

Working Paper under Discussion

Competing Demands: Understanding and Addressing the Socio-economic Forces that Work for and against Tiger Conservation

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1. Background – tigers, people and their demands

The problems undermining the conservation of wild tiger populations are often summarised in relatively simple terms such as loss and degradation of habitat, scarcity of prey, poaching and illegal trade. Solutions are similarly described in terms of enhancement of the protection of and connectivity between priority landscapes, suppression of poaching and enforcement of laws aimed to stop illegal trade.

Though describing clearly the nature of threats to tiger populations and the types of action that could help, this terminology fails to convey clearly the fact that both the problems and solutions are matters of human behaviour. They represent symptoms of and potential remedies arising from choices made by people – by individuals, communities, institutions and wider society – within the context of the diverse and sometimes competing experiences, interests and motivations that shape their behaviour. These choices have been and will continue to be made in light of a wide range of social, cultural, economic and political forces that evolve and interact in a bewilderingly complex manner. Fundamentally then, the future of tiger conservation is a matter of societal choice. Essentially the challenge for those committed to guaranteeing that future for wild tigers is to influence the behaviour of a diverse range of people and institutions to achieve that end.

Considering the implications of this analysis in simple terms, it seems reasonable to ask why on one hand there appears to be insufficiently strong motivation from parts of human society to ensure that wild tiger populations can survive and why on the other hand there is such strong motivation from other parts of society to acquire the parts and products of tigers for consumptive uses. Simpler still, why do dead tigers in trade appear to be in more demand than live tigers in the wild?

In part this is because the (illegal) market provides a profitable and observable way to register the demand for dead tigers, whereas apart from eco-tourism and the possibility of donating money to a conservation charity (an illustration of what economists call the preservation value of a species) there are few other means to channel the latent demand for recording the desire and demand for wild thriving tigers. A further problem is that tigers bestow **public** and largely global benefits when alive in the wild, but **private** benefits when killed. The implication is that the tiger's survival requires adequate levels of protection, conservation and sanctuary. As a corollary the greater the private demand for dead tigers, the greater are the need for and costs of protecting the species in the wild. A key question is therefore: what can be done to shift the balance between these forces?

This paper aims to take a fresh look at of the main socio-economic factors that influence the protection of tiger populations in the wild and the commercial consumption of their parts and products. It also draws attention to some areas of innovation and action that could play critical parts of a strategy to ensure a brighter future for wild tiger populations.

What this paper does not aim to do is re-examine the question of allowing new captive-sourced supply of tiger products to the market and the belief held by some commentators that this could reduce poaching of wild populations. This matter has been examined in detail in a range of other analyses, which have identified both opportunity and risk, but failed to provide reliable grounds for confidence that positive results would entail. Such an approach remains outside the boundaries of current inter-governmental policy, particularly CITES, and would be at odds with the existing national laws of all relevant states. Indeed at the 2009 CITES Standing Committee, the World Bank – an institution of many economists - asserted that having reviewed the evidence and weighed the arguments carefully, on balance the risks of legalizing the trade in tiger parts (from any source) would far outweigh the potential benefits. More significantly since extinction is irreversible, the down-side risks escalate, suggesting that legalizing the trade in tiger parts would be economically imprudent and ill-considered. The statement is summarized in Annex 1 of this paper.

2. Demand for conservation of tigers in the wild

2.1 A brief guide to modern life for large predators

Competition for living space between humans and wildlife is a major challenge in conservation efforts all over the world today. One part of this challenge is the set of particular issues that arise with respect to the conservation of large wild predators. For such species, conflict includes livestock predation, competition for animal protein valued by people and predators, and the risk of human injury or death from attacks on people. Resentment of the presence of large predators and retaliatory killing is a common reaction by individuals and communities suffering the effects of such conflict. The fundamental question posed for human society in this respect is whether we are willing to make room for such predators and whether we can tolerate co-existence (Fascione *et al.*, 2004).

There is a significant body of research into and practical management experience of large predator/human conflict across a wide range of species and geographical situations. Examples include: lynx, vultures and wolves in western Europe; bears, cougar and wolves in North America; jaguar in Latin America; crocodiles, wild dogs, lion and leopard in sub-Saharan Africa; as well as bears, leopards and tigers in Asia. Common solutions include such mitigation approaches as land use zoning, animal population control, development of economic incentives for co-existence and compensation for loss and injury (Woodroffe *et al.*, 2005).

However, conservation efforts for large predators are motivated by more than simply the desire to mitigate negative impacts. On the positive side of this equation are the particular ecological roles played by predators as keystone species and their symbolic and political value in conservation strategy as flagship or umbrella species. Many large predators also act as the focus of direct economic benefit through consumptive (such as trophy hunting) and non-consumptive (such as tourist viewing) use. Motivation comes too from deep in the human psyche. People all over the world experience conflicting emotional responses to predators, with instinctive fear and defensiveness on one hand contrasting with deep-set aesthetic appreciation and cultural fascination on the other. There seems little doubt that such strong socio-cultural motivations are at least of equal importance and perhaps ironically may even be the primary reasons why some large predators continue to survive in the wild at all (Fascione *et al.*, 2004; Kruuk, 2002).

2.2 Fighting an uphill battle

The tiger is undeniably subject to all the challenges facing large carnivores in modern times. All things considered, its survival, even in the meagre and declining numbers we estimate today, can be seen as a considerable victory for human reason over basic instinct. For long periods of not too distant history, tigers were by choice eradicated by people from almost any place where conflict for living space arose. Then at some point in the latter half of the 20th Century this trend was challenged, the case was made for the tiger's survival and conservation action was nurtured in many parts of the tiger's range.

In 2009 it would be self-deceiving to claim that tiger conservation over the past 50 years or so has been an unmitigated success, but it is important to recognise that the world in which these efforts have been made has changed in ways that make the task ever more difficult to achieve. Over the past 50 years world's human population has more than doubled in number and the global economy has grown roughly five-fold. Economic and social changes in the countries where tigers are found in the wild have been immense. The tigers which remain today live in a world where human society has its main focus on economy, on development – sustainable or otherwise – on issues such as poverty alleviation and the spectre of rapid climate change. Conservation ranks poorly among the list of anthropogenic priorities.

2.3 Looking for the pulse of tiger conservation today

The first challenge set for this paper was to examine the issue of demand for live tigers in the wild. As discussed in a more traditional economic context with respect to tiger trade issues below, demand may be viewed as a combination of both the desire and willingness to pay for something. So, what drives the desire for tiger conservation in the early 21st Century? What are the factors that motivate people to strive to reverse the downward trend in the number of tigers in the wild? And is this motivation shared by enough of the people actually in a position to make a difference and bear the costs of success?

As a starting point for these questions, the first author carried out a rapid review of how fifteen international NGOs and national governments describe the motivation for their commitment to tiger conservation. Although articulated in different ways and not universally shared by all those reviewed, some common themes soon emerged (in fact they are rather well collated on the website of the Global Tiger Initiative itself, the text of which is paraphrased and abbreviated here):

Culture: tigers are a symbol of all that is splendid, mystical and powerful about nature and there is a wealth of legend and lore connected with the tiger in Asian cultures. The loss of tigers would inevitably mean the loss of cultural and spiritual values that connect humans to the wild world.

Ecology: loss of tigers from their natural habitat will result in irreversible changes in natural ecosystems owing to their place at the top of the food-chain, the disruption of which will eventually lead to loss of other species.

Ecosystems: the presence of tigers helps justify the conservation of high-value ecosystems that provide vital services to humans, such as carbon sequestration, hydrological balance, pollination services, protection from natural disasters and soil erosion, medicinal plant genetic diversity, bio-prospecting and income from tourism.

Biodiversity: the fact that many tiger populations inhabit areas of particularly high biodiversity value, helps justify the conservation of these critical conservation areas.

Indicator: the tiger is an indicator or barometer of how human society is doing on the larger question of sustaining environmental quality in the face of ever-increasing demands on finite resources.

There is no denying that this is an impressive list and that individually or together these specific motivations for tiger conservation provide a relevant and compelling justification for conservation action by the institutions in question and they are no doubt shared by many other individuals, communities and governments around the world.

However, it is doubtful that all of these motivations are understood and held as firm belief by the full range of actors with their own diverse and competing interests who influence the continued existence of wild tiger populations. Even for those who do hold such belief, other wants and needs may undermine their willingness to act in favour of tiger conservation. How would a local politician in a key tiger conservation area weigh these motivations against the range of other economic and social promises he or she has promised to deliver in a term of office? How would a farmer in that same area place them in the context of the daily struggle to feed a family and make ends meet? Reconciling short term needs and promises with benefits that will only prove their value in the long term is a fundamental sustainable development challenge. Nevertheless, it is undoubtedly in the context of this human behavioral dilemma that the demand for conservation of tigers in the wild is competing for attention.

2.4 What more can be done?

There are certainly no easy answers to the rather large question of how best to enhance demand and, as a result, conservation action for live tigers in the wild across the full range of people sharing their living space and responsible for the wide range of decisions that affect their future survival.

The sparse and anecdotal evidence suggests that the economic value of the damage by tigers to livestock is not substantial and it would in fact be relatively straightforward to design fair and efficient compensation schemes to ensure that losses are not suffered by those who live with the tiger. Extending this idea there could be various forms of benefit sharing schemes and "payments for environmental services" where rewards to local communities are made contingent upon objectively measurable and verifiable environmental outcomes. Again rudimentary estimates suggest that the sums needed to shift incentives towards conservation would not be large as most inhabitants in tiger

habitats subsist at low levels of income. Missing is the political will, economic expertise and fiscal resources to pilot such schemes.

Improving efforts to reduce and compensate conflict between people and tigers is certainly a priority, but this brief overview of the social and economic setting for tiger conservation suggests at least that success depends on a lot more than better mitigation of conflict. Such action needs to be complemented and strengthened by creative efforts to translate the cultural, ecological, ecosystem, biodiversity and indicator values that motivate the already converted tiger conservationists into a language and set of motivations that enlists a greater diversity of stakeholders to the same cause.

It's not much use to hear that the place you live in or govern is providing an important ecosystem service or is recognised as a great centre of biodiversity value if there is no tangible connection between those concepts and your day-to-day existence. There is no doubt a great deal to be learned in this respect from the on-going work of The Economics of Ecosystems and Biodiversity (TEEB) study and other work in this field (TEEB is a major international initiative to draw attention to the global economic benefits of biodiversity, to highlight the growing costs of biodiversity loss and ecosystem degradation, and to draw together expertise from the fields of science, economics and policy to enable practical actions moving forward – www.teebweb.org).

3. Tackling the demand for tiger parts and products

3.1 An exploration of the market landscape

However complicated the circumstances that surround the illegal killing of wild tigers, it is clear that one aspect of motivation for people involved is the fact that parts and products of dead tigers have a market value. A critical starting point for the design of actions aimed to reduce this motivation for illegal killing is an understanding of the demand that drives the market and any other factors that shape the behaviour of those along the trade chain from poacher to final consumer.

The nature of demand for tiger parts and products has been examined by a variety of earlier studies. The following account describes the principal characteristics of the main segments of tiger product consumption and provides a summary statement about the status of concern to future conservation efforts.

Skins for display Tiger skins, whole or in parts, have been used for adornment and household display for centuries, particularly as rugs and wall hangings (in essence hunting trophies). Though undoubtedly a form of use that has a long history in many tiger range States, this sector of trade also developed a global dimension, with significant movements of skins and skin items particularly along colonial trade routes to Europe in the 19th and early 20th Centuries. An extension of this market segment is the trade in whole taxidermy specimens (often skin and skeleton) for display (Nowell, 2000). Unlike the mainstream trade in wildlife trophies, it is likely that today's end user for tiger skin display items is seldom also the hunter of the animal from which the skin was taken. The motivation for acquiring these items is more likely to be association with, rather than involvement in, the act of hunting, or simply admiration for and the aesthetic value of the item. In this segment of the trade, fake items are quite regularly discovered in trade, though they are often quite crude and easy to distinguish. Recent information indicates that skin dealers are adapting to the decline in garment trade demand in China by promoting trade in whole skins as a status item (EIA, 2009). There is evidence though that this market may be expanding (though the extent is a matter of conjecture). Overall, subjectively the status of this market segment can be summarised as: ***moderate/high concern: uncertain volume, but a persistent trade, perhaps even growing, and trading requires little of the specialised knowledge of product or market needed in other trade segments.***

Skins for garments Perhaps simply because of rarity, but maybe because of unfavourable handling characteristics and consumer preference for other skin patterns, tiger skins did not feature heavily in the boom times of the 1960s/1970s international fashion-driven cat skin

garment trade. Aside from occasional re-surfacing in trade of old tiger skin garments, especially in Europe and the US, this segment of trade was not considered significant prior to documentation of recent growth in tiger skin use for clothing in China. Although apparently rooted in strong tradition of use of animal skins, including tigers, in clothing, research indicates that it was only in the 1990s that the market for tiger (and leopard) skin-trimmed *chubas* (cloaks) spread widely among ethnic Tibetan communities in China (Banks *et al.*, 2006; Nowell and Xu, 2007). Consumer attitude surveys in 2005/2006 indicated that possession of tiger skin clothing remained uncommon, but was viewed as an indicator of prosperity (Nowell and Xu, 2007). No doubt cultural values played a part in making these items more popular, but it appears that they became one among a number of symbols of wealth, a trade driven more by fashion than tradition. This trade appears to have been a primary driver of skin trade during the decade up to around 2006, but recent public awareness efforts appear to have been effective in reducing overt sale of these goods in recent years. Overall, the status of this market segment can be summarised as: ***moderate/high concern: arguably the principle component of recent trade, but localised and apparently responding to negative publicity.***

Formalised medicinal use of bones Though virtually every tiger part has been documented in some form of medicinal or folk remedy use (see below), the commercialised use of tiger bone in formal preparations within traditional Asian medicine practice is best treated as a distinct trade segment in its own right. The pharmaceutical value of tiger bone, particularly in Chinese, Japanese, Korean and Vietnamese medicinal practice, has been described in relevant medicinal texts for centuries for treatment of rheumatism and a variety of other ailments of the muscles and bones (Mills and Jackson, 1994). Traditionally tiger bone was soaked then fried, ground to powder and mixed in small quantities with other ingredients in prescribed combinations by pharmacists and doctors. However in the second half of the 20th Century, as part of a the wider modernization of traditional medicine manufacture, factory production techniques were increasingly employed to make medicines containing tiger bone in the form of pills, plasters, gels and wine. By the early 1990s in China alone, there were more than 200 companies involved in production of tiger bone medicines within what had become a multi-million dollar subset of the traditional medicine sector. Although such preparations likely included highly diluted quantities of genuine tiger bone and sometimes even no bone at all, there is little doubt that the sector as a whole was a dominant driver of tiger trade dynamics from the mid 1970s to the early 1990s and estimates of use volumes during that period range from 1000kg-3000kg per year during that period (Jenkins, 2006; Moyle, 2009; Nowell, 2000). Despite prohibition under CITES, tiger bone medicines were distributed globally as a small part of the growing international market for traditional Asian medicines. As part of the international effort to reduce trade impacts on wild tigers, both China and South Korea halted production, domestic and international trade in tiger bone medicine by the mid-1990s through legislation and amendment of official pharmacopeia (Nowell, 2000). Subsequent market surveys in China, by far the largest market by the early 1990s, have documented steadily decreasing availability of formal tiger bone medicines. Medical practitioners have demonstrated a major commitment to shift to use of animal and plant-derived substitutes and surveys of potential consumers have revealed significant awareness of prohibition, concern about conservation impacts and positive attitudes to the use of alternative ingredients (Nowell and Xu, 2007). Overall, the status of this market segment can be summarised as: ***moderate concern: high trade levels in recent history indicate risk, but there is also credible evidence of significant changes in attitudes and practice of the formal medicinal sector.***

Tonics and folk remedies In addition to the formalised medical use of bones described above, traditional beliefs throughout Asia have attributed health benefits to the consumption of almost every other part of a dead tiger. From tiger penis (often fake) sold to assist sexual virility to tiger teeth, hair, skin pieces, fat and eyeballs used to treat an enormous variety of ailments, there is a rich and diverse tradition of use of tiger parts and products (Mills and Jackson, 1994). These commodities are often offered and purchased in raw or dried form and have been found to appear in a wide variety of trade outlets, including pharmacies, folk medicine markets and sometimes through businesses dealing with wild meat or wildlife curios.

There are examples where the dividing line between such trade and the formalised medicinal use of bone becomes blurred, particularly the manufacture and sale of tonic wines (in the past associated with both formal medicinal practice and general retail sale) and the manufacture of tiger bone gelatine cake or *cao* in Viet Nam. The distinction made here in separating this market segment is that, unlike the formalised medicinal use of bone, the use of tonics and folk remedies is not regularised through official pharmacopeia nor is it carried out largely within the scope of licensed medical manufacturing and dispensing practice. As such, this market segment, though likely including almost as high a level of fakes as the curio trade is challenging to monitor or regulate. Furthermore, unlike the formal traditional medicine trade, it is a sector where the judgement about need or desire to use the commodity is made principally by the consumer and not by a trained medicinal practitioner or pharmaceutical regulator. Overall, the status of this market segment can be summarised as: ***moderate/high concern: owing to the widespread occurrence of such practice, the diversity of outlets and the challenges of regulation.***

Wild meat The occurrence of tiger meat in the exotic meat restaurant trade in South-east and East Asia is not common, but does come to light from time to time. As with other aspects of wild meat use in Asia, there is a connection with health/tonic attributes, but for such a rare species the prime motivation is likely to be status-related. Such dining is necessarily covert and is poorly documented, but is likely to be done in full cognisance of both the illegality of and conservation impact of consumption. Arguably those may actually be the primary factors driving the choice to serve and consume tiger meat. Like some other market segments, there is almost certainly an element of deception in this trade, with meat from other species sold falsely as tiger meat. In one case in China for example, a restaurant owner under questioning claimed that "tiger meat" offered for sale was actually donkey meat. There are also claims that some tiger meat on sale in China may have originated from tiger farms (Nowell and Xu, 2007). Overall, the status of this market segment can be summarised as: ***low/moderate concern: this practice is localised and relatively rare, but by its nature extremely secretive and unlikely to be dissuaded by awareness raising***

Curios A further dimension of the trade in tiger parts as curios, including teeth and claws, whiskers, clavicles (collar bones) and small skin pieces. This trade has chiefly been identified in Southeast Asia, particularly Indonesia but also during recent decades in countries such as Lao PDR, Viet Nam and Thailand. Sometimes these items are sold as magic amulets and charms and sometimes simply as collectors items or souvenirs. The occurrence of fake items, particularly teeth and claws, is very common (Nowell, 2000). Contemporary research indicates that the place where this trade is of greatest concern is in Sumatra, Indonesia, where tiger teeth, claws and other parts are considered by some to provide good luck and protective powers. Though apparently declining under regulatory pressure, this market segment appears to have been the main recent demand driver for illegal killing of tigers in Sumatra (Ng and Nemora, 2007; Shepherd and Magnus, 2004). Overall, the status of this market segment can be summarised as: ***moderate/high concern: for the Sumatran subspecies in particular, this demand appears to be a key driver of illegal killing and appears to have strong cultural origins***

Live animals The demand for live tigers for public and private display remains surprisingly strong in many parts of the world. Despite sporadic reports of trade in wild-caught infant tigers (Nowell, 2000), the majority of this trade, whether for formal zoological collections, animal shows or private keeping, appears to be supplied through sale and exchange between these collections of captive-bred animals. For example, the majority of growth in the two largest captive tiger populations, over 5000 in the US and 4000-5000 in China has come from captive breeding rather than the acquisition of live tigers from the wild (Moyle, 2009; Nowell and Xu, 2007; Williamson and Henry, 2008). Overall, the status of this market segment can be summarised as: ***low concern: most demand for live tigers is almost certainly being met from captive breeding***

3.2 Getting to market – the role of dealers and brokers

Between the people who illegally kill tigers in the wild and these different end-markets lies a complicated and fluid trade chain involving a range of actors motivated largely by the opportunity for financial gain from a low volume, high value black market commodity. It is not the purpose of the present paper to examine the specific dynamics of this trade chain, but some general overview of its nature is essential when considering demand-side interventions.

Most information on trade chains and the actors involved is derived from analysis of seizure information and development of intelligence from apprehended traders and covert sources. The general picture that arises is far from simple and very little is known as perhaps little as 10 percent of the trade is intercepted. For example a review of seizure information carried out by TRAFFIC in relation to tiger trade involving China noted the involvement of both professional criminal networks and opportunistic amateurs (Nowell and Xu, 2007). A later study of Chinese seizure information suggested a significant degree of criminal organisation along the trade chain, though also evidence of the existence of specialised roles at certain stages, such as accumulation points in range state cities, dedicated cross-border smuggling operations and product distribution networks. This latter analysis stressed the importance of coordination and evasion costs in shaping the behaviour of trade actors (Moyle, 2009). Other analyses though describe a less structured network of individuals and small groups who operate independently depending upon their role or geographical location (Nowell, 2000; EIA, 2009).

Various studies have also commented on the degree of specialisation among those involved in illegal tiger trade, noting that specialists do appear to exist, but that this commerce is commonly only a small part of wider wildlife product businesses (often including both illegal and legal commodities). Commentaries vary about whether there is strong evidence of connectedness to larger criminal operations dealing outside the wildlife sector and much depends on the geography of the trade (Moyle, 2009, Nowell, 2000; Nowell and Xu, 2007).

More generally the economic structure of the trade can be likened to a wine glass – with a large number of potential poachers – forest dwellers; a relatively small number of traders who smuggle supplies across borders and a large number of buyers and retailers of tiger products in East Asia. The relatively small number of traders at the centre of the trade have the capacity to exercise market power and manipulate prices and supplies. In economic jargon they act as oligopolists with market power (Damania and Bulte, 2007). This renders demand management policies ever more important as a strategy to address the wildlife trade.

3.3 Thinking about underlying drivers of demand behaviour

In simple terms, demand can be seen as a function of the desire for a commodity combined with both ability and willingness to pay for it. Attempts to elaborate the factors that affect demand often stress issues such as: price of the commodity; price of related commodities (such as substitutes); income; taste or preferences; and expectations about future prices and income. The extent to which consumers make decisions based on logical assessment of these and other factors or through other behavioural mechanisms is a matter of rich debate among economists.

Considering demand factors influencing the tiger part and product trade, a number of key issues can be identified:

Desire for the commodity The exploration of the demand landscape presented above shows that there is a wide range of distinct, though in some cases related, segments of demand for tiger parts and products. For some uses, desire for the commodity has strong specific cultural and traditional underpinnings (eg. medicine, tonics, charms). For other uses, desire may be a combination of association with the aesthetic and cultural imagery of the tiger and a matter of status demonstration (eg. skins for display and garments and wild meat). In all cases, this desire is clearly strong and resilient for some groups of people, since it has continued in the face of significant regulatory pressure over the past three decades.

Substitution For all the market segments discussed above there are related commodities that may attract consumer choice in preference to purchase of tiger products. In some cases

these commodities may also be derived from other threatened wildlife species (eg leopard skins and bones), in others from non-threatened wildlife, captive-sourced specimens or even domesticated species (eg some medicinal plants or other wildlife meats) and in others they may be of a very different nature (eg industrial pharmaceuticals). A great deal of work has been done in the traditional Asian medicine sector in particular to find and gain acceptance of substitutes for tiger and other endangered species products with some success, but such efforts have also encountered significant challenges (Nowell, 2000). For example, the entry of large amounts of captive-sourced and synthetic bear bile into the market does not appear to have displaced a significant residual demand for bile from wild-sourced bears (Robinson, 2007). The issue of substitution in the tiger trade is further complicated though by the prevalence of fake items in most market sectors (Nowell, 2000). Finally under this theme, it should be noted that there is considerable evidence of adaptability in the tiger trade chain, with suppliers shifting to new end market segments as opportunities come and go.

Stigma of endangerment and illegality There are two main factors that may moderate demand. First, tigers are widely known and understood to be endangered and therefore tiger product consumption has negative conservation impact. Second, trade in tiger products is illegal and in many countries subject to significant legal sanction. Research into the awareness of traders, medicinal practitioners and potential consumers in a number of countries has repeatedly demonstrated high levels of awareness about both conservation impacts and legal restrictions along with high levels of claimed motivation to avoid using endangered wildlife products (Gratwicke *et al.*, 2008; Nowell and Xu, 2007; Venkataraman, 2007). There may be some market segments where such knowledge is actually part of the desire to consume (eg wild meat), but this is likely to be a small part of the overall demand picture.

Ability to pay There is no doubt that growth in some sectors of trade in wild animals and plants has reflected increasing consumer affluence. Examples include the shark fin trade, swiftlet nest trade and crocodile skin trade. Analyses of tiger trade dynamics for at least some demand segments indicate that such increased ability to pay has also had a significant effect (eg. skin garments used by China's Tibetan communities and the overall industrialisation of the traditional medicine industry in China from the 1980s onwards) (Nowell, 2000; Nowell and Xu, 2007). The fact that tiger product demand persists in countries with among the highest levels of current and potential future economic growth globally is clearly an on-going aspect of concern.

Uncertainty about future prices and supply Two issues are worthy of note with respect to market uncertainty. First, a factor identified by review of tiger trade dynamics is the motivation by traders and consumers to buy tiger products for storage and later use on the assumption that they will become rarer, more expensive and harder to acquire in future (Moyle, 2009; Nowell, 2000). This option demand presents a particular challenge, since increasing awareness of rarity may simply motivate more purchasing. Second, there is concern that government messaging about a review of the merits of relaxing tiger trade prohibitions in China may encourage risk taking and increased speculation and stockpiling by illegal traders gambling on the possibility of making windfall gains (Nowell and Xu, 2007).

In combination, these factors and others present a complicated set of forces influencing consumer choice and very much set the scene for any attempts to alter demand behaviour.

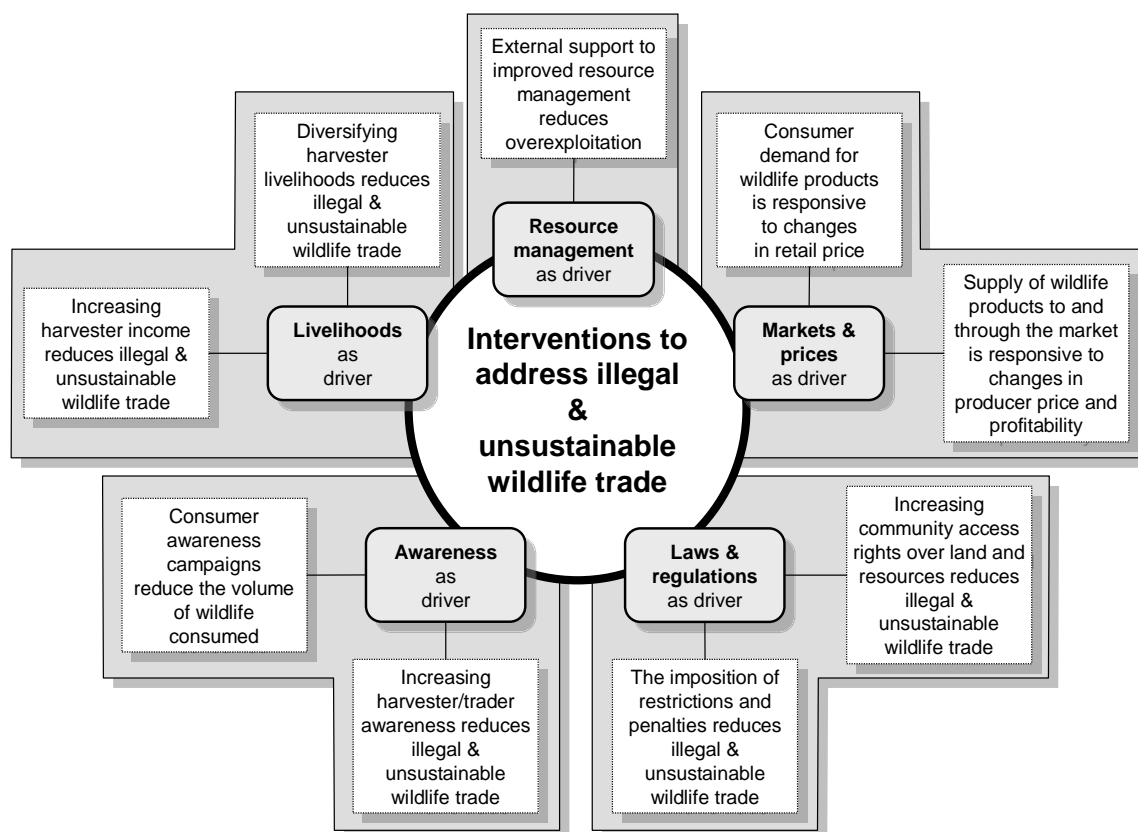
3.4 Past and current interventions – are they working?

The design of interventions to address illegal and unsustainable wildlife trade is shaped by a series of assumptions made by governments, non-governmental organisations, and others of what drives the behaviour of people and institutions involved, and which conditions therefore need to change in order to improve the situation.

A recent review of wildlife trade drivers and intervention logic in Asia carried out by TRAFFIC for the World Bank noted five broad categories of interventions that are commonly employed, individually or

in combination, to reduce unsustainable and/or illegal wildlife trade. Each of these intervention types was though, at least implicitly, to be founded on assumptions about a different set of economic and social drivers, as illustrated in the Fig 1. below: those concerning people's livelihoods, the markets and prices for wildlife products, the laws and regulations that are in place to govern people's actions, awareness and knowledge of regulations and conservation concerns, and the practices and techniques used to manage wild animal and plant resources (TRAFFIC, 2008).

Fig 1. Assumptions underlying wildlife trade interventions (TRAFFIC, 2008)



Broadly, the actions taken by governments, civil society groups and in some cases the private sector to dissuade tiger trade have fallen into two main groupings: providing a legal and enforcement deterrent; and motivating consumer preference to avoid tiger products. Each has been characterised by a set of interventions founded on some basic assumptions about the nature of the illegal trade in tiger parts and products. A key question that needs to be faced, however, is whether these measures are succeeding in reducing demand and illegal trade.

Legal deterrent With international and domestic trade universally prohibited in tiger range States and significant consumer countries since the mid-1990s, there has been a clear message for at least the last 15 years to those involved in tiger trade that such practice is contrary to the policies and laws of the countries where they live and work. As noted previously, research has indicated that tiger trade prohibitions are widely known and understood among key audiences and it is likely that some proportion of potential traders and users of tiger parts and products have been motivated to avoid such activity simply because it is illegal. There is no basis upon which to quantify accurately the extent of this impact, but high levels of support for legislative measures among potential consumers in China (Gratwicke *et al.* 2008) and Viet Nam (Venkataraman, 2007) suggest that it is not insignificant. However, as noted below, there is a case for strengthening legal provisions in some countries still further so that end users more clearly face the same risk of sanction that already applies to the people who supply them.

Enforcement deterrent Beyond this basic response to the straightforward existence of legislative prohibition is the deterrent of law enforcement action. Viewed in this context,

enforcement deterrent grows only from visible actual enforcement action. Enforcement risk is a virtually universal factor for those deciding whether or not to purchase tiger products for resale along the trade chain, since transactions such as commercial movement, offer for sale and import/export are usually prohibited and subject to legal sanction. However for the end-users of tiger parts and products, the question of whether their actions are prohibited and subject to sanction varies from country to country depending on legislative cover for acts such as purchase, possession or display of a restricted item and in some cases is likely to be open to interpretation. Where legislative prohibition for a particular act is in place, the key question is what factors influence compliance. This is a hotly debated and heavily analysed topic in many other spheres of law enforcement and some of the common themes identified include: perceived justness/legitimacy of the law; political certainty (ie. will the law soon change?); effectiveness of preventative measures; and strength of visible enforcement implementation. The latter point is of particular relevance and importance in the case of illegal wildlife trade generally and that affecting tigers in particular. There is a significant body of work on enforcement economics that makes a strong case that the effectiveness and deterrent value of environmental laws is undermined by weak implementation. In simple terms, the profits (or benefits otherwise measured) of illegal behaviour often exceed the expected value of the enforcement disincentive; that disincentive being a function of the probabilities of detection, arrest, prosecution and conviction multiplied by the amount of the likely penalty. By this logic, enforcement systems must be treated as holistic and only as strong as its weakest link (Akella and Cannon, 2004). Evidence of the direct impact of enforcement deterrent on tiger part and product demand is largely lacking. Studies of domestic trade in China, where potential penalties are high, indicated significant reductions in detectable trade in the formal medicinal sector over the past 15 years that could, in part, be attributable to enforcement deterrent (Nowell, 2000; Nowell and Xu, 2007). However, research into consumption of tiger products in Sumatra, Indonesia, over the past decade indicated that enforcement was inadequate (though action has been taken recently by the Indonesian government to address this concern), with the potential deterrent value of high penalties nullified by low detection, arrest and prosecution rates (Ng and Nemora, 2007). A recent review of expert opinion about this subject indicated a range of opinions, with some believing that national enforcement action was deterring some potential offenders and others indicating that they felt enforcement at current levels was not a credible deterrent and too often undermined by corruption (TRAFFIC, 2008).

Motivating consumer preference Although by no means as concerted an effort as the legal and enforcement deterrent measures adopted by governments over the past two decades, there have been a number of important initiatives aimed to dissuade traders, medical practitioners and consumers in Asia and elsewhere from purchasing illegal wildlife products in general, and tiger products in particular. These initiatives have taken a range of forms from government publicity about legal prohibition to celebrity-led media messaging organised by NGOs. One example is the Chinese government's extensive outreach and media communications effort after the 1993 tiger trade ban, which included active distribution of the official notice of the State Council to target audiences in the medicinal sector, supplementary publicity about legal sanctions and stock controls and a newspaper and TV publicity campaign aimed at the general public (Mills, 1997). Another is the work of the Active Conservation and Awareness Program (ACAP) and the NGO WildAid, which delivers public messaging on illegal wildlife trade, including that involving tigers, through celebrity-led public service announcements using popular visual media that are estimated to reach as many as 1 billion viewers a week. There are many other examples including the work of MYCAT in Malaysia and a range of NGO and government efforts in China, Viet Nam, Thailand and Indonesia. The main forms of messaging employed individually or in combination by governments or NGOs in such initiatives include:

- Conservation: over-use will cause extinction
- Heritage: any use conflicts with longstanding cultural values
- Alternatives: are available and of at least equal value
- Illegality: crime is morally wrong and risks punishment

- Role models: influential people calling others to join them in avoiding such consumption

In terms of impact measurement, key questions are whether such messaging reaches its target audiences, whether it affects their attitudes and ultimately whether it influences their purchasing behaviour. As in the case of regulatory measures, the evidence base for assessing such impact is rather weak. A review of the 1994 government publicity push in China indicated very high levels of penetration to target audiences, though mixed results in terms of attitudinal impact (Mills, 1997). Furthermore, a recent survey of opinion among experts working on wildlife trade issues in Asia indicated that they held a rather low level of belief in the impact of awareness campaigns on consumer demand (TRAFFIC, 2008). However, market monitoring and interviews in Tibet in 2006 indicated that a range of public awareness campaigns by environmental and religious organisations aimed to dissuade use of tiger skin for clothing did appear to have had a marked effect on attitudes and trade levels (Nowell and Xu, 2007). To understand these issues there is a clear need for further research from other markets to assess the key determinants of success and failure in altering consumer preferences.

The overall performance of past and current efforts to dissuade demand for tiger parts and products is clearly difficult to judge, but current efforts must overall be called into question since there is continuing evidence of both illegal tiger killing and illegal tiger trade. Perhaps this is because the scale of the exercise is too small and crowded out by other messages. Or it could be because the message does not resonate with its intended target. Again more research is warranted.

Aside from the straightforward value of the existence of a consistent legal framework across range and consumer states, the effectiveness of enforcement deterrent appears to be undermined by gaps and weaknesses in specific parts of the enforcement process. Signalling country commitment is vital and could be strengthened in many cases. Furthermore, the effectiveness of efforts to influence consumer preference to avoid tiger products have not been carried out at the scale that might have meaningful impact. That said, there are clearly good localised success stories demonstrating that enforcement deterrent and consumer campaigning can impact demand when implemented effectively.

3.5 What more can be done?

The main message arising from this analysis of demand for tiger parts and products is that “carry on, but try a bit harder”, is clearly not going to have a significant impact on the surprisingly diverse range of market segments that drive illegal trade and illegal killing. Moreover, with a distinct lack of systematic and formalised monitoring of market trends, even through proxy indicators such as seizure information, the impact of those interventions will continue to be difficult to assess or refine.

If demand for tiger parts and products is to be seriously impacted, there needs to be a renewed, scaled-up and sustained effort to dissuade end users and those who supply them from participating in this business. That effort needs to transmit and reinforce two key messages: use of tiger products is socially unacceptable; and anyone who decided to use tiger products risks a high chance of meaningful legal penalty. The following suggestions of how to move forward are offered for consideration:

A. Reinforce the legal deterrent: There are two critical issues to deal with in terms of legal deterrent. First, governments should act to remove any ambiguity about the likelihood of easing tiger trade prohibition and make it clear that this is not going to happen. Second, governments should consider, within the scope of relevant legal code, increasing the scope of legislative measures so that they include prohibition and sanction for acts such as purchase, possession or public display of illegally-obtained tiger parts and products by end users. This latter recommendation reflects innovative practice in many other fields of criminal deterrence, such as prostitution and narcotic control, where emphasis is being placed on putting the client in at least as much risk of legal sanction as the supplier. As an adjunct all trade in tiger parts must be banned completely so that there can be no ambiguity about the source.

B. Make enforcement consistently credible: Urgent and coordinated action is needed by governments and inter-governmental support agencies to convince those involved in the tiger trade that there is a significant risk of being caught, prosecuted, convicted and given a meaningful punishment. This task may appear complicated, but compared with many other areas of criminality, making more serious in-roads into the low-volume, high-value illegal trade in tiger products is not at all an unfeasible undertaking. Successful action requires better handling of intelligence within and between countries in order to locate offenders, better use of that intelligence during investigations in order to understand and dismantle trade networks. It also depends upon improved prosecution practices, greater awareness of this area of crime and the relevant laws among the judiciary, strong sentencing and greater vigilance against the undermining effects of petty corruption and other governance failures. As others have commented before, there is no point in having laws that threaten draconian penalties for illegal tiger traders and consumers if these people do not believe they are likely to be caught or prosecuted in the first place.

C. Talk to the unconverted: The volume and focus of public and targeted communications aimed to deter tiger product consumption needs to be vastly improved. Building from lessons learned and opportunities created during past campaigning on wildlife trade issues in Asia, there is a great need to invest significant new resources in dedicated messaging aimed at specific groups of tiger product consumers, their suppliers and those who regulate their activities. Market analysis should form the basis for identifying, segmenting and targeting key audiences and innovative approaches should be used to frame and deliver messaging. There is an enormous amount to gain in this regard by looking at actions, results and lessons gained from social cause communications in Asia in other spheres of concern, such as HIV-AIDS, child labour, conflict diamonds and narcotics. New media need to be employed more creatively and new ideas, such as disruptive marketing may have a place to play. It is easy to be cynical about the likelihood of success from demand reduction campaigning, but for tigers in particular it has simply not been tried at a scale where impact could expect to be measured.

D. Monitor progress: Methods to monitor changes in the main tiger market sectors need to be developed and employed over time to provide a basis for assessing the impact of and refining the legal, enforcement and communications actions described above. Although not necessarily the precise approach needed for tigers, the CITES Elephant Trade Information System provides a good example of how systematic monitoring and analysis of readily accessible information on wildlife seizures and confiscations can provide a basis for assessing policy actions and other interventions. Some initial review of options for an international Tiger trade Information System was carried out at a joint TRAFFIC/WWF workshop in August 2008 (TRAFFIC, 2009). Investing in monitoring and assessment will increase the efficiency of investment in the main demand reduction approaches, allowing emphasis to be shifted in response to emerging market trends and other developments.

4. Mobilising action

This paper began with the concept that the future of tiger conservation is essentially a matter of societal choice and that the challenge for those committed to guaranteeing that future for wild tigers is to influence the behaviour of a diverse range of people and institutions to achieve that end. Although not claiming to be exhaustive in its considerations, nor correct in every sense with its prescriptions, this preliminary analysis of the human dimensions of tiger conservation does reach some tentative conclusions about how demand for live tigers in the wild might be enhanced and demand for dead tigers in trade could be dissuaded to a meaningful extent.

Concerted and coordinated action is needed on multiple fronts at a scale and intensity far in excess of what has been attempted to date. Legal measures need to be refined, law enforcement action needs to be focused, integrated and visibly incisive, and communication to those driving this trade needs to be better targeted and implemented with the resources and approaches that have been shown to be effective in changing attitudes and behaviour with respect to other issues of social concern.

Such actions have organisation and resource needs that, if taken as a while, would be considerable. However, such costs need at least to be set in the context of what is already being spent by governments and NGOs on other tiger conservation activities and preferably considered too with regard to the considerable direct and indirect social, economic and environmental benefits that successful tiger conservation would bring. Arguably too, the alternative is simply to give up current efforts and accept one day that the tiger's extinction is to be explained simply by saying that it had no chance of survival up against the basic forces of human nature.

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Annex 1

World Bank Statement at CITES Standing Committee Meeting – Geneva, July 9, 2009

Tiger farming has proven to be a divisive issue and one that has distracted many in the conservation community and in the Range States from the common goal of saving wild tigers in their wild habitats.

Too much faith has been placed lately upon the guidance that economics and market mechanisms can bring to this very complex issue. Economics is an extremely useful guide to policy, but as the World Bank can authoritatively say from the position of its vast professional and practical experience, a narrow economic approach has its limits and it cannot meaningfully apply to this subject.

There are clever theories that tell us that tiger farming is and could become the panacea for conservation. But there are an equal number of experts and theories who inform us otherwise. This is not surprising. There are several unknowns and even more unknowables that no amount of research can cast light upon. Will legalized farming facilitate laundering? Would it create new markets and an even higher demand for wild tiger products - for those who want a luxury good - the "real thing"? And why if farming is so effective are wild bears still poached when there is a surplus of farmed bear bile in the world? The truth is that we cannot provide answers to these counterfactuals that can only be known after the fact.

And this is why we need to exercise caution. Extinction is irreversible, so prudence and precaution suggest that the risks of legalized farming for commercial exploitation of tiger parts and derivatives are too great a gamble for the world to take. We cannot know for sure if tiger farming will work. And if it does not work the downside risks are just too high - irreversible harm. Having carefully weighed the economic arguments we urge the CITES community to uphold the ban on tiger products and for all countries to continue to ban the domestic trade of tiger parts and derivatives. We also call upon the international community at large to join efforts in providing the necessary technical and other support to the respective countries in phasing out tiger farming. This is the only safe way to ensure that wild tigers may have a future tomorrow.