69084

The World Bank Group

Promoting Nature-Based Tourism for Management of Protected Areas and Elephant Conservation in Sri Lanka

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SUMMARY

The Government of Sri Lanka's ten-year development framework aims at accelerating growth while ensuring a path of sustainable development and prioritizing conservation of the country's natural heritage. In line with these priorities this study focuses on promoting nature-based tourism for enhancing protection of natural assets, in particular elephants which are a flagship species while promoting growth in the tourism industry. The study identifies development opportunities that increase tourism revenues and offers an assessment of the human elephant conflict which is the primary impediment to long term elephant conservation.

Tourism has remained a resilient contributor to the economy of Sri Lanka. With improved promotion and niche markets that capitalize upon the country's rich natural assets, tourism's contribution to the economy could increase substantially. An assessment based on a tourism survey conducted in a small cluster of national parks in the Southern Province indicates potential for increased revenue from nature-based tourism in Sri Lanka which could contribute towards conservation of the protected areas and flagship species such as the elephant.

The current pattern of tourism does not capitalize on the country's potential and comparative advantage. Expenditure patterns that emerged from the survey indicate that travelers who visit the country are typically on a tour package and spend meager amounts compared to individual (non-package) traveler. The highest spending tourists are those who *visit national parks* and are *non-package* travelers. Of the surveyed international travelers, over 76 percent were on packaged tours, and among them, 96 percent of the packages were purchased outside Sri Lanka. These findings have policy implications for the country and suggest that incentives to promote individual travel, which could create high-value niche markets, raise revenue from the sector, and possibly decrease revenue leakages by reducing the number of foreign-purchased travel packages.

Another simple method of increasing tourism revenue would be through increasing the average length of a tourist's stay. With almost 70 percent of tourists identifying "pleasure" (e.g., recreation, sun-and-sand, cultural, natural, wildlife tours) as their main reason for travel, increasing a nature tourist's duration in Sri Lanka could be accomplished through better marketing of its national parks. Currently the vast majority of tourists do not visit the parks, but the survey reveals a strong willingness to add a park visit to their trip.

Along with better marketing, improved conditions of the national parks (e.g., less traffic congestion, improved infrastructure facilities, more shopping opportunities, and diverse activities) have the potential to increase tourism revenue. To assess the scope for raising additional revenue, the tourist survey was used to ask nature tourists their willingness to pay park entrance fees (1) to enjoy the national parks as they currently stand and (2) for specific improvements in the park. Results from the survey indicate that both international and local tourists are willing to pay higher than their current entrance fees, for park improvements as well as for the parks' current conditions. The findings imply that simply imposing a 30 percent increase on park entrance fees would result in an increase in park revenues of more than $369,000 per year (in a subset of the surveyed parks). With improved park conditions and with a more proactive tourism initiative that encourages current nonpark tourists to visit, entrance fee revenues have the potential to increase to more than $6 million annually, representing over $55 million in 10 years.

Elephant Conservation and the Human-Elephant Conflict

Tourists visit Sri Lanka's parks mainly to view the charismatic and celebrated wild elephants that form the backbone of Sri Lanka's nascent ecotourism industry. Currently Sri Lanka provides the best opportunities of viewing wild Asian elephants in the world. While there is vast scope to capitalize on this natural tourist asset, there are serious conservation challenges that need to be addressed for its full economic potential to be realized. Elephants have large home ranges that are not adequately provided for by protected areas and national parks, and they are edge species that prefer the vegetation found in degraded and secondary forest habits. Consequently, more than two-thirds of the wild elephant population is found outside of protected areas, grazing on agricultural lands and disturbing and threatening the livelihoods of local farmers, chena households in particular. This friction between humans and elephants, termed human-elephant conflict, presents a development challenge between supporting the livelihoods of those living in close proximity to national parks and conserving Sri Lanka's flagship species, the wild elephant. Furthermore, this study finds that the local residents who suffer the consequences of living near elephants receive only a small share of the benefits accrued from the nature-based tourism industry that thrive on wild elephants. Policy makers are thus confronted with the challenge of developing strategies that link local benefits to the nature tourism industry.

The study suggests there is great potential in devising strategies that build on development opportunities in nature tourism, particularly those that ensure the conservation of wild elephants and their habitats while alleviating the human-elephant conflict. Improving park management and locating fences along ecological rather than administrative boundaries can minimize human-elephant interactions. Healthy elephant herds can boost ecotourism opportunities, adding value to local parks; the increased revenue generated can be used to compensate farmers located near elephant habitats who inevitably experience losses. Results from a livelihood survey conducted among 800 households in the vicinity of Yala National Park indicate that the cost of mitigation measures (e.g., electric fences, firecrackers, shouting) used to defend crops against wild elephants are quite low, as are the realized crop losses. These findings suggest that a compensation scheme may be successful in facilitating a flow of benefits to local communities while also ensuring the conservation of wild elephants.

In short the study indicates that elephants remain a considerable economic asset to Sri Lanka and there is much scope to increase their economic contribution through humane and judicious environmental stewardship, rather than environmental destruction.

Chapter 1 Introduction and Context

1 Introduction

1. Sri Lanka has a tradition of conservation dating back more than 2,000 years, to a time when edicts called for the preservation of wildlife in defined areas. Village communities systematically organized their landscape, locating irrigation tanks and cultivated areas in low-lying land and their settlements at higher levels. Catchments in hilly areas were left under forest cover. The value of the nation's biodiversity has not gone unrecognized in recent times, as governments enacted laws aimed at the protection of biological resources. With the highest biodiversity per unit area in Asia, Sri Lanka is ranked as a global biodiversity hot spot.[1]

2. Despite its efforts, the country is currently confronted with serious degradation of its ecosystems and the biodiversity they host. According to a recent survey, 33 percent of Sri Lanka's inland vertebrate fauna and 61 percent of its flora are threatened. Around 33 percent of the threatened biodiversity is endemic to Sri Lanka. Twenty-one species of endemic amphibians have not been recorded during the past 100 years, and these species could, for most purposes, be considered extinct. One in every 12 species of inland indigenous vertebrates of Sri Lanka is currently facing an immediate and extremely high risk of extinction in the wild.[2] Experts suggest that this trend will continue unless more systematic and stringent corrective measures are taken.

3. The Government's 10-year development framework aims at accelerating growth with an emphasis on equitable development. At the same time, it gives priority to a "land in harmony with nature."[3] The framework commits Sri Lanka to a path of sustainable development and identifies the country's unique biodiversity as part of the country's natural heritage and a high conservation priority. Protection of the environment is observed in Sri Lanka, although not as comprehensively as needed. Sri Lanka was the first country in Asia to prepare a national environmental action plan. The original 1992 plan was subsequently updated as the document "Caring for the Environment 2003–2007: The Path to Sustainable Development." More than 80 legislative enactments related to environmental management are in place. The legislation led to the present system of protected areas that covers 14 percent of the country's total land area. Though this is large by the standards of South Asia it is completely insufficient to ensure protection of the country's natural heritage and provide the habitat needed for the protection of large iconic species such as Sri Lanka's elephants and leopards. Sri Lanka also demonstrates a commitment to conservation in terms of administrative structure. The three government agencies directly responsible for environment and protected area (PA) management—the Department of Wildlife Conservation, Forest Department, and the Central Environmental Authority—have remained within the ministry in charge of environment, despite the commonplace fragmentation of other sectors and ministries, until the recent election in April 2010 saw the Department of Wildlife

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[1] Biodiversity Conservation in Sri Lanka—A Framework for Action, Ministry of Forestry and Environment, 1998. The concept of a biodiversity hotspot is due to the celebrated biologist Myers analysis and is now used globally to identify conservation areas at high risk. To qualify as a hotspot, a region must meet two strict criteria: it must contain at least 0.5 percent or 1,500 species of vascular plants as endemics, and it has to have lost at least 70 percent of its primary vegetation. Around the world, at least 25 areas qualify under this definition, with nine others possible candidates. These sites support nearly 60 percent of the world's plant, bird, mammal, reptile, and amphibian species, with a very high share of endemic species.

[2] IUCN Sri Lanka and the Ministry of Environment and Natural Resources (2007), The 2007 Red List of Threatened Fauna and Flora of Sri Lanka, Colombo, Sri Lanka.

[3] The Government's framework called the Mahinda Chintana (MC): Vision for a New Sri Lanka was presented at the Sri Lanka Development Forum in 2007.

Conservation (DWC) moved to the Ministry of Economic Development due to DWC's potential for nature based tourism . Furthermore, all three institutions have recently undergone institutional reforms with a move toward decentralization and empowerment of field staff, market-based incentives, more accountability and transparency, and wider stakeholder participation in planning and decision making.

4. With undeveloped land becoming increasingly scarce, Sri Lanka's natural forests and protected areas are under constant and unrelenting pressure. Despite reforms, conventional command-and-control approaches are becoming less and less effective in addressing these problems, since they do little to tackle the fundamental causes of environmental degradation. To address the root causes there is a need to create economic incentives for sustainability in ways that harmonize competing interests and create win-wins for conservation and poverty alleviation.

5. Experience in countries as diverse as Australia, New Zealand, Costa Rica, Tanzania, and Kenya has shown that if judiciously managed, nature-based tourism can play a crucial role in providing the resources and economic incentives needed for environmental stewardship. It presents an opportunity to go beyond simply mitigating the industry's "footprint" by providing revenue for the management and conservation of natural assets. By generating local employment and growth, it can create additional constituencies in support of sustainability and harmonize potentially conflicting interests on the use of forests and biodiversity.

6. It is often argued that Sri Lanka is well endowed with natural assets and able to reposition itself as a more attractive tourist destination. The proximity and juxtaposition of national parks to cultural attractions and beaches presents an opportunity to forge new links of "nature, culture, and beaches" and lure a more lucrative segment of the tourist market. Unlike its regional competitors, Sri Lanka has a uniquely high density of natural and cultural assets. These include the renowned "cultural triangle"[4] and a rich array of "charismatic" and celebrated species, such as elephants and leopards that can form the basis of a highly lucrative ecotourism industry. Sri Lanka has the highest density of elephants in Asia and provides the best opportunities of viewing wild Asian elephants in the world, and Yala National Park is reported to have the highest density of leopards per unit area in the world. Globally, nature-based tourism is displaying a rate of growth far in excess of the beach and sun product lines. And yet in Sri Lanka, less than 10 percent of foreign tourists ever visit any of the country's national parks, which are considered to be among the best in Asia.

7. It is in this context that this policy note seeks to examine the scope for enhancing protection of Sri Lanka's natural assets through nature based tourism as an instrument for conservation with a specific focus on elephant conservation. Nature based tourism is defined for the purposes of this study as tourism within the protected area network of the country. The study begins with a brief overview of the tourism sector and recent trends. It then reports on the results of a contingent valuation exercise that assesses the earning potential of the national parks sector as a tourism asset. This is followed by a more detailed analysis of human-elephant conflict and the scope for remedying the problem through revenues generated by tourism. A key objective is to explore two seemingly distinct , but in fact related issues - the extent of economic benefits that can be derived from conservation and determine ways of

[4] Sri Lanka's Cultural triangle is situated in the centre of the island and covers an area which includes the World Heritage cultural sites of the Sacred City of Anuradhapura, the Ancient City of Polonnaruwa, the Ancient City of Sigiriya, the Ancient City of Dambulla and the Sacred City of Kandy. Due to the constructions and associated historical events, some of which are millennia old, these sites are of high universal value; they are visited by many pilgrims, both laymen and the clergy (prominently Buddhist), as well as by local and foreign tourists.

addressing one of the main perceived problems and costs of elephant conservation – the human elephant conflict.

Chapter 2 Nature-Based Tourism: Prospects and Potential

2.1 Introduction

8. Tourism is a significant contributor to the economy of Sri Lanka. It ranks fourth in the country in terms of foreign exchange earnings (US$384.4 million in 2007), employs more than 60,000 workers directly and perhaps as many as 300,000 indirectly, and accounts for more than 2.3 percent of gross domestic product (GDP). It is viewed as a growth sector whose contribution could substantially increase with improved promotion and the creation of niche markets that capitalize upon the country's rich natural assets. The aim of this chapter is to explore the revenue potential and economic prospects of nature-based tourism in a small cluster of national parks in the Southern Province as an indicator of the potential for nature based tourism financing management of protected areas with a special emphasis on conservation of the Asian elephant which is a flagship species and the main attraction in protected areas. As in most developing countries, Sri Lanka too has limited funding for conservation of protected areas. However, if the natural asset base of the protected area network can be utilized to generate revenue through nature tourism towards management of the protected areas and the charismatic species living in the national parks, sustainable financing of conservation would not be a problem any longer.

9. The chapter begins with a brief overview of the industry and an analysis of the tourists who visit. It identifies visitor perceptions of the nature-tourism experience in these parks and explores ways to further promote tourism opportunities in the national park system. The assessment is based on a tourism survey undertaken between October 2008 and January 2009 in four national parks (Bundala, Minneriya, Uda Walawe, and Yala) and one forest reserve (Singharaja). Section 2.2 then identifies the opportunities and challenges the Government may face in raising further revenue from these parks.

10. Nature-based tourism has direct impacts on the economy through tourist spending in the immediate vicinity of the park, as well as indirect effects through the many linkages between the tourism sector and the rest of the economy. These are captured through an input-output (I-O) matrix that provides estimates of the impacts of tourist spending on gross value-added, wages, and tax revenue.[5]

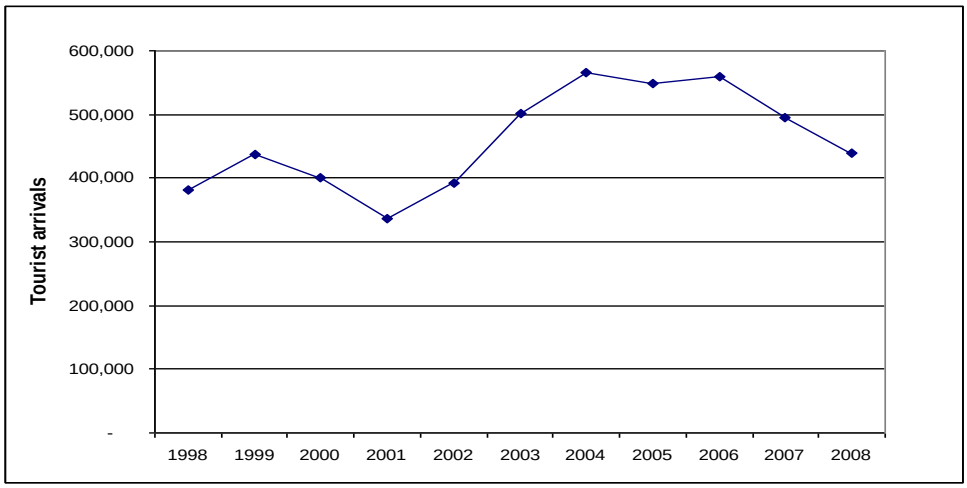
11. The focus is largely on the most lucrative segment of the tourist market—international arrivals, which constitute the majority of revenues generated across a wide variety of activities and in numerous settings, including the national park system. Also included in the analysis are tourists who did not visit the parks. They represent the majority of tourist arrival to the country and are seen as an un-tapped source that could be harnessed in a first step of an overall tourism strategy for the country.

2.2 Tourism in Sri Lanka

12. Tourism in Sri Lanka has displayed considerable resilience to both conflict and natural disasters, such as the 2004 tsunami. The period between 2002 and 2004 was the high point for tourism, with arrivals reaching more than 500,000 per year by 2003. This trend began to reverse through 2005 and 2006 with the escalation of the civil war and the tsunami, which devastated the region. Still, numbers have not plunged to the lows of 1998 and 2001 (Figure 2.1).

[5] Unfortunately, a similar matrix could not be constructed for employment.

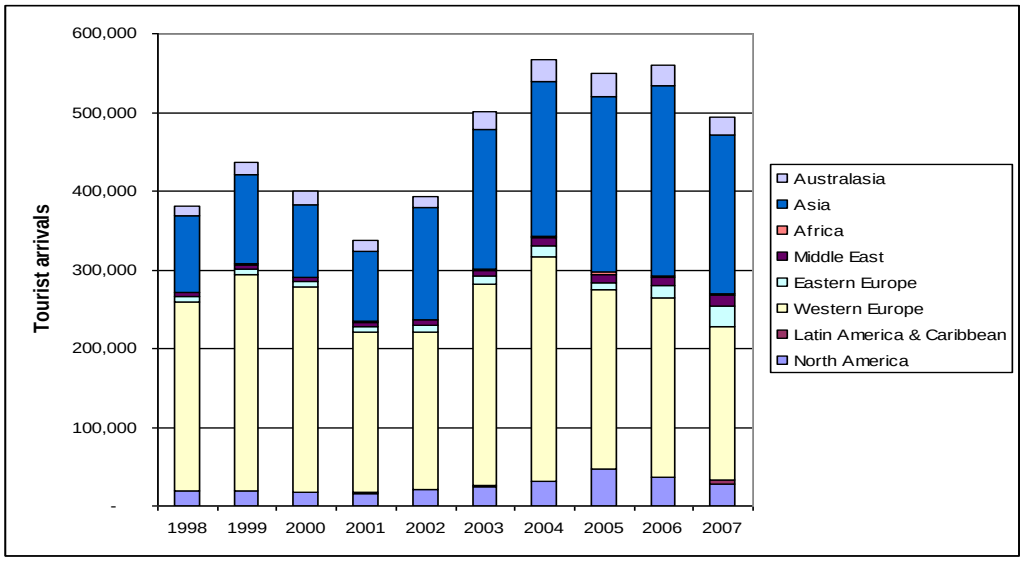
Figure 2. 1 International tourist arrivals to Sri Lanka, 1998-2008



Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007).

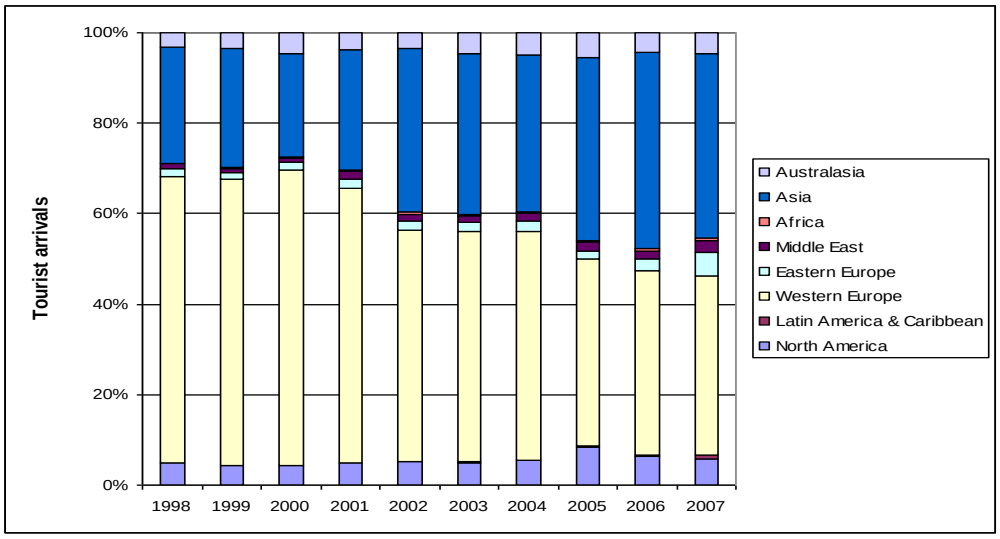
13. There is a gradual change in the geographic composition of tourist arrivals, with an ever-increasing number of visitors from South Asia. Figure 2.2 and Figure 2.3 present total arrivals by region. Significant and increasing shares are from Asia, while the numbers and portion of Western European arrivals have decreased; represented more than 60 percent in 1998 and a low of 40 percent by 2007. Fifty percent of the Asian arrivals are from India, and nearly half of the Western European arrivals are from the United Kingdom. This trend has been stable over time and is unlikely to change. Other significant arrivals appear from the Maldives and Germany. Many of the other regions experienced only modest growth in terms of arrivals.

Figure 2.2 Tourist arrivals by region, total



Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007).

Figure 2.3 Tourist arrivals by region, percent



Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007).

14. The main reason for travel, according to a resounding 67 percent of respondents, is "pleasure," which includes recreation, sun-and-sand, spas, cultural, natural, ecotourism, and wildlife tours (Annex 2: Table A2.1). This is true even with the negative backdrop of the war. Recommendations by friends or family and package deals rounded off the top reasons for visiting Sri Lanka, which also provides evidence that prior experience is important and that tour operators feel confident in packaging Sri Lanka with other places of interest. The vast majority arrive on a package tour and spend 8 to 14 days, with the median visitor moving closer to the 14-day mark. Repeat visits are common too. Those who stayed for 1 to 3 nights in the past were staying a bit longer, and some were staying beyond three weeks. The data indicate that the "two-week rule" was even more pronounced, with more than half of the respondents claiming trips with an 8 to 14 day interval.

15. Beyond the beaches, the most visited sites are the zoological and botanical gardens. These are followed by trips to the Cultural Triangle, which include tours of ancient cities, tanks (man-made reservoirs), and spiritual sites (Table 2.1). The next most frequented sites, by locals and foreigners alike, are the wildlife parks on safari-like experiences featuring observation of elephants, leopards, exotic birds, reptiles, and marine biodiversity. Site preferences have remained fairly stable over time. Of the noticeable patterns, visitation to wildlife parks appears to have fallen since 2004, whereas visits to museums have risen dramatically. Conferences in the capital, Colombo, also provide important visitor activities, albeit primarily for the local population.

16. Increasing visitation is the first step in fostering greater income from the tourism sector; the next is increasing the expenditures of tourists. Table 2.2 summarizes visitor information in terms of the revenue generated from these tourism activities.[6] The most striking observation is that the majority of public revenues are generated from international tourists, with levies and taxes comprising over half of

[6] Note that, strictly speaking, the totals in the table should not include revenue from the local population— since spending by the local population is just a redistribution of wealth and not new money coming into the economy from abroad.

the annual revenue. Under the current pricing regime, foreign tourists are responsible for nearly 93 percent of the revenues generated by these tourist activities.

Table 2.1 Visitation at major attractions

Sites	2004	2005	2006	2007	% 2007 [9]
Cultural Triangle	779,101	811,341	614,005	650,364	12.3
Local [1]	532,721	700,898	475,773	545,781	10.3
Foreign [2]	246,380	110,443	138,232	104,583	2.0
Botanical Gardens [3]	1,637,740	1,597,690	1,493,851	1,673,106	31.6
Local	1,399,051	1,487,321	1,343,713	1,559,347	29.5
Foreign	238,689	110,369	150,138	113,759	2.2
Zoological Gardens [4]	1,911,570	1,887,250	1,489,327	1,970,592	37.3
Local	1,659,325	1,752,244	1,310,425	1,815,282	34.3
Foreign	252,245	135,006	178,902	155,310	2.9
Wild Life Parks [5]	553,039	446,403	482,060	421,692	8.0
Local	464,006	388,962	397,862	363,436	6.9
Foreign	89,033	57,441	84,198	58,256	1.1
Museums [6]	23,833	370,950	186,072	260,743	4.9
Local	-	355,669	172,301	251,703	4.8
Foreign	-	15,281	13,771	9,040	0.2
BMICH [7]	434,060	504,455	919,405	310,725	5.9
Local	432,510	502,335	916,845	310,100	5.9
Foreign	1,550	2,120	2,560	625	0.0
Total	5,339,343	5,618,089	5,184,720	5,287,222	100.0
Local	4,487,613 [8]	5,187,429	4,616,919	4,535,549	85.8
Foreign	827,897 [8]	430,660	567,801	751,673	14.2

1 – Includes Alahana Museum, Jethavana Museum, Abeygiriya Museum, Dambulla (Museum). and Sigiriya.
2 – Includes Anuradhapura, Polonnaruva, Kandy, and Sigiriya,
3 – Includes Peradeniya, Hakgala, and Gampaha.
4 – Includes Dehiwala and Pinnawala.
5 – Includes national parks listed in Table A2.2 (Annex 2), with the exception of Singharaja Forest Reserve.
6 – Includes Colombo National Museum, National History Museum, Kandy National Museum, Ratnapura National Museum, Galle National Museum, Anuradhapura Folk Museum, and the Dutch Museum.
7 - Conferences held at Bandaranaike Memorial International Conference Hall (BMICH).
8 – Includes same proportion of Museum revenue as 2005 since local and foreign division was not available.
9 – Numbers may not add to 100 percent due to rounding.
Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007).

Table 2.2 Public sector revenue from tourism (in SL Rs millions)

Source of Revenue	2004	2005	2006	2007	% 2007 [9]
Tourism Embarkation Levy	780.4	674.2	696.0	n/a	n/a
Tourism Development Levy	300.6	172.5	177.5	214.3	11.3
Tourist Board Income	30.9	39.0	36.7	35.2	1.9
Embarkation Tax on Foreign Tourists	849.3	823.9	839.4	741.1	39.1
Cultural Triangle	551.9	296.0	409.5	288.5	15.2
Local [1]	8.8	11.3	8.5	8.7	0.5
Foreign [2]	543.1	284.7	401.0	279.8	14.8
Botanical Gardens [3]	94.0	56.8	67.4	103.4	5.5
Local	23.3	24.2	23.2	36.8	1.9
Foreign	70.7	32.6	44.2	66.6	3.5
Zoological Gardens [4]	183.7	129.4	136.8	204.7	10.8
Local	64.2	68.0	54.2	71.6	3.8
Foreign	119.5	61.4	82.6	133.1	7.0
Wild Life Parks [5]	123.6	70.9	191.7	159.9	8.4
Local	9.8	8.2	92.1	17.1	0.9
Foreign	113.8	62.7	99.6	142.8	7.5
Museums [6]	1.5	7.6	9.2	4.5	0.2
Local	-	3.7	2.7	0.3	0.0
Foreign	-	3.9	6.5	4.2	0.2
BMICH [7]	70.7	101.4	120.5	142.9	7.5
Total	2,986.6	2,371.7	2,684.7	1,894.5	100.0
Local	106.8 [8]	115.4	180.7	134.5	7.1
Foreign	2,879.8 [8]	2,256.3	2,504.0	1,760.0	92.9

1 – Includes Alahana Museum, Jethavana Museum, Abeygiriya Museum, Dambulla (Museum), and Sigiriya.
2 – Includes Anuradhapura, Polonnaruva, Kandy, and Sigiriya.
3 – Includes Peradeniya, Hakgala, and Gampaha.
4 – Includes Dehiwala and Pinnawala.
5 – Includes national parks listed in Table A2.2 (Annex 2), with the exception of Singharaja Forest Reserve.
6 – Includes Colombo National Museum, National History Museum, Kandy National Museum, Ratnapura National Museum, Galle National Museum, Anuradhapura Folk Museum, and the Dutch Museum.
7 - Conferences held at Bandaranaike Memorial International Conference Hall (BMICH).
8 – Includes same proportion of Museum revenue as 2005 since local and foreign division was not available.
9 – Numbers may not add to 100 percent due to rounding.
Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007).

17. The current trends in tourism emphasize the high volume and low value-added, sun-and-sand type of tourism. Although this is a lucrative segment of the market that has been captured, it is reasonable to ask whether there are other areas that could be further promoted to grow the sector. The national park system and cultural areas offer major attractions that appear to be underutilized. Strategic investments could be important in this area. To assess the revenue-generating potential of these assets, a tourism survey was conducted to determine tourists' willingness to pay for the national park experience.

2.3 The Approach

18. A tourist survey was conducted across a sample of nearly 2,000 respondents, who were interviewed in hotels and lodges as well as at the park gates.[7] The targeted population included resident and nonresident tourists staying in the hotels and lodges along the southwest coastline of Sri Lanka and near the parks (Bundala, Minneriya, Singharaja Forest Reserve, Uda Walawe, and Yala). The survey was designed to elicit information about the tourist profiles, trip characteristics, satisfaction levels, and the willingness to pay for park-related activities. The interviews were typically conducted following a respondent's trip into the park to ensure an informed response. Annex 2 contains details of the sampling methodology used and the caveats that apply in generalizing the results.

19. Table 2.3 shows the final distribution of tourists in the sample by location. The largest shares were international tourists who did not visit the parks ("nonpark") (50 percent), followed by local residents who did not visit the parks (30 percent). Park visitors, taken together, represented just less than 20 percent of the sample. The latter reflects the purposive sampling approach guided by the need to capture a sufficient number of visitors to the parks.

Table 2. 3 Distribution of tourists, by type and location

Tourist type	Number of respondents	Percent (%)
International nonpark (Hotels and lodges)	998	50.0
Local nonpark (Hotels and lodges)	600	30.1
International park	198	9.9
Bundala National Park	*43*	
Minneriya National Park	*37*	
Singharaja Forest Reserve	*42*	
Uda Walawe National Park	*42*	
Yala National Park	*33*	
Local park	200	10.0
Bundala National Park	*40*	
Minneriya National Park	*40*	
Singharaja Forest Reserve	*40*	
Uda Walawe National Park	*40*	
Yala National Park	*40*	
Total	1,996	

Source: World Bank Tourist Survey (2008).

20. Table 2.4 summarizes basic characteristics of the sampled population of tourists. Mirroring national trends, recreation and pleasure travel are the main reasons for visiting Sri Lanka. However, the arrival categories may not be mutually exclusive, and it is likely that the pleasure category includes religious and cultural trips. There would also likely be seasonal variation in other forms of tourism, such as conferences, which the survey was not able to capture. Low numbers in the nonrecreational categories could also reflect the consequences of the civil conflict at the time of the sampling. The bulk

[7] The survey identified (1) the socioeconomic characteristics of the different types of tourists who frequent the island,)2) purpose of the visit, (3) duration of stay and number of sites visited, (4) perceptions of park quality, and (5) willingness to pay for visits to the national parks and for improvements in their conservation and management. The final number of completed questionnaires was 1,996. The survey was conducted over several months in the last quarter of 2008 and into January of 2009 (survey appended in Annex 2).

of tourists in the sample (about 60 percent) are from Western Europe, followed by Australasia (14 percent) and North America (10 percent).

21. The number of arrivals is one indicator of potential revenue generation. Length of stay is a second.. More than 42 percent of international tourists stay for 4 to 7 nights and more than 51 percent stay 8 to14 nights, with an average visit of 7.2 days.

Table 2.4 Number of international tourists by country of residence and purpose of visit, 2007

Region	Total	Pleasure	Private & Official Business	Convention & Meetings	Visiting Friends & Relations	Percent [1]
North America	117	100	4	11	2	**9.9**
Latin America & Caribbean	-	-	-	-	-	**-**
Western Europe	713	668	14	20	11	**60.1**
Eastern Europe	115	107	2	5	1	**9.7**
Africa	9	4	-	5	-	**0.8**
Middle East	3	1	-	2	-	**0.3**
Asia	59	48	4	7	0	**5.0**
Australasia	170	162	4	4	0	**14.3**
Total	**1186**	**1090**	**28**	**54**	**14**	**100.0**
Percent		**91.9**	**2.4**	**4.6**	**1.2**	

1 – Numbers may not add to 100 percent due to rounding.
Source: World Bank Tourist Survey (2008).

2.4 The Economic Impacts of Tourism: Spending Patterns

22. The questionnaire elicited information on expenditures for goods and services such as airfare, hotels, transport, food, shopping, and other activities, both inside and outside the country. An important distinction that emerges is in the spending patterns of package tourists and those who visit a park. Packages typically capitalize on volume pricing and other arrangements that make the overall cost of the trip less expensive, so it is no surprise that the package tourists spend significantly less than the nonpackage travelers.[8]

23. Expenditure patterns differ considerably by tourist type and also whether there has been a visit to a national park (Table 2.5). Those who travel on packages and do *not* visit a park spend the least. The typical package tourist who does not visit a park stays in Sri Lanka for about 10 days and spends on average a meager $34 per person per day. In contrast, the highest spenders are individual (nonpackage) travelers who visit a park. These stay in the country for slightly longer—about 12 days—and spend on average $73 per person per day. The policy implication of this finding is very clear: promoting individual travel provides a potentially more lucrative strategy for creating high-value niche markets and raising revenue from the sector. Of the surveyed international individuals, more than 76 percent were on packaged tours, 8 percent had some items packaged, and 15 percent purchased items separately (nonpackage). Among the package tourists, 96 percent were purchased *outside* Sri Lanka in their resident country, indicating the possibility of significant revenue leakages.

[8] One aspect about packages to note in the Sri Lankan context is that local residents quite often do not travel as part of any package. In fact, none were found during this survey.

Table 2.5 Tourist expenditures per person, excluding airfare

	Per person per trip ($)	Average stay (days)	Per person per day ($)
International park, package	527	12.7	41
International park, nonpackage	796	12.2	73
International nonpark, package	296	10.3	34
International nonpark, nonpackage	448	8.0	90
Local park	75	2.2	35
Local nonpark	48	2.5	19

Source: World Bank Tourist Survey (2008).

24. A breakdown of spending patterns further reinforces this conclusion. Table 2.6 gives the per-person, per-trip average expenditures for each spending category. Each of these goods or services represents a sector in the economy. The nonpackage park tourists again represent the highest spenders in most categories (except transport).

Table 2.6 Breakdown of expenditures per person per trip ($)

	International park		International nonpark	
Category	Package	Nonpackage	Package	Nonpackage
Hotels	185	484	197	177
Transportation	116	83	33	121
Food and beverages	76	120	38	95
Shopping	59	48	13	30
Other activities	62	61	14	23

Source: World Bank Tourist Survey (2008).

2.5 Economic Impact of Nature Tourism

25. Average expenditures provide the basic information required to calculate the economic impact of nature tourism. The average tourist spends from $296 (package variety) to $796 (nonpackage park visitor) on each trip in Sri Lanka, distributed across each of the sectors in Table 2.6.[9] This information is combined with the 2000 input-output table for Sri Lanka to estimate the economy-wide impacts of nature tourism on gross value-added, wages, tax revenues, and imports.[10] I-O models make the strong assumption that factor inputs are fixed in proportion, but they have the unique property of being able to trace sectoral inter-linkages in great detail. A full computable general equilibrium analysis that allows for factor substitution is clearly beyond the scope of this report.

26. The methodology employed is to "close" the I-O table to households. As an example, when a tourist spends, say, $484 on hotels and restaurants, this generates a certain amount of wage income

[9] "Other activities" was mapped to the sector "Tourist Shops and Travel Agents" in the I-O matrix.

[10] I-O tables are constructed around a matrix of intersectoral flows detailing how much of the intermediate demand for goods and services in a given production sector is met by other sectors in the economy. Information on value-added is broken down into wages, indirect taxes, and operating surplus complete the production accounting system.

and net surplus that accrues to households, who then spend this income by consuming goods and services. In addition, when the hotel and restaurant sector produces $484 worth of output, it must purchase inputs of food, beverages, water, electricity, communications, manufactures, and so on. These inputs to the sector are either imported or produced by other sectors in the Sri Lankan economy. When all transactions are added up it is possible to arrive at a total measure of the direct plus indirect production, value added, wages, tax revenues, and imports required to meet this demand.

Impact on the economy

27. Table 2.8 displays the economic impact of each type of nature tourism spending in Sri Lanka. Consider first the high-spending international park tourist, with no package spending. With the average spending pattern of this type of tourist, $796 in overall spending generates a total of $909 worth of GDP (value-added) in the economy. The tourism multiplier in this case is 1.77: that is; $1.00 spent by the tourist generates an additional $1.77 in revenue for the economy. The benefits accrue in the form of an additional $387 in wages and $487 in operating surplus to businesses, $41 in tax revenue, and $153 worth of imported goods and services. Overall multiplier effects for each tourist type are summarized in Table 2.7.

Table 2.7 Direct and indirect economic impact of nature-based tourists in 2007[1]

	Contribution to GDP		
	Direct impact	**Total (direct + indirect) impact**	**Multiplier**
International visitors to parks			
Package	452	765	1.69
Non-package	513	909	1.77
International visitors not visiting parks			
Package	180	319	1.78
Non-package	394	665	1.69

1 – Simulated using the expenditure by one tourist.
Source: Author's calculation.

28. The total number of international tourists who indicated they were in Sri Lanka for "pleasure" was more than 331,000 (Annex 2: Table A2.1), and more than 58,000 visitors were recorded at the park gates in 2007 (Table 2.1). The difference, 273,000, represents potential park visitors. If the 273,000 tourists were to visits parks and more generally follow this spending pattern (an average amount of $796), it would translate to more than $248 million, or 0.77 percent of GDP, to the Sri Lankan economy (Table 2.8).

29. This estimate is an annual figure. Were these revenue flows sustained for 10 years (using a 5 percent discount rate) the revenue streams would amount to a net present value (NPV) of *$2.2 billion in a decade and $3.3 billion in 20 years*. These figures are, of course, indicative of only an extreme hypothetical scenario that is unlikely to occur. But they do illustrate that even more modest measures that increase tourism spending could yield tremendous gains. This could be achieved either by measures that increase the time spent in the country or by improving the quality of (and hence willingness to pay for) the experience.

Table 2.8 Economic impacts of nature-based tourism spending in 2007

Tourist type	One tourist ($)	273,000 nature tourists ($ millions)	Percent of GDP
International park, package			
Local Intermediate Inputs	628	172	0.53
Imports	126	35	0.11
Value added (total)	768	210	0.65
Wages	294	80	0.25
Taxes on production	43	12	0.04
Operating surplus	435	119	0.37
Total impact on GDP (annual) [1]	**765**	**209**	**0.65**
NPV (10 years)	6,671	1,821	
NPV (15 years)	8,703	2,376	
NPV (20 years)	10,296	2,811	
International park, nonpackage			
Local Intermediate Inputs	954	260	0.81
Imports	153	42	0.13
Value added (total)	911	249	0.77
Wages	387	106	0.33
Taxes on production	41	11	0.03
Operating surplus	487	133	0.41
Total impact on GDP (annual) [1]	**909**	**248**	**0.77**
NPV (10 years)	7,930	2,165	
NPV (15 years)	10,347	2,825	
NPV (20 years)	12,241	3,342	
International nonpark, package			
Local Intermediate Inputs	361	98	0.30
Imports	56	15	0.05
Value added (total)	320	87	0.27
Wages	142	39	0.12
Taxes on production	12	3	0.01
Operating surplus	167	46	0.14
Total impact on GDP (annual) [1]	**319**	**87**	**0.27**
NPV (10 years)	2,784	760	
NPV (15 years)	3,633	992	
NPV (20 years)	4,297	1,173	
International nonpark, nonpackage			
Local Intermediate Inputs	562	154	0.47
Imports	117	32	0.10
Value added (total)	668	182	0.56
Wages	248	68	0.21
Taxes on production	32	9	0.03
Operating surplus	391	107	0.33
Total impact on GDP (annual) [1]	**665**	**182**	**0.56**

Tourist type	One tourist ($)	273,000 nature tourists ($ millions)	Percent of GDP
NPV (10 years)	5,800	1,583	
NPV (15 years)	7,567	2,066	
NPV (20 years)	8,952	2,444	

1 – The total annual impact is not the sum of value-added, indirect taxes, corporate taxes, wages and imports. It is the total impact on GDP. The separate line items are shown since they are major components of GDP and of interest to policymakers.
Source: Author's calculation.

2.6 Increasing the Economic Impact of Nature Tourism

30. One simple way to increase tourism revenue would be to increase the average length of stay. The average number of days tourists spend in Sri Lanka is around 8 to 13 days for international tourists, depending on whether they were traveling on a package or not (Table 2.5). To gain a sense of the magnitudes involved, a simple example can illustrate the potential earning capacity. If a low-spending international package tourist that did not visit a park spent an extra day in the country then (multiplying the expenditure figure by the potential 273,000 nature tourists) this would result in a potential annual increase of $9.3 million *per day*. The corresponding figure for the higher spending international nonpackage tourists who did visit a park is $19.9 million per day. Hypothetically if one were to extend the typical park trip by two days, this would of course double the contribution to nearly $40 million. With a tourism multiplier of 1.77, the overall impact could be as large as 0.22 percent of GDP or $70 million annually, with just this simple intervention. Over the span of 10 years this would represent a net present value of more than *$614 million* at a 5 percent discount rate.

31. Increasing a nature tourist's duration of stay could be accomplished through better marketing of the national parks. Currently the vast majority of tourists do not visit the parks. Among the international tourists who did not go to a park and were on a package, only 48 percent said that park options were available. There appears to be a strong latent desire among these to visit the national parks. In the survey, nonpark tourists were asked if they were willing to pay to visit a park with the concomitant increase on transport and accommodation costs. The results were highly favorable, with 90 percent indicating that they would be willing to add a park visit to the trip. Needless to say, it is unlikely that all tourists who currently visit would extend their stay by one or two days, but the exercise is useful in indicating the likely contribution that such an intervention could make to the economy.

Quality of the tourist experience

32. The absolute number of arrivals and the length of stay determine the quantity of tourism, but another important aspect is the quality of the experience. If the visitor is dissatisfied, repeat visits are unlikely. More importantly, with more than 12 percent of the sample arriving on the recommendation of friends, relatives, or evaluative books, there is an important reputational risk to the quality of the experience that the industry should be aware of. Although the Sri Lankan national park network is abundant with charismatic faunal species such as the elephant, leopard and sloth bear, the visitor experience needs significant improvement.

33. Table 2.9 presents the overall visitor satisfaction for the five sites in the sample. Uda Walawe is the lowest in terms of overall satisfaction, with only 58 percent of respondents describing their

experience as being "quite good" or "very good." The highest was the Singharaja Forest Reserve with more than 90 percent of visitors rating it as "quite good" or "very good." However, these broad averages conceal considerable variation in attitudes and satisfaction with service quality. Closer scrutiny unearthed a consistent pattern of visitor experiences.

Table 2.9 Overall site satisfaction by park tourists, percent

Site	Quite good	Very good
Bundala National Park	30	41
Minneriya National Park	63	21
Singharaja Forest Reserve	62	28
Uda Walawe National Park	53	5
Yala National Park	20	46

Source: World Bank Tourist Survey (2008).

34. Figure 2.4 shows the perceptions across a wide variety of site attributes for each of the parks. There is remarkable consistency in the results. There is uniformly high satisfaction with the ***wildlife experience***—the primary attraction to a nature reserve. But regrettably, this is where the positive perceptions end. There is concern and dissatisfaction with traffic congestion in the parks, suggesting that limits may have been reached. There is also dissatisfaction with organized excursions, accommodation, activities for children, availability of restaurants, diversity of activities, and shopping opportunities. In short, the lack of visitor services are a common problem, though there is appreciation of infrastructure facilities (for example, toilets) when these are available in some of the parks. Minneriya and Singharaja fair the worst on average, in most categories. When respondents were asked to assess their overall experience, individual attribute trends diminish greatly, especially for Minneriya and Singharaja, as the wildlife and nature attributes dominate perceptions of satisfaction (see "Overall experience," the last graph in Figure 2.4).

Figure 2.4 Perceptions of park attributes

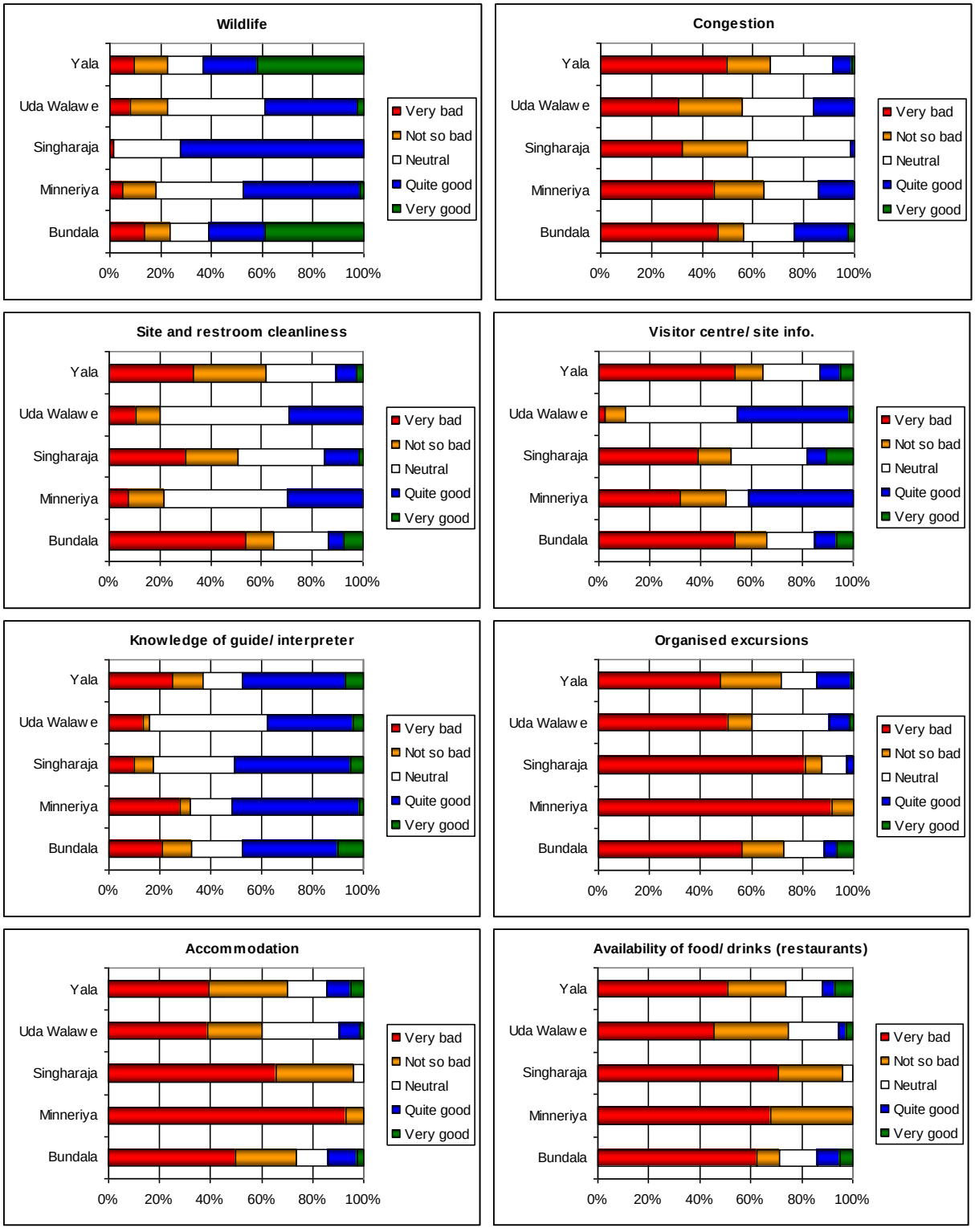
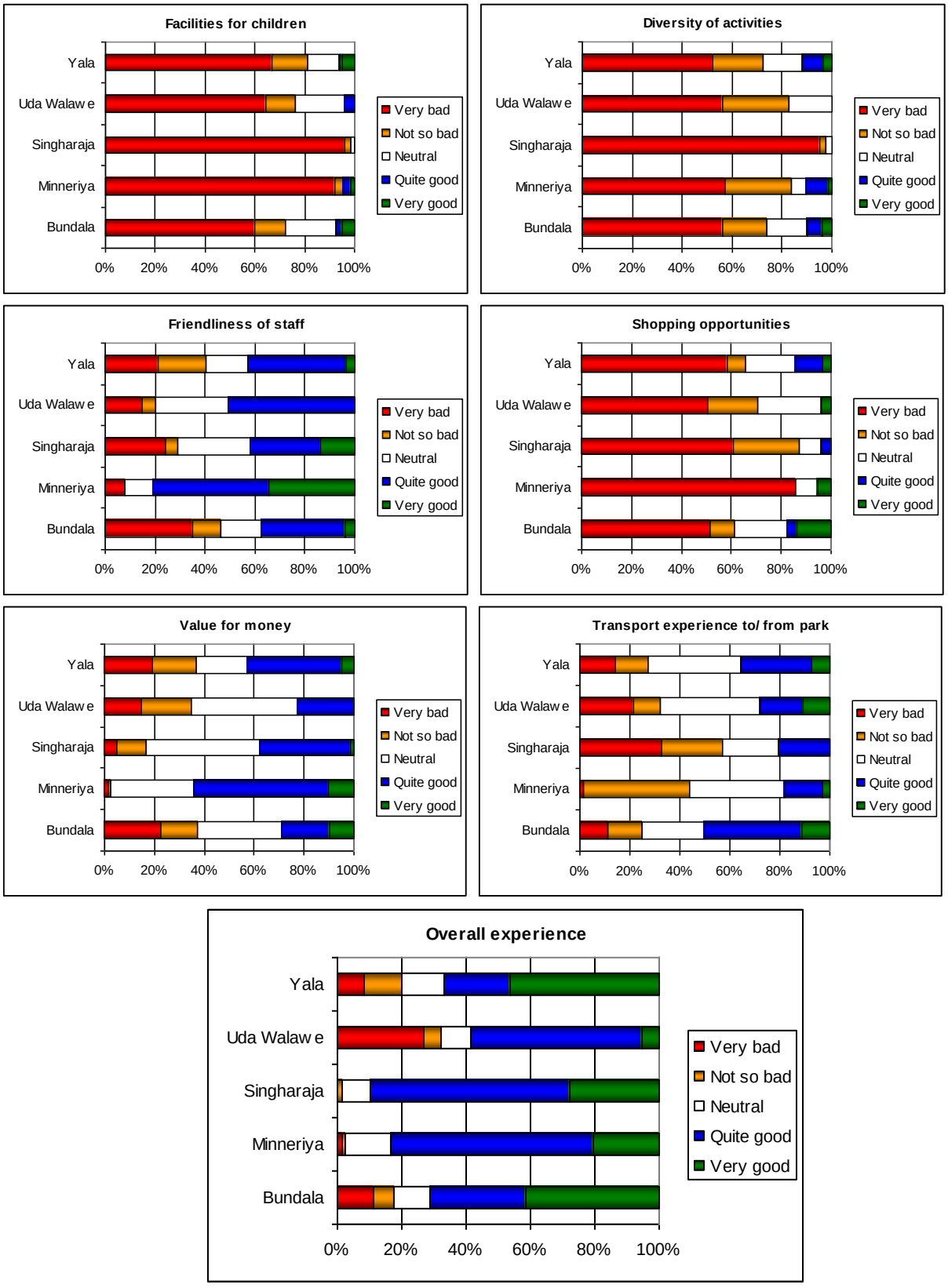
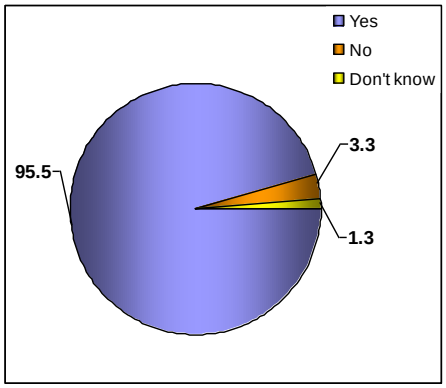


Figure 2.4 Perceptions of park attributes (continued)



35. The impressions that tourists leave the country with can be highly influential in future vacation decisions. Although the impressive statistics above reveal a good overall trip experience, this does not necessarily imply that tourists would return in the future, since there may be other more attractive international destinations. To get an indication of a repeat visit, tourists were also asked whether they would visit Sri Lankan natural sites again in the future. As Figure 2.5 shows, over 95 percent who visited these parks would return.

Figure 2.5 Percentage of park visitors who would return to Sri Lanka



Source: World Bank Tourist Survey (2008).

2.7 Opportunities for Financing National Parks and Forest Reserves

36. The tourist survey was also used to elicit the willingness to pay park entrance fees as another possible means of raising additional revenue (see Box 2.1) for conservation. A high willingness to pay would indicate high levels of consumer satisfaction and provide scope to raise entrance fees. Conversely a low willingness to pay would suggest the need for investments to improve the park experience. Nature tourists were asked a series of questions on their willingness to pay (1) to enjoy the national parks as they currently stand and (2) for specific improvements in the each of the parks.

Box 2.1 Willingness to pay

Willingness-to-pay (WTP) studies are not as straightforward as they may seem, since they are essentially creating a hypothetical market for an environmental good, which may have some arbitrary price already associated with it (e.g. entrance fee). Since the good in question is likely to possess some nonmarket services, the description of the quantity and quality must be carefully thought out and presented to the respondent. Due to the hypothetical nature of WTP studies, there are certain sets of "rules" or guidelines that should be followed in order to elicit a reliable and consistent willingness to pay—and avoid a plethora of possible biases that could distort the value given by the tourist.

The WTP section of the tourist survey used five out of six guidelines from the "Report on the NOAA Panel on Contingent Valuation" (Arrow et al 1993, Randall 1997). The survey used personal interviews, probability sampling, careful pretesting, and reminders of budget constraints and the availability of substitutes. A common criticism of contingent valuation (CV) analysis is that CV estimates are gross overestimates. Studies show that, under plausible conditions, when asked to value quasi-public goods where the effective trade-off is a quality change against a cost change, and public goods are to be provided by means of an increased tax, it is in the strategic interest of the respondents to truthfully reveal their WTP (Carson et al 1999). The survey in this study used a menu of multiple choices presented to the respondent in the form of a payment card. However, this question format is likely to bias WTP responses downward for three reasons (Carson 1997): (1) the optimal strategy for respondents whose WTP is less than the expected cost is to state a WTP of $0; (2) open-ended and payment card questions indicate uncertainty about future costs for the respondent and result in a lower WTP response; and (3) if the respondent believes that the government is capable of capturing part of any available surplus for unproductive purposes, the WTP reported would be lower. Thus, WTP reported in the survey may be lower than the actual WTP of the respondents and should be considered a *lower bound*.

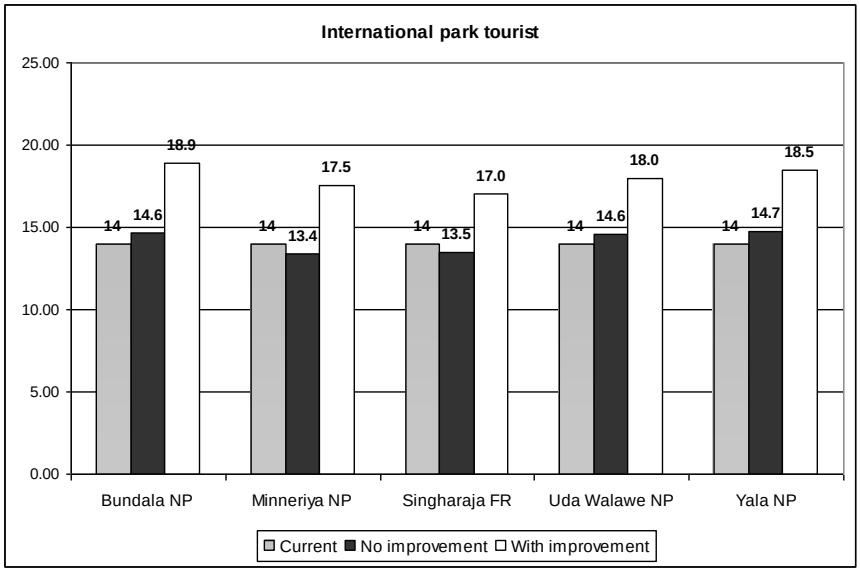
The survey took these principles into account along with other important considerations such as the following: (1) tourists were interviewed after they had enjoyed their trip to a national park, making the questions seem less hypothetical; 2) the scenarios used to elicit willingness to pay were described in precise terms, rooted in the experience the respondent has just had; and (3) the means of eliciting willingness to pay was through a payment card, giving the respondent a menu of potential amounts to pay for the experience just enjoyed (or enhancements to the experience). The questions were asked in terms of a maximum willingness to pay once reminded of the current entrance fee to the park.

Willingness to pay by international visitors for national parks (or forest reserves)

37. Figures 2.6 to 2.9 summarize the results from the WTP survey, for each tourist type and development scenario. On average, the international tourists indicate that the entrance fee of $14 is close to what they are willing to pay for the current experience (with Minneriya and Singharaja being worth a little less, perhaps, because of some dissatisfaction with some specific site attributes as shown in Figure 2.4). The fiscal implication is also clear. In the absence of improvements in infrastructure and quality of interpretation services there is perhaps little scope to raise park entrance fees without substantially sacrificing visitor numbers.

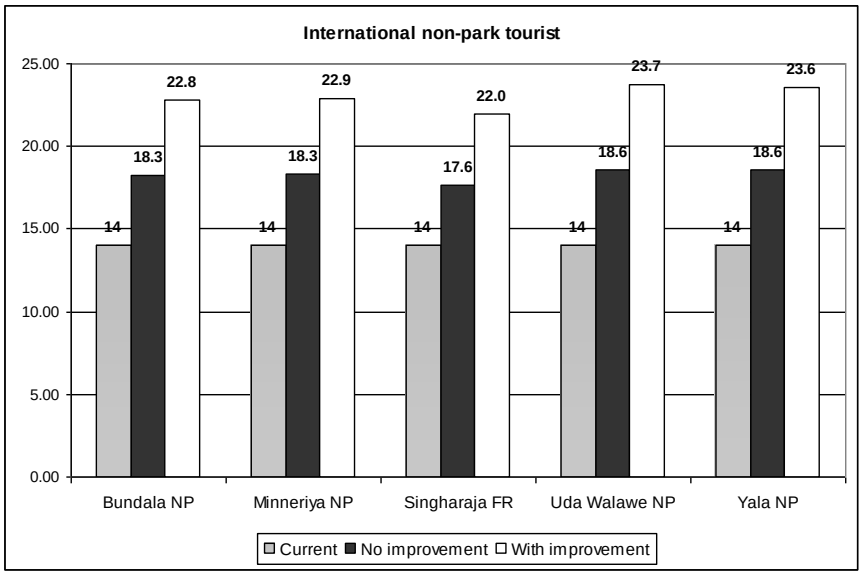
38. If improvements are made to the parks, as suggested in the hypothetical scenarios (see Box 2.2), willingness to pay increases by about 28 percent or more per trip. In the case of international nonpark tourists, the differential between the current entrance fee and what they would be willing to pay to visit a park is even more striking. On average, international nonpark tourists were willing to pay about $18 for the current situation and up to $23 or 64 percent more for the improved conditions (Figure 2.7).

Figure 2.6 International park tourists' willingness to pay park entrance fees



Source: World Bank Tourist Survey (2008).

Figure 2.7 International nonpark tourists' willingness to pay park entrance fees



Box 2.2 Development scenarios for the parks/reserves

Bundala National Park

- Upgrade of the camping facilities inside the park
- Provision of bungalows inside the park
- Improvement of the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Development of Wilmanna Sanctuary across the road to provide opportunities for viewing large herds of elephants
- Provision of night safaris, and viewing platforms during moonlit nights near watering holes

Minneriya National Park

- Provision of camping facilities and bungalows inside the park
- Limiting of traffic and the number of vehicles entering the park to reduce congestion
- Improvement of the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Provision of elephant safari's inside the park
- Provision of boating facilities in Minneriya Tank for elephant viewing
- Provision of opportunities for night safaris, and viewing platforms during moonlit nights near watering holes

Singharaja Forest Reserve

- Provisions of visitor centers with exhibits, clean restrooms, restaurants, camping facilities inside the reserve, and bungalows in the buffer zones of the reserve
- Provision of new visitor services such as elephant safaris and nature trails
- Improvement in the quality and experience of visitation with better interpretation services provided by the Forest Department Guides

Uda Walawe National Park

- Upgrade of the camping facilities and better maintained bungalows inside the park
- Limiting of traffic and the number of vehicles entering the park to reduce congestion
- Improvement in the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Provision of opportunities for night safaris, and viewing platforms during moonlit nights near watering holes

Yala National Park

- Provisions of visitor centers with exhibits, clean restrooms, restaurants, camping facilities, and better maintained bungalows inside the park
- Provision of new visitor services such as elephant safaris, nature trails, visiting cultural sites/ruins, night safaris, and viewing platforms during moonlit nights near watering holes
- Limiting of traffic and the number of vehicles entering the park to reduce congestion
- Improvement in the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides

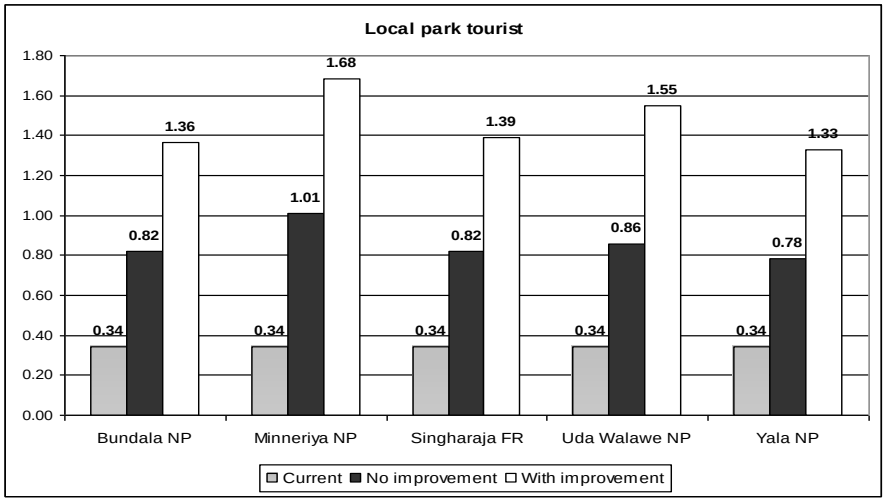
Source: World Bank Tourist Survey (2008).

Willingness to pay by local visitors for National Parks (or Forest Reserves)

39. The willingness to pay by locals is similar, though the magnitudes differ. Comparing park and nonpark tourists in Figures 2.8 and 2.9, on average, local park tourists are willing to pay the current fee for the prevailing situation, just above $0.80 (or about SL Rs 93). However, the local park visitors have a higher willingness to pay for the improved development scenarios, especially in the case of Minneriya and Uda Walawe National Parks. Bundala National Park, a Ramsar Wetland site that is best known for

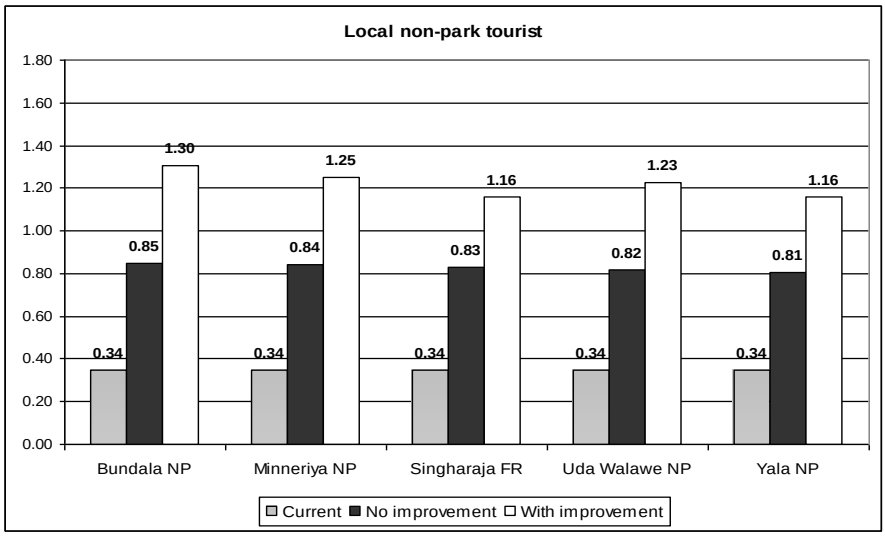
its bird life, is valued approximately the same by local park and nonpark visitors since Sri Lankans are not very keen birders. This is also reflected in the ratio of local to international visitors for the park (Table A2.2, Annex 2).

Figure 2.8 Local park tourists' willingness to pay park entrance fees



Source: World Bank Tourist Survey (2008).

Figure 2.9 Local nonpark tourists' willingness to pay park entrance fees



Source: World Bank Tourist Survey (2008).

Current revenue from park tourists

40. Consolidating the willingness to pay estimates and combining them with information on actual park visitation, Table 2.10 shows what these entrance fees would represent in terms of potential revenue generation.[11]

41. Summing across the five surveyed parks, revenues from international park tourists could raise an additional $19,000 per year, reflecting the current WTP value of the experience ($690,000 minus $671,000). If improvements were made to the parks according to the development scenarios, international tourists value these changes as an additional $198,000 (30 percent more) in potential entrance fee increases above the current fee structure ($869,000 minus $671,000).

42. Local visitors' fee increases appear to be highly significant in the short run (assuming no impact on demand). Currently, local park tourists would be willing to pay an additional $92,000 ($152,000 minus $60,000) for the current experience in the parks and upward of $194,000 ($254,000 minus $60,000) more than they currently do for improvements to the parks.

Potential revenue from nonpark tourists

43. These findings are for a subset of five sites and only for those who are currently visitors to the parks. Including the other sites listed in Table A2.2 (Annex 2) and imposing a similar park fee revenue increase of 30 percent would translate to more than $369,000 in additional park revenue per year (see bottom of Table 2.10).[12] A more proactive park tourism initiative may also encourage current nonpark tourists to take a park trip. In this case, if the broader market were to be tapped, 273,000 tourists would represent $3,822,000 immediately at the current entrance fee price of $14 and potentially $6,279,000 with an $23 fee, if there were park improvements (see Figure 2.7). Again, these are annual figures and would represent more than $55 million in 10 years (at a 5 percent discount rate).

[11] The magnitude of these fees is relevant in either the international or local case. In terms of total trip expenditures, entrance fees represent only around 2 percent, and even less if airfares are included. If so small, then what would be the demand response to a fee increase—fewer trips? Most studies of tourism demand in developing countries have found a price response (elasticity) of demand less than one, which means that for every 1 percent increase in the fee, demand for visitation decreases by less than 1 percent. In this study, since fees really represent only a small proportion of overall expenses, we assume an elasticity of near zero.

[12] Calculated as total foreign revenue generated in 2007, converted to US$ (divided by 116), and then multiplied by 30 percent.

Table 2.10 Current and potential fees from visitors to National Parks/ Forest Reserves[13]

National Park/ Forest Reserve	Current v. WTP	Local fees (US$)	Intl. fees (US$)	Number of local tourists	Number of intl. tourists	Revenue from locals (US$)	Revenue from Foreigners (US$)
Bundala NP	Current fee	0.34	14.00	6,214	4,319	2,143	60,466
	No improvement	0.82	14.63			5,082	63,178
	With improvement	1.36	18.93			8,477	81,766
Minneriya NP	Current fee	0.34	14.00	22,334	6,005	7,701	84,070
	No improvement	1.01	13.43			22,501	80,650
	With improvement	1.68	17.55			37,541	105,387
Singharaja FR	Current fee	0.34	14.00	27,364	4,829	9,436	67,606
	No improvement	0.82	13.46			22,408	65,015
	With improvement	1.39	17.01			38,006	82,157
Uda Walawe NP	Current fee	0.34	14.00	55,362	12,896	19,090	180,544
	No improvement	0.86	14.60			47,424	188,298
	With improvement	1.55	17.95			85,779	231,527
Yala NP	Current fee	0.34	14.00	64,020	19,914	22,076	278,796
	No improvement	0.86	14.73			54,840	293,252
	With improvement	1.33	18.50			84,897	368,491
Total	Current fee			175,294	47,963	60,446	671,482
	No improvement					152,255	690,393
	With improvement					254,700	869,328
Other parks [1]							369,000
Non-park tourists	Current fee		14.00		273,000		3,822,000
	With improvement		23.00		273,000		6,279,000

Sources: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007); World Bank Tourist Survey (2008).
1 – Parks include those other than the 5 surveyed above (Table A2.2, Annex 2)

2.8 Revenue Leakages

44. A common concern within tourism is the amount of tourist expenditures actually staying within the country's border and not in the hands of companies abroad. These so-called leakages can be important when attempting to measure the true impact of tourism on the local economy, and are potentially a problem when a significant proportion of these expenditures are incurred before entering the country.

45. As mentioned already, among the surveyed international individuals, more than 76 percent were on packaged tours, and of these, 96 percent were purchased outside Sri Lanka, in the resident country of the tourists. While this provides some compelling evidence of possible leakages, it is difficult to tell whether all of this revenue is actually retained outside the country or not. Some suggest that leakages in the sector may be as high as 50-70 percent – mostly from the sun-and-sand package tourism along the coast. Without specific information on the business arrangements between tour operators and countries, it remains open to debate what the exact figures may be. However, even if the implied leakage rate were upward to 73 percent (76 percent x 96 percent) this would not imply that Sri Lanka should not be in the tourism business. On the contrary, what this implies is that if Sri Lanka were to

[13] Note that in Table 2.9 we include only those who visited the parks. We discuss the implications of including nonpark tourists below.

make the necessary investments and develop multisite packages—for example, including sites in the Cultural Triangle and national parks—this could raise the rent capture by local operators.

2.9 Conclusions

46. In 2007, nearly 70 percent of all tourist arrivals stated "pleasure" as their purpose of visit to Sri Lanka according to the Tourism Development Authority, and more than 90 percent were found to be holiday tourists in a recent tourist demand survey in 2008.

Tourism's contribution to the economy

47. Average trip expenditures depend on whether the tourist is local or international, whether he or she had visited a park, and whether the tourist is traveling as part of a package tour. The average international park tourist, not on a package, is the highest-spending individual with an expenditure of more than $796 on a 12-day stay, not including airfare. More than 60 percent of this expenditure was on hotels and accommodation, 10 percent on transport, 15 percent on food and beverages, and 14 percent on shopping and other activities. The tourism multiplier was found to be approximately 1.77, implying that when the average international park tourist spends $796 in Sri Lanka, $909 of value-added is generated: $387 in wages, $487 in operating surplus to businesses, 41 in tax revenue (indirect and corporate taxes), and $153 in imports. The economic impact of 273,000 nature tourists each spending an average amount of $796 would translate to more than $248 million, or 0.77 percent of GDP, to the Sri Lankan economy annually. Over the course of 10 to 20 years this would represent between $2.2 and $3.3 billion, respectively. If even a portion of these funds were re-invested in the protected area network, Sri Lanka's conservation of its natural assets will be sustainable, ensuring long term nature tourism potential.

Increasing contributions through greater trip duration

48. The average length of stay by international tourists is 8 to 13 days, depending on whether or not they were on a package deal. If this stay were extended by a typical two-day trip to one of the parks, the additional revenue generated would be nearly $70 million or 0.22 percent of GDP once direct and indirect tourism effects are taken into account. Over 10 years, this would represent a net present value of more than $614 million, using a 5 percent discount rate.

Financing parks through entrance fees

49. International nature tourists stated a willingness to pay 30 percent more than the current entrance fee for each of the national parks and Singharaja Forest Reserve in their current condition and up to 60 percent with improvements. Local tourists, who currently pay only a nominal fee, were willing to pay three and four times the current entrance fee for current and improved park conditions, respectively. In terms of revenue, these five sites generated more than $670,000 from international tourists who would be willing to pay an additional $198,000 for modest improvements. If nonpark tourists were to include a park trip to their stay, annual entrance fee revenue would be more than $6 million, or $55 million to $85 million in 10 to 20 years, simply from the imposition of a 30 percent increase in entrance fees in the five surveyed areas: Bundala, Minneriya, Uda Walawe, and Yala National Parks and the Singharaja Forest Reserve.

50. In short, there exists scope to increase tourism revenues from the national parks, but it will call for improvements in structure and service to capitalize on this potential. The Government of Sri Lanka

has already made a serious commitment to develop nature tourism in Sri Lanka and has been channeling at least 50% of the revenue into a dedicated fund for improving services and facilities in protected areas. Yet due to low visitation the protected area network is not able to yield the revenue potential as estimated above unless better services are provided. Improving visitor services in the protected areas should be given high priority by the Government so as to realize the potential for increase in tourism revenue, which in turn will advance the conservation goals of the country. For long term sustainability of nature tourism, Sri Lanka has to ensure much better management of the protected area network and conservation of its charismatic and flagship species such as the Asian elephant—a main attraction of visitors to national parks.

Chapter 3 The Impediment to Elephant Conservation around Yala National Park—The Human-Elephant Conflict

3.1 Introduction: Tourism and Conservation

51. Captivating and charismatic wild elephants are the flagship attraction of Sri Lanka's national parks and are the backbone of its nascent ecotourism industry. Despite limited facilities and the country's prolonged civil conflict, the national parks continue to draw the highest value international tourists to otherwise remote areas of the country, largely to see elephants because Sri Lanka provides the best opportunity of viewing wild Asian elephants in the world. The scope to capitalize on this natural tourist asset is enormous and current utilization is well below its full economic potential. At the same time there are daunting challenges to long term elephant conservation that need to be confronted if the full economic potential of this natural asset is to be realized.

52. Protected areas and national parks—the fortress of wildlife conservation efforts—are typically of insufficient size and inadequate quality to sustain the country's elephant population. Not only do elephants have large home ranges, but they must be allowed to disperse among reserves to ensure genetic diversity. A further difficulty is that elephants are an edge species that prefer the concentrated growth of vegetation typically found in degraded and secondary forest habitats. Consequently, more than two-thirds of the wild elephant population can be found outside the protected area system.[14] Estimates of the number of elephants in Sri Lanka vary from about 3,000 to 5,000. This imprecision is inevitable due to the extreme challenges of enumeration in dense vegetation. The forest range available for elephants is thought to cover approximately 15,000 km^2 (Sukumar, 2006) implying a range of about 3 to 5 km^2 for each elephant. To meet its nutritional needs an elephant must consume about 150kg of foliage each day (Sukumar 2006). For the forests to sustain a herd the size of Sri Lanka's, the daily growth in forest biomass would need to equal the consumption needs of each wild elephant—an unlikely prospect.[15] As a result, wild elephants are compelled to graze on agricultural lands to survive, resulting in a vicious spiral of conflict with agriculturalists. The problem is made worse by the rapid and escalating fragmentation of habitats. The proximate causes—unplanned development, a growing infrastructure footprint, gaps in legislation, poor law enforcement, and weak implementation of protected area management plans—are not unfamiliar. This has resulted in the human-elephant conflict which claims around 50-60 humans and 200 elephants annually and is the most serious threat to long term elephant conservation.

53. Long term elephant conservation is futile without addressing the main impediment to conservation. In an attempt to address the human-elephant conflict (HEC), over the last 50 years, there is an emphasis on moving and confining large herds to national parks managed by the Department of Wildlife Conservation (DWC). The two main methods of removing elephants from outside DWC's protected areas have been "elephant drives" that remove elephant herds and capturing and transporting individual males to protected areas. The long-term risks and limitations of this approach are self-evident. Over-grazing and degradation of habitats would inevitably lead to a decline in the carrying capacity of reserves and an ultimate drop in elephant numbers. To ensure their long-term survival there is a need to provide habitat connectivity combined with incentives to turn wild elephants from economic liabilities and the foes of local farmers to wild, living assets.

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[14] Center for Conservation and Research for the Department of Wildlife Conservation, 2007.

[15] The simple arithmetic indicates that each square kilometer of forest would need to "grow" 30–50 kg of biomass each day.

54. In short, the central problem of elephant conservation is also the overarching economic problem of creating incentives and regulations that maintain habitat size, forest productivity, and the full assemblage of ecological services generated by forests. The good news is that there still remain tracts of land capable of sustaining wild elephants as well as generating revenues through tourism such as elephant viewing. Although there is a perception that economic losses due to elephant depredation is very high, the actual losses from HEC are small even relative to farmers' meager incomes, suggesting that economic solutions could be available to address the problem. The decline in elephant numbers and rising HEC are not just indicators of decaying environmental services; they also reflect lost economic benefits to society and in particular those rural communities that depend on natural capital for a large proportion of their income.

55. This chapter addresses these issues in detail. It investigates the extent of HEC in an area around Yala National Park, with a particular focus on the role of shifting cultivation, termed *chena*. It examines the nature of HEC and the effectiveness of different mitigation measures and explores the extent to which tourism benefits could flow to local residents who endure the costs of living with wild elephants but receive few of the economic benefits.

3.2 The Approach

56. What is the extent of damage inflicted by elephants? How do affected households respond? How effective are current damage-mitigation strategies? To answer these fundamental questions a livelihoods survey was conducted in 2008 among 800 households in the vicinity of Yala National Park. Box 3.1 provides details of the survey design. The purpose of the survey was to take stock of the economic activities that households participate in, explore the consequences of the human-elephant interactions, and suggest strategies to address conservation challenges in ways that could bring greater income and employment to affected communities. Ecotourism, and sustainable tourism in general, could become a vehicle that creates some of these potential win-win scenarios to reinvigorate local communities while preserving the environment.

Box 3.1 Survey Design

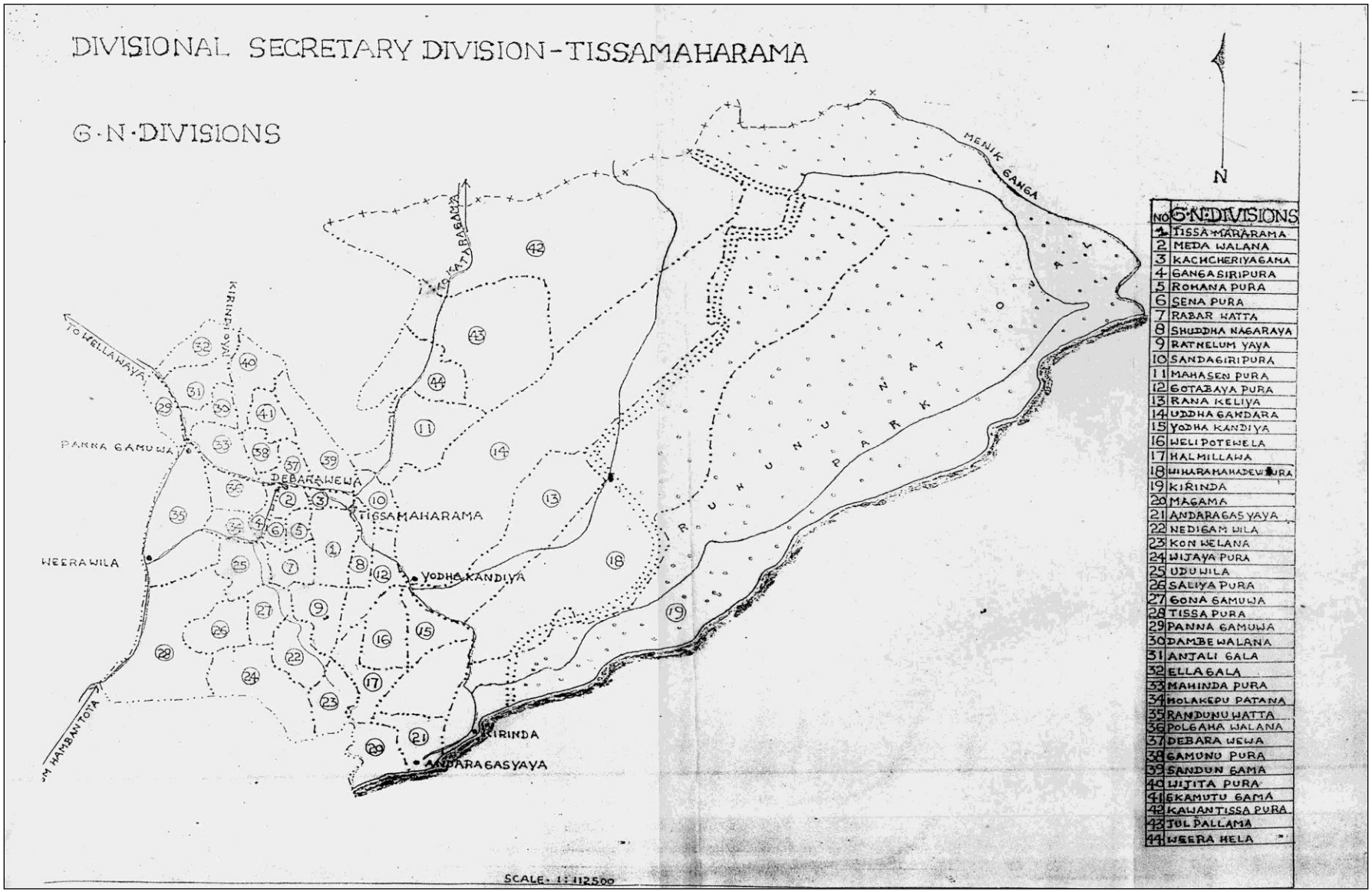
The livelihoods survey elicited responses from 800 households in 11 GN (Grama Niladhari) Divisions located next to Yala National Park (see Table 3.1 and Map 3.1). The sample was stratified among two groups of households in the Hambantota District. Households in the first layer were those adjoining the YNP boundary and the second group were located next to the first but with a significant number of families engaged in chena cultivation. The focus on chena farmers was determined largely by their close interaction with elephants—the flagship species of YNP. Sixty percent of the sample was allocated to the group adjacent to YNP and 40 percent to those in the second group with significant chena cultivation. A total of four focus group discussions were also held with each of the communities to gauge their opinions on elephant encounters and also how tourism might play a role in their future livelihoods. Transcripts of these discussions are also provided in Annex 3.

Table 3.11 Details of sample allocation and coverage

Group	GN Divisions (code)	Number of Households
Adjoining YNP	Andaragasyaya (21)	90
	Kirinda (19)	100
	Viharamahadevipura (18)	80
	Rana Keliya (13)	50
	Udaha Gandara (14)	70
	Kawantissapura (42)	90
	Sub-sample total	480
Significant Chena	Magama (20)	50
	Yodakandiya (15)	60
	Mahasenpura (11)	70
	Weerahela (44)	70
	Julpallama (43)	70
	Sub-sample total	320
	Sample total	800

Source: World Bank Livelihoods Survey (2008).

Map 3.1 Map of the livelihoods survey area



3.3 The Anatomy of Households and Livelihood Activities

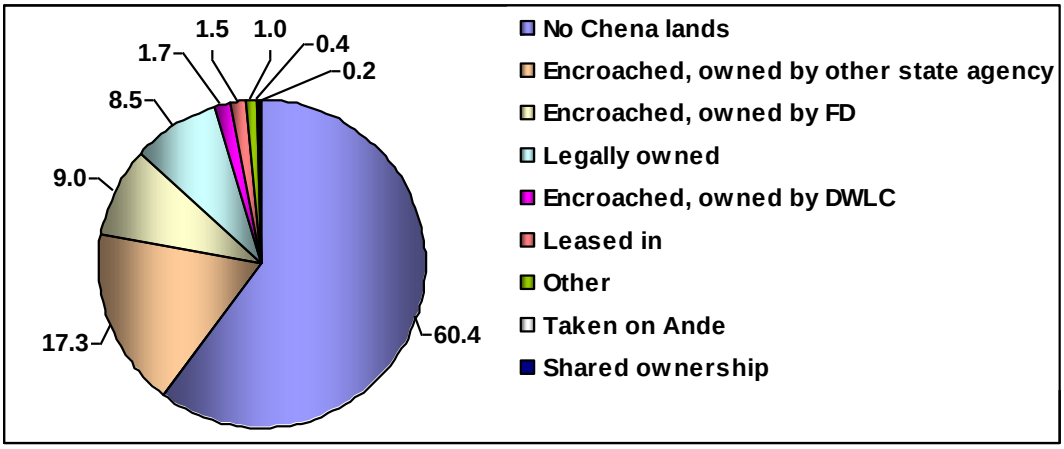
57. Shifting cultivation, or chena, a practice dating back centuries, remains an important part of village life throughout Sri Lanka's Dry Zone. Individual families have customary rights to chena lands that include both the currently cultivated land and all fallow lands that have been cleared and are recovering after one to two years of cultivation. These patterns of cultivation have been sustained by social norms and customs that dictate recognition of pre-existing family rights. However, chena farmers have no formal tenure rights to land (see Figures 3.1 and 3.2). In most villages, the male family members spend much of the growing season in the chena lands, away from the village, due to problems of wild animal crop depredation. Elephants are perceived as particularly menacing by the chena farmers (see Box 3.2). Chena is also a practice that occurs in undisturbed areas—such as Forest Department land buffering national parks. Table 3.2 distinguishes between two geographical areas—chena lands that are adjoining Yala National Park (normally Forest Department lands) and those that are not.

58. Chena land is cultivated with limited agricultural technology and virtually no inputs. As a result, yields mirror the natural fertility of the soil. Cultivation is dominated by vegetables, nonrice grains (grams, lentils, and maize), and some fruits. Chena is also a seasonal activity, with only around 5 percent of households using the land residentially (Figure 3.3). Chena crops are mostly organic and rain-fed, and so must follow seasonal variations in precipitation. Most of the cultivation occurs during Maha (October-January), and in the fallow season the forests gradually return to the chena farms, creating ideal elephant habitat which in turn restores soil fertility (Figure 3.4).[16] It is no coincidence that chena cultivation is more prevalent among households adjoining Yala National Park (YNP), where larger plots of forest land are available and the proximity to the protected area assures more rapid rejuvenation of soils (Table 3.2). In terms of land rotation, almost all lands are cultivated on a permanent basis with less than 5 percent in rotation (i.e., other than in the Yala—dry—season).[17]

[16] This occurs through both elephant dung deposits and the natural recovery of nutrients through the fallow period.

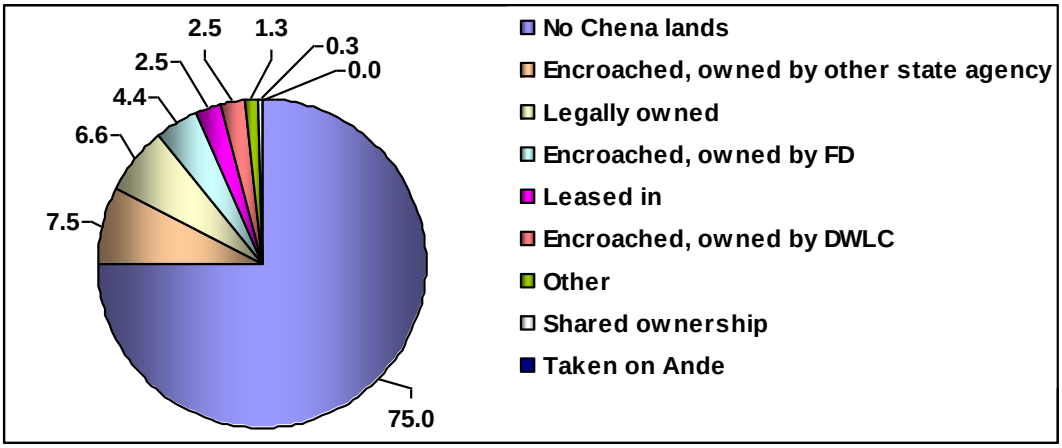
[17] In Sri Lanka, there are two main cultivation seasons—the Maha season (October-January), or the period with excessive rainfall, and the Yala season (April-August), the drier season. In Yala, farmers have a greater reliance on irrigation.

Figure 3.10 Tenure rights on land where chena occurs in areas adjoining YNP



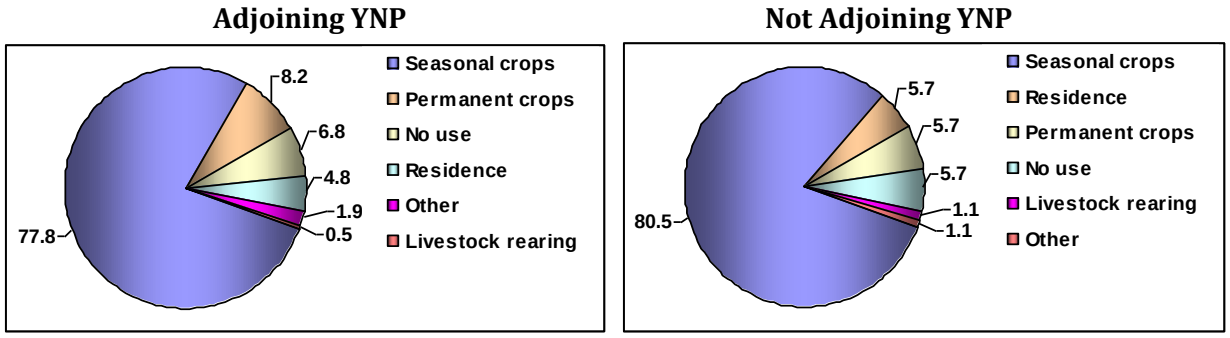
Source: World Bank Livelihoods Survey (2008).

Figure 3.11 Tenure rights on other land where chena occurs



Source: World Bank Livelihoods Survey (2008).

Figure 3.12 Chena land use



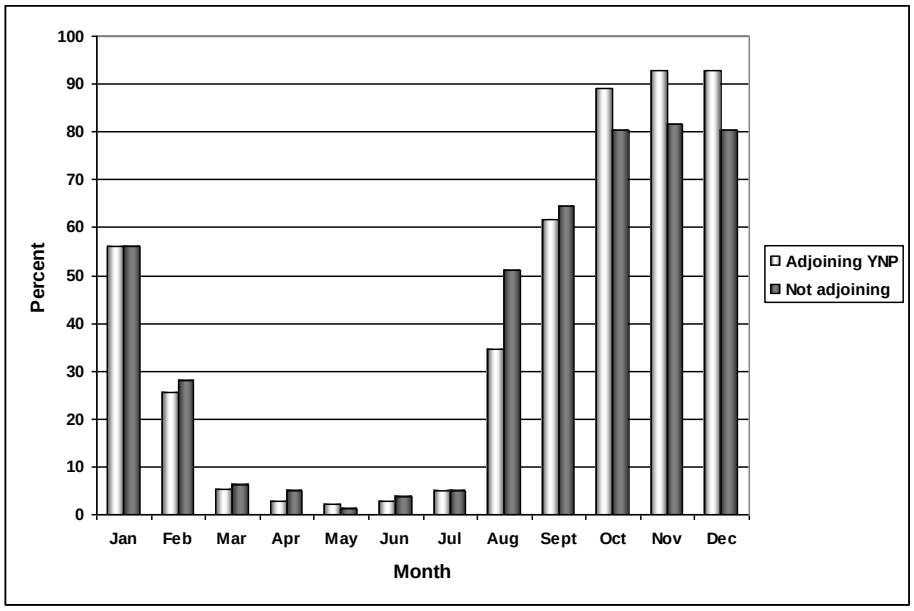
Source: World Bank Livelihoods Survey (2008).

Table 3.12 Characteristics of chena cultivation

Chena cultivation	Adjoining YNP	Not adjoining
Number of households with chena lands	185	82
Average chena land area (acres)	0.71	0.43
Average chena land extent cultivated (acres)	0.64	0.32
Average years chena farming	6.11	4.20
Percent of all land that remains in fallow	3.96	4.06
Total number of households	480	320

Source: World Bank Livelihoods Survey (2008).

Figure 3.13 Percentage of farmers engaged in seasonal chena cultivation



Source: World Bank Livelihoods Survey (2008).

Box 4.2 Chena cultivation and optimal habitats for elephants

Chena, or slash-and-burn agriculture, is generally considered a practice detrimental to the environment and a cause of habitat degradation. However, studies in Sri Lanka have demonstrated that traditional chena agriculture actually creates optimal habitat for elephants. Slash-and-burn is a system of agriculture that is widespread throughout the world and usually is "shifting" in nature.

A farmer will typically cut and clear an area of forest and set fire to it just before the onset of the rainy season. Grounds are then cultivated with crops of cereals and vegetables with the harvest completed soon after the rainy season.

The remainder of the year, through the dry season, the land is left fallow. Again at the beginning of the wet season, it is cleared of the vegetation that has sprung up and cultivated. After about five years of this cultivation, the land becomes unproductive and a new patch is cleared. This is the reason why chena cultivation is "shifting" in nature.

During the period that the chenas are cultivated, left over vegetation from the harvest provides a good source of food for elephants, which flock in great numbers to consume it as soon as the people leave. Then through the dry season, hardy natural plants keep growing in the chena fields, providing fodder for elephants. Therefore, even during the period chenas are cultivated, such areas provide dry season food for elephants. Once the chenas are abandoned due to decreased productivity, natural plants take over. Although the nutrients in the soil are insufficient to provide a good harvest for farmers, they are still more than sufficient for the natural "pioneer" vegetation, which springs up with a vengeance. In just a couple of years such fields have vegetation a couple of meters tall and growing profusely. Elephants prefer this vegetation as it provides them with a concentrated source of food.

With time and through a process known as "succession," different species of plants take over and the chena fields become secondary forests. Consequently, traditional chenas create ideal habitat for elephants.

Due to the rapidly increasing human population, changes in the aspirations and outlook of people, and pressure from groups that consider chena as an undesirable practice, there is a strong movement to convert chena to permanent cultivation. However, most chena lands are not arable and can be cultivated only with rain water. Therefore, only one season of crops per year is possible, and such areas cannot support families throughout the year. In addition, the practice of chena has developed over thousands of years as a form of shifting cultivation because of the low nutrient value of the soil. Converting chena lands to permanent cultivation requires the adoption of practices such as mechanical tilling of soil and use of fertilizer. Consequently, the farmer has to bear a high cost of cultivation and needs to cultivate even larger areas to recover the investment. Since cultivation is rain dependant, droughts and dry spells result in the financial ruin of farmers.

The conversion to permanent agriculture also prevents the growth of natural vegetation, slowly converts chena land to bare land, and eliminates their use by elephants and other wildlife. Thus converting traditional chena lands to permanent agriculture is of dubious benefit to the people and is detrimental to elephants.

Source: Adapted from Fernando et al. (2005).

Household characteristics in the area

59. Households in the survey area are relatively similar in terms of size, composition ,and educational attainment (Table 3.3). Chena households are slightly larger than others in total size and have a higher percentage of male occupants. Female-headed households are more common

among nonchena households and are characterized by slightly fewer children. Education attainment is also relatively consistent across chena and nonchena as well as across the gender of the household head.

Table 3. 13 Household characteristics

	Chena		Non-Chena	
	Adjoining YNP	Not adjoining	Adjoining YNP	Not adjoining
Household size	4.51	4.83	4.02	3.90
% Male	0.53	0.57	0.49	0.50
% Female	0.47	0.43	0.51	0.50
% Male household head	0.86	0.86	0.78	0.77
Number of children	2.17	2.23	1.91	1.70
Years of education				
Head	6.38	5.93	6.60	6.66
Spouse	7.72	7.75	7.63	8.10
Children	6.75	6.92	5.63	6.75
Number of households	159	69	321	251

Source: World Bank Livelihoods Survey (2008).

Sources of income

60. The overall picture that emerges from the survey data is one of communities with a high dependence on natural resources and in the case of chena farmers – on agriculture. Mean *reported* income varies from a low of between SL Rs 100,000 per year, for nonchena farmers located at a distance from YNP, to a high of SL Rs 142,000 for chena farmers located close to YNP. Households in the survey area derive their income from a wide variety of agriculture and nonagricultural activities (Table 3.4). Agricultural activities include chena, paddy, crop, and livestock production while nonagricultural activities include fishing, small-scale enterprises, forest products, tourism, and off-farm formal employment. For those engaged in chena farming, agriculture is the primary source of income (over 60 percent of total income), while nonchena households, on average, earn approximately 74 percent of their total income from nonagricultural activities such as small-scale enterprises.[18] In addition, overall income is also higher for those who adjoin YNP and are *not* chena farmers. Chena is often recognized as subsistence farming and a livelihood of those with fewer income opportunities. Among chena farmers, income from agriculture is higher for those located closer to YNP, perhaps reflecting the resilience and regenerative capacity of lands located closer to better quality habitats. Very few in the sample derive income from formal sources of employment.

[18] Microenterprises that include selling of fish, fruits and other goods; handy work; carpentry; and transport are a major source of nonagricultural revenue. Specific activities, and the percentage engaged, included: vendor-seller (fish, fruits, books, paddy—34 percent), handy work (25 percent), carpenters/drivers/rice mill work/saloon work (13 percent), selling (9 percent), garments (6 percent), brick making (4 percent), food processing (3 percent), mechanics and household goods repair (2 percent), weaving/mat-work (1 percent), medicines (1 percent), and electricians (1 percent).

Table 3.14 Average income from different economic activities

Sources of income	Chena				Non-Chena			
	Adjoining YNP		Not adjoining		Adjoining YNP		Not adjoining	
	Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
Agricultural income	*84,364*		*93,043*		*21,362*		*38,380*	
Chena	59,648	70.7	44,643	48.0	-	-	-	-
Paddy	8,748	10.4	24,832	26.7	8,032	37.1	21,151	55.1
Other seasonal highland crops	806	1.0	422	0.5	2,219	10.3	2,245	5.8
Other permanent highland crops	3,805	4.5	10,286	11.1	3,450	15.9	3,627	9.4
Livestock	377	0.4	376	0.4	1,632	7.5	2,833	7.4
Agricultural labor income	10,979	13.0	12,483	13.4	6,299	29.1	8,525	22.2
Nonagricultural income	*52,905*		*50,700*		*114,825*		*65,195*	
Fisheries (inland and coastal)	1,867	3.5	232	0.5	48,795	42.5	2,748	4.2
Micro-enterprises	24,145	45.6	25,144	49.6	40,307	35.1	27,552	42.3
Forest products	348	0.7	123	0.2	248	0.2	-	-
Tourism	7,064	13.4	2,609	5.1	1,308	1.1	6,478	9.9
Formal employment	3,890	7.4	4,858	9.6	4,421	3.9	4,907	7.5
Cash receipts	535	1.0	690	1.4	1,234	1.1	1,401	2.1
Nonagricultural labor income	15,056	28.5	17,045	33.6	18,510	16.1	22,110	33.9
Total income	***137,269***		***143,743***		***136,456***		***103,575***	

Source: World Bank Livelihoods Survey (2008).

The challenges of farming in the survey area

61. Given the wide variety of income-generating activities listed above, the livelihood challenges are certainly familiar and recognizable. However, the survey also revealed several other major issues to be significant to households. Although security and agricultural productivity issues were a concern, problems with other wild animals as well as elephants were cited as being the most problematic (Table 3.5). Irrespective of location, about 40 percent of respondents noted that wild animal depredations are a major concern in farming, followed by security issues and input cost inflation. Of particular concern for this study are the human-elephant interactions.

Table 3.15 Main issues facing chena cultivation

Chena cultivation	Adjoining YNP	Not adjoining
Problems from other wild animals	23.9	23.5
Wild elephant problems	19.8	15.9
Security issues in Yala NP	14.3	13.9
High input cost	13.2	15.9
Problems in marketing	11.6	12.7
Other	7.5	6.4
Productivity loss over time	6.4	7.6
Restrictions from the Forest Dept	3.4	4.0
Restrictions from the Dept of Wildlife Conservation	0.0	0.0

Source: World Bank Livelihoods Survey (2008).

3.4 Human-Elephant Interactions

62. The pattern of elephant encounters is reflective of location and agricultural practice. Encounters were highest among those engaged in chena cultivation and in particular those located closer to the park (Table 3.6). The seasonality of encounters also closely follows that of the chena cultivation season, with the largest occurrences coming in the Maha season (compare Figure 3.4 to Figure 3.5). The frequency of attacks (i.e., the number of repeated attacks) was also higher among chena cultivators. These occurrences were also found to be statistically significant, where the likelihood of an elephant encounter is greater on chena lands that adjoin YNP and less likely among those who derive greater income from nonagricultural activities (second column in Table 3.7). In addition, repeated encounters on the same land (i.e., the frequency of encounters) are greater on chena lands (third column of Table 3.7).

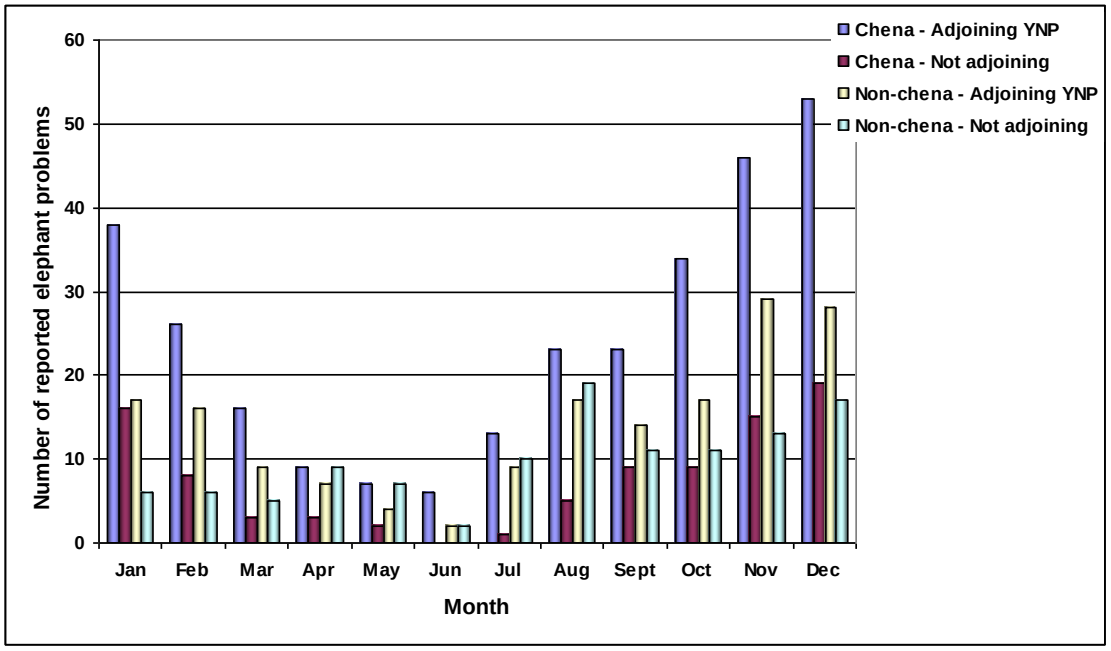
63. The actual economic losses caused by elephant crop raiding are surprisingly low. The average loss of even the most vulnerable group—chena farmers adjoining YNP—is SL Rs 4,842 and accounts for less than 3.6 percent of annual income. Total HEC losses, across all sampled households, was only about SL Rs 226,000 or US$1,950, so damage compensation scheme requirements would actually be quite modest. On average, the perceptions of most households reflect this low level of impact, even though those with adjoining plots tend to have a higher frequency of encounters (i.e., average frequency of attacks). Compensation for HEC losses is also rarely sought since the only compensation available is for the loss of life.

Table 3.16 Attributes of elephant encounters

	Chena		Non-Chena	
	Adjoining YNP	Not adjoining	Adjoining YNP	Not adjoining
Elephant problems (%)	39.0	29.0	9.3	6.0
Average frequency of attacks	2.9	1.9	1.5	1.7
Minimum	1	1	1	1
Maximum	25	4	4	3
Perceptions of economic impact of interaction (%)				
No impact	49.1	62.3	83.5	87.3
Yes, significantly	17.0	10.1	3.4	3.2
Yes, moderately	17.0	14.5	2.5	2.8
Not much impact	17.0	13.0	10.6	6.8
Average crop loss from HEC (SL Rs)	4,842	2,957	545	1,380
Number affected	36	11	5	12
Total losses (SL Rs)	174,317	32,522	2,726	16,561
HEC compensation (no.) [1]	1		2	
% of damage compensated (SL Rs)	0		0	
Number of households	159	69	321	251

Source: World Bank Livelihoods Survey (2008).
1 – Compensators: Ceylinco Grameen, Government

Figure 3.14 Seasonality of elephant problems



Source: World Bank Livelihoods Survey (2008).

Table 3.17 Determinants of the likelihood and frequency of elephant encounters

Determinants	Elephant encounter (probit)	Frequency of attack (negative binomial)
	Coefficient	Coefficient
Chena cultivation	0.92 ***	2.21 ***
Household size	0.05	0.02
Agricultural income	0.000000658	-0.000000725
Nonagricultural income	-0.00000198 **	0.000000282
Adjoining YNP	0.30 **	0.32
Constant	-1.68 ***	-3.22 ***
Alpha		9.38
LR test ~ χ^2 (d.f.)	102.46 (5)	46.59 (5)
LR test (α=0) ~ χ^2 (d.f.)		258.89 (1)
Number of observations	800	800

*** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level

HEC-related mitigation measures

64. The low value of losses at least partly reflects the success of damage-mitigation measures. The actions and expenditures taken by households to mitigate HEC-related problems are summarized in Table 3.8. Chena cultivators are more proactive as are those in boundary plots to YNP. This trend is also clearly reflected in mitigation expenditures—but even so the absolute amount is again remarkably low. The average amount spent by chena cultivators around Yala is SL

Rs 2,728; for chena farmers beyond Yala it is SL Rs 1,188; for nonchena farmers near Yala it is SL Rs 93; and nonchena farmers beyond Yala it is SL Rs 38. The amounts constitute only about 1 to 2 percent of average annual income—a nominal amount relative to expenditures on other agricultural inputs.

Table 3.18 HEC-related mitigation expenditures undertaken by farmers (values in SL Rs and percentage of households with positive expenditures in brackets)

	Chena		Non-Chena	
	Adjoining YNP	**Not adjoining**	**Adjoining YNP**	**Not adjoining**
Chena cultivation	***2,728***	***1,188***	***93***	***38***
Electric fences	**711**	**-**	**-**	**16**
	(1.9)	(-)	(-)	(0.8)
Fences	**1,574**	**944**	**64**	**4**
	(26.4)	(17.4)	(2.5)	(0.4)
Firecrackers	**431**	**236**	**28**	**18**
	(36.5)	(37.7)	(5.3)	(3.6)
Fire	**-**	**-**	**-**	**-**
	(23.9)	(20.3)	(3.1)	(2.0)
Shouting	**-**	**-**	**-**	**-**
	(17.0)	(10.1)	(1.6)	(1.2)
Other	**11**	**8**	**-**	**-**
	(3.1)	(4.3)	(0.3)	(-)
Paddy + other highland cultivation	***534***	***270***	***61***	***425***
Electric fences	**409**	**-**	**-**	**40**
	(0.6)	(-)	(-)	(0.4)
Fences	**88**	**101**	**46**	**303**
	(2.5)	(4.3)	(2.2)	(3.2)
Firecrackers	**37**	**168**	**15**	**82**
	(8.2)	(7.2)	(2.8)	(6.0)
Fire	**-**	-	**-**	**-**
	(5.7)	(4.3)	(2.2)	(4.4)
Shouting	**-**	-	**-**	**-**
	(1.9)	(1.4)	(1.6)	(2.8)
Other	**-**	-	**-**	**-**
	(-)	(1.4)	(0.3)	(0.8)
Total number of households in each area	159	69	321	251

Source: World Bank Livelihoods Survey (2008).

Perceptions of mitigation measures

65. One of the largest mitigation expenditures is on electric fences—but what is the experience and perception of their use? Overall, the perception of electric fences as an effective mitigation measure is mixed, even among those whose crops are protected (Table 3.9). Farmers perceive the fences to be effective, despite the fact that elephants are still witnessed on either side of the fence and still cause crop damage on chena lands. Elephants are found on both sides of the fence since, currently, electric fences are placed along the administrative boundary of the national park and not the ecological boundary. Elephants then break through the fences in search of fodder, and when the fence is repaired elephants appear on both sides. Thus there is a compelling argument to be made for placing the fences along the ecological boundary, around villages and permanent agriculture

which would be minimizing the need for elephant migration and fence destruction. In terms of financing fences the survey revealed that among those who are already protected, the Government has supported most investments.

Table 3.19 Effectiveness of electric fences (all values in percent)

	Chena		Non-Chena	
	Adjoining YNP	**Not adjoining**	**Adjoining YNP**	**Not adjoining**
Percentage of households protected by electric fences	67	55	40	33
Have the fences been effective in minimizing elephant problems?				
Yes	74	60	93	83
No	26	40	7	17
Are these elephants still on both sides of the fence?				
Yes	85	100	78	43
No	15	0	22	57
If yes, are they single males or herds?				
Single male	30	27	34	67
Herds	21	9	10	0
Both	49	64	55	33
Do the herds do damage to your crops?				
Yes	42	38	11	17
No	58	62	89	83
Has any institution supported the building of the electric fence?				
Yes	32	13	21	7
No	68	87	79	93
If yes, who?				
Government	74	60	85	67
Not known	26	40	15	33
Total number of households	159	69	321	251

Source: World Bank Livelihoods Survey (2008).

The effectiveness of mitigation expenditures: HEC regressions

66. Perceptions can also diverge from reality. Regression analysis provides one way to examine whether or not electric fences and other mitigation expenditures have been effective (Table 3.10). The survey sample was reduced to include only those who incurred HEC crop losses, or spent money on HEC-related mitigation measures on their chena or paddy lands. Not surprisingly, the results clearly show a strong positive relationship between chena cultivation and HEC crop losses, but mitigation expenditures on electric fences decrease the amount of the loss and those with higher agricultural income are also associated with smaller losses. The results suggest some measure of success with HEC mitigation measures. In terms of impact, on average, investment an electric fence reduces HEC damages by about 39 percent. Other measures are much less effective.

For instance, the coefficient for firecrackers is much smaller, suggesting a 10 percent reduction, and for nonelectric fences the reduction is a meager 4 percent. In sum, the mitigation actions, though imperfect, have been successful in providing a measure of protection against wildlife depredations. But what is perhaps surprising is that the monetary losses do not appear to be large and the perception of these losses far exceeds actual losses.

Table 3.20 Determinants of HEC losses

Dependent variable Ln(HEC losses)	**(1) Coefficient**	**(2) Coefficient**	**(3) Coefficient**
Chena cultivation	6.31 ***	6.03 ***	4.14 **
Ln(HEC expenditure on chena lands)	-0.25 **		
Ln(exp. on electric fences)		-0.39	-0.42 *
Ln(exp. on fences)		-0.04	
Ln(exp. on firecrackers)		-0.10	
Ln(HEC expenditure on Paddy lands)	-0.03		
Ln(exp. on electric fences)		0.82 **	0.76 **
Ln(exp. on fences)		0.19	
Ln(exp. on firecrackers)		-0.02	
Household size	0.36	0.53	
		-0.30	
Ln(agricultural income)	-0.26 ***	***	-0.24 **
Ln(nonagricultural income)	-0.02	-0.02	
Adjoining YNP	-2.02	-2.14	
Constant	-7.42 ***	0.02	-1.10
R^2	0.089	0.122	0.091
Number of observations	162	162	162

*** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

3.5 Local Benefits of Tourism and Opportunities for Financing Conservation

Current engagement in tourism activities

67. At the heart of the HEC problem lies a familiar conservation dilemma—those who suffer the consequences of living with elephants gain little from the many benefits that could accrue from a thriving nature-based tourism industry. Currently, tourism is a relatively insignificant contributor to income in these areas. Only 14 out of the 800 individuals surveyed have any direct income from tourism-related activities, but the amounts are substantial for the fortunate few—SL Rs 3,013,200 or about US$25,976 across the fourteen individuals per year. The most lucrative positions are those associated with the provision of accommodation or food services (Table 3.11).

Table 3.121 Tourism employment and income in the survey area [1]

Job type	N	Earnings (SL Rs)	Earnings per person (SL Rs)
Tourist guides	1	180,000	180,000
Safari jeep owner	3	432,000	144,000
Safari jeep driver	5	438,000	87,600
Selling food	2	744,000	372,000
Providing accommodation	2	780,000	390,000
Working in an accommodation	3	259,200	86,400
Other	1	180,000	180,000

Source: World Bank Livelihoods Survey (2008).
1 - A few individuals reported income from more than one job of type, hence there is some overlap.

68. This problem is not peculiar to Sri Lanka. As an "enclave industry," tourism is capital intensive, draws relatively few inputs from the local economy, and exports its earnings outside the region. As a result, few of the direct benefits accrue to local residents and the rural economy. The challenge for the industry and policy makers is to devise strategies that link local community benefits to the primary tourist attraction of YNP—its elephants. Doing so would boost local development and simultaneously ensure more sustainable and inclusive regional development outcomes. Healthy elephant herds not only provide greater ecotourism opportunities that can add value to the parks, but the revenue generated can also be used to compensate farmers for the inevitable losses when farming in or near elephant habitats. Given the extremely modest losses, totaling about SL Rs 226,000 or US$1,950, the resources needed to ensure fair compensation will not be large (Table 3.6).

Promoting greater tourism opportunities in Yala National Park

69. The benefits that flow to local communities could be quite substantial if parks were better promoted and visitation numbers were to increase. The tourism survey suggests that the average international tourist who visits a park spends around $796 and stays 12.2 days in the country—or about $73 per day. Of the $796 in total expenditure, 60 percent is spent on hotels, 10 percent on transport, and 15 percent on food and beverages (Table 3.12). Even in the absence of a tourism multiplier, these three expenditures represent about $56 per person per day in additional revenue. International visitation to Yala NP was around 19,000 in 2007, while occupancy rates in the area averaged only 30-40 percent (Sri Lanka Tourism Development Authority 2007). If better park promotion were to lead to increased occupancy rates, revenues could easily double to more than SL Rs 260 million or US$2.2 million annually (Table 3.13). If local benefit sharing arrangements, or employment opportunities, were structured so as to capture even 30 percent of these benefits it would represent an additional SL Rs 80 million or US$680,000 annually to the locals of YNP area. Similar arrangements in other parks would also yield substantial local benefits.

Table 3.222 Breakdown of expenditures per person (US$)

Category	Expenditure	%	Per day
Hotels	484	60.8	39.7
Transportation	83	10.4	6.8
Food and beverages	120	15.1	9.8
Shopping	48	6.0	3.9
Other activities	61	7.7	5.0

Source: World Bank Tourist Survey (2008).

Table 3.233 Revenue generation potential in YNP

Visitation, 2007	Occupancy rate (%)	Revenue (SL Rs mil.)	Revenue (US$ mil.)	Local benefits 10% (SL Rs mil.)	Local benefits 20% (SL Rs mil.)	Local benefits 30% (SL Rs mil.)	Local benefits 30% (US$ mil.)
19,914	39.4	130.08	1.12	13.01	26.02	39.02	0.34
25,272	50.0	165.08	1.42	16.51	33.02	49.52	0.43
30,326	60.0	198.09	1.71	19.81	39.62	59.43	0.51
35,380	70.0	231.11	1.99	23.11	46.22	69.33	0.60
40,435	80.0	264.12	2.28	26.41	52.82	79.24	0.68

Source: Author's calculations.

70. Benefit-sharing arrangements tend to be highly localized and must be tailored to the individual socioeconomic and habitat condition. The particular needs of an area should be assessed. International experience has been mixed, but program evaluation has led to a number of recommended areas that are necessary for success. For instance, it was found that successful programs in African countries require four key components: long-term institutional support, appropriate identification of the target community and project type, transparency and accountability, and adequate funding (Archabald and Naughton-Treves 2001; Makamea and Boon 2008). Cash transfers have at times been used but are likely to be spent on nonproductive consumption. And while they may contribute to current poverty alleviation, if distributed broadly, they do not generally contribute to development. Thus, private cash distributions may not be optimal in all cases. Harder questions arise when public expenditures are not likely to be very productive either. In this case, one should think seriously about investing in governance capacity and creating the preconditions for more effective use of public expenditures. Historically, support and funding for Yala NP has been weak, and when coupled with the exploitative nature of local tour operators, the overall sustainability of the park is a concern (Buultjens et al. 2005). A meaningful strategy is urgently needed in the case of the park system as a whole.

71. Annex 1 provides a stylized model that yields workable closed form solutions that can be calibrated to determine location specific responses. The parameterization of this model (or extensions thereof) is left for future research. The important conclusion of this study is that few benefits flow to local people and the local development impacts of tourism are well below potential. Additionally, the monetary damage from HEC is surprisingly small. All of this suggests that opportunities abound to build on the development opportunities of nature-based tourism in ways that ensure the long term protection of elephants and their habitats. Sound park management with an integrated and inclusive approach to benefit sharing with the local population can make new inroads to the broader development agenda of rural poverty alleviation.

3.6 The Human-Elephant Conflict around Yala National Park, Sri Lanka: Conclusions

72. The human-elephant conflict represents a development challenge between supporting the livelihoods of those in close proximity to Yala National Park and conserving one of Sri Lanka's most charismatic species—the wild elephant. Through population and other development pressure, elephants have been confined to the park areas as their last refuge—but this is not ecologically sustainable in the longer term. As elephant habitats shrink even further, the inevitable pattern is clear: increased encounters leading to distorted perceptions of elephants as a pest rather than an

asset. The human-elephant conflict is a development and conservation challenge that policy makers and the public must confront. New strategies must be developed that will foster more win-win scenarios. There is a need to move beyond the failed approach of attempting to restrict elephants to DWC protected areas if there is serious commitment to mitigate HEC and conserve elephants. DWC protected areas were only 30% of the elephant range and has been one of the main reasons for failing to restrict elephants to such small ranges. The new approach advocates removing elephants form developed areas, comprising about 20% of their current range and allowing them to range in DWC protected areas, Forest Department reserves and chena lands which are under the jurisdiction of the Forest Department. This will in effect mean that elephants are limited to about 80% of their current range and is a viable proposition. However, since elephants are expected to co-exist with the chena farmers during the cultivation season—a practice that has been going on for decades, despite attempts to restrict elephants to DWC protected areas—localized benefit-sharing programs offer a way forward—changing perceptions of elephants from a liability into an asset through the creation of economic incentives and mechanisms that will improve the livelihoods of those interacting with elephants and conserving their habitat.

73. To better understand the human-elephant interaction, a survey of 800 households was conducted in areas around Yala National Park, focusing particularly on shifting cultivators also known as chena farmers. Chena farming is an informal tenure practice that follows the wet and dry seasons of Maha (wet) and Yala (dry). The crop residual produced on chena lands is excellent grassland fodder for elephants, which often migrate to these areas in the search of scarce food. The ensuing encounters follow this pattern of seasonal production, where lands that adjoin YNP (i.e., Forest Department lands) have a higher probability and frequency of attacks. Farmers perceive these encounters as one of the main challenges to chena cultivation, followed by other wild animal attacks and high input costs. To defend crops, various mitigation measures have been undertaken—such as electric fences, firecrackers, lighting fires, and shouting, each with a varying degree of success. Empirical evidence lends support to the effectiveness of electric fences, with other measures being less effective in avoiding damage. However, actual expenditures on these measures are quite low as are the realized crop losses, with the highest losses being among chena plots adjoining YNP, where farmers spend an average of SL Rs 2,728 on mitigation and realize SL Rs 4,842 per year in crop losses. Overall losses among the sample were approximately SL Rs 226,000 or US$1,950, an encouraging result for any proposed compensation scheme. In addition to compensation, one further recommendation would be to locate fences along the ecological boundary and around villages and permanent agriculture rather than the administrative boundary of the park in order to minimize the interaction. Currently the search for further sustenance is resulting in elephants breaking through administratively bounded fences, with fodder on both sides of the fence.

74. Agricultural income is the mainstay of households around YNP. However, due to subsistence requirements, many people diversify to many nonagricultural activities such as microenterprises, fishing, tourism and other formal employment opportunities. Currently, tourism opportunities represent only about 3.2 percent of total nonagricultural income in the area, and even still this accrues to only a few individuals. A more robust and targeted ecotourism strategy to increase occupancy rates in YNP could potentially double the park's revenues to SL Rs 260 million or US$2.2 million per year. If even 30 percent of these benefits were to flow to local communities in terms of employment, it would serve to lessen the burden to diversify their income across so many diverse activities, lower their dependence on chena, ameliorate the human-elephant contact, and support greater conservation measures. The greatest impediment to long term conservation of the Asian elephant in Sri Lanka is the human-elephant conflict. Unless meaningful steps are taken to address the conflict, the future of these charismatic giants is in jeopardy. Elephant viewing ranks very

highly among visitors to protected areas and the absence or low incidence of elephants in protected areas would most likely mean lower visitation—thus lower revenues from tourism and for conservation. Therefore, elephant conservation and ensuring the long term viewing of wild elephants in Sri Lanka begins with addressing the human elephant conflict.

Chapter 4 Conclusion

75. Ranked as a global biodiversity hot spot, Sri Lanka abounds in natural assets that should attract tourists from all over the world. However less than 10 percent of foreign tourists ever visit the country's national parks; rather, the tourism industry focuses on the high-volume "sun, sea, and sand" segment of the market. Given the country's unique biodiversity and high density of beautiful wild species such as elephants and leopards, Sri Lanka is well positioned to develop an ecotourism industry and become a more attractive tourist destination. However, fragmentation and poor management of diverse ecosystems, population and development pressures on protected areas, and short-sighted policies are leading to the degradation and irreversible loss of biodiversity in the country.

76. The Government's ten-year development framework aims at accelerating growth while ensuring a path of sustainable development and prioritizing conservation of the country's natural assets. In line with this framework, this study focuses on analyzing the options for the protection of natural assets through nature-based tourism with a specific focus on elephant conservation while promoting growth in the tourism industry. The study identifies development opportunities that increase tourism revenues and offer remedies to the human elephant conflict—the impediment to elephant conservation.

4.1 Revenue Potential from Nature-Based Tourism

77. Despite the devastation of the 2004 Tsunami and the escalation of the Civil War in recent years, tourism has remained a resilient contributor to the economy of Sri Lanka. With improved promotion and niche markets that capitalize upon the country's rich natural assets, tourism's contribution to the economy could increase substantially. An assessment based on a tourism survey conducted in a small cluster of national parks in the Southern Province indicates potential for increased revenue from nature-based tourism from the protected area network in Sri Lanka.

78. The expenditure patterns that emerged from the survey indicate that travelers who visit the country with a tour package spend on average less than half than an individual (nonpackage) traveler; of the surveyed international travelers, over 76 percent were on packaged tours, and among them, 96 percent of the packages were purchased outside Sri Lanka. These findings have policy implications for the country and incentive to promote individual travel, which could create high-value niche markets, raise revenue from the sector, and possibly decrease revenue leakages by reducing the number of foreign-purchased travel packages.

79. Another simple method of increasing tourism revenue would be through increasing the average length of a tourist's stay. With almost 70 percent of tourists identifying "pleasure" (e.g., recreation, sun-and-sand, cultural, natural, wildlife tours) as their main reason for travel, increasing a nature tourist's duration in Sri Lanka could be accomplished through better marketing of its national parks. Currently the vast majority of tourists do not visit the parks, but the survey reveals a strong willingness to add a park visit to their trip.

80. Along with better marketing, improved conditions of the national parks (e.g., less traffic congestion, improved infrastructure facilities, more shopping opportunities, and diverse activities)

have the potential to increase tourism revenue. To assess the scope for raising additional revenue, the tourist survey was used to ask nature tourists their willingness to pay park entrance fees (1) to enjoy the national parks as they currently stand and (2) for specific improvements in the park. Results from the survey indicate that both international and local tourists are willing to pay higher than their current entrance fees, for park improvements as well as for the parks' current conditions. The findings imply that simply imposing a 30 percent increase on park entrance fees would result in an increase in park revenues of more than $369,000 per year. With improved park conditions and with a more proactive tourism initiative that encourages current nonpark tourists to visit, entrance fee revenues have the potential to increase to more than $6 million annually, representing over $55 million in 10 years. This demonstrates the potential revenue for investing in conservation and protection of the protected area network in Sri Lanka which has the highest biodiversity per unit area in Asia and conservation of one of the most charismatic species—the Asian elephant.

4.2 The Impediment to Elephant Conservation—Human-Elephant Conflict

81. The charismatic and celebrated wild elephants form the basis of Sri Lanka's nascent ecotourism industry and are the flagship attraction of its national parks with the best opportunity of viewing wild Asian elephants in the world. While there is vast scope to capitalize on this natural tourist asset, there are serious conservation challenges that need to be addressed for its full economic potential to be realized. Elephants have large home ranges that are not adequately provided for by protected areas and national parks, and they are edge species that prefer the vegetation found in degraded and secondary forest habits. Consequently, more than two-thirds of the wild elephant population is found outside of protected areas, grazing on agricultural lands and disturbing and threatening the livelihoods of local farmers, chena households in particular. This friction between humans and elephants, termed human-elephant conflict, presents a development challenge between supporting the livelihoods of those living in close proximity to national parks and conserving Sri Lanka's flagship species, the wild elephant. Furthermore, this study finds that the local residents who suffer the consequences of living near elephants receive only a small share of the benefits accrued from the nature-based tourism industry that thrive on wild elephants. Policy makers are thus confronted with the challenge of developing strategies that link local benefits to the nature tourism industry.

82. This study suggests there is great potential in devising strategies that build on development opportunities in nature tourism, particularly those that ensure the conservation of wild elephants and their habitats while alleviating the human-elephant conflict. Improving park management and locating fences along ecological rather than administrative boundaries can minimize human-elephant interactions. Healthy elephant herds can boost ecotourism opportunities, adding value to local parks; the increased revenue generated can be used to compensate farmers located near elephant habitats who inevitably experience losses. Results from a livelihood survey conducted among 800 households in the vicinity of Yala National Park indicate that the cost of mitigation measures (e.g., electric fences, firecrackers, shouting) used to defend crops against wild elephants are quite low, as are the realized crop losses. These findings suggest that a compensation scheme may be successful in facilitating a flow of benefits to local communities while also ensuring the conservation of wild elephants.

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Annex 1: A Stylized Model of HEC without Elephant Dynamics

This is a simple model with functional forms crafted to yield reduced form solutions and where the structure is also guided by the data that is available from the survey.
The representative household in the study area has two choices – to devote effort to agriculture (L_a) or some "outside" non-agricultural activity (L_n). Thus the labor constraint is:

$$L^* = L_a + L_n \qquad (1)$$

where L* = total labor supply per household. Without loss of generality we normalize L* to unity.
Let $p_nNL_n = P_nL_n = P_n(1 - L_a)$ be the returns from the non-agricultural activity. Where p_n is price, N is the marginal product of labor. For simplicity we assume CRS to all activities unless otherwise stated.
Let AL_aP_a be the revenue from agriculture before an elephant attack; where A is the marginal product of labor (or per unit output from a unit of labor input) and P_a is the price of agriculture. A fraction E of the produce is consumed by elephants and the damage can be partially prevented by investing in mitigation measures (such as fencing) denoted F. The intervention is never completely effective so that the losses are given by: $AEF^{\beta}L_a$, where $\beta < 1$. The costs of mitigation measures are cF.
Net revenues from agriculture are thus given by:

$$\Pi = AL_aP_a\left(1 - EF^{\beta}\right) - cF \qquad (2)$$

The representative household maximizes:

$$\text{Max}_{F,La}\ AL_aP_a\left(1 - EF^{\beta}\right) - cF + P_n(1 - L_a) \quad (3)$$

The solutions are:

$$F = \left(\left(1 - \frac{P_n}{P_aA}\right)\frac{1}{E}\right)^{1/\beta} \qquad (4)$$

Observe that investment in mitigation measures is increasing in the returns from agriculture (P_aA) and declining in the marginal returns to the opportunity cost of agriculture - the outside activity P_n.

$$L_a = \frac{-c}{D} \qquad (5)$$

Where $D = \beta E P_a A\left(\frac{1}{E}\left(1 - \frac{P_n}{PaA}\right)^{\beta - 1/\beta}\right.$

Similarly labor devoted to agriculture rises with the payoffs and declines with the opportunity cost, the extent of damage and the costs of fencing.

These are standard results and intuitive. Now the model is extended to allow for insurance/ compensation and tourism or other elephant related activities.

A fraction Ψ of crop losses are recovered through insurance or some form of compensation mechanism. In addition there are employment opportunities for elephant related tourism denoted by the revenue function:

$$R_t = P_tE^{\delta}L_t^{\varepsilon} \qquad (6)$$

Where subscript t denotes tourism. Note that if labor is excluded this could be modeled as a simple PES scheme.

The augmented maximization problem becomes

$$\text{Max}_{F,La}\ AL_aP_a\left(1 - EF^{\beta}(1 - \Psi)\right) - cF + P_n(1 - L_t - L_a) + P_t e^{\delta} L_t^{\epsilon} \qquad (7)$$

Where *e* is the size of the elephant herd.
Solutions are:

$$F^* = ((1 - \frac{P_n}{P_a A}) \frac{1}{E(1-\Psi)})^{1/\beta} \qquad (8)$$

$$L *_a = \frac{-c}{D1} \text{Z} \qquad (9)$$

Where $D1 = \beta E P_a A(1 - \Psi)$; $Z = \frac{1}{E(1-\Psi)} \left(1 - \frac{P_n}{PaA}\right)^{\frac{1-\beta}{\beta}}$

As expected compensation (Ψ) reduces the incentive to fence or protect crops and also increases the allocation of time devoted to agriculture.

$$L_t^* = \left(\frac{\varepsilon P_t e^{\delta}}{P_n}\right)^{\frac{1}{1-\varepsilon}} \qquad (10)$$

Similarly elephant tourism increases with the marginal payoffs and declines with the opportunity cost of outside activities. Higher elephant numbers (e) are a clear bonus in this context.

Suggested Simulations

This framework can be used to ask and answer a number of policy questions. Which strategy is more cost effective? How much needs to be transferred and how? Equations (2) – (5) define the BAU (base case) with damage. Set E = 0, then this is the situation without elephants and defines the level of compensation needed to make the household at least as well off with elephants, as without them. This is the key to turning elephants from a *liability to an economic asset* for households who live with them. Eqns (7) – (10) define the rudimentary policy interventions. We can ask and answer the following questions:

1. How much extra revenue needs to be generated to ensure that the household is at least as well off with elephants, as without them. i.e. set E = 0 and then E at its empirical value from the survey.
2. Which policy instrument is more effective for each dollar spent? Note it is not straight forward anymore as household responses are endogenous. For instance, if we have insurance ⇒ less fencing and more agricultural effort and so more damage, *ceteris paribus.*
3. How should we compensate farmers? What mechanisms work and how much of a problem is moral hazard, etc.

Annex 2: Table A2.1 Tourist arrivals by country of residence & purpose of visit - 2007

Nationality	Total	Private & Official Business	Convention & Meetings	Visiting Friends & Relations	Religious & Cultural	Pleasure	Other	Percent
North America	**28,355**	**2,571**	**366**	**5,556**	**741**	**17,265**	**1,856**	**5.7**
Canada	11,869	693	114	3,189	249	6,591	1,033	-
U.S.A.	16,486	1,878	252	2,367	492	10,674	823	-
Latin America & Caribbean	**3,962**	**318**	**66**	**216**	**97**	**3,195**	**70**	**0.8**
Western Europe	**194,448**	**10,445**	**1,095**	**11,805**	**1,743**	**163,732**	**5,628**	**39.4**
Austria	3,580	171	15	129	33	3,168	64	-
Belgium	4,669	276	39	189	9	4,008	148	-
Denmark	1,796	207	9	165	24	1,296	95	-
Finland	497	51	6	39	6	381	14	-
France	8,091	618	54	627	147	6,222	423	-
Germany	35,042	2,073	147	1,485	273	30,198	866	-
Italy	11,451	648	72	423	129	9,714	465	-
Netherlands	17,526	621	48	927	81	15,492	357	-
Norway	2,304	264	18	321	33	1,473	195	-
Spain	2,484	216	18	108	9	2,008	125	-
Sweden	4,851	468	60	528	54	3,567	174	-
Switzerland	4,917	255	24	369	33	4,101	135	
U.K.	94,060	4,332	537	6,474	909	79,263	2,545	-
Others	3,180	245	48	21	3	2,841	22	-
Eastern Europe	**25,573**	**3,376**	**712**	**668**	**75**	**9,196**	**11,546**	**5.2**
Russia	13,621	360	117	254	129	12,357	404	-
Others	11,952	492	96	294	180	9,000	1,890	-
Africa	**2,712**	**501**	**174**	**210**	**663**	**894**	**270**	**0.5**
Middle East	**13,554**	**1,572**	**324**	**129**	**183**	**8,025**	**3,321**	**2.7**
Asia	**202,480**	**31,867**	**4,648**	**15,427**	**10,170**	**115,808**	**24,560**	**41.0**
China (P.R.)	11,949	2,799	141	345	147	7,755	762	-
Hong Kong, China	186	54	3	6	3	114	6	-
India	106,067	18,351	2,883	7,716	7,269	58,083	11,765	-
Indonesia	1,404	138	84	78	39	543	522	-
Japan	14,274	2,547	159	810	138	10,134	486	-
Korea (South)	4,870	1,044	69	360	57	3,021	319	-
Malaysia	6,704	1,296	189	585	336	3,711	587	-
Maldives	29,539	1,629	249	3,507	531	15,834	7,789	-
Pakistan	10,204	1,167	477	963	1,173	5,424	1,000	-
Philippines	2,162	351	57	237	54	906	557	-
Singapore	5,688	1,269	183	555	180	3,303	198	-
Thailand	2,467	216	27	108	201	1,629	286	
Taiwan (P.C.)	2,553	348	12	129	15	1,830	219	-
Others	4,413	658	115	28	27	3,521	64	-
Australasia	**22,924**	**1,466**	**235**	**6,957**	**230**	**13,123**	**913**	**4.6**
Australia	20,241	1,332	204	6,152	189	11,544	820	-
New Zealand	2,627	126	27	804	39	1,542	89	-
Others	56	8	4	1	2	37	4	-
Total	**494,008**	**52,116**	**7,620**	**40,968**	**13,902**	**331,238**	**48,164**	**100.0**
Percent		**10.5**	**1.5**	**8.3**	**2.8**	**67.1**	**9.7**	**100.0**

Source: Sri Lanka Tourism Development Authority (2007)

Table A2.2 Visitation rates and revenue generation from National Parks

	2005			2006			2007		
	Local	Foreign	Total	Local	Foreign	Total	Local	Foreign	Total
Bundala National Park									
Visitation	4,821	2,351	7,172	7,695	4,552	12,247	6,214	4,319	10,533
Revenue (Rs.)	104,491	1,607,910	1,712,401	2,266,698	3,140,880	5,407,578	281,834	5,880,311	6,162,145
Gal Oya National Park									
Visitation	181	3	184	189	2	191	653	22	675
Revenue (Rs.)	4,115	4,140	8,255	18,178	2,760	20,938	50,475	46,823	97,298
Horagolla National Park									
Visitation	1,242	3	1,245	2,128	4	2,132	1,352	2	1354
Revenue (Rs.)	20,153	2,070	22,223	82,165	2,760	84,925	55,058	3,629	58,687
Horton Plains National Park									
Visitation	183,413	11,272	194,685	174,392	15,144	189,536	171,949	9,395	181,344
Revenue (Rs.)	3,753,063	15,391,140	19,144,203	15,243,699	21,201,600	36,445,299	6,544,709	26,701,755	33,246,464
Kaudulla National Park									
Visitation	8,890	6,099	14,989	5,185	5,682	10,867	8,946	4,999	13,945
Revenue (Rs.)	199,382	4,170,570	4,369,952	2,258,298	3,920,580	6,178,878	407,187	6,789,437	7,196,624
Kumana National Park									
Visitation	1,295	112	1,407	899	119	1,018	-	-	-
Revenue (Rs.)	29,780	75,920	105,705	1,614,772	82,110	1,696,882	-	-	-
Lunugamvehera National Park									
Visitation	489	6	495	471	64	535	467	112	579
Revenue (Rs.)	11,247	4,140	15,387	47,746	64,160	111,906	23,662	159,913	183,575
Maduru Oya National Park									
Visitation	-	-	-	62	-	62	9	2	11
Revenue (Rs.)	-	-	25,987	3,740	-	3,740	9,871	11,575	21,446
Minneriya National Park									
Visitation	24,914	6,964	31,878	20,048	8,382	28,430	22,334	6,005	28,339
Revenue (Rs.)	547,704	549,923	1,097,627	15,661,981	1,508,760	17,170,741	771,542	13,522,452	14,293,994
Singharaja Forest Reserve [1]									
Visitation	-	-	-	-	-	29,179	27,364	4,829	32,193
Revenue (Rs.)	-	-	-	-	-	3,462,761	-	-	2,682,620
Uda Walawe National Park									
Visitation	55,507	11,912	67,419	64,788	16,796	81,584	55,362	12,896	68,258
Revenue (Rs.)	1,201,561	16,205,340	17,406,901	14,971,613	23,514,400	38,486,013	3,544,993	33,944,545	37,489,538
Wasgamuwa National Park									
Visitation	-	-	-	33,033	485	33,518	32,130	590	32,720
Revenue (Rs.)	-	-	4,389,643	4,431,279	334,650	4,765,929	3,382,191	1,847,355	5,229,546
Wilpattu National Park									
Visitation	14,554	1,105	15,659	3,364	531	3,895	-	-	-
Revenue (Rs.)	316,086	734,940	1,051,026	3,917,630	366,390	4,284,020	-	-	790
Yala National Park									
Visitation	93,656	17,614	111,270	85,608	32,437	118,045	64,020	19,914	83,934
Revenue (Rs.)	2,057,235	23,945,760	26,002,995	31,612,372	45,411,800	77,024,172	3,154,673	50,024,572	53,179,245
Total									
Visitation	388,962	57,441	446,403	397,862	84,198	511,239	363,436	58,256	453,885
Revenue (Rs.)	8,244,817	62,691,853	75,352,305	92,130,171	99,550,850	238,037,782	17,060,380	142,781,592	159,841,972

Source: Sri Lanka Tourism Development Authority (2004, 2005, 2006, 2007); **Notes**: 1 – Singharja is a Forest Reserve, not a National Park

Annex 3 Tourist survey design and methodology

Sample Stratification

Tourists were stratified into several categories of tourist types, owing to the rather unique composition of the Sri Lankan tourism market. Special attention was made to try and represent the current structure by sampling according to the arrival statistics and based on the opinion of those knowledgeable in the industry.[19] Since the majority of tourists are those who normally do not visit a park, the sample was deliberately over-weighted by this tourist-type. This sub-group however was still presented with the willingness to pay question, but obviously from a more hypothetical setting. The sample also included those who did visit a park, stratified across the five surveyed parks. A distinction was also made between local and international tourists as they may represent different preferences for park experiences (i.e. expenditures or willingness to pay). In addition, the local population was included since they constitute a significant proportion of visitation to the parks; as seen in Chapter 2.

Sample Selection

Although the overall sample stratification was pre-set to be representative of the current population of tourists, the selection of tourists within each category was based on a random interception procedure. In the case of hotels or lodges, permission was obtained from the hotel manager to solicit his/her guests and also to make them aware of the purpose of this survey. Enumerators would then interview every i^{th} tourist out of a total number that would be required per day to achieve a representative sample for the location. In the case of interception at or near the parks, tourists were contacted after they had visited the park, normally at the park gate or in hotels lodges or even restaurants near the site. There were also instances where large groups on tour buses would arrive at the park. In this case, an agreement with the driver was made that upon exiting the park, respondents would be asked whether they would answer a few questions about their experience in the park.[20] In other instances, respondents were traveling individually and not part of a group so interception was not an issue.

One immediate question about any sample is whether it can be considered representative of the total population of visitors, which number in the hundreds of thousands per year in Sri Lanka. One quick measure that can be used is the confidence interval which represents the lower and upper bound for the mean. Interval estimates give an indication of how much uncertainty there is in the estimate of the true mean. The rule of thumb is the narrower the interval, the more precise is the estimate. Creating a 95% confidence interval means that if many samples of size N were taken from the population and the confidence interval is calculated, 95% of these intervals would contain the true mean.

Table 3.22 95% Confidence interval for selected indicators [1]

[19] Approximately 80% of the tourist arrivals do not visit a park, and this was the most important criteria to replicate in the sample selection, along with a significant local resident representation.

[20] Making arrangements with the hoteliers and the drivers of the tour group turned out to be essential for the success of tourist interception. Getting prior approval from hotel managers was just good sense if enumerators are hanging out in the lobbies, but in the case of the parks, tourists were often horded back onto buses and expedited away by the drivers. Thus a more effective strategy was developed during the pre-testing phase where talking to the drivers while they were waiting for the tourists to return from the park and an agreement was made to allow tourists to be asked questions after exiting the park.

	N	Mean	Lower bound	Upper bound
Average expenditure per tourist trip	187	313	289	337
Number of days in Sri Lanka	187	12.7	12.3	13.0
Willingness to pay for Yala NP	33	14.73	14.68	14.77

Source: Sri Lanka Tourism Development Authority (2007)

1 – All figures are for an international park tourist on a packaged tour

The table above gives an example of the 95% confidence interval for three key variables in the analysis. In this case, the average expenditure by an international park tourist, on a package tour is between $289 and $337. The average number of days spent in Sri Lanka by the same tourist is from 12.3 to 13 days. This tourist type is willing to pay between $14.68 and $14.77 to visit Yala National Park. The narrow range of these confidence intervals implies a high degree of reliability of the sample means as estimates of the true population mean.

The 'true' number of tourists

In order to determine the economic impact of tourism on the economy it is important to know what the total universe of tourists is for the analysis. Also, for the purposes of policy setting it would be important to distinguish between types of foreign arrivals so that the imposition of a revenue generating mechanism caters to that specific sub-group of tourist. For example, conservation taxes can be levied only on those considered to be 'users', or could be imposed on all those departing the country. Examples of these types of levies and taxes were presented in Table 2.49 in the form of embarkation taxes and levies, currently imposed on departures. Table 3.23 below shows the total number of arrivals by purpose of visit where the 'Pleasure' category is the one associated with tourism and is over 67% of arrivals. Thus there are, potentially, 331,238 tourists that could participate in nature-based or ecotourism activities. The total of 494,008 would be applicable in the case of imposing more broad financing mechanisms on air- or sea-port departures.

Table 3.23 Tourist arrivals by country of residence & purpose of visit - 2007

	Total	Pleasure	Private & Official Business	Convention & Meetings	Visiting Friends & Relations	Religious & Cultural	Other
Total by purpose of visit	494,008	331,238	52,116	7,620	40,968	13,902	48,164
Percent		67.1	10.5	1.5	8.3	2.8	9.7

Source: Sri Lanka Tourism Development Authority (2007)

Annex 4 Tourist survey, 2008

(International Park Tourist)
SRI LANKA VISITOR SURVEY FOR INTERNATIONAL PARK TOURISTS

Interview No | | | |

Area code | | | |

Interviewer's code | | | |

ASK THE VISITOR IF HE/SHE HAS ALREADY BEEN INTERVIEWED AT ANOTHER SITE. IF YES, THEN WITHDRAW POLITELY; IF NO, THEN PROCEED

Hello my name is……and I am a research assistant for a visitor survey conducted in collaboration with the Ministry of Tourism and Ministry of Environment and Natural Resources. We are undertaking a study of tourists to Sri Lanka on their activities and to get their opinion of how Sri Lanka can expand its ecotourism opportunities. All information gathered will only be used for statistical analysis, presented in the aggregate and individual responses will be kept strictly confidential.

Would you be willing to answer a few questions?

IF YES, THEN PROCEED; IF NO, THEN WITHDRAW POLITELY

A. SOCIO-DEMOGRAPHIC INFORMATION

First, I would like to ask you a few questions about yourself.

1. Gender?

Male	1
Female	2

2. Can you indicate by looking at this card what is the age group that you belong to?

18-24 years	1
25-34 years	2
35-44 years	3
45-54 years	4
55-64 years	5
65-74 years	6
75 or more	7

3. What is your nationality and country of residence?
Circle one only.

Country	**3.1 Nationality**	**3.2 Residence**
American (USA)	1	1
Australian	2	2
Belgian	3	3
British	4	4
Canadian	5	5
Chinese	6	6
Danish	7	7
Dutch (Netherlands)	8	8

French	9	9
German	10	10
Indian	11	11
Italian	12	12
Japanese	13	13
Korean	14	14
Malaysian	15	15
Maldivian	16	16
Pakistani	17	17
Russian	18	18
Singaporean	19	19
South African	20	20
Spanish	21	21
Swedish	22	22
Swiss	23	23
Thai	24	24
Other, please specify: _____		

4. Are you currently a member of any conservation, wildlife or environmental organisations?

Yes	1
No	2

5. By looking at this card, which category would best describe the highest level of education you have attained until now?
Circle one only.

No formal education	1
Primary school (up to 11 years old)	2
Lower Secondary school (up to 15 years old)	3
Upper Secondary school (up to 18 years old)	4
Professional qualification or diploma	5
College degree	6
Higher degree (MSc or PhD)	7

6. By looking at this card, can you indicate which category would better describe your current work status?
Circle one only.

Self-employed	1
Employed full-time (30 hours plus per week)	2
Employed part-time (under 30 hours per week)	3
Student	4
Unemployed	5
Looking after the home full-time / housewife / husband	6
Retired	7
Do not work: private means	8
Unable to work due to sickness or disability	9
Unpaid voluntary work	10
Other work status, please specify:	

7. By looking at this card can you indicate which category would better describe your INDIVIDUAL yearly gross (personal) income?

If the respondent only remembers their household income, skip to **QUESTION 8**

For international tourist		
Income category		Currency
10,000-20,000	1	
20,001-40,000	2	
40,001-60,000	3	
60,001-80,000	4	
80,001 and above	5	

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

8. By looking at this card can you indicate which category would better describe your HOUSEHOLD yearly gross income?

For international tourist		
Income category		Currency
20,000-40,000	1	
40,001-60,000	2	
60,001-80,000	3	
80,001-100,000	4	
100,001 and above	5	

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

9. We are interested in measuring the value of time of tourists. Typically we measure this as a fraction of the wage or salary a person would make while working. Approximately how much do you earn in one week (5 days)?

Looking at this card, what would the approximate amount be?

Amount	**Category**	**Currency**	
Under 100	1		
101 – 200	2		
201 – 300	3		
301 – 500	4		
501 – 750	5		
751 – 1000	6		
1001 – 1500	7		
1501 – 2000	8		
2001 – 3000	9		
3001 – 4000	10		
4001 – 5000	11		
5001 and above	12		
Any other amount (specify)	13		
I do not know	14		

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

10. How many members live with you in your household, including yourself? How many are children?

10.1 Household members	____
10.2 Number of children	____

B. CURRENT TRIP INFORMATION

11. How many times in total have you visited Sri Lanka (including this trip) in the last ten years?
Circle one only.

1 (it is my first time)	1
2	2
3-5	3
6-10	4
Over 10	5

12. What is the main reason you came to visit Sri Lanka?
Circle all that apply.

12.1 I came for business reasons	1
12.2 I came for a conference	2
12.3 I wanted to visit a specific park/reserve or site	3
12.4 I came for a sun and sand trip only	4
12.5 I came to shop	5
12.6 I came for an adventure trip (rafting, boating)	6
12.7 I came for a cultural trip (heritage sites, villages)	7
12.8 I came for viewing and photographing wildlife	8
12.9 I wanted to visit friends or family	9
12.10 It was included in my packaged tour	10
12.11 It was recommended by friends/ relatives/ book	11
12.12 I had a really good experience during my previous trip	12
12.13 Other reason, please specify:	

13. How many days in total are you spending in Sri Lanka during this trip? How many as a tourist?

13.1 Record total number of days in Sri Lanka	
13.2 Record number of days spent as a tourist	

14. How many people are in your travel party, including yourself?

Number of people		**IF ANSWER IS 1 GO TO QUESTION 16**

15. Who are you travelling with?
Circle one only.

Family	1
Friends	2
Family and friends	3
Work colleagues	4
Other people, please specify:	

16. Which of the following national parks/forest reserves in Sri Lanka have you visited during this trip?
1= visited, 0 = Not visited

Site	**Response for current trip**
Bundala	16.1
Mineriya	16.2
Singharaja	16.3
Uda Walawe	16.4
Yala	16.5
Other (specify)	16.6

17. If your current trip includes a visit to only ONE park/reserve, why did you not consider going to more than one park/reserve?
Circle one only.

I do not know anything about the other parks/reserves or what there is to see	1
The tour operator only offered this park/reserve	2
I did not have enough money for multiple parks/reserves	3
I would rather spend my money on shopping	4
I would rather spend my money on something else	5
Other reason, please specify:	

18. In regards to your current trip to the park/reserve, did you make independent tour arrangements or is your visit a:
Circle one only.

Package tour	1
Part of a package tour	2
Independent traveller	3

19. Was your current package tour purchased in Sri Lanka or in your resident country?

Sri Lanka	1
Resident country	2
Not applicable	3

20. Did your packaged tour include options to visit national parks or forest reserves?

Yes	1
No	2

Not applicable	3

21. When purchasing your package, would you have liked to see more details of different nature tourism opportunities?

Yes	1
No	2
Not applicable	3

22. How long did it take to travel from your starting point to the park? ____hours ____minutes

23. Approximately how much did you spend in total for each of the trip expenses below? If you cannot recall any item what was the total cost and approximately the percentage of total cost?

	Package tourists			**Independent traveler**
Item	**Included in package**	**Item cost**	**Percentage of total cost**	**Item cost**
23.1 International air fare				
23.2 Hotels/accommodation				
23.3 Transportation/transfers				
23.4 Food and beverages				
23.5 Park entrance fees				
23.6 Other activities				
23.7 Shopping				
23.8 **Total cost**				
23.9 **Currency**				

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

24. For how many people does this total cost cover? _____people

25. How many sites did this total cost cover? _____number of sites

C. PERCEPTIONS OF NATIONAL PARKS/ FOREST RESERVES

We would now like to ask for your opinion of the national parks/forest reserves.

26. There are many reasons why conservation of wildlife and natural landscapes in national parks/reserves might be regarded as important for society. Please choose the one you feel is most important to you personally.
Circle only one.

People who visit benefit directly (recreation, enjoyment, education, etc)	1
People who do not visit can benefit indirectly (documentaries, books, etc)	2
It ensures that we all have the option of visiting in the future	3
It is important for the sake of the animal and plant life, regardless of its current or future use	4
It is important for the local population (part of their culture and identity)	5

It is important for future generations	6
It contributes to the country's economy through local livelihoods, employment, tourism, business, etc	7
Other reason, please specify:	

I am now going to read out a number of features of your visit to Sri Lankan natural sites.
Please rank them using a scale that ranges from 1 = 'very bad' to 5 = 'very good'.

1 – Very bad	2 – Not so bad	3 - Neutral	4 – Quite good	5 – Very good	99- Not applicable
☹☹☹	☹	😐😐	☺	☺☺☺	

27. Insert code from the scale above and for ONLY the parks/reserves visited.

Site attributes	**Bundala**	**Mineriya**	**Singharaja**	**Uda Walawe**	**Yala**	**Other**
1. Wildlife: number and diversity of species						
2. Congestion: number of people/vehicles on site						
3. Site and restroom cleanliness						
4. Visitor centre/ site information						
5. Knowledge of guide/interpreter						
6. Organised excursions						
7. Accommodation						
8. Availability of food/drinks (restaurants)						
9. Facilities for children						
10. Diversity of activities						
11. Friendliness of staff						
12. Shopping opportunities						
13. Value for money						
14. Transport experience to/from park						
15. Overall experience						

28. What features would you like to see improved or introduced at these, or any other, sites? *You may use the attribute codes above in Question 27.*

Site visited	Record improvement or introduction
Bundala	28.1
Mineriya	28.2

Singharaja	28.3
Uda Walawe	28.4
Yala	28.5
Other	28.7

29. Do you plan to visit Sri Lankan natural sites again in the future?
Circle one only.

Yes	1
No	2

D. NATIONAL PARK/FOREST RESERVE VALUATION SECTION

30. *Circle current park/reserve location and remind respondent of the current entrance fee.*

Site	**Entry fee/person/day**	**Location**
Bundala National Park	$14 USD	1
Minneriya National Park	$14 USD	2
Sinharaja Forest Reserve	$14 USD	3
Uda Walawe National Park	$14 USD	4
Yala National Park	$14 USD	5

31. Suppose while you were planning your trip to this park/reserve you learned that the entry fee had increased. What is the maximum fee you personally would be prepared to pay to visit this site? Please do not agree to pay an amount that you cannot afford, that you are unsure about, or that you feel would be better spent on other things (Show the payment card)

Record the fee	Currency
31.1	31.2

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

IF THE AMOUNT INDICATED IS <u>MORE</u> THAN THE CURRENT FEE: GO TO QUESTION 33

32. What are the main reasons why you are **NOT** willing to pay any more than the current fee to visit this site?

I think the current fee is appropriate	1
I think the fee is already too much	2
I think that any increase should be financed from other sources	3
Other reasons, please specify	
THEN GO TO SECTION E	

33. The Government of Sri Lanka has proposed several improvements to the site such as (*Please only read out the appropriate set of improvements for the current park visited*):

Bundala National Prak:

- Upgrading the camping facilities inside the park
- Provision of bungalows inside the park
- Improving the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Develop Wilmanna Santuary across the road to provide opportunities for viewing large herds of elephants
- Provision of night safaris, and viewing platforms during moonlit nights near watering holes

Minneriya National Park:

- Provision of camping facilities and bungalows inside the park
- Limiting traffic and the number of vehicles entering the park to reduce congestion
- Improving the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Provision of Elephant Safari's inside the park
- Provision of boating facilities in Minneriya Tank for elephant viewing
- Provision of opportunities for night safaris, and viewing platforms during moonlit nights near watering holes

Singharaja Forest Reserve:

- Visitor centres with exhibits, clean restrooms, restaurants, introduction of camping facilities inside the reserve and bungalows in the buffer zones of the reserve
- New visitor services such as elephant safaris and nature trails
- Improving the quality and experience of visitation with better interpretation services provided by the Forest Department Guides

Uda Walawe National Park:

- Upgrading the camping facilities and better maintained bungalows inside the park
- Limiting traffic and the number of vehicles entering the park to reduce congestion
- Improving the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides
- Provision of opportunities for night safaris, and viewing platforms during moonlit nights near watering holes

Yala National Park:

- Visitor centres with exhibits, clean restrooms, restaurants, camping facilities and better maintained bungalows inside the park
- New visitor services such as elephant safaris, nature trails, visiting cultural sites/ruins, night safaris, and viewing platforms during moonlit nights near watering holes
- Limiting traffic and the number of vehicles entering the park to reduce congestion
- Improving the quality and experience of visitation with better interpretation services provided by the Department of Wildlife Guides

33. Suppose that the entrance fee were to increase by <u>20%</u> with these improvements. What is the maximum fee you personally would be prepared to pay to visit the site in this case? Please do not agree to pay an amount that you cannot afford, that you are unsure about, or that you feel would be better spent on other things (Show payment card)

Record the fee	Currency

33.1	33.2

Currency
Dollar = 1 Pound = 3
Euro = 2 Rupee = 4
Other currency: Please specify _____

IF THE AMOUNT INDICATED IS <u>MORE</u> THAN THE CURRENT FEE: GO TO SECTION E

34. What are the main reasons why you are **NOT** willing to pay any more to visit this site if the changes described had been implemented?

I do not think these improvements are worth more than my previous maximum	1
I do not think these improvements should be financed through entrance fees	2
I do not think these improvements are worth the increased fee	3
Other reasons, please specify	

E. MISCELLANEOUS QUESTIONS

Finally, these are the last few questions.

35. What will you remember most vividly about your visit to this site? This might be a good or a bad thing!

Record memory	

36. Last of all, what did you think of this questionnaire?
Circle all that apply

Interesting	1
Too long	2
Difficult to understand	3
Educational	4
Unrealistic/ not credible	5
Other opinion, please specify	

This is the end of the interview!

Thank you very much for your co-operation!

F. INTERVIEWER DECLARATION
37. Time ended (24 hour clock):
38. Total time taken: _____minutes

Date:

This interview was conducted face to face with a respondent who is unknown to me

Please print your name:

Signature:

Annex 5 Perceptions of the HEC and tourism-related benefits

Perceptions of the Department of Wildlife and Conservation (DWLC)

The survey also elicited responses on the farmer's perception of the primary agency responsible for elephant issues – the Department of Wildlife and Conservation (DWLC). A majority believe that progress has been made, but more could be done to mitigate human-elephant interactions (Table A3.1). The suggested options are approximately split between better maintenance of the electric fences and chasing away the elephants outside the fence.

Table A3.1 Perceptions of the DWLC on wild elephant mitigation issues (all values in percent)

	Chena		Non-Chena	
	Adjoining YNP	Not adjoining	Adjoining YNP	Not adjoining
How do you perceive the intervention of the DWLC in wild elephant problems?				
Doing a good job	35	27	33	21
No significant intervention	49	48	45	45
No intervention at all	13	19	15	25
Negative perception	3	6	6	9
What could be the ways to reduce this problem? (%) (multiple answers possible)				
Properly maintain electric fences	40	33	40	37
Chase away elephants outside the fence	44	39	39	36
Provide villages with crackers	13	20	13	15
Other	3	8	8	11
Number of households	159	69	321	251

Source: World Bank Livelihoods Survey (2008)

Focus group opinions on the HEC

The HEC issue is contentious perhaps more so because of the fear induced by the presence of elephants and because at times it involves the loss of lives of both people and elephants. As a consequence there have been concentrated efforts to try and mitigate the HEC, including electric fences (Table A3.2). Again, there are mixed views on the effectiveness of mitigation measures (as also confirmed by the regression analysis).

Table A3.2 Community opinions about the HEC during the focus group sessions

GN Division	Wild elephant problems	Assistance to mitigate wild elephant problems
Kirinda (# Households: 924)	• Households in the division have faced many wild elephant problems before the electric fence around YNP was established in 2002 – 2003 • Before the fence was established elephants were responsible for significant damage to stored paddy and crops. Even fishermen were affected, being attacked on their way to go fishing in the early morning • The number of wild elephant attacks has been reduced, thus electric fences were an effective mitigation strategy	• Since Chena cultivation is practiced on unauthorized lands, there is not much assistance from the government • There are occasions where compensation is provided for lost lives • When houses were damaged, around 25% of the cost of damage was covered by compensation • Farmers have not purchased any insurance products so far • Farmers collectively working as a farmer organization have been able to get the relevant authorities to establish the electric fence, which they consider a significant achievement in mitigating wild elephant problems
Kawantissapura (# Households: 575)	• Around 3 houses were damaged by elephants over the last month. There is an increasing trend of the incidents of wild elephant attacks • Establishment of the electric fence around YNP has not made a significant difference to mitigate the problem in this division • At present villagers use firecrackers ("ali wedi") (people do not have much knowledge on how to use them), lighting up fire and shouting to chase away the elephants • Currently there is no community level mechanism to address the problem other than informing the DWLC	• Compensation for lost damages to houses is provided to only those who have legal ownership to the land • Compensation for crop damages is provided only if they have been insured (very few purchase insurance) • For property damages the maximum amount paid was Rs. 10,000, whereas for lost lives, it is Rs. 50,000
Ranakeliya (# Households: 316)	• There are areas which are not covered by the electric fence, especially along the roadside areas, and a few elephants can be seen in those areas. In addition, maintenance of the electric fence is not conducted properly • The elephant problem is now aggravated and is causing damages to lives, livelihoods and properties. There has been one killing by wild elephants in the last three years • Chasing away the elephants is the only means at present to reduce this problem • Two to three households have established electric fences	• So far, no compensation has been received by those who were affected by wild elephant problems

GN Division	Wild elephant problems	Assistance to mitigate wild elephant problems
Weerahela (# Households: 625)	• The wild elephant problems are very prominent during the Yala season. A few elephants can be seen outside the electric fence, and there are significant impacts on cultivation in the Weerahela area. For other villages this is not a significant issue	

Source: World Bank Livelihoods Survey - Focus Group Discussions (2008)

Opinions from local communities

The focus group sessions also revealed several ideas and issues towards greater benefits sharing of tourism. The opinions during these group sessions echoed what was found above, that only relatively few derive any significant income from tourist-related activities (Table A3.3). Even still, the suggestions appear to be relatively modest in their potential impact and in some cases lack any real innovative appeal in meeting the challenge. Several suggestions revolve around the selling of handicrafts and/or products that can be derived from park resources. The potential revenue from these types of activities tends to be very low and not unique enough to attract tourists to road-side stands. However, these sorts of activities are not completely without merit if complemented with interventions that would capture the higher rungs of the value chain. For example, if one were to invest in building accommodation facilities, this could be complemented with specific supporting services around it, such as restaurants, handicraft shops and so forth.

Table A3.3 Community opinions during the focus group sessions

GN Division	Benefits from tourism activities	Ways of improving economic benefits from YNP	Suggestions to improve livelihood aspects of villagers
Kirinda (# Households: 924)	• 4 households provide accommodation • 3 - 4 individuals in the division working as tourist guides • 4 safari jeep owners • A few households sell handicrafts made of sea shells, cadjan leaves and beeralu	• Establishing marketing places to sell handicrafts and food to tourists those who come to visit YNP • Creating opportunities to work as laborers in maintaining YNP buildings and roads during the periods where it is closed for tourists (August – September)	• Creating marketing facilities, especially around Yala junction to sell the handicrafts made by the villagers was suggested. Around 30 individuals have received required training and are capable of carrying out a successful business out of that knowledge • In order to retain the tourists in the village, it is necessary to have accommodation facilities. Investing on construction of tourist hotels in the area is appropriate. This would create more employment opportunities with the division • The villagers highlight the need to create linkages between the tourists and the villagers. However there are mixed perceptions towards the development community tourism among the villagers
Kawantissapura (# Households: 575)	• There are few individuals working in safari jeeps and about 7 households providing accommodation facilities for pilgrims	• It seems that villagers do not have an idea on the possible benefits that could be reaped through improved tourism. Few people suggested that building accommodation facilities near the lake as a good option	
Ranakeliya (# Households: 316)	• Around 6 individuals in the division work in the tourist hotels owned by outsiders	• The main road to YNP passes through the division. If tourism is promoted, the villagers can benefit by means of selling handicrafts to tourists (a place to sell products has to be established), working as guides and hiring out safari jeeps.	
Weerahela (# Households: 625)	• At present none of the villagers are benefiting from tourism and there are no tourism facilities in the division either	• Villagers suggest that they can benefit if accommodation facilities for pilgrims are developed. In addition, establishing a marketing center to sell the handicrafts	• Villagers expect that developments in tourism in YNP and tourism facilities in the division would be important in providing employment opportunities and retain the

GN Division	Benefits from tourism activities	Ways of improving economic benefits from YNP	Suggestions to improve livelihood aspects of villagers
		to tourists would serve as a good income source, especially for women	out-migration of youth for employment

Source: World Bank Livelihoods Survey - Focus Group Discussions (2008)