Appendix E: Results from "Follow up Questions of the modeling and stakeholder information"

A: What is the main message the model is passing?

(Macaronesia)

1. The model shows the intricacies and inter-dependency of model parameters highlighting the complexity of social-ecological systems.
2. Implementation of protection measures, both in the ecological corridor Azores-Madeira-Canaries and in coastal MPAs, impacts local economies (i.e. tourism) and vice-versa.
3. MPA conservation; Ecological corridors between archipelagos
4. The model allows to explain in a simple way the complexity of the system. Interconnectivity among the variables. Highlights the need of conservation and protection measures.
5. That there are specificities and constraints related to the marine environment where the DA lays because it is mainly open ocean, thus more sensitive to certain aspects such as boat traffic, deep-sea mining, and more robust to others such as climate change effects.
6. The model passes a message of the system functioning in the Macaronesia, revolving specially around the nature of tourism activities and the possibilities of an ecological corridor that focused on the migration of megafauna. PESTLE approach brought up the main issues and opportunities of different sectors for the achievability of a sustainable scenario.
7. The potential for the implementation of protection measures in the DA, and the possibility of connecting the Macaronesia area through a corridor. I also believe that the model represents well the causality between social, economic and environmental factors in the area.
8. The main message that the model is passing concerns the different pressures of tourism in the DA and the biological corridor that connects all three archipelagos involved.
9. CLDs are a powerful tool for understanding complex systems and identifying points of influence for change and making-decisions. This model helps to visualize how different variables influence each other and create feedback loops that reinforce or balance system behavior. In a simple way, the model provides valuable information for decision-making in improving the balance between the conservation of marine biodiversity and the economic activities developed in the marine environment (special role of ecotourism).
10. It emphasizes the ecosystem's complexity and the necessity of implementing conservation and protection measures in the ecological corridor and MPAs to achieve healthy habitats.

(Arctic)

11. How governmental decisions and actions impact both nature and socioeconomic systems.
12. It is difficult to see the main message from looking at the model. One reason could be that the model is not complete. For instance, loops are not communicated (labeled) in the model

(Tuscany)

13. Tourism emerges as a fundamental element for the Tuscan Archipelago community that has positive effect in terms of job opportunities but may also have negative effects on marine ecosystems (and the services they provide) and wellbeing of island residents.
14. This model is suggesting the pros and cons of tourism in the Tuscan Archipelago DA. Specifically how tourism affects key ecosystems and social systems and how they interact and feedback on one another.
15. Tourism activity is the most important economic activity for local people in the different islands, but it could also have negative impacts on marine communities without clear roles. Socio-economical activities and the environmental conservation should be strictly linked

B: What policy insights or recommendations can be created meaningfully?

(Macaronesia)

16. One of the main concerns raised is that an ecological corridor among archipelagos would cross many geopolitical boundaries (e.g. regional, national, international) and that this needs clear articulation with the different agents, which may not be easy to accomplish.
17. We did not enter into specific details. We discussed about implementation of protection measures in the ecological corridor Azores-Madeira-Canaries. From the CLD we can suggest that such measure can be adopted and maybe can be accepted more likely if technological development is "moving" in the same direction. For example, development of less noisy engine, or detection system to avoid collision with cetaceans.
18. Policy insights, as many as the stakeholder's. Not sure about recommendations.
19. Recommendation for heathy ecosystems and habitat quality. Protective measures. Sustainable tourism.
20. Supranational ones concerning a possible marine corridor and its management.
21. Some insight can be created, such as the rearrangement of marine traffic to prevent environmental impacts, the implementation of innovative technologies for increased sustainability and potential cost reduction, as well as the evaluation of size restrictions and fishing campaigns for fisheries, based on scientific evidence of size to sex ratio and reproductive activity of some species. Additional insights include shifts in tourism

activities to a more sustainable and local economy based approach. Despite the potential of these considerations, further evidence and resources might be needed to back them up.

22. A recommendation for the establishment of an ecological corridor for Macaronesia, and maybe to propose some transboundary MPAs in the area.
23. The increase in regulation regarding overtourism, and the creation of an MPA covering the biological corridor.
24. The possibility of creating a ecological corridor at a supranational level has the potential to improve policies associated with the management of small island systems and their particularities.
25. The recommendation keywords are regulation, protection, and conservation. Regulate and protect MPAs and the ecological marine corridor considering human pressures, to ensure healthy and sustainable ecosystems

(Arctic)

26. I have never participated in any work related to policy briefings or recommendations and I have no idea how to turn the model into a policy brief that makes sense to the intended audience.
27. There are no new insights that come from the model, instead, it confirms current knowledge.

(Tuscany)

28. Regulation of touristic activities within the MPA but also outside. Deployment of buoys in the most visited places/diving sites for private boats. Dissemination and educational activities to inform the public audience about best practices at sea, marine environment and species in the Tuscan Archipelago. Public funding to help locals to shift from extractive activities (fishing) to more sustainable tourism-related jobs.
29. One recommendation which arose from the modelling process was creating a series of apps to engage with the public in order to let them make informed decisions about their tourism activities in the archipelago. Furthermore, instituting policies aimed at regulating the number of tourists was mentioned.
30. Local people and tourists should be adequately inform about the importance to conserve marine biodiversity and key habitat forming species. More information about this topic are needed.

C: How much novelty was learned or discussed during the process?

(Macaronesia)

31. I felt that most of the exercise was fairly intuitive, but it helped to have a structured and well thought-out step-by-step process for the model creation.

32. The novelty was the use of CLD model.
33. All the discussion process provided more information and novelty.
34. New way to approach a complex system
35. In the end I believe we had a deeper understanding on the strengths and weaknesses, challenges and opportunities, of the DA as an all.
36. Some elements of novelty were brought up during the modeling process, which included recent technological advancements, as well as proposal for the creation of MPAs and scientific evidence for the creation of a Macaronesian ecological corridor, along with some of its limitations. Project opportunities for ecology studies were also discussed.
37. The CLD and PESTLE models were new to me.
38. The three archipelagos had the opportunity to learn about the realities of the other locations.
39. In addition to the list of variables for the design of the CLD and the relationships between them, the PESTLE analysis provided a lot of valuable detailed information on the context of each archipelago and discussing common points of the Macaronesian DA.
40. The new thing was the interactive creation of a complete model.

(Arctic)

41. ~~Leaning~~Learning how to qualitatively evaluate impact of fishing on the socioeconomic system and how governmental decisions impact many things.
42. Due to time constraints and the simplicity of the model, very limited novelty was discussed or learned.

(Tuscany)

43. The process can be very useful to start a constructive discussion among stakeholders/modelers with different expertise/ point of views. It was also useful to think about one issue under different perspectives (ecological/economic/social) at the same time.
44. I for one saw the whole process as novel, I am unsure as to whether these topics have been discussed before
45. We are often focused only on research activities and sometimes we do not invest too much time to divulgate the results of our activities outside our “boundary”. This process highlights how science and tourism (or economic activities in general) ca be strongly linked.

D: Do you think the knowledge represented in the model is potentially acceptable for your Stakeholders?

(Macaronesia)

46. For most stakeholders, yes.

47. The model is a good tool to explain the system. I think stakeholders will easily understand how everything is connected and related. I'm not sure if this will make stakeholders more supportive of new management actions.
48. Yes
49. Probably, but it should be presented and explained in a simple way according to the stakeholders group
50. To some of them yes, but to others maybe not; it depends on their individual wisdom.
51. The knowledge presented is potentially acceptable, although this may vary depending on the type of stakeholders involved. This might be the result of the modeling team being mainly comprised of biologist. In any case, adjustments could be necessary once stakeholder feedback is received.
52. Yes, I believe it will be acceptable for most stakeholders. However, I still feel that we might have missed the inputs from someone outside of academia during to exercise, to strengthen the model.
53. Yes, if well explained and contextualized.
54. I think so but, in addition to their perspectives on the problems and challenges that arise, it will depend on how the storytelling of the CLD is carried out and how the information is transmitted in an accessible and connected way.
55. Yes, I think the model has potential, but it should be explained in a simplistic way and explanations developed according to stakeholders' specificities and levels of knowledge.

(Arctic)

56. I have not been involved in the stakeholder interviews therefore I have no idea what is acceptable to them and what is not acceptable.
57. The model needs further refinement, such as a clearer illustration of loops, to be used for communication purposes.

(Tuscany)

58. I think the model can be generally acceptable, some stakeholders may disagree with individual elements (or links) or may think the model is incomplete.
59. I think the knowledge would be acceptable if presented in a palatable and easily digested format.
60. Yes, I think so, but maybe one single CLD contains too much information, and it is not easy to interpret it.

E: How do you evaluate the relevance of the information of D2.1 in your knowledge base used in this model exercise?

(Macaronesia)

61. I learned quite a lot since I started working in the project (not only from the D2.1) since my background as a field ecologist is quite different.
62. I have read the D2.1 but to be honest I do not remember it. Since I have actively participated in the WP2 interview/survey it is possible that the knowledge acquired during those exercises has influenced my awareness of the system. So, I believe that having previous experience might have facilitated the construction of the model.
63. It was important, but not capital.
64. It was relevant somehow since it was based in the same approach as in the WP2 stakeholders' interviews, although our model was developed in a different perspective and considering a specific topic.
65. Some of the elements presented by the stakeholders during the interviews, were shared in our model too. Still, their answers did not influence my line of thought.
66. In accordance with the impressions left by the Canary Islands stakeholders interviewed for D2.1, the importance of cultural heritage linked with socio-economic activity was brought up during the modeling process. Mass tourism was also a relevant topic, along with its interaction with other variables, particularly those of ecological value. The autonomous status of the Canary Islands and its impact on governance was likewise brought up in discussion, and although climate change was not included in the Casual Loop Diagram developed, it was mentioned as a limiting factor for the achievability of a sustainable socio-ecological scenario (SSP1-RCP2.6), with how it could interfere with the creation efforts of a Macaronesian ecological corridor.
67. I read only the summary of D2.1, so I don't feel like it was relevant for my knowledge to use in this model exercise.
68. It was relevant because it gave me a bigger perspective (being able to see the "big picture" of the DA).
69. In my case, I joined the project recently. I assume that the relevance has also been addressed by including feedback from the stakeholder workshops and is reflected in the relationship between variables in both, CLD and PESTLE analysis.
70. The information in D2.1 probably contributed to recalling knowledge and issues, helping to build reasoning

(Arctic)

71. It was irrelevant as I did not participate in task D2.1 and I did not read information from D2.1 before the workshop
72. Whilst the information from the Arctic DA in the Annex of D2.1, is informative, the method of building the model does not utilize all information from D2.1.

(Tuscany)

73. D 2.1 was useful to better understand differences and commonalities among stakeholder views.
74. I think the information contain in D2.1 is highly relevant and provided a background to be used within this exercise
75. It was useful to deepen our understanding about local communities and economic activities in the TA

F: Did you use direct information from the report on stakeholders (D2.1) to frame your understanding of the system represented by this CLD?

(Macaronesia)

76. Yes. A substantial part of what was made here results directly from what was learned when contributing to D2.1.
77. Direct information no. Indirectly maybe yes (See previous answer).
78. No.
79. No, we did not consider the stakeholders inputs, however this model should somehow interconnect/or validate with stakeholders' opinions
80. No, I didn't. As I said my mind was already made up and if we share some thoughts, that means we share the same concerns.
81. The existence of an agreement in relevant topics between the stakeholders and Canary Islands representatives for the workshop allowed for the information of the stakeholders report to be applied during the modeling process.
82. No.
83. I think not in a direct way, but expert opinions already have interactions with local stakeholders, and that is partially reflected in the results.
84. No, I didn't. The previous documents read to contribute to the development of the model were those previously provided by e-mail by AZTI, to understand the different elements of the CLD and its practical application.
85. No, maybe indirectly.

(Arctic)

86. No, I did not.
87. Information from the report on stakeholders (Arctic DA) is to some extent represented in the CLD, but there is potential to further analyse the results.

(Tuscany)

88. Yes
89. I did indeed.

90. In general, I know the social-economical activates of different islands of the TA and so I was able to work on it also without reading the report on stakeholders.

G: How do you think the outputs of WP2 can be integrated into the product of this workshop? (Macaronesia)

91. I believe that the model should be presented and validated by different stakeholders to ensure its accuracy and holistic nature.
92. I think the two approaches can be compared to assess if the view from the stakeholders (data from the WP2) is similar to the one of the researchers (CLD model). However, two important notes: a) In our DA researchers who build the CLD were also interviewed or took part in the WP2 work. So, results from WP2 may have influenced the construction of the CLD. B). In our DA, WP2 never focus the interviews on the ecological corridor. So, this aspect was never discussed with our stakeholders.
93. One way to incorporate the outputs from WP2 could be taking into account the scores (weighting coefficients) in the interconnections, but there's a need to considers the diverse stakeholders' groups.
94. By searching for discrepancies and similarities, between the stakeholders' opinions and our own.
95. WP2 outputs could perhaps be integrated into the product of the workshop by contrasting stakeholder interviews with the discussions held by the modeling team during the workshop, searching for relevant topics, links and implementation possibilities. Also, harmonization of the elements brought up according to deliverable 2.1. Important contributions could also be made by presenting the CLD built to stakeholder groups for feedback, tuning and refinement. The PESTLE analysis could also be enhanced in the same way, at the very least allowing for the reception of feedback.
96. It can be helpful to compare both and identify the similarities and differences and gaps between the two approaches.
97. Results from WP2 gave us the perspective of the stakeholders' main concerns which is reflected in the model, although not in a very detailed way.
98. With a participatory practices approach, the implementation of the CLD would provide valuable information for decision-making that, in defining recommendations and improving policies, would facilitate the harmonization and integration of simple socio-ecological frameworks. In this sense, it is absolutely necessary to apply a dialogical process that allows analyzing the level of adaptation of the model designed to the needs and challenges identified by stakeholders.

(Arctic)

99. I do not know.
100. You will have to directly analyze the results to complete the CLD model. However, the qualitative information from D2.1 is not so compatible with system/CLD, so methods of handling information from D2.1, need to be further explored.

(Tuscany)

101. It is possible to make comparisons between CLD realized during the workshop and those created by stakeholders.
102. I think maybe as a background or introduction framing the different DAs.
103. The outputs of WP2 could deepen our understanding about the request of local people that live and work on the islands and their points of view. As I write above, I think it is really important to integrate our knowledge with the necessity of local people and tourists.