

# ***Interactive comment on “Ideas: a simple proposal to improve the contribution of IPCC WG1 to the assessment and communication of climate change risks” by Rowan T. Sutton***

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I thank S. Hallegate for his positive response to my proposal, his linking it to wider practice in risk assessment, and his very valuable suggestions. I particularly welcome the remark that “A great contribution from climate sciences would be to guide the selection of the most extreme scenarios that should be considered. . .”, and wholeheartedly agree.

With regard to the point that high impact scenarios should not be defined by their likelihood, I agree that attempts to assess likelihood with inappropriate precision would be misplaced (particularly in the context of deep uncertainty). However, there is a need

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to make connection with the IPCC calibrated language for confidence and likelihood. This is related to the communication challenge, which I also agree is extremely important. To address both points I offer the following more specific proposal, and I would welcome suggestions to further improve or refine it.

IPCC WG1 could define a Physically Plausible High Impact Scenario (PPHIS) as: an assessed physically-based storyline for specific aspects of future climate change that is consistent with all available evidence and would result in impacts that are significantly greater than those implied by the relevant likely range. It is proposed that where possible WG1 should base the assessment of PPHISs on scenarios that are assessed to be very unlikely (0-10%) rather than extremely unlikely (0-5%) or exceptionally unlikely (0-1%). Information about the impacts of these scenarios should be provided, but explicitly framed in conditional terms (i.e. conditional on the PPHIS being realised in the real world) and together with an assessed confidence level following the IPCC guidelines.

Such a definition should ensure no confusion between PPHISs and forecasts or predictions. It is worth noting that potential abrupt or irreversible changes (which were discussed in 12.5.5 of the WG1 contribution to AR5) are a subset (but only a subset) of PPHISs.

A specific example, adapted from the AR5 Summary for Policymakers, might result in an assessment such as: “It is very unlikely that ECS is greater than 6C but this value may be considered a Physically Plausible High Impact Scenario (PPHIS). If realised, such a value for ECS would very likely result in an increase in global mean surface temperature by 2100 well above 2C relative to 1850-1900 under all RCP scenarios except RCP2.6 (high confidence).”

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