

CORRESPONDENCE:

Solar radiation management could be a game changer

To the Editor — Barrett *et al.*¹ argue that, given the challenges with solar radiation management (SRM) geoengineering, “when the use of geoengineering is politically feasible, the intervention may not be effective; and ... when the use of geoengineering might be effective, its deployment may not be politically feasible”. We believe the first part of this conclusion depends on a relatively narrow definition of efficacy that may not reflect the real concerns that would motivate a potential deployment of SRM, whereas the second part of the conclusion lacks evidence and therefore is speculative at this stage.

Although the evidence from model studies about the impacts of SRM geoengineering is, at present, limited, the initial evidence broadly indicates that SRM deployed to cool the climate could potentially reduce many of the physical impacts of climate change as well as the risk of crossing tipping points^{2–4}, as Barrett *et al.* acknowledge. This is because many climate impact drivers depend directly on temperature, such as high-temperature extremes, the thermal expansion of water, the melting of snow and ice and the intensity of precipitation^{2–5}.

Barrett *et al.* argue that the potential benefits of SRM could not be secured

due to political controversy around regionally differentiated effects and fears of becoming ‘addicted’ to SRM. While there are undoubtedly regional differences in the climate response to SRM, the general reversal of temperature increases would be felt worldwide, as would some benefits such as a reduction in sea-level rise^{2,4,6}. To argue that SRM deployment is politically infeasible due to its differentiated regional effects, which will be challenging to predict in detail, it would have to be demonstrated that regional considerations would trump the benefits of an overall reduction of physical climate impacts in shaping states’ preferences. The claim that the fear of becoming addicted to SRM would make SRM politically unfeasible would similarly need to be substantiated by theoretical considerations and evidence from analogous cases.

Barrett *et al.* claim that as a response to crossing a tipping point, SRM would be politically feasible, but ineffective. However, they fail to acknowledge that while SRM may not reverse the changes following the passing of a tipping point, in many cases it could reduce the rate of change and hence reduce some of the harm that the passing of a tipping point would cause⁷.

SRM is no panacea; it would introduce new risks and would shift the overall burden of risks, which might pose substantial political problems, as Barrett *et al.* indicate. It is also clear that to minimize the risks posed by climate change, mitigation will need to be pursued vigorously. Although much is uncertain about the potential impacts of SRM, should we not at least seriously consider how the world would react if SRM eventually proved to be a highly effective means of reducing the physical risks of climate change? In this case, SRM geoengineering would indeed be a game changer. □

References

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CORRESPONDENCE:

Enhancing the impact of climate science

To the Editor — Rose¹ argues that embracing an ‘evidence-informed’ rather than ‘evidence-based’ attitude to policymaking should result in more effective action on climate change. As scientists who advise policymakers and environmental managers, we suggest instead that (1) scientists need to work harder to communicate results in a concise and accessible way and (2) more attention needs to be given to turning policy into practice.

Science can’t — and shouldn’t — prescribe policy, but it can ground it in reality, and the aspiration to be evidence-based is important. To do this, a clear distinction needs to be drawn between the presentation of evidence and advocacy of policy responses, otherwise the science may be undermined by a perception that it is politically biased². We think Rose is unduly pessimistic about how influential climate science has been in setting many international and regional

policy agendas, including those of the United Nations, the European Union and many national governments. The problems of turning policy into action are, however, often underestimated. Indeed, a significant challenge to further policymaking is that climate change mitigation is perceived by some to be impractical or too expensive.

The primary duty of scientists to policymakers is to present their work clearly and effectively. As the volume