

# Track wars' environmental effects in real time

Modern warfare generates predictable environmental hazards, yet the scientific response to these risks remains slow and fragmented. In the first 10 days, Operation Epic Fury, the US-Israeli military action against Iran, has already produced at least 300 environmental incidents across West Asia, from burning oil facilities to damaged tankers in the Strait of Hormuz (1). Unlike accidental spills, this damage is the foreseeable consequence of strikes on industrial, energy, and water infrastructure. The scientific community should act quickly to document these effects and inform a rapid response.

Military targets are not isolated infrastructure; they are nodes in regional ecological systems. Fires at oil installations release sulphur dioxide and polycyclic aromatic hydrocarbons (1, 2). Damaged missile facilities may expose communities to toxic propellants such as unsymmetrical dimethylhydrazine (1, 2). Bombed desalination plants or coastal infrastructure, seawater intrusion can salinize aquifers for decades (3).

International law recognizes these risks. The UN's Draft Principles on the Protection of the Environment in Relation to Armed Conflicts and a 2024 UN Environment Assembly resolution both call for measuring environmental damage during war (4, 5). Yet monitoring typically occurs months or years later.

The scientific community should act to close this gap. Space agencies and research institutions should release near-real-time satellite data on fires, oil spills, and infrastructure damage during conflicts. Atmospheric and oceanographic modelling groups should publish rapid assessments of pollutant dispersion and exposure risks. Journals and research networks should establish open repositories for verified environmental incident reporting and waive paywalls for all conflict-related environmental research, ensuring that evidence reaches affected communities, humanitarian responders, and advocates without financial barriers.

The long-term ecological scars of war, from Vietnam to Gaza and Ukraine, have been well-documented (6), but immediate action could improve results. When environmental damage is left unmeasured as it occurs, pollution becomes strategically invisible, limiting accountability and denying affected communities the evidence needed for remediation and justice.

Hussam Hussein

Department of Politics and International Relations, University of Oxford, Oxford OX1 3UQ, UK. Email: hh.hussam.hussein@gmail.com

## REFERENCES AND NOTES

1. Conflict and Environment Observatory, *Operation Epic Fury: emerging environmental harm and risks in Iran and the region* (2026); <https://ceobs.org/operation-epic-fury-emerging-environmental-harm-and-risks-in-iran-and-the-region/>
2. Conflict and Environment Observatory, *Three days of Operation Epic Fury: a rapid overview of environmental harm in Iran and the region* (2026); <https://ceobs.org/three-days-of-operation-epic-fury-rapid-overview-of-environmental-harm-in-iran-and-the-region/>
3. A. Nolte, *Nat. Water* 10.1038/s44221-026-00619-8 (2026).
4. International Law Commission, *Draft principles on protection of the environment in relation to armed conflicts* (United Nations, 2022).
5. United Nations Environment Programme, \*UNEA-6 Resolution: Environmental assistance and recovery in areas affected by armed conflict\* (2024) UNEP/EA.6/L.12.
- ref. M. J. Lawrence *et al.*, *Environ. Rev.* **23**, 443 (2015).
6. H. Hussein, *Nature* **623** (7986) (2023).

69 **COMPETING INTERESTS**

70 none

71

72

73

74

10.1126/science.aeg9532

75

76