ministerial Committees in the veterinary field, namely:

Directives (4) governing the movement of live animals (Camels, Small Ruminants, Cattle and Horses)
Directives (3) governing the movements of animals and products of animal origin (Cattle, Poultry, Meat)
Directive (1) governing the production and importation of veterinary pharmaceuticals
Directive (1) governing the sale and distribution of veterinary pharmaceuticals
Directive (1) defining the measures for the elimination of FMD
Directive (1) defining the measures for the control of PPR
6. **Partnership**

6.1 **Assistance to AMU in control of TADs and zoonoses**

In the context of strengthening food security in the AMU region, two specific interventions are implemented in the animal health sector.

The program “Strengthening the capacity to coordinate interventions for the control of Trans-boundary animal diseases, through capacity building and laboratory services” envisages a number of activities, namely:

- Exchange of texts and regulations governing veterinary activities in the UMA Member States as well as future regulations that will have an impact on veterinary legislation. Reconciliation and updating of veterinary legislations so as to comply with international standards and norms.

- Exchange of epidemiological data, coordination of emergency interventions in case of outbreaks, and enforcement of suitable veterinary regulations for common actions and strengthening of veterinary services;

- Upgrade laboratory services so as to improve common action for the control of animal diseases and strengthen regional coordination in the field of epide-mio-surveillance and preparedness;

- Definition of procedures for notification of animal diseases;

- Exchange of technical expertise so as to strengthen capacities at regional level;

- Harmonization of veterinary education and cooperation in the field of research;

- Facilitation of exchange of veterinary pharmaceuticals

- Strengthening cooperation in the field of scientific research.

The second intervention “Harmonization of health standards for the improvement of animal health and safety standards of animals and products of animal origin in order to facilitate intra-Maghreb trade” aims at reducing the impact of Trans-boundary Animal diseases and Zoonoses and fostering trade of live animals and products of animal origin in the Maghreb region through improved safety and health standards. The program has also the objective of establishing a network for the exchange of data, linked to the web-site of the UMA Secretariat General.

6.2 **Coordination mechanism between RECs and technical and financial partners**
PART III: CONCLUSION AND RECOMMENDATIONS

1. CONCLUSION

Veterinary Services

Harmonizing the laws relating to animal health and food safety in the AMU space would be of major interest in facilitating regional trade to the extent where this will guarantee the health security of trade between Member States. The regional approach of prevention and control of these diseases is the most effective way to sustainably improve the health situation of countries within the same region given the transboundary nature of animal diseases (including zoonoses), their direct impact on food security, public health and economy.

Veterinary Services are considered by the OIE as an International Public matter and their implementation in accordance with international standards (concerning legislation, structure, organization, resources, and skills, role of the private sector and paraprofessional personnel) is a priority in terms of public investments.

It is for each State to guarantee the effectiveness of its Veterinary Services with regard to the adequacy of human resources and funding of their activities following their needs in order to ease the early detection of animal diseases, to diagnose and to control them. Reports of PVS qualitative assessment and quantitative of PVS gaps carried out by certified evaluators (by the OIE) are major references on which States can rely to improve the quality of their VS in line with the Code of the OIE. These efforts make at national level will have even more impact that they will be done in a structured regional framework, whereby the responsibility of all States is engaged.

Analysis of the OIE-PVS reports related to VS evaluation within AMA MSs presented in this report releases two findings:

- Two groups of countries are distinguished in the region, a first group with overall levels of higher progress (Morocco, Algeria, Tunisia) and a second group with levels of overall lower status (Mauritania and Libya);

If one refers to the principles of progress levels analysis identified in this report ("levels of advancement synthesis tables"), about thirty critical competences (CC) must be strengthened in priority to contribute to the strengthening and harmonization of the VS skills in the region. Some of these critical skills are the heart of the activities proposed for the AMU region and are elaborated below.

Professions

To meet the challenges of society whose needs in terms of quantity and quality of food products of animal origin are growing, States must have a network of competent professionals able to develop strategies for prevention and control of priority animal diseases based on solid scientific supports, to provide quality advices and services to the animal of the animal dies (filières) operators, to detect and rapidly respond to unusual health situations (ex: emerging or re-emerging diseases).
OIE has initiated a work on the development of recommendations for defining a common core to all veterinary teaching institutions, incorporating the major veterinary skills to implement public policies in accordance with international standards, and taking into account the new threats, perspectives and requirements of society.

States have to ensure recruitments for their public VS including veterinary officers and paraprofessionals who are able to respond to their needs and sustain a veterinarian’s network throughout their territories. In this regard, PVS gaps analysis reports provide a quantitative estimate of the various categories of personnel on which they could usefully be based. In qualitative terms, AMA has a role to play to ensure that services are provided according to levels of skills among the States. This is crucial for the quality of health information and the reliability of the certifications. Given the primary responsibility of veterinarians in the areas of animal health, animal welfare and food safety of animal origin, as well as in international certification, it is important to define common criterion to be respected in order to allow the recognition of veterinary diplomas and their free establishment in the AMA space.

Also, establish coherent principles of official veterinary controls that involve defining the categories of professionals to carry out certain types of inspections or certification activities. As indicated in the CC I-1 (A and B) and I-2 (A and B), the composition and competencies of veterinarians and veterinary para-professionals within the AMA countries are highly variable.

A substantive work on the conditions of medicine and veterinary surgery practices, the distribution and use of veterinary medicinal products should therefore be carried out; minimum training criteria to fill some functions need to be defined at the regional level.

Finally, for all of the professionals, the continuous update of skills in relation with activities carried out is essential to adapt the practices and keep a high level of performance. A requirement for continuing training should be provided at the regional level.

Veterinary pharmacy

Control of this area must be considered as a priority by all the States given its major impact on public health and animal productions. It should be recalled that it is also a key factor in maintaining a network of qualified private veterinary practitioners on all the territories through the revenues they generate, contributing thus to the effectiveness of national surveillance systems, prevention and diseases control.

This implies a strict and common application of measures concerning production, registration, import, storage, distribution and use of the veterinary drugs and hence a firm commitment to high level of individual States to combat illegal practices and clean up this sector. The link of the distribution and use which is currently the exclusive domain of States is the most neglected and reduce to nil all the previous efforts.

This domain must remain under the responsibility of the veterinary authority; nevertheless its control requires a coordinated involvement of all the health authorities, the security forces and the judicial authority to end at tangible results.
In addition to the application of the Protocol n° 6 signed on 11/11/1992, which establishes the conditions of production, import and wholesale offers of animals’ medication between the AMU countries, the definition and updating of regulations the veterinary drugs in the AMU space is therefore a first-order asset. The Organization of mass communication operations in respect of breeders and animal sectors operators and implementing of suitably dissuasive measures is also necessary to achieve a normalization of practices.

2. RECOMMENDATIONS

Veterinary services

The following propositions could be envisaged for the veterinary profession:

- To establish a working group bringing together the Maghreb Standing Veterinary Committee, the representatives of the national veterinary statutory bodies and representatives of the main training institutions of VS officers of the region to discuss the aspects related to VS professionals. This recommendation also means to finalize or strengthen the constitution of the national veterinary statutory bodies in Mauritania, Algeria and Libya (see CC III - 5A and B).

- To initiate works in the UMA aiming to facilitate free circulation and establishment of professionals on the basis of community agreements in this regard and bilateral agreements already existing between some countries of the region. In this framework, the conditions of recognition and equivalence of diplomas and titles for VS professionals (veterinarians and different categories of veterinary para-professionals to be identified) may be defined;

- To develop Community rules for continuous training of public and private VS. Within the Working Group and in light of the shortcomings in several PVS reports, the question of organizing continuous training modules at the regional level in the VS key areas should be discussed. Similarly, the dearth of initial training of official veterinarians is mentioned in several PVS reports. An OIE twinning project between an institution dedicated to the training of veterinarians in the region and an OIE Collaborating Centre for veterinary or official veterinarians training could be envisaged with a view to create a regional pole of competence in veterinary training for North Africa (training of official veterinarians and establishment of regional continuous training modules in partnership with other institutions of the region).

The following proposals could be envisaged for the veterinary medicinal product:

- Carry out, under the auspices of the Maghrebian Standing Veterinary Committee, an economic and technical analysis of the veterinary medicinal product in the AMU region and a regional study on current national regulations in the area of drugs and biological products for veterinary use. This study would include the drafting of proposals for regional actions to be implemented in the short and medium term especially in view of the authorization for the marketing of veterinary medicinal products (harmonisation of procedures) as well as the distribution and quality of veterinary medicinal products.

- Develop within the Maghreb Standing Veterinary Committee a communication program focused on the veterinary drugs theme and the risk correlated to their improper use;
- Establish a regional programme of quality control of drugs and a monitoring plan for residues to obtain usable and comparable data at the regional level; it should be preferred that analyses are carried out by the same referral regional or even international laboratories to ensure reliability of the results;

-Given the significant costs related to regional analysis procedures (funding of studies), communication actions, quality control and residues, a regional funding should be considered to ensure an effective implementation of the programme in all the Member States.

In addition to the management of these two areas which are pillars for the VS development of the AMU countries, it is important that special attention be given to the restructuring of the national Veterinary Services (cf. including chain of command, CC I - 6 A and B) as recommended in the PVS reports and PVS gaps analysis so that they respond to the fundamental principles of independence and efficiency of organization which are essentials for the development and implementation of Community and National rules.

In addition, AMU should pay a particular attention to the recommendations of this report relating to the animal identification, control of movements and traceability of products of animal origin, to the development and application of the legislation and regulations. Attention should also be given to laboratories, risk analysis, security at the borders, monitoring, prevention and control of diseases as well as the veterinary public health. The ability to carry out these important missions will clearly depend on the human and financial resources allocated to the AMU food security Direction in charge of health issues.

The socio-economic importance of livestock in the AMU countries is no longer to be demonstrated. It is essential that regional and national policies grant to the livestock a place equal to its contribution to the health of populations, to the national economy and development in General.
ANNEXES

Annex I: Terms of Reference
## Annex 2: List of tables

### Animal health

<table>
<thead>
<tr>
<th>Country</th>
<th>Camels (1000)</th>
<th>Cattle (1000)</th>
<th>Sheep (1000)</th>
<th>Goats (1000)</th>
<th>Pigs (1000)</th>
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Table 3.1 Livestock production data of IGAD Member States, 2008  
Source: FAO STAT accessed July 2010

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<td>Sudan</td>
<td>340000</td>
<td>45000</td>
<td>27000</td>
<td>5309003</td>
<td>186000</td>
<td>47000</td>
<td>Na</td>
<td>148000</td>
</tr>
<tr>
<td>Uganda</td>
<td>106000</td>
<td>Na</td>
<td>37700</td>
<td>735000</td>
<td>29000</td>
<td>21000</td>
<td>60000</td>
<td>5800</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,279,700</strong></td>
<td><strong>134,592</strong></td>
<td><strong>140,714</strong></td>
<td><strong>1,186,253</strong></td>
<td><strong>375,100</strong></td>
<td><strong>179,040</strong></td>
<td><strong>79,015</strong></td>
<td><strong>324,784</strong></td>
</tr>
</tbody>
</table>

Table 3.2 Food Supply from Livestock in the IGAD region, 2008  
Source: FAO STAT website accessed July 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Goats</th>
<th>Pigs</th>
<th>Sheep</th>
<th>Chickens (1000)</th>
<th>Milk – whole fresh, skimmed dry, whole dry (Tones)*</th>
<th>Total Import value excluding milk US $ (1000)</th>
<th>Total Import value including milk US $ (1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djibouti</td>
<td>Na</td>
<td>na</td>
<td>na</td>
<td>Na</td>
<td>13</td>
<td>na</td>
<td>17</td>
<td>15248</td>
</tr>
<tr>
<td>Eritrea</td>
<td>Na</td>
<td>na</td>
<td>na</td>
<td>Na</td>
<td>Na</td>
<td>na</td>
<td>na</td>
<td>7</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Na</td>
<td>240</td>
<td>na</td>
<td>Na</td>
<td>94</td>
<td>na</td>
<td>259</td>
<td>5750</td>
</tr>
<tr>
<td>Kenya</td>
<td>158</td>
<td>1550</td>
<td>12</td>
<td>6</td>
<td>92</td>
<td>na</td>
<td>414</td>
<td>4629</td>
</tr>
<tr>
<td>Somalia</td>
<td>Na</td>
<td>na</td>
<td>na</td>
<td>Na</td>
<td>Na</td>
<td>na</td>
<td>na</td>
<td>3798</td>
</tr>
<tr>
<td>Sudan</td>
<td>9354</td>
<td>4</td>
<td>na</td>
<td>8</td>
<td>3126</td>
<td>na</td>
<td>11795</td>
<td>109704</td>
</tr>
<tr>
<td>Uganda</td>
<td>31</td>
<td>318</td>
<td>2</td>
<td>Na</td>
<td>552</td>
<td>na</td>
<td>758</td>
<td>5787</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9543</strong></td>
<td><strong>2112</strong></td>
<td><strong>14</strong></td>
<td><strong>14</strong></td>
<td><strong>3877</strong></td>
<td>na</td>
<td><strong>13,243</strong></td>
<td><strong>144923</strong></td>
</tr>
</tbody>
</table>

Table 3.3 Livestock imports (Heads), milk (tones) and import value (US$) in the IGAD, 2007
Source: FAOSTAT website accessed June 2010; na – data not available; *The FAOSTAT data base could only indicate the import value without the quantity

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle</th>
<th>Goats</th>
<th>Pigs</th>
<th>Sheep</th>
<th>Chickens</th>
<th>Camels</th>
<th>Milk – whole fresh, skimmed dry, whole dry (Tones)</th>
<th>Total Export value US $ (1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djibouti</td>
<td>32924</td>
<td>na</td>
<td>na</td>
<td>Na</td>
<td>na</td>
<td>54437</td>
<td>463</td>
<td>33581</td>
</tr>
<tr>
<td>Eritrea</td>
<td>na</td>
<td>9078</td>
<td>na</td>
<td>2042</td>
<td>na</td>
<td>na</td>
<td>47</td>
<td>137</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>38410</td>
<td>22982</td>
<td>na</td>
<td>13863</td>
<td>na</td>
<td>na</td>
<td>16060</td>
<td>31663</td>
</tr>
<tr>
<td>Kenya</td>
<td>16</td>
<td>158</td>
<td>Na</td>
<td>1516</td>
<td>na</td>
<td>2</td>
<td>771</td>
<td></td>
</tr>
<tr>
<td>Somalia</td>
<td>110000</td>
<td>120000</td>
<td>na</td>
<td>500000</td>
<td>na</td>
<td>467</td>
<td>0</td>
<td>71514</td>
</tr>
<tr>
<td>Sudan</td>
<td>2717</td>
<td>120000</td>
<td>na</td>
<td>719890</td>
<td>na</td>
<td>49539</td>
<td>606</td>
<td>80442</td>
</tr>
<tr>
<td>Uganda</td>
<td>3418</td>
<td>2279</td>
<td>566</td>
<td>Na</td>
<td>121</td>
<td>na</td>
<td>463</td>
<td>1692</td>
</tr>
<tr>
<td>Total</td>
<td>187485</td>
<td>1354497</td>
<td>566</td>
<td>1235795</td>
<td>1637</td>
<td>104443</td>
<td>17178</td>
<td>219,800</td>
</tr>
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</table>

Table 3.4 Livestock Exports (Heads), milk (tones) and Export value (US$) in the IGAD, 2007 Source: FAO STAT website accessed March 2010; na – data not available

### Human health
### Table 3.1: Distribution of viral hemorrhagic fever outbreaks caused by Ebola viruses, classified by year, cases, deaths and lethality, 1976-2007.

<table>
<thead>
<tr>
<th>Epidemic</th>
<th>Year</th>
<th>Country</th>
<th>Cases</th>
<th>Deaths</th>
<th>CFR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBOLA</td>
<td>1976</td>
<td>Sudan</td>
<td>284</td>
<td>151</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRC</td>
<td>318</td>
<td>280</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>1977</td>
<td>DRC</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>1979</td>
<td>Sudan</td>
<td>34</td>
<td>22</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>1994</td>
<td>Gabon</td>
<td>52</td>
<td>31</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cote d'Ivoire</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>Liberia</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>315</td>
<td>250</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>Gabon</td>
<td>97</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>South Africa</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>2000-2001</td>
<td>Uganda</td>
<td>425</td>
<td>224</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>2001-2002</td>
<td>Gabon</td>
<td>65</td>
<td>53</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Congo</td>
<td>59</td>
<td>44</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>2002-2003</td>
<td>Congo</td>
<td>178</td>
<td>157</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>Sudan</td>
<td>37</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>Congo</td>
<td>12</td>
<td>10</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>DRC</td>
<td>264</td>
<td>187</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uganda</td>
<td>149</td>
<td>37</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>2293</td>
<td>1536</td>
<td>67</td>
</tr>
</tbody>
</table>

**Communication**
<table>
<thead>
<tr>
<th>IGAD Country</th>
<th>Literacy %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djibouti</td>
<td>70</td>
</tr>
<tr>
<td>Eritrea</td>
<td>64</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>36</td>
</tr>
<tr>
<td>Kenya</td>
<td>73</td>
</tr>
<tr>
<td>Somalia</td>
<td>Not Avail.</td>
</tr>
<tr>
<td>Sudan</td>
<td>70</td>
</tr>
<tr>
<td>Uganda</td>
<td>73</td>
</tr>
</tbody>
</table>

Table 5: Table 4.1 UNESCO literacy rates, Source: UNESCO Institute for Statistics 2007a