The authors have clarified their arguments and substantially addressed major referee concerns. I recommend publication of the ms after some attention to the following points. Namely, there are a couple of small changes that the authors could still make that I think would go even further in aiding the reader.

The variable E is defined (line 32) as the instantaneous rate of world energy consumption. E is power, but looks like it should be energy. So I would suggest that variables that are rates rather than stocks/quantities should be designated by an overdot or other indicator, thus $E \to \dot{E}$ (energy/time), where E now is indeed energy. This is trivial, but such changes will make the ms more accessible, especially to the "casual" reader. Similar changes might be made for (instantaneous) world GDP, $Y \to \dot{Y}$ (USD/time), and for K. Fig 1. would remain (almost) correct because E as plotted would indeed be energy (although not instantaneous energy, but rather E_i, as already explained in the caption, and similarly for the other variables there). In Eq (2), because W as well as E (i.e., $\dot{E}$) are instantaneous values, the units of the constant w would be essentially USD/watt (not USD/energy/year).

Most importantly, the dot notation, if used in Eq (3), $\dot{Y} = w\frac{d\dot{E}}{dt}$, makes clear(er), as pointed out in the Conclusions (line 168), that even if GDP ($\dot{Y}$) is not increasing, as long as it is positive, energy consumption accelerates. So a fixed value of GDP, even if small, means that demands on energy (and thus material) resources will not remain fixed, but will continue to increase.

Eq. (3) is in my view a key summary of the results of the present paper. As such, its implications might be emphasized a little more fully. Thus, decreasing GDP to a small positive value only means that any problems associated with increasing use of energy will continue getting worse, just not as fast as before. However, if GDP actually goes to zero (no economic growth), then energy use does not accelerate, $\dot{E} = const$. For some, this no-growth condition may approximate an imagined ideal of a "steady-state" world. But in this case $\dot{E}$ constitutes the base metabolic rate of the world economy, a level of energy consumption too small to deal effectively with large-scale environmental disruptions of society or for developing and deploying new tools for managing/improving human health (e.g., cancer) or social infrastructure (e.g., housing, basic income). Re environmental challenges, one might consider the case of an adult animal, which is a no-growth system. It has enough energy reserves to accelerate (by running away) to escape a predator, but not enough to outrun a larger and more sustained threat, like a forest fire. Regarding civilization, because the occurrence of future global emergencies is virtually guaranteed, especially in an ecologically distressed world, a condition of no-growth, $\dot{E} = const$, would not be hospitable, or perhaps even survivable, for the collective human enterprise no matter how sophisticated the civilization. A condition of degrowth, i.e., $\dot{E} < 0$, would be a recipe for collapse of the technosphere (global civilization), a result stated in reverse by the authors, namely that collapse is a recipe, perhaps the only recipe, for degrowth.

The final comment of the ms, line 180, on managing the constant w, is interesting. It points to the unknown details of how exactly past production retains its currency in the modern world even after many years of physical decay. This is a topic, among others suggested by the paper, that deserves more

study in the future, and as such is a clear sign of the value of the present work not only for its analysis but as a stimulus for further research.

Finally, the conclusions of the paper are of course provisional and might be in error. Nonetheless, publication will likely generate substantial controversy and pushback because of its message that there are hard-to-change, or even potentially unchangeable, structural obstacles to managing the human future in ways that are palatable to many potential readers. Generating friction is an occupational hazard for those who try to dispassionately separate the workings of the world as implied by scientific analysis from a vision of how one might wish the world to be. Where friction exists, and at the same time scientific analysis seems as sound as it can be given the uncertainties of the problem, wide dissemination of the results can be especially valuable.