icrad
International coordination of research on infectious animal diseases

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SRIA: methodology

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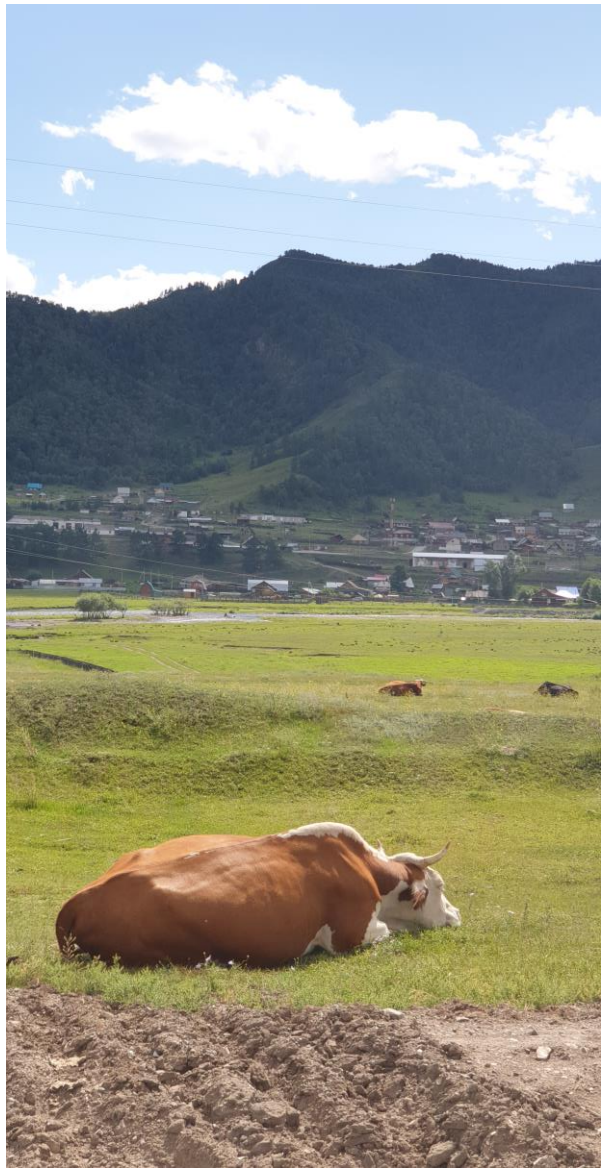
In collaboration with **EUPAHW core group**, Coordinator Hein Imberechts (Sciensano, Be) and WGs experts.



1. Establishment of a Working Group in charge of the SRIA process
2. Identification of R&I priorities through a desk study
3. Online prioritization of the identified research and innovation needs
4. Consultation 1: Industry Sector
5. Drafting of the SRIA
6. Consultation 2: EUP AH&W Experts
7. Consultation 3: Workshop
8. Consultation 4: Open Consultation

Step 1: Establishment of a Working Group in charge of the SRIA process

A Working Group (WG) was established, comprising of representatives from the ICRAD WP6 leaders, main contributors to Task 6.2 in close consultation with the EUP AH&W core group. The team defined the methodology, delivery plan and timeframe by devising an Action Plan, then proceeded to implement the tasks.

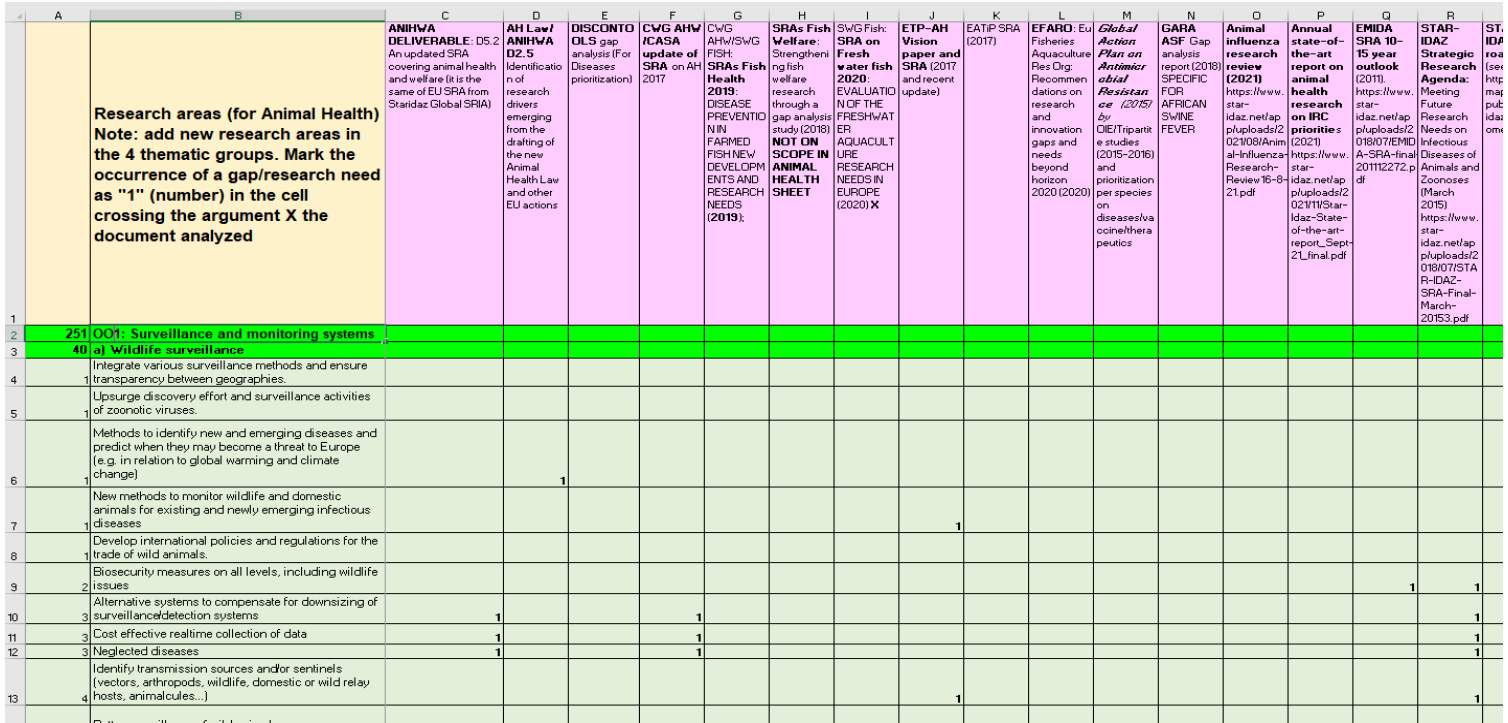
Step 2: Identification of R&I priorities through a desk study

Phase A: Compilation of existing strategic documents on animal health and welfare.

The WG, in collaboration with representatives from other European initiatives generated a list of **43 literature related to animal health and welfare** R&I. The documents were selected based on their relevance and focus on international priorities (EU or global), as opposed to regional/national priorities or personal opinions, with a particular emphasis on reports produced by EU institutions or international bodies/advisory groups.

Phase B: Literature review and identification of research and innovation needs.

During this phase the WG reviewed the collected literature, distilling R&I needs. An Excel spreadsheet tool was developed to capture the research needs identified, track sources and produce the first quantitative data.

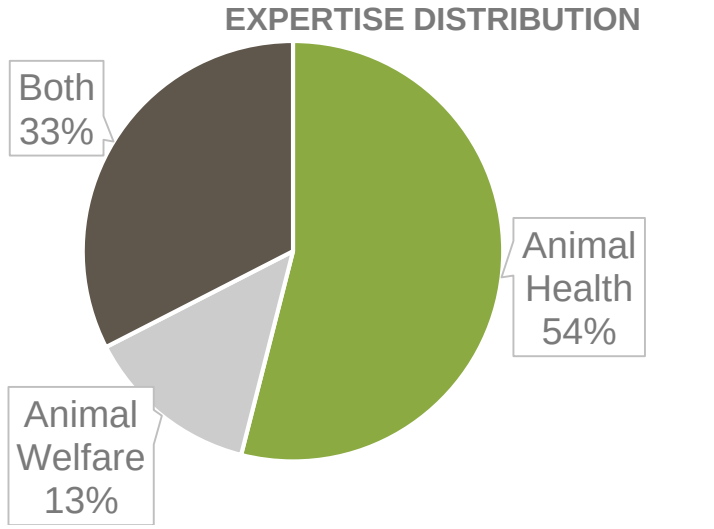


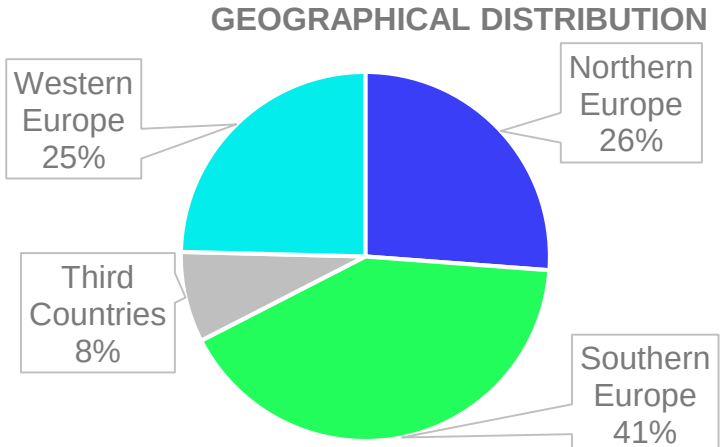
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1		**Research areas (for Animal Health) Note: add new research areas in the 4 thematic groups. Mark the occurrence of a gap/research need as "1" (number) in the cell crossing the argument X the document analyzed**	**ANIHWA DELIVERABLE**: D5.2 An updated SRA covering animal health and welfare (it is the same of EU SRA from Staridaz Global SRIA)	**AH Law/ ANIHWA D2.5** Identification of research drivers emerging from the drafting of the new Animal Health Law and other EU actions	**DISCONTOOLS** gap analysis (For Diseases prioritization)	**CWG AHW /CASA update of SRA** on AH 2017	CWG AHW/SWG FISH: **SRAs Fish Health 2019**: DISEASE PREVENTION IN FARMED FISH NEW DEVELOPMENTS AND RESEARCH NEEDS **(2019);**	**SRAs Fish Welfare**: Strengthening fish welfare research through a gap analysis study (2018) **NOT ON SCOPE IN ANIMAL HEALTH SHEET**	SWG Fish: **SRA on Fresh water fish 2020**: EVALUATION OF THE FRESHWATER AQUACULTURE RESEARCH NEEDS IN EUROPE (2020) **X**	**ETP-AH Vision paper and SRA** (2017 and recent update)	EATiP SRA (2017)	**EFARO**: Eu Fisheries Aquaculture Res Org: Recommendations on research and innovation gaps and needs beyond horizon 2020 (2020)	***Global Action Plan on Antimicrobial Resistance*** *(2015) by* OIE/Tripartite studies (2015-2016) and prioritization per species on diseases/vaccine/therapeutics	**GARA ASF** Gap analysis report (2018) SPECIFIC FOR AFRICAN SWINE FEVER	**Animal influenza research review (2021)** https://www.star-idaz.net/app/uploads/2021/08/Animal-Influenza-Research-Review 16-8-21.pdf	**Annual state-of-the-art report on animal health research on IRC priorities** (2021) https://www.star-idaz.net/app/uploads/2021/11/Star-Idaz-State-of-the-art-report_Sept-21_final.pdf	**EMIDA SRA 10-15 year outlook** (2011). https://www.star-idaz.net/app/uploads/2018/07/EMIDA-SRA-final-201112272.pdf	**STAR-IDAZ Strategic Research Agenda:** Meeting Future Research Needs on Infectious Diseases of Animals and Zoonoses (March 2015) https://www.star-idaz.net/app/uploads/2018/07/STAR-IDAZ-SRA-Final-March-20153.pdf	**STA IDA roa** (see http map pub idaz ome
2	**251**	**OO1: Surveillance and monitoring systems**																	
3	**40**	**a) Wildlife surveillance**																	
4	1	Integrate various surveillance methods and ensure transparency between geographies.																	
5	1	Upsurge discovery effort and surveillance activities of zoonotic viruses.																	
6	1	Methods to identify new and emerging diseases and predict when they may become a threat to Europe (e.g. in relation to global warming and climate change)		1															
7	1	New methods to monitor wildlife and domestic animals for existing and newly emerging infectious diseases								1									
8	1	Develop international policies and regulations for the trade of wild animals.																	
9	2	Biosecurity measures on all levels, including wildlife issues															1	1	
10	3	Alternative systems to compensate for downsizing of surveillance/detection systems	1			1												1	
11	3	Cost effective realtime collection of data	1			1												1	
12	3	Neglected diseases	1			1												1	
13	4	Identify transmission sources and/or sentinels (vectors, arthropods, wildlife, domestic or wild relay hosts, animalcules...)								1								1	

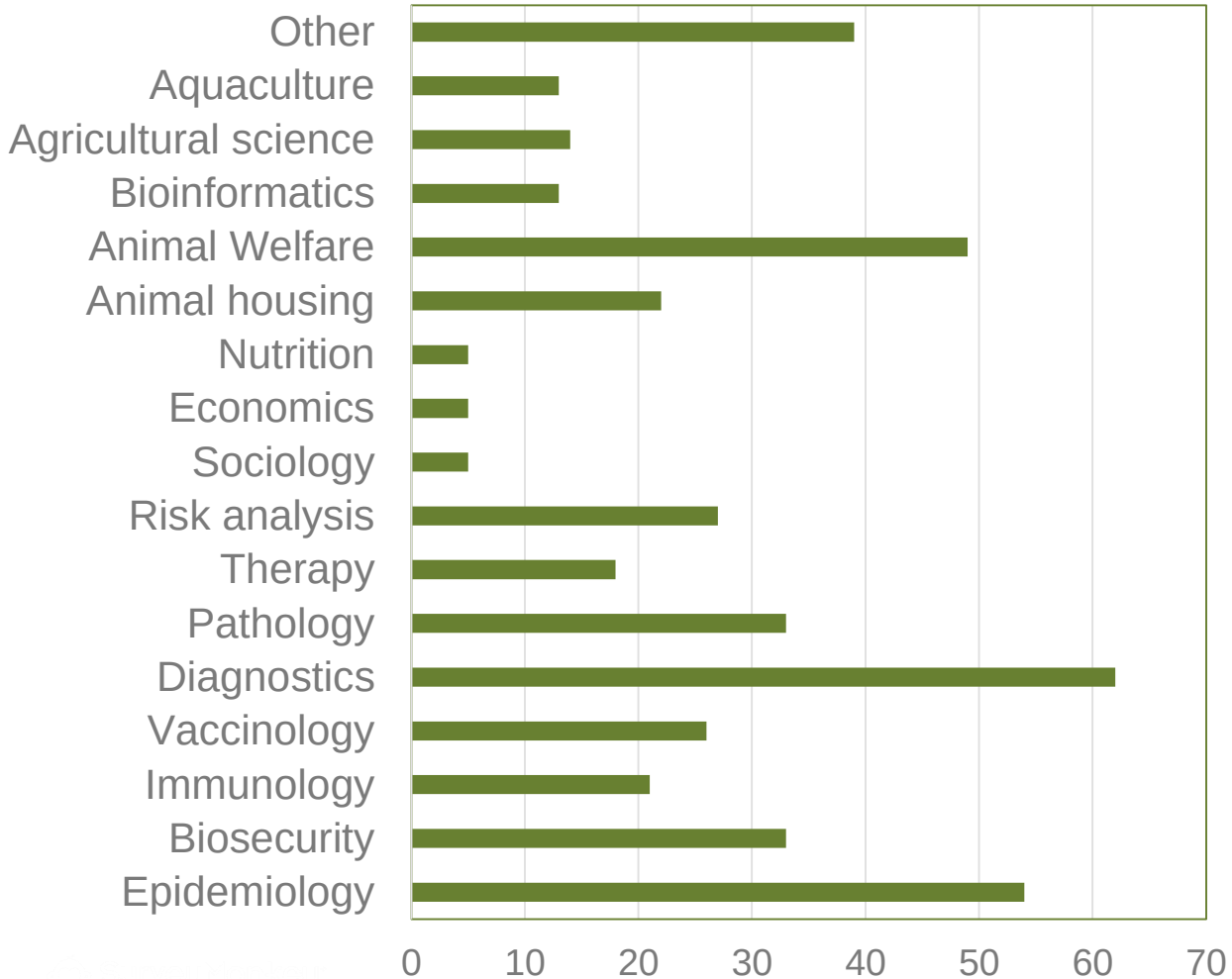
Step 3: Online prioritization of the identified research and innovation needs

A survey was used to consult European animal health and welfare experts on the research needs highlighted through the previously explained desk study. A broad range of experts from different AH and AW related fields were invited to prioritize the identified R&I needs within the thematic categories identified in the desk study + in OOs from the dossier.

460 invitations were sent. Respondents were asked to score each research need for importance, on a 1 to 7 scale, and urgency, on a 1 to 3 scale. Responders were permitted to answer "I don't know" or skip questions entirely, and to offer written comment and suggestion additional research priority gaps, for consideration in the final analysis of the survey.







Analysis of online survey results

The results of the survey were analyzed using MSOffice Excel®. “I don't know” responses and skipped questions were ignored during the analysis and are not counted for statistical purposes. Expert comments in open questions were considered as qualitative data. For multiple choice questions a mean was applied as a statistical tool, separately for importance and urgency. Bessel correction was applied to estimate sample standard deviation.

R&I priorities ranking and alignment with the EUP AH&W Operation Objectives

Actions	Research Needs	Importance score	Urgency score
Action 1. Optimize and extend to other countries current surveillance systems for animal health and zoonotic infections and to develop new ones where needed	**Fundamental Research for Surveillance** - Increase investigations at the human-animal interface of diseases and by increase engagement in networking (One Health approach)	5,97	2,39
	Fundamental Research for Surveillance - Improvement of preparedness for emerging and exotic diseases	5,95	2,54
	Fundamental Research for Surveillance - Identify transmission sources and/or sentinels for animal diseases (vectors, arthropods, wildlife, domestic or wild relay hosts, animalcules...)	5,89	2,43
	Fundamental Research for Surveillance - Better understanding of the effect of extreme weather and ecosystem changes on vector-borne diseases occurrence and transmission	5,73	2,51
	Development of new tools and technologies - Develop methods/tools for the design of efficient surveillance systems for early warning, early detection, monitoring of pathogen diversity, frequency and animal health implications	5,98	2,50
	Development of new tools and technologies - Develop optimised terrestrial and aquatic wildlife disease surveillance and reporting systems, including methods, systems and harmonisation for assessment of wildlife populations and demography	5,36	2,11
	Development of new tools and technologies - Progress alternative methods to control vectors: integrated pest management, biological control, genetically modified insects/improving networking with the human and environment sectors	5,15	2,10
	Development of new tools and technologies - Develop animal identification technologies and systems for traceability of animals and their products for disease prevention, control and emergency management	4,93	1,99
	Development of new tools and technologies - Elaborate alternative systems to compensate for downsizing of surveillance/detection systems	4,51	1,73
	Communication - Integrate various surveillance methods and ensure transparency between geographies	5,78	2,33
	Communication- Integrate animal health surveillance systems of different sources	5,78	2,35
Action 2. Set up a European wildlife network (both terrestrial and aquatic	**Fundamental Research for Surveillance** - Increase investigations at the human-animal interface of diseases and by increase engagement in networking (One Health approach)	5,97	2,39

Step 4: Early stakeholder consultation (Focus Group)

To develop the SRIA in an open and participatory manner, the WG planned to consult a broad set of stakeholders in order to make the agenda more responsive to their needs and ensure their interest and commitment. The majority of respondents to the survey were researchers form academia and research centers, the next step it was fundamental to seek input from industries and EU associations:

Action	Research Needs: 1-2 years	Research Needs: 3-5 years	Research Needs: 5 years +
Action 1. Optimize and extend to other countries current surveillance systems for animal health and zoonotic infections and to develop new ones where needed	Improvement of preparedness for emerging and exotic diseases	Increase investigations at the human-animal interface of diseases and by increase engagement in networking (One Health approach)	Develop optimised terrestrial and aquatic wildlife disease surveillance and reporting systems, including methods, systems and harmonisation for assessment of wildlife populations and demography
	Identify transmission sources and/or sentinels for animal diseases (vectors, arthropods, wildlife, domestic or wild relay hosts, animalcules…)	Integrate various surveillance methods and ensure transparency between geographies	Progress alternative methods to control vectors: integrated pest management, biological control, genetically modified insects/improving networking with the human and environment sectors
	Better understanding of the effect of extreme weather and ecosystem changes on vector-borne diseases occurrence and transmission	Integrate animal health surveillance systems of different sources	Develop animal identification technologies and systems for traceability of animals and their products for disease prevention, control and emergency management
	Develop methods/tools for the design of efficient surveillance systems for early warning, early detection, monitoring of pathogen diversity, frequency and animal health implications		Elaborate alternative systems to compensate for downsizing of surveillance/detection systems
Action 2. Set up a European wildlife network (both terrestrial and aquatic animals), based on existing wildlife disease surveillance and reporting systems, to coordinate and expand their activities, to analyse wildlife populations in Europe, and to analyse what specific data with reference to potential threat to animals and humans are needed.	Identify transmission sources and/or sentinels for animal diseases (vectors, arthropods, wildlife, domestic or wild relay hosts, animalcules…)	Increase investigations at the human-animal interface of diseases and by increase engagement in networking (One Health approach)	Improved understanding of the role of wildlife-livestock interactions
	Better understanding of the effect of extreme weather and ecosystem changes on vector-borne diseases occurrence and transmission	Animal welfare risk-assessment related data sharing and networking among research centres	Develop optimised terrestrial and aquatic wildlife disease surveillance and reporting systems, including methods, systems and harmonisation for assessment of wildlife populations and demography
	Develop methods/tools for the design of efficient surveillance systems for early warning, early detection, monitoring of pathogen diversity, frequency and animal health implications	Study the role of wildlife reservoirs for a number of diseases which might impact on human and animal health (transmission parameters study, effect of biosecurity measures, wildlife-livestock interactions, physical barriers etc.)	Progress alternative methods to control vectors: integrated pest management, biological control, genetically modified insects/improving networking with the human and environment sectors
		Integrate animal health surveillance systems of different sources	
		Build a European wildlife network (both terrestrial and aquatic animals) based on existing wildlife disease surveillance and reporting systems	
Action 3. Create networks that bring together bio-informatics and epidemiology, to harmonise metagenomic data and data collection methods, to integrate genomic, clinical and epidemiological data, applicable to both livestock/aquaculture and wildlife.	Progress prediction methods to identify new and emerging diseases and when they may become a threat to Europe in relation to international trade, global warming and climate change (e.g. new diseases, transboundary and vector borne diseases)	Progress analysis tools that integrate genomic, clinical and epidemiological data into risk assessment, early detection and disease spread models, including creation of network that bring together bio-informatics and epidemiology applicable to both livestock /aquaculture and wildlife	Develop tools and systems for syndromic surveillance

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Step 5: Drafting the SRIA

- An advanced draft of SRIA was produced for the end of September 2022.
- On line consultation of scientific experts on October 2022.
- **Amend of the draft according to the remarks of experts**.
- **Workshop consultation: 10 November 2022**

Main amendments regarded:

- **Request of clarification on methodology**: i.e. *What* is the *desk study? How have been developed the Survey? Consultation step?*

- **Rephrasing of R&I needs**: i.e.*" monitoring and surveillance to emerging, exotic diseases and enzootic production diseases and (further) development of models to predict clinical outbreaks and production limiting infection levels." ; AW Diagnostic "...at pre-slaughter phase including stunning methods"*

- **Specific suggestions on Action (better description or integration)**: i.e. *"Animal Health – Diagnostic, Action 6: Development of digital toolboxes that centralize all diagnostic data coming from local laboratories in real time and directly send the information to responsible authorities…(development of diagnostic dashboard)"; "Experts in virology, bacteriology and parasitology should be added in Action4"; "Networking needs to be integrated into existing operational networks*".

- **Better and more balanced alignment between AH and AW**: i.e. "*OO3 Action 6: Assessment of welfare needs specific indicators….*"; *"it is important to investigate interactions between animal health/disease and animal welfare (comments on OO1)"; "animal welfare is overrepresented (e.g., OO1, OO4, OO10), especially since improvement of animal health often also has an indirect positive effect on animal welfare*".

- **Suggestions for specific work areas**: i.e. "*Aquaculture needs to be inclusive of algae and shellfish*"; "*Problem related to cascade use of antimicrobials/regulatory…*"; "Risk analysis"; "Climate change impacts"; "Education of vet for future"; "Communication (at any level)".

- **General indication on overlapping and repetitions**

Thanks for your attention

Enjoy the Workshop!