

Comments from Topical Editor

The anonymous reviewer #2 did not respond to a review request of your second revised version. However, that reviewer indicated in the previous review that she/he was largely satisfied with the previous modifications in response to her/his comments. In my opinion, you have sufficiently responded to the remaining points by that reviewer in the latest resubmission.

Please review the comments by Reviewer #1 and resubmit the manuscript, which can then be accepted for publication. I concur with the reviewer that SDs are not the only method to study feedbacks, so this should be revised.

Based on the comments by Reviewer #1, I also suggest to simply remove these sentences:

“The most often used IAMs approach is the static approach in which to connect disciplinary models output of one model is first obtained then given as input to another. This approach is not well suited for studying feedback relationships between different sectors.”

It is not clear what exactly you mean by “static approach”, and it is not relevant for the further discussion of your model. Therefore, shortening the introduction in this way can help to shorten the manuscript.

- The authors appreciate your comments and have removed relevant sentences.

Comments from Anonymous Reviewer #1

The authors did a good job of revising the manuscript. Besides, I would suggest the authors adding related text changes in the response letter next time.

In the response letter, I respect the authors’ defense argument about the definition of IAM. I still don’t think SD models are IAMs. Because IAM is now narrowly to describe a particular group of models in the modeling community. Naming SD as IAM creates confusion to the readers. I do agree that both SD and IAM can be considered as multi-sector models. Reaching this consensus is important in introduction.

- We appreciate your suggestion and will add relevant text changes in response letter in the future.
- We agree with you. SD models are not IAMs, they are two different modelling paradigms. We revised part of the introduction as “Multi-sector modelling mainly occurs within two modelling paradigms: Integrated Assessment Modelling (IAM) and System Dynamics simulation (SD). IAMs are developed and used for addressing complex interactions between socio-economic and natural sectors. They integrate knowledge from various

disciplines into a single modelling environment and are used to investigate future adaptation pathways to globally changing conditions. There are several IAMs of global change. Examples include AIM, MESSAGE, POLES, TIMES, REMIND, IMAGE, and GCAM, to name a few. The second modelling paradigm – System Dynamics simulation (SD) – integrates all sectoral models into the endogenous structures with emphasis on the link between the system structure and dynamic behaviour through explicit consideration of multiple feedback relations. There are also several SD models of global change. Examples include ANEMI, Threshold 21, and iSDG.”

I still have minor comments:

L63: “the only way to create and thoroughly study feedback relationships”. I don’t think SD is the only way to create feedback relationship. This claim is incorrect as there are many other methods.

- The authors agree with you and have deleted the following sentences based on the recommendation by the topical editor.

“The most often used IAMs approach is the static approach in which to connect disciplinary models output of one model is first obtained then given as input to another. This approach is not well suited for studying feedback relationships between different sectors.”

“This approach is the only way to create and thoroughly study feedback relationships between different sectors.”

L317 Please check the loop label in all CLD figures. Some loop symbol seems to be labelled in an opposite direction of the actual CLD. For example, the positive loop of B5 in Fig 7 should be labelled as counter-clock wise instead of clockwise?

- The authors thank you for pointing out the inconsistency in labelling. We have checked all the CLD figures and labelled all the positive loops counter-clock wise and all the negative loops clockwise.

324: In many sectors, “desired water capital order rate” is used, could you please explain it? And what are orders?

- Yes, in the Economy sector we have “capital order rate” and in the Water sector we have “water capital order rate”. “Order” here can be viewed as “investments”.