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## A new scenario logic for the Paris Agreement long-term temperature goal

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To understand how global warming can be kept well-below 2°C and even 1.5°C, climate policy uses scenarios that describe how society could transform in order to reduce its greenhouse gas emissions. Such scenarios are typically created with integrated assessment models that include a representation of the economy, and the energy, land-use, and industrial system. However, current climate change scenarios have a key weakness in that they typically focus on reaching specific climate goals in 2100 only.

This choice results in risky pathways that delay action and seemingly inevitably rely on large quantities of carbon-dioxide removal after mid-century. Here we propose a framework that more closely reflects the intentions of the UN Paris Agreement. It focuses on reaching a peak in global warming with either stabilisation or reversal thereafter. This approach provides a critical extension of the widely used Shared Socioeconomic Pathways (SSP) framework and reveals a more diverse picture: an inevitable transition period of aggressive near-term climate action to reach carbon neutrality can be followed by a variety of long-term states. It allows policymakers to explicitly consider near-term climate strategies in the context of intergenerational equity and long-term sustainability.