



C O N S T R U I S O N S E N S E M B L E V O T R E F U T U R

**OIE study:
“Listing and Categorisation of Priority
Animal Diseases, including those
Transmissible to Humans”**

Mission Report



Table of Contents

1 - Introduction	1
1.1 - Aim of the study	1
1.2 - Structure of the report	2
2 - Methodology and organisation of the study	3
2.1 - Context of the study	3
2.2 - The team of experts (Consultants) and the OIE Steering Committee	3
2.2.1 - Team of experts (Consultants).....	3
2.2.2 - OIE Steering Committee.....	4
2.3 - Methodology and schedule	5
2.4 - Background / Framework	7
3 - Analysis of previous work and challenges of devising a prioritisation approach...	8
3.1 - Review of the literature	8
3.1.1 - Initiatives in human health.....	8
3.1.2 - Initiatives in animal health.....	9
3.1.3 - Conclusion	10
3.2 - Design challenges and preferential choices	10
3.2.1 - A need for adaptability	10
3.2.2 - Distinction between the concepts of categorisation and prioritisation.....	11
3.2.3 - Importance of a management decision in the final decision	13
3.2.4 - Prioritisation guidelines	14
4 - Analysis of the results and recommendations	16
4.1 - Analysis of the fulfilment of the objectives	16
4.2 - Methodological achievements	18
4.3 - Limits of the project	19
4.4 - Recommendations	20
4.4.1 - Instructions for the field use of the protocol	20
4.4.2 - Recommendations for the next working steps	21
5 - Conclusion	22
Appendix 1 - Glossary of terms used in the study “Listing and Categorization of Priority Animal Diseases, including those Transmissible to Humans”	I



This study was commissioned by the World Organisation for Animal Health (OIE) and co-funded by the World Bank and the European Union. The views and recommendations presented in this study are those of the authors and do not necessarily represent the views of the OIE or one of the co-funding institutions.

**List of figures**

<i>Figure 1</i>	<i>FAST (Function Analysis System Technique) diagram of the project</i>	<i>7</i>
<i>Figure 2</i>	<i>General approach and main methodological steps.....</i>	<i>12</i>
<i>Figure 3</i>	<i>Respective weighting of the different disease-related impacts.....</i>	<i>14</i>

Note: *The report should be printed in colour as colour codes are used in the text and the figures.*

List of tables

Table 1 - Main steps of the work 5

Table 2 - Commented self-assessment of the fulfilment of the objectives of this project 16

**List of acronyms and abbreviations**

CVO	Chief Veterinary Officer
DG-SANCO	EC - Directorate General for Health and Consumers
EC	European Commission
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
OIE	World Organisation for Animal Health
VS	Veterinary Services
WB	World Bank
WHO	World Health Organization



1 - Introduction

1.1 - Aim of the study

This study is part of a project entrusted to PHYLUM by the OIE, entitled “***Listing and Categorisation of Priority Animal Diseases, including those Transmissible to Humans.***” This study is co-financed by the European Commission and by the World Bank, through the OIE World Animal Health and Welfare Fund.

The objective is, according to the Terms of Reference, “*to facilitate regional/national veterinary authority management decision making on priorities and categorisation of all animal diseases and animal-related threats.*”

This would facilitate possible priority management decisions on (i) legislation (regional versus national); (ii) surveillance of animal diseases; (iii) on farm biosecurity measures; (iv) control and monitoring of animal movements; (v) import and export of animals and animal products; (vi) assistance to developing countries and trade partners; (vii) border inspection control measures; (viii) public/private partnerships (e.g. on surveillance or on solidarity mechanisms); (ix) awareness campaigns; (x) new research programs; etc.

This would also facilitate priority setting to maintain, to further strengthen or to set up (new) financial mechanisms for the control of the different categories of animal diseases identified: regional/national emergency funds; regional versus national financing; public/private partnerships; setting up of regional/national insurance schemes; etc. Eventually, it will be the basis for the definition of schemes for sharing responsibilities and costs.

In addition, the OIE stresses that the links between (i) animal health and food security (food supply) and (ii) animal health and public health (not only as regards zoonoses) should not be forgotten when weighing different criteria and setting categories and priorities. This is why OIE lists of diseases of terrestrial and aquatic animals should be strongly taken into consideration to cover both the animal diseases which have an impact on production and also zoonoses.”

To address this demand, PHYLUM proposed a study conducted in three steps:

- Step 1: Conception of the method and the tools¹
- Step 2: Testing of the method and the tools within the European Union (EU) and in non-EU countries
- Step 3: Field tests and finalization.

This method and the tool is designed to assist decision-makers with elaborating animal health policies. It is not intended to modify the existing OIE list of diseases.

¹ The method is the process to do categorisation and prioritisation. The tools are the different excel tables used during this process.



Remark: Considering the considerable particularities of aquatic species, it was decided with the team of experts to focus on the OIE Terrestrial Animal Health Code (the Terrestrial Code) in this study. This decision was validated during the first meeting of the Steering Committee. Nevertheless, further considerations regarding the OIE Aquatic Animal Health Code may be added by the European Commission (EC) through future working steps.

1.2 - Structure of the report

The report is in three parts, each one corresponding to a fundamental sequence of the work.

- **Part 1 is a report on the activities of the project:** objectives, main steps, analysis of difficulties, main recommendations for further studies, etc.
- **Part 2 is a manual,** providing a detailed presentation of the method and of the corresponding modules of the tools, as well as some directions and clues about how to deal certain particular points or key notions of the study.
- **Part 3 is a review of the test phase,** including the workshops with country representatives and representatives of international organisations and the tests that were carried out in various countries. For all these test sessions, we will describe:
 - the objectives and methodology;
 - the results;
 - the lessons learnt.



2 - Methodology and organisation of the study

2.1 - Context of the study

The European Union has adopted a new strategy for animal health. The choices concerning this policy must be based on objective data and suitably adapted tools that will enable the right decisions to be taken. One of the first steps is to define priorities regarding the different diseases to be taken into account, as well as the corresponding strategic animal health measures. The objective is to optimise the resources (financial and human means, equipment, etc.) invested in animal health policies and sanitary actions at different levels (European, national, public sector versus Private sector, etc.)

That is why the EU Chief Veterinary Officers (CVOs) started working on a document (Appendix 2 of the ToRs) relating to the methodology of this prioritisation and this is also why the EC decided to ask the OIE to prepare a detailed study on the subject.

Such a study is also necessary for International Organisations (The OIE and its main partners, such as FAO and WHO) involved in the definition of international strategies to fight and control diseases. On the one hand, the priority list and the categorisation of diseases is a way of improving the actions of the various actors. On the other hand, it can be a good way to discuss and recognise the sanitary policies defined by each country.

The OIE was chosen to conduct this study on the development of a suitable decision tool. The OIE decided to entrust the task of designing the tool to Phylum, a specialist firm.

2.2 - The team of experts (Consultants) and the OIE Steering Committee

2.2.1 - Team of experts (Consultants)

The team of experts consisted mainly of senior consultants with both a solid scientific background in the animal health domain and competences in strategy and public or private policies.

- **François GARY (team leader)**, partner of Phylum, has experience in providing support for the definition and evaluation of public policies: support for policy making on breeding activities, animal health services structural definition, organisation of animal sectors, etc. He also has international experience (Africa, Latin America, and Central Europe). He has a good knowledge of animal production economics and its interactions with animal health.
- **Philippe BARALON**, partner of Phylum, has good experience in animal health: setting of disease prevention strategies and crisis management. He has worked with veterinary pharmaceutical groups, agro-food industries and national Veterinary services. He also has experience as a risk programme manager for a farmers' group.



- **Jean-François VALARCHER** is an Associate Professor at Uppsala University and an international consultant in animal health. He has also been involved in several international research projects. He has worked as an International Foot-and-Mouth Disease (FMD) Surveillance Liaison Officer and as a group leader on the epidemiology of vesicular diseases within the department of Exotic Disease Control at the OIE/FAO World Reference Laboratory for FMD, IAH, and Pirbright.
- **Peter Leonard ROEDER** is a specialist in disease epidemiology, diagnosis and control. He has also worked in the field of research and the definition of a risk operational programme. His wide-ranging international experience has given him a good overview of epidemiological situations in different parts of the world. He worked with the FAO until 2007.
- **Marianne ELVANDER** teaches at the National Veterinary Institute in Uppsala (Sweden). She is a state epizootiologist, specialised risk assessor and expert advisor. She worked for the FVO (DG SANCO) for several years. During this mission, she was able to evaluate the capacity of several African and South American countries to comply with European sanitary regulations.
- **Philippe BLANC** is an international expert with a strong experience in developing countries. He has worked for the World Bank and different donors.
- **Cedric COLMAR** is a junior consultant with training and experience in public veterinary policies.

2.2.2 - OIE Steering Committee

The OIE Steering Committee consisted of members of the OIE staff, as well as representatives of the EC and FAO:

- Dr Karim BEN JEBARA (OIE): Head of the Animal Health Information Department.
- Dr Etienne BONBON (EC): Health and Consumers – Directorate D - Animal Health and Welfare – Unit D1 - Animal Health and Standing Committees.
- Dr Alain DEHOVE (OIE): Coordinator of the World Animal Health and Welfare Fund.
- Dr Stéphane DE LA ROCQUE (FAO): Veterinary Epidemiologist, Infectious Diseases Group (IDG), Animal Health Service (AGAH).
- Dr Elisabeth ERLACHER-VINDEL (OIE): Deputy Head of the Scientific and Technical Department.
- Dr Kathleen GLYNN (OIE): CDC Assignee to the OIE, and Chargée de Mission at the Scientific and Technical Department (attended only parts of some meetings).
- Dr Kazuaki MIYAGISHIMA (OIE): Deputy Director General and Head of the Scientific and Technical Department.



2.3 - Methodology and schedule

The methodology used in carrying out this project included:

- Preliminary work to clarify the terms and concepts of relevance to the study, to propose definitions for “prioritisation” and “categorisation” of animal diseases and to validate the approach. A glossary of some of the key terms used in this study is provided in **Appendix 1**.
- Review of the literature and consultation with the experts to list and define the relevant criteria to be taken into account in the impact assessment step. The aim was to consider as many criteria as possible, in order to constitute a base from which the most determinant criteria would be selected for the prioritisation/categorisation process.
- Conception of a first series of categorisation and prioritisation tools, based on a qualitative and quantitative assessment of different kinds of impact, in order to propose a first prioritisation model.
- Testing of these first tools with the experts and identification of relevant and problematic points. These elements, as well as the data collected for this testing cycle, were used to develop a second generation of tools.
- Development of the final decision method, development of the corresponding data analysis and assessment sequences, and design of the new tools.
- Second testing phase, using the new protocol, to refine the approach and finalise the tools.

All steps were reported to the Steering Committee for validation and advice before being implemented, in order to integrate as many contributions as possible in the early stages of the work.

Table 1 Main steps of the work

Date	Step	Participants	Location
02/05/2009	First meeting of the OIE Steering Committee	Members of the Steering Committee + Consultants	OIE Headquarters (Paris)
23-24/02/2009	First working session of the consultants	Consultants	OIE Headquarters (Paris)
21/04/2009	Workshop	Consultants	PHYLUM (Toulouse)
07/05/2009	OIE Steering Committee	Members of the Steering Committee	OIE Headquarters (Paris)



		+ Consultants	
26/05/2009	Workshop	Consultants	OIE Headquarters (Paris)
27/05/2009	Meeting with some CVOs	Consultants + CVOs	OIE Headquarters (Paris)
10/07/2009	CE Steering Group(a)	Members of the Steering Group + Consultants	DG-SANCO (Brussels)
02/10/2009	OIE Steering Committee	Members of the Steering Committee + Consultants	OIE Headquarters (Paris)
11/11/2009	Workshop	Consultants	Brussels
12/11/2009	Meeting with DG-SANCO and representatives of some EU Member States	Consultants, Experts + DG-SANCO staff + Representatives of Veterinary Services of Germany, Hungary, Italy, Sweden and UK	DG-SANCO (Brussels)
13/11/2009	Briefing for the test missions	Consultants	PHYLUM (Toulouse)
16-18/11/2009	Test mission in Tunisia	Consultants	Tunis (Tunisia)
18-20/11/2009	Test mission in Kenya	Consultants	Nairobi (Kenya)
16-18/12/2009	Test mission in Thailand	Consultants	Bangkok (Thailand)
22/01/2010	Last meeting of the OIE Steering Committee	Members of the Steering Committee + Consultants	OIE Headquarters (Paris)
03/02/2010	Final presentation to the EU Steering Group	Members of the Steering Group + Consultants	DG-SANCO (Brussels)

(a) : It is a specific steering group of the DG Sanco to follow the different works related to prioritisation and categorisation, for the preparation of the new animal health regulation.

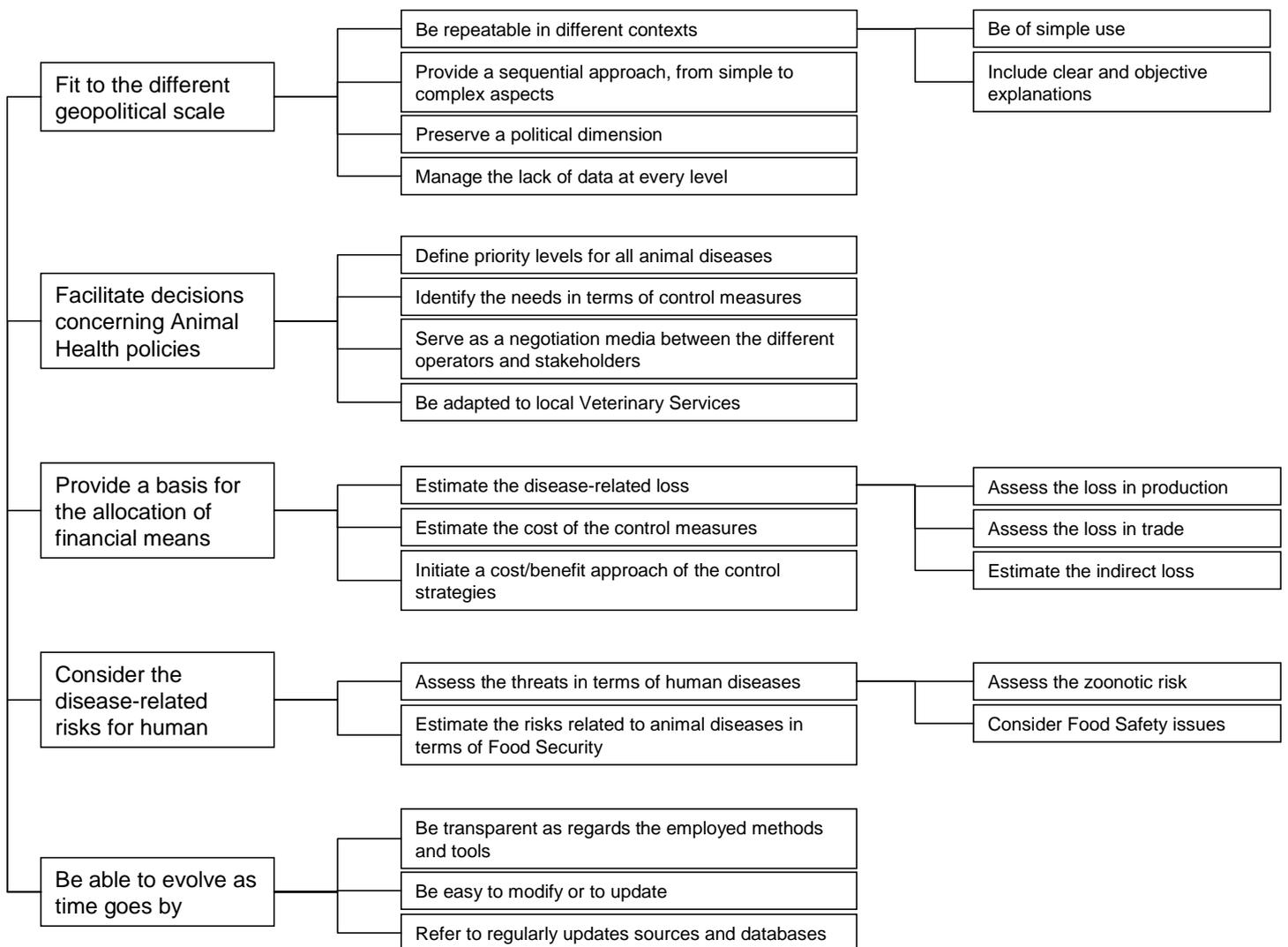


2.4 - Background / Framework

The objective is to provide decision-makers with actual elements and methods to perform reasoned choices in terms of animal health policies. These choices could be based on objective elements of scientific risk assessment, but also integrate the particularities of each local situation and political contingencies so as to define and implement consistent strategies.

A more detailed review of the objectives of this work, based on the analysis of the Terms of Reference, is provided in the following function analysis diagram.

Figure 1 FAST (Function Analysis System Technique) diagram of the project





3 - Analysis of previous work and challenges of devising a prioritisation approach

3.1 - Review of the literature

As a preliminary study, a review of existing initiatives relating to the categorisation and prioritisation of diseases was performed.

3.1.1 - Initiatives in human health

Several initiatives have been undertaken with regard to the prioritisation of diseases, applicable to the field of public health. Some of the most recent works on the prioritisation of human diseases are as follows:

- The “Prioritisation of Infectious Diseases in Public Health – Call for comments”, published in 2008 by Gérard Krause (Robert Koch Institute, Berlin, Germany), proposed a system of weighted scoring based on 12 criteria to assess the priority level of human diseases. The protocol is based on the DELPHI method to manage expert appraisals and assessments. This publication refers to a number of earlier studies on prioritisation of human diseases:
 - Réseau National de Santé Publique, 1995 (France)
 - Rushdy & O’Mahony, 1998 (United Kingdom)
 - Weinberg *et al.*, 1999 (European Union)
 - Doherty, 2000 (Canada)
 - Harby *et al.*, 2001 (United Kingdom)
 - Institut de Veille Sanitaire, 2001 (France)
 - World Health Organization, 2003 (South East Europe).
- The “Setting Priorities in Communicable Diseases Surveillance” study (WHO, 2006) and the WHO Prioritization Tool (Excel® file) describe and operate a ranking approach for human diseases based on the scoring of different criteria for each disease. The corresponding results are then interpreted to provide a comparison between the different diseases and a relevant priority ranking.

As a general assessment, two points may be underlined concerning these initiatives, in comparison with the objectives of our study:

- All methods recommend an approach based on an appraisal of the different criteria by expert teams.
- The studies carried out for national purposes only can be more precise in the definition of criteria and their assessment (threshold, coefficient). Our study was more complex, however, since the results need to be applicable on different geographical scales and in a great variety of contexts.



3.1.2 - Initiatives in animal health

Work has also been undertaken on prioritisation in the field of animal health, which has led to several initiatives in different countries, such as:

- The Prioritisation Decision Support Tool (DST) developed by the Department for Environment, Food and Rural Affairs, United Kingdom. This DST is an Excel® file, providing an assessment and weighting for selected criteria and resulting in a prioritisation ranking for the different diseases. The tool aims to assess the importance of the diseases in terms of different types of impact:
 - Impact on Public Health
 - Impact on Animal Welfare
 - Impact on Wider Society
 - Impact on International Trade
 - Risk and Epidemiology.
- The Australian Animal Health Council defines, in the Emergency Animal Disease Response Agreement, different categories for animal diseases with regard to their potential impact and the relevant patterns of public intervention and funding:
 - Diseases that seriously affect human health and/or the environment, but may only have minimal direct consequences for the livestock industries (rabies, Japanese encephalitis, equine encephalomyelitis, etc.);
 - Diseases liable to cause major socio-economic consequences through very serious international trade losses, national market disruptions and very severe production losses in the livestock industries involved; the same category includes diseases with lower socio-economic consequences but a significant public health or environmental impact (bovine spongiform encephalopathy, foot and mouth disease, brucellosis caused by *B. abortus* and *B. melitensis*, etc.);
 - Diseases of moderate public impact, with the potential to cause significant national socio-economic consequences but with minimal or no effect on human health or the environment (African horse sickness, anthrax, highly pathogenic avian influenza, bluetongue, etc.);
 - Mainly production loss diseases, liable to cause international and local market disruptions, but without significantly affecting the national economy (Aujeszky's disease, maedi-visna, Teschen disease, etc.).
- The European Technical Platform for Global Animal Health released Disease Control Tools (DISCONTTOOLS) in May 2009. This tool aims at assessing the priority level of animal diseases through the weighted scoring of impact criteria. The objective of this initiative is to provide decision-makers with elements of priority in terms of technical research and development concerning the prevention and control means for diseases (vaccination, treatments, tests).

In addition to the aforementioned initiatives, numerous quantitative socio-economic studies have been and are regularly carried out in order to assess risk management strategies. This aspect does not directly concern the present project, which has to remain mainly qualitative. However, in certain cases where a qualitative assessment proves to be too limited, such types of socio-economic analysis may be recommended to refine the available elements



of decision. However, in such cases a preliminary qualitative prioritisation remains essential in order to define relevant priorities for further research.

3.1.3 - Conclusion

- In summary, the majority of the aforementioned initiatives have a relatively well-defined field of action: a given country or region. Their objectives are likewise fairly precise: defining a respective level of State involvement in sanitary actions, determining priorities for technical research and development, etc.

In contrast, the present project is designed for a variety of contexts and should be applicable in any country, zone or region (for the purposes of our study, “region” means a group of countries). Thus, the tool should be able to provide, at any scale, a relevant prioritisation and categorisation for the selected diseases.

- The operational tools designed for the categorisation and/or prioritisation of diseases are difficult to design. A rather qualitative approach is essential to ensure the tools are sufficiently simple and user-friendly, but they must be precise enough to effectively discriminate between the diseases and provide a useful assessment. As a consequence, particular attention must be paid to:

- The choice and organisation of the different criteria used for the analysis. A relatively exhaustive review is required, in order to select only the most relevant ones. Moreover, it is absolutely essential to provide, for each criterion, clear and precise definitions and elements of interpretation.
- The choice and respective importance of the proper weighting applicable to each criterion or group of criteria. On the one hand, there must not be too many different weights or too complex weighting values to preserve the simplicity and qualitative orientation of the analysis. On the other hand, coefficients are necessary to achieve a consistent approach and relevant results, with a level of good discrimination for each aspect of each disease.

3.2 - Design challenges and preferential choices

3.2.1 - A need for adaptability

- First, the categorisation and prioritisation process is expected to be applicable in every country or region throughout the world. As huge differences exist between these countries and regions (particularly as regards the quality and quantity of available information), we needed to strike a balance between the feasibility and the accuracy of the method and tool:

- In developing countries, the available data are sometimes very limited and/or out of date. In this context, a simplified analysis is required and running the process



may require quite considerable preparatory work to obtain the required information.

- In developed countries, huge amounts of precise data may be available, and in these contexts our approach may be simplistic. In this case, it may be relevant to carry out a further study to obtain more precise models, at least for the diseases that turn out to have the highest priority based on our approach.

Moreover, huge differences may exist in the societal, religious and cultural background and context from one country or region to another. It is essential to take into account these local particularities in order to propose a relevant analysis in each country or region, adapted to its particular situation.

- In order to optimise the readability and transferability of the tool, the answering modalities for the different criteria must be relative simple and homogeneous. As often as possible, simple and easily understandable rules should be used, such as “binary” answers of the YES/NO type. When additional levels are required, they must remain as clear and easy to distinguish as possible.

For the same reason, all quantitative indicators must be used carefully. When it is possible, converting them into semi-quantitative classes may be a suitable way to simplify the interpretation.

3.2.2 - Distinction between the concepts of categorisation and prioritisation

The categorisation and prioritisation of animal diseases is a complex protocol, even if both concepts are linked in certain respects. For example, a vector-borne disease (particularly if vectors are flying animals) will never be easy to control in the event of an outbreak and may therefore be seen as a priority in terms of prevention. On the other hand, that particular vector-borne disease may have only a limited impact on animal health and production, whereas another, non arthropod-borne disease may represent a major threat to animals or humans (in the case of a zoonosis). Thus, it is not easy to decide *a priori* which of these two diseases should be given the higher priority.

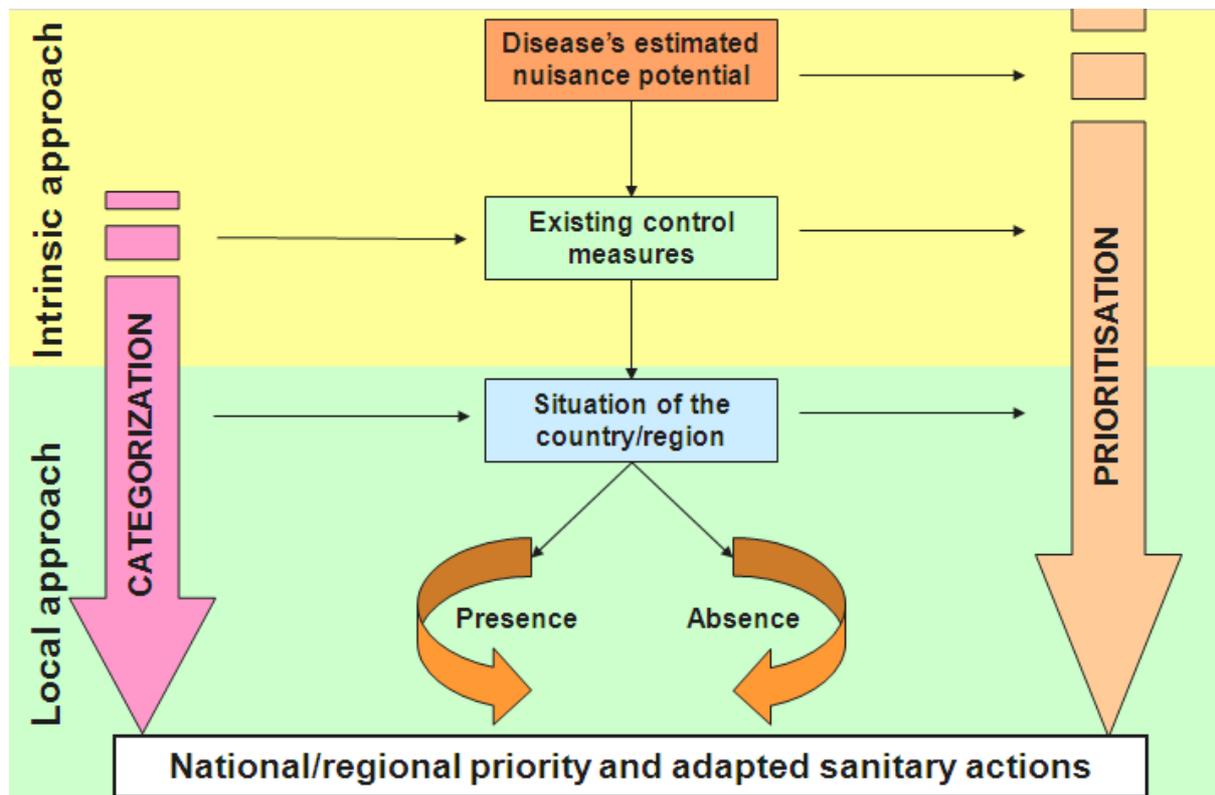
That is why it is essential to define precise and organised steps in the method in order to be able to refine the categorisation and prioritisation according to the quantity of data available. Thus, a two-dimensional decision space was devised:

- A “vertical” and chronological sequence is established in this approach.
 - It begins with the theoretical determination of the intrinsic potential nuisance value of the disease. At this stage, only general data/knowledge concerning the disease and its possible control measures are required. The objective is to assess whether or not, in a hypothetically favourable context, the disease has the ability to impact significantly on animal and/or human health, or to raise relatively important societal or environmental issues. At this stage, it is also important to consider whether control measures exist for the disease and to get an idea of their effectiveness and availability.

- Once this first step has been performed, a local interpretation (i.e. in a particular country or region) may be performed to refine the results. At this level, particular data concerning the country (territory, population, production systems, trade activities, society, etc.) and the disease (presence or absence in the territory, affected native species, etc.) is necessary. This will allow an assessment of the specific impact of a given disease in the country, as well as the workability, costs and benefits of the corresponding control measures at the local scale.
- A “horizontal” and logical sequence is respected at each level: information from the categorisation of the disease is crossed with the processing of available data in order to assess a priority level for the disease at the current level (intrinsic or local). The same goes for each level, as long as sufficient data are available.

An overview of the general approach and identified steps is provided in the following figure.

Figure 2 General approach and main methodological steps



The protocol is based on the analysis of the different types of impact a disease may have. The distinction of these impacts led to the definition of the following main families of criteria:

- Epidemiological characteristics of the disease
- Economic impact
- Impact on human health
- Societal impact
- Environmental impact



3.2.2.1 - Categorisation

The categorisation of a disease has been defined as the “*Organisation of listed diseases into different groups, depending on particular criteria. Each group is associated with a specific pattern of herd-scaled, collective or State measures, in relation with the corresponding critical competencies of the Veterinary Services*”. (See Glossary in **Appendix 1**)

The objective is to establish a link between some characteristics of the disease concerning its geographical spread, transmission and clinical consequences, corresponding to types of actions liable to be implemented to control such a disease in a given country or region.

The aim here is to answer the question: “*What should be done to control this disease?*”

3.2.2.2 - Prioritisation

The prioritisation of a disease has been defined as the “*Organisation of listed diseases into a hierarchy, considering their respective impacts. Prioritisation may be performed within the different categories, as well as for diseases belonging to different categories. This process aims at providing decision-makers with a tool to help them select the disease-related threats that are worth being addressed by public policies (the corresponding control measures should then be determined thanks to the categorization tool)*”. (See Glossary in **Appendix 1**)

The objective is to assess whether or not a particular disease is worth being addressed by sanitary actions and policies, in comparison with other diseases. The goal is to define priorities between several diseases. But, it is important to note that:

- The ranking is done roughly, depending on the gathered data quality.
- It is not possible to do a global ranking for all diseases: those that are absent and the diseases present. These two subcategories should therefore be addressed separately and, for this reason, the comparison of the respective prioritisation of diseases present and diseases absent may have low significance. Nevertheless, we assume that “prevention is better than cure”, and so preventing the occurrence of a disease of established concern (in the event of an outbreak) will always be a relevant priority.

The aim here is to answer the question: “*Is it relevant to implement sanitary actions in order to control this disease (rather than another one, should the case arise)?*”

3.2.3 - Importance of a management decision in the final decision

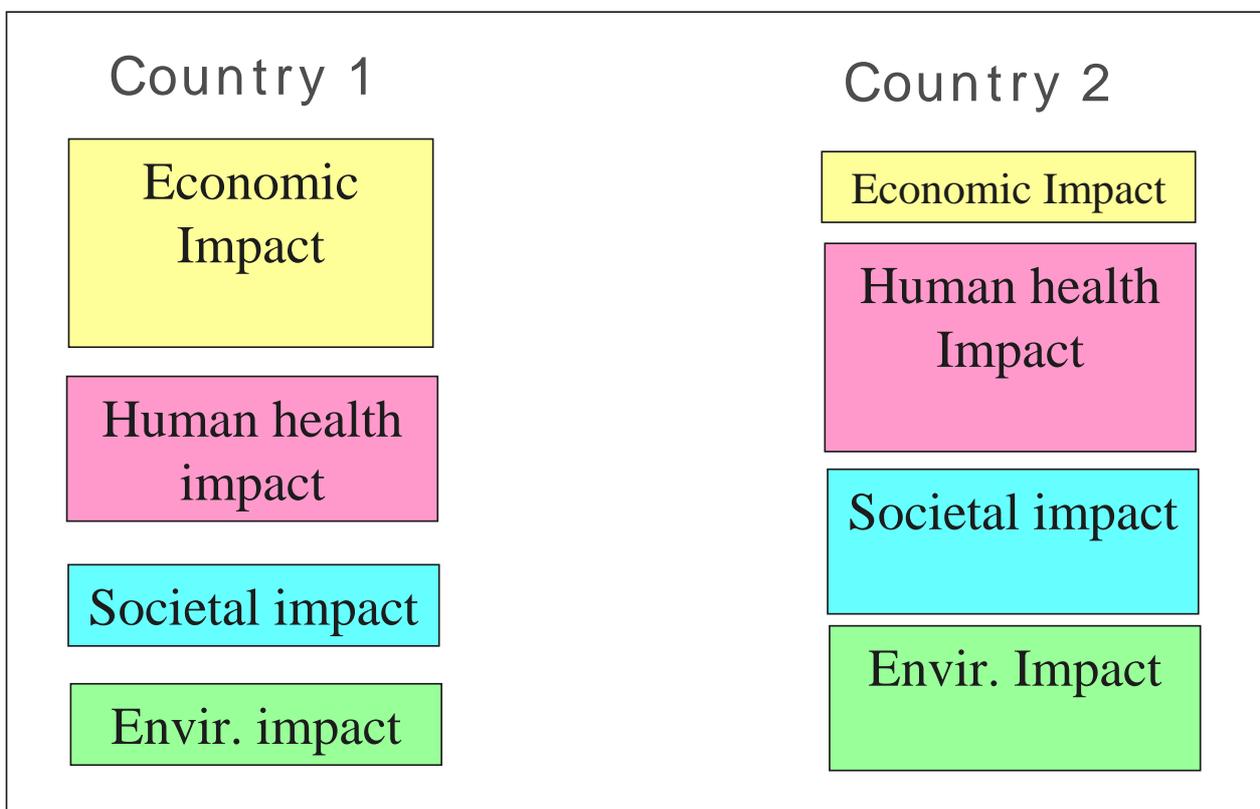
However, it is essential to keep in mind that these aspects (except for the bioterrorism potential, which is a general issue), are often tightly linked to the economic, social, cultural and political context of each country or region. The economic impact will depend on local production systems and trade channels; there may be considerable differences in the



interpretation and management of human health issues from one region to another (for example food-borne diseases may be a relatively low concern when food supplies are not sufficient and food security is a major issue); the societal and environmental concerns will not have the same importance in all socio-cultural models.

Thus, even if the tool may help to assess the impact of a disease (and of the corresponding control measures) in each of these domains, it is absolutely essential to **preserve a political dimension** in the final balance between these different impacts, as well as in the decision concerning the relevant priority level, to enable decision-makers in all countries to be able to adapt the method to the particular case of the territory in question. This is illustrated in the following figure.

Figure 3 Respective weighting of the different disease-related impacts



3.2.4 - Prioritisation guidelines

In order to propose a relevant protocol that will prove acceptable to the various countries, our decision rules must include elements of prioritisation that are generally agreed upon by most CVOs and decision-makers. During the different meetings and test missions, the following axes could be highlighted:



- Priority is often given to diseases severely affecting the livestock industry, with additional importance being given to those causing massive epizootics compared to more chronic diseases. Even in the case where an epizootic disease and a chronic disease have equivalent consequences, the epizootic disease will always be more “obvious”, and seem more problematic than a relatively “cryptic” disease. Moreover, if the epizootic peaks of cases are an important feature, it may raise logistic issues as locally available means and structures may be inadequate to manage a large number of geographically concentrated cases.
- Diseases that hinder the trade and movement of animals (and/or animal products), at a local and/or international scale, are liable to be a high priority. Indeed, even if their direct impact on production is limited, the indirect loss due to the disruption of trade channels can be considerable, particularly in exporting countries.
- Last but not least, zoonoses may be given particular importance in terms of priority, as they are liable to cause major public health issues, sometimes in addition to a significant threat to the local economy. Moreover, as the public can see zoonoses as a direct threat, they may cause major social crises.

Nevertheless, the respective relevance of the aforementioned axes may be significantly different depending on the local context. As stated in the previous paragraph, it is essential for each decision-maker in each territory to be able to adapt the analysis and final decision to the specific orientation and political objectives of his or her own country or region.



4 - Analysis of the results and recommendations

4.1 - Analysis of the fulfilment of the objectives

As a first debriefing step of our work, it is interesting to assess the fulfilment of the different initial objectives of the project, according to the Terms of Reference. The following table analyses the outcome in comparison with the objectives reviewed in Chapter 2 (see 2.4).

Table 2 Commented self-assessment of the fulfilment of the objectives of this project

Objectives	Level of fulfilment (from - to +++)	Comments
Be simple to use	++	Good feedback from the test missions. Possible transfer to an expert in ½ to 1 day.
Include clear and objective explanations	+++	A whole volume of the report is dedicated to the methodological manual (choice of a detailed step-by-step manual).
Provide a sequential approach, from simple to complex aspects	++	The analytical sequence starts with a general assessment and progresses towards precisely calculated indicators.
Preserve a political dimension	+++	The whole approach is designed to give objective elements that can be specifically weighted for the final decision. The analysis of the different criteria (or group of criteria) can be a help to answer other questions about the diseases.
Manage the lack of data at every level	+	The tool allows missing data to be identified, though missing data may limit the accuracy of the analysis.
Define priority levels for all animal diseases	+++	The tool provides clear indicators to prioritise diseases <u>in the given country</u> .
Identify the needs in terms of control measures	+	This is very complex and highly dependent on local elements. Possible confusion between what can be done and what should be done.



		The tool does not indicate the best control strategy for a disease.
Serve as a negotiation medium between the different operators and stakeholders	++	The profiling step is dedicated to reaching a consensus. The method clearly requires a multi-disciplinary approach with permanent communication. It is also a support for discussion at the local level, to reach a consensus regarding the priorities.
Be adapted to local Veterinary Services	++	The protocol requires a minimum (but sufficient) level of organisation and available data.
Estimate the disease-related direct loss in production	++	Semi-quantitative assessment (a fully quantitative approach is too complicated and would require specific studies).
Estimate the disease-related loss in trade	+	Semi-quantitative assessment.
Estimate the disease-related indirect loss	+	Qualitative assessment.
Estimate the cost of the control measures	+	Semi-quantitative assessment. Difficult to assess precisely, particularly for diseases that are absent.
Initiate a cost/benefit approach for the control strategies	+	The tool provides clues, but further specific studies may be necessary.
Assess the zoonotic risk	+++	Dual analysis of the potential and actual impacts.
Consider food safety issues	+++	Specific criteria for food-borne diseases.
Estimate the risks related to animal diseases in terms of food security	+	Qualitative assessment, in relation to the local availability of food products. Possibility to take into account the specific situations of particular groups in the country.
Be transparent as regards the methods and tools employed	+++	All methods and calculation processes are described in the manual.
Be easy to modify and update	+	Requires basic Microsoft Excel® skills.



Refer to regularly updated sources and databases	+++	Other sources may also be added in the future.
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4.2 - Methodological achievements

First, during the elaboration and test sessions, a few achievements were made concerning the method used to develop the tool.

- The approach must be simple, taking into account only a limited number of relevant criteria. Indeed, a tool that is too long or too complex would not be easily transferable to local experts, and there would be a high risk of confusion in the meaning and interpretation of the different criteria. Moreover, if the categorisation and prioritisation process is too time-consuming, there are chances that it will not be performed entirely and correctly for all the relevant diseases.

The transferability of the tool was demonstrated during the test missions, as the country experts were able to use it by themselves after a short briefing. However, a minimum amount of time is necessary to adapt and master the tool and to perform the analysis. The complete analysis of a disease (including the profiling and local approach) if all required data are available is estimated at about half a day.

- The analysis requires a certain number of data for each studied disease, as well as general data concerning the local context. As the available information can be very different from one country or region to another, it is essential to limit as much as possible the need for quantitative criteria. For this reason, even if precise figures are necessary in some cases, the majority of the criteria are designed for a qualitative or semi-quantitative assessment.

Despite this precaution, some of the data needed to perform the complete detailed analysis may still be missing. In this case, epidemiological studies and research work should be encouraged. However, it is impossible to carry out studies for all missing data: thus, operating an indicative prioritisation of diseases of uncertain epidemiological status can provide elements to prioritise the requirements in terms of surveys and research investigations.

- Some particular points or problems are too subtle and complex to allow an “automatic” analysis by a formal tool, as they may for example be addressed in different ways according to the local situation. For this reason, our protocol should associate standard assessment modules for some fundamental issues, and also practical elements of methodology and guidelines in order to carry out a case-by-case study of the aforementioned specific points.



- The proposed categorisation and prioritisation protocol is organised into a sequence of thematic analyses. Within each theme, there may be huge differences between diseases, requiring a particular interpretation. Yet the compilation of the different criteria in each topic into a global prioritisation score for the topic would cause a lack of discrimination. For example, a disease affecting one species with high transmissibility but no real persistence may result in the same global “epidemiological score” as another disease affecting several species with limited transmissibility but very long persistence in the environment. For this reason, the tool not only provides a differential assessment of every main aspect within each theme, but also proposes a compiled graphical representation of the profile of the disease as regards this theme.

Here, the goal is to provide both a global idea of the disease-related impacts, and a series of easy to interpret indicators.

4.3 - Limits of the project

Due to the nature of the project and its objectives, some limits exist in the final output. These aspects must be kept in mind while using the method and tool, in order to perform the most appropriate and relevant interpretation.

- The categorisation and prioritisation process is expected to be applicable to all diseases in the OIE list, as well as to non-listed diseases (except diseases affecting aquatic animals). Considering the extreme variability existing among these diseases, it may sometimes be difficult to differentiate between two diseases with rather similar profiles and a comparable local situation. Yet, in this case, those two diseases will remain clearly distinguished from all others with a different intrinsic profile and/or local situation.

In this case more quantitative specific studies will have to be carried out to discriminate those diseases: risk analysis, impact assessment, cost/benefit study, etc.

- As the method used to prioritise diseases that are absent and diseases that are present (in the studied country) is conceptually different, the tool makes no global prioritisation between those groups. It will only provide elements of comparison for the different diseases within each group, and the choice of addressing a ‘present’ disease in terms of priority compared to an ‘absent’ disease ultimately belongs to the local Veterinary Service, with their policy decision makers. Nevertheless, in many cases, “prevention is better than cure” and it will be easier and often worth considering as a priority the prevention of those diseases that are absent but give the most cause for concern (i.e. those most likely to be introduced into the territory and to have a serious impact).



4.4 - Recommendations

4.4.1 - Instructions for the field use of the protocol

In order to get the best out of the categorisation and prioritisation analysis, and taking into account the previously described achievements and limits, some general recommendations can be made for countries wishing to use this method.

- The whole approach must be seen as an integrative and interdisciplinary matter. It involves team-work and requires a close collaboration between local experts from different (and complementary) fields (representatives of the Veterinary Authorities, epidemiologists, clinicians, economists, wildlife experts, human/public health services, etc.). The first step in the analysis – the profiling of diseases – aims at providing the basis for a global discussion to calibrate the points of view of all the participants and stakeholders, before the local study is performed.
- Each disease must be analysed in an open-minded manner, constantly comparing it with other diseases and taking into account every relevant element of the local context. A “blinded” approach would considerably increase the risk of introducing a bias in the interpretation and balance of criteria.
- Even if a formal tool is proposed to assess several points of the analysis, the method has to be constantly adapted to the particular situation of each country or region. For example, operators may have to estimate some data for which no precise figures are available or, on the contrary, carry out further modelling when additional data are available.
- A sufficient number of diseases must be studied (we recommend studying more than ten), to obtain enough data to perform a relevant final interpretation. Otherwise, the discrimination power of the analysis may be limited.
- If the discrimination is of low significance between two diseases, further and more precise analyses may be necessary to distinguish between them (cost-benefit or cost-efficiency studies).
- Even if a multi-disciplinary team is required during the process, the experts may not all need to be present throughout the entire protocol:
 - The first data collection tasks and the manipulation of the tool can be performed by a small team of one to three persons;
 - The synthesis and review of the answers to the different criteria, as well as the weighting and final interpretation, must be the result of a consensus between all the experts and stakeholders involved in the study.

The manual presents more detailed recommendations about the practical organisation of the categorisation and prioritisation analysis in countries.



4.4.2 - Recommendations for the next working steps

The delivery of this work will not be the end of the project, as it is liable to be completed and adapted by the EU through specific activities under the action plan corresponding to the EU's new Animal Health Strategy. A few recommendations can be made regarding the possible orientation of these next working steps:

- More tests could be performed in the context of developed countries, with a significant number of diseases, to improve the discrimination power of the tool. It would be interesting to apply statistical analysis methods to determine whether an approach including about a hundred diseases would result in more precisely adapted profiles.
Some tests could also be carried out in developing countries, to devise data collection methods on a participatory basis: participatory epidemiological inquiries, network of field veterinarians, etc.
- The tool's ergonomics could be improved, for example by developing corresponding software and/or an online version.
- Some points that are particularly difficult to apprehend could be studied more in detail:
 - The environmental impact, which is often hard to assess in developing countries due to the lack of corresponding data, and for which it is difficult to find relevant criteria in developed countries;
 - The societal impact. Indeed, it remains difficult to determine easy to objectivise criteria regarding the points liable to cause rejection among consumers or strong public concern;
 - The control measures, due to the difficulty of assessing the capability and capacity of the different services and operators at the local level, on the basis of:
 - ✓ The local responsible authorities,
 - ✓ Any previous evaluations or audits.

In parallel with these recommendations, some fundamental principles should in any case be kept in mind:

- The methodological interest of the profiling steps, with a major possible role of the OIE in the elaboration of global disease information bases (33 newly published "disease cards" (OIE website), an illustrated Atlas of transboundary animal diseases to be published in 2010). Indeed, the OIE could be a valuable source of fundamental elements for the profiling of the diseases, thanks to its disease database. Such references – through regular updates and a homogenous format – may considerably simplify the data collection phase: the data required for the profiling could include the factsheet for each disease, and also mention any knowledge gaps and points that still need to be studied about the diseases.
- The need for indicators with adaptable weighting, in order:
 - To test the reliability of the disease profiles;
 - To provide comparative elements for decision-makers regarding the respective importance given to the different types of sensibilities.



5 - Conclusion

The result of this work is a method and tool to perform a prioritisation and a first categorisation of animal diseases in a given territory (at a local, national or regional scale).

Additional steps may follow in order to refine the approach and to obtain more precise elements regarding for example the best control strategies for the diseases, or corresponding issues about financial commitments and cost-sharing. However, to assess such points, it will be necessary to define more accurately the specific particularities and concerns of the countries in question.

Institutions also have an essential part to play in the development of references and knowledge databases concerning the diseases (OIE and CFSPH), as well as in the possible integration of some elements related to this work in the regulatory frameworks at different levels.

				
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Appendix 1 - Glossary of terms used in the study “Listing and Categorization of Priority Animal Diseases, including those Transmissible to Humans”

	Phylum		Listing and Categorisation of Priority Animal Diseases, including those Transmissible to Humans		January, 2010	
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Categorisation – Organisation of listed diseases into different groups depending on particular criteria. Each group is associated to a specific pattern of herd-scaled, collective or State measures in relation to the corresponding critical competencies of the Veterinary Services.

Compensation – Financial mechanism set up by the State or public institutions to promote early declaration of animal diseases and effective disease control, and to reimburse losses suffered by private citizens who have complied with a disease control process for the public good.

Control measures – All kinds of actions that can be set in response to a disease outbreak or threat, including surveillance, diagnosis, notification systems, medical prevention (vaccines), treatment, culling, compartmentalisation, zoning, sanitary status, etc. These measures can be either public or private (even individual) initiatives.

Criterion – Data that can be assessed through qualitative or quantitative (scoring) means. The synthesis of values for various criteria should enable decision tools to generate a result. Each criterion must be relevant for the tools to work properly.

DALY – Disability Adjusted Life Years. Unit developed by the World Health Organization to assess the impact on human health of a disease (or a control measure). It represents the loss of healthy life years due either to premature mortality or to long-term disability or injury caused by the disease.

Epizootic diseases – Animal diseases that may spread rapidly over a territory, affecting a large number of animals within a short period.

Food safety – Discipline that defines good practices for the elaboration and handling of food products, in order to avoid and prevent food-borne diseases and threats.

Food security – Refers to food availability and quality, for people to be able to have a sufficient and well-balanced alimentation, compatible with preservation of health.

Impact – All the consequences a disease may have regarding the main sectors of importance. The global impact of a disease is subdivided as follows:

- **Economic** impact: the consequences a disease may have in terms of animal health with subsequent losses in production systems and trade (direct loss) as well the costs represented by response and prevention measures implemented to control the disease (indirect loss).
- Impact on **public health**: this relates to the zoonotic potential of the disease and its ability to affect human health, but also the potential disease-related threats to food safety and food security.
- **Societal and environmental** impact: the potential of the disease to generate a social crisis, relating to the way it may affect issues of major popular concern such as animal welfare or environment, the acceptability of the disease and of the corresponding control measures, the potential religious or cultural contingencies that may influence animal health policies, and the bioterrorism potential of the disease.



Listing – Selection and synthesis of available data for characterisation of animal diseases.

Prioritisation – Organisation of listed disease into a hierarchy considering their respective impacts. Prioritisation may be performed within the different categories, as well as for diseases belonging to different categories.

This process is aimed at providing decision-makers with a tool to help them select the disease related threats that are worth being addressed by public policies (the corresponding control measures should then be determined thanks to the categorisation tool).

Production disease – Animal diseases whose major consequences are economic, mainly affecting production capacity, the quality of products, or trade status and flows.

Region – Refers to a geographical area encompassing several countries with similar situations in terms of a disease, or with common animal and public health policies or agreements.

Sanitary status – means the situation of a country or a zone with respect to a particular animal disease, according to criteria which possibly leading to a certified and controlled designation of relevance to access to specific trade channels and relations with trading partners (e.g. “disease free” status).

Scoring – Quantitative or semi-quantitative assessment of criteria, resulting in a numerical assessment. The final decision is made by compiling the scores for each criterion. This process is heavily dependent on the views of the experts and may be the source of considerable variations in the final result from one country/region to another.

Zoonosis – (OIE *Terrestrial Code* definition) Means any disease or infection which is naturally transmissible from animals to humans.



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