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## BACKGROUND INFORMATION FOR REVIEWERS

Thank you for taking part in the peer-review of the methodological protocol developed by the selected expert working group to answer the Eclipse request on “Biodiversity and pandemics”. The request aims to explore the following topic: Building on existing relevant work on research agendas and knowledge gap analysis, identifying interdisciplinary research and action priorities, that contribute to a strategic research agenda on Biodiversity and pandemics addressing the critical interlinkages between relevant sectors needed to make future actions more effective.

The form has two main parts: a “general comments” part, and a “comments by section” part where you can provide more specific comments to each section of the protocol. Where possible, please provide page and line numbers so that we can ensure we match your comments to the text.

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## ANSWERS FROM REVIEWERS

(ON THE FORM)

2.2 Is the text self-explanatory, free of jargon and easy to follow? If not, where do you see a need for language revision, or more clarity? Please specify page and line numbers if possible.

**Reviewer x1:** The text is self-explanatory and free of jargon as well as easy to follow

*RESPONSE: Thank you.*

**Reviewer x2:** Line 124 “Reporting Standards”, typo. Line 162 - line 188 (I do think that the methodology with regards to the Grey Literature searches, and Search language could be further clarified by creating a process chart.). It would be best to describe a bit more in detail with regards to the process for people based methods by sharing the online survey link or having the hyperlink for it for readers.

*RESPONSE: We have corrected the typo. We decided not to introduce the chart for the reasons of time saving to focus on the implementation of the method protocol.*

**Reviewer x3:** Overall the text is quite clear and well structured. For the most part, it is sufficiently detailed to give a good overview of the method and its organisation, also in its sequence. A couple of sentences need to be clarified: -sentence on line 197-200 -also in that section, is the pilot test mentioned on line 206 the same or a different one than mentioned just above? -item on lines 219-220 is oddly phrased: are the modifications affecting the environment, biodiversity, or disease? all three together? or biodiversity and disease through modifications of the environment? -item on lines 221-222 “on biodiversity and its consequence on human infectious disease” also not clear enough

*RESPONSE: Sentences corrected.*

**Reviewer x4:** The text is well elaborated and easy to follow.

*RESPONSE: Thank you.*

**Reviewer x5:** Yes, it's a well-spaced document

*RESPONSE: Thank you.*

**Reviewer x6:** yes

*RESPONSE: Thank you.*



### 2.3 Regarding the initial request made to Eklipse to answer policy-relevant needs for evidence related to “Biodiversity and Pandemics”, do you agree with the interpretation of and refinements to the request and the knowledge synthesis framework?

**Reviewer x1:** From my point of view I agree with this approach

*RESPONSE: Thank you.*

**Reviewer x2:** Yes, the knowledge synthesis framework has been defined in a clear manner and it describes about how the different fields are connected but I do feel that with the emergence and growing understanding of biomaterials, biopolymers it will become important that the processing impact for these materials is also being considered, since the manufacturing process, and waste streams from these can also impact on the “Biodiversity and Pandemics” in the long run.

*RESPONSE: We believe this topic is too specific, but we would like to invite the reviewer to the survey we describe in our protocol.*

**Reviewer x3:** Yes. The reformulation of the request highlights the important points of checking where there are knowledge gaps, but also wants to identify what are the missing interlinkages between sectors - with such a broad topic this is a major obstacle and it persists in today’s complex world. Also the ambition to make actions more effective is important. The objectives mentioned should help reach that target, with a few caveats detailed below

*RESPONSE: Thank you.*

**Reviewer x4:** I do agree.

*RESPONSE: Thank you.*

**Reviewer x5:** Yes

*RESPONSE: Thank you.*

**Reviewer x6:** The policy relevant needs seems to be to identify research agendas and recommendations for research as well as knowledge gaps on the topic. The review methods and search terms proposed could be more targeted or specific to address the policy relevant needs which have been identified. It is not an attempt at a systematic review of all data in the very general area of “biodiversity” and “pandemics” or “disease outbreaks” which is clearly not feasible even if desirable which I doubt. The apparent extensive attempts at establishing reliability and reproducibility assessments of the ensuing results may thus be unnecessary and take time and resource away from a more targeted approach to a review. For example, reviewing the programmes of funders may be an insightful way to identify agendas rather than reviewing a vast number of academic papers in general terms.



*RESPONSE: For the reasons of feasibility mentioned by the reviewer, we decided to carry out a scoping review instead of a full systematic review. This is necessary to identify knowledge gaps in the existing evidence to be addressed in people-based methods and provide a comprehensive summary of areas in need of further investigation backed by a robust evidence synthesis protocol.*

**2.4 Is the global methodological approach logical, well-formulated and appropriate? Please consider that the timetable of this knowledge synthesis is limited (to see the timeline, please go to page 16 of the Methods protocol).**

**Reviewer x1:** The methodological approach was well designed in relation to the expected results of the project

*RESPONSE: Thank you.*

**Reviewer x2:** Yes, based on the timetable, the knowledge synthesis is limited but could be expanded upon next year if funding is available.

*RESPONSE: Thank you.*

**Reviewer x3:** Most of my questions pertain to definitions of data to be extracted in the survey (not in the extent of data, considering time constraint but rather the exact definition of items extracted. Some sources would warrant a more specific definitions, and the pool of people to invite in the online survey maybe could be expanded somewhat.

*RESPONSE: Our list for the survey already includes 200 participants and will be expended.*

**Reviewer x4:** The approach is very concise and logical, however the timeline suggested for people-based methods might be tight - the surveys and especially interviews usually take longer to process.

*RESPONSE: Thank you.*

**Reviewer x5:** It's understandable and well organized.

*RESPONSE: Thank you.*

**Reviewer x6:** The methods are very exhaustive and general and could be more specific to particular policy needs.

*RESPONSE: Our goal is to address research policy needs, not general policy issues related to biodiversity and pandemics.*



## 2.5 Is the combination of methods proposed appropriate and justified?

**Reviewer x1:** The combination of these methods is very appropriate and with the related points of clarification

*RESPONSE: Thank you.*

**Reviewer x2:** Yes, the combination of methods proposed are appropriate and well thought of, especially with regards to how method development is going to take place by considering different experts. The current methods are well justified at this point.

*RESPONSE: Thank you.*

**Reviewer x3:** Yes

*RESPONSE: Thank you.*

**Reviewer x4:** The combination of methods is appropriate according to the research questions and the purpose of the protocol.

*RESPONSE: Thank you.*

**Reviewer x5:** Yes

*RESPONSE: Thank you.*

**Reviewer x6:** As above. The primary data collection or 'people-based methods' could be very insightful indeed. Again, rather than include experts working in biodiversity and pandemics in general, could head hunt those with track records of forecasting, responding and managing outbreaks of zoonotic origin rather than simply doing academic research. The net for participation is cast very wide and consensus may not ultimately lead to the best research strategy.

*RESPONSE: We decided to cast our net for the survey very widely, not only including academics, and focus on any controversies in the focus groups, the second step of the people-based methods.*

## 2.6 Is there an undue emphasis on one step/research question? If so, how might it be overcome? On the contrary, should one step/research question be looked into more?



**Reviewer x1:** From my point of view and from my modest experience a particular emphasis should be put on research in order to explore all the contours required to find adequate solutions to this crucial development issue

*RESPONSE: Thank you.*

**Reviewer x2:** The one step / research questions can be utilized for a generic understanding of the biodiversity but if I we do look at the biodiversity impact especially the impact on bacteria, fungi, and viral growth in different diverse environment then it is important to gather regional data as well and elaboration might be needed with regards to understand the environment, and surroundings in which things are being performed.

*RESPONSE: Thank you.*

**Reviewer x3:** No

*RESPONSE: Thank you.*

**Reviewer x4:** I suggest that interviews should be looked into, since the method renders more detailed information that is communicated more sincerely and genuinely from the interviewee as it is through an online survey.

*RESPONSE: Indeed, we already include focus groups/workshops, which is a way to interview a certain number of respondents in the survey.*

**Reviewer x5:** no comment

**Reviewer x6:** no comment

## 2.7 Are appropriate and up-to-date sources used? Do you know of any additional sources, examples which we could use and where (please be as precise as possible)?

**Reviewer x1:** The sources used are very appropriate

*RESPONSE: Thank you.*

**Reviewer x2:** <https://link.springer.com/article/10.1007/s11367-010-0155-8> Twisting biomaterials around your little finger: environmental impacts of bio-based wrappings, Biodiversity Improves Life Cycle Sustainability Metrics in Algal Biofuel Production <https://pubs.acs.org/doi/abs/10.1021/acs.est.9b00909>

*RESPONSE: Again, we would like to invite this reviewer to our survey.*

**Reviewer x3:** no comment



**Reviewer x4:** Some examples that might be useful:

Busse, M., Zoll, F., Siebert, R., Bartels, A., Bokelmann, A., & Scharschmidt, P. (2021). How farmers think about insects: perceptions of biodiversity, biodiversity loss and attitudes towards insect-friendly farming practices. *Biodiversity and Conservation*, 30(11), 3045-3066.

Bernardo, F., Loupa-Ramos, I., & Carvalheiro, J. (2021). Are biodiversity perception and attitudes context dependent? A comparative study using a mixed-method approach. *Land Use Policy*, 109, 105703.

*RESPONSE:* Thank you, we will include these in our literature scoping.

**Reviewer x5:** Yes

*RESPONSE:* Thank you.

**Reviewer x6:** Include research funders who often set the research agenda either through calls or responsive mode, and operational needs from those working in outbreak responses not necessarily publishing so may be overlooked.

*RESPONSE:* This topic is already covered indirectly in the initiatives scoping, but we will try also to include relevant funder representatives in our survey in people-based methods.

## 2.8 Any further general comments:

**Reviewer x1:** None above

*RESPONSE:* Thank you.

**Reviewer x2:** I think this is a great initiative, and I look forward to see others join in the work.

*RESPONSE:* Thank you.

**Reviewer x3:** no comment

**Reviewer x4:** I would like to express acknowledgements for your great effort!

*RESPONSE:* Thank you.

**Reviewer x5:** None

*RESPONSE:* Thank you.





**Reviewer x6:** *no comment*

## 2.9 Are you interested in the further development of the knowledge synthesis?

**Reviewer x1:** Yes, I am interested

*RESPONSE: Thank you.*

**Reviewer x2:** Yes, I am interested

*RESPONSE: Thank you.*

**Reviewer x3:** Yes, I am interested

*RESPONSE: Thank you.*

**Reviewer x4:** Yes, I am interested

*RESPONSE: Thank you.*

**Reviewer x5:** Yes, I am interested

*RESPONSE: Thank you.*

**Reviewer x6:** Yes, I am interested

*RESPONSE: Thank you.*

## 2.10 Would you like to be acknowledged as reviewer in the final report and how?

**Reviewer x1:** Yes (i.e. Last name, First name and affiliation)

*RESPONSE: Thank you.*

**Reviewer x2:** Yes but without my affiliation (i.e. last name, First name)

*RESPONSE: Thank you.*

**Reviewer x3:** Yes (i.e. Last name, First name and affiliation)

*RESPONSE: Thank you.*

**Reviewer x4:** Yes (i.e. Last name, First name and affiliation)

*RESPONSE: Thank you.*



**Reviewer x5:** Yes but without my affiliation (i.e. last name, First name)

*RESPONSE: Thank you.*

**Reviewer x6:** Yes (i.e. Last name, First name and affiliation)

*RESPONSE: Thank you.*

### 3.2 Glossary (page 0)

**Reviewer x1:** *no comment*

**Reviewer x2:** May be in the glossary section for the references, the reference number which allows for the reader and viewer to directly go and look at the hyperlinked reference if needed.

*RESPONSE: We provided the missing references.*

**Reviewer x3:** No specific comment

*RESPONSE: Thank you.*

**Reviewer x4:** I suggest putting the glossary in the form of a bulleted list and not in a tabularic form, with references added to the References section at the end of the protocol.

*RESPONSE: For the reasons of time-effectiveness, we decided to stick to the current format.*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.3 Introduction (pages 1-2)

**Reviewer x1:** *no comment*

**Reviewer x2:** No comments needed at this point.

*RESPONSE: Thank you.*

**Reviewer x3:** No specific comment

*RESPONSE: Thank you.*



**Reviewer x4:** *no comment*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.4 Objectives (page 3)

**Reviewer x1:** *no comment*

**Reviewer x2:** All three objectives have been clearly defined.

*RESPONSE: Thank you.*

**Reviewer x3:** No specific comment

*RESPONSE: Thank you.*

**Reviewer x4:** *no comment*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.5 Methodological framework (pages 3-4)

**Reviewer x1:** *no comment*

**Reviewer x2:** The comprehensive methodological framework is elaboration and explains in great deal.

*RESPONSE: Thank you.*

**Reviewer x3:** No specific comment

*RESPONSE: Thank you.*

**Reviewer x4:** *no comment*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*



### 3.6 Selected methodological approach: scoping review (pages 4-10)

**Reviewer x1:** *no comment*

**Reviewer x2:** I think the Description of the method whereby wide expert consultation is required on survey followed by targeted expert consultation, it is suggested that the questions from the wide expert consultation survey be utilized to further narrow down on the second step of targeted expert consultation and then used later in the third process for online expert group, this way a refined and more targeted work one will be able to achieve.

*RESPONSE: Thank you.*

**Reviewer x3:** Line 151: organisation websites: how will other websites be identified and how is the search stopped?

*RESPONSE: we only focus on international organisations.*

- Line 164: why should the private mode be used?

*RESPONSE: this is standard research procedure when working with grey literature to avoid any bias that could be introduced into the search based on the search history of the researcher. We have now supported this statement with a reference from Adams, Smart and Huff (2017) in the methods protocol.*

- Line 173: how will national websites/national reports be identified? There are many countries and diverse structures (e.g. the administration publishing reports on the topics of concern here may be different in different countries; also it may not be at the national level (but at finer levels of federal states). This needs to be clarified here if you want to give the reader a clear vision.

*RESPONSE: we decided to only include international organizations.*

- Line 177: is it appropriate/acceptable (with regard to the topic) that Chinese is not included here?

*RESPONSE: we decided to only include international organizations and we will add Chinese in literature search for scoping review.*

- Line 237: Geographical location and scale (as data to be entered about papers reviewed) will need to be specified: what is the degree of detail and the associated information that will need to be entered? continent? country? province? Scale is a complex concept that is often loosely used and in the absence of a guide here, could result in information difficult to use. At least it should specify the two aspects of scale (extent + resolution). Maybe it could be considered to offer multiple choice rather than leaving the reviewers to set it up themselves.



*RESPONSE:* we now addressed this problem. The data extraction sheet offers a dropdown menu with multiple choices to ensure a standardized reporting by the reviews.

- Line 239: habitat fragmentation is unfortunately often loosely used (and understood). Sometimes it refers to a state of the landscape (fragmented - as its shape, or as the result of a process?); sometimes it refers to the process of habitats GETTING fragmented. It would be useful to distinguish between static and dynamic studies in this domain.

*RESPONSE:* We have now addressed this problem in the data extraction sheet. The reviewers involved in the data extraction are provided with the definitions of the various terminologies to appraise the articles. For this scoping review, the process leading to habitat fragmentation such as deforestation is classified separately as opposed to the impact of an already fragmented habitat on biodiversity defined as habitat fragmentation in this study.

- Line 254: “Model” can be many different things, the usefulness of (especially for the purpose of building knowledge synthesis like here) is not necessarily equivalent. At the very least, you’d want to separate here between conceptual/mechanistic/empirical-statistical. Also models are only useful with respect to the question asked; how will the data collection account for this element?

*RESPONSE:* given the time constraints, we decided not to go into such detail in the scoping review.

- Line 269: again a term that (despite it having a standard definition) is very loosely defined. Reviewers of the literature should agree on what they are looking for here. I do not see in this list an item indicating how biodiversity is measured. This could be relevant to gather considering many studies will rely on proxies (e.g. measuring only mammal diversity or measuring biodiversity based on presence/absence) or simplified simulations of the world (using a limited number of “model species” in a mechanistic model). I did not see anything here relating to the question of the strength of the evidence; this may be important. These are multifactorial issues and complex relationships. The synthesis should be able to reflect this.

*RESPONSE:* In this case, we do not rely on our own definition, but on whether the article in question mentions risks using this very word. To ensure standardised reporting in the data extraction process, we plan to organise a workshop explaining the data extraction sheet with worked examples. The definition of the terms and what to report has been explained in detail on the first page of the data extraction sheet. The strength of evidence will be noted under the quality of evidence section using a series of questions based on the study designs, obvious bias, etc. We also plan to



*evaluate the reviewer confidence on data extraction through a self-evaluation score for each article extracted.*

**Reviewer x6:** *no comment*

### 3.7 Selected methodological approach: initiatives scoping (pages 10-11)

**Reviewer x1:** *no comment.*

**Reviewer x2:** No comments at this time.

*RESPONSE: Thank you.*

**Reviewer x3:** No specific comment

*RESPONSE: Thank you.*

**Reviewer x4:** *no comment*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.8 Selected methodological approach: people-based methods (pages 11-15)

**Reviewer x1:** *no comment*

**Reviewer x2:** Visualizing gaps collected using the people based approach is the best way to ensure effective understanding of data and its analysis.

*RESPONSE: Thank you.*

**Reviewer x3:** Concerning the online survey, is it planned to try to reach out to people in e.g. institutions or administrations that are somewhat on the margins on this issue but would matter to bring in for the interlinkages mentioned in the reformulated request? For example, wildlife managers who be important but may not be involved directly in these issues for now? Or agricultural ministries not so involved in issue that pertain to wildlife conservation/management? The text states for now “professionals working on the relationship between biodiversity and pandemics”. 30 respondents would probably low - you really want to avoid ending up with just the people of the same circles in there, presumably.

*RESPONSE: For the survey, we will contact 200-400 of potential participants, and given their interest in the topic, we expect more than half of them to respond. From this*



*group, we will select some 20-30 participants for 2-4 focus group workshops. So, for the survey, we aim to receive the much higher number of responses than 30, while for the focus groups 30 is in fact a good number, given our time constraints.*

**Reviewer x4:** I suggest adding some more precise information on what type of questions will be used in the online survey (open/closed type, inputs in keywords, etc.) and how the answers will be analysed (basic statistics etc.). Same applies for the interviews and focus groups.

*RESPONSE:* We plan to present the questions in different groups according to the sub-headings we have determined on biodiversity and pandemic, for example, surveillance and monitoring systems, climate changes and interventions on the ecosystem etc. The questions will be answered by rating them on a scale from insignificant to very important on items such as the importance of preventing the pandemic, the adequacy of current research, and the necessity of new research on the relevant topic. We are going to analyse the answers through this scale. At the end of each section experts will have the opportunity to add any major points they judge as missing. Those points will be considered in the final analysis of the survey.

**Reviewer x5:** no comment

**Reviewer x6:** no comment

### 3.9 Visualisation of the results and expected results (pages 15-16)

**Reviewer x1:** no comment

**Reviewer x2:** No more comments

*RESPONSE:* Thank you.

**Reviewer x3:** No specific comment

*RESPONSE:* Thank you.

**Reviewer x4:** For visualisations I suggest that main findings, especially from people-based methods, could be impactful if presented in wordclouds of keywords or displayed in various font sizes, for example according to the frequency of mentions

*RESPONSE:* Thank you for this suggestion!

**Reviewer x5:** no comment

**Reviewer x6:** no comment



### 3.10 Timeline (pages 16-18)

**Reviewer x1:** *no comment*

**Reviewer x2:** Excellent, most of the work has been done.

*RESPONSE:* Thank you.

**Reviewer x3:** Ambitious!

*RESPONSE:* Thank you.

**Reviewer x4:** I suggest that people-based methods shall have half a month to a month longer period in the timeline, if possible.

*RESPONSE:* Our timetable is unfortunately dictated by the needs of the requesters.

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.11 References (page 19)

**Reviewer x1:** *no comment*

**Reviewer x2:** All references are complete.

*RESPONSE:* Thank you.

**Reviewer x3:** No specific comment

*RESPONSE:* Thank you.

**Reviewer x4:** *no comment*

**Reviewer x5:** *no comment*

**Reviewer x6:** *no comment*

### 3.12 Annexes (pages 20-24)

**Reviewer x1:** *no comment*

**Reviewer x2:** Complete





*RESPONSE: Thank you.*

**Reviewer x3:** Page 21: what do the colours refer to? Page 22: what do the stars refer to?

*RESPONSE: Colours refer to different methods, and we cannot see stars on page 22.*

**Reviewer x4:** no comment

**Reviewer x5:** no comment

**Reviewer x6:** no comment

### How did you get to know about this call for review?\*

**Reviewer x1:** Eklipse website ([www.eclipse.eu](http://www.eclipse.eu))

*RESPONSE: Thank you.*

**Reviewer x2:** Email from Eklipse

*RESPONSE: Thank you.*

**Reviewer x3:** I don't remember, sorry

*RESPONSE: Thank you.*

**Reviewer x4:** Email from Eklipse

*RESPONSE: Thank you.*

**Reviewer x5:** LinkedIn

*RESPONSE: Thank you.*

**Reviewer x6:** Colleague

*RESPONSE: Thank you.*

### Any other comments?

**Reviewer x1:** None above

*RESPONSE: Thank you.*

**Reviewer x2:** no comment



Reviewer x3: *no comment*

Reviewer x4: *no comment*

Reviewer x5: *no comment*

Reviewer x6: *no comment*