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# Correspondence

## Climate activists — rethink fossil-fuel subsidy cuts

Climate activists in several countries are calling for an end to fossil-fuel subsidies. However, estimates of the extent to which this tactic would cut global emissions depend on how subsidies and the social cost of carbon are calculated. From a pricing perspective, it could be more effective to charge sources for their carbon emissions directly.

The social cost of carbon (the externality, or economic damage to society of emitting one tonne of carbon dioxide) is unpriced, because the emitter isn't charged for it. Genuine (that is, pre-tax) subsidies and unpriced externalities are often combined to calculate total subsidies. In 2015, these were estimated to exceed US\$5.3 trillion, of which 6.3% was pre-tax subsidies (D. Coady *et al. World Dev.* **91**, 11–27; 2017).

The social cost of carbon used in such subsidy estimates has been estimated at US\$25.0–42.3 per tonne, but could be much higher (K. Rennert *et al. Nature* **610**, 687–692; 2022). The relative monetary value of pre-tax fossil-fuel subsidies would then be close to 1% of the unpriced externalities. Activists and policymakers should therefore prioritize carbon pricing to capture unpriced climate externalities.

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## Chronic pain: try new routes to more tailored treatments

Many people with chronic pain do not respond to the treatments available (see *Nature* **615**, 782–786; 2023). Clinical practice therefore needs more specific, evidence-based approaches to mitigating long-term pain.

Chronic pain is biologically complex, prevalent and subjective. When maladaptive, it forces a person to focus on their suffering body, thereby diminishing their connection with the world beyond. General analgesics for pain, such as opioids or drugs designed for other pathologies, tend not to be particularly effective. Ideally, treatments should target the underlying mechanisms and take into account how the individual experiences pain, but both these factors are poorly understood.

For example, immune, glial and other non-neuronal cells are fundamentally involved in the modulation of pain (H. Starobova *et al. J. Neurochem.* <https://doi.org/j872>; 2022). Translational research is needed into how such cells and affected tissues (nerves, muscles) contribute to pain pathways (N. T. Fiore *et al. Nature Rev. Neurol.* **19**, 199–220; 2023). And variations in the ways in which people experience pain should be considered when developing personalized, non-pharmacological strategies (L. M. McCracken *Eur. J. Pain* <https://doi.org/j873>; 2023).

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## Marine heatwaves: definition duel heats up

Changing the commonly used definition of a marine heatwave from a fixed to a shifting temperature baseline (D. J. Amaya *et al. Nature* **616**, 29–32; 2023) would be inconsistent with current trends and confuse communications relating to extreme conditions.

A fixed-baseline definition reflects the increasingly frequent and devastating biological impacts of marine heatwaves (K. E. Smith *et al. Ann. Rev. Mar. Sci.* **15**, 119–145; 2023). A shifting baseline artificially decouples processes that act on different timescales, so it cannot reveal the increasing risks caused by climate change. This could create the false impression that temperature extremes and their associated impacts will remain almost unchanged.

In line with the World Meteorological Organization's recommendations for comparing the effects of climate extremes over time (see, for example, IPCC *The Ocean and Cryosphere in a Changing Climate* <https://doi.org/j8q8>; Cambridge Univ. Press, 2022), the fixed-baseline approach has been widely adopted by the scientific community and policymakers. This ensures consistency across disciplines in comparing the evolving impacts of atmospheric heatwaves, sea-level changes and marine heatwaves. This consistency should be maintained to minimize stakeholder and public confusion.

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