Thematic Paper #7

- Smart Green Infrastructure
- Conservation through Community Incentives
- Capacity-Building
- Landscape-Scale Management
- Addressing Competing Demands
- Innovative Finance
- **Costing Tiger Conservation**

GTI
Global Tiger Initiative

What do we need to conserve the Tiger in the wild and how much will it cost?

Joe Walston, Wildlife Conservation Society, New York, USA. Jwalston@wcs.org

Colin Poole, Wildlife Conservation Society, New York, USA. Cpoole@wcs.org

Anak Pattanavibool, Wildlife Conservation Society, Thailand Program, Bangkok, Thailand, Anakp@wcs.org

Arlyne Johnson, Wildlife Conservation Society, Lao PDR Program, Vientiane, Lao PDR. Ajohnson@wcs.org

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Abstract
This paper is the beginning of an analysis of what is needed to save Tigers in the wild and what it will cost. A preliminary analysis will be completed by the end of 2009 with a full analysis to be completed in early 2010. Our approach examines what it means to conserve the Tiger and justifies a focus on indentifying key 'source sites' across their range. We define these source sites and argue that urgent and sustained effort and financing needs to be targeted at the protection of Tigers and prey at these source sites across Global Priority Tiger Conservation Landscapes to complement broader landscape and demand-reduction strategies. We conclude by taking two example sites and assessing the cost of achieving this.

Background
As part of its commitment to Tiger conservation and, more specifically, to the Global Tiger Initiative (GTI), WCS is implementing a GEF project with a number of partners called "*Tiger Futures: Mainstreaming Conservation in Large Landscapes*". The project's overall objective is to "mainstream conservation across large landscapes through enhanced protection of tigers and their habitats" with WCS's role focused on two areas, one of which is to perform an **"assessment of financial needs for effective tiger conservation"**. The obvious premise here is that we know what is needed to effectively conserve Tigers. In this paper we therefore focus on this premise before embarking on estimating its cost, actually the most straightforward aspect of the work. Examining the premise is both complex and open to debate from many sides. This paper does not seek to establish a single solution, but to highlight the issues and then use two examples to establish what the implied costs are.

This work will continue beyond the completion of the Kathmandu workshop. As such this paper is intended to present a working draft of the initial analysis, justify its approach and conclusions, and to solicit inputs into the larger study.

Context
It is firstly important to clarify the relevance, scope, and acuity of the work. The work's relevance must be to either on-going site-based conservation efforts for Tigers or the ability to harness greater funds for these efforts. The following confines the scope of the study: first, it will only consider in situ conservation efforts. Second, it will not advocate particular strategies that would be philosophically unacceptable to particular range states. Third, it will attempt to be range-wide. Fourth, its methods will be standardized and explicit. The need for range-wide analyses and the limited availability of funds and of quality, standardized and detailed data from each range state or landscape will necessarily limit and define the acuity of the work.

Introduction
Defining the limits of what defines 'Tiger conservation' is complex and subjective, but has rarely been necessary. While most would agree on site-based law enforcement to prevent poaching being key, there is a cline upon which 'Tiger conservation' activities lie and where, at its extremes, it becomes less easy to evaluate an activity's impact on - and therefore relevance to - Tiger conservation. While

we don't wish to spend time debating this continuum, it is necessary for the purposes of this study to define limits, not least in order that a cost-analysis can be performed. These quite limited boundaries are not intended to demarcate Tiger conservation or to discount other approaches, but to focus this study on a sub-set of those ineluctably vital activities upon which other Tiger conservation activities rely.

We are concerned that while significant progress is being made by many Governments and agencies in developing appropriately ambitious landscape strategies for Tiger-recovery, based on a reasonably sound identification of priority Tiger Conservation Landscapes (TCLs), we still are not able to claim that any more of a handful of sites for Tigers are suitably protected to allow these strategies to be effective. This in itself would be immensely depressing given the amount of resources and attention Tigers receive, were it not for two facts: Tiger conservation is actually working at some sites, and there seems to be an increasing acceptance of looking critically and independently at what is working and what is not working for Tigers. The combination of these facts, have lead us to the design of this study, which will eventually set out the long-term costs of conserving Tigers at source sites.

We recognize that without investments in broader landscape planning, demand-reduction, and global trade issues the long-term future of the Tiger is doomed, so making too much of the short-term investments is akin to a life-support system keeping a terminally-ill patient alive for a few more weeks. We recognize the need to scale-up support for these broader initiatives to connect landscapes, restrict trade and, ultimately, reduce demand. However, we see the debate too often focused on an equitable distribution of resources across a set of self-determining funding needs, rather than on an objective examination of priorities, scale and evidence-based targets.

Consider the fight against HIV/AIDS. If one asks a major donor how would you best direct a million dollars to help combat HIV/AIDS, the response is almost invariably a question: do you want to help prevent people from acquiring HIV, or do you want to contribute to the long-term search for a cure/vaccine? Both approaches help fight HIV/AIDS, both are undoubtedly important approaches, but they have, practically speaking, very little to do with each other (until that cure/vaccine is found). We believe the analogy holds for Tigers. If we agree on the need to be able to effectively reduce the global demand for Tiger products while at the same time we agree that we have to prevent their immediate extinction, then we need to disaggregate them. This does neither an injustice but merely reflects their different but complementary requirements. To finish the metaphor, to prevent Tigers being killed today one needs an entirely different set of competences, tools and objectives, working across significantly different temporal and spatial scales to the those seeking a long-term reduction in demand for Tigers and their prey.

We therefore propose that a focus on securing 'source sites' is still the over-riding priority for Tigers and that an assessment of the financial needs and gaps for Tiger conservation should consider these costs in order that long-term/sustainable funding mechanisms can be established.

In order to do this we need to define what a 'source site' is. Source sites for Tigers are defined here as conservation units, such as protected areas, which are known to maintain a significant breeding Tiger population and are therefore considered critical to the overall recovery of Tigers within a TCL. There is some intentional flexibility in this definition to allow for refinements based on sub-regional contexts and ecological or political realities. However, the underlying assumption is that these sites currently are the basis for a repopulation of adjacent areas within TCLs. A possible definition would be "***those sites which, if they lost their wild Tigers, would prevent or greatly retard any natural repopulation of the larger TCL***".

As mentioned the definition provides a certain flexibility, which we believe to be necessary. A purely population-based approach would probably either preclude a majority of sites beyond the Indian subcontinent and Russian Far East or would be too coarse-filtered to remove sites that are known to be doomed or equivocal sites that lack sufficient data. Our definition attempts to set a qualification that is TCL-based and allows for the local context to be considered. For example, Nam Et-Phou Louey (NEPL) National Protected Area (NPA) in Lao PDR would not rank highly on a purely numerical scale of Tiger numbers when compared with some sites in India. However, there is little doubt that it is a

(possibly the only) source site for Tigers in the Northern Annamites and so is unquestionably of raised importance. If we lose the Tigers at NEPL it is highly likely that we will have lost the Tiger from that part of their range or, to put it more positively, if we succeed in helping the Lao government protect and recover the Tigers at NEPL then we provide hope to the whole landscape.

The approach does not reject the need for wider Tiger-conservation activities in these TCLs, but does call for some basic, cautionary logic. If we are to build Tiger landscapes we need to ensure that the foundations are there and are solid. Arguably, the essential increased ambition and strategic thinking about connectivity and landscape-level recovery which has occurred in recent years has distracted attention from our most immediate and important priority: making sure Tigers don't disappear in the meantime. Recent experiences from the two traditional "strongholds" of Tigers, India and Russia, are salient reminders that these foundations are far from secure. We need to start investing far more heavily in - and sustaining - our support for these strong foundations: the source populations.

Identifying Source Sites

We believe that it is important to identify source sites across the TCLs for a number of reasons, though it is not within the authority of this paper to determine where they are or how they are chosen. We do, however, suggest that an approach, to be refined in Kathmandu, that will identify the sites and allow for the full analysis to be completed.

We suggest that source sites be identified by TCL rather than just by country or region. There is a complementarity between the source sites approach and that of the TCLs such that this selection process would end-up augmenting the TCLs. It would also somewhat de-politicise the process and ensure that a certain level of independence and objectivity could drive the process. The following are suggested principles in selecting source sites:

- At least one must be demonstrated to exist for each Global Priority TCL or the TCL should be down-listed/removed
- There is no limit to the number of Source Sites selected for each TCL
- A potential source site must be able to demonstrate an existing Tiger population with the demographic potential to recover. [precise ecological criteria for this to be developed]
- A potential source site must be able to demonstrate sufficient political support for Tiger conservation regardless of the availability of resources or capacity
- The limits of the site should be defined by current range (known or inferred) of a contiguous breeding population, not additional areas for potential re-occupancy
- Contiguous areas that lie across an international border should be evaluated as two separate source sites. If both sides qualify then they should remain as two source sites[1]
- The selection of source sites does not lower the importance of other sites within the TCL, but highlights an area for its specific role and contribution to these other sites

These principles are intended to further a debate and refinement in Kathmandu and are not prescriptive.

Example Source Site Descriptions

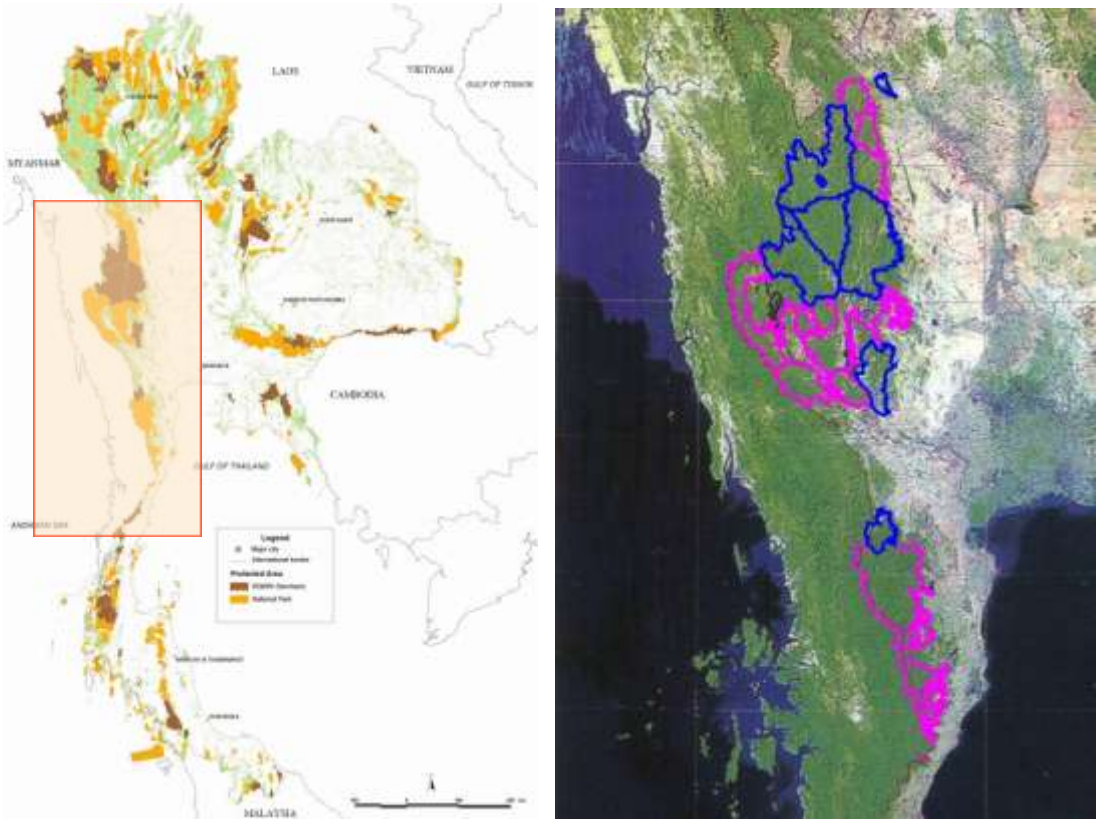
For the workshop we have chosen two source sites to analyze: Huai Kha Khaeng Wildlife Sanctuary (WS), Thailand and Nam Et-Phou Louey National Protected Area (NPA), Lao PDR. These two sites were chosen for technical and practical purposes. They are data-rich, are at very different stages of recovering Tigers, have different capacities and investments, but for both we have the support from the appropriate authorities. While it would be ideal to have more geographically/ecologically distinct sites, the current sites are sufficient for this early analysis. The complete study will include a number of sites across the Tiger's range.

[1] Regardless of connectivity and scale issues, the fact remains that the two sites would remain under the management of two Governments who might have differing levels of commitment to Tiger conservation. The over-riding importance of Government backing for Tigers makes this necessary we believe.

Huai Kha Khaeng Wildlife Sanctuary, Thailand

Huai Kha Khaeng Wildlife Sanctuary encompasses an area of 2,700 km^2, and is a core area of the Western Forest Complex (WEFCOM), a large protected area complex of six wildlife sanctuaries and 11 national parks encompassing 8,000 km^2. It is a part of the Tenasserim Mountain range that straddles the borders of Thailand and Myanmar and is globally recognized as a Class I Tiger Conservation Landscape (TCL).

Figure 1. Huai Kha Khaeng Wildlife Sanctuary and the Western Forest Complex (WEFCOM)

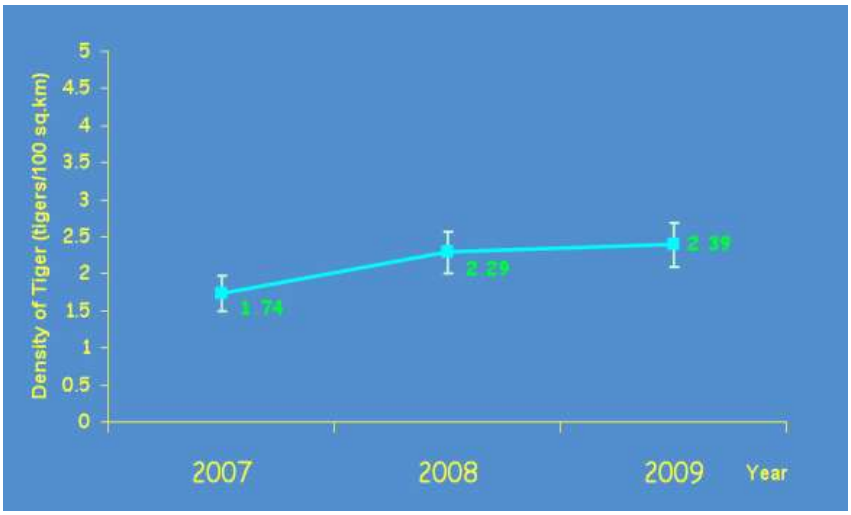


Huai Kha Khaeng Wildlife Sanctuary is now, without question, one of the greatest hopes for Tigers globally, and not just for HKK itself but also for the impressively ambitious Western Forest Complex. While there are also breeding Tigers in other parts of the complex and probably other source sites to identify, we have chosen HKK as a model of progress and cautious ambition. Additionally, HKK has a long history (for SE Asia) of conservation and one that has seen many ups and downs. As such, it contrasts nicely with Nam Et-Phou Louey (NPA), which is also making progress but is at a nascent stage of development, has no history of conservation prior to this century, and is facing somewhat different challenges.

Since its inception in 1972 HKK's conservation peaks and troughs have, as with most Protected Areas in the region, closely tracked both the country's political will to protect wildlife and the individual leadership of the Park itself. Currently, due to both these factors being positive, HKK is undergoing a resurgence of activity and there is evidence to show that this is directly resulting in increasing numbers of Tigers and their prey. While national and international NGOs have been part of this 'renaissance' there is little doubt that the Government of Thailand and the individuals within the Government agencies responsible for HKK have been the over-riding factor. We believe that this probably holds true for most Protected Areas and will be a particular focus of the longer-term analysis.

Importantly to this discussion, the available Government budget to HKK has not greatly changed over the last few years, though the amount of on-the-ground law enforcement effort, the quality of that effort, and the implementation of accompanying monitoring programs for wildlife and law enforcement effort, has significantly improved. Increased donor and iNGO commitments can account for some of this, though certainly not all, suggesting that a more efficient use of resources, increased motivation and a refinement of techniques have been instrumental. HKK now boasts a sophisticated zoning, patrolling, monitoring and training system to complement its already impressive infrastructure of 19 patrol stations, 19 patrol teams and over 170 patrol staff. Starting in 2006, a new law enforcement strategy named the "Smart Patrol System" to address poaching of tiger prey has been adopted. Annual tiger monitoring in HKK started in 2004 and current estimates (2008) indicate 40 tigers are using just the central survey area of 1000km^2 in HKK.

Figure 2. Density of Tigers at HKK between 2007-2009



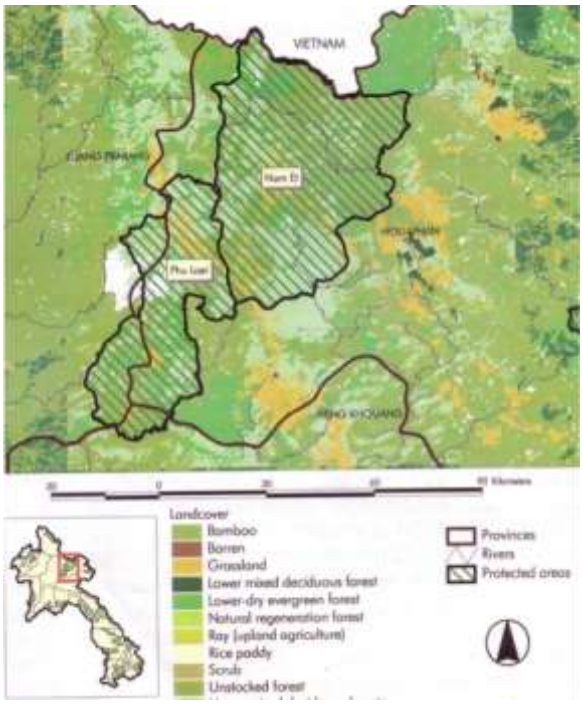
The salient point here is that HKK is succeeding, at least under the current administration, using the resources and staff provided by the Government of Thailand. It still relies on some external funding and support, and it is still short of the funding it needs to improve to achieve its own goals; these figures will be discussed later. However, it contrasts starkly with Nam Et-Phou Louey, which we will consider now.

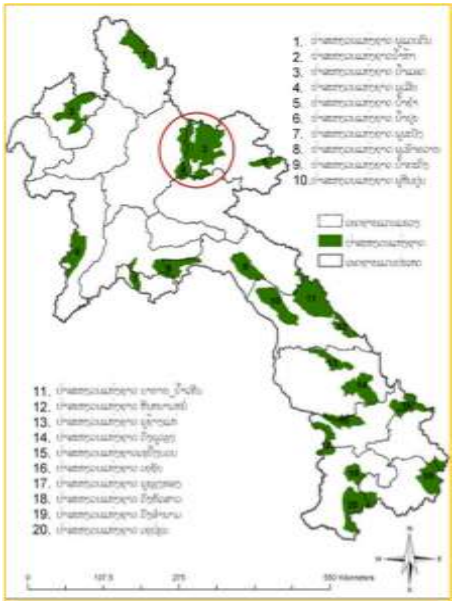
Nam Et-Phou Louey National Protected Area, Lao PDR

The first protected areas in Lao PDR were created in 1993, as National Biodiversity Conservation Areas. Much of the system remained unmanaged for a number of years due to the nascency of the relevant Government bodies, the inaccessibility of many of the areas and the low budgets available to these Government bodies.

The Nam Et-Phou Louey NPA covers 5,950 km^2 of mountainous terrain in northern Lao PDR. The NPA is part of the larger Tiger Conservation Landscape #35 (WCS/WWF/SI 2006) in northern Laos and Vietnam. The 15,000 km^2 landscape ranges from 400-2288m in elevation and is a mosaic of mixed evergreen and deciduous forest. The NPA is divided into two zones, a 3,000 km^2 core zone where access and harvest is prohibited and a 2,950 km^2 management zone, where pre-existing villages are allocated land for subsistence (Government of Lao PDR 2007, Government of Lao PDR 2008). Annual rainfall fluctuates from 1400 to 1800mm. The area is a Category VI Managed Resource Area with villages remaining inside the protected area boundary in designated management zones. There are 98 villages inside (n=34) and on the boundary (n=64) of the NPA with a mean population of 313 people per village.

Figure 3. Nam Et-Phou Louey National Protected Area





Protected Area: 5,959 km^2
Core zone: 3,000 km^2
Management zone: 2,959 km^2

Prior to 2002, very little was known about the site and no consistent conservation activities were in place. Between 2003 and 2005 surveys indicated that Tigers still remained and in numbers that gave some hope for a recovery. The Laos Government were supportive of increased attention on NEPL and, almost entirely with external financial support, a Tiger conservation program was initiated with a range of activities including law-enforcement patrols, outreach and education with villages, wildlife monitoring, livestock management and ecotourism.

Today there are 7 substations, 3 mobiles teams and 1 road checkpoint, an active enforcement strategy operating in conjunction with outreach teams in the villages. A Government-led strategy for Tigers has been developed and is now being implemented.

Comparison

The two sites here provide positive examples of what is being achieved for Tigers. Both are unquestionably source sites: they are critical to the long-term recovery of Tigers across their respective landscapes/TCLs/countries, they have demonstrated the necessary political support. However, it is the differences that are most germane to the question of funding gaps and costings. In HKK there is established infrastructure, detailed knowledge of the geography and accessibility of the zones, a large and reasonably well-trained cadre of rangers, support staff, existing networks of communication and, most crucially, funds to maintain this. In short, they have had 30 years experience of developing conservation capacity and have a budget.

In NEPL, the project personnel are starting almost from scratch. The terrain is uncharted and challenging, with none of the support staff or back-up facilities. Although the Government have proved their commitment through providing the majority of the manpower for the enforcement activities (currently there are nine mobile patrol officers, three wildlife checkpoint officers, 42 forest rangers to conduct patrols and to staff ranger stations) financial support is provided for most of the enforcement costs. Thus, we have very different scenarios with very different funding needs.

The costs of conserving Tigers

Defining what constitutes a cost for the conservation of source sites is open to conjecture and also site-specific. Often it is not a question of whether a cost is related to Tiger conservation or not, but rather whether Tiger conservation should be paying that cost. For example, a local judiciary is an important body in dealing with minor infractions, conflict resolution and, on occasions, convictions. A fully functioning judiciary, cognizant of wildlife law, mindful of it implementation, and open to collaboration with protected area authorities, is a key aspect of conservation. However, should Tiger conservation pay for the judiciary? Almost certainly not. Should it pay for promoting awareness of wildlife laws and facilitating conflict-resolution? Possibly, in some circumstances in some countries.

For the purposes of this study we have confined the definition of costs to those relating to core activities of the source site and of the agencies directly responsible for protecting and managing those sites, such as the Protected Area agency. However, we also want to give license for site managers to decide, within limits, of what constitutes core activities. For example, in both HKK and NEPL it was decided that a core activity included work with communities both within and immediately adjacent to the source sites, while HKK also chose to include law enforcement efforts with local restaurants that were illegally selling wildlife from the source site. However, one-off studies, the involvement of other Governmental agencies, non-monitoring research and ecotourism investments would not be considered.

Categories of costs also have to be defined for the purposes of identifying appropriate sources of long-term/sustainable funding sources. The most obvious is one-off or investment costs versus sustained costs. However, there are also costs for which the responsibility should remain with the host countries, such as Government staff salaries.

Results and Discussion

Data provided by Government agencies, conservation NGOs and donors have been compiled for the two sites. Some data are currently still confidential, such as individual staff salaries, though in these cases numbers have been merged into larger categories in order that data is not lost but details are hidden. Categories for costs are: Staff, Monitoring, Interventions and Constituency Building. Estimates are based on existing strategies being developed by both countries and are considered a reasonable minimum for ensuring adequate protection of Tigers and their prey. They do not represent a 'wish list' or an 'ideal state' but a practical but ambitious statement of needs.

The figures presented are also entirely the responsibility of the authors and do not represent formal Government policy or those of WCS.

In Tables 1. and 2. 'Probable Secured' is taken here to be the combination of Government funding and donor/NGO support. For donors/NGOs, only funds that apply specifically to Tiger conservation activities are considered, and no indirect costs of those activities are included. At this stage the figures are intentionally combined until official Government sanction is given. The Government funding under "secured funds" does not change across the ten-year extrapolation, as it is not possible to predict future changes in Government policy or funding levels. The external contribution to "Probable Secured" is similarly static as it is expected that existing donors will not stop support or will be replaced, though will not significantly increase contributions.

Investment Costs

These represent costs for construction and equipment purchases that are either one-off costs or those that are not annually incurred. Although they are not included here in the long-term sustainable costing analysis, it is important as part of the gap analysis.

Table 1. indicates that Nam Et-Phou Louey has a far higher need for immediate infrastructure development than Huai Kha Khaeng, which would be expected given their differing histories. However, the scale of investment in both is currently significantly greater than any existing source of funds being made available to either site.

Table 1. One-off required investment costs for Huai Kha Khaeng (HKK) Wildlife Sanctuary and Nam Et-Phou Louey (NEPL) National Protected Area (US$)

	HKK	**NEPL**
Infrastructure		
Overall Requirement	410,000	650,000
Probable Secured	200,000	45,000
Difference	*210,000*	*605,000*
Equipment		
Overall Requirement	120,000	120,000
Probable Secured	28,000	28,000
Difference	*92,000*	*92,000*
Overall Requirement	530,000	770,000
Probable Secured	228,000	73,000
Total short-term investment needs:	**302,000**	**697,000**

Table 2. Annual Required Running Costs for Huai Kha Khaeng (HKK) Wildlife Sanctuary and Nam Et-Phou Louey (NEPL) National Protected Area (US$)

	HKK	**NEPL**
Staff		
Overall requirement	680,000	420,000
Probable Secured	540,000	185,000
Difference	*140,000*	*235,000*
Interventions		
Overall requirement	280,000	300,000
Probable Secured	190,000	120,000
Difference	*90,000*	*180,000*
Monitoring		
Overall requirement	160,000	130,000
Probable Secured	130,000	78,000
Difference	*30,000*	*52,000*
Constituency Building		
Overall requirement	95,000	135,000
Probable Secured	45,000	40,000
Difference	*50,000*	*95,000*
Overall requirement	*1,215,000*	*985,000*
Probable Secured	*905,000*	*423,000*
Difference	**310,000**	**562,000**

Note: detailed breakdowns of these figures are not currently available for public distribution

Table 2. shows a number of points of interest, not least that the total operating budget estimates for both sites are not dissimilar, with the major difference being the numbers of staff deemed necessary at each site. However, it is the difference between the secured and the required funding that is most pertinent here. NEPL requires significantly more annual funding in order that they can achieve their stated objective of recovering Tigers at the site in the short-term and re-populating the wider landscape in the medium- to long-term. In fact, NEPL's funding needs represent a greater figure than than is currently being invested, while for HKK it only represents 28% more in comparison to current investments.

An extrapolation of the figures would indicate that NEPL requires an additional 6 million US$ over the next ten years, over and above existing commitments, with HKK requiring half that amount. These figures are significantly higher than any being currently provided or even requested of individual donors. If one combines existing and required funding, the figures become more than 10 million US$ for NEPL and 12 million US$ for HKK.

Timescale is necessary to mention as it appears that, to some, an 'immediate' problem mistakenly infers the need for a 'short-term' funding solution. Additionally, there are existing strategies that suggest that a short-term investment, and of the financial scale mentioned here, could stop the further loss of Tigers across entire TCLs. We believe these to be flawed in three ways. Firstly, spreading limited funds too widely will undermine the ability to achieve the stated goal; greater focus is needed. Secondly, the figures, even with added focus, are too low as this paper demonstrates. And finally, there is no likelihood that just a few years of funding will be able to address the underlying drivers of Tiger loss at these sites. It is important to state that there is no indication, nor in fact any likelihood, that these requirements are going to lessen or abate in the foreseeable future.

The examples of Huai Kha Khaeng and Nam Et-Phou Louey are not intended to represent the complete range of source sites across Asia, though they are likely to be in many ways indicative. The full analysis that will continue from this paper will consider the variety of sites across the Tigers range, though we consider that there is sufficient evidence from this paper to suggest that, in order to conserve Tigers across these source sites, the global community will need to increase its commitment to Tigers by an order of magnitude, and to sustain it until wider demand-reduction strategies begin to reduce pressure.

If we are surprised or shocked by the figures, then we should be reminded that these are low when one considers that this investment should be valued not against the size of a source area, but against the larger landscape for which these source sites are critical. Furthermore, they should be valued against the other long-term and larger investments being put into tackling global demand, trade and political capital-building, which ultimately rely on these source sites. Against these activities, any financial figures we present will be significant though not disproportionately so.

Next Steps

We would like to propose that the analysis move ahead based on comments received in Kathmandu, which will be immediately incorporated into an updated document.

There are two main aspects to consider: the identification of 'Source Sites' and the 'costings framework'. The first will require the support of this meeting for a process of agreeing on criteria. The second will also require broad endorsement of a set of principles to keep costings well-defined but flexible. If these can be agreed and the support is there, then we would like to ask the various agencies to nominate their point persons to ensure that good communication is maintained and we are sufficiently inclusive and rigorous.

There is no doubt that the work will require effort from many sources and individuals, though we trust that you agree that this is a useful contribution to all our efforts to conserve the Tiger.