

Time to recover



Media attention to the disastrous consequences of this summer's wildfires has been at a record high. Now the world should wake up to the urgent need to restore burnt sites.

As catastrophic wildfires have made headlines throughout the summer¹, we want to reflect on what happens after them.

Although fires can lead to vegetation renewal and the establishment of a diverse habitat in the long term, in the short term, burnt landscapes cannot provide the same ecosystem services that they provided before being burnt. Burnt sites have altered hydrological and soil functions and are more vulnerable to floods, contamination and extreme sediment transport; their accessibility, hydromorphology, microclimate and, in general, ecology and functionality are altered after burning².

A lot of research goes into growing our understanding of the role played by climate change in driving heatwaves and their likely consequences, including wildfires, with work assessing the risks of more frequent and intense wildfires in the future and their impacts and evaluating the destruction they are responsible for^{3,4}. This knowledge and understanding is crucial so that we can prepare and increase our ability to cope with and better manage the fire seasons of following years⁵, and ultimately build (soft and hard) infrastructure systems able to help ecosystems cope with wildfires. This is not just ecosystems withstanding wildfires while still being able to maintain some of their functionalities, but also using knowledge from past experiences to increase preparedness for the future.

However, a fundamental neglect to date is preparedness for the recovery of the burnt sites. Natural recovery can take several months, even years, but with swift local action, continuous efforts and government support, it is possible to timely avoid otherwise uncontrollable post-fire flood and erosion phenomena. Post-fire recovery should focus on speeding up the recovery and boosting the ecohydrological functionality of burnt sites. Efforts should be directed at restoring the landscape, including land cover



Timely and efficient wildfire recovery can restore burnt ecosystems in the short run.

and vegetation, as this will have multiple co-benefits such as avoiding excess erosion, achieving flood water retention and supporting biodiversity, among others. But the challenge lies on the timely implementation of such post-fire protection interventions, and the level of available public and private support. It is difficult for public authorities to prioritize environmental restoration when people are still suffering from wildfire losses, with burnt properties and health impacts; therefore, action across different governance levels is needed and should be coordinated. **National or federal governments can allocate money** to cover health and social damages, but the environmental damages are mainly up to the capacity of local authorities and the private sector and their willingness to act. First, they should respond swiftly with interventions on the ground, and then they should monitor and maintain restoration progress. The involvement of local communities in such efforts is crucial and necessary, not only because they get actively involved in environmental management, but also because this can ensure more proactive, adequate regulatory support.

Restoration actions are 'silent actions' and might not grab headlines. Post-fire protection measures certainly cannot get comparable attention to wildfire impacts, even when burnt sites experience destructive consequences due to negligent and scant recovery efforts. In many cases, inaction can feed suspicions that at least some wildfires might be intentionally provoked, with questions about the future of the burnt sites and uncertainty on whether there will be sufficient support for any restoration efforts. Provoked or not, wildfires can have many cascading effects on the impacted ecosystems, and restoring such ecosystems promptly is the only way forward to keep communities on course to better cope with future disasters and continue their sustainable development journey.

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References

1. *Nat. Sustain.* **6**, 875–876 (2023).
2. Moreira, F. et al. *Environ. Res. Lett.* **15**, 011001 (2020).
3. Johnston, F. H. et al. *Nat. Sustain.* **4**, 42–47 (2021).
4. Modaresi Rad, A. et al. *Nat. Sustain.* <https://doi.org/10.1038/s41893-023-01163-z> (2023).
5. Jong-Levinger, A., Banerjee, T., Houston, D. & Sanders, B. F. *Earth's Future* **10**, e2022EF002670 (2022).