Budgeting for climate change

**Embargo**

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As negotiators meet at the twenty-first Conference of Parties (COP21) in Paris to try to agree on an emissions path that will limit the rise in global temperatures to less than two degrees above pre-industrial levels, a Perspective article published online this week in *Nature Geoscience* reports that this target, although perceived as a universally accepted goal, has not been scientifically assessed or defended. Reto Knutti and colleagues present a critique of the two-degree climate target and argue that attention should turn to mitigating dangerous emissions instead of debating particular temperature objectives.

Irrespective of the temperature target, evidence suggests that the rapid rise in global carbon dioxide emissions from industry and fossil fuel burning since 2000 has slowed markedly, or even reversed, in the past two years. According to data presented in a Commentary in *Nature Climate Change*, this comes despite continuing economic growth. Robert Jackson and colleagues suggest that this decoupling of emissions from economic growth could stem from some emerging and established economies moving away from using coal and towards using renewable energy sources, which suggests that this emissions trend might continue. However, they caution that uncertainties in emissions over the coming decades, particularly in China, make it difficult to determine if the peak in annual global emissions has yet been reached.

Relying on technologies that remove greenhouse gasses from the atmosphere—known as negative emissions technologies (NETs)—to play a major role in the mitigation of these emissions is a high-risk strategy, notes a Review in *Nature Climate Change*. Pete Smith and colleagues assess the potential risks and opportunities of different NETs, and suggest that aiming to aggressively reduce emissions as soon as possible remains the safest strategy.

Climate change litigation may have a role to play in realizing that strategy, suggest James Thornton and Howard Covington in a Commentary in *Nature Geoscience*. Using past relevant legal cases, they outline an approach that could, in the future, lead to court orders to restrict greenhouse gas emissions from significant contributors to climate change.

Finally, in another Commentary in *Nature Geoscience*, Katharine Ricke and colleagues argue that ambitious and early climate change mitigation is key—particularly for sectors where the impact of climate change increases rapidly at relatively low levels of warming, but then slows or levels off as temperatures continue to rise.

The articles are part of a joint *Nature Geoscience* and *Nature Climate Change* web focus on the topic ‘budgeting for climate change’, and will be added to an online collection of Commentaries, Reviews and news articles from Nature Publishing Group, published and collated to coincide with COP21 (http://www.nature.com/ngeo/focus/budgeting-for-climate-change/index.html and http://www.nature.com/nclimate/focus/budgeting-for-climate-change/index.html).

**Article and author details**

1. **A scientific critique of the two-degree climate change target**

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1. **Commentary: Reaching peak emissions**

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1. **Biophysical and economic limits to negative CO2 emissions**

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1. **Commentary: Climate change before the court**

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1. **Commentary: Policy thresholds in mitigation**

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