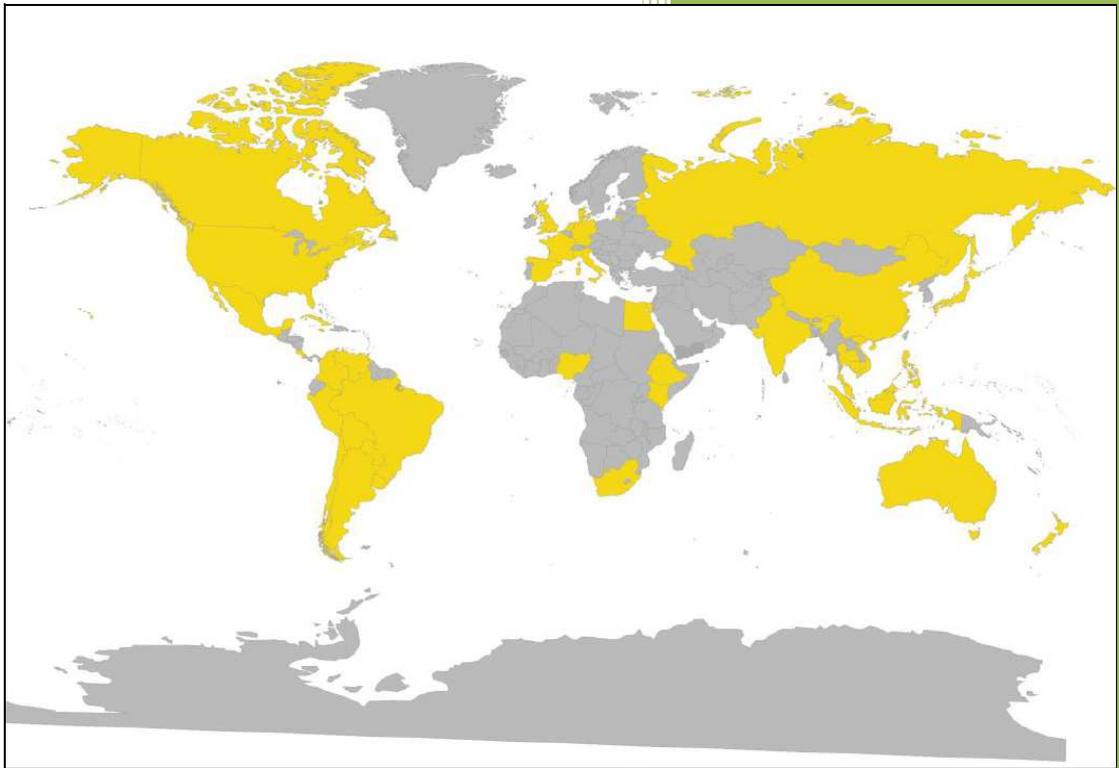


Criteria for priority setting



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WP 5

STAR-IDAZ

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LIST OF ACRONYMS AND ABBREVIATIONS

CAM	Combined Approach Matrix
COHRED	Commission on Health Research for Development
CWG	Collaborative Working Group
EMIDA	Emerging and Major Infectious Diseases of Livestock
ENHR	Essential National Health Research
ERA-NET	European Research Area Network
DISCONTTOOLS	Disease Control Tools
FAO	Food and Agriculture Organization of the United Nations
FPU	Foresight Programming Unit
INCO-NETs	International Scientific Cooperation Activities Networks
MS	Milestone
NGO	Non-Governmental Organization
OIE	World Organisation for Animal Health
R&D	Research and Development
SCAR	Standing Committee on Agricultural Research
STAR-IDAZ	Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses
STEEP	Societal Technological Economic Environmental and Political
VS	Veterinary Services
WHAID	World Animal Health Information Database
WHO	World Health Organization
WP	Work Package

INTRODUCTION

This document represents the MS33 outcome of the STAR-IDAZ project. It is aimed at advising on a methodology to set criteria for priority setting to be used for developing a strategic research agenda for global animal disease research for the next 5 to 15 years. It will advise on a methodology rather than set criteria itself because previous studies have recognised priority setting in health research as a dynamic process. Thus, all the criteria and steps identified in this document are intended to be guidelines only for the steps to be used during the prioritisation process. The participants of the priority setting exercise should be those who have a major stake in the equity of the setting of criteria to prioritise animal health research needs, such as policy makers, researchers, members of agro-industry, NGOs, breeders, and other appropriate organisations. For this reason, it is important to build a participative and interactive process in order to reach consensus among the participants step by step, although it is crucial to set up a methodology before starting to ensure a systematic analysis of animal health research needs.

STRUCTURE OF THE REPORT

This document covers the following steps of the priority setting exercise:

- Planning of the priority setting process
- Selection of the team for priority setting
- Elements for priority setting
- Criteria for priority setting

STAR-IDAZ PROJECT

The Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses (STAR-IDAZ) is a project funded by the European Commission's Seventh Framework Programme. It is aimed at promoting coordination and cooperation at an international level of research programmes in the area of animal health, focussing in particular on infectious diseases including zoonoses. An increasing number of zoonoses and other major disease problems faced by the livestock industry are of a global nature. Thus, the overall aim of the project is to improve coordination of research activities on major infectious diseases of livestock and zoonoses so as to hasten the delivery of improved control methods. This will be achieved through the establishment of an international forum of R&D programme owners/managers and international organisations for the

purpose of sharing information, improving collaboration on research activities, and working toward common research agendas and coordinated research funding on the major animal diseases affecting livestock production and/or human health. It will build on the groundwork established by the SCAR CWG on animal health and welfare research, the EMIDA ERA-NET project, and specific INCO-NETs involving partner countries. The scope of the project will include coordination of research relevant to emerging and major infectious diseases of livestock, including fish and managed bees, and those infections of livestock that may threaten human health. Diseases of wildlife will also be considered where they are identified as reservoirs of infection with emerging and major infectious diseases of humans or production animals.

WP5 AND THE NEED FOR CRITERIA FOR PRIORITY SETTING

A goal of WP5 of the STAR-IDAZ project is to draft criteria for priority setting in order to develop a common research agenda and action plan based on shared priorities. Priority setting is a fundamental step in the management of research activities because financial resources are not unlimited and there is never as much funding as is needed to address all animal health problems and pursue all research needs. Moreover, these needs are far from static; they can change from time to time, as they can be affected by current animal health emergencies and epidemics, environmental conditions, demographic trends, consumer habits, and new opportunities in science due to advances in research or better research instruments. Thus, it is fundamental to start from the analysis of the current situation in order to have an evidence-based study, and run foresight studies from time to time to investigate the current trends of animal health research needs. At the end of each foresight study, it will be essential to prioritise the identified research needs in order to allocate the funding available in the best ways possible. In the process of priority setting, it is critical to decide who sets the priorities and what criteria should be used to determine them. It is important to understand from the start that a single, universal concept of priority does not exist. A priority may look different from each stakeholder's point of view, as the concept of priority serves the purpose, the capacity, the resources, the mandate, and the culture of each stakeholder. Therefore, it is important to build a participative and dynamic process among stakeholders to reach agreement among the participants step by step during the priority setting exercise.

To ensure a systematic analysis of research needs, it is fundamental to decide who is going to participate and to draft criteria for priority setting before the process starts. Legitimacy of the process will be achieved only if all the relevant stakeholders participate in the process. Furthermore, it is important that the methodology used will be available to the participants in order to ensure the transparency of the process. Each choice made during the process should also be available on the website, so that everybody can evaluate the equity of the process.

PRIORITY SETTING IN ANIMAL HEALTH RESEARCH

Priority setting in health research is a relatively recent discipline which was first defined in the 1990 report of the Commission on Health Research for Development (COHRED). It arose from the need to undertake essential national health research (ENHR) in developing countries in an equitable and systematic way. Since then, a series of approaches have emerged, although there is no single tool able to provide an objective process, because any such tool needs to fulfil the demands of the different stakeholders according to their particular circumstances. Lessons can be learned from the various experiences of other organisations (see the recommended readings below).

The majority of prioritising exercises have been undertaken for well-defined fields of action, such as a territory or a specific topic. This allows the use of quantitative methods based on epidemiological and economic data. In our case, the commitment to prioritise research needs in a global context makes it difficult to use quantitative data for the huge amount of data needed (and often lacking) and for the great variety of contexts to which the study will need to be applied. This is the reason why a qualitative approach better suits work of this type.

Furthermore, the difference between animal health priorities and animal health research priorities should be defined, as not all the animal health priorities could be addressed by implementing research activities on diseases. Although animal disease, research, and development are interconnected, convert a disease priority to a research priority could be possible if feasible research presents the potential to resolve the disease problem. Not all animal health diseases require further research, as a lack of knowledge about the disease itself is not always the problem, which can also lie in veterinary health service, consumer/breeder habits, lack of communication, and lack of infrastructures. Depending on the kind of problems addressed, different kinds of research could be implemented (see Figure 1).

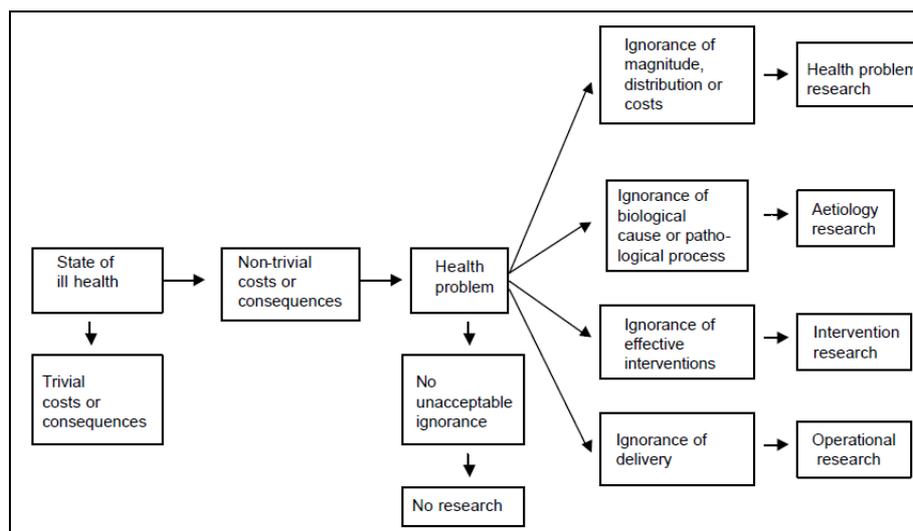


FIGURE 1: A FRAMEWORK TO CONSIDER A HEALTH PROBLEM AND THE CONSEQUENT FOUR TYPES OF RESEARCH (FROM FEACHAM ET AL. IDENTIFYING HEALTH PROBLEMS AND HEALTH RESEARCH PRIORITIES IN DEVELOPING COUNTRIES, *J TROP MED HYG* 92, 1989, P.137)

PLANNING OF THE PRIORITY SETTING PROCESS

The priority setting exercise is only a component of the process for creating a global research agenda. Thus, it is influenced by the results of the work and thinking of the preceding steps. The objective of this document is to furnish methods to perform a prioritisation of categorised research areas defined through foresight exercises conducted in the four main areas of the project (Africa and the Middle East, the Americas, Asia and Australasia, and Europe) and through the WP2 and WP3 work. The method should fit the different geo-political dimensions of the project and needs to be easily modifiable by participants and updateable to the results which will be available from the studies mentioned above. The idea here is to draft some guidelines in order to build a participative, transparent, and dynamic process among stakeholders – a process which can evolve with the different national, operational, and political contexts of the project and grow more accurate as the process continues. Once this draft of methodology is circulated among the leadership group of the STAR-IDAZ project and agreed upon, the process can start (see Table 1).

TABLE 1: METHODS AND SCHEDULES

<i>Step</i>	<i>Who</i>	<i>How</i>	<i>When</i>
1. <i>Process planning</i>	WP5	Participative process with leadership of STAR-IDAZ and EMIDA FPU	September 2013
2. <i>Background information collection:</i> a) <i>Situation analysis</i> b) <i>List of research areas</i>	WP2, WP3, WP5	Online survey, Literature reviews, Databases scan, Foresight studies results	
3. <i>List of relevant criteria</i>	WP5	Technical group	September 2013
4. <i>Selection of criteria for prioritising research areas</i>	STAR-IDAZ consortium partners	Consensus workshop	Mexico October 2013
5. <i>Expert selection</i>	WP5, Country contact points	Database of experts	November 2013
6. <i>Organisation of criteria for the online survey</i>	WP5	Technical group	November 2013
7. <i>Validation of criteria</i>	Selection of experts	Online survey 1	December 2013
8. <i>Research areas prioritisation</i>	Selection of experts	Online survey 2	Following the regional foresight seminar (May 2014)
9. <i>Selection of criteria for prioritising specific topics of research areas</i>	STAR-IDAZ consortium partners	Consensus workshop	Moscow June 2014
10. <i>Validation of criteria</i>	Selection of experts	Online survey 3	September 2014
11. <i>Specific topic prioritisation</i>	Selection of experts	Online survey 4	October 2014

SELECTION OF TEAM FOR PRIORITY SETTING

In order to set priorities, it is fundamental to develop a profile of the experts who will conduct the study. The involvement of multiple stakeholders in priority setting is fundamental for the credibility of the process, and also to ensure the best chance of identifying research needs, information gaps and distortions, technical and financial capabilities. Of course, the number of participants depends on the financial and human resources available. In this project two different kinds of participation are required: a small panel of stakeholders to set criteria and a large one to prioritise the research areas.

The first phase of criteria selection can be executed at the workshop in Mexico (October 2013), where a panel of stakeholders (STAR-IDAZ consortium partners) can set the criteria to be utilised. Panels are typically groups of 12 to 20 individuals, although the number can be different depending on the funding available and on the method of choosing panel members. In this project the limits of selecting a restricted stakeholder panel, such as STAR-IDAZ consortium partners, will be overcome by an online validation of criteria by a large number of experts. The panel can work with all members together in a single workshop or different subgroups can be organised, usually of 3 to 5 members, allowing for more concentrated efforts or specialised opinions on specific topics. However, this depends on the time and the financial resources available. It is worth noting the importance of the selection of the chairperson for the panel. Choosing a person well known and respected by all the participants will be a motivating factor for other members of the panel. Furthermore, good team leadership and project management skills, as well as the political acumen to deal with sponsor and stakeholder organisations are considered essential. The chair should encourage the expression and discussion of diverse points of view. If disagreements arise, these should be highlighted rather than obfuscated.

In the second phase of priority setting, a large number of experts can be elicited through an online vote. In this case the number of panel members need not be limited and several viewpoints can be brought together freely. The selection of the team for priority setting is very important in order to achieve a mixed composition of participants and thus a balance between stakes, views and scientific disciplines. The expert panel in particular must be perceived as technically qualified and even-handed, so that the exercise can achieve authority, credibility, and legitimacy. As the priorities are different from each stakeholder's point of view, it is important to select people from different levels (e.g., international, national and district levels), different geographical areas, and different fields of expertise (e.g., scientific, management, economic, political, etc.). Furthermore, to ensure equity among stakeholders, there is also a need for balancing the private sector (i.e., breeders' associations, pharmaceutical industries and professional veterinary health associations) with the public sector (e.g., ministries officers and service providers). To identify priorities for animal health research needs, it is advisable to choose from at least three categories of participants (see Table 2): researchers, decision makers, and research users (veterinary public health officers, breeders, and consumers). Each of these groups will have a different perception of the most urgent issues, e.g.:

- Researchers will focus on scientific issues (mainly on the disciplines of their own interest) and on the research trends of developed countries
- Decision makers will focus on issues of major concern for public health and on public opinion

- Research users (veterinary public health officers, veterinarians, breeders and consumers) will focus on the practical and economic problems of livestock breeding systems and animal health matters

Through the online survey for expert identification launched by WP5 in August 2013, a long list of candidates can be generated that key stakeholders can then work to shorten. This process is very important, as having experts acceptable to the key stakeholders is fundamental if the goal is to have an impact on policy. It is also important to guarantee minority perspectives.

Once the lists are agreed upon, the experts need to be contacted and their willingness to participate determined. To elicit expert involvement, all the information about the key tasks the time and effort required should be provided at the first contact.

TABLE 2: FUNCTIONS AND ROLES OF DIFFERENT STAKEHOLDERS

Main kind of stakeholder	Principal stakeholder type	Kind of input
Funders	NGOs Research agency Ministry Research networks	<ul style="list-style-type: none"> • Mobilise fund in accordance with the priority research area • Provide national and international perspectives
Researchers	Government agencies Universities Industries	<ul style="list-style-type: none"> • Technical and ethical reviews • Evaluate the scientific relevance of the research area • Avoid research duplications
Users	Veterinary public health services Private practice veterinarians Breeders Consumers	<ul style="list-style-type: none"> • Provide societal perspectives • Evaluate the urgency of the problems • Determine the applicability of the research outcomes

ELEMENTS FOR PRIORITY SETTING

Any priority setting exercise should start from the analysis of the current situation. It is in fact important to combine analytic data with the perceptions of participants. It should be specified that participants should act as individuals rather than supporting the views held by their own organisations and their analysis should be based upon sound data about the past and present and real trends, not upon their own (or their organisations') wishes about the future. For this reason, it will be important to furnish the participants with information on the analysis of the current situation and trends. This information will promote broader thinking and help identify an approach that is focussed on to the reality of the moment.

Information should be made available on the current status of animal health and on the animal health research system, and participants should be encouraged to access this information. Analysis of the current situation will be provided using information from any source available; these might include the analysis of WP2 and WP3, the main international databases such as WHAID, FAO-stat, DISCONTTOOLS, and literature reviews. Participants should have access to:

- Statistics on worldwide animal health status
- Statistics on the animal production
- The main programmes on animal health currently in progress
- Infrastructures available around the globe
- Gaps in animal health research
- Sector reviews of the main fields to be considered, as in a STEEP analysis

SELECTION OF RESEARCH AREAS TO PRIORITISE

WP3 of the project will furnish the areas to prioritise according to its aim of establishing the priorities for evidence and research needs of partners over the next 2 to 5 years, taking into account the probability of the global/regional spread and economic impact of particular diseases by using OIE reports and the outcomes of the EMIDA and DISCONTTOOLS projects. This will be based upon a matrix approach, considering the following issues:

1. 'Safe Trade': diseases and risks associated with trade in livestock – regulated and non-regulated trade. Taking into account national, regional and global contexts;
2. Disease categories (including zoonotics): viral, bacterial, parasitic, and other (e.g., prion) diseases, taking into account a livestock sector approach.

A broad list of research areas to be prioritised will also be categorised from WP5 once the information on trends and perceptions in the 40 countries (see Figure 2) participating in the project has been received. This information will come from the four different foresight studies conducted for the main pan-regions of the STAR-IDAZ project:

- Africa and the Middle East
- The Americas
- Asia and Australasia
- Europe

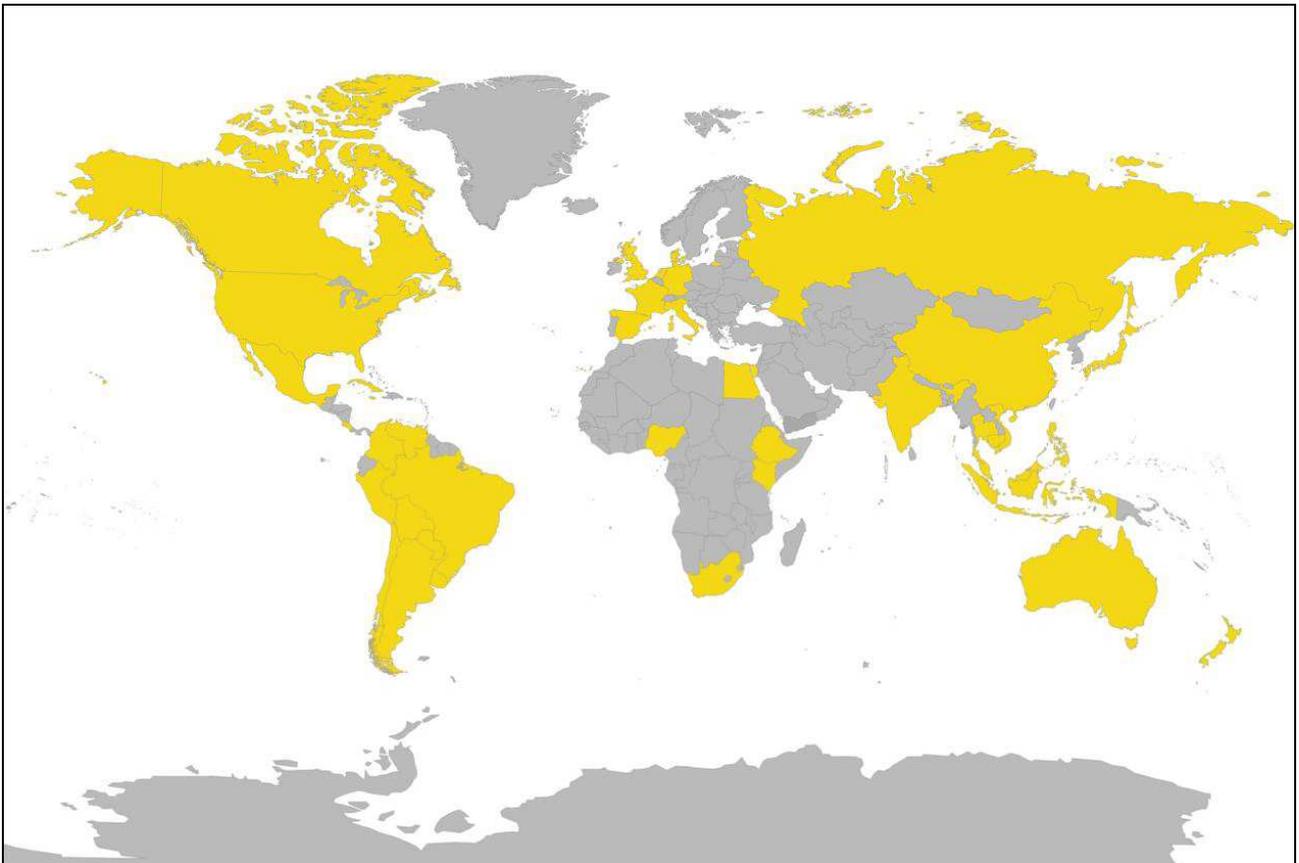


FIGURE 2: COUNTRIES PARTICIPATING IN THE STAR-IDAZ PROJECT (WP2 IMAGE)

The research areas will be clustered and for each cluster a list of main thematic issues will be defined. The list of specific research areas together with the specific topics will be validated through consensus from the leadership of the project.

CRITERIA FOR PRIORITY SETTING

Research priorities will be established in a four-step process:

- Selection of criteria for research areas
- Selection of priority areas of research
- Selection of criteria for specific research topics
- Selection of priority topics for each selected research area

Once the list of research areas to prioritise is available, it will be possible to define the criteria most appropriate for prioritisation. This step will be very important in order to obtain results agreed upon by the different stakeholders, and this is the reason why the criteria need to be validated by the stakeholders themselves. The selection of criteria for prioritisation can be restricted to a panel of stakeholders, while the validation of criteria and the prioritisation can be done through online voting. This method allows the attainment of the best consensus, as it includes a larger list of participants.

SELECTION OF CRITERIA FOR RESEARCH AREAS

The first step of criteria selection for priority setting will be carried out in the Mexico workshop (October 2013). Before starting the prioritisation exercise in the workshop, the participants need to be briefed on the task and on the composition of the panel. Three tasks will be assigned to the participants.

First, they will be asked to comment on the criteria listed and add new criteria if they think it useful; in this way, new ideas for prioritisation criteria can be collected from participants.

Second, they will be asked to advise on the criteria in terms of priority, assigning a score for each criterion listed using a 5-point scale (1 = not important, and 5 = highly important).

Third, the participants will be asked to select/list criteria which they think could be important for discarding certain research areas, such as those which could raise ethical issues.

The list of criteria to be furnished to the experts for prioritisation could be the following:

1. Adequacy and usefulness of the current knowledge base
2. Impact on animal welfare

3. Applicability of the research outcome
4. Availability of cost-effective interventions
5. Capacity of research maintenance
6. Capacity of the system to carry out the research
7. Consumer demands
8. Cost benefit
9. Economic impact
10. Environmental health impact
11. Equity focus
12. Ethical and moral issues
13. Feasibility
14. Funding support
15. Impact on animal health and development
16. Innovativeness
17. International trade impact
18. Legal aspect
19. Magnitude of the problem
20. Operational effectiveness
21. Partnership building
22. Political will
23. Public health impact
24. Potential for building research capacity
25. Responsiveness to national guidelines
26. Socio-political effects
27. Urgency

Once the criteria have been weighted by the stakeholders, the less important criteria will be discarded and the others will be grouped into a few representative categories by a restricted panel of persons or

by a technical panel of WP5. The priority setting working group of COHRED advises that only a manageable list of criteria should be taken into account; this list should not be longer than six or seven points. This limited number of relevant criteria prevents the priority exercise from becoming too time-consuming. An example of these groupings could be:

- Magnitude and urgency of the problem in relation to current animal health status or demands
- Relevance of the research in relation to current research gaps or technical innovation
- Possibility of conducting the research in relation to financial, technical, legal, and human constraints
- Impact of the research outcomes on the animal health sector, consumer habits, and economics

In any case, the selection of the final criteria will depend on the decisions of the participants. The panel should also agree on the weight given to each criterion and the methods for combining results, which could be a simple addition of scores or a matrix method. A technical group of WP5 will summarise the results of the workshop into a brief grid, such as a ready-to-use module for prioritisation of animal health research areas to facilitate criteria validation during online survey 1.

SELECTION OF PRIORITY AREAS OF RESEARCH

Once the criteria has been set in the workshop and validated online by experts, the prioritisation exercise can be executed online by a broad selected panel of experts. When collecting authorisation for participation in the online survey, it should be specified that responses will be kept anonymous and participation is voluntary. The participants will be asked at first to decide if any research area needs to be discarded based on criteria set in the workshop, and then to score each criterion for each selected area of research (see Table 4) using the scoring system agreed in the Mexico workshop.

TABLE 3: EXAMPLE OF POSSIBLE SCALES FOR RATING RESEARCH AREAS

<i>Criteria</i>	<i>Score system</i>
<i>Magnitude and urgency</i>	1. Research not urgently needed 2. Research could be used now but delay would be acceptable 3. Research urgently needed
<i>Relevance of the research</i>	1. Not relevant 2. Relevant 3. Very relevant
<i>Possibility of conducting the research</i>	1. Research not feasible considering the actual resources 2. Research feasible 3. Research very feasible
<i>Impact of the research outcomes</i>	1. Low impact 2. Medium impact 3. High impact

SELECTION OF CRITERIA FOR SPECIFIC RESEARCH TOPICS

Once the areas of research have been selected, a further division of the selected areas of research can be made, in order to decide on which issues the research should focus more. These issues will be different for each research area or at least for the kind of research needed. A list of these topics will be advised at the moment of clustering the areas of research and discussed and finalized in the Moscow workshop (June 2014). An example of issues for a disease-centred biomedical area could be the following:

1. Epidemiology and risk assessment
2. Improved disease knowledge and host-pathogen interactions
3. Biosecurity measures and education
4. Development of vaccines
5. Improvement of diagnostic tools
6. Improvement of therapeutic tools
7. Surveillance
8. Service delivery and organisation

After the workshop the criteria for the different areas of research will be summarised by a technical group of WP5.

SELECTION OF PRIORITY TOPICS FOR RESEARCH AREAS

As for the selection of priority areas, the selection of topics for each priority area will be validated by an on-line survey by experts, which in this case could be selected for their field of expertise.

After the validation, the main topics for the most interesting area of research can be prioritised by a second survey administered to the experts, using the scoring system which will be agreed in the Moscow workshop.

The large body of information collected could be organized using a modified combined approach matrix (CAM) table which summarises the problems in the area of research and the stakeholders' concerns. Table 3 represents only an example, as the topics of research may be differently summarised by the participants.

TABLE 4: EXAMPLE OF TABLE FOR CAM TO BE USED FOR THE SELECTED AREA OF RESEARCH

Stakeholder													
Specific issues		Africa & Middle East			Americas			Asia & Australasia			Europe		
		Users	Researchers	Policy makers & funders	Users	Researchers	Policy makers & funders	Users	Researchers	Policy makers & funders	Users	Researchers	Policy makers & funders
	Epidemiology and risk assessment												
	Improved disease knowledge and host-pathogen interactions												
	Biosecurity measures and education/guidelines												
	Development of vaccines												
	Improvement of diagnostic tools												
	Improvement of therapeutic tools												
	Surveillance												
	Service delivery and organisation												

ANALYSIS OF THE RESULTS

WP5 will summarise the results of the prioritisation exercise conducted. The results will be validated by the leadership group of the project. The priorities selected will be utilised for developing a strategic research agenda for global animal disease research for the next 5 to 15 years.

CONCLUSION

This document outlines a method to perform the prioritisation of animal health research areas in a global context for the STAR-IDAZ project. Adjustments of the methods will be adopted step by step during the prioritisation exercise by the participants in order to make it a dynamic process capable of satisfying the purpose, the mandate, the culture, the capacity, and the resources of each stakeholder involved. It is fundamental to understand that despite the precaution of using a qualitative but analytical evidence-based method, due to the nature of the project and its objectives, there are limits to its outcome. The categorisation of animal health research areas will be based on trends perceived in different foresight studies around the globe; considering the differences that could have been used in methodology associated with the extreme variability of territories and needs, it may be difficult to express a single global priority vision shared by all participants. The goal of this activity is to define a set of priorities which can have the greatest possible impact in the greatest number of the areas. Some priorities will have only local relevance and may not appear in a global research agenda even if their relevance could be significant. In this case, a note will be made to advise research through local institutions. Moreover, the study will be able to provide a basis for global discussion, integrate different view points, and enhance interdisciplinary collaboration at a global level.

REFERENCES AND RECOMMENDED READINGS

1. ANDERSON, M., COSBY, J., SWAN, B., MOORE, H. and BROEKHOVEN, M., 1999. The use of research in local health service agencies. *Soc Sci Med*, 49, pp. 1007-1019.
2. BHIMJI, W., 2009. Guidance on the use of strategic futures analysis for policy development in government. *Foresight Horizon Scanning Centre, London*.
3. BLACK, N., 1997. National strategy for research and development: lessons from England. *Annu Rev Public Health*, 18, pp. 485-505.
4. CLAVISI, O., BRAGGE, P., TAVENDER, E., TURNER, T. and GRUEN, R.L., 2013. Effective stakeholder participation in setting research priorities using a Global Evidence Mapping approach. *Journal of clinical epidemiology*, 66(5), pp. 496-502.
5. COHRED, 2006-last update, Priority Setting for Health Research: Toward a management process for low and middle income countries. ISBN 92-9226-008-1. Available at: <http://www.healthresearchweb.org/files/COHREDWP1PrioritySetting.doc>
6. COHRED, 1997-last update, Essential National health Research and Priority setting: lessons learned. Document n° 97.3. Geneva. Pages 66. Available at: <http://www.cohred.org/downloads/586.pdf>
7. COHRED, 1990. Health Research: Essential Link to Equity in Development. ISBN 0.19-520838-2. *New York, Oxford University Press*, , pp. 157.
8. COHRED, The priority setting process: practical steps. Available at: http://sicar.csuca.org/attachments/125_the%20priority%20setting%20process.pdf
9. COHRED WORKING GROUP ON RESEARCH TO ACTION, AND POLICY, 2000-last update, Lessons in Research to Action and Policy - Case Studies from Seven Countries. Document n°2000.10. Available at: <http://www.cohred.org/downloads/696.pdf>
10. COHRED, O., DAVID and CHONGTRAKUL, P., 2000-last update, A manual for research priority setting using the ENHR strategy. Geneva. Document N°2000.3. pages 47 [Homepage of Council on health research for development (COHRED)].
11. COX, R., SANCHEZ, J. and REVIE, C.W., 2013. Multi-Criteria Decision Analysis Tools for Prioritising Emerging or Re-Emerging Infectious Diseases Associated with Climate Change in Canada. *PloS one*, 8(8), pp. e68338.
12. DE LATTRE-GASQUET, M., 2006. The use of foresight in setting agricultural research priorities. *Science and Technology Policy for Development: Dialogues at the Interface*, pp. 191.
13. DEFRA, 2010-last update, ARCHIVE: Veterinary surveillance: Prioritisation Project. Available at: <http://archive.defra.gov.uk/foodfarm/farmanimal/diseases/vetsurveillance/strategy/programme/prioritisation.htm>
14. DISCONTTOOLS, 2012-last update, Approaches to the prioritisation of diseases to focus and prioritise research in animal health: A worldwide review of existing methodologies. Available at: <http://www.discontools.eu/upl/1/default/doc/WP%20%20Prioritisation%20Review%20Paper%20Final%2020120930.docx>
15. DISCONTTOOLS, 2011-last update, Prioritising research to control animal diseases more effectively. Available at: http://www.bft-online.de/fileadmin/bft/publikationen/DISCONTTOOLS_Brosch%C3%BCre.pdf
16. EMIDA ERANET, 2011-last update, Strategic research agenda- 10-15 year outlook. Available at: <http://www.emida-era.net/upload/pdf/EMIDA%20SRA%20final%2020111227.pdf>
17. HORIZON SCANNING CENTRE, 2008-last update, Exploring the future: Tools for strategic thinking. Available at: <http://hsctoolkit.bis.gov.uk/Other-sources-and-toolkits.html>

18. HUMBLET, M., VANDEPUTTE, S., ALBERT, A., GOSSET, C., KIRSCHVINK, N., HAUBRUGE, E., FECHER-BOURGEOIS, F., PASTORET, P. and SAEGERMAN, C., 2012. Multidisciplinary and Evidence-based Method for Prioritizing Diseases of Food-producing Animals and Zoonoses. *Emerging infectious diseases*, 18(4), pp. e1.
19. INSTITUTE FOR ALTERNATIVE FUTURES, 2013 , Methods. Available at: <http://www.altfutures.com/methods>.
20. JRC EUROPEAN COMMISSION, 2007-last update, The FOR-LEARN Online Foresight Guide. Available at: http://forlearn.jrc.ec.europa.eu/guide/0_home/index.htm.
21. LANSANG, M., NEUFELD, V., NUYENS, Y., BARIS, E., DIALLO, B., FIGUEROA, P., SHRESTHA, M., PAULINO, R., RAYMUNDO, C. and TAN-TORRES, T., 2000. Priority setting for health research: lessons from developing countries. *Health policy and planning*, 15(2), pp. 130-136.
22. MORE, S.J., MCKENZIE, K., O'FLAHERTY, J., DOHERTY, M.L., CROMIE, A.R. and MAGAN, M.J., 2010. Setting priorities for non-regulatory animal health in Ireland: results from an expert Policy Delphi study and a farmer priority identification survey. *Preventive veterinary medicine*, 95(3), pp. 198-207.
23. NIH- Institute of Medicine (US) Committee on the NIH Research Priority-Setting Process. Scientific Opportunities and Public Needs: Improving Priority Setting and Public Input at the National Institutes of Health. Washington (DC): National Academies Press (US); 1998. 2, Criteria for Priority Setting. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK45361> .
24. NOORANI, H.Z., HUSEREAU, D.R., BOUDREAU, R., SKIDMORE, B., BANTA, D., ANDREASEN, P., BOROWSKI, H., BOROWSKI, H., CARLSSON, P. and CHASE, D., 2007. Priority setting for health technology assessments: a systematic review of current practical approaches. *International Journal of Technology Assessment in Health Care*, 23(3), pp. 310-315.
25. NUYENS, Y., 2007. Setting priorities for health research: lessons from low-and middle-income countries. *Bulletin of the World Health Organization*, 85(4), pp. 319-321.
26. OIE, 2010-last update, Listing and Categorisation of Priority Animal Diseases, including those Transmissible to Humans. Mission Report. Available at: [http://www.oie.int/fileadmin/Home/eng/Support to OIE Members/docs/ppt/OIE study_prio-ori-catego_mission_report.pdf](http://www.oie.int/fileadmin/Home/eng/Support%20to%20OIE%20Members/docs/ppt/OIE_study_prio-ori-catego_mission_report.pdf).
27. STAR-IDAZ, 2011-last update, Promoting coordination and cooperation at international level of research programmes in the area of animal health, in particular infectious diseases including zoonoses. Available at: [http://www.star-idaz.net/wp-content/uploads/2011/11/STAR-IDAZ_265919 - DoW - 2011-04-281.pdf](http://www.star-idaz.net/wp-content/uploads/2011/11/STAR-IDAZ_265919_-_DoW_-_2011-04-281.pdf) .
28. VIERGEVER, R.F., OLIFSON, S., GHAFAR, A. and TERRY, R.F., 2010. A checklist for health research priority setting: nine common themes of good practice. *Health Res Policy Syst*, 8, pp. 36.
29. WHO AD HOC COMMITTEE ON HEALTH RESEARCH RELATING TO FUTURE,INTERVENTION OPTIONS, 1996. Investing in Health Research and Development. *World Health Organization, Geneva*.

APPENDIX I

CRITERIA FOR THE SELECTION OF PARTICIPANTS

TABLE 5: SUMMARY OF CRITERIA FOR THE SELECTION OF PARTICIPANTS

	a) Stakeholder group	b) Geographical area	c) Disciplines
Experts for the on-line consultation	<p>-The maximum amount of stakeholders</p> <p>-All stakeholder groups should be represented such as:</p> <ul style="list-style-type: none"> ○ Type: <ul style="list-style-type: none"> • Funders • Researchers • Users (VS, veterinarian, breeders, consumers) ○ Level <ul style="list-style-type: none"> • International • National • Local ○ Sector: <ul style="list-style-type: none"> • Public • Private 	<p>-All the geographical areas need to be represented</p> <p>-Balance, as much as possible, among the 4 pan-regions: Africa & Middle East Americas Asia & Australasia Europe</p>	<p>-The maximum amount of experts from all the disciplines:</p> <p>Agro-economy Animal disease Animal genetics Animal welfare Antimicrobial resistance Aquaculture/Fish diseases Bacteriology Bioterrorism Climatology Communication/Sociology Criminology, fraud Ecology/Nature Conservation Entomology Epidemiology Feed Foresight studies GIS/ DB Engineering/ ICT Architect Immunology Infectious diseases of Livestock Parasitology Research management Risk analysis Toxicology Vaccine Manufacturer Veterinary Public Health Virology Wildlife Zoonosis</p> <p>-Balance, as much as possible, among disciplines</p> <p>-The involvement of multi-sector experts will be an asset</p>