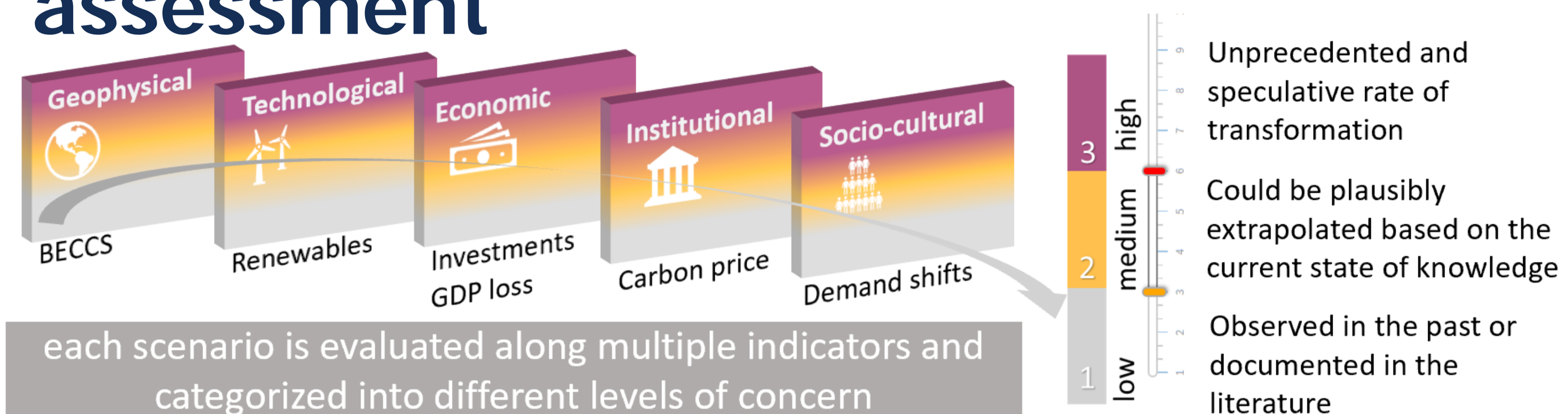




Balancing global sources and sinks under the Paris Agreement decreases overall feasibility concerns but requires faster mitigation early on

Bas van Ruijven (IIASA), Keywan Riahi (IIASA), Elina Brutschin (IIASA), Silvia Pianta (CMCC)

I. New framework for feasibility assessment

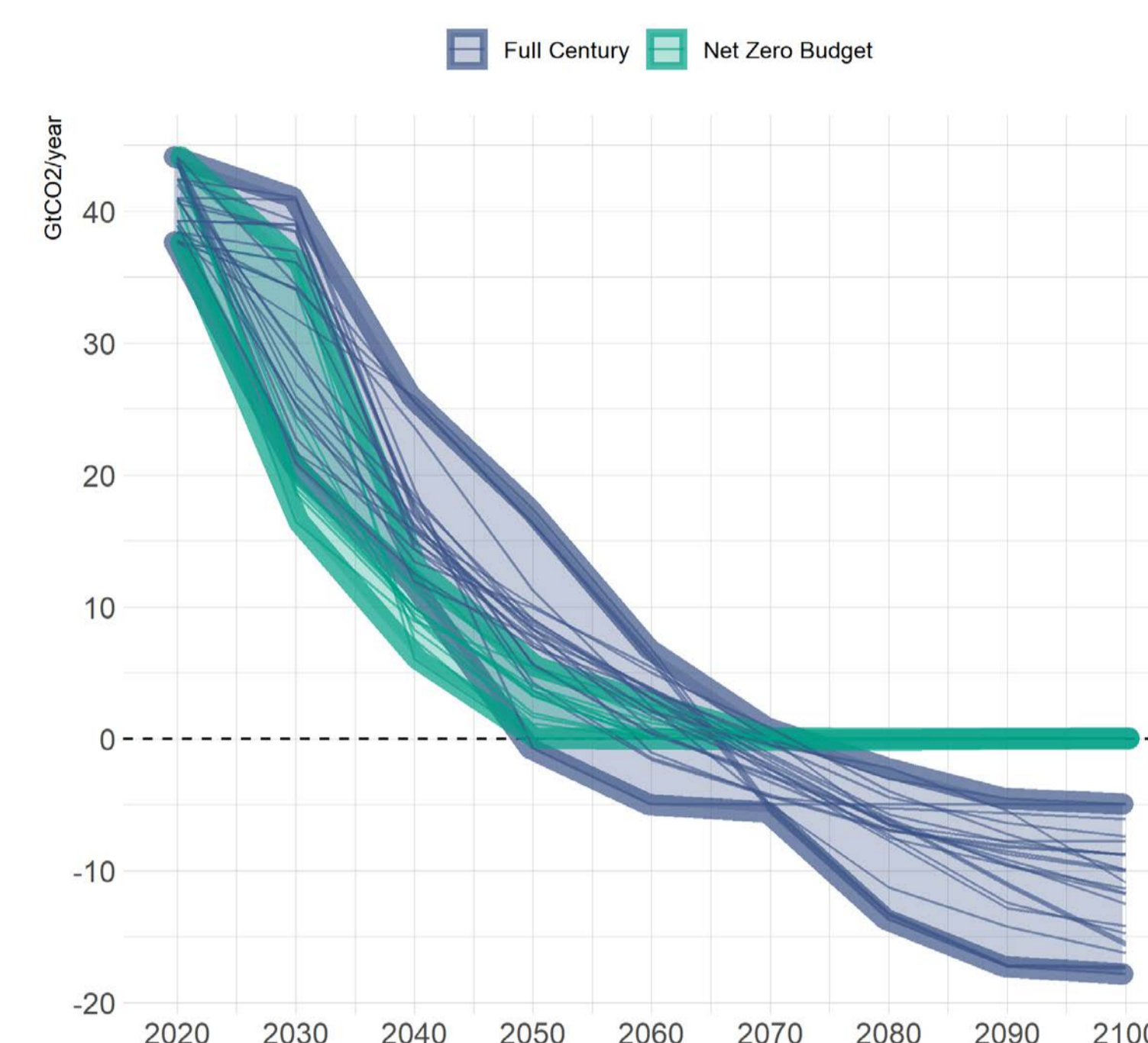


INCLUDES INTERACTIVE VISUAL TOOL TO ASSESS SCENARIOS USING DIFFERENT THRESHOLDS: <https://tinyurl.com/3d2beujm>

Global Net Zero Budget scenarios require faster transition by 2030 but avoid persistent feasibility concerns later in the century when compared to Full Century scenarios

II. New scenario ensemble

CO2 emissions ranges 600Gt Budget scenarios



Global Net Zero Budget logic:

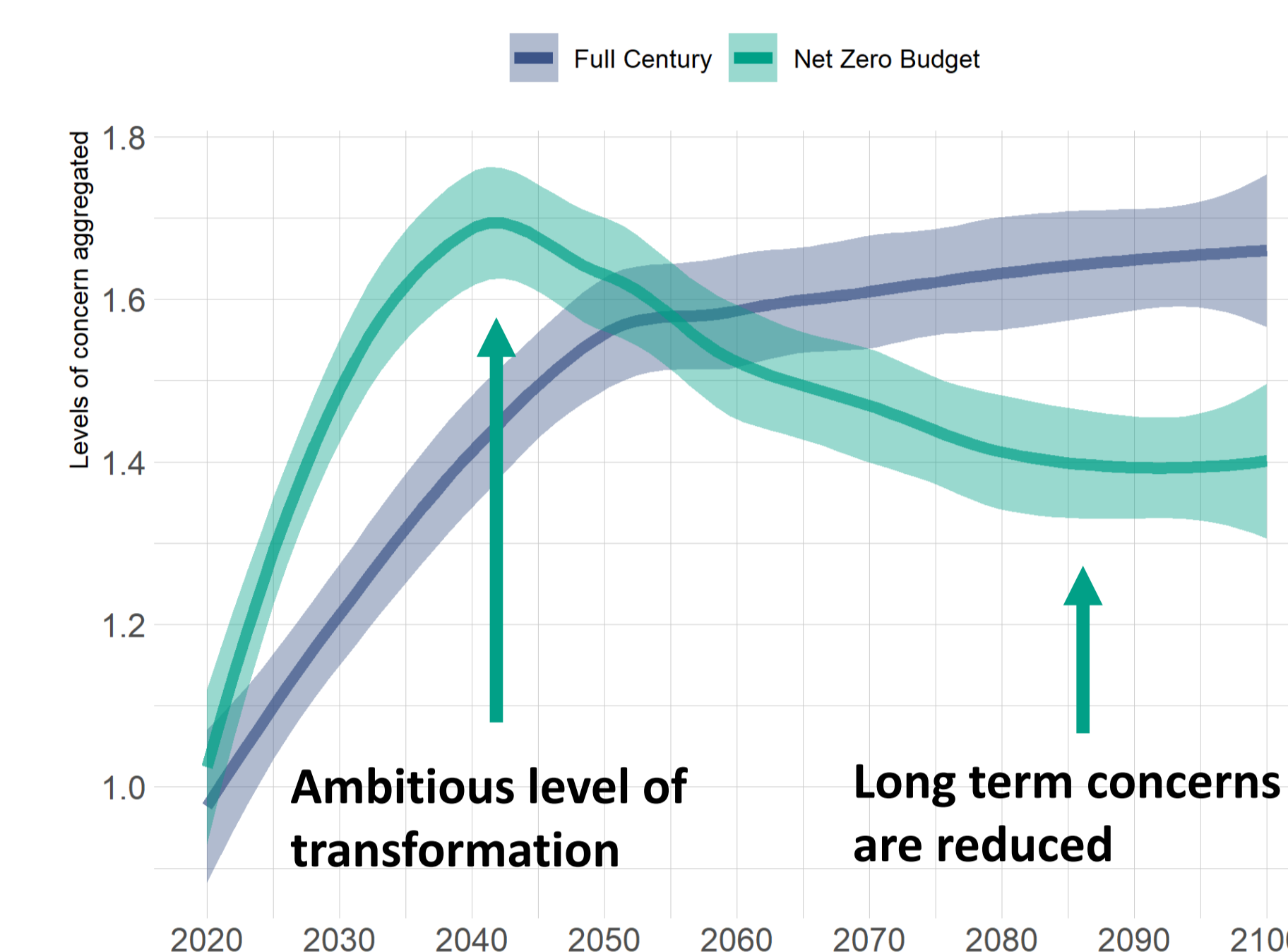
focus on the remaining carbon budget in the near term until balance between sources and sinks is reached
does not allow for net-negative CO2 emissions as opposed to the Full Century budget and thus avoids temperature overshoot

overall budget of 600 Gt is associated with more ambitious climate goals (broadly consistent with a median temperature goal of 1.4-1.8°C)

*In this set implications of COVID-19 are not considered.
**Scenario logic proposed by Rogelj et al.(2019), scenarios described in Riahi et al. (forthcoming)

III. Results – Overall

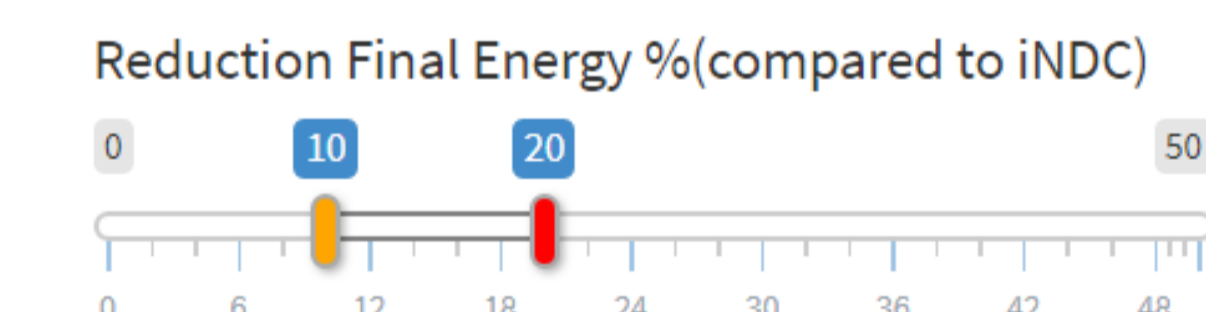
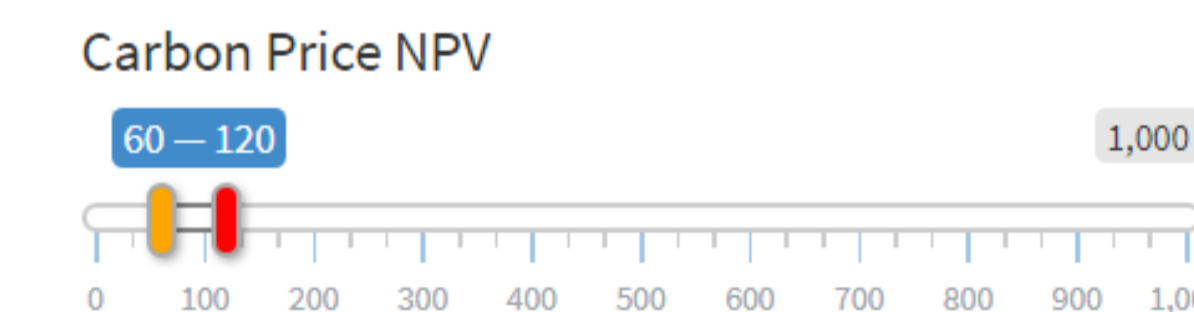
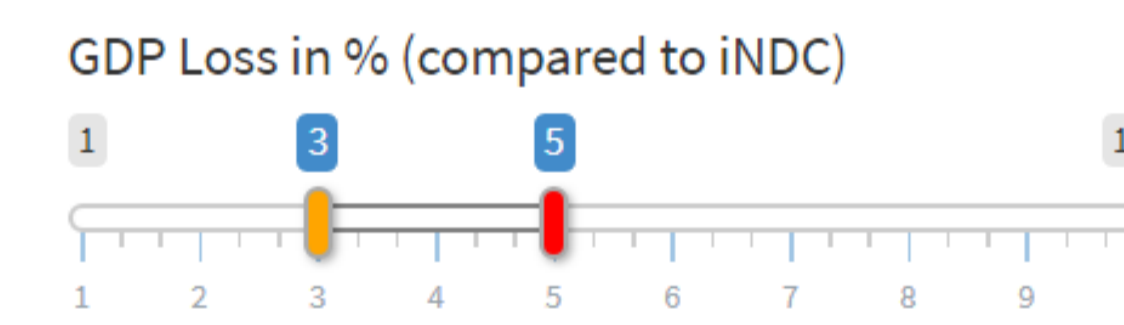
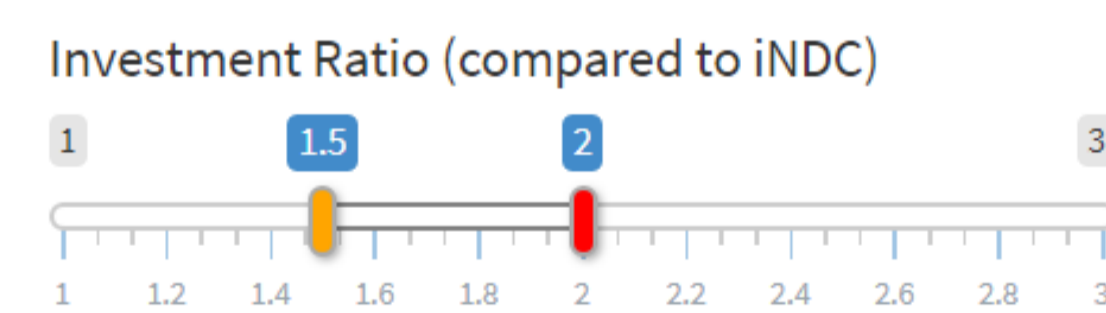
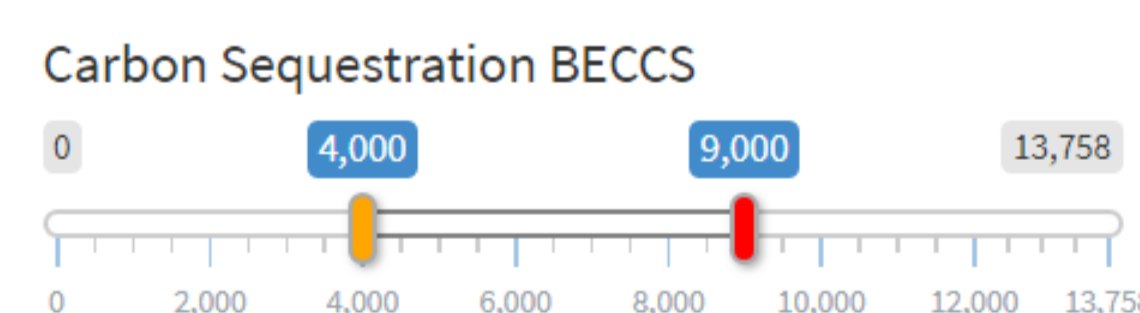
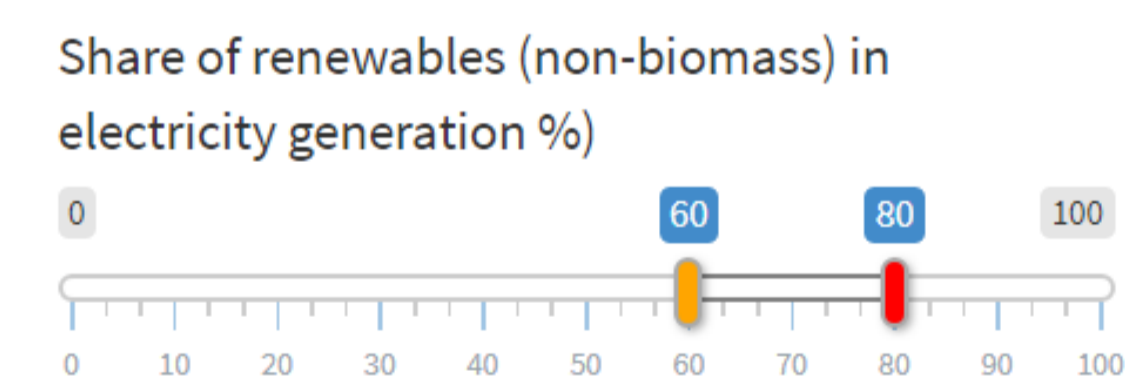
Illustration of aggregated levels of concern



This Figure illustrates the implications of intertemporal trade-offs when the categorization of scenarios into different levels of concerns is aggregated across all indicators using geometric mean.

TECHNOLOGICAL/GEOPHYSICAL

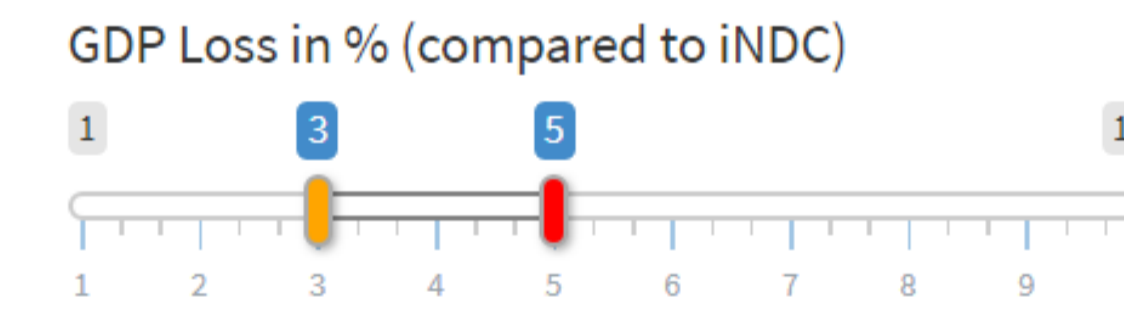
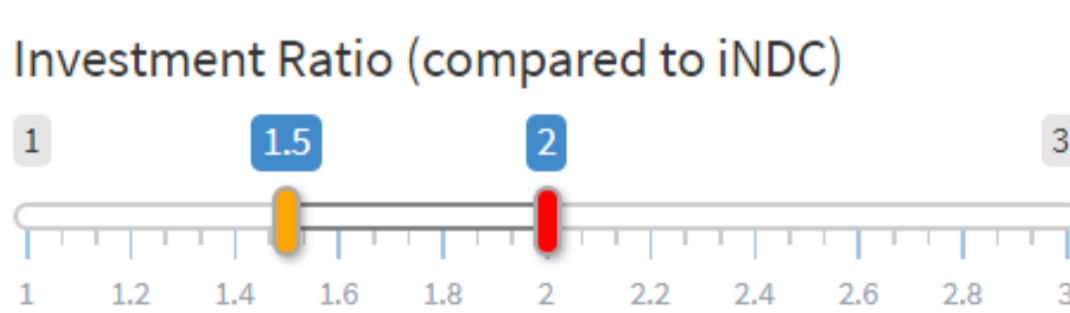
Global Net Zero Budget scenarios require rapid deployment of renewables but rely less on new technologies such as BECCS where major geophysical concerns arise



Transformational Trade-offs

ECONOMIC

Global Net Zero Budget scenarios require larger investments early on but avoid persistent GDP losses in the long term



INSTITUTIONAL/SOCIAL

Higher carbon prices as a proxy for policy stringency (institutional commitment) early on in **Global Net Zero Budget** scenarios avoid shifting the burden of persistent final energy demand reductions towards the end of the century (which requires major behavioral/social changes)

