

## Concerns of young protesters are justified

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## Address the roots of environmental crime

In their Letter “Madagascar: Crime threatens biodiversity” (22 February, p. 825), J. P. G. Jones *et al.* call on the new president of Madagascar, Andry Rajoelina, to get tough on environmental crime and corruption to protect what is left of the island’s precious resources. However, in countries where enforcement-heavy conservation strategies take precedence, the rural poor and frontline environmental activists, rather than those truly at fault, often pay the price (1).

As Jones *et al.* point out, illegal activities are “often linked to local violence and insecurity,” but such activities are also deeply connected to the political and economic marginalization of local communities and global demand for valuable resources (2). For instance, Madagascar’s exports of rosewood (*Dalbergia* spp.), a high-value hardwood, increased in protected areas from 2002 to 2009 and continued unabated during Rajoelina’s political coup d’état and the subsequent 5-year economic crisis (3, 4). Neither local gangs nor rural communities engineered this international trade; rather, it was organized by large timber syndicates and those in positions of power with connections in global networks (5).

To date, top-down enforcement on environmental crime in Madagascar has mainly resulted in minor thieves held in jail indefinitely awaiting trial. Amnesty International reported that, as of October 2017, more than half the total prison population were petty offenders made up of rural poor who “lacked formal education and were underinformed of their rights” (6). Long-term incarceration will drive many rural inhabitants deeper into poverty, potentially reversing conservation objectives, and does little to target more powerful, centrally involved actors. Compounding the injustice, environmental activists and journalists speaking out on the government’s role have also been arrested (7).

I agree with Jones *et al.* that enforcement is vital, but it must be implemented in a way that avoids overcriminalization of the rural poor. Fairer and more inclusive conservation policies would focus attention on important global drivers of environmental crime, including the role of complicit governments. Independent truth and justice commissions (8) adapted to specialize on international environmental crime could be used alongside in-depth investigations by United Nations special rapporteurs on human rights and the environment (9). Such programs are not meant to replace a country’s judicial or enforcement systems, but rather

to support existing institutions and work with transnational crime prevention programs. Interventions that directly address structural poverty at the local level could also combat counterproductive enforcement (10). Governments should fully adopt transparent benefit-sharing mechanisms, compensation for burdens of environmental harm, procedures to ensure diverse voices in natural resource allocation, and recognition of historical injustices (11).

Strengthened conservation enforcement involves not only national governments but also journalists and frontline activists, who often help hold those in power to account—including for their involvement in environmental crimes. These actors need to be able to live and work without the fear of arrest or worse. In 2017 alone, there were 207 activists and frontline environmental defenders killed worldwide (12). Now more than ever, we must ensure basic standards of human rights, freedom to protest, and protection of the press.

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### REFERENCES AND NOTES

1. R. Duffy *et al.*, *Biol. Conserv.* **232**, 66 (2019).
2. J. Barlow *et al.*, *Nature* **559**, 517 (2018).
3. J. Tollefson, *Nature* **565**, 407 (2019).
4. H. Randriamalala, Z. Liu, *Madagascar Conserv. Dev.* **5**, 11 (2010).
5. A. Zhu, *Geoforum* **86**, 1 (2018).
6. Amnesty International, Madagascar, “Punished for being poor: Pretrial detention in Madagascar” (2018); <https://www.amnesty.org/en/latest/campaigns/2018/10/madagascar-prison/>.
7. J. Watts, “Madagascar’s vanilla wars: Prized spice drives death and deforestation” (2018); [www.theguardian.com/environment/2018/mar/31/madagascars-vanilla-wars-prized-spice-drives-death-and-deforestation](http://www.theguardian.com/environment/2018/mar/31/madagascars-vanilla-wars-prized-spice-drives-death-and-deforestation).
8. International Center for Transitional Justice (2019); [www.ictj.org/our-work/regions-and-countries/kenya](http://www.ictj.org/our-work/regions-and-countries/kenya).
9. United Nations Human Rights, “Special Rapporteur on human rights and the environment” (2019); [www.ohchr.org/en/Issues/environment/SREnvironment/Pages/SREnvironmentIndex.aspx](http://www.ohchr.org/en/Issues/environment/SREnvironment/Pages/SREnvironmentIndex.aspx).
10. J. Phelps *et al.*, *Conserv. Lett.* **7**, 495 (2014).
11. R. Cooney *et al.*, *Conserv. Lett.* **10**, 367 (2017).
12. Global Witness, “At what cost?” (2018); [www.globalwitness.org/en-gb/campaigns/environmental-activists/at-what-cost/](http://www.globalwitness.org/en-gb/campaigns/environmental-activists/at-what-cost/).

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## Concerns of young protesters are justified

The world’s youth have begun to persistently demonstrate for the protection of the climate and other foundations of human well-being. (1, 2). As scientists and scholars who have recently initiated similar letters of support in our countries, we call for our colleagues across all disciplines and from the entire world to support these young climate protesters (3). We declare: Their concerns are justified and supported by the

best available science. The current measures for protecting the climate and biosphere are deeply inadequate.

Nearly every country has signed and ratified the Paris Agreement of 2015, committing under international law to hold global warming well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C (4). The scientific community has clearly concluded that a global warming of 2°C instead of 1.5°C would substantially increase climate-related impacts and the risk of some becoming irreversible (5). Moreover, given the uneven distribution of most impacts, 2°C of warming would further exacerbate existing global inequalities (5).

It is critical to immediately begin a rapid reduction in CO<sub>2</sub> and other greenhouse gas emissions. The degree of climate crisis that humanity will experience in the future will be determined by our cumulative emissions; rapid reduction now will limit the damage. For example, the Intergovernmental Panel on Climate Change (IPCC) has recently assessed that halving CO<sub>2</sub> emissions by 2030 (relative to 2010 levels) and globally achieving net-zero CO<sub>2</sub> emissions by 2050 (as well as strong reductions in other greenhouse gases) would allow a 50% chance of staying below 1.5°C of warming (5). Considering that industrialized countries produced more of and benefited more from previous emissions, they have an ethical responsibility to achieve this transition more quickly than the world as a whole (4, 6).

Many social, technological, and nature-based solutions already exist. The young protesters rightfully demand that these solutions be used to achieve a sustainable society (7). Without bold and focused action, their future is in critical danger. There is no time to wait until they are in power.

Politicians have the huge responsibility of creating the necessary framework conditions in a timely manner. Policies are needed to make climate-friendly and sustainable action simple and cost-effective and make climate-damaging action unattractive and expensive. Examples include effective CO<sub>2</sub> prices and regulations; cessation of subsidies for climate-damaging actions and products; efficiency standards; social innovations; and massive, directed investment in solutions such as renewable energy, cross-sector electrification, public transport infrastructure, and demand reduction. A socially fair distribution of the costs and benefits of climate action will require deliberate attention, but it is both possible and essential (8).

The enormous grassroots mobilization (2) of the youth climate movement—including Fridays for Future, School (or Youth) Strike 4 Climate, Youth for (or 4) Climate, and Youth

Climate Strike (7)—shows that young people understand the situation. We approve and support their demand for rapid and forceful action. We see it as our social, ethical, and scholarly responsibility to state in no uncertain terms: Only if humanity acts quickly and resolutely can we limit global warming, halt the ongoing mass extinction of animal and plant species, and preserve the natural basis for the food supply and well-being of present and future generations. This is what the young people want to achieve. They deserve our respect and full support.

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#### REFERENCES AND NOTES

1. M. Warren, *Nature* **567**, 291 (2019).
2. "Pictures from youth climate strikes around the world," *The New York Times* (2019); [www.nytimes.com/2019/03/15/climate/climate-school-strikes.html](http://www.nytimes.com/2019/03/15/climate/climate-school-strikes.html).

3. Please show support by signing the open letter at [www.scientistsforfuture.org/international/](http://www.scientistsforfuture.org/international/).
4. United Nations Framework Convention on Climate Change, "Decision 1/CP.21: Adoption of the Paris Agreement," (Paris, France, 2015); [https://unfccc.int/files/essential\\_background/convention/application/pdf/english\\_paris\\_agreement.pdf](https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf).
5. IPCC, "Summary for policymakers: Global warming of 1.5 °C—An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty," V. Masson-Delmotte *et al.*, Eds. (IPCC, World Meteorological Organization, United Nations Environment Programme, Geneva, Switzerland, 2018); [www.ipcc.ch/report/sr15](http://www.ipcc.ch/report/sr15).
6. C. Kolstad *et al.*, in *Climate Change 2014: Mitigation of Climate Change: Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, O. Edenhofer *et al.*, Eds. (Cambridge Univ. Press, Cambridge, UK, 2014).
7. Fridays for Future ([www.fridaysforfuture.org](http://www.fridaysforfuture.org)).
8. IPCC, *Climate Change 2014: Synthesis Report: Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Core Writing Team, R. K. Pachauri, L. A. Meyer, Eds. (IPCC, Geneva, Switzerland, 2014).

#### SUPPLEMENTARY MATERIALS

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