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Advancing the science of environmental justice in the international wildlife trade pathway: summary for CITES policy makers

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Context and significance

One of the primary aims of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is to foster environmental justice by regulating international wildlife trade. The agreement aims to protect species vulnerable to extinction, peoples reliant on wildlife for their lives and livelihoods, and ecological systems worldwide (CITES n.d.). Thus, CITES provides a framework for its 183 member states to jointly implement a comprehensive approach to environmental justice, which we define to include social justice, species justice, and ecosystem justice. This article serves as a summary for CITES policy makers, highlighting key findings, observations, and recommendations arising from the Frontiers in Conservation Science's Research Topic, Advancing the Science of Environmental Justice in the International Wildlife Trade. The summary is intended to empower CITES parties to more deliberately and strategically mainstream environmental justice in CITES policies and procedures.

For the first time, conservation scientists were invited to contribute to a collection of transdisciplinary research, perspectives, and case studies meant to inform development of an environmental justice framework serving international wildlife trade scientific inquiry, policy, and planning. In the spirit of environmental justice, manuscript publication fees were sponsored through a grant from the Smithsonian Institution's Life on a Sustainable Planet initiative. This facilitated a unique wealth of contributions from scientists, veterinarians, and natural resource managers typically hindered by publication costs. It brought the conceptual conversation to the ground and the frontlines of environmental justice challenges in international wildlife trade. The voices in the collection primarily arise from scholar-practitioners in Africa, Asia, and Latin America (Reaser et al., 2025). The key findings and recommendations offered here are informed and inspired by the Research Topic manuscripts but have been generalized to support policy decision making across a

wide range of socio-ecological norms. We strongly encourage review of the entire Research Topic to gain an understanding and examples of context-specific priorities, points of view, and issue nuances.

Key findings and observations

Globally, wildlife trade is increasing, both within countries and across borders. This appears to be especially true of illegal wildlife trade, with growing quantities of wildlife and wildlife derivatives seized by authorities due to the unlawful possession and trading of protected species (Arroyo-Quiroz et al., 2025; Saito, 2025). However, the regulatory regime is not keeping pace with the growth in the sector, both legal and illegal (Green, 2025; Mukanganwa, 2025). Lack of international coordination, as well as data standards and data sharing frameworks (Arroyo-Quiroz et al., 2025; Carpio-Domínguez et al., 2025), hinder the vastly more comprehensive controls required (Kolby and Goodman, 2025). Post-seizure management practices are hopelessly *ad hoc*, uncoordinated, and lack conservation and welfare considerations. This is especially a concern for countries of origin, which generally lack the resources to effectively implement whatever regulatory frameworks do exist at national and subnational levels (Saito, 2025). The subnational movement of wildlife is often unregulated and occurring outside of surveillance frameworks, making assessment and intervention particularly challenging (Adebowale et al., 2025; Carpio-Domínguez et al., 2025; Mukanganwa, 2025; Zanzo, 2024). The gaps and weaknesses in international wildlife trade regulation foster readily apparent injustices at the species level that extend to the ecosystems from which the wildlife has been derived (Arroyo-Quiroz et al., 2025; Joshi et al., 2025). Social justice implications are more complex and include such issues as the impacts of corruption on societal dynamics, increases in the risk of zoonotic disease outbreaks, and disparities in access and benefit sharing (Carpio-Domínguez et al., 2025; Green, 2025; Joshi et al., 2025; Mukanganwa, 2025; Olunusi, 2024).

To date, wildlife trade has been viewed as an economic endeavor. Regulatory frameworks have thus had a ‘commodities’ lens, being focused generally on aspects of production and consumption, on the sustainability of supply and demand in terms of impacts on the conservation of traded species (Arroyo-Quiroz et al., 2025). However, the international wildlife trade is fundamentally a network of interacting people and non-human animals. Regulatory effectiveness needs to place value on human lives and livelihoods, as well as the health of individual animals and the ecological systems to which they belong. As demonstrated by the case studies herein focusing on bushmeat (Olunusi, 2024) and game meat trades (Mukanganwa, 2025), the trade dynamics for wildlife-derived meat are complex and attentiveness to context-specific socio-ecological factors is key to fostering fair, equitable, sustainable, humane, and just wildlife trade practices. Yet, thus far, CITES largely operates from the perspective of business transactions; it has demonstrated little cognizance of environmental justice concerns. This is especially true of the illegal wildlife trade, where CITES primarily seeks to curtail the negative economic externalities, rather than frontline

environmental justice. Whilst it is acknowledged that effectively managing sustainable wildlife use is enormously challenging, the awareness, resources allocation, and enforcement to date - across all jurisdictional levels - lags far behind what is required for the scientific, evidence-based approach needed to develop and implement regulatory regimes that are both fair and effective (Carpio-Domínguez et al., 2025; Mukanganwa, 2025; Saito, 2025).

Opportunities to improve environmental justice along the international wildlife trade pathway are many (Arroyo-Quiroz et al., 2025). For example, youth are a critical stakeholder group underrepresented in wildlife trade decision-making. Despite some progress to date, youth engagement falls well behind both the recognition of the need for, and growing engagement in, other key policy sectors such as climate change. More meaningful youth engagement has significant potential to improve understanding and incorporation of environmental justice for a legal and sustainable wildlife trade (Anagnostou et al., 2025). Likewise, there is a need to more explicitly consider gender-based social injustices in the international wildlife trade (Arroyo-Quiroz et al., 2025; Olunusi, 2024). The case studies from these articles underscore how environmental justice requires attention to both procedural fairness and outcomes for people, species, and ecosystems. For example, enforcement strategies that overlook community voices (Carpio-Domínguez et al., 2025), benefit-sharing schemes that exclude traditional users (Adebowale et al., 2025; Green, 2025; Zanzo et al., 2024), and post-seizure animal handling that ignores welfare concerns (Saito, 2025) reflect injustices at multiple levels. Likewise, the work of Green (2025) highlights how colonial legacies persist in the dominance of Western scientific norms over local knowledge systems.

Illegal wildlife trade is an environmental, economic, and social problem that threatens global public health and is one of the main drivers of biodiversity loss on a global to local scale (Arroyo-Quiroz et al., 2025; Green, 2025; Mukanganwa, 2025). The international wildlife trade regulatory regime, currently led by CITES, would benefit from philosophical, moral, and practical updating. The authors in this Research Topic point the way for the framework to be re-envisioned through a multi-faceted environmental justice, conservation, and sustainable use lens, evolving beyond the dominant economic supply-and-demand lens. This resetting of values is especially needed to address the growing volumes of seizures of live animals when considering how to address animal welfare, zoonotic disease risks, and conservation imperatives. It is also urgently required for rewilding and restoration projects involving live animals, where utilization of CITES import and export trading permits can prove to be logistical barriers to achieving wildlife conservation aims.

Practical recommendations

There is an urgent need to build national capacities across several environmental justice dimensions. The following recommendations are intended to provide a way forward for CITES Parties to constructively advance the science and practice of social justice, species justice, and ecological justice in the international wildlife trade context.

A. Actionable recommendations for CITES Parties:

- Codify environmental justice principles in CITES procedures, including stakeholder consultation and community impact assessments for listing decisions and enforcement.
- Improve the coordination, data standards, and data sharing serving wildlife trade regulatory frameworks. Rapid adoption of digital technologies is essential to keep pace with the sector's scale.
- Promote and support more meaningful youth engagement and gender equity, especially within wildlife trade governance processes.
- Establish ethical standards for post-seizure care of live animals, including options for rehabilitation, repatriation, or sanctuary, with species and ecosystem justice top of mind.
- Develop justice-sensitive enforcement training modules that incorporate procedural and distributive justice.
- Integrate environmental justice indicators in national reporting, including outreach on the role of CITES in fostering environmental justice.
- Support co-production of knowledge, considering both traditional ecological knowledge and science in regulatory processes.
- Facilitate the sharing of original research and case studies in scientific, peer-reviewed literature by scientist-practitioners working at the frontlines of environmental justice challenges associated with the wildlife trade.
- Continue exploring the role of CITES in zoonoses risk mitigation with the intent of safeguarding lives and livelihoods, thereby fostering environmental justice.

B. Motivators for implementation of the recommendations

Motivating the implementation of these recommendations will require a mix of conventional and innovative incentives. Traditional levers include:

- Financial incentives: Donor funding, climate or biodiversity finance mechanisms, and economic aid packages can be tied to measurable progress on justice-oriented wildlife trade governance.
- Reputational benefits: CITES Parties may be motivated by international recognition, improved credibility, or leadership in conservation diplomacy.
- Legal compliance and risk mitigation: Stronger environmental justice provisions help reduce the risk of social conflict, legal challenges, and non-compliance penalties.
- Combatting corruption and organized crime: more stringent regulatory frameworks together with improved collaborative multi-party data and information sharing help reduce corruption and curtail organized crime activities within the illegal wildlife trade pathway.

In addition, innovative approaches can offer complementary motivations:

- Empowerment through education and capacity-building: As seen in protected area contexts, awareness campaigns and participatory training programs can shift perceptions and foster community stewardship.
- Alternative livelihood development: Offering viable economic pathways aligned with conservation goals can foster behavioral change and reduce dependence on illegal or unjust trade practices.
- Youth and community engagement platforms: Platforms for co-design and dialogue—especially with marginalized or underrepresented groups—can generate ownership and co-benefits across social and ecological dimensions.
- Integrating justice outcomes into performance metrics: Embedding justice-related indicators into monitoring and evaluation systems can drive sustained institutional commitment.
- Cross-sectoral coalitions: Linking environmental justice with broader agendas—such as public health, indigenous rights, combatting corruption and organized crime networks, and sustainable development—can open new pathways for advocacy and resource mobilization.

These motivators, taken together, offer a robust strategy for overcoming inertia and enabling transformative change toward environmental justice in the governance of international wildlife trade.

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NK: Writing – review & editing, Writing – original draft. GP: Writing – original draft, Writing – review & editing. JR: Conceptualization, Funding acquisition, Project administration, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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