Elephant Conservation and Ivory Trade: Navigating Taboo Trade-offs

Poaching for ivory has caused a steep decline in African elephant (*Loxodonta africana)* populations over the past decade (*1*). This crisis has fuelled a contentious global debate over which ivory policy would best conserve elephants: ban trade, or enable regulated trade to incentivize and fund elephant conservation (*2*). The deep-seated deadlock on ivory policy consumes valuable resources, and creates an antagonistic environment among elephant conservationists. Conflict over the trade in ivory is emblematic of the impasses that have characterised international decision-making around wildlife trade for iconic taxa, including elephants, rhinos, sea turtles, and tigers (*2*). We argue that the lack of convergence is rooted in incompatible underlying views, and that successful solutions must begin by recognising the different mental models (cognitive frameworks of how actions lead to outcomes (*3*)) and values that underlie stakeholders' diverging positions (*4*). Similarly polarised arenas, such as negotiations to end armed conflicts (*5*) and address climate change (*6*), have made progress using approaches that allow for structured, iterative trust-building as part of evaluating policy options among parties.

Conflicting views on how to save elephants

Many argue that prohibiting all trade in ivory will reduce poaching and conserve elephants (*7*). Stakeholders that support ivory bans also advocate the destruction of ivory stockpiles and steps to reduce demand for ivory. Kenya and most west and central African countries with wild elephant populations subscribe to this approach (see Table S1). Critics of this approach argue that trade bans and stockpile destruction have the perverse effect of increasing the ivory price through perceived scarcity, incentivising further poaching, and that there is limited evidence of successful demand reduction from these actions (*8*). Trade bans are also difficult to enforce in countries with poor governance, carry high social costs of enforcement, and limit opportunities to use sustainably-managed elephant populations and their ivory to generate funds for conservation and community benefits (e.g. *2, 8, 9*).

An alternative approach proposed for elephant conservation is to allow legal ivory trade through regulated markets, with ivory harvested from animals that die naturally or are killed for other reasons (e.g. problem animal control) (*9*). Revenue from ivory can be used to provide income

to rural communities that bear the costs of living with elephants (e.g., attacks on humans, crop raids), and fund conservation and development programmes. The southern African countries that advocate this approach, such as South Africa, Namibia, and Zimbabwe, have large elephant populations and lower rates of poaching than other African nations (*10*). Critics of this approach argue that legal sales stimulate demand by implying that purchasing ivory is socially acceptable. Legalised trade can also facilitate laundering of illegal ivory, particularly in countries with high levels of corruption that would struggle to regulate a legal trade (*7*).

Despite this lack of agreement, the first approach has more policy momentum. Stockpile destruction has increased more than six-fold since 2011. There have been significant efforts to criminalise trade, including commitments to near-total domestic bans on commercial ivory trade in the United States (2016), China and UK (2017), and a motion to stop all legal domestic ivory sales passed at the 2016 IUCN (International Union for the Conservation of Nature) World Conservation Congress. However, the polarisation continues as pro-trade countries and NGOs disagree with the current policy direction (Table S1).

Polarised debates

Heated debates about elephants and ivory have dominated meetings of the Convention on the Trade in Endangered Species (CITES) Conference of the Parties (CoP) for nearly 30 years, where 183 signatory countries debate and negotiate global policies in the trade of flora and fauna (Table S1). For example, following a fierce debate at the October 2016 CoP, a proposal by Namibia and Zimbabwe to trade ivory was defeated. CITES debates are influenced by the positions of NGOs that mobilise media and public attention, lobby signatories, and provide technical advice and support (*2*). Because all signatory countries have an equal vote on proposals to CITES, some countries with wild elephant populations ('range states') have expressed frustration that they have limited influence in CITES negotiations despite bearing the costs of resulting decisions (*2*).

There have been several efforts to find common ground among range states and other stakeholders with divergent views on ivory trade. For example, the African Elephant Range States Dialogues brought nations together to discuss relevant conservation and trade issues (*11*). A series of African Elephant Meetings developed the African Elephant Action Plan in which all range states expressed support for securing sustainable elephant populations throughout their present and potential range in Africa, and for realising elephants' potential to provide cultural and socio-economic benefits. In 1997 parties to CITES established two global monitoring systems: MIKE (Monitoring the Illegal Killing of Elephants) and ETIS (the Elephant Trade Information System) for

collecting and analysing data on poaching, mortality and illegal ivory trade to monitor the trade and provide evidence for decision-making.

Despite these efforts and the evidence available through MIKE and ETIS, the polarisation on ivory trade persists. There is no consensus on what the primary causes of the high levels of poaching are,1 and which policy options on ivory could resolve the crisis (*2, 7, 9*). We contend this continued polarisation stems from a failure to recognise conflicting mental models about elephant conservation, and the values that underpin them (*4*). Mental models and values are influential in the interpretation of evidence — people are more likely to unconsciously challenge the credibility of information that deviates from their values (i.e., confirmation bias; (*12-14*)). For example, the interpretation of evidence on climate change and gun control policy among respondents in the USA was explained by values, with responses predicted by the individual's political affiliation more than by their scientific or mathematical literacy (*12*).

Values also affect how stakeholders perceive trade-offs, contributing to positions that appear irreconcilable, despite agreement about the overarching goal of elephant conservation. Three types of trade-off can be identified when 'sacred values' (i.e., those with transcendental significance, such as human rights, nature, and justice) and 'secular values' (e.g., cost-effectiveness) are involved (*4, 15*). *Routine trade-offs* pit secular values against each other, and can be acceptably evaluated using rational cost-benefit logic (e.g., whether to invest in new hospital equipment or more staff). *Tragic trade-offs* involve trading-off one sacred value against another – e.g., saving the life of one patient over another. There is acceptance that tragic trade-offs exist and have to be dealt with. However, *taboo trade-offs* pit a secular value against a sacred value (e.g., saving the life of one patient through a costly intervention versus securing the financial sustainability of a hospital) (*4, 15*). Taboo trade-offs are inherently uncomfortable and generate both moral outrage and a reluctance to deal with the issue (*4*). Debates over decisions on ivory trade—notably the sacred value that the trade of any elephant-derived product is morally unacceptable (*16*) versus the secular value that ivory is a source of conservation revenue — entail a taboo trade-off (Figure 1).

Navigating divergent mental models and taboo trade-offs

Unblocking the current impasse on ivory trade requires space for experimentation and learning, as well as trust-building among stakeholders (Figure 1)(*5, 6*). An iterative process built on five elements, that draws on experiences from other polarised contexts (*5, 6*), offers a way forward.

First, the range states, as part of their own ongoing dialogues on elephant conservation, should reconfirm the conservation objectives that they aim to achieve (*17*) and explore the values that underlie their perspectives (*18*).

Second, a process for eliciting and sharing different mental models of how various actions affect objectives (including consideration of other threats to elephants, such as habitat loss) is required. Mental models exist at both individual and group level, and their elicitation and discussion will clarify where the differences and common ground lie in stakeholder conceptualisations of how policy interventions work (*3*). It will expose specific areas of disagreement and knowledge gaps about the impacts of policy interventions, informing participants on where further evidence needs to be gathered. Moreover, sharing mental models can foster the emergence of innovative solutions (*3*). For example, tension between wool-producing farmers and conservationists in New South Wales, Australia, involved fundamental differences concerning the perceived impacts of expanding conservation areas on the farming industry's survival. Through a process that revealed and explored stakeholders' conflicting mental models, it became apparent that farmers had the capacity to manage land for conservation, enabling conservation stewardship to become established on pastoral land (see also Table S2) (*3*). A similar process of articulating pro- and anti-trade stakeholders' mental models may highlight that pro-trade countries view ivory as an essential, sustainable source of revenue for conservation. In this case, a commitment to provide other equally valuable revenue sources to replace ivory sales could potentially be an acceptable alternative.

Third, there needs to be a structured approach to evaluating and synthesising evidence on the consequences of different policy options, using methods that minimise bias and that are considered legitimate by all participants (*19*). The identified knowledge gaps must then be addressed by collecting evidence through credible mechanisms that participants agree to accept (*20*).

Fourth, there should be discussion among stakeholders about the trade-offs involved in achieving their shared conservation objectives, and how these relate to stakeholders' different value systems. This may reveal that trade-offs that are perceived as taboo by some stakeholders (e.g. morality of selling ivory versus secular benefits of money from ivory) are seen as a tragic trade-off by others (e.g., the morality of selling ivory versus the morality of conserving elephant populations and supporting poverty alleviation through a sustainable nature-based revenue source) (Figure 1) (*4, 15, 16*). Such discussions can incorporate available evidence, and assist in the identification of policies and interventions that are more acceptable to a broader group of stakeholders (*15*).

Finally, there needs to be an accepted manner by which the process feeds into decision-making at different levels, including via proposals and votes at CITES CoPs (Figure 1). Circumstances vary widely among range states, making a single continent-wide policy unlikely and inappropriate;

but if this process is successful, it could lead to range states supporting each other on locally appropriate policy proposals at CITES, defusing long-term debates and conflicts.

Unlike previous efforts to bring diverse stakeholders together on ivory trade, our proposed process is structured and explicit in its recognition of the values and mental models underlying different positions (Figure 1). It will require iterative discussions among range states, with input from technical experts where needed, and include NGOs, conservation donors, and other key stakeholders at appropriate times. Importantly, experience from other apparently-intractable issues, such as negotiating the end to armed conflict in Colombia and apartheid in South Africa (*5*), and international climate change negotiations (*6*), suggests that iterative interactions among a small group of key parties is more likely to engender trust and agreement, than an international vote open to the media and campaigning pressures. For example, the success of the 2016 Paris climate agreement built on a prior bilateral agreement between the US and China that stemmed from a working group that met several times outside of the public's view for over two years (*6*). Indeed, experience from the African Range States Dialogues suggests that concordance on ivory policy may best be found outside the public and adversarial environment of CITES CoPs (*11*).

Africa has experienced an alarming reduction in elephant numbers since 2007 (*1, 10*) yet range states and NGOs remain in deadlock on ivory policy in response. The next CITES CoP is less than two years away. We recognise that the politics around ivory policy are challenging, but urge range states to begin a structured process to negotiate the diverse perspectives in this contentious debate as soon as possible, supported by organisations committed to elephant conservation. Successful navigation of different mental models and values, and the trade-offs they imply, will not only enable greater collective action on elephant conservation — but also provide an example of how to enhance the structured use of evidence in CITES decision-making on other globally iconic taxa.

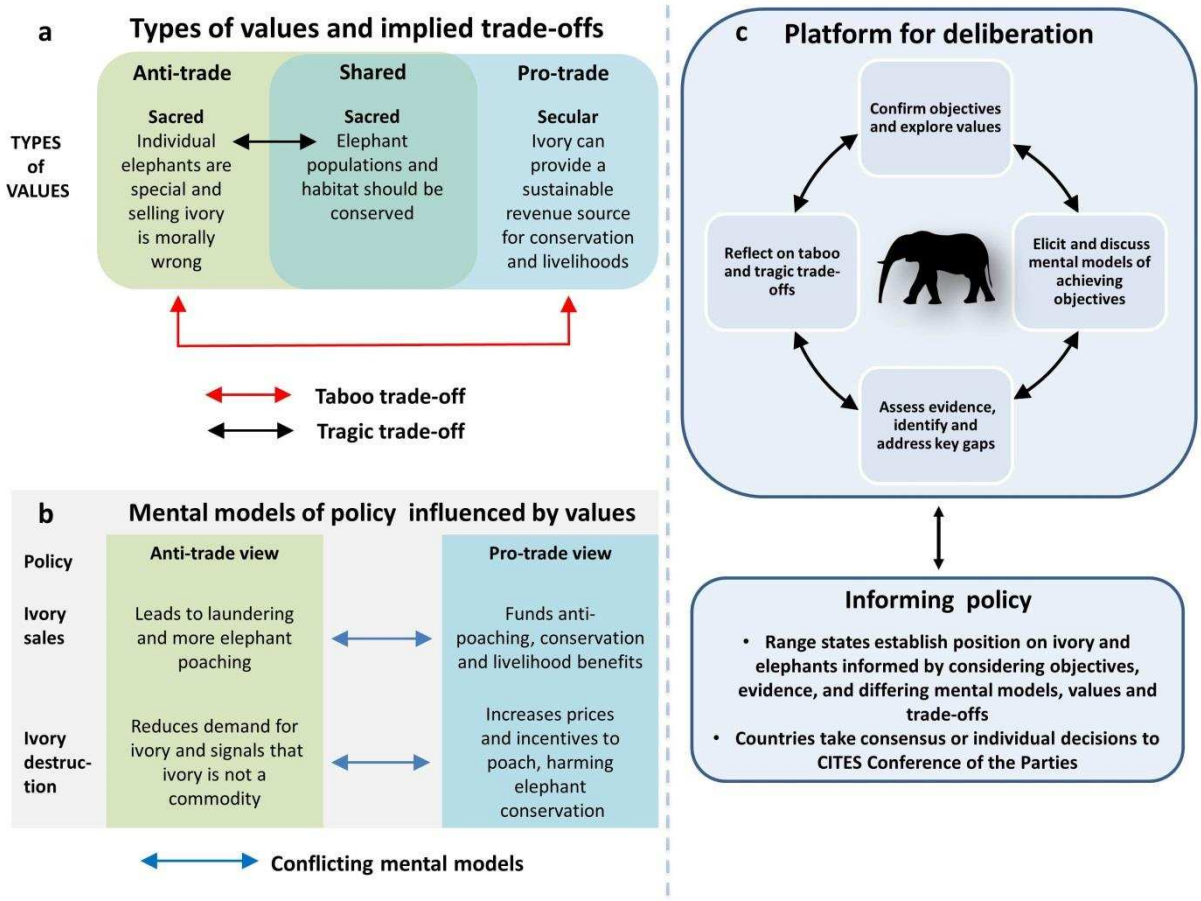

Figure 1: Illustrative figure of how sacred and secular values imply different types of trade-offs, and how mental models affect ivory policy debates. (a) Values: Stakeholders hold different values that affects how trade-offs are perceived. Some of these values are shared between pro-trade and anti-trade sides whereas others are not. Values shown are illustrative and not comprehensive. (b) Mental Models: The values shown in (a) influence the mental models of how different policy options will lead to successful elephant conservation. (c) Platform for deliberation: An iterative process between a small group of key stakeholders (e.g., African elephant range states) with input from technical experts can build an understanding among stakeholders of the different values and mental models in policy discussions. This process can identify evidence gaps, clarify misapprehensions and identify common ground and potential novel solutions. The process can also illuminate that the taboo trade-offs that underlie policy conflicts can also be seen as tragic trade-offs. For example, the trade-off between conservation and the morality of selling ivory, because pro-trade groups perceive selling ivory as essential to conserving elephants. The process can therefore aid identification of more broadly acceptable solutions. In seeking to reveal mental models, this process can also support the uptake of evidence to build consensus on policies for ivory trade and elephant conservation.

Supplementary Materials

Table S1 with selected CITES proposals by pro-and anti-trade sides to show the long-standing nature of this debate

Table S2 How mental models and cognitive mapping have been used to contribute to understanding and resolving conflict and tension and strengthening collaboration

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