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UEMOA SPS INITIATIVE

A CRITIQUE OF REGIONAL ANALYSES

WATH Technical Report No. 10

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DISCLAIMER

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EXECUTIVE SUMMARY

In October 2000, UEMOA[1] and the Food and Agriculture Organization (FAO) signed an agreement for a major food security program (PSRSA[2]) for countries of the Sahel in West Africa. As part of this program, UEMOA initiated SPS (sanitary and phytosanitary) harmonization of the regulatory structures within its eight member countries. This PSRSA program has three components: food safety, phytosanitary control (plant safety), and animal health protection.

UEMOA is proceeding to harmonize its regional SPS systems through three activities: preparation of the legislative and regulatory framework and treaties within the eight UEMOA countries; training of government officials to understand and implement the treaties; and enforcement of inspection and laboratory testing. In each of its eight member countries, UEMOA hired a consultant for each of the three component areas to assess current SPS status and country-specific agricultural priorities.

Food Safety

UEMOA commissioned Mr. Feral to summarize the results and conclusions of eight consultants who assessed the food safety status in the eight UEMOA countries. His terms of reference included summarizing all legal and statutory documents pertaining to food production and consumption within UEMOA, identifying the roles of the various administrations in charge of assuring food safety and quality, and analyzing the legal framework available for controlling and enforcing food quality and safety policies. Based on these analyses, Feral proposed legal, institutional and administrative reforms to raise the level of food safety in the UEMOA countries.

Phytosanitary Control

In the case of phytosanitary control, a consultant for each UEMOA country conducted two separate studies. The first study evaluated the legislative, regulatory and institutional systems that support phytosanitary control in each UEMOA country. The second evaluation was based on a precise methodology established during an educational workshop in Dakar. Following these evaluations, each national consultant wrote two reports and submitted them to the regional project coordinator. Dr. Agounke reviewed the 16 national reports and composed a detailed summary for the eight UEMOA countries with specific phytosanitary control recommendations. His report also contains seven extensive appendices on the legislative, regulatory, and institutional characteristics of each UEMOA country, an SPS risk analysis, the analytical laboratory status with recommendations for each country, and a section on SPS terminology.

Animal Health Protection

The goal of the animal health study was to evaluate current systems that protect animal health and the safety of animal-derived food products sold in the UEMOA region. Any future consistent and harmonized animal health control system must guarantee food safety and high nutritional value of animal-derived food products. It must also assure regional uniformity to allow free movement of livestock and animal products among UEMOA countries. Dr. Cheikh Ly coordinated and summarized the work of national consultants who evaluated animal health in

[1] Union Economique et Monétaire Ouest Africaine
[2] Programme Spécial Régional d'appui à la Sécurité Alimentaire

the UEMOA countries. His three-volume report, with extensive appendices, summarizes the UEMOA countries' legislative, regulatory and institutional frameworks that support animal health protection; evaluates animal health inspection and disease prevention capacities; and assesses capacities of diagnostic animal disease laboratories and their needs for equipment and supplies.

WATH Intervention

The West Africa Trade Hub, a project under the West Africa Regional Program of USAID, provides support to UEMOA in its SPS harmonization efforts. As a U.S. project, WATH wanted to ensure that the UEMOA harmonization process fitted into the import requirements of the United States. It therefore became necessary to engage a consultant, Dr. Ernst Graf, to review and present a summary report of the UEMOA SPS harmonization process with recommendations for steps to be taken to align the process with that of the U.S. Additionally, Dr. Graf's review would provide an English version of the analyses to enable remaining non-UEMOA country SPS public officials to learn of the UEMOA example as a model for their own SPS harmonization programs.

This report therefore presents Dr. Graf's critique and summary of the status of sanitary and phytosanitary measures in the eight member countries of the UEMOA, and suggests how these can be aligned to meet the requirements of the U.S. His report makes the following recommendations:

1. Consolidate the 497 pages of the three summary reports on food, plant, and animal safety and distill the main conclusions and recommendations into a single concise document. Overall, there is too much emphasis on historical antecedents, and an uncritical presentation of equipment 'wish lists' rather than a prioritization of needs and allocation of very scarce resources. He recommends more discussion of achievable objectives and realistic action steps based on the given resource constraints.
2. Identify, in each country, the major food products that have potential for export after removal of trade barriers through the SPS initiative —examples may include frozen fish, cashews and shea butter (as a cocoa replacer). This information is currently not available in any of the summary reports.
3. Prioritize the selected food products for each country in terms of the agricultural orientation of the country, the estimated economic benefits of exporting particular food products, the availability of potential international trading partners, current SPS infrastructure, the level of technical sophistication necessary to meet importers' specifications, and overlap with the WATH mission.
4. Assess and prioritize the individual countries' SPS-related needs to remove trade barriers for the food products selected above. Focus the analysis on issues specific to the export product and also on the broad institutional, legislative and administrative infrastructure that supports the given export industry. This assessment should include a second review of analytical testing capacities with recommendations for a unified UEMOA laboratory strategy.
5. Develop an effective hands-on and detailed program to build the necessary SPS capacity. The assistance must be tailored to the host country's specific needs and agricultural development priorities. Provide clear directions with enough specifics for harmonizing West African SPS regulations with the WTO Agreement on SPS and with EU/U.S. regulations.

International harmonization of animal health standards may not be a high priority for WATH since West Africa is unlikely to supply the U.S. or EU markets competitively with livestock

products. Instead, the food safety aspect may need to be expanded to include more detailed country-specific details and to prioritize their weaknesses. The phytosanitary control analysis seems the most complete and useful to proceed with the SPS harmonization process.

Graf proposes additional success criteria and program components in a final SPS initiative that are absent in the reports summarized here:

- Sustainability of programs, equipment, or reagents, particularly the sustainability of sophisticated laboratories after project completion.
- Farm-to-fork approach: It is mandatory to develop SPS programs on a total food chain approach that encompasses all aspects of food production from GAP (Good Agricultural Practices) and improved livestock management to food distribution and consumption. For example, if the most basic sanitary conditions are not met, sophisticated analytical testing for microbes in milk and other dairy products is not required – the products will be contaminated.
- Simple approaches: The consultants suggest numerous sophisticated and high-end systems to improve SPS safety in the UEMOA countries. However, they never mention the inexpensive and practical approaches that often have a much greater impact on food product safety than the most advanced laboratory. Such simple approaches are very effective in an environment of limited financial resources and they often prove to be more sustainable. Some examples in the dairy industry include daily cleaning of the hind legs and udders of cows to avoid fecal transfer of *E. coli* and coliforms into the milk and subsequent contamination of dairy products with pathogens; rapid cooling of fresh milk in collection centers before being transported to processing facilities; cleaning and sanitizing of dairy equipment and facilities according to GMP after each use; personal hygiene of both farm and factory personnel; and availability of a clean and safe water supply (see below). Similar examples are available in other agricultural and food processing sectors.
- Water quality: Water is the primary ingredient in many food products and it also is important for phytosanitary control and animal health. Therefore, a fundamental water analysis should be carried out in the major industrial and agricultural centers of the UEMOA countries to test for microbial contamination, toxic trace metals, iron, pesticides, radioactivity and other chemical contaminants. Affordable solutions for water purification exist, including simple filtration and UV sterilization.
- Sanitation: Graf recommends an assessment of the basic sanitation protocols in public production facilities, perhaps with additional training in this important area. Companies like Ecolab often have representatives in developing countries who are available for industrial tutoring (principles of microbiological contamination, types of chemicals, basic procedures, pitfalls to avoid, typical equipment and material shortcomings that promote bacterial growth, and many other relevant topics). Also, there are many training courses, videos and consultants specializing in industrial food sanitation.
- Traceability: A rudimentary traceability program is an essential requirement for the export of any food product to the U.S. and EU, but it also should be considered as a voluntary program for intra-regional trade.
- Adulteration: A comprehensive SPS program should include the identification of the primary contaminants of the food products destined for export. Also, safe and high-quality food includes labeling accuracy and standards of identity.

- HACCP and ISO certification: Such programs should be considered for one or several advanced companies with a high potential for export. The local consultants will have to make that assessment and recommend suitable companies.

Finally, Graf suggests that a single coordinator write a final concise report based on the three summary reports. Such a report should include some or all of the suggestions and recommendations presented here. This implies that Feral, Agounke and Ly collect the additional necessary information and supply it to the final coordinator. Furthermore, several additional independent consultants may be employed to conduct short studies in the areas of water quality analysis, laboratory testing capacity, and a sanitation and GAP/GMP analysis of various companies and agricultural centers.

LIST OF ACRONYMS AND ABBREVIATIONS

AMM	Autorisation de Mise sur le Marché
ANADER	Agence National d'Appui au Développement Rural
CEBV	Communauté Economique du Bétail et de la Viande
CEDEAO	Communauté Economique des Etats de l'Afrique de l'Ouest
CILSS	Comité Inter-Etats de Lutte contre la Sécheresse au Sahel
CIPV	Convention Internationale pour la Protection des Végétaux
CNEAG	Centre National d'Elevage et d'Amélioration Génétique
CODEX or **CAC**	Codex Alimentarius Commission
CRMV	Comité Régional du Médicament Vétérinaire
DAP	Direction de l'Aquaculture et des Pêches
DAQ	Direction de l'Alimentation et de Qualité
DCVP	Directeur du Contrôle Vétérinaire et Phytosanitaire
DEP	Direction de l'Elevage et de la Pêche
DGSV	Direction Générale des Services Vétérinaires
DPE	Direction des Productions d'Elevages
DPH	Direction des Productions Halieutiques
DRRA	Directions Régionales des Ressources Animales
DSV	Direction des Services Vétérinaires
ECOWAS	Economic Community of West African States
EISMV	Ecole Inter-Etats des Sciences et Médecine Vétérinaires
ELAT	Ecole de Lutte Anti Tsé-Tsé
ENESA	Ecole Nationale d'Elevage et de la Santé Animale
EU	European Union
FAO	Food and Agriculture Organization
HACCP	Hazard Analysis for Critical Control Points
HIDAOA	Hygiène des Industries et des Denrées Animales d'Origine Animale
ICP	Inductively Coupled Plasma Spectroscopy
IPM	Integrated Pest Management

IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
LANADA	Laboratoire National d'Appui au Développement Agricole
LNE	Laboratoire National d'Elevage
LPDA	Lettre de Politique Développement Agraire
MAEP	Ministère de l'Agriculture, de l'Elevage et de la Pêche
MINAGRA	Ministère de l'Agriculture et des Ressources Animales
NIMP	Normes Internationales pour les Mesures Phytosanitaire
NPPO	National Plant Protection Organization
OIE	Office International des Epizooties
OMC	Organisation Mondiale du Commerce
ONPV	Organisation Nationale de la Protection des Végétaux
ONV	Ordre National des Vétérinaires
PACE	Programme Panafricain de Contrôle des Epizooties
PARC	PanAfrican Rinderpest Campaign
PAU	Politique Agricole de l'Union
PCR	Polymerase Chain Reaction
PRA	Pest Risk Assessment
PSRSA	Programme Spécial Régional d'Appui à la Sécurité Alimentaire
PV	Postes Vétérinaires
RESUREP	Réseau de Surveillance Epidémiologique
SICOSAV	Service d'Inspection et de Contrôle Sanitaire Vétérinaire
SNSE	Système National de Surveillance Epidémiologique
SPS	Sanitary and Phytosanitary
UEMOA	Union Economique et Monétaire Ouest Africaine (Benin, Burkina Faso, Ivory Coast, Guinea Bissau, Mali, Niger, Senegal, Togo)
WATH	West Africa Trade Hub
WTO	World Trade Organization

1. EVALUATION OF FOOD SAFETY

UEMOA commissioned Feral to summarize the results and conclusions of eight consultants who assessed the food safety status in each of the eight UEMOA countries. Specifically, he collected and analyzed legal and statutory documents pertaining to food production and consumption within UEMOA, to identify the roles of the various administrations charged with assuring food safety and quality, and to analyze the legal framework available for controlling and enforcing food quality and safety policies. Based on these analyses he proposed legal, institutional and administrative reforms to increase the level of food safety in the UEMOA countries.

Feral's summary report is divided into three sections:

1. Evolution of the legal principles and characteristics of food safety management.
2. The legal, administrative and institutional framework for food safety.
3. Strategies and suggestions.

1.1 Evolution of food safety management

The first part of the report reads like an interesting academic monograph on the history and philosophy of food safety laws, risk management, and elimination of fraud in developed countries, and the failure of the entire food safety system in developing countries. The discussion suggests that food laws in UEMOA countries, based on the French colonial legal system, are outdated and ineffective.

Unfortunately, Feral never refers to any individual UEMOA country in his introduction or final recommendations. Furthermore, he does not assess and/or prioritize the individual countries' SPS-related needs. Development of an effective SPS initiative necessitates that the donor organization define a country's SPS infrastructure, programs, staffing and specific requirements. Requirements vary with each country's agricultural orientation (e.g., plants, animals, processed agricultural products), level of economic development, knowledge of SPS issues, physical and institutional infrastructure, major trading partners, and the level of technical sophistication necessary to meet importers' specifications. Therefore, technical assistance and SPS capacity building must be detailed and focus on hands-on, practical issues. The assistance must be tailored to the host country's specific needs and above all it must be linked to individual countries' agricultural development priorities and strategies.

1.2 Legal, administrative and institutional framework for food safety

Feral does not address any of the above SPS issues, agricultural priorities or technical barriers to export and international trade for specific UEMOA countries. His observations and broad conclusions have limited practical value. At one point he states that the food laws are very uniform and outdated in all eight UEMOA countries. Similarly, he notes that in all UEMOA countries any ministry with food safety responsibility lacks real authority in these very bureaucratic, hierarchical and corrupt government organizations. The judge has final jurisdiction, but he never intervenes and the entire system fails! These conclusions may be valid for improving the overall judicial and institutional framework within the UEMOA union. However, Sahelian interior countries and coastal countries differ in the types of agricultural products regarded as most promising for export earnings in the event that international trade barriers can be overcome. Furthermore, there may be country-to country differences in key SPS risks and the required means for mitigating those risks.

Given Feral's legal background, it may not be surprising that he limited his analysis to the legal, institutional and administrative framework of the food safety program. However, the WTO SPS agreement covers many other SPS measures, such as product and process criteria, production methods, sampling and testing procedures, inspection protocols, certification and accreditation, risk-assessment methods, quarantine treatments, and packaging and labelling requirements. An effective food safety SPS initiative will have to address all of these issues and tailor donor assistance to the specific requirements of each country. In addition to providing such technical assistance, a successful SPS project will also help a country implement trade-related SPS obligations and participate in SPS-related trade discussions in the WTO and other international standard-setting organizations.

Feral points out that the food laws in all the UEMOA countries were written during French colonialism, before each West African government had different departments and ministries. In most UEMOA countries food safety is managed by the health ministry, while in one country it is administered by the ministry of agriculture and in two countries by the ministry of the environment. But in all eight countries the inspectors and customs officers lack the necessary tools to carry out their inspections. Veterinary inspectors often own a knife and nothing else, not even a cooler, despite large distances to be covered. Local governments also lack the funds, the information and the power to administer an effective food safety program. Food safety programs are centralized, with weak links between central offices and the field, and they lack transparency. There is no real risk assessment or management plan; the experts come under the auspices of the minister, and any advice is very secretive. In Benin, a Codex Alimentarius committee exists, but it publishes no reports or activities. UEMOA countries lack travel funds to send representatives to international food safety and SPS meetings. No GMP policies or laboratory accreditation bodies exist in any of the countries.

Feral concludes that the absence or failure of a food safety system is not due to a lack of means or technical expertise, but rather to the lack of suitable institutional, administrative and legal frameworks to provide a strategy and method for administering a food safety program. This conclusion, which reflects his training and professional biases, seems inconsistent with his other observations concerning poverty and technical expertise. For example, Feral asserts that the inspectors and customs officers lack all means for effectively carrying out their inspections. However, based on information from Dr. Coulibaly, he recommends a thorough assessment of the skills and functions of the various central and regional laboratories in the eight countries

before designing an action plan. Such a recommendation implies that we are not certain about the level of technical expertise, at least in the area of analytical testing laboratories. In summary, one may suppose that technical, financial *and* institutional deficiencies contribute to the failure of the food safety system.

1.3 Strategies and recommendations

Feral offers three recommendations to improve the level of food safety within UEMOA:

1. *Adoption of international food safety standards to promote international trade.* I agree with this recommendation, but the analysis above does not support it. His most significant conclusion attributes the complete breakdown of the food safety system to the lack of a suitable institutional and administrative legal framework, suggesting that revamping this framework should take highest priority.

2. *Adoption of international standards for local markets.* Feral emphasizes the adoption of a legal framework for controlling food safety, e.g., development of decentralized services under the auspices of the central state authority, development of systems, training protocols, food safety control methods, inspection booklets, activity reports, company client files, organized data collection, legal enforcement procedures, etc. I agree with all of these recommendations, although they require greater detail and more specificity for the individual countries within UEMOA.

3. *Regionalization of broad UEMOA-wide food safety policies required for export, with special emphasis on improving food hygiene during food production and distribution.* Feral stresses that the plan must be very practical, however, he does not suggest specific strategies essential to the success of such a program. Feral recommends the adoption of international standards and SPS measures for the improvement of food hygiene. He chooses food hygiene because of its breadth. It affects many participants and government organizations and thus allows for decentralization. Although Feral asserts that it requires only a small investment, this assertion could be an understatement. Any long-term and permanent improvement in food hygiene at the farm and food processing level usually requires a major investment of time and resources. For example, improving the production of clean cheese requires a long-term effort to improve barn management, milking practices, personal hygiene, milk cooling and storage procedures, analytical testing methods, milk pasteurization, cheese processing procedures, and equipment sanitation. Overall, the data do not support Feral's broad recommendations. He provides only one example of such an intervention plan—itself questionable—for improving food hygiene (in Appendix II).

Feral identifies several additional areas for improving the administration of food safety. I agree with these organizational recommendations, while noting their lack of specificity.

- Development of a UEMOA technical committee to provide information on the Codex Alimentarius, represent UEMOA and serve as an independent board for risk management.
- Development and dissemination of written UEMOA-wide technical, scientific and legal information.
- Development of central trade schools, universities and continuing education programs as well as specialized region-wide programs in different UEMOA countries.

- Evaluation of existing public and private laboratories and development of new central laboratories for the entire UEMOA Union. Central laboratories would be accredited.
- Creation of an organization within UEMOA for addressing common food safety issues.

In summary, Feral focuses more on local food safety than on overcoming true SPS trade obstacles. He omits addressing other important SPS issues such as ISO, HACCP, traceability, certification and accreditation, training in food sanitation, modern microbiological testing technologies, training in safe food formulation, and food processing issues unique to local industries. His summary report makes few references to a true SPS analysis in the individual countries and many of his recommendations are not supported by data or conclusions. Therefore, Feral's recommendations are as applicable to ECOWAS and CILSS as they are to UEMOA countries. The same caveats for any generalization will hold true and a final analysis will have to focus on the agricultural inclination of each country, products of greatest export potential, the local SPS infrastructure, and SPS risks.

1.4 Review of selected documents

1.4.1 Characteristics of Food Law (Appendix I, Document 1)

This document provides a very general description of food laws, definitions, the role of inspectors, penal measures, sampling procedures, etc., not based on the evaluations carried out in the eight UEMOA countries. Feral outlines a general administrative structure for a food safety control organization:

- Coordination of different government agencies that all report to one lead agency
- Laboratories
- An independent scientific authority
- An authority responsible for meetings and coordination

This organizational strategy seems very reasonable but it is too general and not tailored to individual UEMOA countries.

Feral lists the human resource requirements and training needs for a food safety control organization. He states that laboratories might be private or associated with a university. He also recommends that UEMOA set up a technical and scientific committee that the government may call on during food safety crises. Feral makes no reference to the existing SPS infrastructure or legal and administrative frameworks in the various UEMOA countries. The contents of this appendix seem too general and insufficiently practical to benefit a future SPS program.

1.4.2 Regional Intervention Plan for the Improvement of Food Hygiene in the UEMOA Countries (Appendix II, Document 1)

Feral suggests a pilot study that would entail a 12-month intervention plan to improve food hygiene in all eight UEMOA countries. He encouraged each country to select its own food hygiene project that would have the greatest public health impact and visibility. This pilot study would serve as a model for the design of a longer-term food safety program within UEMOA.

Feral suggests a 6-phase action plan:

1. Select site and project. Each country can choose one or several geographic sites and a project in cooperation with the municipality. Examples include slaughterhouses, animal industries, catering, modern food distribution, open food markets, and large food production facilities. The local food safety authority should decide which project is most pertinent, visible and significant. Feral prefers large open food markets as potential projects since they pose the biggest public health threat and they provide an opportunity to inform many people about new food safety policies.
2. Prepare an inventory of social practices and a complete description of the current food hygiene status.
3. Analyze above inventory data.
4. Develop an action plan based on the above analysis.
5. Carry out the action plan.
6. Evaluate the results of the pilot study.

This six-phase action plan is simply a fundamental research protocol that is germane to any scientific study and should not be considered a pilot study design. Feral should have focused more on the specific variables such as impact on trade, etc.

Furthermore, an open food market is a poor choice for such a pilot study due to the sheer size of the project and the number of variables involved; the researcher has virtually no control over most of the variables; and finally, the results are not easily measurable or quantifiable.

In my estimation the proposed pilot study is too large since it involves eight countries with different geographic sites and miscellaneous mini-projects. Such a study would require enormous resources that could be allocated much more effectively on a real SPS initiative that will actually benefit the UEMOA countries in terms of building international food trade capacity.

Finally, the proposed pilot study does not meet the criteria for addressing SPS-related weaknesses.

1.4.3 Development of a Food Safety Program Based on Social Practices: Bush and Street Food (Appendix II, Document 2)

Feral gives a detailed description of the laws governing the sale of food in restaurants, along roads (by street vendors), in open food markets and in the bush. He describes the level of control by different government agencies, food handling and hygiene practices in restaurants, description of safe drinking water, and so on.

This document does not address trade capacity building in any way and it has only minor relevance to a major SPS initiative.

The following two appendices are not part of the current review article but they summarize previous pilot studies.

1.4.4 Pilot Study (Appendix I, Document 2)

This document describes the legal framework of a food safety program within the UEMOA countries, the relationship of the food safety program to international trade, definition of governing bodies, etc. The document contains many generalities and several sections of little relevance to an UEMOA food safety program, e.g., a lengthy chapter on novel food items that have never been formulated (definition of a novel food item, regulations, food safety obligations, etc.). UEMOA countries have more urgent needs than the creation of legislation to govern the introduction of novel foods.

1.4.5 Pilot Study (Appendix I, Document 3)

This legal document describes the creation of a new "Food Safety Agency" to control food quality and safety. It is a typical legal document consisting of eight articles on the creation of the agency, its function, staff composition, its renewal, and its legal powers.

2. EVALUATION OF PLANT SAFETY

In the case of phytosanitary control, a national consultant in each of the eight countries conducted two separate studies. The first study evaluated the legislative, regulatory and institutional systems that support phytosanitary control in the eight UEMOA countries. The second evaluation was based on a precise methodology established during an educational workshop in Dakar. Following this training workshop the eight consultants effectively carried out this second phytosanitary evaluation, organized into twelve modules:

- General information
- Phytosanitary legislation and regulation
- Phytosanitary risk analysis
- Phytosanitary inspection of import and export products
- Response measures against exotic pests
- Pest diagnostic capabilities
- Surveillance and monitoring
- Institutional problems
- Areas safe of pests
- Phytosanitary export certification
- Life span and continuity of the phytosanitary system
- Needs assessment

Upon completion of the studies, each national consultant wrote two country-specific reports and submitted them to the regional project coordinator, Dr. Agounke. Dr. Agounke then reviewed the 16 national reports and composed a very thorough 166-page summary, with detailed and specific phytosanitary control recommendations for the eight UEMOA countries. His report also contains seven extensive appendices on the legislative, regulatory, and institutional characteristics of each separate UEMOA country, an SPS risk analysis, the analytical laboratory status with recommendations for each country, and a section on SPS terminology. A list of helpful references concludes the report.

Agounke's excellent summary of the true phytosanitary obstacles to trade within the UEMOA region identifies weaknesses in available testing equipment, a need for improved training, and a necessity for institutional and legislative reforms to adopt international SPS standards. I completely agree with his proposed list of recommendations for a well-defined assistance program to achieve long-term harmonization. He tailors the recommended assistance to each

country's specific needs and links it to individual countries' agricultural development priorities and strategies. Although Agounke fails to sequence the required investments and training or provide a series of steps for each country, his report is written with enough technical competence and analytical details to allow any future SPS coordinator to implement a successful harmonization program based on Agounke's recommendations.

2.1 Harmonization and integration

The results of the consultants' national reports form the basis for Agounke's clearly defined recommendations for harmonization and integration. His regional strategy is premised on an UEMOA - wide action plan that requires certain measures, some of which are optional while others are compulsory. He prioritized actions that the national consultants regarded as most urgent.

- Revision of legislative regulations.
- Signing and ratification of CIPV (Convention Internationale pour la Protection des Végétaux = International Plant Protection Convention), revised in 1997.
- Revision of the institutional framework of the ONPV (Organization Nationale de la Protection des Végétaux (National Plant Protection Organization) in the eight countries and development of priorities. Institutional efficacy varies enormously across the eight UEMOA countries. In Guinea-Bissau and Togo the ONPV needs revision urgently since the laws in these countries do not abide by the principles of the CIPV. In Burkina Faso and Mali the ONPV needs revision to better define the role of the various institutions, e.g., the ONPV not only controls the health of plants but also the quality of finished food products. The functions must be separated in a collaborative and complementary fashion between the different regulatory agencies. The national services for ONPV in Benin, Ivory Coast, Senegal and Niger are relatively better structured; a minor revision of the resource allocations and relationships between the institutions would be enough to correct the weaknesses. Agounke realizes that these are fairly difficult problems. However, he stressed the need for harmonization and regional adherence to international phytosanitary standards in order to create a common market and increase its export potential.
- Besides improving the legislative, regulatory and institutional framework in the UEMOA countries, strengthening the phytosanitary capacity of the ONPV is critical. The ONPV consists of the following organizations, each of which must be reviewed and reorganized according to the country's international trade priorities:

    - The administration of the plant protection services.
    - The national universities and research labs interested in plant protection.
    - The national agronomic educational systems.
    - The private sector linked to plant protection.
    - The associations of producers and consumers.

    The primary activities for improvement include:

    - Reorganization of the legislative, regulatory and institutional framework of these organizations.

- Strengthening their phytosanitary capacities through education. In October 2003, FAO provided regional training in Niamey for educators, but national training of phytosanitary inspectors has not been offered.
- Strengthening phytosanitary capacity by providing adequate equipment for phytosanitary control and testing according to international standards. Agounke meticulously documented the equipment needs for each country and organized them according to the project modules described earlier.

According to Agounke, significant differences exist in institutional, legislative, and phytosanitary controls among the UEMOA countries, especially between the group of countries of the Sahelian zone (Burkina Faso, Guinée–Bissau, Mali, Niger and Senegal) and those of the humid tropical zone (Benin, Ivory Coast and Togo).

2.2 Phytosanitary priorities, weaknesses and recommended actions

Agounke recommends that all activities focus on the harmonization of phytosanitary control at both the regional and national levels for the eight UEMOA countries. To that end he provides hands-on, practical and detailed suggestions throughout his report and in the appendices. For individual UEMOA countries, Agounke painstakingly assesses and ranks the development priorities for each phytosanitary issue. He proposes a very effective phytosanitary program by defining each country's SPS infrastructure, legislative and institutional framework, strengths, weaknesses, priorities, existing programs, staffing requirements and past development efforts. He reviews each country's agricultural orientation, level of economic development, knowledge of SPS issues, physical and institutional infrastructure, and analytical testing capabilities and equipment. His proposed recommendations regarding technical assistance and SPS capacity building are tailored to meet the specific needs of each country. He provides detailed, practical and realistic guidance within the context of the UEMOA culture and political environment.

His encyclopedic table summaries are particularly useful since they recapitulate the weaknesses and recommendations for each phytosanitary module. Although there is some duplication of information, these tables are extremely helpful since they allow the reader to quickly review the various phytosanitary issues for each country and module.

However, a slight modification in the format of these tables would simplify further the reader's overview. For example, I reorganized Agounke's information on Benin (available in nine separate tables on three and a half pages in his Appendix 1B) and presented this information in the form of a single table on one page (see Table 1). I suggest Agounke consolidate this information for each of the other seven UEMOA countries.

Similarly, I recommend he consolidate the large number of tables in his Appendix 1A into a single summary table for the entire UEMOA region. Considering the surfeit of detailed information in these tables it would have been helpful if Agounke had ranked the eight UEMOA countries according to their level of phytosanitary development and SPS capacities. Agounke ranks the priorities within each country but he neglects to compare the countries. As illustrated in Table 1 (Phytosanitary Analysis for Benin), Agounke addresses many different areas of phytosanitary control with true competency, insightfulness and thoroughness, and in each case he considers the country and its unique SPS weaknesses, he suggests practical solutions, and he develops priorities for his numerous recommendations.

Table 1. Phytosanitary Analysis for Benin

Phytosanitary Analysis for Benin			
Module	**Priorite N°**	**Faiblesses**	**Actions**
Législation	1.	La législation en application (décret 63-264 du 20 juin 1963 et loi 64-005 du 15 juillet 1965, révisée 1992. non conforme aux nouveaux textes révisés de la CIPV (1999)	Intégrer dans la loi les nouvelles définitions conformément à la CIPV (1999)
Analyse du risque phytosanitaire	1.	Le SNPV n'est pas mandaté par la législation de conduire ARP telle que définie par la CIPV	Intégrer le concept de l'ARP dans les textes réglementaire
	2.	La liste des organismes nuisibles de quarantaine est inexistante	Établir et publier par arrêté la liste des organismes nuisibles de quarantaine
Inspection	1.	Le niveau des inspecteurs est trop bas	Il faut que tous les Inspecteurs aient le niveau au moins de techniciens supérieurs d'agriculture, spécialisés en protection des végétaux
	2.	Insuffisance du personnel du service de l'inspection	Recrutement de spécialistes en protection des végétaux
	3.	Manque de formation ou de recyclage des inspecteurs	La formation régulière et le recyclage des inspecteurs sur les nouvelles normes
	4.	Absences des salles étanches pour l'inspection des échantillons	Fournir l'équipement de bases aux postes des contrôles
Mesures de réactions aux organismes nuisibles exotiques	1.	Inexistence d'une équipe formelle mise en place pour réagir en cas d'introduction des organismes nuisibles exotiques	Il faut formaliser une telle équipe en précisant sa composition et sous l'autorité du SNPV
	2.	La loi n'a pas prévu de ressources financières d'urgence pour faire face à l'introduction des organismes nuisibles exotiques	La loi doit instaurer un fonds d'urgence pour parer à d'éventuelles introductions d'organismes nuisibles exotiques
Diagnostic d'organismes nuisibles	1.	Le personnel du SNPV n'est pas qualifié pour entreprendre les diagnostics d'organismes nuisibles	Il faut avoir des spécialistes au niveau de la direction du SNPV
	2.	Le SNPV ne fait pas de la recherche, et n'est pas habilité à poser des diagnostics	Il faut formaliser le diagnostic des organismes nuisibles avec la recherche nationale
	3.	Il manque l'équipement nécessaire pour faire le diagnostic	Equiper les différents laboratoires du SNPV et recenser les laboratoires de recherche pouvant aider à ce travail de diagnostic
Surveillance	1.	La surveillance n'est pas systématique	Formaliser la surveillance du territoire en précisant dans la législation la fréquence par an
	2.	Aucune zone indemne n'a été répertoriée par le SPV	Formaliser les prospections dans les zones de grandes productions agricoles et préciser la fréquence par an
Problème institutionnel	1.	La loi n'a pas prévu une autonomie financière au SPV	Prendre des dispositions réglementaires pour assurer à la direction de l'agriculture de disposer d'une ligne budgétaire pour la SPV
	2.	Le SPV n'assiste jamais aux réunions des commissions intérimaires pour les mesures phytosanitaires de la CIPV et autres	Le Ministère de l'agriculture doit assurer la représentation effective de la PV à ces différentes rencontres
Zones indemnes d'organismes nuisibles	1.	La législation n'a pas prévu une disposition réglementaire pour l'établissement des zones indemnes d'organismes nuisibles	Prendre les dispositions législatives compatibles avec la norme internationale pour l'établissement des zones indemnes d'organismes nuisibles
Certification à l'exportation	1.	Le SPV ne dispose pas d'équipement et d'installations adéquates pour la réalisation des inspections	Equiper les différents postes de contrôle de tout le matériel nécessaire pour inspection
	2.	Le suivi de la production en général du champ vers le point d'exportation n'est pas assuré par le SPV	Sur la base d'enquête il faut formaliser ce suivi du champ au lieu d'exportation pour les grandes sociétés d'exportation de végétaux et produits végétaux
	3.	Le système de certification est décentralisé jusqu'aux postes frontaliers terrestres	Informatiser le système de numérotation des CP afin que le suivi soit effectué depuis la direction du SPV

2.3 Training needs

Agounke offers concrete guidelines for the training of approximately 500 phytosanitary inspectors in the eight UEMOA countries (see his Appendix 4). He proposes an educational protocol consisting of fourteen different plant health modules, such as:

- Phytosanitary risk analysis.
- Inspection of plant shipments.
- Import and export certification (including safety and traceability of shipments).
- Use of modern information technologies for data base management (mostly for inspection and certification activities).
- Management and upkeep of a quarantine station.

Agounke also suggests that the trainers who participated in an FAO workshop in Niamey in December 2003 develop detailed curricula. Since Agounke wrote his plant safety report in May 2004 I assume he had no information on the outcome of this training program. However, it would have been useful to provide some details on the type of training offered.

I recommend including training in the area of analytical testing for laboratory personnel. In addition, I would develop an IPM (integrated pest management) course for universities and other training centers. For example, Penn State University offers an excellent curriculum for a course entitled *IPM for Teachers*. The course outline (see Appendix 1) may serve as a model for similar IPM training material since it covers all aspects of integrated pest management.

2.4 Request for analytical equipment and supplies

In his main report Agounke never addresses the analytical testing capacities in the UEMOA countries, the educational background and competencies of the staff, the status of existing laboratories, the current organization of testing facilities (large centers vs. small local laboratories, government vs. independent private sector facilities, national vs. regional high-tech laboratories, etc.), or his recommendations for the future organizational strategy for analytical testing within the entire UEMOA region. Instead, he compiled very detailed summaries of the basic laboratory needs for equipment and supplies in each country (in his 40-page Appendix 2). This information was provided by the national consultants; Agounke simply confirms that the requests had already been prioritized to reduce the total expenditure to a range of 32,000 to 33,000 $ EU per country.

All eight UEMOA countries presented essentially the same list of equipment and supplies needed for two laboratories in each country: a central phytosanitary laboratory (often part of the Ministry of Agriculture) and a small laboratory at the airport to check both imported and exported plants and plant products. The lists are very complete for each country, including specifications and accurate cost estimates for equipment and supplies, vendor information, and alternate suppliers. However, without knowing the inventory and status of existing facilities in the eight UEMOA countries I am unable to comment on the completeness of these suggested supply and equipment lists. Some of my other comments and suggestions regarding these equipment and supplies lists include the following:

- I would combine the laboratory information presented in his Appendix 2 (40 pages) into one or two tables. This would reduce extensive text replication and improve clarity. Agounke may consider a format similar to that of Table 1.
- He presents cost estimates in three different currencies of silver sterling, euros and $ EU. What is a $ EU? On page 73 of his summary report Agounke states an exchange rate of 1.2 $ EU per Euro (36.96 Euros = 43.07 $ EU), while on the following page he states an exchange rate of 1.7 $ EU per Euro (745 Euros = 1248 $ EU). I recommend that Agounke report all budgets in a single standard currency of US$.
- I question the urgent need for airport laboratories in all eight UEMOA countries. Export certificates should be provided by central laboratories, while plant health risks from import and domestic products are probably larger at borders, ports and in large open food markets. Again, without knowing the organizational details of the laboratory testing infrastructure it is difficult for me to offer constructive criticism.

In his Appendix 3 Agounke presents additional equipment lists for specialty laboratories and for information and communication centers in all eight UEMOA countries:

- Eight entomology labs (348,000 $ EU)
- Eight mycology and bacteriology labs (646,000 $ EU)
- Eight information and communication centers, including certification supplies (257,000 $ EU)

The total proposed budget for this additional equipment amounts to 1,151,290 $ EU for the UEMOA region with an average of 143,911 $ EU per country. Without knowing what $ EU means, I cannot comment on the accuracy of these cost estimates. However, I seriously doubt the cost realism in these lists, e.g., Agounke quoted a cost of 3,500 $ EU per fax machine, 5,000 $ EU per photocopier, 1,500 $ EU per modem and additional e-mail accessories (what other accessories are there?), 5,978 $ EU per incubator, 7,990 $ EU per laboratory hood, etc. Overall, these requests in Agounke's Appendix 3 appear to be wish lists with little or no justification. For example, the proposed mycology and bacteriology labs are sophisticated research labs. The practical phytosanitary control labs (as proposed in his Appendix 2) already include all of the capabilities for microbiological testing (bacteria, fungi and yeasts) and do not require any advanced equipment like electrophoresis apparatus, freeze dryer, ultracentrifuge, etc. Maybe one sophisticated mycology and bacteriology research center within the UEMOA region is needed, but the other seven countries can easily incorporate those microbiological analytical capabilities into their national testing centers.

Agounke did indicate that these budgets and requests for additional equipment were put together in a hurry and will require additional future prioritization. He also mentioned that the true budget is probably even higher than 1.15 million $ EU since several transportation items and diagnostic laboratories were omitted. Overall, Agounke described three levels of priority for equipment needs; with the exceptions mentioned earlier, I mostly agree with these priorities.

Based on the laboratory testing concerns expressed earlier, I recommend that the UEMOA SPS project commission an independent consultant to assess the analytical testing capacities in the UEMOA region. Such an appointment would include the following tasks:

- Visit two or three representative central phytosanitary labs to evaluate their existing capacities (facility, equipment, supplies, and skills) and to make recommendations for future needs.
- Visit two or three representative airport labs to assess their role, to evaluate their capacities and to make future recommendations.
- Visit two or three representative specialty labs (if any of them exist), such as an entomology lab and a bacteriology and mycology center.
- Develop a phytosanitary testing strategy for the entire UEMOA region.
- Conduct similar assessments for zoonotic and food safety testing capacities within UEMOA countries.

Agounke's equipment and supply lists look very accurate and detailed and include analytical items for both chemical and microbiological testing. As mentioned above I am unable to comment on their completeness without knowing the status of existing facilities. However, I noticed the equipment requests failed to include a piece of equipment for the detection and measurement of toxic metals – an absolute requirement for phytosanitary control. Metals are usually determined by voltammetry, polarography, atomic absorption spectroscopy or emission spectroscopy, or else by the newer technology called ICP (Inductively Coupled Plasma Spectroscopy). Such analyzers are fairly expensive, ranging from $5,000 for voltammetric and polarographic trace metal analyzers to $20,000 for atomic absorption and emission spectrometers and up to $40,000 for ICP spectrometers.

Furthermore, many developing countries have problems with radioactive contamination; their agricultural products must be tested for radioactivity. For example, such a stringent requirement exists in all former Soviet countries. I am unfamiliar with West Africa, but I have come across a recent report on radioactive contamination of drinking water and soil in a small uranium mining town called Arlit in the far north of Niger (UN Integrated Regional Information Networks, April 28, 2005). French NGO's SHERPA and CRIIRAD found that the level of radioactive contamination in water was 10 to 110 times higher than standards considered acceptable to the World Health Organization. These dangerously high levels were believed to account for the high incidence of a range of illnesses among local residents. This occurrence of radioactive contamination may be an isolated case in the UEMOA countries, but I simply wanted to alert Agounke to the possible need for testing equipment like Geiger counters.

Finally, I would also include 3M Petrifilm strips in the microbiological supplies list to enable accelerated bacteriological and mycological analyses when needed.

2.5 Past UEMOA efforts

At the end of his report Agounke reviews past phytosanitary development efforts and results in the UEMOA countries between August 2002 and December 2003. He presents a concise timeline of major project milestones and a second graph of all future planned activities. These two figures help the reader to visualize the course of the entire FAO/UEMOA SPS project.

2.6 Transferability of UEMOA initiative to non-UEMOA countries

During a workshop held in Bamako, Mali in 1991 a small contingency of Sahelian CILSS[3] countries--Burkina Faso, Guinée-Bissau, Mali, Niger and Senegal--developed a subregional regulatory agreement regarding phytosanitary regulation and pesticide control. One year later they expanded the proposal for the entire CILSS union, which was accepted by the Ministers of Agriculture of all nine member countries in 1992. These two initial policies regarding regional plant safety and pesticide management have served as a platform for subsequent phytosanitary improvements. However, progress has been very slow, especially regarding regional inspection offices, plant quarantine centers, and pesticide control. In Agounke's estimation, most of the program objectives have not been accomplished over a period of more than 10 years. He mostly blamed a lack of financial resources for this failure. Personally, I believe that the financial shortcomings were only one of several factors accounting for the fairly disappointing outcome of the 1992 CILSS treaty.

Similar SPS pilot programs have been developed in West African countries, most of them dealing with the issue of pesticide control. For example, Ivory Coast, Benin, Togo, Ghana, and Guinea Conakry started a phytosanitary control project named "HIP" in 1993 that lasted until 2000. Again, the overall success of the program was very limited. But Agounke used these opportunities to learn from past mistakes and to better design both the UEMOA initiative and future ECOWAS and CILSS projects. He enumerated several key conclusions and developed appropriate recommendations. Most of all, Agounke believes that **all future programs must establish priorities** and elaborate a common regional strategy that goes beyond the national boundaries. Although this goal has a lot of merit for the overall harmonization it also seems rather elusive to me since Agounke fails to address the steps by which the UEMOA countries can move toward this harmonization, the process of evaluating the success of the program, and mechanisms for preventing the numerous past failures.

In theory, Agounke's recommendations for the UEMOA initiative are directly applicable to ECOWAS (Economic Community of West African States) and CILSS. However, the success of any program transfer will be predicated on a prior analysis of the agricultural inclination of each country, the products of greatest export potential, the local SPS infrastructure, the level of existing plant safety knowledge of agricultural producers, food processors and government officials, and major phytosanitary weaknesses and risks that jeopardize international trade. Due to the past programs listed above, many of these evaluations have already been carried out, and the transfer of the UEMOA initiative to ECOWAS and CILSS appears to have increased odds of success.

Finally, based on my personal experience with both short- and long-term assignments in developing countries, successful extension of the proposed SPS initiative to non-UEMOA countries necessitates the deployment of long-term consultants. Short visits are often fraught with unrealistic perceptions leading to false expectations. A successful program transfer requires a thorough understanding of the local political infrastructure, degree of transparency, and inertial forces that will resist change, such as officials' rent-seeking behavior, cultural practices, and local lobby groups.

[3] Comité Inter-Etats de Lutte contre la Sécheresse au Sahel

3. EVALUATION OF ANIMAL HEALTH

The goal of the present animal health study was the evaluation of the current systems that protect animal health and the safety of animal-derived food products sold in the UEMOA region. The study also included the identification of weaknesses and development priorities to assist FAO and WATH to target their SPS assistance most effectively. Any future consistent and harmonized animal health control system must guarantee food safety and high nutritional quality of all animal-derived food products and also assure regional uniformity to allow free movement of livestock and animal products among UEMOA countries. Furthermore, it is important that all recommendations be consistent with the animal health code developed by OIE and also with the Codex Alimentarius and the fundamental WTO SPS measures.

The animal health component of the PSRSA program was divided into three separate studies that national consultants undertook in all eight UEMOA countries. At the conclusion of these animal health evaluations the national consultants wrote status reports and submitted them to the regional project coordinator, Mr. Cheikh Ly. In turn, Ly reviewed the 24 national reports and composed a very thorough 257-page summary report entitled "Animal Health Protection" covering all eight UEMOA countries. His well-organized report summarizes each different study topic in a separate volume:

- Volume 1: Evaluation of the legislative, regulatory and institutional systems that support animal health protection in the eight UEMOA countries.
- Volume 2: Assessment of the national capacities of animal health inspection and disease prevention; it also evaluated training needs in the UEMOA region.
- Volume 3: Assessment of the capacities of the diagnostic animal disease laboratories and their equipment and supplies needs.

The three volumes and extensive appendices summarize the UEMOA countries' SPS infrastructure and weaknesses; animal diseases and public health issues; animal health code and policy; inspection and monitoring systems; veterinary medicine; laboratory capacities and training needs; and legislative, regulatory and institutional frameworks. However, he summarizes the information contained in local documents without providing an assessment of the actual situation. A true SPS analysis should explain the actual status of an inspection system, not only recapitulate protocols published by the local government. Similarly, Ly often summarizes facts without drawing any conclusions.

Therefore, his report does not offer enough specifics or provide enough direction for harmonizing West African SPS regulations with the WTO Agreement on SPS or with EU/U.S. regulations. However, international harmonization of animal health standards may not be a high priority for WATH since West Africa is unlikely to supply the U.S. market competitively with livestock products. Any future WATH work on SPS should focus largely on removing barriers to international exports; such foodstuffs may include frozen fish and cashews, but not livestock products.

Other minor problems with the report include the lack of an index of acronyms, regular use of abbreviations without any definition, numerous grammatical and stylistic errors, and frequent repetitions of the same information. For example, many different chapters cover the same aspects of training needs, and the same criticism applies to the discussion of an animal health code and other topics. Unwarranted text redundancy renders the report unwieldy and therefore less useful. Furthermore, many of his appendices contain completely unnecessary information and should be omitted. For example, Appendix 1 of Volume 1 provides a 10-page protocol in the format of a table of contents that is already listed at the beginning of Volume 1. Similarly, most of the other appendices lack the critical analysis that would be of value to WATH and UEMOA. Some information in the appendices and in Volume 3 is fragmented, for example, in Volume 3 he presented a very detailed 27-page multimillion-dollar wish list of equipment for all UEMOA countries but he omitted one country without any explanation.

Overall, Ly seems to have an excellent understanding of the fundamental animal health issues and the political infrastructure in the UEMOA region. He underscored the move from top-down state-run veterinary health systems to a decentralized and private-sector industry. This privatization was both necessary and desirable, but it has left big gaps in veterinary medicine. Facilities are dilapidated, equipment is obsolete, and staff performance is weak due to inadequate training and low motivation. Government institutions in UEMOA countries are mostly unstable, dysfunctional and corrupt; they merely slow down animal health programs. Ly is very knowledgeable about veterinary science and regional health policies and programs and his report truly reflects this technical competence. Therefore, Ly's report provides an adequate framework for harmonizing SPS intra-regionally to facilitate trade within the UEMOA region. However, given its focus on promoting exports to the U.S., WATH should not invest significant resources in harmonizing regional animal health standards.

3.1 Volume 1: Legislation on animal health protection in the UEMOA region

3.1.1 Historical and Political Backdrop

Ly's interesting narrative at the outset of his report sets the stage for the role of UEMOA in the promotion of agriculture and food safety, particularly through the adoption of the agricultural policy PAU (Politique Agricole de l'Union). The three main objectives of PAU are the long-term satisfaction of the food needs of the UEMOA countries, economic and social development in the UEMOA union, and the reduction of poverty. To meet these goals PAU is focused on improving the production environment, strengthening the common agricultural market, managing shared resources, and entering the world market.

Global market participation will require adoption of international SPS standards (such as the WTO agreement on SPS and the Codex Alimentarius) and harmonization of UEMOA regulatory structures with international policies. To this end UEMOA and FOA created a major program called PSRSA (Programme Spécial Régional d'appui à la Sécurité Alimentaire). The specific objectives of PSRSA are the following:

- To provide the UEMOA states with a framework for coordination and harmonization of national food safety programs.
- To assist the programs by taking advantage of the common market within UEMOA.

- To contribute to the implementation of a legal, fiscal and regulatory environment that is favorable to the exchange of agricultural products within UEMOA.
- To initiate, in stages, an agricultural policy (PAU) that promotes regional integration.
- To assure competitive participation of the agricultural sector in global commercial markets within the framework of the WTO rules.

Besides PSRSA, other past initiatives in West Africa for integration of agricultural production include la Communauté Economique du Bétail et de la Viande (CEBV), le Comité Inter-Etats de Lutte contre la Sécheresse au Sahel (CILSS), La Communauté Economique des Etats de l'Afrique de l'Ouest (CEDEAO), La Conférence des Ministres de l'Agriculture de l'Afrique de l'Ouest et du Centre (CMA/AOC), L'Ecole Inter-Etats des Sciences et Médecine Vétérinaires de Dakar (EISMV), and – very importantly – the process of regulatory harmonization of veterinary medicine under the guidance of UEMOA. UEMOA formed a regional committee for veterinary medicine (Comité Régional du Médicament Vétérinaire or CRMV) in 1999 to create a unified mechanism for controlling the distribution and sale of vaccines and medicines (Autorisation de Mise sur le Marché, or AMM). However, this committee was not renewed during a regional workshop in 2001 on the harmonization of veterinary medicine regulations within UEMOA.

Unfortunately, despite this extensive historical account there is no information on the efficacy of these prior initiatives, the reason for potential failures, and the level of overall improvement due to these programs in the UEMOA region. There still seems to be a huge gap between international SPS standards and the reality of conditions on the ground in the UEMOA countries. Bridging this gap will take significant time, training, and resources. Most West African countries depend largely on donors for support in upgrading food safety and SPS regulations. Therefore, a critical analysis of past programs is important to more effectively contribute to the success of future programs and to accelerate the process of harmonization and economic independence of UEMOA.

3.1.2 Summary of Landmarks of Animal Health Legislation in UEMOA

Ly traces animal health legislation in UEMOA back to colonial times in 1904. He reviewed past milestones and the relative legislative continuity and stability until the late sixties when the UEMOA countries became independent. At that time novel approaches surfaced due to political changes and gradual privatization. Each country adopted transitional legislation that was often barely operational. Over the past 30 years, many West African livestock programs were elaborated and implemented, but new legislation was not always ratified. Existing legislation is often outdated, unenforceable, confusing and even contradictory to prevailing aims.

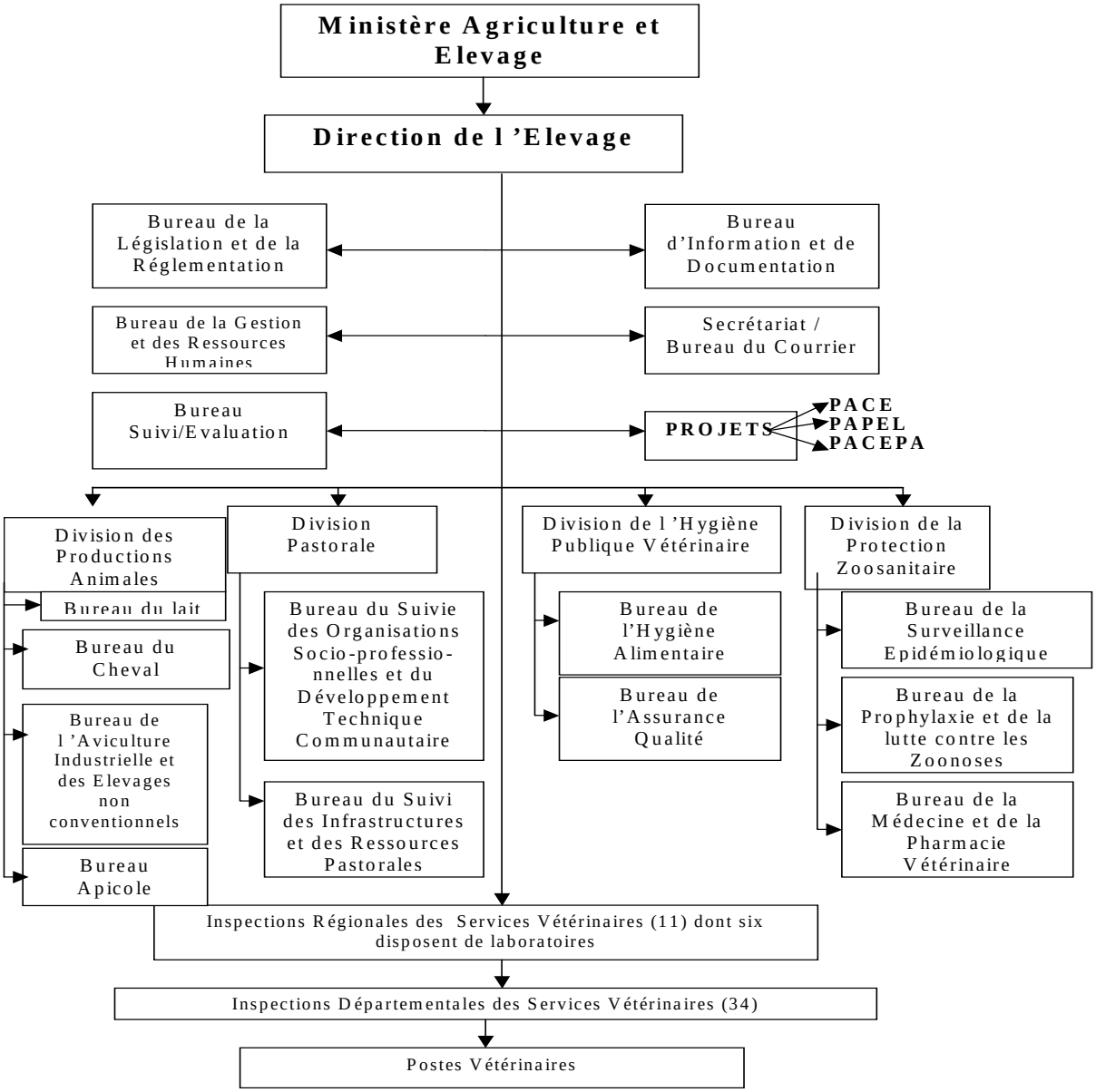
The current research project on animal health analyzed the current legislation in all eight UEMOA countries in-depth and revealed strong ties to colonial legislation, the same conclusion reached by Feral in his food safety project. Ly summarizes the legislative landmarks of each country, underlining the salient points and encapsulating the differences among the eight UEMOA countries. More details on publications of decrees and legislative declarations are available in his Appendix 2. He organizes the legal codes according to the following topics (in a small chapter for each country and a review for the union):

- Public health.
- Animal public health.
- Association of veterinary profession.

- National association of veterinarians and code of ethics.
- Regulation of veterinary medicine (medication and vaccines) – In this case the regulations concerning the import, registration, classification, sale, distribution and dispensing of veterinary medicine were adopted virtually unchanged from original colonial French law.
- Health policy – The basic elements of the national health policies date back to the French colonial period with occasional sporadic amendments. The privatization of veterinary medicine and the means of financing the health mandate are the key changes from the original colonial policy.
- HIDAOA (Hygiène des Industries et des Denrées Animales d'Origine Animale).
- Regulation of animal input supplies – There is virtually no regulation concerning the import of animal input supplies. The SPS initiative definitely has to address this deficiency to facilitate compliance with international standards and the WTO agreement.
- Control systems – There is no enforceable legislation for control and inspection systems, except for the AMM, the health mandate and the inspection of plants. This is a major shortcoming that needs to be corrected by the UEMOA SPS initiative.
    - Inspection – Virtually non-existent despite some mandates for veterinarians to inspect facilities and food products of animal origin.
    - Food safety – Meat is always inspected after slaughter, during transport, and during its sale in the market to assure food safety.
    - Fraud squad system – Curbing of food adulteration and fraud is always planned for in the existing control system.
- Institutional framework of organizations responsible for regulatory implementation – With decentralization, communication between field personnel and the central offices is often poor. Ly presents a government organizational chart for each of the eight UEMOA countries and provides details regarding the size and function of each department, contact points for international programs, changes during privatization, and so on. Figure 1 shows a representative example of such an organizational chart for the government of Senegal.
- PACE (Le Programme Panafricain de Contrôle des Epizooties) – Ly describes the role of PACE in the augmentation of the animal health capacity, in the securing of a stable high-protein food supply to the population of the UEMOA countries, in the battle against poverty and in economic and social development in rural areas.

As mentioned before, Ly fails to critically assess the actual status of the systems he described. For example, he maintained that meat is always inspected after slaughter, during transport and during sale in the market to assure food safety. Is this simply a government statement to appease international donor agencies, or is the meat actually inspected? What really happens if some beef is deemed unacceptable for consumption according to international standards? Is it incinerated or simply sold in a minor market? What incentive do the inspectors have to condemn the meat and forego a bribe? What penal sanctions do they risk in case of infractions? WATH and FAO need an assessment of the actual SPS weaknesses and prioritized recommendations that Ly's summary does not provide.

Figure 1. Organizational Chart of the Animal Health Division (Senegal)



3.1.3 Weaknesses in the Legal System for Animal Health Control

Ly notes a large discrepancy between legislative regulations and actual practices in the field. These gaps arise from poorly defined ordinances and decrees as well as from the uncertainty over jurisdictional boundaries and access to resources created by government decentralization. Privatization of animal health services favored the development of professional agricultural organizations, of independent professions and of the liberalization of the veterinary sector. These changes in turn caused both deliberate and accidental misinterpretation of the legal texts and damaging inconsistencies in animal health programs.

The principal legislative and regulatory documents (laws, decrees, orders, decisions, notices, etc.) developed for animal health protection policy concern veterinary medicine, the veterinary profession, the transhumance of animals[4], animal feed and nutrition, marketing, milk and other dairy products. Additional legislative texts cover wildlife, curbing of fraud, and regional and international agreements. The primary objective of these legislative documents is to protect the consumer and assure the safety and high quality of all animal-derived food products. However, many of these laws have not been adapted to the new reality of globalization and harmonization of the international animal health code (OIE). Therefore, the refusal to accept these laws and the lack of enforcement by different animal health players (government, private veterinarians, breeders and manufacturers) create gaps that are aggravated by frequent changes in the ministry in charge. Ly recommends that any measures for correcting these gaps will take the following political evolutions into account: government decentralization, the commercialization of provided services, the emergence of a private sector in veterinary services and animal production input supply, regional integration (UEMOA, PACE), as well as the development of commercial trading (FAO, OMC/Codex Alimentarius) and the harmonization of health policies (international animal health code of OIE).

Many of the inconsistencies and problems are caused by the ministers and top-level government officials themselves, since they fail to delegate clear responsibilities or delineate their own scope of activities. This leads to misinterpretation of the law, which may lead to chaos in the distribution of veterinary products, since nobody respects the animal health policy or public health rules. The following difficulties are responsible for the lack of legal enforcement:

- Insufficient involvement of regulatory bodies and the private sector in writing of legislation.
- Lack of dissemination of regulatory information.
- Poor understanding of regulatory information by government officials and industry professionals.
- Problems with filing of the regulatory documents in the administration.
- Lack of financial and personnel resources for the implementation of the regulations.
- Lack of legal competence in the government.
- Lack of dialogue and coordination of activities at the government level for follow-up evaluations of the regulations in force.

Implementation of the regulations is always a governmental responsibility. However, due to the frequent personnel changes in the government and due to the loss of the typical government hierarchy after decentralization, the chain of command is often broken, which tends to delay both implementation and enforcement of animal health regulations.

Although Ly summarizes these shortcomings, he offers few recommendations or suggestions for hands-on action steps to accelerate the harmonization process. It would be useful if he set priorities based on odds of success, level of impact or need, or other criteria.

[4] Transhumance is the seasonal movement of livestock, especially sheep, between mountain and lowland pastures either under the care of herders or in company with the owners).

3.1.4 Regional Legislative Texts

First Ly provides clear legal definitions of several legislative texts, such as a law, code, decree, order, infraction, sanction, authorization, and agreement. He describes their significance and importance and discusses the legal bodies that have the authority to ratify and enforce such legislation.

Ly then discusses the use of different potential legislative texts to support the harmonization of animal health legislation in the UEMOA region. One example would be a sub-regional code – modelled after the animal health code of the OIE. However, a more efficacious approach might be to simply rely on the core of the OIE animal health code to derive the animal health and veterinary guiding principles in the UEMOA countries. Step-by-step adaptations can be worked out to meet the specific needs of the UEMOA countries. At that point a true "animal health code of the UEMOA countries" is created. In all of these discussions Ly never mentions the current status of this legislative process and who proposed these ideas. Furthermore, he refrains from giving his own opinion or recommendations. He simply recounts events without any analysis or interpretation; such neutrality is inappropriate for a summary report that needs to be critical of past and current performance in animal health and inspection services, as well as providing specific guidance on future directions for improvement and regional harmonization. Ly's input is important to the crafters of the sanitary sections of a major regional SPS initiative.

Ly goes on to discuss the need for a new animal health policy to guarantee the safety of livestock products in the new political environment of a liberalized veterinary profession; privatized circulation and distribution of animal input supplies; increased responsibilities of the breeders; withdrawal of the government from its market activities; the government's greater role in setting policies for livestock development; the government's stronger involvement in public health; etc. Ly discusses some of the veterinarians' role in this new environment, the need for mandatory vaccinations against infectious diseases, animal health issues along the country borders, and a variety of other factors to consider for the adoption of a new animal health policy. He lists all of the requirements that a sound health policy must meet, such as the establishment of a continuously updated list of contagious diseases; definition of an action plan in the event of a contagious disease; definition of sanitary standards for animal slaughterhouses; and the organization of inspections, for example.

Similarly, new legislation has to be drawn up to define an animal health mandate, dues to public officials payable by livestock breeders, and disciplinary sanctions to be taken. In rural West Africa this health mandate is assigned to private veterinarians for one year. Within the scope of the wider health mandate covering epidemiological monitoring, the laboratories confirm the diagnosis of infectious sources.

Ly then discusses the new trend of young veterinarians to establish their own private practice. The UEMOA member states paralleled this trend by promulgating new laws relating to the creation of a veterinary association, a code of ethics of veterinary medicine, and instituting the health mandate. The new laws also clearly define the responsibilities and authorities of private veterinarians. Since the entire veterinary profession is undergoing major changes, it is important that legislation promote the creation of a professional veterinary association – the ONV (Ordre National des Vétérinaires) – that regulates the conduct of independent veterinarians. This discussion seems redundant in view of the detailed description of the ONV in his Appendix 3 of Volume 1. Moreover, the current text is unclear since the appendix describes the role and function of the ONV in each country, i.e., each UEMOA country has a functioning ONV, but in

this chapter Ly stated that new legislation encourages the formation of professional veterinary associations; this needs clarification.

Ly provides a very thorough and valuable discussion of the regulation of veterinary medicine, e.g., vaccines and medications. He discusses the role of the quality control laboratory at EISVM and the responsibility of AMM in the regulation of the safety of veterinary drugs. Much of this information is also presented in his Appendix.

Next Ly provides a clear working definition of an animal health code, covering general measures in the control of animal health and animal products. Specifically, it has to deal with the following areas:

- Veterinary profession
- Animal health policy
- Veterinary public health
- Veterinary association and code of ethics
- Health mandate
- Veterinary medicine
- Wildlife
- Fraud repression
- Transhumance

Ly elaborates on the details of a functional health code. However, much of this discussion is repetitive and appears in other sections of his report. Finally, he discusses the legislation of the sale of animal input supplies and the institutional framework for animal health management of livestock in UEMOA countries.

3.1.5 Animal Health Code of the UEMOA Countries

Ly discusses the basis for the elements of an "Animal Health Code of the UEMOA Countries" and refers mostly to the legislative texts in his Appendix 3. This regional animal health code must cover the following areas (the first four topics have highest priority):

- Veterinary profession
- Veterinary medicine (vaccines, drugs)
- Association of veterinarians
- Animal health policy
- Industrial sanitation of animal-derived food products
- Trade

This section repeats Ly's discussion of the different options for creating such a regional health code (see above under weaknesses).

3.1.6 Conclusions

Ly reviewed the major findings of the study and offered five conclusions with explicit or implied recommendations:

- Establishing an epidemiological monitoring network will strengthen the existing system.
- The reinforcement of organizational capacities of veterinary intervention services is necessary to deal with emergency situations, especially the development of a strong line of authority between the central administrative office and field personnel.
- In view of the importance of rapid and precise confirmation of suspected diseases, the national diagnostic laboratories must collaborate with regional and international laboratories.
- Obsolete equipment and facilities (slaughterhouses, veterinary services) and a lack of human and financial resources account for weaknesses that need to be corrected in order to improve monitoring and inspection.
- Train personnel in order to remove, or at least reduce, the constraints that currently handicap the efficacy of animal health inspection and monitoring.

3.1.7 Protocols for the Animal Health Assessment Project (Appendix 1)

Appendix 1 summarizes the initial study design for the entire animal health project and seems unnecessary given that he described the objectives and protocols of the three volumes at the beginning of his summary report.

- Volume 1: Legislation on animal health protection.
- Volume 2: Evaluation of animal health inspection capacities and training needs.
- Volume 3: Evaluation of capacities and needs of zoonotic testing institutions.

3.1.8 Legislation on Animal Health Issues for Each Country (Appendix 2)

This 26-page compendium contains mostly dates and decree titles of legislative declarations and rulings regarding animal health protection. Ly organizes this information under the following broad headings:

- Public health
- Veterinary profession
- Veterinary pharmacy
- Health policy
- HIDAOA (Hygiène des Industries et des Denrées Animales d'Origine Animale)
- Regulation of input supplies
- Regulation of live animals and animal products (sperm, embryos, etc.)
- Institutions

Ly further organizes this information by country, text hierarchy and chronology and includes other relevant references. Overall, this Appendix may be a valuable legal reference, but of little interest to most technical experts.

3.1.9 Regional Legislation on Animal Health (Appendix 3)

Appendix 3 summarizes regional legislation pertaining to all veterinary, inspection, prevention and institutional aspects of animal health:

- Health policy - Lists all of the legal codes pertaining to zoonotic animal diseases and categorizes animal diseases for each animal.
- Health mandate - Lists UEMOA rules regarding the enforcement of the above policies; includes financial responsibilities of government and private clients; deals with infractions and sanctions.
- Veterinary profession - Describes the legal rights and obligations of a veterinary doctor in the UEMOA.
- Association of veterinarians – Each country in the UEMOA region has its own national association of veterinarians (Ordre National des Vétérinaires or ONV); describes the organization of the ONV of each country, its function, and code of ethics or deontology[5]; every veterinarian must join this professional organization.
- Veterinary pharmacy – Lists the UEMOA-wide legislative code relative to the dispensing, distributing and importing of veterinary drugs.
- Veterinary public health – Lists veterinary inspections of 27 class-A public health buildings and establishments (such as slaughterhouses) and 10 class-B establishments (such as dairy shops, local meat markets, etc); describes the general conditions of slaughterhouses; also describes the role of the Laboratoire National d'Elevage (LNE) in conducting research and analytical tests necessary to assure the safety of all animal-derived food products.

Appendix 3 is a useful reference, but of limited value to the SPS project. It cites all of the legislation, but fails to comment on efficacy, weaknesses and priorities for change.

3.2 Volume 2: National capacities of animal health inspection & training needs

3.2.1 Animal Health Policy

Ly provides a clear evaluation of the national capacities of animal health inspection and inspection training needs in the UEMOA region. He discusses the political infrastructure and the governments' steps during the past 35 years to secure the animal protein supply by improving animal health and maintaining healthy livestock. Specifically, the UEMOA countries have implemented programs in the areas listed below.

[5] Deontology is the theory or study of moral obligation.

- Close training and supervision of breeders and farmers.
- Improving the quality of animal feed and nutrition.
- Improving animal health through the creation of diagnostic laboratories, mandatory annual vaccination campaigns, and eradication efforts against the tse-tse flies.
- Implementing select animal breeding.
- Genetic improvement through artificial insemination.

The privatization of animal health is another primary objective of the government. The formation of breeders' organizations represents progress towards this goal. These organizations assume many veterinary and public health responsibilities. For example, a private sector for the distribution and administration of vaccines and drugs has already been developed. Government-licensed veterinarians and technicians perform the entire spectrum of animal health care, i.e., prophylactic vaccinations, health check-ups and administering of drugs. Farmers and breeders have to pay for all these services, even for mandatory vaccines, and this raises the quality of service. Breeders expect better performance since they pay for each head of livestock. At the same time, some vaccination programs in rural areas administered by private veterinarians have nearly been suspended due to the livestock producers' inability to pay for them. The public sector still performs all inspection services and epidemiological monitoring.

3.2.2 Characteristics of Major Animal Diseases in the UEMOA Region

Based on the zoonotic epidemiological surveys, UEMOA has developed a list of priority animal diseases. Ly summarized the major animal diseases, their symptoms, prevalences and diagnostic characteristics. For each disease Ly also discussed some of the obstacles for eradication and offered suggestions for improving the efficacy of the veterinary program. For example, in the case of PPCB (péripneumonie contagieuse bovine), the strategy for complete eradication--or even partial confinement--requires coordination between UEMOA countries and relies on a common operational health policy.

Ly summarized his recommendation as follows. Based on the zoonotic characteristics, any battle against these diseases has to be based on rapid detection, enforcement of health policies, urgent care, consistent vaccinations and education of farmers and breeders. I wholeheartedly agree with this recommendation, realizing its implementation will require a major 10-year development program. It wisely stresses a multifaceted approach, not simply sophisticated diagnostic laboratories.

3.2.3 Means for Preventing Animal Diseases

The primary livestock in the semi-arid UEMOA countries are cattle, sheep, goats and pigs. Ruminant livestock tend to dominate the semi-arid zones (landlocked interior countries and northern drier halves of the coastal countries; pigs are more widespread in the southern, more humid halves of coastal countries). Pig production is very limited in the interior Muslim countries. Poultry raising is artisanal in rural areas and probably increasingly industrial or semi-industrial (confined systems) around major urban areas.

During the past 30 years, cattle breeding has undergone major changes and modernization. The recent trend toward liberalization and privatization has placed more responsibility on private veterinarians and breeders in terms of vaccinations and animal health care. Only qualified personnel (veterinarians and pharmacists) have the right to dispense and distribute vaccines to

breeders. However, in areas not covered by private veterinarians the distribution of vaccines remains the responsibility of public governmental organizations.

While much preventive care is optional, some vaccinations for "Type A" diseases are mandatory. These diseases have been characterized by OIE as extremely contagious and capable of killing entire herds of animals. Ly listed most of these diseases and the vaccination regimes used in the UEMOA region. However it is not clear that government veterinarian services are sufficiently funded and mobile to enforce these mandatory vaccines.

3.2.4 Current Status of Inspection and Prevention

Ly provides an extensive summary of the present emergencies with recommendations for relief, expected results, financial aspects of the inspection and prevention programs, the international sources of vaccine supplies, the important role of epidemiological monitoring of animal diseases, organizational aspects of the inspection and prevention programs, staffing and training issues, and national and regional directives for improving animal health. He also discusses the institutional framework and regulatory aspects of these programs in light of the trend towards privatization. Ly also summarizes the involvement of various international development agencies, all of the major joint projects, and the relationships of UEMOA countries with FAO, OIE, the World Trade Organization, and other international donor organizations.

3.2.5 SWOT Analysis

Ly provides an excellent SWOT analysis of the inspection and prevention of animal diseases in the UEMOA region. He starts with the strengths in the areas of animal health, veterinary public health and diagnostic laboratories. Specifically he stressed that laboratories in the UEMOA region possess the infrastructure, equipment and qualified staff for the diagnostic determination of animal diseases. They can also assure quality control of vaccines and food products of animal and fish origin according to FAO standards and criteria.

Ly then enumerates 11 areas of weakness and elaborates on each one in detail, such as educational deficiencies, lack of collaboration between different countries within the UEMOA region, financial problems, and inadequate cooperation between the public and private sectors. The recent privatization and decentralization has exacerbated the tension between private veterinarians and government officials in charge of animal health. Communication between the head office and field personnel is not systematized, which results in a complete inconsistency in the implementation of animal health activities.

Ly continues his analysis with a review of opportunities in expanding the capacities of disease monitoring and prevention. He provides practical recommendations for improvement in five separate areas, such as international cooperation, legislative and regulatory revisions, financing, and laboratory testing. In each case he offers detailed suggestions for changes.

He concludes his SWOT analysis with two major threats and risks for the successful implementation of the above recommendations. A major risk is the lack of support from the breeders and poor farm conditions – many breeders employ farm management practices that fail to see value in vaccination programs. Another threat is government instability and frequent changes in the top echelon of the government administration, which leads to perturbations in animal health programs. Furthermore, frequent personnel changes within the government impair communication between field offices and the central administration and international authorities.

After the restructuring of the decentralized and privatized animal health services, the number of field agents was greatly reduced and their qualifications fall below the acceptable level. I completely agree with Ly, except that I consider the government problems far worse than he described. It is likely that many government clerks sabotage the new decentralized organization, since privatization likely undermines their authority and results in some loss of income from petty bribes and "speed money" (to ensure more rapid, timely service).

3.2.6 Training

Ly concludes this volume with a detailed description of all staff positions within the animal health organizations and provided another in-depth discussion of training and educational needs. This discussion is informative yet somewhat redundant given the earlier section on training and appendices 1 and 2 (cf. below) that review training programs and needs.

3.2.7 Training Needs for Inspection of Animal Diseases (Appendix 1)

Ly lists the vacancies and requirements for veterinarians and veterinary technicians in Burkina Faso, Mali, Ivory Coast and Guinea Bissau. However, he never mentions the other four countries in the UEMOA region and fails to provide an explanation for omitting these countries. Then he lists all of the professions required in the public sector for continuing education in Burkina, Guinea Bissau, Ivory Coast, Mali and Senegal. Ly does not make clear whether this refers to teaching professionals or to the types of animal health professionals who require continuing education. In the case of Senegal, he enumerates hundreds of positions for dozens of faculties on a total of three pages. Why does he describe Senegal in such detail without mentioning other countries like Togo? Are all of these positions vacant at the moment? Is Ly requesting money or expertise? Who decided on the particular curricula that created such large outstanding needs?

Overall, this appendix poses more questions than it provides answers. It is of limited usefulness for the UEMOA program or the animal health section of the SPS initiative.

3.2.8 Training Needs for Zoonotic Testing Laboratories (Appendix 2)

Ly recommends the following three types of education for the UEMOA countries:

- Academic education
- Continuing education
- Flexible free-choice and tailor-made curricula

He suggests the following six disciplines for the academic educational component:

- Molecular biology (PCR, DNA sequencing)
- Virology
- Bacteriology
- Bacterial immunology
- Parasitology
- Taxonomy of parasites

He suggests twelve different disciplines for the continuing education program, but gives no examples for the flexible free-choice curricula.

Again, this discussion raises many questions and offers very few answers that will help the SPS initiative. For example, what is the current academic status in the UEMOA union? In Volume 3 he praises the different types of diagnostic laboratories (Appendix 1, Volume 3) and the sophisticated analyses that they are able to perform (Appendix 2, Volume 3). Furthermore, he rates the competencies of laboratories (Appendix 3, Volume 3) and states that many of them display a high level of technical skills. These statements are inconsistent with the proposed educational programs, especially since Ly never reviews the current status of academic programs. Likewise, the proposal for such basic scientific training in microbiology and parasitology discredits the multi-million dollar requests for very sophisticated equipment in Volume 3.

After the general discussion of academic training needs, Ly goes on to describe the detailed educational needs of seven UEMOA countries, but he omits Mali. I assume that this is a mere oversight. Furthermore, I disagree with some of the country-specific recommendations. For example, he suggests that Benin add a discipline to teach general food microbiology and also physicochemical and microbiological analyses of milk and other dairy products. He bases the urgency and high priority of analytical dairy science on the fact that dairy technology is changing rapidly. However, dairy technology has not changed very much at all, especially in comparison to other disciplines listed, such as molecular biology, diagnostic testing procedures, and general analytical methodologies. Secondly, I think any milk science and analytical food testing should be taught in food safety programs, not veterinary and animal safety disciplines. Finally, why does he single out Benin for such a priority?

Overall, Appendix 2 does not contribute much value to the UEMOA SPS program design, since it fails to provide practical recommendations based on real needs assessments.

3.2.9 Veterinary Education in the UEMOA Region (Appendix 3)

Ly lists several examples of educational programs in the UEMOA region for the training of veterinary technicians, agronomists, veterinarians, technical breeding agents, agricultural engineers, laboratory specialists, and other professionals. In some cases he gives the average cost of the total program, while in others he omits any expense information. He mentions programs in three separate UEMOA countries – does that imply the lack of veterinary educational programs in the other five countries? Then he notes institutions like CIRDES and AIEA – where are they and what do the abbreviations mean? Finally, he mentions the veterinary school of Lyon – is that Lyon in France?

What is the objective of listing such fragmentary and incomplete information on a medley of programs in three arbitrary UEMOA countries? I would either omit this appendix or complete the information and discuss its relevance to the SPS program.

3.3 Volume 3: Assessment of equipment needs of diagnostic laboratories

3.3.1 Priorities and Weaknesses of Zoonotic Laboratories

All national laboratories have two objectives: research and technical support. The latter includes continued education and training of staff, and ongoing improvement in good laboratory practices that meet international standards to qualify for accreditation.

The national diagnostic testing and epidemiological monitoring programs are based on collaborations between central veterinary services, diagnostic laboratories, private veterinarians, and breeders. The diagnostic laboratories are organizations of national interest, indispensable for international trade. Therefore, they assume a key role in maintaining agricultural policies. Unfortunately, these public organizations are experiencing grave economic difficulties and their functioning encounters multiple problems in the following 25 areas:

- Lack of financial autonomy
- Lack of a clear agreement for the chemical and microbiological analyses of agricultural food products
- Lack of universally accepted laboratory practices
- Lack of confidentiality for testing results
- Poor marketing
- Lack of receipts
- Inadequate equipment and supplies
- Insufficient size of technical and support staff
- Inadequate training
- Lack of systems for quality assurance and accreditation
- Shortage of regional laboratories
- Shortage of vehicles
- Lack of computers
- Irregular and inadequate equipment maintenance
- Frequent breakage of reagents and supplies
- Poor laboratory organization and task assignments
- Inadequate documentation and formalization of work procedures
- Poorly maintained laboratory premises and inadequate work conditions
- Insufficient information on laboratory safety rules
- Lack of preventive maintenance on equipment and inadequate repair
- Lack of equipment calibration
- Neglect of clients' needs and expectations
- Lack of dialogue with private or public partners
- Unmotivated staff
- Poor internal communication

Unfortunately, Ly simply provides an overwhelming list of weaknesses without any prioritization. In such a case it is especially important to set priorities based on the input from the national consultants and to develop clear recommendations for a practical action plan.

3.3.2 Laboratory Activities

When the animal pathology laboratories were created, their mission was focused on diagnostic activities. They were organized around the services presented in Ly's Appendices 1 and 2. Internationally accepted standard methodology is employed. His Appendix 3 summarizes the network of central and regional diagnostic animal disease laboratories within UEMOA.

The technical staff dedicates most of its time to diagnostic activities; they spend approximately 75% of their time on the diagnosis of animal diseases, 10% on epidemiological monitoring, 10% on applied research, and 5% on teaching of interns and students.

Most of the activities focus on the following areas:

- Safety, hygiene and quality of animal-derived food products
- Improvement of animal health
- Connection between animal health and food quality and safety
- Veterinary medicine
- Environmental concerns
- Animal protection

These activities are funded primarily by grants and subsidies from the government and public or private organizations (both national and international), gifts and bequests, and client fees.

3.3.3 Training

The staff of the zoonotic laboratories received either an academic education or advanced retraining in the areas of bacteriology, virology, parasitology, animal epidemiology, applied immunology, animal husbandry, and computer science. These training courses are very applied and relate directly to the diagnostic activities. Training is intended mostly for technical personnel. It is often financed by international organizations, such as the FAO. Volume 3 presents the training needs for laboratory staff.

3.3.4 Infrastructure and Equipment Needs

Ly presents a 27-page wish list for equipment and supplies such as vehicles, communication and information systems, refrigerators, centrifuges, dishwashers, dryers, microscopes, laminar flow hoods, freezers, pH meters, spectrophotometers, automatic pipets, lyophilizers, DNA sequencers, autoclaves, reagents, microbiological media, etc., with subsequent requests for media, supplies, and research materials (such as expensive molecular biology enzymes).

He lists the equipment needs for each UEMOA country but Mali – also, he summarizes the needs for Niger on less than one third of a page (vs. several pages of details for each of the other six countries). Similarly, he details the needs for six of the eight UEMOA countries and completely omits Mali and Guinea Bissau. He summarizes the needs for Niger in less than one line--reagents, kits and other materials--vs. pages of details for the other five countries.

The total costs are not transparent, but it appears that his total requests exceeded $2 million for each country. There are no justifications, no explanations of staff capabilities, and no priorities. I suggest that this section be omitted from the final report.

3.3.5 Typical Diagnostic Animal Disease Laboratory (Appendix 1)

This appendix provides a description of five typical zoonotic animal labs that specialize in the following diagnostic areas:

- General bacteriology
- Virology
- Serology
- Parasitology
- Avian pathology

While this appendix is of interest to any veterinarian or zoonotic laboratory microbiologist, it is of little importance to the animal health assessment in the UEMOA countries, including the weaknesses, strengths, and priorities of country systems and recommendations for the SPS initiative. It simply provides a textbook description of such typical diagnostic laboratories with no reference to the UEMOA needs.

3.3.6 Typical Analyses in Diagnostic Laboratories (Appendix 2)

This appendix summarizes the scientific disciplines present in different diagnostic laboratories:

- Bacteriology
- Virology and immunology
- Parasitology
- General pathology (mostly avian)
- Biochemistry, hematology, and cytogenetics
- Food microbiology

Ly lists the major tests that these laboratories are capable of performing:

- Enzyme-linked immunosorbent assay (ELISA)
- Seroneutralization
- Agarose gel immunodiffusion (AGID)
- Inhibition of hemagglutination (IHA)
- Complement fixation
- Polymerase chain reaction (PCR)
- Immunofluorescence (IF)
- Sero-agglutination
- Molecular biology (hybridization, sequencing and cloning)

Again, Appendix 2 is interesting but does not add much to the overall summary, except that it shows some of the capabilities.

3.3.7 Location and Competencies of Diagnostic Laboratories (Appendix 3)

This appendix summarizes the capacities of the various diagnostic labs in each country, including geographic location of each lab, size and function of each lab, personnel, skill level, budgets and sponsors, physical infrastructure, tests performed, diseases analyzed, and general observations.

This information is very interesting but Ly never addresses the true issues of the SPS capacity evaluation. That is, he never assesses the real weaknesses, strengths, priorities, areas for improvement, or long-term benefit to SPS initiative. For example, what is the quality of their basic research program on an international level? What is its value to the local animal public health program and to the UEMOA export market?

3.3.8 Technical Equipment Specifications (Appendix 4)

What is the objective of this 8-page list of equipment specifications, including very sophisticated equipment? There are no prices or justification or any context for its presentation. It simply confuses the reader and adds extra pages to an already oversized report.

APPENDIX 1 IPM CURRICULUM FOR TEACHERS

Penn State University offers a course that helps teachers to learn IPM (Integrated Pest Management) principles and to incorporate them into their school curricula. Although the course is geared toward North Americans it could easily be adapted for professionals from developing countries and translated into French.

Course Synopsis

Course Overview

Environment & Ecology: Key Concepts
- Activity - Ecological Interactions: The Food Cobweb

Integrated Pest Management: What is it and why do we care?
- Activity - When Is a Pest?

A Short History of Pest Management
- Steps and Tactics of IPM: The Nuts and Bolts
- Six Steps of IPM
- Six Tactics of IPM
- IPM Related Websites for Teachers

Understanding the Organism: Insect and Arthropod Biology and ID
- Activity - Friend or Foe? You ought to know!
- Activity - Growth by Molting
- Activity - Mouthpart Madness
- Activity - What's that smell?!
- Activity - Insect Night Life

Evaluating the Situation
- Activity - Habits & Habitats: Collecting and Sampling Insects

Insects and Education Resources List

Introduction to Weeds: What are Weeds and Why Do We Care?

Understanding the Organism: Weed Ecology, Biology, and ID

Activity - Weeds, Weeds Everywhere!
Activity - Inventory and Sampling Weeds
Activity - Buried Treasure? Weed Seed Bank

Background
Activity - Observation of Soil Fauna

IPM Tactic: Biological Control
Activity - Population Growth Potential: Aphids!
Activity - Aphids: Comparative Management Tactics
Activity - Invisible Allies: Beneficial Nematodes
Activity - A+B=C: Conservation of Insect Natural Enemies

IPM Tactic: Chemical Control
Activity - Lessons from Labels
Activity - Acute Toxicity: LD50 by the Numbers

IPM in Agriculture
Activity - Interview with a Farmer
Activity - Hopper Hunt: IPM Decision-making in Alfalfa
Activity - Paper Bag Orchard

Background
Activity - Purple Loosestrife: Monitoring and BioControl
Activity - Pest Management Assessment of a Park: Balancing Multiple Needs

IPM in Schools
Activity - IPM Detective: Pest Management Assessment in & Around Buildings

Pyramid of IPM Tactics - Inside Buildings
Activity - IPM Checklist for Home Garden & Lawns
Activity - Household Chemicals
Activity - Home-A-Syst Checklist
Activity - Itchy, Itchy, Itchy Head Lice (Not Nice!)

Pyramid of IPM Tactics - Animals & Humans