

Geosci. Model Dev. Discuss., editor comment EC2
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Reply on AC5

Daniel Huppmann (Editor)

Editor comment on "REMIND2.1: transformation and innovation dynamics of the energy-economic system within climate and sustainability limits" by Lavinia Baumstark et al.,
Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-85-EC2>, 2021

Dear authors, thank you for submitting a revised version of your manuscript and a detailed list of responses.

I would like to comment on the changes in response to my earlier notes.

1. Section 3.1.2, steady-state vs. equilibrium:

I was hoping for a more thorough rewrite of this section - I find it very hard to digest and the overlap with section 2.2 is adding to my confusion. In the last paragraph of Section 3.1.2, you introduce (for the first time) the welfare theorems by Arrow and Debreu, which state that "a competitive market equilibrium can be determined as a Pareto optimum". You then proceed to claim that this is exactly what the Negishi approach does. But in my (maybe wrong?) understanding, a Nash solution (under certain assumptions, which seem to be met by your statement on internalizing an externality) is also the result of a competitive market equilibrium - which (per Section 2.2) differs from the Negishi approach.

It could be that trying to explain the solution method before having discussed the underlying economic principles puts the reader onto a very challenging path to follow your exposition. Please reconsider at which point in the manuscript to introduce these concepts, and how to properly introduce the difference between equilibrium, general equilibrium and steady state.

2. The arbitrary choice of a 50% tax mark-up on net-negative emissions: I understand the rationale for disincentivizing net-negative emissions, but my question concerned the choice of that value. I do not think that "the 50% assumption is the middle ground" is a very convincing argument.