

Authors' Reply to 2nd Referee's Report on "The Sustainable Development Goals and the Systems Approach to Sustainability"

We are grateful to the referee for providing detailed and helpful comments on our paper. We are also delighted that the referee has recommended our paper for publication.

Here are our replies to the specific comments provided by the referee.

- In commenting on our systems approach to analyzing possible tradeoffs between the 17 sustainable development goals, the referee is correct in stating that "One benefit of taking this approach would be to make it possible to predict which goals are in conflict or are potential 'win-wins', and to identify externalities that need to be addressed in development policy." As the referee suggests, in the section **Quantitative Assessment of Progress in Attaining SDGs** we identify which of the SDG target indicators have been improving, and which have unfortunately been in decline, in recent years. We use this information to discuss which goals appear to be in conflict, and thus there are potential tradeoffs among them (see also Table 2 and Figures 5 and 6). We agree with the referee that we could expand this section further to discuss "why goals might be in conflict, and to relate this back to the systems thinking approach to better link the two sections".
- We agree with the referee that our categorization of the 17 SDGs as primarily "economic", "social" and "environmental" is somewhat arbitrary, and that in fact, some of these goals overlap systems. In revising the paper (especially pp. 6-9), we will clarify this point, and to emphasize that we have made this designation mainly to illustrate how the SDGs and the systems approach are related.
- The example the referee cites illustrates exactly the potential tradeoff between SDG 2 "Zero Hunger" – which we categorize in Table 1 as primarily an "economic" goal – and SDG 15 "Life on Land" - which we categorize as primarily an "environmental" goal. Moreover, as the summary in Table 2 of our analysis of SDG indicators shows, progress in attaining SDG 2 has been "improving" whereas for SDG 15 has been "declining". Thus, this is a good example of a tradeoff between an important economic goal versus an environmental goal.
- The issue of possible irreversible and irrevocable impacts over time is an important one. We touch on this point in the final paragraph of the paper (p. 22). But explicit elaboration on the point raised by the referee may be necessary.
- As we stated in our reply to Referee 1, the referee is correct that there may be relative price effects associated with attaining one or more SDGs. To keep our welfare analysis uncomplicated, we have assumed relative prices to be unchanged, which is a standard economic assumption. We are happy to acknowledge that this is a simplifying assumption.
- In revising our paper, we will clarify this assumption, as suggested by the referee.
- We agree with the referee that we should emphasize more clearly that these results are hypothesized outcomes based on our illustrative empirical analysis. It is indeed up to future work to conduct more explicit and rigorous empirical analysis to test these hypothetical results.