Green business

Managerial and financial barriers

The transition to a low-carbon economy is challenging because it requires large-scale investments in both new and more efficient green technologies. However, adoption by firms is still slow. Previous works have usually focused on the impact of climate policies, such as carbon pricing. However, organizational constraints, including financial and managerial barriers, can also prevent firms from green investment and emissions reductions.

Ralph De Haas, of the European Bank for Reconstruction and Development, and colleagues show how these constraints can lead to less green investment and higher carbon dioxide emissions. They combined data on emissions from 3,387 industrial facilities with local credit constraints and green management data from firm surveys in 12 emerging European countries. A counterfactual analysis shows that without credit constraints and weak management practices, carbon emissions would have been 4.5% and 2.3% lower than with these conditions, respectively. They further show that global financial crises can slow down the process of decarbonization of economic production, tempering optimism about the green benefits of the recent COVID-19 pandemic. They also suggest that low-cost measures, such as implementing an environmental strategy or appointing specialized managers, can help promote firms' green transition.

Lingxiao Yan
Nature Climate Change

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Geophysics

Changing the Earth's tune

Polar motion, a small variation of the Earth's rotational axis, is primarily caused by the Chandler wobble. The Chandler wobble has a period of roughly 14 months and is mainly caused by the unequal mass distribution of the planet. Although it is known to vary over time owing to a number of influencing factors, the degree to which changes in the ice mass, in particular the melting of ice sheets in Greenland and Antarctica and of glaciers in many polar and mountain regions, due to climate change can affect it is not well understood.

CanCan Xu and ChengLi Huang from the Shanghai Astronomical Observatory and the University of Chinese Academy of Sciences in Beijing and colleagues also from China used satellite gravity observations to assess the influence a changing ice mass on Earth has on the Chandler wobble. They find that variations in the ice mass are statistically linked with changes in the Chandler wobble. This relationship has strengthened in recent years, so that ice-mass variations contributed about 20% to the Chandler wobble in 2022, which is a four-times-stronger contribution compared with in 2006. The authors argue this indicates that the faster melting of ice due to global warming can also be expected to increasingly influence the Chandler wobble.

Jasper Franke
Nature Climate Change

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Climate responses

Biased reports of species range shifts

Rapid climate change has led to species shifting to higher latitudes and elevations to maintain suitable climatic niches. However, not all species are able to move at pace with climate change, and research indicates that shifts can be more likely for certain taxonomic groups and in certain ecosystems, and depends on both intrinsic species traits and external factors such as geographic complexity and human activity. Wider understanding of these shift potentials may be limited by biases in studying species shifts, including unequal focus on certain geographic regions or on certain taxa.

Evan Parker at Yale University, USA, and colleagues from the USA assessed coverage and biases in 33,016 potential distribution reports for 12,009 species. They showed taxonomic and geographic biases, with higher coverage of birds, gymnosperms and European and US species, and lower coverage of insects, Amphibia and species in temperate South America, Australia, the tropics and polar regions. Within species, studies were biased towards the colder parts of species distributions, with only 8% of the species assessed at both ends of their ranges. The work highlights the need for accounting of current biases and management of future data collection to address gaps.

Tegan Armarego-Marriott
Nature Climate Change

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Environmental education

Interventions in education

Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving and take action to improve the environment, which is a crucial path to tackling environmental challenges. However, the effectiveness of behaviour interventions on enhancing individual literacy and promoting pro-environmental behaviour remains understudied.

Hirofumi Kurokawa from Kwansei Gakuin University and colleagues from Japan, conducted a field experiment to investigate the impacts of nudging (goal setting) and boosting (emphasizing cooperation) within an environmental education programme on students' attitudes and actions. Their study reveals that an interaction effect between higher goals in the nudge task and boosting influenced students' awareness and actions. Students in the nudge-and-boost group exhibited increased awareness of energy conservation, improved environmental attitudes and increased adoption of energy-saving practices. Effects of the environmental education persisted three months later. This study underscores the effectiveness of combining multiple behavioural interventions and integrating educational approaches with behavioural interventions to promote pro-environmental behaviour.

Danyang Cheng
Nature Climate Change

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