Review comments

In this manuscript, the authors build a framework to study the long-term emissions of GHGs and major air pollutants by coupling with other socioeconomical models. This tool provides flexible to study the wide range of emission changes under various climate scenarios. The methodology is reasonable, and potential be useful. However, I have several concerns on how the authors solve their discrepancies between their framework with SSPs, and how the other researchers could be beneficial from this tool.

Methods:

To make this tool usable or accessible for other users, I want the authors to add their suggestions on how to include the fire & aviation emissions which are currently not included in this framework (line 142-144).

As acknowledged in their discussions, the authors also discussed the discrepancies between TAPS and SSPs. To make community adopt their framework for further climate and air quality related research, I wonder how the authors can convince the users that these discrepancies between TAPS and SSPs are acceptable.

Minor comments:

Line 32: delete "anthropogenic".

Line 40-41: I suggest the authors to expand their references on co-benefits analysis. These two included in the paper are not very representative.

Line 83-85: "dependence on previous CTM runs and base years"

Line 90: the authors discussed that the usages of EPPA are quite "limited" in previous studies. I wonder then why the authors choose the EPPA not other IAMs? Any potential limitations for potential users to adopt this product?

Line 94: describe "EPPA7"

Line 125: there is no link or doi for such reference "GEOS-Chem, 2021".

Line 142: I am very curious to see the authors' check on the consistency between EPPA7 and GFED.