

# TOURISM, CONSERVATION & SUSTAINABLE DEVELOPMENT

## VOLUME III

### KOMODO NATIONAL PARK, INDONESIA

Final Report to the Department for International Development

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The funding for this research was announced to the University of Kent by the ODA in December 1993. The original management team for the project consisted of, Goodwin, H.J., (Project Director), Swingland, I.R. and Sinclair, M.T. In August 1995, Sinclair was replaced by Parker, K.T.

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Additional research and assistance in the UK was carried out by K.Ward (DICE), R.Smith (DICE), C.Jordan (IMS) and D.Metcalf (IMS).

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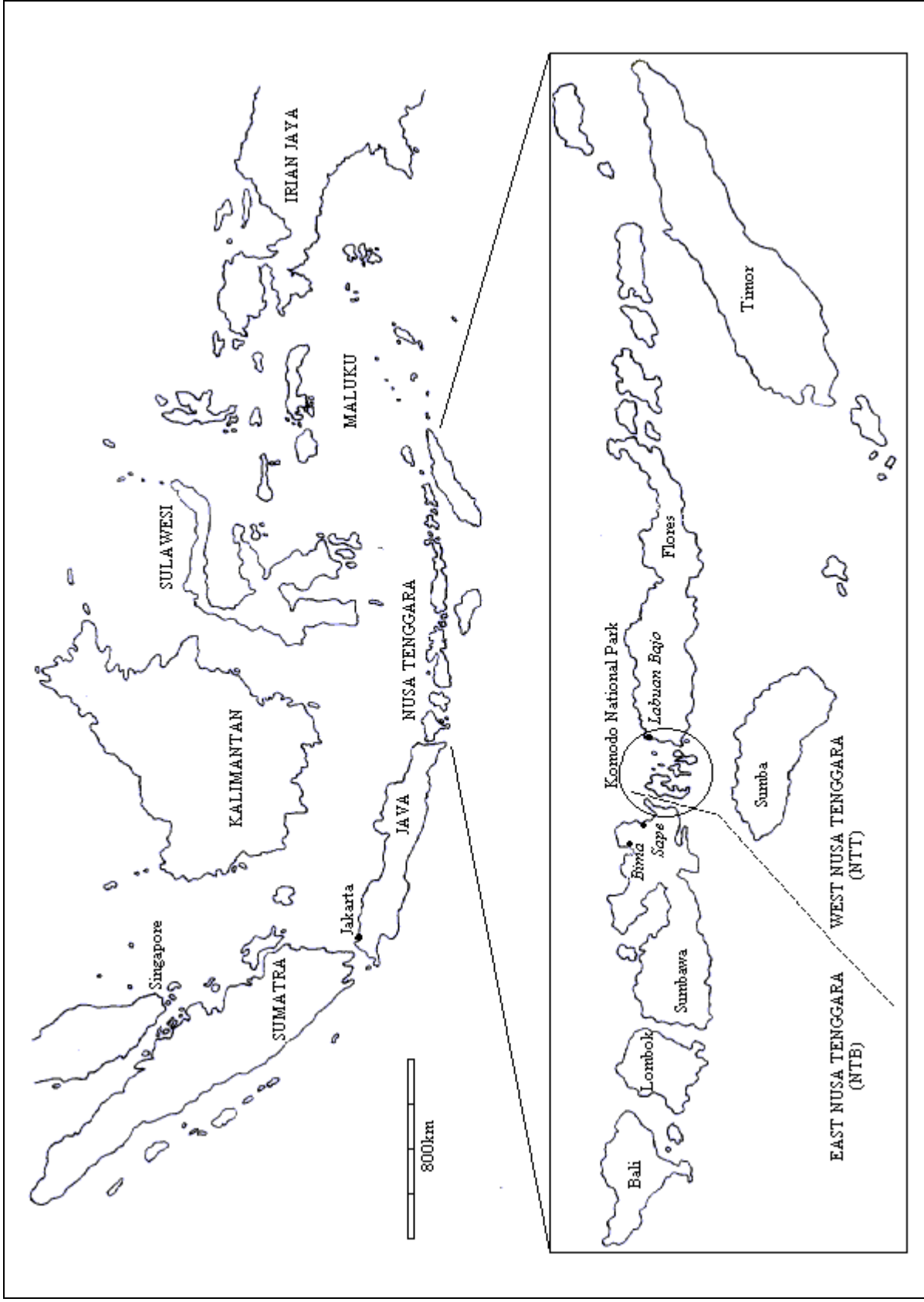
## EXCHANGE RATES

End of period (December) US\$ exchange rates as published by the IMF.

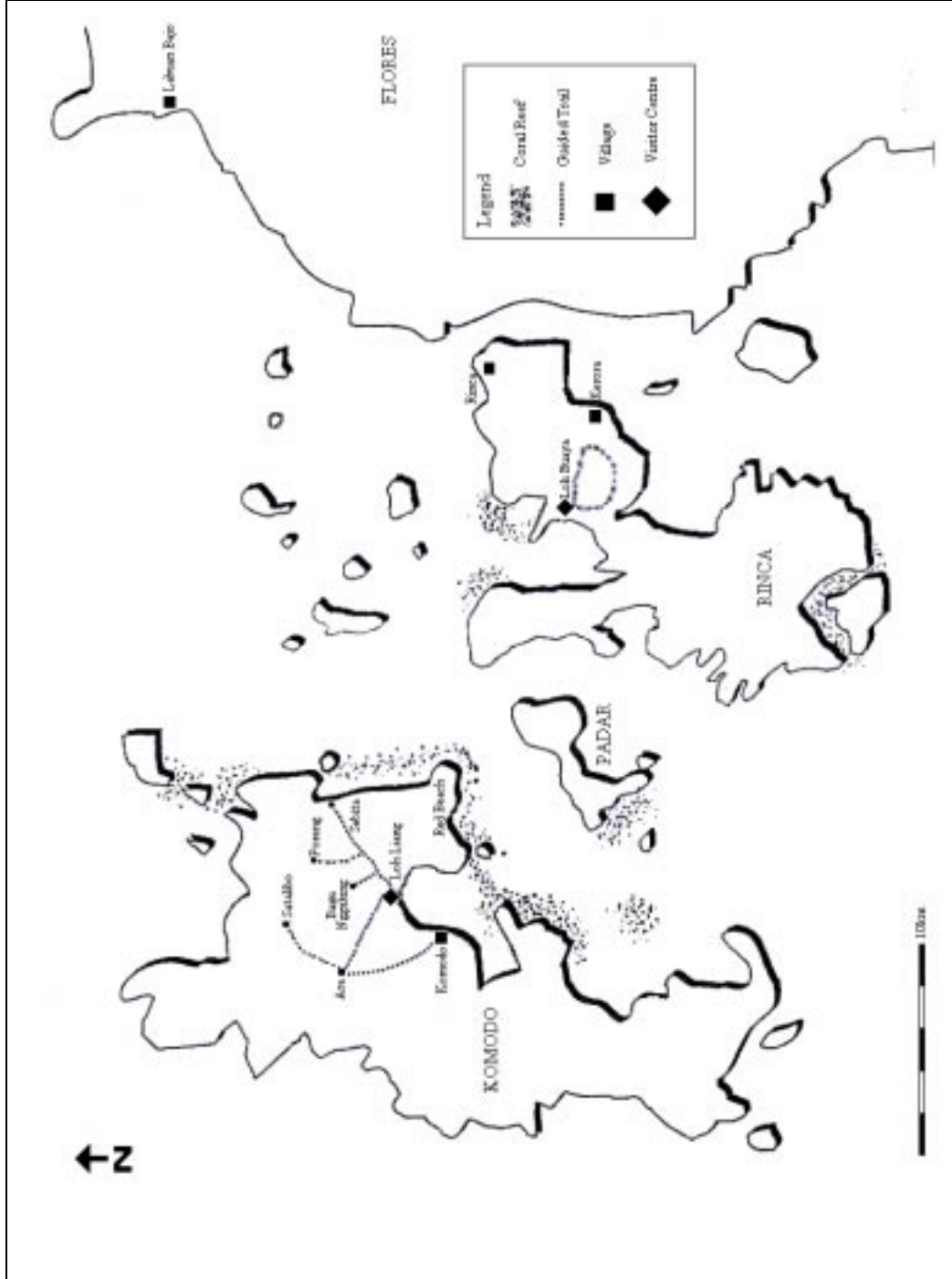
Year	1990	1991	1992	1993	1994	1995
Rp/\$	1901.0	1992.0	2062.0	2109.9	2199.9	2308.0

Real effective exchange rate indices (1990=100), based on relative wholesale prices.  
IMF financial statistics, January 1997.

Year	1990	1991	1992	1993	1994	1995	1996 (first quarter)
US\$	100	98	95.4	98.6	96.7	90.4	94.9



**Map 1. The Seven Provinces of Indonesia, and (enlarged) Bali and Nusa Tenggara Province.**



Map 2. Komodo National Park, Including Villages and Visitor Trails.

# 1. INTRODUCTION<sup>1</sup>

## 1.1 Overview

This report forms part of the three year, ODA funded, Tourism, Conservation and Sustainable Development Project undertaken by the Durrell Institute of Conservation and Ecology (DICE), University of Kent. It is the final report of one of three case studies carried out by DICE for the ODA. The other two case studies refer to Keoladeo National Park, India, and the south east Lowveld of Zimbabwe. This report focuses on Komodo National Park, Indonesia. All three have been written as detailed individual case study reports, with a forth volume comprising a comparison of the three and a synthesis of the main findings.

This report examines the nature of tourism in Komodo National Park (KNP), Indonesia, and the contribution that tourism makes both to conservation and to the surrounding local community. It examines factors affecting the performance of tourism in these respects, and attempts to identify ways of increasing the net benefit of tourism to conservation and local development.

The principal objectives of the project were as follows:

- a) *identify methods of providing sustainable revenues from tourism for conservation and development.*
- b) *examine means of improved site management providing increased revenues whilst conserving the local ecology.*
- c) *identify means of improved visitor management in order to decrease the adverse ecological effects of tourism.*
- d) *raise the income and related benefits which local people gain from tourism based on biodiversity.*
- e) *provide a methodology which will enable local researchers to continue to monitor the survey sites, and to provide research reports, which will enable similar and comparative work on the compatibility of tourism development and conservation to be undertaken in other developing countries.*

The scientific/technical objectives of the project were as follows;

*This project will develop and test a methodology for assessing the relationships between tourism development and conservation which can be applied by local institutions in developing countries.*

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<sup>1</sup> *Much of this chapter is taken from the first year interim report (Goodwin et al., 1995). A more detailed presentation of the national context can be found there.*

*The project will determine and measure, using a standardised survey of comparative sites, the ecological, economic and social relationships between tourism development and conservation and the regulatory framework within which they take place. It will;*

- a) quantify the visitor numbers and assess the forms of tourist visit which are consistent with sustainability.*
- b) identify the local people's incomes from the sites and identify additional economic benefit which could accrue to them from tourism and biodiversity.*
- c) identify the net contribution of tourism development to conservation and restoration, and assess the commercial and regulatory conditions necessary for increasing the contribution.*
- d) identify and assess the qualitative contribution of tourism to conservation through visitor education and increased awareness.*
- e) identify and quantify the benefits and problems created by integration into the international market.*

These objectives are addressed through a series of chapters dealing with different facets of the study. An introduction to the project and the study site is presented in this chapter. Chapter 2 examines the nature of tourism to KNP, focusing on spatial and temporal trends. It also attempts to desegregate visitor arrivals to generate a tourist typology for the park. This typology is used in subsequent chapters to examine the heterogeneity in tourist impacts and identify how different forms of tourism have different effects on the park and the local community.

Chapter 3 examines the physical impacts of tourism, and the monitoring and management of these impacts within KNP. It attempts to assess the environmental implications of tourism within the context of the conservation priorities of the park and the additional environmental threats posed to the park by external factors. It includes a discussion of problem areas and potential strategies to improve the environmental performance of tourism, based on adaptive management.

Chapter 4 deals with the finances of KNP, and the contribution of tourism therein. It also examines ways in which the net financial contribution of tourism to the park can be increased. Similarly, chapter 5 examines the contribution of tourism to town and village communities surrounding KNP, and ways in which the net benefits to the community can be increased. Besides financial contributions, this chapter examines employment generation, and the distribution of benefits and costs among the various facets of the local community. Both of these chapters also compare the different contributions of different types of tourist, using the typology developed in chapter 2.

Chapter 6 considers some of the implications of integration into the international tourism market, through the findings of earlier chapters and a survey of UK and German tour operators.

## 1.2 National Perspective

### 1.2.1 Biodiversity Significance

Indonesia is one of the world's mega-diversity countries, second only to Brazil as the most important global centre for biodiversity. Although it only covers 1.3% of the terrestrial surface of the earth it contains 10% of the world's known flowering plant species, 12% of its mammal species, 16% of all herpetofauna, 17% of all bird species and 25% of the world's fish species (BAPPENAS, 1993). It ranks seventh in the world for flowering plant richness, first for mammal richness, 3rd for reptiles, 4th for birds and 5th for amphibians. Its flora and fauna are also considerably endemic. It ranks third in the world for higher vertebrate endemism, whilst 66.7% of its flowering plants are endemic (WCMC, 1992). See Tables 1.1 and 1.2 for comparisons with the other study countries, India and Zimbabwe.

Country	Flowering Plants	Gymno-Sperms	Ferns	No. of Endemics	% Endemics
Indonesia	20,000	-	2,500	15,000	66.7
India	15,000	-	1,000	5,000	31.3
Zimbabwe	4,200	6	234	95	2.1

**Table 1.1 Higher Plant Species Richness and Endemism.**

Country	Mammals		Birds		Reptiles		Amphibians	
	Spp.	Endemic	Spp.	Endemic	Spp.	Endemic	Spp.	Endemic
Indonesia	515	165	1519	258	511	150	270	100
India	317	38	969	69	389	156	206	110
Zimbabwe	196	2	635	0	153	2	120	3

**Table 1.2 Higher Vertebrate Species Richness and Number of Endemics**

The richness of the Indo-Pacific seas in Indonesia's vast amount of territorial waters result in a substantial coastal and marine diversity. The coral reef systems off Sulawesi and Maluku are among the world's richest in coral fish and other reef organisms.

Indonesia contains the largest expanse of lowland rainforest in tropical Asia, within which are the world's greatest number of palm species, and more than 400 species of dipterocarp. The plant genetic resources within the forests are enormous. However, because of forest degradation, hunting and trade, and natural catastrophes, much of Indonesia's wildlife is threatened with extinction. This problem has been heightened by the demand for Indonesian wildlife and wildlife products by overseas markets. This demand has greatly increased the prices for wildlife products.

As a result of these pressures, Indonesia has the unfortunate distinction of being the country with the greatest number of vertebrates threatened with extinction, including 126 birds, 63 mammals and 21 reptiles.

### 1.2.2 Tourism in Indonesia

The Indonesian tourism product is primarily beach and culture-oriented, with Bali the most popular destination. Bali has been, and remains, the major focus of tourism development and the most popular tour packages combine Bali, Central Java, North Sumatra and to a lesser extent South Sulawesi. The 1970 Tourism Master Plan recommended that tourism development should be confined to luxury resorts in the southern part of the island, and during the late 1970s and 1980s the enclave development of Nusa Dua, with 4 and 5 star hotels, was built. Despite Bali's cultural and natural attractions, most tourists prefer to stay in beach accommodation, spending only a part of their time on sight-seeing tours (Inskeep and Kallenberger, 1992).

Since the start of the Suharto government in the 1960s, tourism has been included in the national strategy for economic development. In the early stages of Indonesia's tourism expansion, ten areas were particularly promoted as tourism destinations. These were Bali, Jakarta, West Java, Central Java, Yogyakarta, East Java, North Sumatra, West Sumatra, South Sulawesi, and West Nusatenggara (which includes Lombok). Since then communications have improved considerably, and several further areas have become popular with Backpacker, Special Interest and independent General Interest tourists, in particular Lampung (southern Sumatra), North Sulawesi, East Kalimantan, East Nusatenggara, the Moluccas, and Irian Jaya.

It has not been possible to obtain up-to-date visitor figures for the different provinces, but in 1984/85 a survey of visitor opinions and expenditure showed that Bali received the highest number of visits at 27%, followed by Jakarta at 26.4% (mainly business visitors or people arriving in Jakarta before moving on elsewhere). Next most popular was North Sumatra, which receives a lot of short-stay visitors from Singapore and trans-Asia Backpackers commencing their journey through the Indonesian archipelago. Central Java/Yogyakarta had 15.7% of visits, West Java 5.5%, and East Java 4.3%.

While the majority of mass tourists on package holidays do not venture out of Bali, there are well-established routes for Backpackers and General Interest tourists. The Backpackers enter at Medan, in North Sumatra, visit the Lake Toba area and the fringes of the Gunung Leuser National Park, and travel south overland, where they spend a few days before taking a passenger ship to Java. They travel overland from west to east through Java, visiting the attractions of Yogyakarta and Mount Bromo in the east, before crossing the narrow straits to Bali. Some will then fly direct to Australia or return home. Others continue east through Lombok, Sumbawa and Flores to West Timor, from where there are twice-weekly flights to Darwin, or they may fly back to Bali. Between Sumbawa and Flores they visit Komodo National Park.

There is another route through Sulawesi from Ujung Pandang to Tanah Toraja, then via the Trans-Sulawesi highway (completed in the 1980s) to Palu, in Central Sulawesi, from where the majority fly back to Denpasar. The Backpackers will accomplish their journey by public transport, generally lacking sufficient funds to make detours which would mean chartering expensive private transport. Many of these Backpackers spend the full two months allowed by the tourist visa in Indonesia, and some exit to Singapore or Australia to re-enter for another two months.

Overland routes for the General Interest tourists follow much the same pattern, though in more comfort and for shorter periods. Groups will travel by air-conditioned coach, minibus or car, and be accompanied by guides who speak the language of their clients.

The sixth five-year plan, Repelita VI (1994-1999), plans to increase tourism in order to create economic and social opportunities and to 'actualise the welfare of all Indonesia's people'. Its marketing priorities are to maintain its European and North American market share whilst prioritising the Asia-Pacific region. Bali, which is visited by around half of all international visitors to Indonesia, is to be used as a springboard for the development of tourism elsewhere, including East Nusa Tenggara. In order to encourage high-spending market segments, emphasis will be placed on nature tourism and promoting Eastern Indonesia, particularly for marine tourism and cultural tourism. Cruise ships and special interest tourists will be targeted.

### **1.2.3 Wildlife Tourism and Conservation**

Wildlife tourism is not a major component of the tourism industry in Indonesia and is unlikely to become so because of the strength of the cultural attractions and traditional beach-resort tourism, and because easily-accessible sites with spectacular scenery, large mammals and reasonable infrastructure are few. Despite these natural handicaps, nature tourism in South-East Asia may be highly successful, as in the East Malaysian state of Sabah where the major focus of a thriving tourism industry is Kinabalu National Park.

The tourism potential of protected areas remains largely unrealised for several reasons. Significant investment for tourism in national parks and other protected areas has only taken place since the mid-1980s, and there has been a lack of attention to training specialist personnel, involving local people, providing good interpretive facilities, and marketing. Although Indonesian wildlife is fascinating and unique, much of it is also small and nocturnal. Extremely few facilities have been developed to make it easier to see wildlife, such as guided nature trails, cat-walks, and viewing platforms. Tourists travelling in special interest groups or package tours require better food and accommodation than is available in areas outside the major resorts. A further problem is the shortage of specialist tour operators and guides.

## **1.3 Site Profile<sup>2</sup>**

### **1.3.1 Location**

Komodo National Park is located in the Lesser Sundas islands of Indonesia, in the province of East Nusa Tenggara (Map 1 above). Lying in the Sape straits between Flores and Sumbawa, it comprises the three islands of Komodo, Rinca and Padar, and smaller surrounding islands, plus the straits between the main islands and all waters within 1000m of shore (Map 2 above). The location of Komodo island is 119°30'E, 8°35'S. The total area of the park is 173,000ha, of which 35% (40,728ha) is terrestrial and 65% (132,572ha) is marine.<sup>3</sup>

### **1.3.2 Physical Features**

The islands are generally rugged, with sheer cliffs, numerous small bays and inlets, plentiful surrounding coral reefs and powerful offshore currents. The topography reflects the position of the national park within the active volcanic 'shatter belt' between Australia and the Sundas shelf. The islands are relatively arid with little perennial surface water, although there are fairly extensive catchment areas with good forest cover on the higher massifs of Komodo and Rinca which sustain limited water supplies throughout the year. There are a number of perennial springs around the coasts of the islands, and also streambeds where, even when dry, water may be found by digging.

Komodo, the largest island, is about 35km from north to south with a width varying from 4km at its southern end to 15km towards its northern extremity. It has a topography dominated by a range of rounded hills oriented along a north-south axis at an elevation of 500-600m. Relief is steepest toward the north-east where the peak of Gunung Toda Klea is precipitous and crowned by deep, rocky and dry gullies. The coastline has many small bays and inlets separated by headlands, often with sheer cliffs falling vertically into the sea. Other bays have cobble or white (coral) sand beaches.

Padar, to the east of Komodo, is a small, narrow island, about 9km in length and 1-3km in width. The topology of the island rises steeply to between 200-300m from the surrounding plains. It has several sandy beaches fringed by coral reefs and occasional small bays lined with mud flats. There is a large, deepwater bay on the south-eastern coast.

Rinca, further east, is the second largest island in the park, roughly 25km in length and 12km wide at its southern end, narrowing to about 2km at the centre and then widening to some 5km towards the north. It is separated from Flores by a narrow strait. The island is mostly comprised of rolling hills, but in the south the topology is

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<sup>2</sup> compiled from unpublished WCMC and IUCN reports, and Sumardja (1981), Blower et al.(1977), Robinson & Bari (1982), Robinson et al. (1982).

<sup>3</sup> Ministry of Agriculture Degree No.306/Kpts-II/1992.

dominated by the 667m Doro Ora massif, while in the north appear the low, steep-sided peaks of Gunung Tumbuh (187m) and Doro Raja (351m).

The mainland components of the park lie in the rugged coastal areas of western Flores, where surface fresh water is more abundant than on the offshore islands.

The park is one of the most geologically interesting regions of Indonesia. Timor, to the south-east, is part of the Australian plate, whilst Bali and Sumba, to the west and south respectively, are part of the Sundas plate. The movement of these two plates in relation to each other has created the area in between, including Sulawesi, Flores and the Komodo Islands. Plate tectonic friction during the mid-Pleistocene led to considerable vulcanism, upthrusting and sea-level changes. There would have been a free interchange of land animals between Java, Sumatra and Borneo during this time and probably similar movement between Flores and Komodo as recently as 18,000 years ago. The geology of the park reflects the regional vulcanism, with Pleistocene and Holocene deposits forming the principal geological units. Deposits are generally resistant volcanics, volcanic ash, conglomerates and raised coral formations.

### 1.3.3 Climate

The park lies in one of the driest regions of Indonesia with an annual rainfall of 800-1000mm. Heaviest rainfall with higher humidity and lower temperatures are recorded during the monsoon between December and March. The pattern is reversed during the dry season from May to October, when mean daily temperatures are around 40°C. There is a scarcity of water on the islands, and during the dry season streambeds near the coast often dry up.

### 1.3.4 Vegetation

The predominant vegetation type is open grass-woodland savannah, mainly of anthropogenic origin, which covers some 70% of the park. The dominant savannah tree is lontar palm *Borassus flabellifer*, which occurs individually or in scattered stands. Grass species include *Eulalia leschenaultiana*, *Setaria adhaerens*, *Chloris barbata*, *Heteropogon contortus* and, in the higher areas, *Themada* spp. including *T.froncosa* and *T.triandra*. Alang-alang *Imperata cylindrica* is conspicuous by its rarity.

Tropical deciduous (monsoon) forest covers about 25% of the park. It is thorny and rather open, often secondary due to the effects of fire, and it survives mostly on the upper slopes of hills and in moist valley bottoms. Characteristic tree species include *Sterculia foedata*, *Oroxylum indicum*, *Tamarindus indica*, *Zizyphus horsfieldii*, *Schleichera oleosa*, *Cassia javanica* and others. In forested coastal valleys are also found *Murraya paniculata*, *Diospyros javanica*, *Harrisonia brownii* and *Ptilostigma malabaricum*. The forest lacks the predominance of Australian-derived tree fauna found further to the east on Timor.

A quasi cloud forest occurs above 500m on pinnacles and ridges. Although covering only small areas on Komodo Island, it harbours a relict flora of many endemic species.

Floristically, it is characterised by moss-covered rocks, rattan, bamboo groves and many tree species generally absent at lower elevations. These include *Terminalia zollingeri*, *Podocarpus nerifolia*, *Uvaria rufa*, *Ficus orupacea*, *Callophyllum spectabile*, *Mischocarpus Sundasicus*, *Colona kostermansiana* and *Glycosmis pentaphylla*.

Coastal vegetation includes mangrove forest, which occurs in sheltered bays on all three major islands, such as Loh Sebita and Soro Lawi on Komodo and Loh Kima and Loh Buaya on Rinca. Dominant tree species include *Rhizophora stylosa*, *R.mangle* and *Bruguiera* spp., with *Avicennia marina* frequently bounding the landward side in large stands. Pioneering beach vegetation includes *Ipomoea pescaprae*, *Spinifex littoreus* and *Cassytha filiformis*. Extensive sea grass beds occur to the north end of Rinca Island.

### 1.3.5 Fauna

The park is best known for the Komodo monitor *Varanus komodoensis*, known locally as *ora*. Discovered in 1910, its total population was estimated in 1991 to be 5700 individuals with a very limited distribution, although more recent surveys within the park suggest that it is unlikely that more than 3000 exist in the wild. It is found only on the islands of Komodo (1,639), Rinca (1110)<sup>4</sup> and Gili Motong (<100) and in certain coastal regions of western and northern Flores (Table 1.3). The species is probably extinct on Padar, where it was last seen in 1975. It is the world's largest living lizard, with males often weighing over 90kg and exceeding 3m in length.

Year	Komodo	Rinca	Total in Park	Total inc. Park	Survey Method	Source
1959	400-500	100	1000-1500	1500-2000	unsubstantiated estimate	Auffenberg, 1981 (after Pfeffer, 1959).
1960	1500	-	2500	-	unsubstantiated estimate	Auffenberg, 1981 (after Piazzini, 1960).
1972	2348	792	3265	5713	Mark recapture	Auffenberg, 1981.
1991	2900	900	<3900	5700		WCMC?
1993	1574	1050	2624	-	Baiting	TNK, 1994.
1994	1639	1110	2749	-	Baiting	TNK, 1994.
1995	1687	-	-	-	Baiting	TNK, 1996.

**Table 1.3 Dragon Population Estimates.**

Several other species of herpetofauna inhabit the different vegetation zones, including frogs, reptiles and snakes such as the green pit viper and the common cobra.

<sup>4</sup> 1994 estimates

The mammal fauna is characteristic of the Wallacean zoogeographic zone, with seven terrestrial species recorded including the endemic rat *Rattus rintjanus* and the crab-eating macaque *Macaca fascicularis*. Other mammal species include rusa deer *Cervus timorensis* and wild boar *Sus scrofa*, as well as feral domestic animals including horses and water buffalo.

72 species of bird have been recorded, including the sulphur-crested cockatoo *Cacatua sulphurea*, the noisy friarbird *Philemon buceroides* and the common scrubhen *Megapodius freycinet*.

### **1.3.6 Marine Environment**

As a result of a continual interchange of water between the Flores sea and the Savu sea, the waters around the park have a high degree of oxygenation and nutrient richness, which together with intense sunlight has produced a rich coral reef system fringing the islands. Dominant corals on most reefs are *Acropora* spp., particularly tabletop coral *A. symmetrica*, as well as *Millepora* spp. and *Porites* spp.. *Fungia* spp. are present on reef slopes. In areas of strong currents, the reef substrate consists of an avalanche of coral fragments, with only encrusting or low branching species, such as *Seriatophora caliendrum* and *Stylophora pistillata*, being able to withstand the rapid water flow. More protected reef slopes are dominated by species of the genera *Heterosammia* and *Heterocyathus*. Reefs off the north-east of Komodo have a particularly high species diversity.

There is an abundance of plankton in the waters surrounding the islands, which lie close to the migratory routes of a number of marine mammals. These include the blue whale *Balaenoptera musculus* and sperm whale *Physeter catodon* which are occasionally observed. In addition to numerous varieties of sharks, 10 species of dolphin have been recorded as well as the dugong *Dugong dugon*, although the latter is probably rare.

## **1.4 Protected Area Status**

### **1.4.1 History**

The history of protection goes back to 1938 when Padar and part of Rinca were established as nature reserves. This was extended in 1965 when Komodo Island was gazetted under Ministerial Decree No.66.

Komodo was accepted as a biosphere reserve under the UNESCO Man and Biosphere Program in January 1977. This 30,000ha reserve represents the entire area of Komodo Island excluding the village enclave.

In 1978, Komodo Nature Reserve was administered under the Regional Centre for Nature Conservation VII (BKSDA VII) in Kupang, the capital of Nusa Tenggara province. The management of nature reserves was the responsibility of the

Directorate of Nature Conservation (PPA), the national headquarters of which was based in Bogor.

The islands of Komodo, Rinca, Padar and Gili Motong and the surrounding waters were declared a 75,000ha national park in 1980 by a letter of the Minister of Agriculture.

In 1984 the park was extended to 219,322ha under Ministerial Decree 46/kpts/VI-sek/1984 to include an expanded marine area and a section of mainland Flores. In the same year, PPA was replaced by the Directorate General of Forest Protection and Nature Conservation (PHPA), part of the Ministry of Forestry. Responsibility for management of the park passed directly to the park director in Labuan Bajo.

In 1990 the Indonesian government submitted a nomination for the national park to be designated a World Heritage site, based primarily on the presence of the Komodo monitor within its boundaries. The nomination, to include the offshore islands but not the extended marine buffer zone nor the section of mainland Flores, was accepted and the park was included in the UNESCO World Heritage list in 1992 (along with another Indonesian national park, Ujung Kulon in West Java).

In 1992, a further ministerial decree (No. 306/Kpts-II/1992), superseding that of 1984, appeared to remove the reserves on Flores from the national park. The amended area of the park is 173,000ha.

Komodo National Park and surrounding reserves are presented here with their management category as defined by IUCN<sup>5</sup>. The park as a whole is Category II (National Park) and IX (Biosphere Reserve).

Komodo Game Reserve (33,987ha)	IV
Rinca Island Nature Reserve (19,625ha)	I
Padar Island Game Reserve (1,533ha)	I
Mbeliling and Nggorang Protection Forest (31,000ha)	VI
Way Wuul and Mburak Game Reserve (3,000ha)	IV
Surrounding Marine Areas (130,177ha)	

#### 1.4.2 Rationale

The park exists primarily as a protected area for the conservation and protection of the Komodo monitor in its natural habitat. Even before the first establishment of reserves on the islands this species was declared protected by the Sultan of Bima, and killing of it prohibited. This was extended to a prohibition of capture and possession of live or dead Komodo monitors or parts thereof, and also to the collection of eggs and disturbance of nests.

The 1984 expansion of the park to include reserves on mainland Flores was also on the basis of the presence of the Komodo monitor. These small, isolated populations

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<sup>5</sup>IUCN Categories: I = Strict Nature reserve, IV = Managed Game Reserve, VI = Resource Reserve.

are believed to have diverged genetically from the island groups and as such their protection is important to maintain the genetic diversity in the gene pool of this rare and restricted species.

Justification for inclusion of the islands of the park on the World Heritage list originally identified four criteria pertaining to the natural properties of the park.

- I. Earth's evolutionary history - Komodo lies at the junction of the Australian and Asian tectonic plates and has experienced a violent geological history.
- II. Biological Evolution and man's interaction with his natural environment
  - A. The Komodo monitor and the isolated environment in which it has evolved represent an outstanding example of biological evolution.
  - B. Prehistoric archaeological remains, in particular large 'menhirs' (megalithic statues), are found in the park, but their significance is not yet fully understood.
- III. Superlative natural features - The park's landscape is regarded as among the most dramatic in Indonesia, with the rugged hillsides of dry savannah and pockets of thorny green vegetation contrasting starkly with the brilliant white sandy beaches and blue waters surging over coral.
- IV. Habitat of threatened species - The park is the only place in the world where the Komodo exists in the wild. Being an island group and relatively isolated, it is one of the best locations in which to ensure the long-term survival of the species.

The IUCN evaluation of this proposal questioned the uniqueness and conservation value of the park despite the presence of the Komodo monitor, since it can be argued that the loss of smaller, almost unnoticed species can be just as important as loss of more dramatic ones, and that effort should be focused on areas of high species diversity such as the forests elsewhere in Indonesia. However, it was recognised that there is substantial conservation awareness value to relatively modest projects which concentrate on dramatic or symbolic lifeforms which already attract local pride and international sympathy, such as the Komodo monitor. In addition, the presence of the Komodo monitor in the park and almost nowhere else renders it important to science. A number of other natural features including the marine environment, flora and intact natural scenery were considered to contribute to the value of the park. It was therefore decided that it met the conditions of integrity for criteria III and IV above.

### **1.4.3 Management**

A management plan was written under the UNDP/FAO programme in 1977, inventorying the flora, fauna and history of the area. The plan was revised in 1982 (Robinson *et al.*, 1982). The team leader was a National Parks Planning consultant,

whose particular task was to make recommendations for the development of tourism in Komodo.

As noted in the management plan, the main objective was to ensure the survival in perpetuity of the Komodo monitor. Its principal recommendations were the establishment of a national park with marine zone, the resettlement of smaller settlements and the inclusion of larger ones as enclaves, the development of tourism infrastructure and management (including zonation of the park by intensity of permitted use), conservation by habitat management (including controlled burning) for both Komodo monitor and their prey, and the control of feral dog as a perceived threat to the Komodo monitor.

Between the 1977 and 1982 surveys the authors noted improvements in the administration, supervision and productivity of staff, with more frequent patrols and better results in terms of arrests of poachers. By 1982 staff were resident on Komodo and on Rinca.

### ***1.5 History Of Tourism***

Tourism to the islands of KNP has existed ever since the world discovered the Komodo monitor, and this charismatic species is the prime focus of the attention of visitors.

The earliest visitors to Komodo baited the monitors with a goat (dead or alive) staked out in an appropriate place. In the early 1980s a feeding site for the dragons was established about 2 kilometres easy walk from the accommodation centre and jetty. The monitor gradually became habituated to humans and to receiving offerings of dead goat, which became increasingly frequent as visitor numbers expanded. By the early 1990s feeding had become so frequent that the monitor group which lived at the feeding site could barely raise the energy to put on a show of tearing yet another goat apart, and the KNP decided to restrict feeding to twice a week, on Wednesdays and Sundays. In August 1994 the park authorities decided to stop the feeding.

The Third World National Parks Congress, held in Bali in October 1982, provided the impetus for PHPA to upgrade facilities in some of the parks nearest Bali to which field trips were arranged for delegates, including Komodo. Tourist facilities are concentrated at Loh Liang. There were two 8-bed guest-houses constructed in modified local style, with a well-appointed kitchen. There was also a jetty and a water system. Two additional guest-houses and a field laboratory were under construction, and a visitor centre was planned for 1983. The field laboratory was in use for a few years in the mid-1980s but by 1988 was too dilapidated to be used. It contained a few exhibits of Komodo eggs and other remains, but there were no interpretive materials.

By 1985 there were 3 guest-houses, all still in a good state of repair. By 1988 they had deteriorated and renovations were under way. By 1993 several new guest-houses and a new restaurant had been built to try and cope with the ever-increasing demand. In

common with other Indonesian national parks, it is not possible to book accommodation in advance - rooms are allocated on a first come, first served basis.

Whereas in 1975-76 KNP received around 350 visitors per year, about two-thirds of whom came from cruise ships, it now receives at least this number per week. This dramatic increase has had a negative effect on the quality of the visitor experience: while in 1985 there were a mere dozen tourists at the feeding site, by 1993 there were literally hundreds of people jostling for the chance to photograph the rather gruesome spectacle. The 1977 management plan suggested that hides should be built to shield the dragons from too much contact with tourists, but this was never attempted and would probably have been unacceptable to the tourists as it would have restricted the taking of photographs.

Most visitors to KNP today simply follow the trail to the old feeding site, observe the dragons from the safety of the enclosure, and walk back to Loh Liang. The management plan expressed the hope that the visitor's experience could be broadened from this typical 3-4 hour rather artificial encounter with the lizards to a more rounded experience of other aspects of the national park. The easy nature of the walk and the brevity of the experience suits cruise ship schedules very well, but for other tour groups or independent travellers there are numerous other opportunities for enjoying the park.

In the last 5 years Rinca island has become known as a more authentic alternative to Komodo island itself. Komodo monitor on Rinca wander through the visitor camp looking for scraps of food, and the chances of seeing them are high. The individuals seen, however, are generally not as large as the ones commonly observed at the feeding site on Komodo.

KNP lies on one of the established routes taken by Backpacker tourists travelling through the Lesser Sundas. During the last 5 years Indonesia has become fashionable among Backpackers and numbers have increased dramatically, with a consequent increase in low-budget accommodation. Tour facilities for other categories of tourists have also improved, specifically with several cruise ship operations now running in Indonesian waters. Travelling by cruise ship is an especially convenient way of visiting more remote regions of Indonesia.

## ***1.6 Introduction to the Local Communities***

KNP lies on the border of two provinces; East Nusa Tenggara (NTT) and West Nusa Tenggara (NTB) (see Map 1, above). There are rural communities in bordering districts on both sides of the park which utilise the marine resources of the park (Sudibyo, 1995b). There are also a number of settlements within the park itself. A brief history of these communities is presented below.

### 1.6.1 History of the Islanders

Little is known of the early history of the Komodo islanders. They were subjects of the Sultanate of Bima, although the island's remoteness from Bima meant its affairs were little troubled by the Sultanate other than by occasional demands for tribute. Until 1982 it was believed that the Komodo islanders were simply Bimanese who had settled on the island for trading reasons or because they had been exiled there. However, research showed that both the language and social organisation of the Komodo people was sufficiently different from those of Sumbawa for the islanders to be considered a separate ethnic group, the Ata Komodo. These original inhabitants are now thought to comprise only 18.4% of the population of the islands, with the rest composed of other groups such as Bajo and Buginese.

The islanders' way of life is well adapted to local conditions. An important staple is sago, although rice has become more important with more frequent contacts with the market centres of Bima (Sumbawa) and Labuan Bajo (Flores). Garden crops are planted near the villages, and some woodland products, particularly tamarind, are collected for sale. The most important economic activity is fishing, and although the local people are allowed to fish within the national park there are certainly abuses of this right, with the capture of protected species such as turtle and dolphin, and the presence of many boats from outside the area. Hunting of deer and boar is important, although the monitor do not appear to have been hunted, probably for cultural reasons.

Fishermen and hunters from other islands are also drawn to the park because their own areas have been hunted out. There are reports of Hong Kong fishermen using cyanide on the reefs and frequent fires occur within the park destroying habitat. The fires are started to drive deer and to attract deer to subsequent new growth.

“The inhabitants of Komodo .... have long lived in close proximity to the lizard and there are various myths surrounding their relationship with them. According to I Gusti Ngurah Bagus, an anthropologist, it is said that the dragons are the islanders' siblings and that, if one of these animals is injured, then its relatives, who have taken the form of human beings, will also become ill (Bagus, 1987, 175). The Bimanese claim that the giant lizards used to live in Sumbawa until they were driven out by a local folk hero known as La Hami. Dragon imagery also features in the legend of the foundation of the Bimanese state, in which a prince marries a Naga princess. The latter creature, however, belongs to the wider Asian tradition and need not necessarily be linked to Komodo. Nevertheless, it has been suggested that some of the dragon mythology of the Far East was inspired by travellers accounts of the giant lizard (Broughton, 1936, 321). Without the relevant documentary evidence one can only speculate that the *ora*, with its long tail and flickering tongue, was transformed into a fire-breathing dragon by story-tellers.” (Hitchcock, 1993, p.305).

### 1.6.2 Involvement in the Park and Tourism

The authors of the 1977 management plan and its later revisions hoped that the islanders would become involved in the park as guides, boat-drivers or hotel workers, or by making handicrafts for sale to the tourists. However, Indonesian villagers (in

common with rural communities elsewhere in the world) are notoriously conservative. It is extremely difficult for a community whose main experience is fishing to diversify into other activities, particularly as no training programmes or other encouragements were ever provided.

The tourist-orientated developments on Komodo were deliberately located away from Kampung Komodo in order to reduce the impact on the community, although this meant that fresh-water supplies had to be expensively piped in from a considerable distance. It also meant that although the negative impacts were few, the positive impacts were also limited. Most visitors' contact with the village is restricted to a half-hour or so spent wandering about taking photographs of small children against a backdrop of traditional stilted houses or outrigger boats.

The population of Kampung Komodo has grown substantially since the 1977 management plan was written, and this growth is seen by some as a threat to the park's resources. There have been attempts to move the community to Flores, giving them more land in compensation. These moves have been made partly on the basis that the islanders are incomers from neighbouring islands so have no traditional roots in the area - although this is not the case for at least a part of the population. Suggestions that they move have been strongly resisted by the Komodo islanders, and so far the KNP and local government have been unwilling to press the point.

The islanders of both Komodo and Rinca appear to have been given little chance to put forward their views on the park and their involvement in it; this was certainly the case up to the end of the 1980s. Currently the classic 'worst case scenario' exists of local people bearing the opportunity cost of a protected area which appears to be for the benefit of foreigners and outsiders.

The modern philosophy of conservation and protected area management acknowledges that, to ensure success, the needs and wishes of the local people must be met. For too long conservation in developing countries has been based on the western model of national parks and on the principal of exclusion. Local people and traditional human activities were viewed as incompatible with environmental well-being, and it seemed to many that the welfare of animals was being placed before the needs of people. Worse, not only were the local people excluded from land on which they may have lived and depended for generations, they were denied any of the benefits that may have come from the land as a result of its protected area status.

Local opposition to protected areas is a common phenomenon. As the parks and reserves blossom and thrive, there is often a concurrent degradation in the surrounding lands, which may become overpopulated or less fertile, unable to support the greater needs of the community. Resentment, both to the loss of a resource and the blatant disregard of authorities for traditional rights, soon leads to destructive action such as poaching, burning and in some cases violence.

However, this situation is not inevitable. Protected areas are not immune to exploitation. They are not barren areas which cannot or should not provide benefits to people. The new generation of 'use it or lose it' conservationists is challenging the

protectionist ideals which have prevailed for almost a century. It is recognised that non-destructive, sustainable utilisation can provide many benefits for conservation. Nature tourism is foremost amongst these initiatives in National Parks all over the world.

With the establishment of tourism comes a means by which local communities can gain significant economic benefit. Local development is enhanced, the economy stimulated, employment prospects arise. This is not to detract from the social and environmental degradation that foreign tourists can inflict on a fragile traditional way of life, nor the economic domination of the industry by outside developers and entrepreneurs that can occur in practice.

In theory, environmentally sustainable tourism in National Parks should be of great benefit to local communities. The aims of this project are to examine the existing situation in and around Komodo National Park, to quantify the benefits of nature tourism to the local communities, and to suggest means by which increased benefit can be brought to the community.

## **2. VISITOR PATTERNS**

### ***2.1 Introduction***

This chapter examines the nature of tourism to Komodo National Park, focusing on temporal and spatial trends in visitation patterns. The analysis is based upon data compiled from existing park records spanning a number of years. It addresses the first part of technical objective (a) of the project;

- quantify the visitor numbers and assess the forms of visit which are consistent with sustainability.

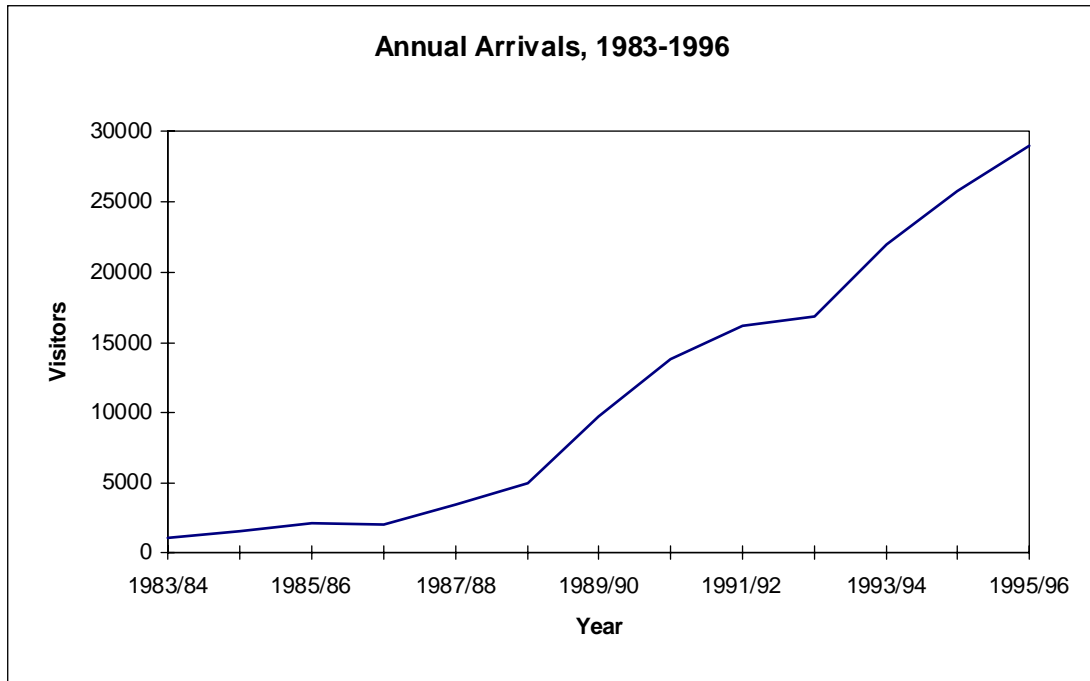
Annual and seasonal (monthly) trends in arrivals are examined over a thirteen year period from April 1983. This is followed by an analysis of visitor length of stay in the park. Spatial dynamics are examined at both inter- and intra-island levels, the latter focusing on trail use patterns on Komodo Island, and seasonality in trail use. An attempt is made to disaggregate arrival data to generate a tourist typology for Komodo National Park. Two variables, visitor nationality and mode of transport, are examined, and a typology is suggested based on mode of transport. This will be used in subsequent chapters as a means of comparing the impact of different types of tourist on the park and the local economy.

### ***2.2 Seasonal/Annual Visitation Patterns***

#### **2.2.1 Annual Trend**

Monthly visitor arrivals at the park have been recorded since April 1983. In the 1983/84 year, 1,140 people visited the park. By 1995/96 this figure had increased almost 30-fold to 28,991 visitors. The annual visitor totals show a rapid rise throughout the late 1980's and 1990's (Figure 2.1). The average growth rate over this thirteen year period has been 33%.

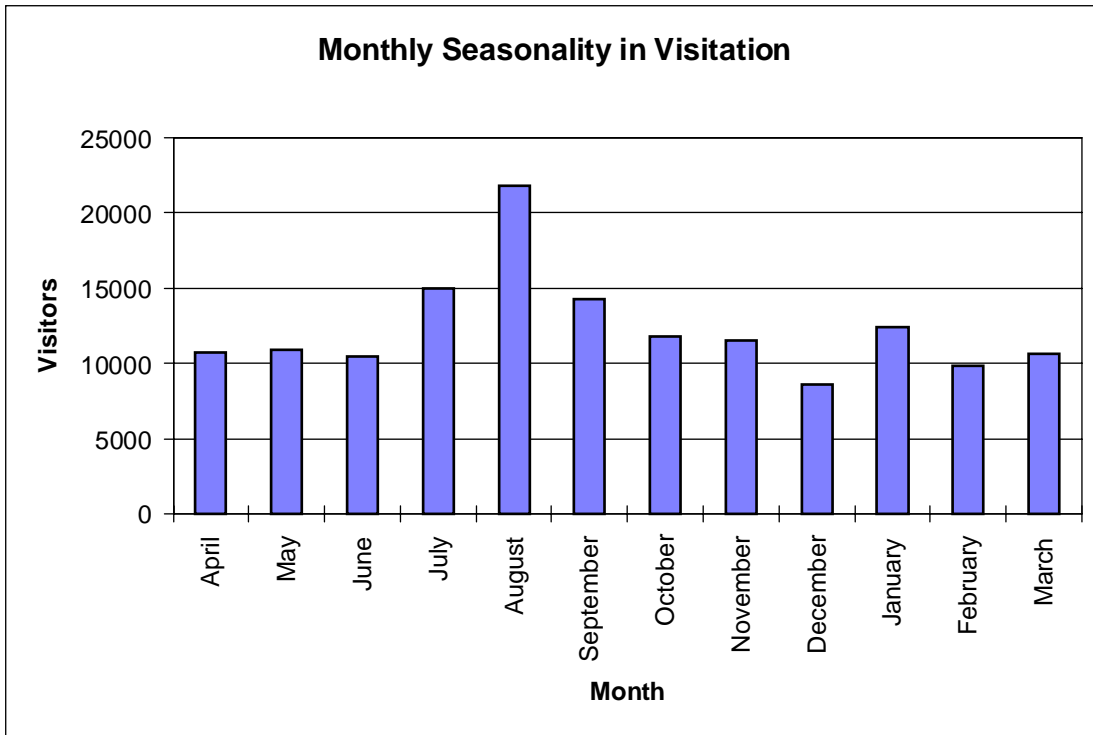
There was an uncharacteristic drop in the growth rate during the 1992/93 year, when the park only achieved a 4% increase in visitation. This may have been due to the earthquake which occurred in Flores that year. Major events of this nature can have a marked effect upon international arrivals (cf the recent outbreak of pneumonic plague in India).



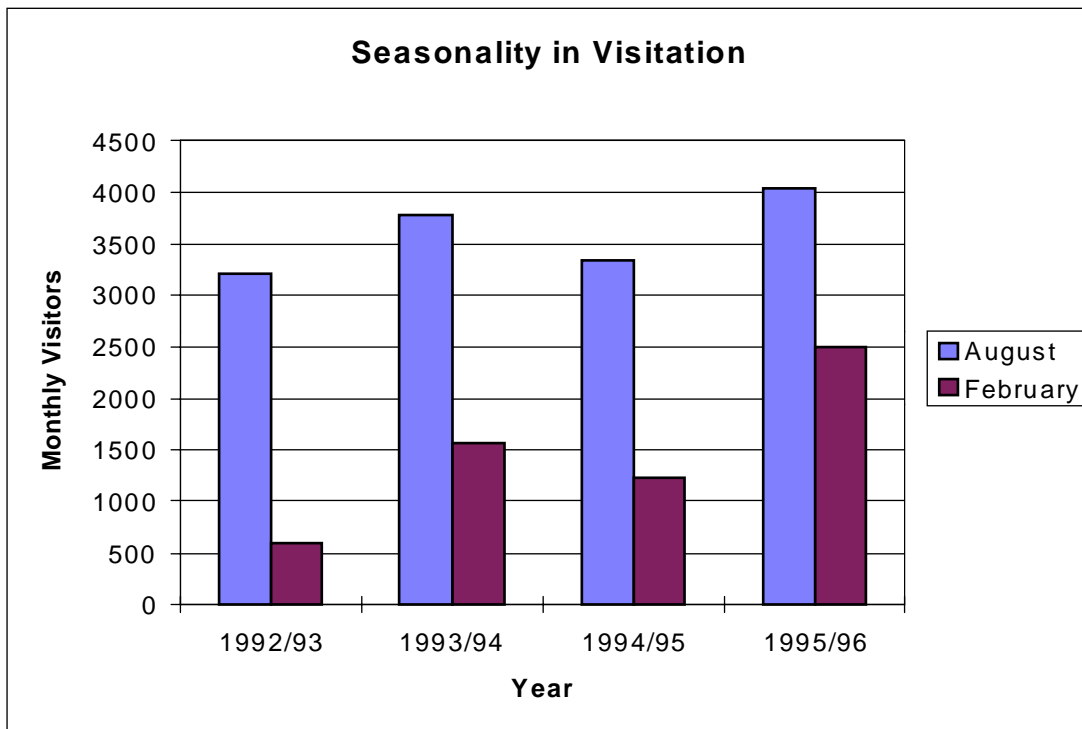
**Figure 2.1 Annual Visitor Arrivals to KNP, 1983/84 - 1995/96.**

### **2.2.2 Seasonal Trend**

Visitation is not spread evenly throughout the year. The peak months for visitor arrivals, totalled over the whole 13 year period, are July, August and September (Figure 2.2). If each year is considered separately, monthly seasonality in visitor arrivals rises to a peak in the 1992/93 season and subsequently tails off. The increasing importance of the European summer months for visitation is a symptom of the increasing domination of arrivals to KNP by foreign, and particularly European/American, visitors (section 2.5). The subsequent decline in the strength of the seasonality is due to a rapid increase in off-season visitation. Between 1992/93 and 1995/96, the month of February experienced a five-fold increase in arrivals whilst, over the same period, the month of August only experienced a 25% increase in arrivals (Figure 2.3). This is in part due to the rise of cruise ship travel to KNP in recent years (section 2.6.2).



**Figure 2.2 Total Monthly Visitor Arrivals to KNP, 1983/84 - 1995/96.**



**Figure 2.3 Monthly Arrivals to KNP For August and February Compared, 1992/93 - 1995/96.**

## 2.3 Length of Stay

All visitors to the park arrive and leave by boat. The most common form of visit is a daytime excursion of 2-3 hours on Komodo Island, or a similar visit to Rinca Island. However, some visitors do stay overnight in the park. There is overnight accommodation available at both Loh Liang (Komodo Island) and Loh Buaya (Rinca Island). There are approximately 50 beds available at Loh Liang.

### 2.3.1 Overnight Visitors

In the three years from April 1993 - March 1996, 28.7% of visitors to Komodo Island stayed overnight (Table 2.1). However, there has been an annual decline from 36.7% in 1993/94 to 24.5% in 1995/96. In real terms the number has also dropped between 1993/94 and 1995/96. Only 1.3% of visitors to Rinca Island stayed overnight for the two years from April 1994 - March 1996, and again the annual figure has fallen in both proportional and real terms. Although figures are unavailable for the 1996/97 season, park staff perceived a further drop in overnight visitors during the first half of the year. This appears to have been in response to a change in the mode of transport used by independent travellers visiting the park (section 2.6).

	93/94	94/95	95/96	TOTAL
<b>KOMODO</b>				
Total Visitors	18,625	21,357	24,159	64,141
Overnight Visitors	6,834	5,685	5,915	18,434
% Overnight	36.7	26.6	24.5	28.7
<b>RINCA</b>				
Total Visitors	n/a	4,253	4,832	9,085
Overnight Visitors	n/a	74	42	116
% Overnight	n/a	1.7	0.9	1.3

**Table 2.1 Number and Proportion of Overnight Visitors to Komodo and Rinca, 1993-1996.**

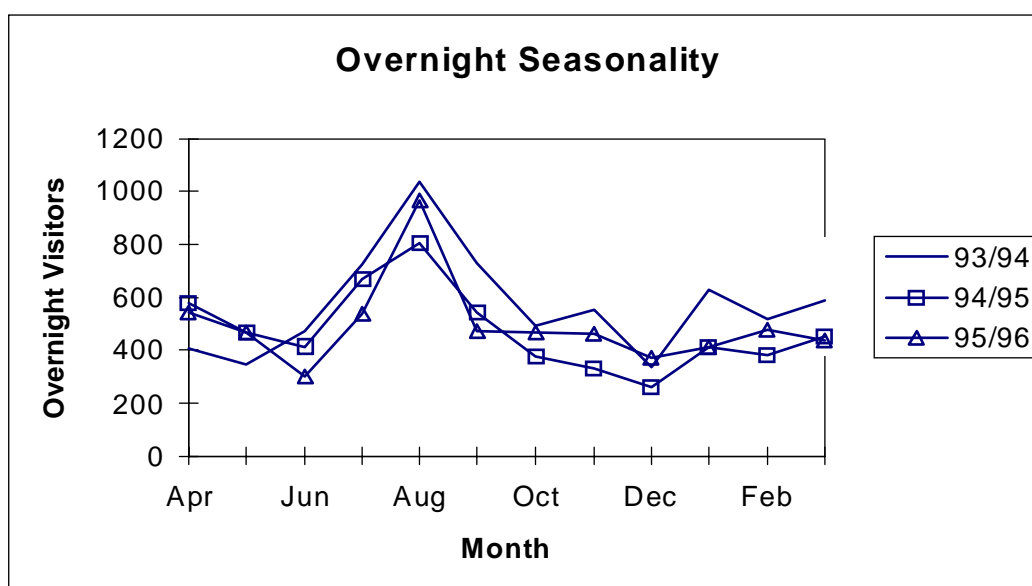
Overnight visitors to Komodo Island stayed for between 1 and 9 nights during 1995/96. The vast majority (85.56%) stayed for one night only, whilst only 1.68% of overnight visitors stayed for more than two nights (Table 2.2). The average length of stay of overnight visitors to Komodo Island in 1995/96 was 1.18 nights.

Length of Stay (nights)	Number of Visitors	% of Overnight	% of Total
0	19,509		81.01
1	4,574	85.56	18.99
2	682	12.76	2.83
3	35	0.65	0.15
4	36	0.67	0.15
5	5	0.09	0.02
6	5	0.09	0.02
7	7	0.13	0.03
8	0	0.00	0.00
9	2	0.04	0.01
Totals, excluding daytrips	5,346		22.20
Totals, including daytrips	24,083		100.00

**Table 2.2 Overnight Visitors to Komodo Island Classified by Length of Stay, 1995/96.**

### 2.3.2 Seasonality in Overnight Stay

Monthly totals for overnight visitors for the three years from April 1993 - March 1996 exhibit some seasonality, with July - September the busiest months (Figure 2.4). Overall bed occupancy during this time was 34%, with a low of 21% in December and a high of 60% in August. On particularly busy days in August, supply has exceeded demand, and visitors have been forced to sleep on the floor of the cafeteria. However, this is unusual, and will be less likely if overnight visitation decreases (see above).



**Figure 2.4 Monthly Seasonality in Overnight Visitation to Komodo Island, 1993/94 - 1995/96.**

## 2.4 Spatial Distribution of Visitors Within the Park

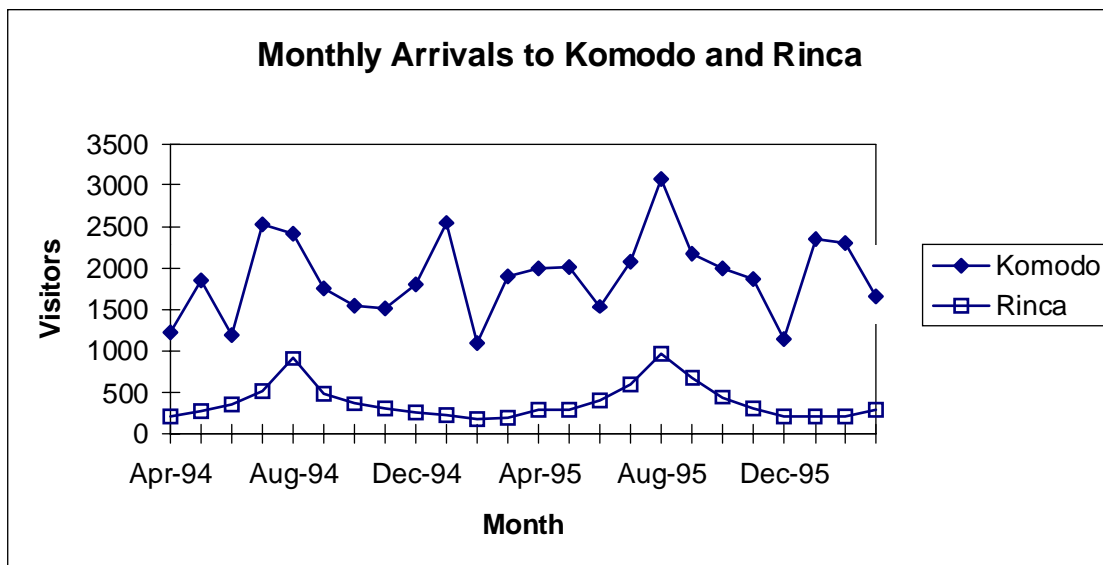
There are visitor centres on both Komodo and Rinca islands, and both receive substantial numbers of arrivals. On Komodo island there are opportunities to undertake a number of different guided trails around the northern part of the island. This section examines the distribution of visitors amongst these different spatial opportunities, and considers the factors which may contribute to this distribution.

### 2.4.1 Komodo vs. Rinca

Of the two large islands of the park with substantial dragon populations, most visitors go to Komodo Island. In the 1994/95 and 1995/96 years, 83.4% and 83.3% of park visitors respectively went to Komodo island (Table 2.3). In both years, the seasonal peak in August is more defined for Rinca than it is for Komodo (Figure 2.5).

Year	Komodo	Rinca	Total	% Komodo	% Rinca
1994/95	21,357	4,253	25,610	83.4	16.6
1995/96	24,159	4,832	28,991	83.3	16.7

**Table 2.3 Monthly Arrivals to Komodo and Rinca Islands as Proportions of Total Park Visitation, 1994-1996.**



**Figure 2.5 Seasonality of Monthly Arrivals to Komodo and Rinca Islands, KNP, 1994/5 - 1995/96.**

There are a number of factors contributing to the greater importance of Komodo island as a visitor destination. It has more developed visitor facilities than Rinca, and is the only island with an established viewing area for the Komodo dragons. It offers guaranteed dragon viewing for even brief visits, with the minimum of effort. The

experience on Rinca is more demanding and visitors are less assured of seeing adult dragons, but it is a more natural experience and is attracting increasing numbers of independent travellers on this basis. Komodo island is a scheduled stop on the route of the government ferry between Sumbawa and Flores, and as such is the more accessible of the two for budget travellers. The nature of the experience on Komodo has led to it becoming the focus of cruise ship visitation in preference to Rinca.

The difference in patterns of seasonality between the two islands are a result of the more complex transport network serving Komodo (section 2.6.2).

#### 2.4.2 Trail Use Patterns on Komodo Island

Virtually every visitor walks the 2km trail to Banu Nggulung to visit the site where the Komodo monitors used to be fed. Several animals still frequent this site and it offers the best chance of seeing the animals outside of the camp area. There are a number of other trails which visitors can use (see Map 2, above, and Table 2.4). However, trails to destinations other than Banu Nggulung receive very little use by visitors. Records are kept of each guided walk; the date, group size, and destination, and from this it is possible to compare the use of different trails.

In the three years from April 1993 - March 1996, 2.7% of visitors to Loh Liang used guided trails other than that to Banu Nggulung (Table 2.4). The Gunung Ara trail is clearly the most popular of the alternative trails, used on average by 261 (1.2%) visitors each year. The second most common alternative to the Banu Nggulung trail is a forest walk off the trail, undertaken by an average of 189 (0.9%) visitors each year. The monthly pattern of visitor use for these two trails is fairly erratic, although there was an August peak in the use of the Gunung Ara trail in 1994 and 1995.

Trail	93/94	94/95	95/96	Average
Gunung Ara	221	299	263	261
<i>% of Arrivals</i>	<i>1.2</i>	<i>1.4</i>	<i>1.1</i>	<i>1.2</i>
Gunung Satalibo	0	25	41	22
<i>% of Arrivals</i>	<i>0</i>	<i>0.1</i>	<i>0.2</i>	<i>0.1</i>
Poreng	73	100	148	107
<i>% of Arrivals</i>	<i>0.4</i>	<i>0.5</i>	<i>0.6</i>	<i>0.5</i>
Sebita	5	11	0	5
<i>% of Arrivals</i>	<i>0.0</i>	<i>0.1</i>	<i>0.00</i>	<i>0.0</i>
Jalan Hutan	243	249	75	189
<i>% of Arrivals</i>	<i>1.3</i>	<i>1.2</i>	<i>0.3</i>	<i>0.9</i>
Total Trail Use <sup>1</sup>	542	684	527	584
<i>% of Arrivals</i>	<i>2.9</i>	<i>3.2</i>	<i>2.2</i>	<i>2.7</i>

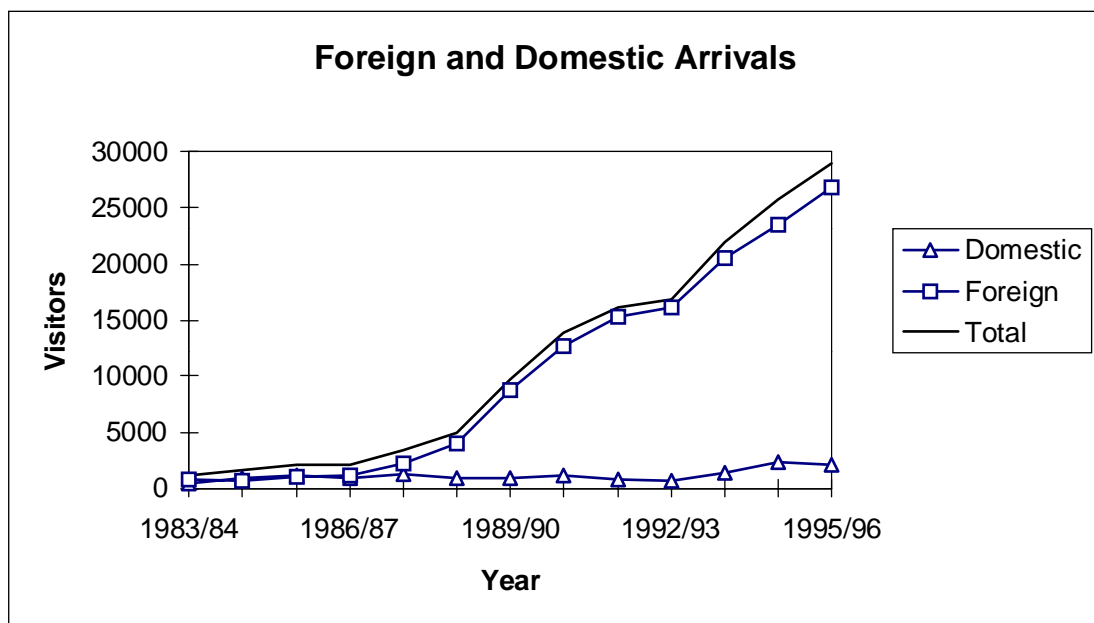
**Table 2.4 Spatial Distribution of Visitors to Komodo Island, 1993/94 - 1995/96.**

<sup>1</sup> Other than Banu Nggulung.

The low levels of use of the alternative trails on Komodo has a number of contributing factors. Principal amongst these is time. The shortest of the trails is a 5-6 hour round trip from camp, and all must be started at dawn to avoid strenuous hill walking in the heat of the day. As such, only overnight visitors have access to these walks, and only physically fit visitors are likely to undertake them. Additional factors were highlighted in the responses to the visitor questionnaire administered at Loh Liang (Chapter 4). A lack of information about these walks, and the perceived prohibitive cost of hiring a guide to conduct them, were the chief reasons why many overnight visitors did not undertake them (section 4.8.2).

## 2.5 Nationality

The increase in visitor arrivals to KNP since 1988 consists almost entirely of foreign tourists. The annual number of domestic visitors has stayed fairly constant over the past twelve years (Figure 2.6). Until 1994 the total fluctuated around 1000 visitors, although the past two years have seen an increase to around 2000 domestic arrivals. In total, only 10.9% of visitors have been domestic, although the annual average is 24.0%. There has been a decrease from 40-60% in the mid-eighties to under 10% in the nineties (Table 2.1). The increasing domination of the visitor arrivals by foreign tourists reflects the opening up of Indonesia and the active promotion of tourism to foreign markets in the late eighties, as well as improvements in transport services east of Bali. KNP is now essentially a destination for international tourists.



**Figure 2.6 Annual Domestic and Foreign Arrivals to KNP, 1983/84 - 1995/96.**

The statistics of visitor nationalities are available for the six years from April 1990 to March 1996. During the 1995-96 year, Germany, America, Holland and Great Britain

together account for 52.4% of the total. Of the top ten , accounting for 85.4% of the total, only America (13.7%, 2nd), Australia (7.8%, 5th) and Indonesia (7.3%, 6th) are outside Europe. Indonesian nationals account for only 7.3% of visitors during this year (Figure 2.7 and Table 2.5). Over the whole six year period, the top four achieve a greater dominance of 59.8% of the market, with America and Germany switching places at the top. Australia and Indonesia switch places at fifth and sixth, whilst Canada and Austria knock Italy and Denmark out of the top ten (Table 2.5).

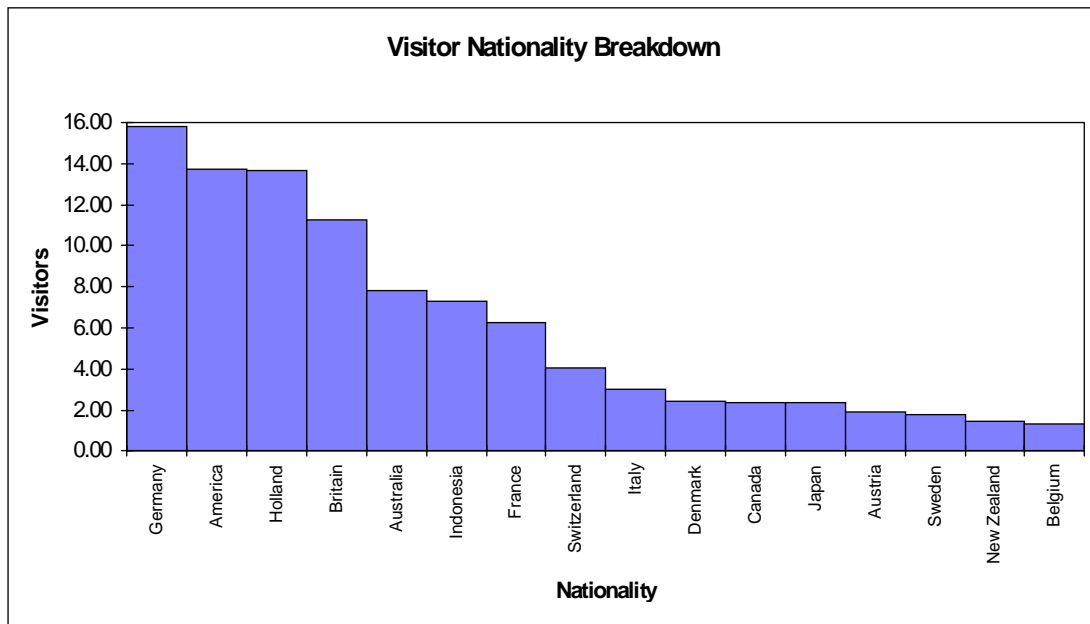
Nationality	1995/96	% of Total	Rank	% of Total 1990-96	Rank
Germany	4,269	15.8	1	16.2	2
America	3,707	13.7	2	16.8	1
Holland	3,701	13.7	3	13.8	3
Britain	3,042	11.3	4	13.0	4
Australia	2,122	7.9	5	6.1	6
Indonesia	1,981	7.3	6	6.9	5
France	1,697	6.3	7	5.7	7
Switzerland	1,101	4.1	8	4.1	8
Italy	810	3.0	9	2.1	11
Denmark	657	2.4	10	1.5	14
Canada	647	2.4	11	2.6	9
Japan	634	2.4	12	1.7	13
Austria	521	1.9	13	2.3	10
Sweden	485	1.8	14	2.1	12
New Zealand	387	1.4	15	1.3	15
Belgium	356	1.3	16	1.3	16
Norway	232	0.9	17	0.6	19
Other European	217	0.8	18	0.8	17
Asia	200	0.7	19	0.7	18
Eastern Europe, Middle East	148	0.6	20	0.3	21
Latin America	93	0.3	21	0.3	20
Africa	28	0.1	22	0.1	22

**Table 2.5 Breakdown of Visitor Nationalities, 1995/96 and 1990 -1996.**

If the data are compiled by continent, Europe as a whole is responsible for 63.5% of the total, whilst North America/Canada is second with 19.4% (16.1% in 1995/96). Asia is third with 9.2% (10.4% in 1995/96) and Australasia fourth with 7.3% (9.3% in 1995/96). The rest of the world accounts for less than 1% of all visitors to the park between April 1990 and March 1996 (Table 2.6).

Continent	95/96	% of Total 95/96	1990-96	% of Total 90-96
Europe	17,088	63.2	77,107	63.5
North Americas	4,354	16.1	23,533	19.4
Asia	2,815	10.4	11,177	9.2
Australasia	2,509	9.3	8,908	7.3
Rest of World	269	1.00	767	0.6

**Table 2.6 Visitors to KNP Grouped by Continent of Origin, 1995/96 and 1990 - 1996.**



**Figure 2.7 Visitors to KNP, 1995/96, Grouped by Nationality.**

## 2.6 Mode of Transport

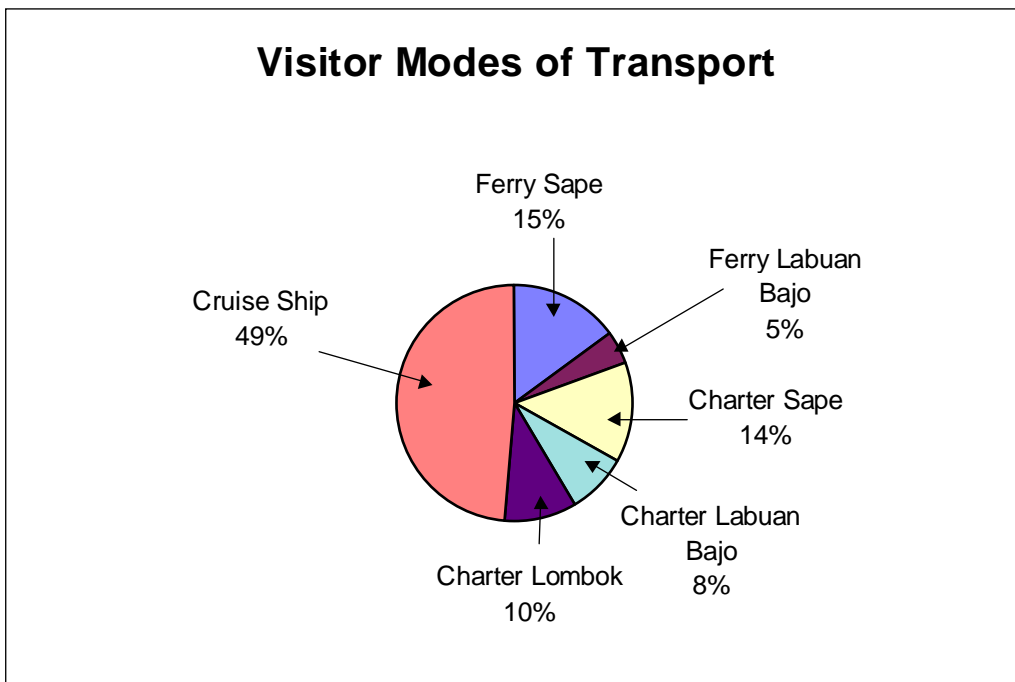
All visitors to Komodo National Park arrive by boat. To reach Komodo Island, there are three means of transport; take the local ferry that runs between Sape and Labuan Bajo, charter a boat from either of these towns, or take a cruise ship/organised charter from further afield, usually Bali or Lombok. It is only possible to reach Rinca island by charter boat.

### 2.6.1 Breakdown by Mode of Transport

Data for arrivals at Komodo island for the year April 1995 - March 1996 were grouped according to mode of transport (Table 2.7). 19.5% of visitors used the government ferry, of which 14.9% arrived from Sape and 4.6% arrived from Labuan Bajo. A similar number of visitors (21.9%) used local charter boats, again with the majority coming from Sape (13.7% vs. 8.2%). The majority of visitors (58.7%) arrived from outside the region, of which 10.0% travelled by charter from Lombok whilst 48.7% travelled by cruise ship (Figure 2.8).

Transport Type	Number of Passengers	% of Total Visitors
Ferry Sape	3,588	14.90
Ferry Labuan Bajo	1,097	4.56
Charter Sape	3,296	13.69
Charter Labuan Bajo	1,968	8.17
Charter Lombok	2,407	9.99
Cruise Ship	11,727	48.69
Ferry Total	4,685	19.45
Local Charter Total	5,264	21.86
Non-Local Charter/Cruise	14,134	58.69
TOTAL	24,083	100.00

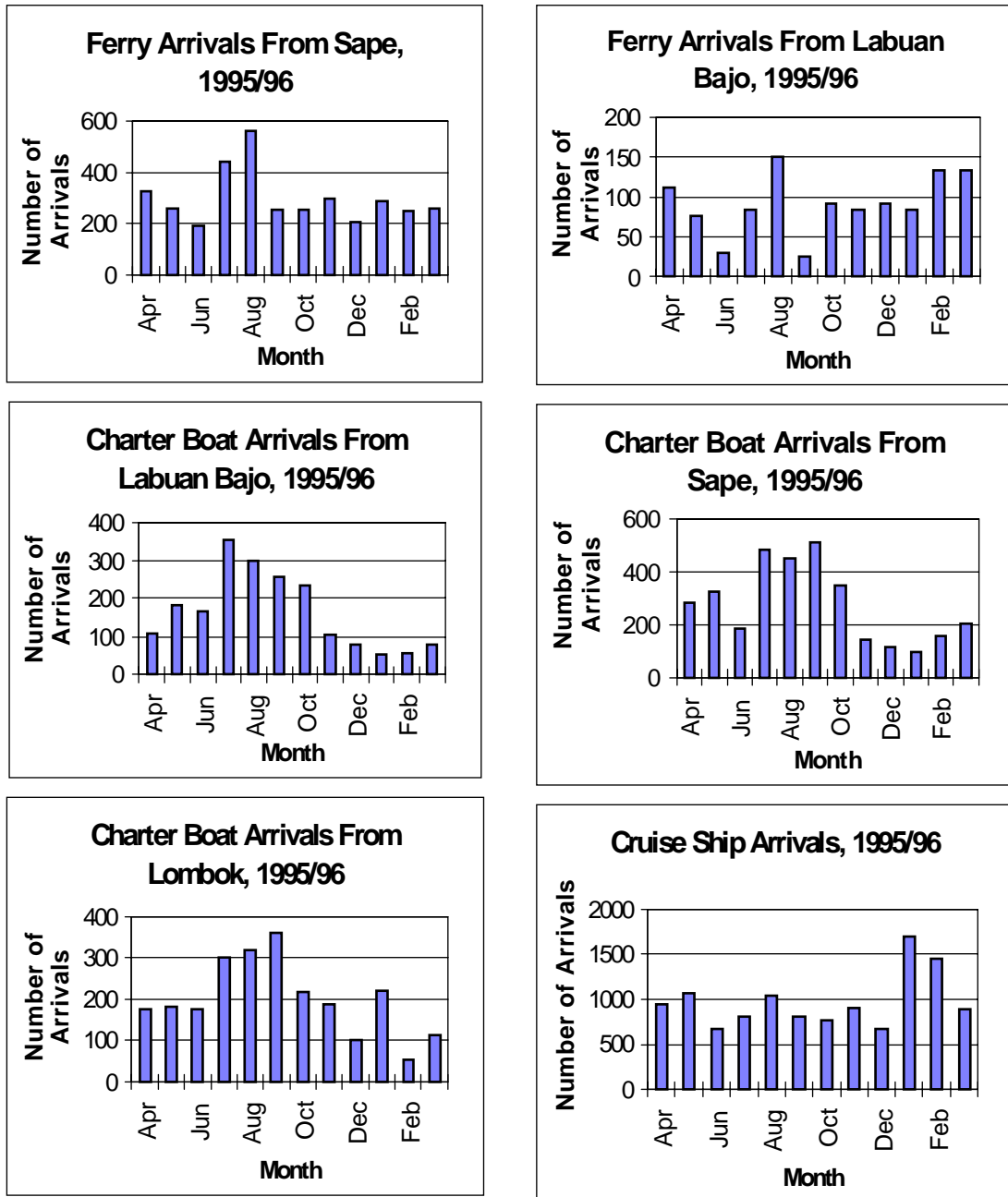
**Table 2.7 Breakdown of Visitors to Komodo Island by Mode of Transport, 1995-96.**



**Figure 2.8 Breakdown of Visitors to Komodo Island by Mode of Transport, 1995/96.**

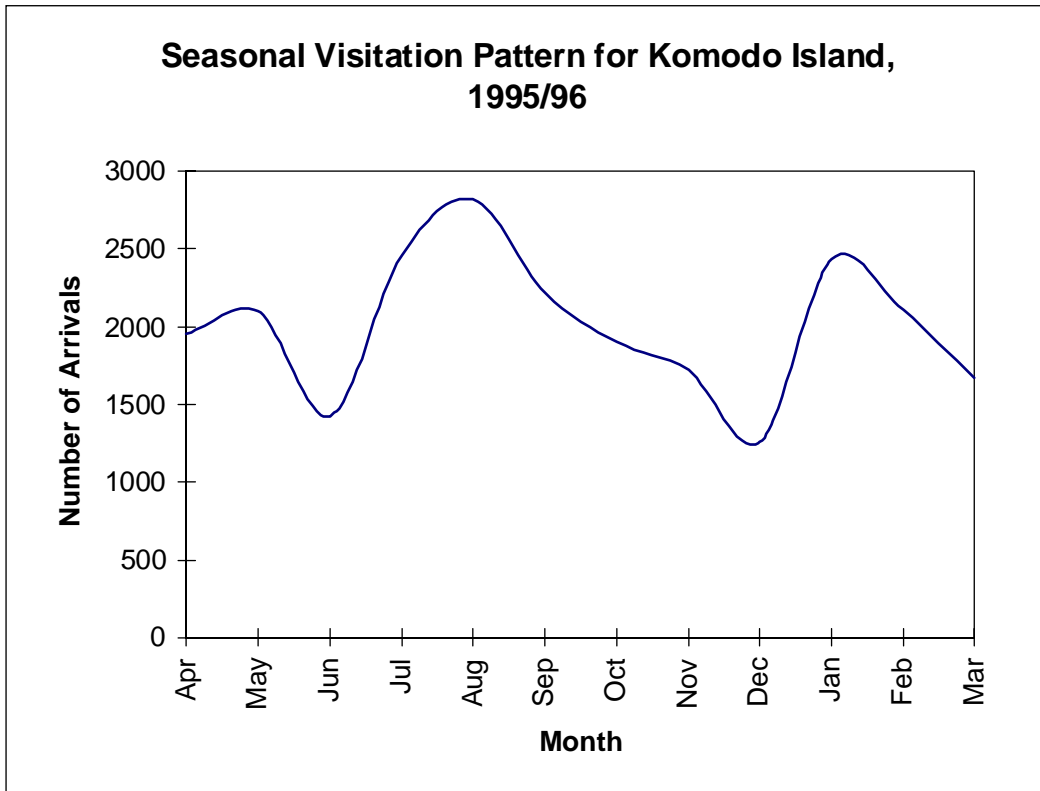
### 2.6.2 Relationship Between Transport Type and Seasonality

Monthly totals for arrivals by each type of transport for the year April 1995-March 1996 shown in Figure 2.9. Charter boat visits all show a peak between July and September. Ferry arrivals from Sape have a July and August peak, although arrivals from Labuan Bajo do not display any seasonality. Cruise ship arrivals, unusually, have a peak in January and February, with the rest of the year remaining fairly constant.

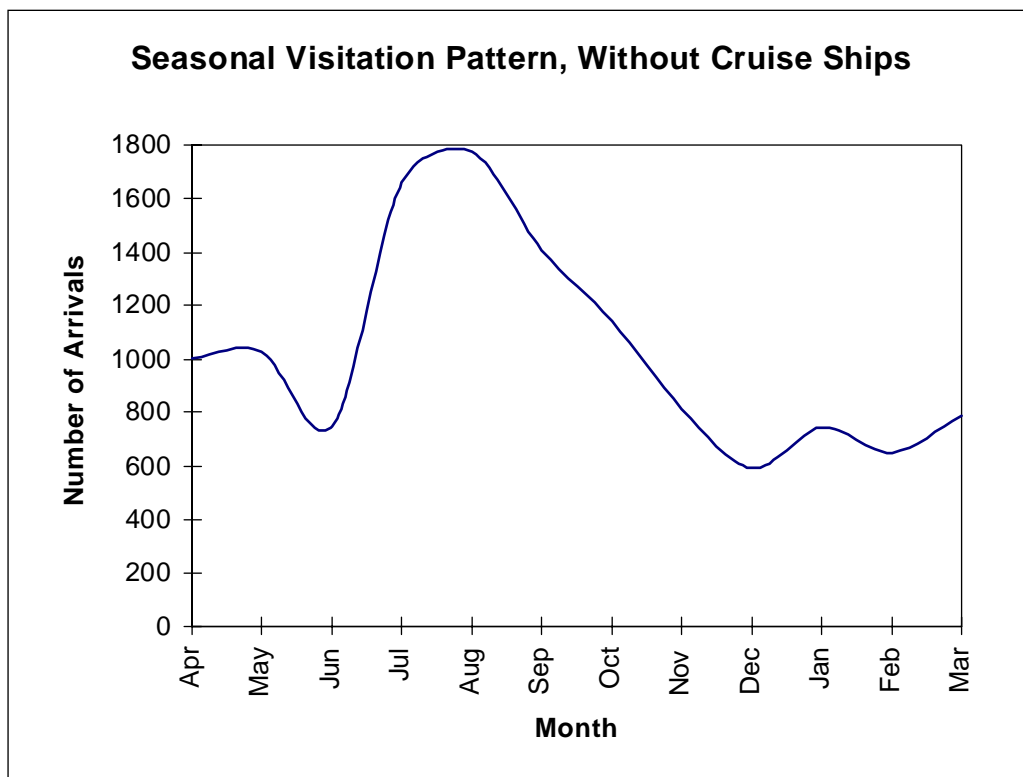


**Figure 2.9 Monthly Patterns of Arrivals of Visitors by Different Modes of Transport to Komodo Island, 1995/96.**

The 2-peaked seasonal visitation pattern displayed by visitors to Komodo island in 1995/96 (Figure 2.10) can be explained by reference to modes of transport. If cruise ship arrivals are removed from the data, the second peak in January disappears and a bell-shaped curve with a single peak in August emerges (Figures 2.11).



**Figure 2.10 Monthly Arrivals to Komodo Island, 1995/96.**



**Figure 2.11 Monthly Arrivals to Komodo Island, Without Cruise Ships, 1995/96.**

### 2.6.3 Relationship between Transport Type and Length of Stay

Data for overnight visitors on Komodo island for the year April 1995 - March 1996 were grouped according to mode of transport (Table 2.8). Virtually all ferry passengers stayed overnight, whilst no cruise ship passengers and only 0.3% of Lombok charter passengers stayed overnight. Of the local charter boat passengers, 17.4% of those from Sape stayed overnight whilst 7.2 % of those from Labuan Bajo did so.

Using bed night data, the average length of stay by mode of transport can be calculated (Table 2.8). Ferry passengers stayed for an average of 1.2 nights (1.2 from Sape, 1.1 from Labuan Bajo). Local charter passengers stayed for an average of 0.2 nights (0.2 from Sape, 0.1 from Labuan Bajo). The average length of stay of Lombok charter passengers was only 0.01 nights.

Mode of Transport	Total Visitors	Overnight Visitors	% of Visitors Overnight	% of Total Overnight	Bed Nights	Mean Length of Stay
Ferry Sape	3,588	3,557	99.1	66.5	4,243	1.2
Ferry Labuan Bajo	1,097	1,061	96.7	19.9	1,234	1.1
Charter Sape	3,296	572	17.4	10.7	634	0.2
Charter Labuan Bajo	1,968	141	7.2	2.6	188	0.1
Charter Lombok	2,407	15	0.6	0.3	15	0.0
Cruise Ship	11,727	0	0.0	0.0	0	0.0
<b>TOTAL</b>	<b>24,083</b>	<b>5,346</b>	<b>22.2</b>			

**Table 2.8 Relationship between Mode of Transport and Length of Stay for Visitors to Komodo Island, 1995/96.**

These findings are intuitive, given that charter boats and cruise ships offer on-board accommodation whilst the government ferry does not. Indeed, ferry passengers have no choice but to stay at least one night on the island, since only one ferry stops at the park each day in each direction, both at around noon. The very small number of ferry passengers who appear not to have stayed overnight may have found passage on a charter boat on the same day that they arrived.

However, these findings have implications for the development of tourism on the island. Given that accommodation is provided on charter and cruise ships, and that these tours have a scheduled timetable, visitors are given very little time in the park. The standard visit of 2-3 hours allows visitors to walk to Banu Nggulung and see the dragons at the viewing site, but nothing more. The low level of use of alternative trails on Komodo island (see section 2.4.2) is partially due to the limited amount of time which tour operators allow their clients in the park.

## 2.7 Towards a Tourist Typology

It is clear that mode of transport plays an important part in the way that visitors interact with KNP. This will have an effect on the environmental impacts and financial contribution which visitors make to the park. In addition, the mode of transport which visitors select will affect their interaction with the local economy surrounding KNP. The following is a summary of the characteristics of each mode of transport, with regard to their likely contributions to the park and the local economy.;

- Ferry

Independent travellers. Longest length of stay in the park, virtually the only visitors to stay overnight and to participate in guided walks other than that to Banu Nggulung. Contact with local communities on both sides of the park.

- Charter from Labuan Bajo and Lombok

Mostly independent travellers. Standard brief visit to Komodo island, very few overnight visitors. 95% of visitors to Rinca island travel by this method. Contact with communities to the east.<sup>2</sup>

- Charter from Sape

Virtually all package tourists. Tours booked through operators in Bali and Bima. Standard brief visit to Komodo island, very few visitors to Rinca island. Minimal contact with local community, mainly to the west (Sape).

- Cruise Ships

Affluent package tourists, embarking and disembarking in Bali or further afield. Minimal contact with the park (many are routed away from the cafeteria and shop), although they do constitute the majority of snorkellers. Isolated from any contact with local communities on either side of the park.

When considering the impacts which different types of tourist have for conservation and local development, certain differences emerge. Clearly, in terms of tourist spending within the park, independent travellers by ferry can be distinguished from other visitors. Similarly, in terms of environmental implications, ferry passengers (i.e. overnight visitors) will have a different effect to other visitors, although forms of marine damage are more likely to occur with other types of visitor. When considering the likely impact on the local economy, three classes of visitor can be identified; independent travellers (by ferry and charter), package charters (charter from Sape), and cruise ship visitors. However, within the independent traveller group, there will be differences between those that use charter boats and those that do not.

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<sup>2</sup> *although some charter visitors to Rinca will also visit Komodo by ferry, so may have contact with communities to the west as well.*

The situation is undoubtedly complex, and many other factors besides mode of transport will determine the impacts which different tourists have. However, mode of transport is a useful and practical indicator for differentiating between tourist types. In the following three chapters, the classes of visitor identified above, based on mode of transport, will be compared with regard to their environmental impacts (Chapter 3), contribution to park income (Chapter 4), and contribution to the local economy (Chapter 5).

## 3. VISITOR IMPACTS AND MANAGEMENT

### 3.1 Introduction

This chapter examines visitor impacts, and the monitoring and management of these impacts, within Komodo National Park. It attempts to assess the environmental implications of tourism within the context of the conservation priorities of the park and the additional environmental threats posed to the park by external factors. This chapter addresses principal objective (c) of the project;

- identify means of improved visitor management in order to decrease the adverse ecological effects of tourism.

In the absence of comprehensive data sets spanning several years, and baseline information against which to compare the current situation, a fully quantitative analysis of the environmental impacts of tourism is difficult.<sup>1</sup> A prolonged period of ecological fieldwork was beyond the scope of this project, and so an alternative approach was employed.

Information regarding visitor activities, impacts, monitoring and management was collected using a questionnaire, administered as semi-structured interviews with key personnel, i.e. park rangers and managers.<sup>2</sup> The format was adapted from the instrument used by Giongo et al (1993) to examine visitor management in protected areas globally. In addition, a rapid environmental appraisal of site and visitor management was carried out. This was conducted as a modified form of field transect whereby a park ranger or other key personnel travelled around a site with an interviewer and relayed details of management, impacts and mitigation in response to the visual prompts of his surroundings. The interviewer made personal observations while undertaking these transects.

Besides the collection of factual information on the management and monitoring of visitor activities and impacts, the principal objective of the survey was to establish the relationship between tourism and the environment, and the relative importance of tourism impacts within the broader environmental context of the park and its surroundings. To this end, interviews focused on the following series of questions.

- What are the conservation priorities, and other values, of the park?
- What environmental problems does tourism present, and is it in conflict with the conservation priorities of the park?
- What are the other environmental threats to the park, how important are tourism impacts in relation to other threats, and what relationships exist between tourism and other impacts?
- What would you change about tourism in the park, and why?

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<sup>1</sup> for a fuller discussion, see the comparative report, Goodwin et al., 1997.

<sup>2</sup> see Methodology report, Goodwin et al., 1996.

After an initial discussion of conservation priorities, visitor activities and their implications for the environment are presented. Specific impacts that have been identified by park staff are discussed and, where data is available, some quantitative analysis is carried out. These impacts are then contextualised within the wider framework of environmental pressures on the park. Current procedures for monitoring and management of tourism are evaluated, and recommendations are made for improving visitor management.

### **3.2 Values and Conservation Priorities**

#### **3.2.1 Biodiversity and Conservation Values**

The terrestrial species richness of the park is moderate. Plant species richness is relatively low, with some 102 different species recorded, whilst bird and mammal species number 72 and 7 respectively. This is because the park consists of small islands, lacking the extensive rainforest of the larger islands of the archipelago. However, the remnants of moist forest from earlier eras are interesting and diverse.

The marine environment is very species rich owing to the presence of a substantial fringing coral reef system. It is considered one of the most species-rich areas of reef in Indonesia, and one of the richest areas in the world for fish, containing almost 1000 species (Holthus, 1995).

What the park lacks in terrestrial species richness it makes up for in special characteristics. It includes some of the least-disturbed remaining dry lowland forest of the Lesser Sundas, and contains a limited yet characteristic Wallacean transition fauna.

The rationale for the inclusion of the park on the UNESCO World Heritage list was as a habitat for threatened species. The Komodo dragon, is listed by the IUCN as vulnerable, and is virtually endemic to the park. Other endemic species include *Rattus rintjanus*, and listed species include the sulphur-crested cockatoo (endangered), the blue whale (endangered) and the dugong (vulnerable) (IUCN, 1996).

#### **3.2.2 Socio-Economic Values**

The major economic value of the park for surrounding communities relates to its considerable marine resources. Fishing is the mainstay of the local economy in both the subdistrict of Sape, to the west of the park on Sumbawa, and the subdistrict of Komodo, which includes the park and the adjacent part of western Flores to the east. Local people are allowed to fish within the waters of the park, but it is clear that overexploitation is occurring, with many boats from outside the local area operating the park, and a number of destructive fishing practices being used (see below). Both pelagic and sedentary marine resources are utilised, and whilst the local community relies more on the former, the non-local fishermen primarily exploit the latter (Pet &

Djohani, 1996). The villagers of Kampung Komodo collect squid and fish for drying and salting, which takes place on the island. They also carry out an activity called *meting*, which involves the collection of marine products (sea cucumber, shells, pearls, fish) from specific coastal sites around the island. Shrimp is also harvested for the production of *terasi* (Sudibyo, 1995a). There is a commercial pearl farm situated on Rinca island.

Terrestrial resources include wildlife (principally the Timor deer, *Cervus timorensis*, and water buffalo, *Bubalus bubalis*) and forest products (tamarind, firewood, building wood and bamboo, mangrove wood for squid drying boards). These have been utilised both by villagers within the park and outsiders. Some cultivation has occurred on land around villages within the park. The Komodo dragons do not appear to have been hunted, probably for cultural reasons.<sup>3</sup>

Since the designation of the park in 1980 tourism, based on the presence of the Komodo dragon, has emerged as a means of realising the aesthetic and amenity values of the park.

### 3.2.3 Current Prioritisation of Values

The current designation of the area as a National Park prioritises conservation and non-consumptive utilisation in core areas. The original management plan (Blower et al., 1977) even recommended the relocation of some village communities outside the park, and the restriction of the remaining communities to enclaves within the protected area. Only three communities currently remain within the park, with restricted rights to terrestrial resource utilisation.

According to Act No.5 of 1990, 'Concerning the Conservation of Living Resources and their Ecosystems' (Government of Indonesia, 1990), a National Park is 'a nature conservation area which possesses native ecosystems, and which is managed through a zoning system which facilitates research, science, education, breeding enhancement, recreation and tourism purposes' (Chapter I, Article 1).

Much of the terrestrial area of the park is Core Zone, within which any form of utilisation is prohibited. Tourism facilities may be developed in the Utilisation Zone of national parks. Much of the marine part of the park is a Buffer Zone in which consumptive utilisation is permitted. Whilst utilisation of living resources and their ecosystems is permitted outside of the Core Zone, it 'shall take place with strict maintenance of the conservation function of the area' (Chapter VI, Article 27).

The original management plan for the Park (Blower et al., 1977) refers to five priorities for management; conservation, research, tourism, education and interpretation, and estate management. All of these refer to the terrestrial part of the park, since it was not until 1984 that the extensive marine buffer zone was included. Whilst usufruct rights to terrestrial resources have been restricted by the establishment of the park, those to marine resources have not been, and subsequent overexploitation

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<sup>3</sup> There is a local creation myth which suggests that the Ata Modo people and the dragons are siblings..

has occurred. However, a new management plan was completed in 1996 and it is anticipated that this will include guidelines for the sustainable utilisation of marine resources.

### **3.3 Visitor Facilities and Activities**

Visitor facilities in Komodo National Park are concentrated at Loh Liang on Komodo Island and Loh Buaya on Rinca Island (see Map 2).

#### **3.3.1 Komodo Island**

Loh Liang is a large circular bay on the east side of Komodo. The visitor facilities, rangers quarters and park office are situated in a camp 2 kilometres north of Kampung Komodo, the only village on the island. Access to the camp at Loh Liang is by boat, and visitors disembark onto a wooden jetty which is a short walk from the camp. Larger vessels must anchor in the bay and ferry their passengers to the jetty in inflatables or other small vessels.

Loh Liang currently incorporates the following facilities for visitors;

- **Main office**, where visitors pay their admission fee and complete the visitor book.
- **Interpretation centre**, a new building housing biological exhibits from the island and information boards detailing the history of the islands.
- **Information boards**. Situated outside the main office, these board provide information and advice for visitors, together with an orientation map.
- **Rest room**, newly constructed for day visitors
- **Sheltered platforms**. Open-sided and with thatched roofs, two resting platforms are situated on the edge of the beach allowing visitors to rest and picnic with a view across the bay.
- **Cafeteria**. A large, open-sided building seating 40-50 people, the cafeteria sells drinks, simple meals and a selection of other supplies and provisions, as well as souvenirs and postcards.
- **Accommodation**. Overnight accommodation is available in six lodges, although at present one of these is under renovation, and another is under construction. These lodges are divided into several rooms and house approximately 50 visitors. They include toilet and ablution facilities.

A limited network of trails is available for guided walks by visitors outside of the camp. Most activity is concentrated along a 4km circular trail to a viewing site and back. The facilities provided along this trail are;

- **Orientation signs**, outlining the route for visitors at the trail head.
- **Footbridges**, constructed over small gullies to provide an easier and safer walk.
- **Resting platform**. An open-sided shelter situated beside the trail 1.1kms from Loh Liang, with a litter bin.
- **Viewing enclosure**. A fenced enclosure overlooking a dry river bed, with a shelter and interpretation board.

### 3.3.2 Visitor Activities on Komodo Island

Current visitor activities on Komodo island outside the area of the camp at Loh Liang are limited to guided walks along designated paths. The primary objective for most visitors is to view the Komodo dragon, although the path network offers the opportunity for birdwatching and other gameviewing. The path network itself is limited to the following destinations, from Loh Liang (see Map 2);

- **Banu Nggulung**. Previously the baiting site for the Komodo dragon, a 4km circular route through gallery forest.
- **Gunung Ara**. The second highest peak at 530m, offering breathtaking views over the islands of the park and beyond. 13km there and back, including steep climbs on exposed ridges.
- **Gunung Satalibo**. The highest mountain, an extension of the Gn.Ara path, usually involving an overnight stop.
- **Poreng**,
- **Loh Sebita**, a bay north of Loh Liang.

However, the network of paths other than to the old feeding site at Banu Nggulung are infrequently used. Only 2.18% of visitors to Komodo Island (527 people) used these other trails in 1995/96 (see Chapter 2 above). It is also possible to visit Kampung Komodo, the only local settlement on the Island, by following the beach at low tide.

Aside from guided walks, it is possible for visitors to Loh Liang to snorkel or scuba dive over coral. This activity occurs at Red Beach (see Map 2) and involves a short boat ride from Loh Liang. No facilities were provided for snorkelling until August 1996, when snorkelling equipment and boat hire became available from the Koperasi at Loh Liang.

### **3.3.3 Rinca Island**

Facilities on Rinca are concentrated at Loh Buaya. This is a scaled down version of Loh Liang. Only two overnight lodges exist, and the cafeteria only serves drinks and snacks. There are no designated viewing sites for visitors to see Komodo dragons, although a network of hiking trails provides scenic views across the island as well as the opportunity to see a variety of wildlife.

From Loh Buaya there exists a circular trail over moderate terrain, passing through monsoon forest and savannah grassland and including scenic views across the island. A series of short cuts and extensions allows a range of distances up to 7kms.

16.7% of visitors (4,832 people) to the park in 1995/96 visited Rinca island, of which less than 1% (42 people) stayed overnight (see Chapter 2 above).

## **3.4 Environmental Implications of Tourism**

In the following discussion, the impacts of tourism in Komodo National Park have been divided into four categories according to their effect on fauna (wildlife disturbance and habituation), the terrestrial habitat (trail degradation and habitat damage), the marine habitat (coral damage and pollution), and fresh water consumption. A fifth category refers specifically to the problem of litter.

### **3.4.1 Disturbance and Habituation of Wildlife**

Wild animals may be directly affected in two ways by non-consumptive tourism. The presence of people may disturb the animals, either interrupting their feeding or reproductive patterns, or causing them to move elsewhere away from the disturbance and thus affecting their ranging patterns. Alternatively, wildlife may become habituated to human presence, possibly becoming reliant on food they receive or scavenge from visitor areas, which can have additional effects on animal health and behavioural interactions. In addition, animal species may be affected indirectly by an impact on their habitat, water supply or prey species.

Disturbance of wildlife by visitors walking along trails is thought to be insignificant in KNP. Deer, wild boar, and Komodo dragons were all seen close to the Banu Nggulung trail, and ground-dwelling Megapode birds have built mounds both in the Loh Liang camp and adjacent to the Banu Nggulung trail. On all but the busiest days, the trail is only used between 7-10am and between 4-6pm. If wildlife were assumed to be disturbed up to a distance of 100m to each side of the trail (an overcautious estimate), then a total of  $<0.8\text{km}^2$  (800ha) of forest would be disturbed by visitors, twice a day. The area of monsoon forest is estimated to be 25% of the total area of Komodo Island (30,000ha), a total of  $7.5\text{km}^2$  (7,500ha). Thus only 1% of the monsoon forest, and virtually nowhere else, on the island is disturbed by visitors.

At the height of the artificial feeding of dragons, a maximum of 28 dragons were seen at Banu Nggulung (see below). In addition, no more than six have ever been seen at Loh Liang. This suggests that, out of a total estimated population of 1687 dragons on

Komodo Island<sup>4</sup>, a maximum of 34 (2%) have ever come into regular contact with tourists or become minimally habituated. Currently, in the absence of artificial feeding, a maximum of 6-8 dragons are seen at Banu Nggulung, suggesting that less than 1% of the island population come into regular contact with tourists.

Habituation of wildlife, both deer and dragons, is certainly in evidence, but its impact on the populations of these species is not yet understood. The following discussion deals with habituation in the visitor camps. That which may occur at the Banu Nggulung viewing site is dealt with separately, in the subsequent section.

#### **3.4.1.1 Habituation at Loh Liang and Loh Buaya**

At the visitor camp at Loh Liang, both dragons and deer cohabit without fear or aggression towards people or each other. The reason for their presence is the waste food produced by the cafeteria. Large amounts of old rice and noodles are thrown out of the window of the kitchen every day after meals. Deer and dragons congregate in the area below the window to feed on these scraps.

There are three dragons which come daily to the camp from the forest nearby, and remain there often until after dark. They are extremely docile, showing no interest in their preferred prey species, nor in the many visitors who approach to within touching distance. They appear well fed from the cafeteria scraps, which is obviously the cause of their presence, despite suggestions that the camp is simply part of their territory in which they like to bask during the day.

There are a number of deer which are seen regularly in the camp. They too feed on the scraps from the cafeteria, as well as occasionally being hand fed by visitors and staff. They are very tame and show no fear of the dragons, although they remain alert to them and will capitulate to them at the cafeteria window. A number of the deer in the camp are in poor condition, limping with wounds and abscesses. It is tempting to suggest that they are seeking sanctuary in the camp, where the dragons are not interested in them and they do not risk being eaten.

At both Loh Liang and Loh Buaya, a number of juvenile dragons are often seen looking for food. At present they are still quite timid, and run away from people. Habituation, dependency and aggression to people may become a problem as they grow older.

#### **3.4.2 Dragons at Banu Nggulung - Artificial Feeding and its Cessation**

A principal concern associated with supplementary feeding of wild animals has been the associated danger, to people, of habituated animals acting aggressively in their search for food items (e.g. elephants and baboons in sub-Saharan Africa). However, there are also a number of effects on the behaviour and welfare of target species, especially where regular baiting is practised. Habituation to baiting at a regular site can result in behavioural shifts, particularly: (1) increased local densities in a

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<sup>4</sup> 1995 estimate, (TNK, 1995).

population; (2) increased intraspecific aggression resulting in increased injury and mortality rates; and (3) nutritional dependence on the bait (McDougal, 1980).

Up until August 1994, dragons were baited with goats at the Banu Nggulung feeding site. This guaranteed the presence of dragons at the site and provided a spectacle for the visitors. However, it was considered unhealthy for the dragons because they were thought to be becoming dependent on this feeding and were no longer hunting for themselves. For this reason, baiting was discontinued at the end of 1994. What follows is an attempt to quantify some of the effects of feeding and its cessation on the dragons.

### **3.4.2.1 Data Collection**

The most comprehensive field study of the Komodo dragon was carried out by Auffenberg between 1969 and 1972 (Auffenberg, 1981). Auffenberg noted that 'in some areas our information is still sparse: physiology, demography and reproduction data are scanty,' (Auffenberg, 1981), and this remains true 25 years after his original fieldwork.

The KNP staff have in recent years established procedures for monitoring the Komodo dragon population. Two forms of survey are carried out regularly; an annual population survey on Komodo and Rinca islands, and a daily count of dragon group size at the Banu Nggulung viewing site. The data from survey and monitoring exercises undertaken by KNP staff between 1993 and 1996 were collected during visits to the park in April/May 1995 and April 1996.

Three annual surveys of the dragon population have been undertaken by KNP staff to date. These occur in October each year, having commenced in 1993. Permanent plots have been established (47 on Komodo, 29 on Rinca, see map). At each annual survey, bait is secured at each permanent plot, and an observer placed nearby. The number of dragons visiting the bait over a 24hr period is recorded, along with the sex and age class of each individual.

Daily counts of the number of dragons at the Banu Nggulung viewing site are conducted by KNP staff when visiting the site with tourists. These counts have been recorded since 1990. Up to three independent records are collected daily, corresponding to site visits in the morning (7-10am), noon (11am-1pm) and afternoon (2-4pm). The most common time for visits is in the early morning, when dragons are most active and the temperature is cooler for visitors to walk in. Hence, most records of counts relate to that time of day. For the purposes of this study, the maximum count for any one day is used in the analysis, regardless of the time of day it was taken.

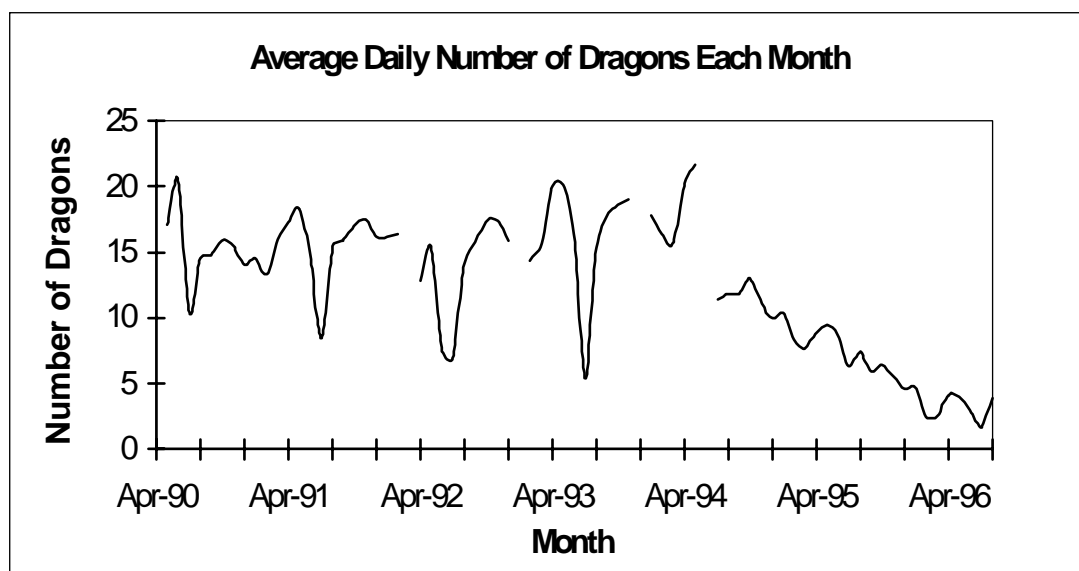
### 3.4.2.2 Results

The average daily dragon count per month, from April 1990-August 1996, is shown in Figure 3.1. Two principal patterns emerge from this data:

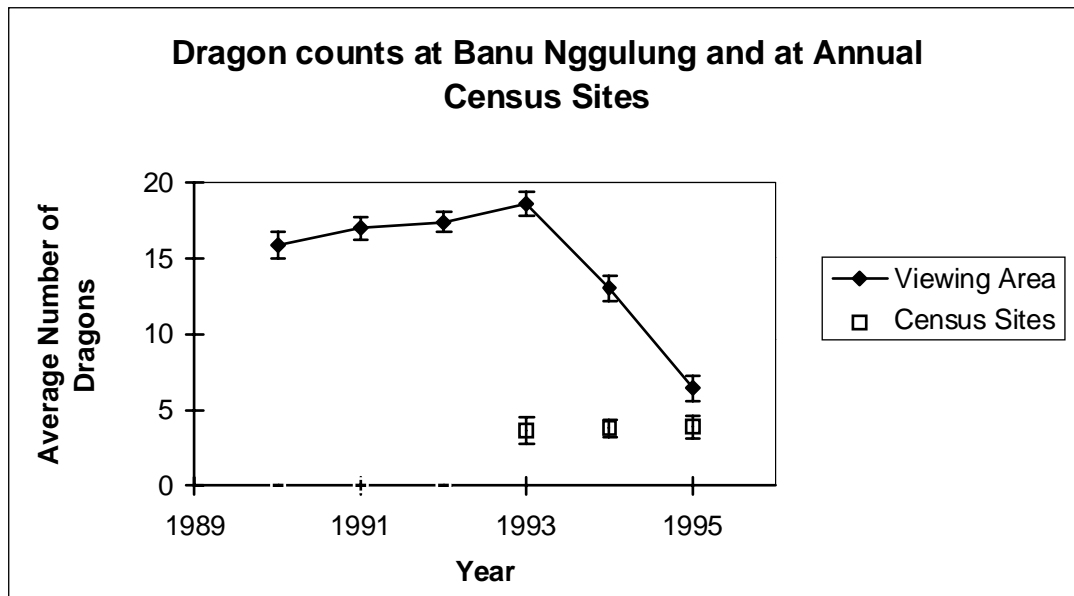
- There is a seasonal pattern to the counts, with a trough each year during July. This corresponds to the breeding season in Komodo dragons (Auffenberg, 1981), and suggests that, despite the presence of food at the site, individuals disperse into the forest to breed. This would imply that the provision of food did not interfere with the natural behavioural cycle associated with breeding.
- Whilst feeding continued at Banu Nggulung, there was a constant, high concentration of individuals at the site. However, upon the cessation of feeding, the number of individuals seen at the site began to fall, and continued to fall to below the level of the seasonal troughs witnessed in previous seasons.

The average counts for the 47 sites of the annual census survey, carried out each October, were compared with the average daily counts for October at Banu Nggulung, from 1990-1995. The results, with 95% confidence intervals, are shown in Figure 3.2. Two patterns emerge from this data:

- In the years when feeding occurred at Banu Nggulung, a significantly higher number of dragons were attracted to Banu Nggulung than were attracted to the baits at the annual October survey sites.
- Upon cessation of feeding, the number of dragons seen at Banu Nggulung fell to within one standard deviation of the average count at the annual October survey sites.



**Figure 3.1 Average Daily Dragon Sightings Each Month at Banu Nggulung, Komodo Island, April 1990 - August 1996.**



**Figure 3.2 Average Daily Dragon Counts at Banu Nggulung in October Compared With Average census Site Counts in October, 1990 - 1995.**

### 3.4.2.3 Discussion

These results would suggest that a number of dragons did become habituated to the artificial feeding at Banu Nggulung, in that an artificially high density of dragons was maintained at the site. Individuals scavenge over wide areas and can travel up to 8km to carrion. Furthermore, their foraging pattern leads them to return to specific sites that can be expected to produce food (Auffenberg, 1981). It is likely that individuals from a wide area converged on the Banu Nggulung site and remained in the vicinity whilst food was readily available there. Given that most adults are transient nomads rather than habitual residents, the artificial feeding may have significantly altered the dispersal pattern of individuals, and thus their interactions with other individuals and their environment.

No data is available on the additional effects of habituation, namely increased intraspecific aggression and dependency on artificial food, on the dragons at Banu Nggulung. However, dragons are cannibalistic on smaller size classes, and the most effective intrinsic mechanism for dispersion within equal size classes is aggression (Auffenberg, 1981). Therefore it seems likely that increased aggression would have been evident and may have resulted in increased mortality or decreased fitness of individuals. An additional health factor which was of concern to the park staff was the risk of spinal damage to individuals straining upwards to feed on the goats, which were suspended from the branch of a tree.

Upon cessation of the artificial feeding in August 1994, the number of dragons regularly seen at the site began to decline. This would suggest that individuals had not become so dependent upon feeding that they were unable to resume natural foraging

behaviour. The habituation to feeding appears to have been a temporary phenomenon. However, two individuals which remained at the site were observed to become emaciated and to subsequently die after the cessation of feeding. Whilst this may have been age or disease-related, it could also have been a result of irreversible habituation to artificial feeding.

The decision to discontinue the artificial feeding of dragons at Banu Nggulung was based to a great extent upon ethical grounds. Whilst data is scarce, it is clear that implementing the decision has reduced the disturbance of tourism to the dragon population, and this is of net ecological benefit. However, it has resulted in a situation where the management of the tourist experience has not adapted to the changing circumstances brought about by the cessation of feeding. The primary visitor activity (a 90 minute round trip to the ex-feeding site) has remained unchanged, whilst the experience (viewing a certain number of dragons at a certain level of activity) has undoubtedly done so. This has fairly severe implications for visitor management which need to be addressed. They are discussed in the next chapter.

### **3.4.3 Trail Degradation and Soil Erosion**

Wherever people walk regularly, paths will be worn into the environment and soil compaction and erosion can occur. In KNP the limited network of paths, and the restriction of visitors to guided groups, confines soil damage to a very small area.

In general, path degradation is not severe in KNP. Being a dry environment, the paths do not become muddy and rutted. As a consequence lateral spread of the paths, due to visitors skirting around muddy areas, is not apparent either. The condition of paths in parks in wetter environments, such as Ujung Kulon in West Java, is greatly inferior to that of paths in KNP (Sudibyo, *pers.comm.*).

By far the greatest visitor pressure occurs on the trail to Banu Nggulung. Over 25,000 people walked along this trail in 1995/96. Despite this, it is in good condition. The path was mapped using a Garmin handheld GPS unit. Path bare widths were measured every 100m along the trail, the average width being 126.28cm (n = 39, s.d. = 51.15cm). The trail is entirely flat, so erosion and gullying is not apparent. Where it does cross small channels, wooden bridges have been constructed, more for ease of passage than to prevent bank erosion. The trail is completely bare, and the dusty soil is hard and compact and, in places, parched and cracked. However, forest clearings exhibit large areas of naturally parched, bare earth in several places along the trail, possibly due to the effects of Komodo dragons basking there. This suggests that the current level of degradation on the trail is not unnatural for the environment in which it occurs.

One problem segment is apparent on the path. Where the path leaves the viewing enclosure, it descends steeply into a dry, gravel stream bed which it subsequently follows for roughly 500m. The descent into the stream bed, although brief, is somewhat treacherous and in danger of becoming eroded.

The trail to Gunung Ara was also walked and mapped during the present visit. It received less than two percent of the number of visitors walking to Banu Nggulung in 1994/95, with an average of less than two groups (7 visitors) a week. Consequently it appears rather overgrown and in places the trail is not at all apparent. At the current visitor pressure, environmental impact along this trail is negligible. The same is undoubtedly true of the other paths followed intermittently by visitors.

The visitor trail on Rinca Island is the second most used trail in the park after Banu Nggulung, receiving over 4000 visitors in 1995/96. A circular trail was walked on Rinca, mapped using GPS and visually assessed. This is the basic route at the heart of a network of short cuts and extensions which make up the visitor trail network on Rinca. It is very narrow and, where it passes through tall savannah grass, virtually indistinguishable from its surroundings. The exceptions to this are on steeper slopes and bare hilltops. Where the trail traverses a steep slope, it has become very eroded, forming a narrow gully roughly 30cms deep in the sandy soil. On downhill sections of the trail, it has widened considerably, due to visitors zigzagging in small traverses down the slope to ease the pressure on their knees. This is particularly apparent where the grass is short and cover sparse, facilitating such trail spread. On exposed hill tops where the grass is short and cover sparse paths tend to fragment and rejoin, creating lateral spread. These paths are also more apparent from a distance, creating an aesthetic scar on the landscape.

#### **3.4.4 Habitat Change, Degradation and Tree Loss**

Human presence can have a variety of impacts on vegetation. Development often results in the removal or overutilisation of tree species. Trampling and soil compaction may lead to a loss in plant diversity, biomass and health. A loss in recruitment of woody species through damage to juveniles can have long term effects leading to habitat change. The import of exotics, whether intentional or accidental, may cause the displacement of local indigenous species.

In Komodo National Park, the geographic spread of visitors is very restricted. Much of the terrestrial part of the park is Sanctuary Zone and out of bounds to visitors. Most of the remainder is Wilderness Zone in which visitors are restricted to trails whilst accompanied by guides. The Intensive Use Zone, within which tourism development is permitted, is restricted to Loh Liang and Banu Nggulung on Komodo Island and Loh Buaya on Rinca Island. On Komodo Island, over 97% of visitors remain within the Intensive Use Zone, which effectively covers less than 1% of the area of the island.

##### **3.4.4.1 Monsoon Forest**

The geographical extent of tourism in the park limits the impact on vegetation. The maximum use occurs in confined areas within the monsoon forest. There has been no removal of trees within these areas associated with tourism, although the pressure of large numbers of visitors could have an impact on the vegetation within these areas, altering the composition of the habitat over the long term.

Tree regeneration in the Loh Liang visitor camp is one concern. The density of visitors concentrated in this area could be damaging seedlings and juveniles, such that recruitment will not advance at its natural rate. In addition to visitors, there is an unnatural density of deer within the camp that have become habituated to the presence of people (see above). Hoof pressure and browsing pressure may have an impact on forest regeneration.

In an effort to protect the habitat in both Loh Liang and Loh Buaya camps, paths are clearly defined and bordered with small rocks. This confines many visitors to the paths. However, alternative trails are beginning to be worn in to the ground away from these marked paths, and visitors do tend to wander off the paths to approach habituated wildlife.

Habitat change along visitor trails will be minimal. The only trail used with any frequency is to Banu Nggulung, which receives regular, moderate use. Since this trail is under four years old, lateral spread has not yet occurred to any great extent that could cause significant denuding of vegetation. Nor is wildlife disturbed away from the forest surrounding the trail (see above). It is not known whether wildlife has a significant impact on the forest habitat, but if it were to have, a distinct lack of wildlife surrounding the trail would give cause for concern.

#### **3.4.4.2 Mangrove forest**

The only place where visitors come close to mangrove forest is at Loh Buaya, on Rinca Island, between the pontoon and the visitor camp. A plan was submitted to route the visitor path through the mangrove to provide an interesting interpretive trail. However, the potential damage to this fragile habitat of a visitor trail was recognised before it was constructed, and the path now bypasses the mangrove.

### **3.4.5 Impact on the Marine Environment**

#### **3.4.5.1 Coral reef damage**

The snorkelling site an Red Beach was visited and the opinions of tourists surveyed. It is evident that the shallow reef is being seriously damaged by snorkellers trampling on it. Visitors are ignorant of the damage they are causing due to the lack of a warning sign or any form of verbal instruction from their tour guides. In addition, there has been concern over the damage resulting from charter boats anchoring off red beach. This problem is being addressed by The Nature Conservancy (TNC), which has provided four permanent concrete moorings for charter boats to use when visiting the beach.

#### **3.4.5.2 Marine pollution**

The increased boat traffic in the waters of the park due to tourism will undoubtedly result in greater pollution. Fuel, sewage and litter are deposited into the sea, the latter washing up onto the shore as well as posing a threat to marine life.

### **3.4.6 Fresh Water Consumption**

The presence of visitors will lead to an increased consumption of fresh water, which may result in local shortages. The park has a very dry ecosystem, with little surface water. Supplies for the visitor camps at Loh Liang and Loh Buaya have to be piped from nearby springs. These supplies will not be able to sustain any great demand for fresh water for visitors or villagers on the islands.

Water for Loh Liang comes from a spring located at the head of a valley above Kampung Komodo. The pipe is a twelve year old extension to a pipe established in 1974 which supplies the village. Conflict with the village over the use of this resource results in almost daily interruptions to the Loh Liang supply. Villagers regularly break the pipe either out of malice or to exploit the supply themselves. In addition, the precarious route of the exposed pipe down the valley from the spring leaves it exposed to damage from rock falls and land slips.

It has been suggested that the diverted water has resulted in a greening of the Loh Liang visitor camp, since the waste water from showers and toilets seeps into the ground from septic tanks located in the camp.

Water for Loh Buaya is piped a short distance from a small stream which has been dammed to provide a water hole for wildlife such as buffalo, which were observed drinking at the hole. An outlet pipe feeds into a small concrete enclosure from where the water is piped to the camp. At present the stream serves the needs of both wildlife and people.

### **3.4.7 Litter**

The uncontrolled spread of litter in national parks has a variety of negative impacts. It pollutes the environment, particularly the soil, it can be a fire hazard, and it poses a danger to both terrestrial and marine wildlife.

In KNP, any combustible solid waste which is collected is burnt. Other rubbish is supposed to be transported off the island. Litter bins are provided within the Loh Liang camp and at the shelter along the Banu Nggulung trail. Unfortunately, the presence of litter bins merely encourages visitors to leave litter rather than take it away with them. Without regular removal, the litter quickly spreads from the bins. In addition, both deer and juvenile dragons were observed scavenging from the bins.

## ***3.5 Environmental Impacts in Context: Other Problems***

Tourism in KNP is confined geographically, and is essentially non-extractive and non-consumptive. Disturbance of wildlife is minimal, and the effects are more likely to affect tourism safety and enjoyment rather than the survival and well-being of the wildlife as a whole. This is not to suggest that there are not environmental concerns associated with tourism in KNP, especially in the long term. However, at the present level it is not having a dramatic negative effect on the conservation of the wildlife and habitats of the Park.

There are other factors which are of greater concern in KNP with regard to conservation and environmental protection. Perhaps the most important impact that tourism has is in taking up much of the scarce time resources of the Park staff, who also have to deal with these other problems.

### **3.5.1 Poaching and Feral Dogs**

The proposed management plan for the park (Blower et al., 1977) recognised that “dogs are one of the most serious threats to *Varanus komodoensis* and should be prohibited.” During 1994/95 there were 4 poaching incidents in the Park (Kodhyat, *pers. comm.*, official records). Poachers come to hunt the deer with rifles and hunting dogs, some of which remain on the Islands and become wild, presenting a threat to the Komodo dragon. However, Komodo dragons themselves are not hunted. The impact of hunting and feral dogs on the prey species of the dragons, such as the deer and wild pigs, is cause for concern. It also presents difficulties for the rangers who are ill-equipped to deal with armed poachers, and are often outnumbered.

### **3.5.2 Wild Fire and Deliberate Burning**

There were four fires in the park during 1994/95 (Kodhyat, *pers.comm.*). The dry savannah environment is susceptible to natural or accidental burning, and is also deliberately burnt to flush out deer by poachers. Fire quickly spreads out of control and can sweep over an entire island in a very short space of time. Between 1990 and 1992, the extent of fire damage increased from 909ha to 4,556ha (Lilley, 1995). Despite being somewhat fire-adapted, the vegetation of the Park will not be able to withstand such an increased frequency of man-made fires. Again, the rangers are unable to deal with such an eventuality.

The consequences of a large grass fire are evident from the recent history of Padar Island. Although the some of the dragons were able to escape, the deer on the island were wiped out, either by fire or increased predation due to a lack of cover. This may have caused the dragons to become cannibalistic, and they too went locally extinct (Lilley, 1995).

### **3.5.3 Overfishing and Coral Blasting**

The marine environment attracts many fishermen, from as far away as Lombok as well as from the villages within the Park. Fishing for squid at night using pressure lamps forms the mainstay of the income of the villagers of the Park, but there is no quota based on sustainable utilisation.

Coral bombing incidents recorded by the KNP staff rose from 65 in 1991 to 121 in 1992 (Lilley, 1995). In 1994/95 there were 101 incidents, and one guard was shot (Kodhyat, *pers comm.*). This is an extremely destructive practice, causing massive reef damage and killing a great deal of marine life. It is estimated that coral bombers can make up to Rp1 million (US\$450) from the catch after a night's activity. Fishermen have also been caught using potassium cyanide to catch fish.

It is clear that marine impacts associated with the fishing industry are the main threat to the biodiversity of the park. These are currently being addressed by the work of TNC in conjunction with the park authorities. Sustainable fishing practices have been identified and an effort is being made to implement them (Pet & Djohani, 1996).

### **3.6 Monitoring and Managing of Visitor Impacts**

#### **3.6.1 Current Monitoring Procedures**

At present, visitor statistics and data on visitor use patterns are collected meticulously. This is a relatively simple task since all visitors must pass through the main office to sign in, all groups are accompanied by a guide and all activities and facilities must be paid for. At each of these contact points, information is gathered. The following data are particularly important for visitor impact management;

- Group Size
- Spatial -temporal distribution
- Length of stay

In addition to this, a questionnaire constructed by the US Forest Service for KNP is administered by the Loh Liang main office. In theory, this is supplied to every tenth visitor for completion, and it deals with visitor satisfaction under a number of categories. The results are compiled and analysed using a specially written computer program at the Labuhan Bajo KNP office. However, very few of these questionnaires were ever completed and distribution now appears to have ceased.

Although visitation data is compiled and statistical reports written, little practical use is made of the information which these monitoring procedures supply.

No significant biophysical impact monitoring is undertaken. The dragon population is censused each year using observational counts at a series of bait sites on both Komodo and Rinca. Also guides report the number of dragons sighted at Banu Nggulung at each visit. So far this data has not been used, other than to compile monthly reports for the park headquarters.

#### **3.6.2 Current Visitor Impact Management Initiatives**

Visitor impact management can be divided into two areas; controlling use and ameliorating the impact of that use. Initiatives for ameliorating visitor impacts are straightforward, practical, damage-limitation exercises (see below). Effective management of visitor use, however, relies on defining limits of acceptable change (LAC) or limits of acceptable use (LAU). These concepts have arisen out of a realisation that defining the precise visitor carrying capacity of an environment is virtually impossible. Visitor management must be adaptive in order to confine levels of use or degradation to within acceptable boundaries, however these boundaries are defined. In KNP, one limit of acceptable environmental change has been established

and adhered to. It was decided that the dragons at Banu Nggulung were becoming too dependent on artificial feeding practices, and so this was stopped.

Management based on LAC/LAU requires monitoring procedures to ensure that the system remains within the set boundaries and to detect when it does not. However, it is clear that, other than the rudimentary dragon monitoring described above, no forms of environmental monitoring are practised, and so management relies on the observations of field staff to detect when action is necessary to halt environmental change. No limits as such have been set.

### 3.6.2.1 Controlling Visitor Use (LAU)

In terms of limiting use, a number of controls are in place.

- **Zoning.** The park is divided into three categories defining the level of permissible use; Intensive Use Zone, Wilderness Zone and Sanctuary Zone. Tourism development and visitor access are confined to the areas designated as Intensive Use Zones. This zoning applies to other forms of utilisation besides tourism, but in practice it is unenforceable for anything other than tourism and exists only on paper in the management plan.
- **Designated trails, camps and viewing sites.** This further confines and controls the geographical extent of visitor impact.
- **Group size limits.** A nominal upper limit of 30 visitors per group is supposedly enforced for the Banu Nggulung trail, the only one that receives such a volume of visitors. This limit is waived for cruise ship groups, although large groups are divided into groups of around thirty.
- **Group departure intervals.** In most instances an interval of at least 30 minutes is enforced between one group and the next starting the Banu Nggulung trail. This is in an effort to control crowding at the viewing site. In practice this is usually only necessary during the busy early morning period, or when very large cruise ship groups arrive.
- **Length of stay limits.** Although there is no limit on the length of stay of a visitor on the islands, guides try to limit the duration of walks to Banu Nggulung to around 90 minutes. This is in an effort to reduce overcrowding at the viewing site and on the trail.

### 3.6.2.2 Ameliorating Impacts

Besides controlling the geographical extent of visitor use (e.g., through the provision of designated trails), facilities are often constructed to lessen the impacts of visitor use. The only example in KNP is the provision of two small bridges on the Banu Nggulung trail over narrow stream channels. Although actually constructed for ease and safety on the trail, they do serve to reduce bank erosion.

Visitor awareness is another means by which negative visitor impacts can be reduced. Initiatives employed at KNP include wooden signs advising visitors how to behave towards the environment, and an introductory talk before the walk to Banu Nggulung.

### **3.6.3 Recommendations for Monitoring and Management**

#### **3.6.3.1 Fresh water supply**

Among the park staff questioned, there was a general feeling that tourism was not causing any major environmental problems, and that those problems that had been recognised (dragon habituation to feeding, anchor damage to coral) had been addressed. However, there was a feeling that the provision of fresh water for the overnight accommodation at Loh Liang could become a problem; a number of tourists and local villagers already believe it is a problem. There is clearly a conflict with villagers, and the erratic supply of fresh water is a cause of complaint amongst overnight visitors. The regular breaking of the water pipe by villagers results in an increased workload for rangers at Loh Liang.

A number of possible solutions to the freshwater problem present themselves. Firstly, an alternative water source could be found. At present the park is investigating other sources, but no success has yet been achieved. Secondly, the current water pipe could be buried below ground so as to protect it from damage. This would alleviate some of the problems of supply, but not the underlying conflict with villagers over access to this resource. Thirdly, a desalination plant could be constructed, but this is costly, and would result in additional environmental degradation. It may also result in subsequent infrastructural development of the park, which is undesirable from an environmental standpoint. Finally, the park could enforce stricter control, or a complete moratorium, on overnight accommodation on the island. This would have major implications for revenue generation and length of stay on the island, and for the accessibility of the park for independent travellers who cannot afford charter tours.

#### **3.6.3.2 Overcrowding**

Park visitation is essentially limited to the Banu Nggulung trail and the Loh Liang visitor camp. Whilst this restricts environmental impacts, it does result in overcrowding at busy times, which causes social and aesthetic impacts for tourists. An average of 130 people per day visit the park in the high season, rising to over 400 on peak days when large cruise ships arrive. Although nominal limits are placed on group size, it is impossible to separate this amount of people in such a small area.

The social carrying capacity of the park depends upon the perspective of the individual. Whilst cruise passengers may be happy in a large crowd, independent travellers tend to prefer smaller groups. When cruise ships and large charter parties arrive, it often reduces the quality of the experience for independent travellers. This must be a cause for concern for park management.

With no control over access, and no prior booking system, the park staff find themselves unprepared to deal with particularly busy days. It is recommended that a

control system is implemented to regulate the flow of visitors to the park and to inform visitors of the arrival of cruise ships and large parties in advance of their visit to the park.

### **3.6.3.3 Monitoring**

The major area of improvement which this report recommends is in the establishment of methodological procedures for the monitoring of visitor impacts within the park, both marine and terrestrial. At a workshop on tourism and biodiversity conducted as part of this project (DICE, 1996), a working group was convened to discuss the monitoring of environmental impacts of tourism. The following outputs resulted from the discussion.

#### **1. Priorities for Impact Monitoring**

- Marine Environment
- Fresh Water Carrying Capacity
- Path Condition
- Noise Disturbance: Visitors and Boats
- Litter and Waste on the Islands
- The Effect/Extent of 'Tame' Wildlife: Ora, Rusa, etc.

#### **2. Responsibilities for Monitoring and Decision-Making**

- a. Prime responsibility lies with KNP, however other stakeholders should be involved. There must be cooperation between KNP, local government, NGOs, tour operators and the local community.
- b. For each issue highlighted above, KNP should develop appropriate partners.

Marine: Initially by NGOs with experience and resources, however local training and empowerment should be a priority.

Terrestrial: Local community monitoring and enforcement should be encouraged.

Other stakeholders: eg. tour operators, should be involved where they can best contribute.

- c. The importance of long-term continuity of monitoring/management is stressed. Hence KNP should always be the principal co-ordinator, with assistance from other groups where relevant.

#### **3. Particular Issues Highlighted for Action**

- a. Control of Litter/Waste

The government should be approached at the appropriate level to provide planning and practical aid.

There is a need to develop a waste management plan, and suitable waste treatment facilities, both in the gateway towns and in the island kampungs.

Decision-making and direction should come from the highest appropriate level of authority, to ensure success.

- b. Community involvement in the enforcement of protection as well as monitoring.

This should be encouraged by establishing a system of self-policing, and through cooperation with the harbour authority at Labuan Bajo in mutual policing of marine exploitation

- c. Development of tourist awareness in advance of their visit to KNP.

Information on behaviour, on the reality of the tourist experience including pricing, and on the availability of alternative activities within the park should be distributed from KNP via commercial tour operators and the local and regional accommodation/transport infrastructure, so as to reach all segments of the tourist market.

## 4. TOURISM AND PARK FINANCES

### 4.1 Introduction

This chapter deals with the finances of Komodo National Park, and the contribution of tourism therein. It also examines ways in which the net financial contribution of tourism to the park can be increased. Two of the objectives of the project are addressed in this chapter:

- Identify the net contribution of tourism development to conservation and restoration, and assess the commercial and regulatory conditions necessary for increasing the contribution.
- Identify methods of providing sustainable revenues from tourism for conservation.

Protected areas are coming under increasing pressure to justify their existence in economic terms. In KNP, tourism is a major source of revenue, but it also incurs significant costs. The distribution of tourism revenue, and the efficiency of the market in capturing the economic benefits of tourism, will affect the net value of tourism for the park.

In the first part of this chapter, after an introduction to park finances (section 4.2), the revenues from tourism to KNP are compared with traditional management costs, and with the financial costs of managing tourism in the park (sections 4.3 & 4.4). This analysis uses data collected from park visitor books, and previously compiled statistics from the park headquarters in Labuan Bajo. Additional information was collected during interviews with park staff.

The second part of the chapter examines other forms of tourism spending within the park which do not accrue to the park authorities. It also estimates the breakdown of tourist spending within the park by visitor type (section 4.5 & 4.6).

In the final part of the chapter, the potential for increasing the financial contribution of tourism to the park is examined (sections 4.7 & 4.8). A questionnaire survey of tourists at KNP uses the contingent valuation method to examine the impact of hypothetical rises in entrance fees on visitation rates.<sup>1</sup> The results are used to provide an estimate of the potential for maximising revenue by increasing fees. The questionnaire also explored the motivations of travellers, and the desirability of possible changes to the level of development and the tourist experience at KNP. The results are discussed in relation to the future management and development of tourism in the park.

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<sup>1</sup> As has been conducted elsewhere (see IIED, 1994, and; Brown & Henry, 1989; Dixon & Sherman, 1990; Moran, 1994).

## **4.2 Administrative structure and Economic Policy**

### **4.2.1 Park Administration**

The park headquarters is in Labuan Bajo. In addition there are ten ranger posts on the islands within the park, including those at the two visitor centres of Loh Liang (Komodo island) and Loh Buaya (Rinca island). In total, 90 staff are employed by the park. The head of the park is supported by 5 structural and technical advisors and an administration staff of 19. There are 11 information officers (community extension workers) and 54 rangers who patrol the park and guide tourists. Rangers work for 21 days in the field, followed by 7 days leave.

The park is funded entirely from government sources. Routine budget allowances come from the National Budget. Central government also supplies funds for additional project expenses (see below). All revenue from visitor entrance fees to the park returns to regional and national government according to the following allocations;

- |                          |     |
|--------------------------|-----|
| • District Authorities   | 40% |
| • Provincial Authorities | 30% |
| • Central Government     | 15% |
| • PHPA head office       | 15% |

At present, all other tourism-related revenue is handled by the Komodo Koperasi (see below).

Current policy in Indonesia maintains that protected areas and their biodiversity are national assets which fall under the jurisdiction of the state, and the maintenance of which is the responsibility of the state. They are also seen as amenities to which the public should be allowed access. Hence entrance fees are fixed at a constant and relatively low level across all national parks, and parks are not expected to justify themselves economically. Spending budgets are met by government, and revenues returned to government. However, this situation is unlikely to remain *ad infinitum*. With rapid rises in nature tourism and the corresponding increases in revenue to some parks, tourism development is being recognised as a way to make parks economically viable and remove the financial burden from domestic tax-payers. The possibility of increasing entrance fees, and even of making parks self-funding, is being considered, with Komodo National Park a prime contender for pilot policy reforms.

### **4.2.2 Komodo Koperasi**

The Komodo Koperasi is a co-operative organisation that provides visitor services in Loh Liang and Loh Buaya, and in Labuan Bajo. It was founded in 1987 to provide restaurant facilities in these locations. In 1994 it also assumed control of the visitor accommodation facilities within the park. At this time, expenditure and revenue associated with visitor accommodation passed to the Koperasi from KNP.

The Koperasi is overseen by a steering committee of twelve KNP staff, chaired by the park director. It employs a manager and 18 ground staff; 10 in Loh Liang, 2 in Loh Buaya and 6 in Labuan Bajo. All 90 park staff are members of the Koperasi, and all

pay in an annual deposit, made up of compulsory and voluntary contributions. Annual dividends are paid to all members based upon the size of their deposit.

The Koperasi retains the revenue from overnight accommodation in the park, and cafeteria profits. It also retains a proportion of the guiding revenue. Until May 1995, the individual guide received 75% of the fee paid by tourists, whilst the Koperasi received the additional 25%, for all guided walks. Since May 1995, for guided walks to the viewing site at Banu Nggulung, the guide gets a fixed amount of Rp3000 and the Koperasi retains the rest.

Koperasi profits are divided in the following way;

• Retained as capital	40%
• Members dividends	40%
• Steering committee incentives	5%
• Employee incentives	5%
• Education/Training	5%
• Development work	2.5%
• Social Fund	2.5%

Although senior park staff still control the Koperasi via the steering committee, it is financially independent of central government, and is a first step towards the privatisation of the tourist development within the park.

### **4.3 Park Expenditure and Revenue<sup>2</sup>**

#### **4.3.1 Overall Running Costs**

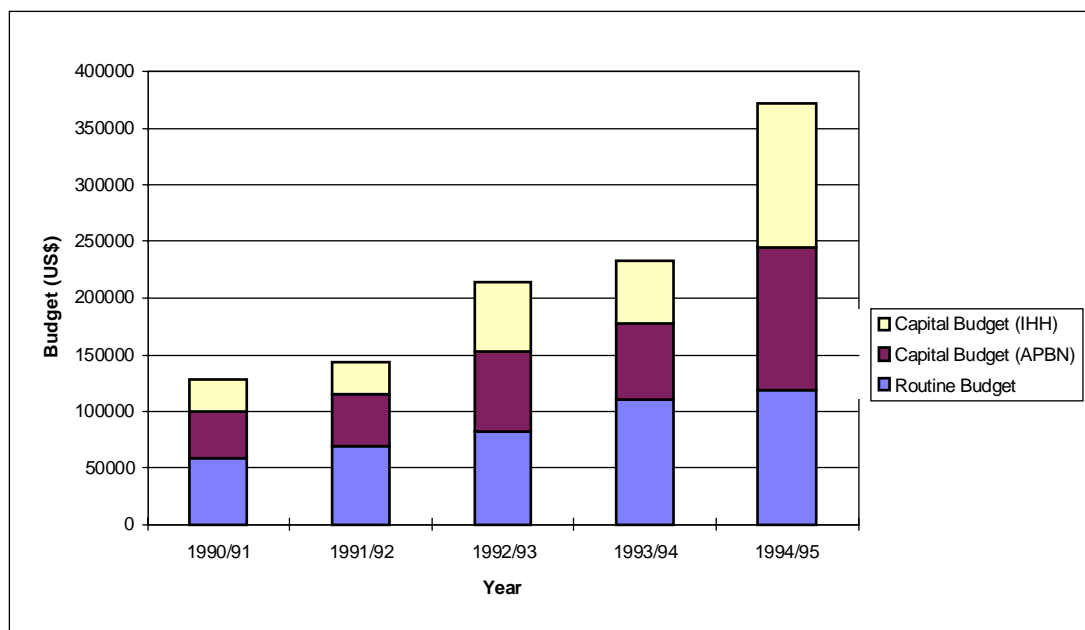
The park receives budget allocations from central government under three headings. The Routine budget is intended for expenditure on staff wages, equipment and materials, maintenance and travel. The APBN budget is for development, particularly of new infrastructure and patrolling. The IHH budget from the Ministry of Forestry is for operational activities concerning forest protection and utilisation. Both involve some degree of community extension work. Any overspend is compensated for by central government, and any surplus funding returns to central government. The budgets allocated from each source for the five years from April 1990 - March 1995 are given in Figure 4.1. Overall, budget allocations and expenditure have been fairly equitable. However, there has been a large increase in expenditure across all three budgets.

In 1994/95, the total operating budget of the park was approximately US\$372,000, split fairly evenly between the three budget heads described above.

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<sup>2</sup> Where conversions to US\$ have been made, the annual end-of-period exchange rates published by the IMF are used. Annual totals have been adjusted to a 1995 US\$ equivalent to take account of inflation, using IMF real effective exchange rate indices based on relative wholesale prices. The 1995 end of period exchange rate was US\$1 = Rp2,308.





**Figure 4.1 Annual Government Expenditure on Komodo National Park for each of Three Budget Heads, 1990/91 - 1994/95.**

### 4.3.2 Tourism-Related Expenditure

Separating the financial costs of tourism from overall park costs can be problematic, even with detailed park accounts. However, it is assumed that tourism expenditure will probably only occur from the Routine budget in KNP, since the other budgets relate to protection and capacity building. Of the components of the Routine budget, the simplest to calculate in terms of tourism-related expenditure is salaries. From the park accounts and interviews with park staff it is possible to ascertain which staff are dedicated to tourism duties and calculate the total salaries for these staff.

	Number of Staff	April '96 Salaries (Rp millions)
Tourist Staff	21	5.18
Total Staff	90	25.01
% of Total Spent on Tourist Staff		20.73

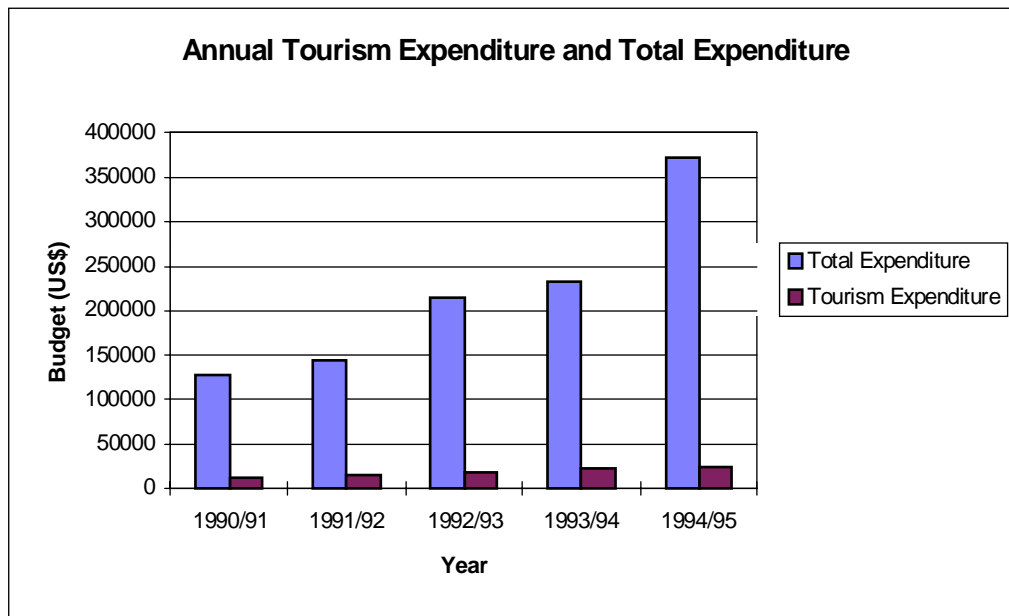
**Table 4.1 Proportion of Salary Budget Spent on staff Dedicated to Tourism-Related Duties, April 1996 Figures.**

Of the 90 staff employed by the park, 21 are dedicated full time to tourism duties, principally at Loh Liang and Loh Buaya visitor camps (Muhidin, *pers.comm.*). The total of their salaries and benefits for April 1996 was Rp5,184,977, which is 20.73% of the total salary bill for that month (Table 4.1). The other components of the Routine budget are equipment, maintenance and transport. In the absence of accurate information, it is assumed that the proportion of each of these budgets used in relation

to tourism is equal to the proportion of the total salary budget used for tourism staff. Since the majority of the Routine budget consists of salaries, it can be assumed with some confidence that 20.73% of the total Routine budget is used for tourism-related purposes.

Year	Expenditure (US\$)	Tourism Expenditure (US\$)	% of Budget Spent on Tourism
1990/91	127,775	12,101	9.47
1991/92	143,282	14,506	10.12
1992/93	214,491	17,076	7.96
1993/94	233,407	23,078	9.89
1994/95	372,285	24,485	6.58
Total	1,091,240	91,245	8.36

**Table 4.2 Tourism Expenditure as a Percentage of Total Park Expenditure, 1990/91 - 1994/95.**



**Figure 4.2 Estimated Annual Expenditure on Tourism Compared With Reported Figures of Total Annual Expenditure, KNP, 1990/91 - 1994/95.**

Infrastructural and running costs, for tourism facilities in the park, are currently the responsibility of the Koperasi and are not paid for from the park budget. However, initial construction costs for tourism infrastructure will have accrued to the park in the 1980s, although this is not included in the following analysis. Remedial costs are presumed to occur in relation to the trail and the Banu Nggulung feeding site in particular. However, no information is available on any current expenditure in this respect above and beyond anything included in the Routine budget. The total estimated expenditure on tourism for each year from 1990/91 -1994/95, compared with the total annual expenditure of the park, is presented in Table 4.2 and Figure 4.2.

Over the whole period, it is estimated that 8.36% of the park budget is spent on tourism.

### 4.3.3 Tourism-Related Income

The only revenue from tourism which accrues to the park is the compulsory entrance fee. Tourist spending on optional services within the park (accommodation, guiding, cafeteria and shop purchases) are handled by the Koperasi (see section 4.5, and Table 4.3). The current (1996) price for entrance to the park is Rp2000, which is valid for a week, although most visitors stay only a few hours. The price of entrance rose from Rp1000 in January 1993.

Source of Tourist Expenditure in Park	Cost/person (Rp)	Initial Destination of Tourist Expenditure in Park <sup>3</sup>
Entrance fee	2,000	Park authority
Accommodation fees	10-20,000	Koperasi
Purchases (cafeteria and shop)	n/a	Koperasi
Guiding fees (Banu Nggulung/Loh Buaya)	1,000/1,500	Rp3,000/4,500 to guide, rest to Koperasi
Guiding Fees (other)	10-35,000	75% to Guide, 25% to Koperasi

**Table 4.3 Source and Initial Destination of Tourism-related Revenues in Komodo National Park.**

Two sources of data regarding tourism revenue exist. A statistical report compiled by the park includes pooled revenue figures from the whole park for the five years 1990/91 - 1994/95. Separate monthly data from each of the two islands with visitor facilities are available directly from the visitor books, and have been collected for the three years 1993/94-1995/96. The figures from these two sources do not tally exactly, and so both have been included here to provide separate estimates of revenue vs. costs.

### 4.4 Revenue vs. Expenditure

The park does not have an explicit financial objective with regard to tourism revenue. The current fee structure is nominal to allow access to domestic as well as foreign visitors.<sup>4</sup> However, in the light of changing policies with regard to the financing of protected areas elsewhere, it is pertinent to examine current revenues in relation to costs.

Two different comparisons between income and expenditure have been made, reflecting different perspectives on the role of tourism in the financing of protected

<sup>3</sup> All revenue to the park authority is subsequently divided between local and central government (see above).

<sup>4</sup> although this appears to be in the process of changing, and a considerable rise in the entrance fee for KNP is anticipated.

areas. The first perspective maintains that protected areas should be self-financing, and that tourism should pay for the costs of maintaining the resource upon which it is based. In this case the comparison is made between entrance fee revenues and total management costs. The second perspective maintains that tourism should at least pay for itself in protected areas, even if it doesn't contribute to traditional management costs. In this case a comparison is made between entrance fee revenues and estimated costs of tourism in the park. Within each of these comparisons, two data sets regarding entrance fee revenue are used, as described in Section 4.3.3 above.

#### 4.4.1 Perspective (a): Tourism Revenue Compared to Overall Expenditure

Over the five years from April 1990, revenue from entrance fees amounted to only 6.9-7.0% of the total budget of KNP, depending which source of revenue data is used (Table 4.4). Over the whole five year period, each visit to KNP was subsidised by US\$10.75 - US\$10.82. If the latest year for which figures are available is examined (1994/95), the subsidy per visit is US\$13.40 - US\$13.53. These subsidies are paid for by central government and, ultimately, by domestic tax-payers. The variation in the figures is due to the different estimates of revenue, but in each case they only differ slightly.

Year	Total KNP Budget (US\$1000s)	Revenue from Tourism (US\$1000s)	Proportion of Budget (%)	Total Subsidy (US\$1000s)	Subsidy per visitor (US\$)
1990/91	127.8	7.3	5.7	120.5	8.74
1991/92	143.3	8.1-8.7	5.7-6.0	134.6-135.2	8.34-8.38
1992/93	214.5	9.4-10.0	4.4-4.6	204.5-205.1	12.15-12.18
1993/94	233.4	20.8-22.8	8.9-9.8	210.6-212.6	9.60-9.69
1994/95	372.3	23.4-26.7	6.3-7.2	345.6-348.8	13.40-13.53
Total	1091.2	75.3-69.0	6.9-7.0	1015.9-1022.2	10.75-10.82

**Table 4.4 Revenue from Tourism and Total Budget of KNP Compared, Using Compiled Data and Raw Data.**

#### 4.4.2 Perspective (b): Tourism Revenue Compared to Tourism-Related Expenditure

When the estimates of tourism-related expenditure are compared with entrance fee revenues, it appears that the park does not quite recover its costs for providing access to visitors. For the five year period from April 1990, a total of 75.7-82.6% of costs are recovered from entrance fee revenues, which suggests a subsidy of US\$0.17 - US\$0.24 per visit (Tables 4.5). However, with the increase in fee from Rp1000 to Rp2000 in 1993, a greater proportion of estimated tourism-related costs have been recovered, and in 1994/95 the park may have broken even, with 95.8-109.1% of the estimated tourism-related costs recovered.

Year	Estimated Tourism-related Costs (US\$1000s)	Revenue from Tourism (US\$1000s)	Proportion of Estimated Costs (%)	Total Subsidy (US\$1000s)	Subsidy per visitor (US\$)
1990/91	12.1	7.3	60.0	4.8	0.35
1991/92	14.5	8.1-8.7	55.8-59.7	5.8-6.4	0.36-0.40
1992/93	17.1	9.4-10.0	55.2-58.3	7.1-7.6	0.42-0.45
1993/94	23.1	20.8-22.8	90.1-98.6	0.3-2.3	0.01-0.10
1994/95	24.5	23.4-26.7	95.8-109.1	-2.2-1.0	-0.09-0.04
Total	91.2	75.3-69.0	75.7-82.6	15,900	0.17-0.24

**Table 4.5 Revenue from Tourism and Estimated Tourism-related Costs Compared, Using Compiled Data and Raw Data.**

#### 4.5 Other Tourist Spending in the Park

The figures for optional tourist spending on accommodation and guiding are available for the five years from 1990/91 - 1994/95 from park statistical records (Table 4.6 & Figure 4.3). In addition, the raw data for 1993/94 - 1995/96 was collected from visitor books on Komodo Island, and for 1995/96 from the visitor books on Rinca Island (Table 4.7 & Figure 4.4). In each case the revenues are compared with that from entrance fees which accrue to the park. Revenues are quoted in US Dollars, adjusted for inflation to equate to the 1995 value of the dollar.

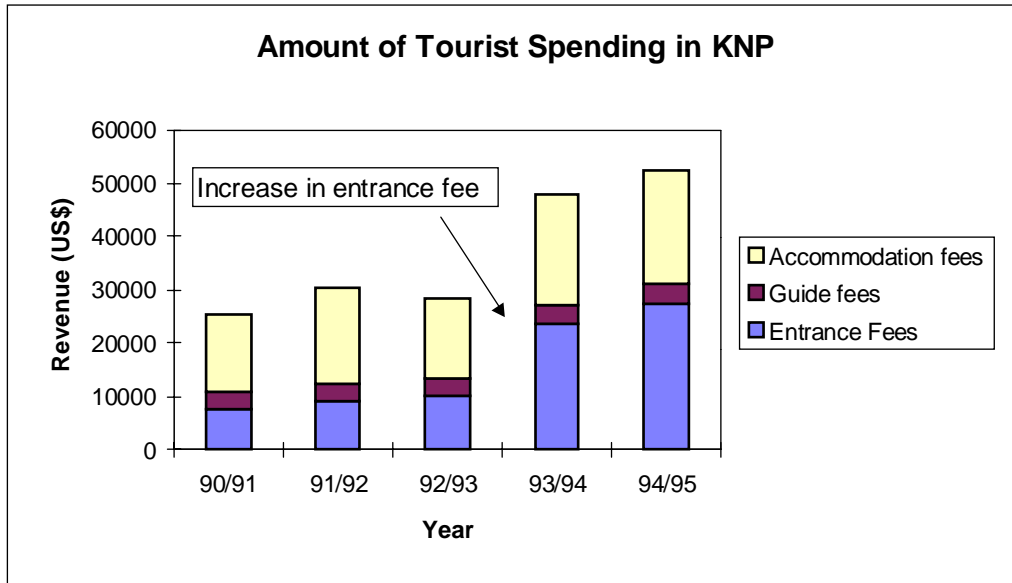
In 1995/96, over US\$36,000 was spent by visitors to Komodo Island on optional services. Of this, one third was spent on guide fees and two thirds on accommodation fees. In addition, US\$3,500 was spent by visitors to Rinca Island, of which all but US\$147 was spent on guiding. In the same year, approximately US\$25,000 was spent on entrance fees to the park. Since guiding and accommodation revenues accrue to the Koperasi and individual guides, it can be seen that considerably more revenue is spent in the park than accrues to the park authorities. Even without considering cafeteria purchases, the entrance fee accounts for only 37% of total visitor spending in the park.

Year	Total Visitors	Entrance Fee Revenue (US\$)	Guiding Revenue (US\$)	Accommodation Revenue (US\$)
90/91	13,792	7,266	3,130	14,596
91/92	16,133	8,664	3,523	17,863
92/93	16,830	9,950	3,387	15,131
93/94	21,942	22,765	3,521	20,733
94/95	25,790	26,701	3,970	21,366
Total Increase (%)	86.99	253.58	26.83	46.39

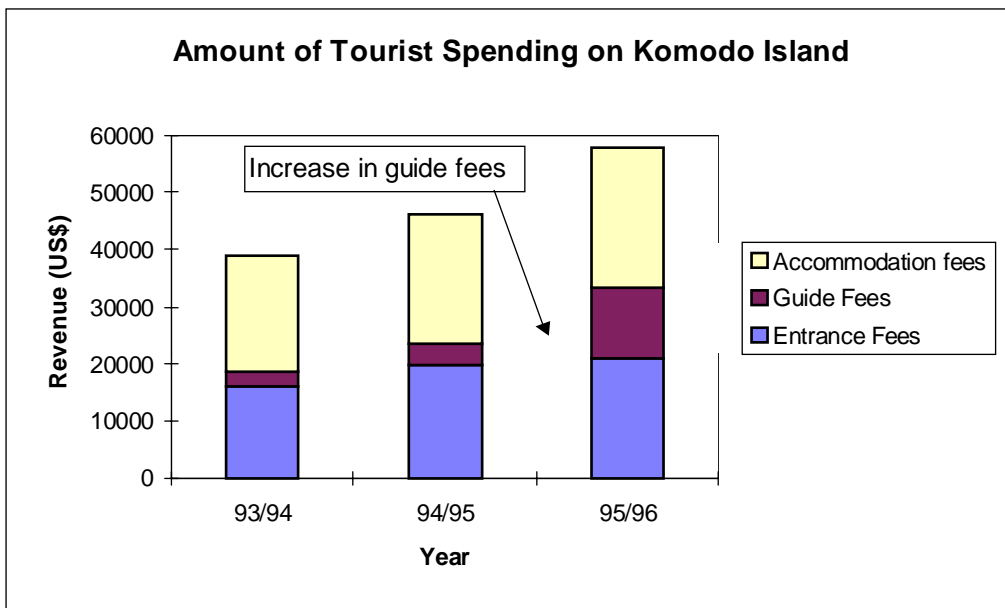
**Table 4.6 Tourist Spending in KNP on Entrance Fees, Guide Fees and Accommodation, 1990/91 - 1994/95.**

Island	Year	Entrance Fee Revenue (US\$)	Guiding Revenue (US\$)	Accommodation Revenue (US\$)
Komodo	1993/94	16,127	2,582	20,346
	1994/95	19,784	3,641	22,677
	1995/96	20,935	12,423	24,438
Rinca	1995/96	4,317	3,351	147
Park	1995/96	25,252	15,774	24,585
Total				

**Table 4.7 Tourist Spending on Komodo Island and Rinca Island on Entrance Fees, Guide Fees and Accommodation, 1993/94 - 1995/96.**



**Figure 4.3 Tourist Spending in KNP on Entrance Fees, Guide Fees and Accommodation, 1990/91 - 1994/95.**



**Figure 4.4 Tourist Spending on Komodo Island on Entrance Fees, Guide Fees and Accommodation, 1993/94 - 1995/96.**

The annual totals for each category of expenditure reveal small increases until 1993 and larger increases from 1993 - 1996. This is due in part to the more rapid growth of visitation since 1993, but also to two significant price increases during that time (Figures 4.3 & 4.4).

#### 4.6 Breakdown of Tourist Spending by Visitor Type

Overall, an average visitor to Komodo island spends US\$2.40 on services within the park.<sup>5</sup> Of this, US\$0.87 is entrance fee which accrues to the park, US\$1.01 is accommodation fee which accrues to the Koperasi, and US\$0.52 is guiding fee which is split between the Koperasi and the individual guides. However, there is some variation in average spend depending on the type of visitor.

The tourist typology based on mode of transport, as developed in Chapter 2, has been used to estimate the relative contributions of different types of visitor to expenditure on entrance fees, guiding fees and accommodation fees (Tables 4.8 & 4.9). This is to give an idea of the relative value of each type of tourist to the park and to the Koperasi.

	Entrance Fees	Guiding Fees	Accommodation Fees	Total Revenue
Transport Type	Amount per Visitor (US\$)	Amount per Visitor (US\$)	Amount per Visitor (US\$)	Amount per Visitor (US\$)
Ferry Sape	0.87	0.67	4.47	6.00
Ferry L. Bajo	0.87	0.67	4.47	6.00
Charter Sape	0.87	0.50	0.74	2.11
Charter L. Bajo	0.87	0.49	0.37	1.72
Charter Lombok	0.87	0.47	0.02	1.36
Cruise	0.87	0.47	0.00	1.34
Total	0.87	0.52	1.01	2.40

**Table 4.8 Average Expenditure per Visitor in Each Category, on Entrance Fees, Guiding Fees and Revenue Fees, Komodo Island, 1995/96.**

TOTAL	Arrivals	Guiding Fees	Accommodation Fees	Total Revenue
Transport Type	% of Total Arrivals	% of Total Fees Paid	% of Total Fees Paid	% of Total Revenue
Ferry Sape	14.90	19.45	67.20	38.34
Ferry L. Bajo	4.56	5.86	19.54	11.27
Charter Sape	13.69	13.37	10.04	12.05
Charter L. Bajo	8.17	7.72	2.98	5.84
Charter Lombok	9.99	9.15	0.24	5.62
Cruise	48.69	44.46	0.00	26.87

**Table 4.9 Proportions of Total Revenues from Each Category of Visitor to Komodo Island, 1995/96.**

<sup>5</sup> This does not include cafeteria purchases.

There is no difference in the amount of entrance fee paid by different types of visitor, since it is a standard one-off fee for all visitors, and not a daily rate as is the case in Keoladeo and Gonarezhou.<sup>6</sup> Hence all visitors make an equal contribution to the park income, via entrance fees, regardless of their mode of transport.

The amount spent by visitors on guiding and accommodation will be related to length of stay, since each guided walk is paid for individually, and accommodation is charged for on a nightly basis. The average length of stay of each type of visitor was presented in Table 2.8, and those figures have been used in estimating the average contribution of each type of visitor in terms of guide fees and entrance fees (Tables 4.8 & 4.9).

Since ferry passengers stay longer than other forms of visitor, it follows that their contributions are the highest, with an average of US\$6.00 per person. However, for guiding fees there is little variation by visitor type, since very few visitors go on a walk other than that to Banu Nggulung, and few take this excursion more than once. There is only a US\$0.20 difference between the contribution of ferry passengers and cruise passengers in terms of guiding fees.

The largest difference between visitors is in the average amount spent on overnight accommodation. Cruise ships and longer charter tours provide accommodation on board, and hence no contribution is made. The local charters mostly include accommodation, but a small number of visitors do use the park accommodation. The average contribution from these local charter tourists is US\$0.37-0.74. The ferry passengers are obliged to stay overnight, and are more likely to stay longer given that they have no tour schedule to keep to. These visitors contribute on average approximately US\$4.47 per person in terms of overnight accommodation.

Overall, ferry passengers constitute <20% of visitors, but contribute almost 50% of visitor spending in the park. Conversely, cruise ship passengers which make up almost 50% of visitors only contribute little over 25% of visitor spending. Charter tourists lie somewhere in between. It is interesting to note that the most affluent tourists, those taking the most expensive excursions to the park, contribute the least amount of visitor spending within the park. The nature of their excursions purposefully limits their contact with the park to a minimum.

## **4.7 Willingness to Pay Increased Fees**

### **4.7.1 Methodology**

The price of entrance to the parks has not been traditionally set by the market, and it is likely that visitors would be willing to pay considerably more to visit KNP. The magnitude of this 'user surplus' has been examined using contingent valuation, an economic valuation technique which constructs a hypothetical market by exploring the response of visitors to hypothetical rises in entrance fee. We have not attempted to calculate user surplus *per se.*, since the figure itself is of little practical use. We use

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<sup>6</sup> *see respective country reports.*

the method purely to demonstrate the capacity for increased revenue generation by increasing fees.

A questionnaire was administered to visitors at the cafeteria in the visitor camp on Komodo island. A total of 524 responses were collected, between August and November 1995. The questionnaire included a question regarding the respondent's willingness to pay increased entrance fees to visit the park. The form of questioning used was an upper and lower-bounded dichotomous choice, with follow-up bids of half and double the amount of the starting bid. Three variations of the questionnaire, with different levels of starting bid, were distributed randomly amongst the sample. Starting bids were US\$4, US\$8 and US\$16, with follow-up bids ranging from US\$2 - US\$32.

It should be noted that the questionnaire was confined to those visitors who visited the cafeteria, who are essentially the independent tourists. Within the independent visitor population, there is no *a priori* reason to suspect that the sample is biased in any way. It could be argued that there will be a bias towards English-speaking visitors, but the nationality spread of respondents suggests that this variable at least has not been skewed by a language restriction. It is also unlikely that many foreign visitors to KNP have no understanding of English.<sup>7</sup>

Package tourists (and particularly cruise passengers) were not represented in the sample. Since these individuals do not pay their own entrance fee (it is included in the price of the package), it is probably invalid to examine their responses to hypothetical fee rises.<sup>8</sup> Demand is likely to be less elastic for these more affluent groups, and an attempt was made to measure this by interviewing tour operators about the effect of fee rises on the magnitude of their businesses.

#### 4.7.2 Results

From the proportions of respondents willing to pay each level of increased fee, it is possible to calculate the increased revenue which would theoretically accrue to the park at each of these bid levels. The formula for calculating the increased revenue as a percentage of current revenue is

$$y = qx_n/x_0$$

where

y = the percentage rise in revenue,

$x_n$  = the increased fee level,

$x_0$  = the existing fee level,

q = the percentage of the sample willing to pay  $x_n$ .

Proportions of respondents willing to pay the five different bid levels, along with the projected increases in revenue accruing to the park at these fee levels, are shown in

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<sup>7</sup> based on the perceptions of project researchers and local informants.

<sup>8</sup> in addition, restrictions on access to cruise passengers and forms of questioning were placed on field researchers by the major cruise operator.

Table 4.10. From these figures, a demand curve can be constructed, and a curve of projected revenue against price increase (Figures 4.5 & 4.6).

Entrance Fee (US\$)	Proportion of sample willing to pay (%)	Projected revenue as a proportion of current revenue (%)
0.87	100.00	100.00
2	90.37	203.08
4	79.31	356.45
8	54.19	487.13
16	28.18	506.64
32	10.26	368.77

**Table 4.10 Proportion of respondents willing to pay hypothetical increases in entrance fee to visit KNP, and resultant increase in revenue to the park.**

A regression model was constructed for the demand curve, using a negative exponential function, the equation for which is

$$q = q_0 e^{-kp}$$

where

p = the entrance fee,  
q = the percentage of the sample willing to pay p,  
and  $q_0$  and k are constants.

This can be transformed into the straight line function

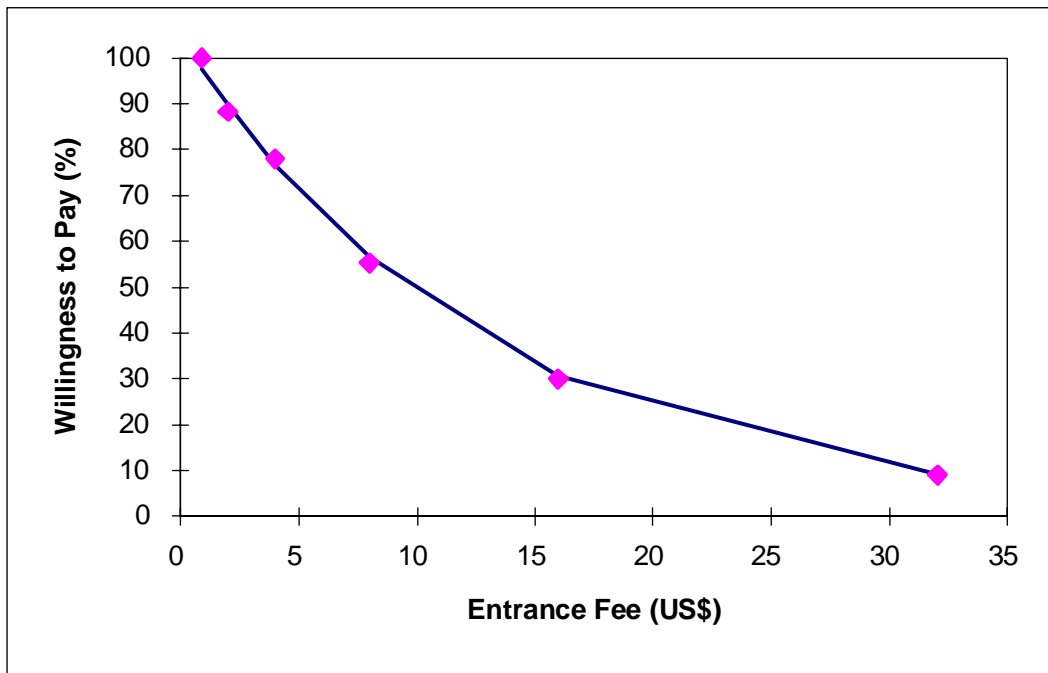
$$\ln q = -kp + c$$

where  $c = \ln q_0$

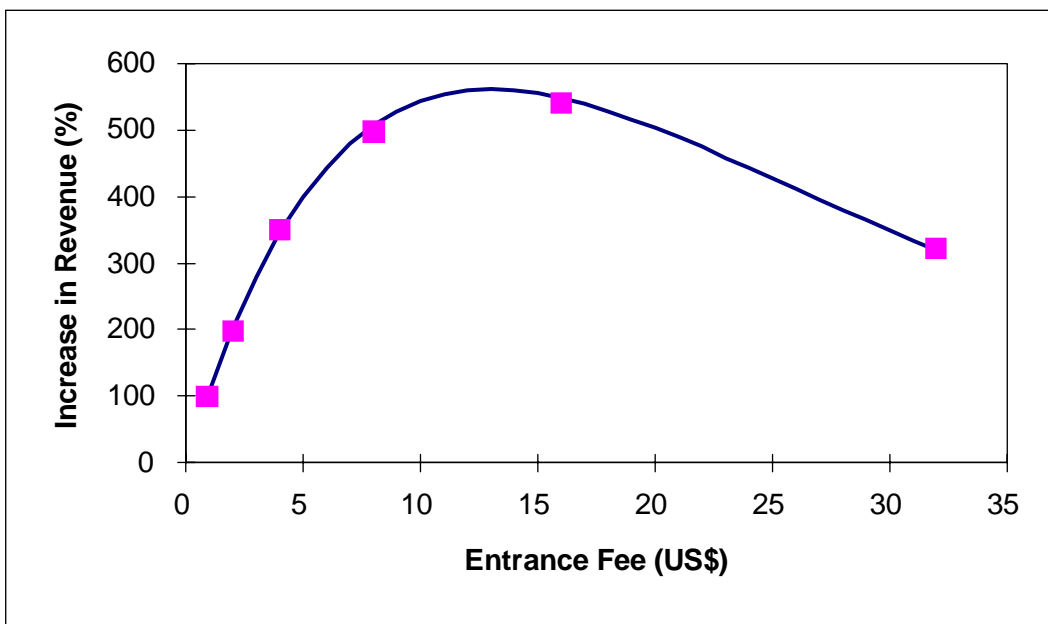
Using the least squares method of regression, the equation with the best fit to the data results in a value of  $k = 0.0739$  and a value of  $c = 4.631$ . This model provides a near perfect fit to the data, generating an  $r^2$  value of 0.994 (see Figures 4.5 & 4.6). This equation can be used to calculate the price elasticity of demand; since

$$\text{elasticity} = d(\ln q)/d(\ln p)$$

this mathematical relationship implies that the price elasticity is simply  $-kp$ . It is also possible to calculate the fee at which the maximum revenue is generated.



**Figure 4.5 Willingness of respondents to pay hypothetical increases in the entrance fee to visit KNP.**



**Figure 4.6 Proportional increase in revenue to the park at increased entrance fees, based on responses to willingness-to-pay questions.**

### 4.7.3 Price Elasticity of Demand

The data from this visitor questionnaire would suggest that, all other things being equal, the current entrance fee is not a limiting factor in terms of visitation. The demand for entrance to the park appears to be relatively inelastic as far as price is concerned. Demand is relatively insensitive to price for even five-fold hypothetical increases in entrance fee. However, caution should be placed on the interpretation of results for larger rises in fee, since they become less reliable with distance from the existing fee.

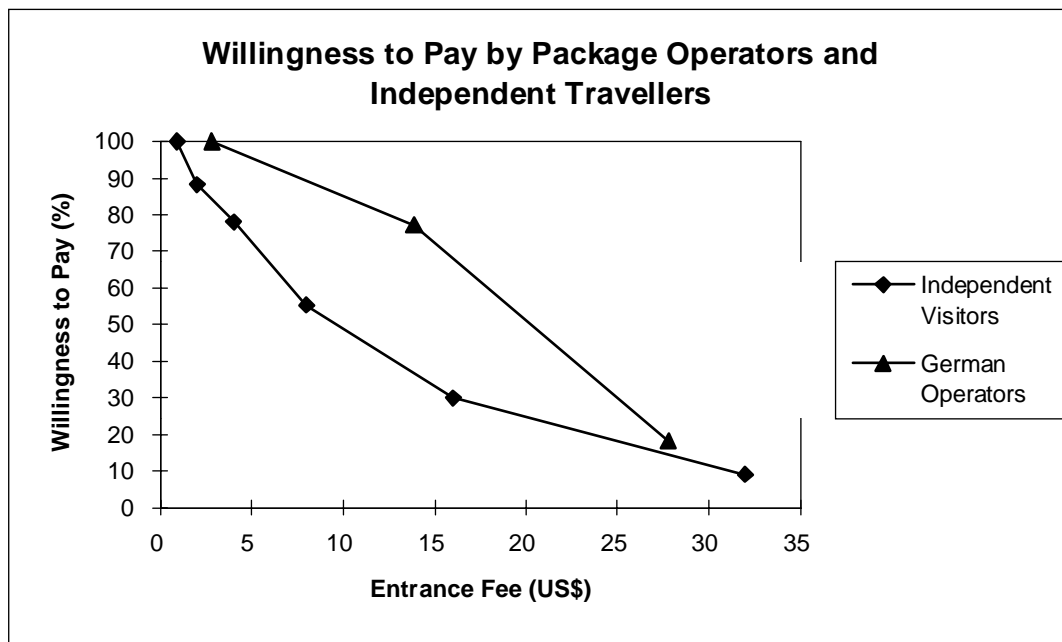
Price (US\$)	Elasticity of Demand
0.89	-0.066
2	-0.148
4	-0.295
8	-0.591
16	-1.182
32	-2.363

**Table 4.11 Price Elasticity of Demand for Entrance to KNP by Independent Visitors.**

### 4.7.4 Results from Tour Operators

Ten Indonesian operators were asked how much the fee should be, and also how a Rp10,000 (approx. US\$4.50) fee would affect their business. The average suggested fee was Rp10,750 (n=8), although the feeling amongst some respondents was that the price itself was not as important as the way that the revenue was used. According to one operator, structural adjustments should be made to allow the park to retain its entrance fee revenue. 80% of respondents said that a fee of Rp10,000 would not affect their business, since this only represented 1-2% of the cost of a typical package. This suggests that demand is even less elastic for package tourists than it is for independents.

In a postal questionnaire, twenty-two German operators were asked how much entrance fee they would be prepared to pay for their clients to enter the park. Three categories of fee were suggested; DM4, DM20 and DM40. The majority were prepared to pay DM20 (approximately US\$14), and a small proportion (18%) were prepared to pay DM40 (approximately US\$28). A demand curve constructed from these results has been compared with that constructed from the independent visitor questionnaire conducted in KNP (Figure 4.7). Caution must be applied in interpreting the comparison since the questionnaire instruments used for each sample were different, and the second sample was very small. However, a purely visual comparison suggests a higher willingness to pay amongst package operators than amongst independent travellers. This is in agreement with the results of the Indonesian operator survey.



**Figure 4.7 A Comparison of Willingness to Pay Increased Entrance Fees to KNP by Independent Visitors and German package Tour Operators.**

#### 4.7.5 Increasing Revenue to the Park

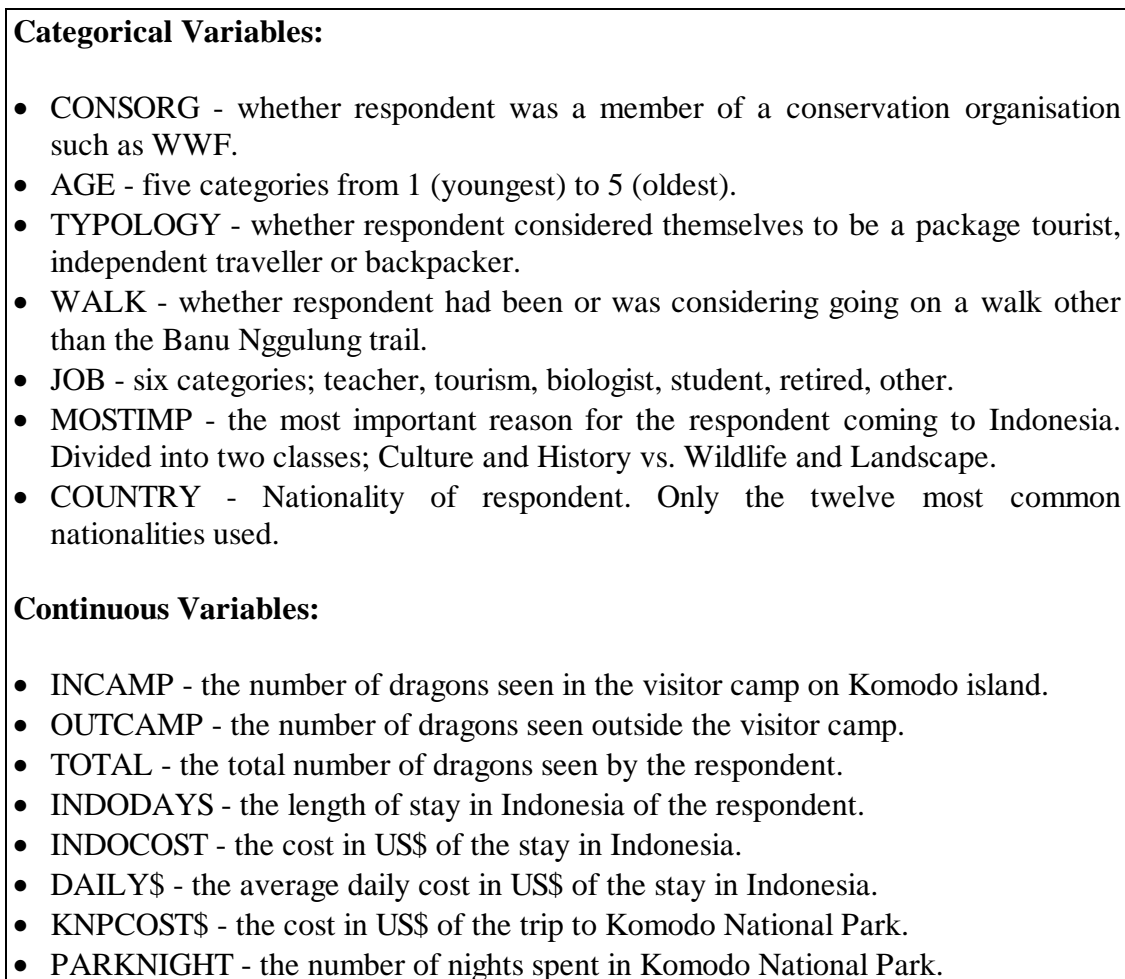
The demand function for the visitor questionnaire results indicates that revenue would be maximised at a fee of approximately US\$13.50. At this fee, an estimated 574% of the current revenue would be raised, whilst visitation levels would drop to 38% of their current level. This would still not cover all of the park management costs, but would certainly cover the tourism-related costs. However, if one takes into account the apparently greater willingness to pay of package operators for their clients to enter the park, it is unlikely that visitation levels will drop this dramatically. Thus a greater increase in revenue could be expected

However, one must exact caution in interpreting these results in this way. In addition to the uncertainties regarding the internal validity of the questionnaire method and the hypothetical nature of the inquiry (would people actually do what they say they would do?), there are likely to be a number of additional effects of increasing the entrance fee beyond pure revenue maximisation (see section 4.8). Therefore, **we do not advocate a rise of entrance fee to a level at which revenues may be maximised.** We present the data only to illustrate that there is potential to increase revenue by increasing fees. It must be stressed that any increase in fees should relate to the pricing policy of the park and take into account other internal and external implications of increasing fees.

#### 4.7.6 Factors Affecting WTP

Bivariate analysis was used on the visitor questionnaire data to compare WTP with other respondent attributes. The five willingness to pay bids were each individually

compared with seven other categorical variables using Pearson's Chi-Squared test of significance. They were also compared with eight continuous variables using 1-Way ANOVA. There are well known assumptions necessary for analysis of variance. However, the technique is recognised as being relatively robust to violations of these assumptions (Howell, 1992: 288-289, 307-309). The fifteen variables used in the analyses are described in Figure 4.8. The results of the analyses are presented in Tables 4.12 and 4.13.



**Figure 4.8 Categorical and Continuous Variables, from the KNP Visitor Questionnaire, used in Bivariate Analysis of Willingness to Pay.**

#### 4.7.6.1 Chi-Squared

Most of the chi-squared contingency tables have total n-values of between 300 and 450. However, the extreme bid values of US\$2 and US\$32 have a very unequal distribution between 'will-pay' and 'won't-pay' responses, resulting in a high proportion of cells in the contingency tables with expected values <5. For this reason, only the analyses using bid values of US\$4, US\$8 and US\$16 can be considered to give valid results.

Of the seven categorical variables used in chi-squared analyses, three have observed values that are significantly different from expected (Table 4.12). Respondents who are members of conservation organisations are more willing to pay increased entrance fees at all three bid levels. This result is significant at US\$4 and US\$16, but not quite so at US\$8. When responses are analysed by age category, observed values are significantly different at US\$8 and US\$16, but not quite so at US\$4. In each case respondents in the lowest age category are less willing to pay than expected, whilst respondents in the other categories are more willing to pay. Using the variable TYPOLOGY, responses are significantly different from expected at bid levels of US\$8 and US\$16, but not at US\$4. In both cases, backpackers are less willing to pay than expected, whilst independent and package tourists are more willing to pay than expected.

Responses divided by country of origin, job, main reason for visiting Indonesia and whether other walks on Komodo Island had been or would be undertaken, were not significantly different from expected. For the first of these, however, it should be noted that domestic visitors and those from developing countries were not included in the analysis, since very few responses were obtained. This result suggests only that amongst European, American and Australian visitors there is no significant difference in willingness to pay.

#### **4.7.6.2 1-Way ANOVA**

Respondents willing to pay entrance fees of US\$4, US\$8 and US\$16 had seen a significantly higher number of dragons during their visit to the park than respondents who were unwilling to pay those levels of entrance fees (Table 4.13). For the number of dragons seen in the visitor camp, the result was significant for bids of US\$8 and US\$16, whilst for the number of dragons seen outside the camp the result was only significant for a bid of US\$8. Results were not significant for bids of US\$2 or US\$32 in any of the three analyses, probably due to the low number of one or other response in these cases (see above).

As would be expected, respondents who have paid more for their visit to Indonesia and to Komodo National Park are more willing to pay increased entrance fees (Table 4.13). This result is significant for the total cost of the visit to Indonesia at bids of US\$8 and US\$16. For average daily cost of visit, and cost of visit to Komodo National Park, the result is significant at bids of US\$8, US\$16 and US\$32.

Respondents who are willing to pay a particular level of entrance fee have a shorter length of stay in Indonesia than those unwilling to pay that bid, except for a fee of US\$2. Although this seems counter-intuitive, it is consistent with other results, since expenditure (and hence willingness to pay) is inversely proportional to length of stay. However, the difference is not significant except at a bid level of US\$32.

Respondents who are willing to pay increased entrance fees have a significantly longer length of stay in the park than those who are unwilling to pay, at bid levels of US\$2, US\$4 and US\$32. The difference is almost significant at a bid of US\$16, but is not so at a bid of US\$8.

Variable (df)	Level of Significance <sup>9</sup>				
	US\$2	US\$4	US\$8	US\$16	US\$32
CONSORG (1)		*	0.055	*	
AGE (4)		*	***	(***)	
TYOLOGY (2)			*	***	(***)
WALKS (1)	*				
JOB (5)					
MOSTIMP (1)					
COUNTRY (11)					

**Table 4.12 Pearson's Chi-Squared Results, Willingness to Pay Increased Fees vs. Categorical Variables.**

Variable	Level of Significance				
	US\$2	US\$4	US\$8	US\$16	US\$32
Dragons Seen			**	***	
INCAMP			**		
OUTCAMP			***	***	
TOTAL		*	***	***	
Other Variables					
INDODAYS					*
INDOCOST			0.06	**	
DAILY\$			**	***	***
KNPCOST\$			**	**	**
PARKNIGHT	**	*		0.055	***

**Table 4.13 1-Way ANOVA Results, Willingness to Pay Increased Fees vs. Continuous Variables.**

#### **4.8 Raising the benefits from Tourism**

At present, the only income to the park is from the Rp2000 (US\$0.87) entrance fee charged to each visitor. Whilst substantial revenue accrues from guiding fees, overnight accommodation and cafeteria sales, this is distributed between guides and visitor camp staff, and the local Koperasi set up to run the visitor camp. None of this revenue is used to offset traditional park management costs.

For the park to increase its revenue from tourism, visitors must be encouraged to spend more money in the park. This could be done in two ways. Firstly, by increasing the entrance fee charged to each visitor. Secondly, by providing additional or upgraded facilities which either incur an additional fee or which entice visitors to stay longer in the park, thus spending more money. These two issues are discussed

<sup>9</sup> \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.001$ , ( ) : >25% of cells in contingency table with expected values < 5.

separately in relation to the comments and attitudes of questionnaire respondents. A summary and recommendations are made in the final part of this section.

#### **4.8.1 Raising Entrance Fees**

A number of respondents to the visitor questionnaire made additional comments when asked about their willingness to pay increased entrance fees. 28 additional comments were made regarding the raising of entrance fees. These fall into a number of categories.

- 5 respondents stated that their willingness to pay increased entrance fees was contingent upon the improvement of existing facilities and the inclusion of added extras in the fee, notably guiding fees, insurance and an information leaflet. Of three respondents who wanted to see a resumption of dragon feeding, one indicated that his willingness to pay increased fees would be contingent upon this resumption.
- 6 respondents were willing to pay more if the extra revenue was needed for the upkeep of the park and was used properly. A further 4 respondents wanted information to be available to visitors on the use to which the entrance fee was put.
- A number of respondents made comments about the effect of raising prices on different user groups. Two said that raising fees would make the park too expensive for domestic tourists, and one said the same about backpackers and suggested student discounts. Others said that the fee should not be so high as to discourage low income visitors, but acknowledged that the current fee was too low for foreign tourists. One suggestion was to raise the fee by a small amount but install a donation for those who wish to contribute more, with details of the way the money is used.
- A couple of respondents stated that raising entrance fees would alter their visit, either by lengthening it to get value for money, or limiting it to Komodo rather than Rinca. One suggested that it wouldn't matter what fee was charged because, without access to prior information on prices, arrivals by ferry have no choice but to pay whatever entrance fee is charged.
- One respondent asked that fees were not raised too rapidly, and the most practical and least disruptive way to raise fees would be incrementally over a period of time, so that information had time to spread and did not go out of date immediately. Another suggested that a fee of US\$16 would be "pushing it", given that San Diego Zoo currently charges an entrance fee of between US\$13 and US\$18.

These comments raise some important issues regarding the raising of fees. They are discussed in section 4.8.3 below.

#### 4.8.2 Current and Future Development Within the Park - Visitor Attitudes

Respondents to the questionnaire administered to tourists in the visitor camp on Komodo Island were asked whether they would like to see specific additional facilities at the park. The categories of facility included in the question, and the frequencies of responses, are presented in Table 4.14.

The most popular additional facilities indicated by respondents were educational. 59.7% of respondents would like to see information boards, whilst 42.6% would like to see labels on trees and vegetation. The third most popular addition would be hides for viewing wildlife (27.7%). A new interpretation centre, and glass-bottomed boats for viewing marine life, both received a similar amount of support (21.6% and 21.0% respectively). A small number of day-visiting respondents would have liked public toilets (15.6%). These are in fact available, but not well signposted or maintained.

Respondents were also asked whether they would stay longer in the park if the facilities they had mentioned were present. A total of 171 respondents (32.6% of the sample, 41.9% of respondents who answered this question) indicated that they would stay longer if the additional facilities they had mentioned were present (Table 4.15). Note that respondents were not asked if they would pay more for these additional facilities. Staying longer is not necessarily the same as spending more money, but it could be made to be, either through a daily or increased one-off fee, or through additional charging for facilities.

When responses to this question are split by responses to the previous question, certain facilities appear more able to entice visitors to stay longer than other facilities do (Table 4.16). 60.0% of respondents requesting glass-bottomed boats said that this facility would entice them to stay longer in the park. Around half of respondents requesting viewing hides and a new interpretation centre said that these facilities would entice them to stay longer (51.7% and 51.3% respectively). Labels on trees and information boards, whilst both very popular additional facilities, were less likely to entice visitors to stay longer (44.4% and 41.5% respectively).

Facility	Frequency	Percent
Information Boards	313	59.7
Labels for Trees	223	42.6
Hides	145	27.7
New Interpretation Centre	113	21.6
Glass-Bottomed Boats	110	21.0
Public Toilets	82	15.6

**Table 4.14 Additional Facilities Desired by Questionnaire Respondents.**

Response	Frequency	Percent	Valid Percent
Yes	171	32.6	41.9
No	237	45.2	58.1
No Response	116	22.1	*

**Table 4.15 Total Frequency of Respondents Who Would Stay Longer if Their Specified Facilities Were Provided.**

Facility	Would Stay Longer (%)	Would Not Stay Longer (%)	No Response (%)
Glass-Bottomed Boats	60.0	20.9	19.1
Hides	51.7	33.8	14.5
New Interpretation Centre	51.3	38.1	10.6
Labels for Trees	44.4	39.9	15.7
Information Boards	41.5	44.7	13.7
Public Toilets	37.8	45.1	17.1

**Table 4.16 Frequency of Respondents Who Would Stay Longer for Each Particular Facility Mentioned in the Questionnaire.**

Besides responses to the closed questions regarding specific facilities as presented in the above tables, many respondents added unprompted comments regarding existing facilities and service, potential improvements, and other facilities they would like to see.

- **Additional items for purchase**

When respondents were asked if there was anything they could not find (Question 19), the most common answer was books and information on dragons and wildlife (20), followed by posters and better postcards of dragons and wildlife (11). Several people wanted to see more T-shirts available, and 5 comments specifically mentioned the need for larger sizes to be made available, since currently available stock is usually too small for non-Asian visitors. Around 4% of the total sample (20) mentioned specific food items which they would have liked. Most common amongst these were fruit and vegetables (8) and dairy products (7). Fresh fish was also mentioned. A number of other items were requested, mostly some form of local craft or clothing (16). Notable among these were requests for rangers' hats and dragon teeth as souvenirs (Table 4.17).

Item Requested	Number of Respondents
Books and information, including maps	20
Better postcards/posters of wildlife	11
Bigger T-shirts (European size)	5
Fruit and vegetables	8
Dairy products	4
Fresh food (fish)	3(2)
Bread	2
Snacks	3
Other (slide film, rangers hat, dragon teeth)	16

**Table 4.17 Additional Items Requested for Purchase by Respondents.**

- **Improved/additional facilities**

When asked about their desire for additional facilities in the park (Question 20), a number of respondents added unprompted comments (Table 4.18).

Comment on Facilities	Number of Respondents
Better/cheaper cafe/food	12
Better Staff	8
Better Accommodation	6
General improvement in food/accom/staff	3
Quiet hides	3
Money Changer	3
Light at night/electricity	2
Boat from Loh Liang for snorkelling, and equipment for hire	2
Reliable ferries	2
Goat feeding	2
Camping only	1
Museum	1
Elevated walkway	1
Walking without a guide	1
Sign about not interfering with wild animals	1
TV programme on dragons shown	1
Telephone for safety	1

**Table 4.18 Improvements and Additions to Facilities Requested by Respondents.**

The most common comment about facilities was the desire to see improved cafeteria, rangers and accommodation facilities (29 in total). Some people felt that washroom facilities in particular were not acceptable. With regard to guides, an improvement in

their English language skills was requested by a couple of people, and one specifically asked for a trained naturalist who spoke English.

Electricity, and specifically lights at night, were requested by a couple of respondents. Others wanted an improvement to ferry services, and the provision of snorkelling equipment and transport from Loh Liang to red beach where snorkelling currently takes place (as of August 1996 this facility is available). Two respondents added that they would like to see the resumption of dragon feeding, an opinion voiced by a number of other visitors who arrived unaware that feeding had been discontinued (*pers. obs.*). However, many others were glad to see that feeding had stopped.

Other requested facilities included a museum, an elevated walkway, a money changer, emergency telephone, showing of documentaries about the dragon, and signposts warning visitors not to interfere with the wildlife.

- **Comments about guided walks**

When asked about their intentions to undertake other guided walks around the park (Question 9), a number of respondents made additional unprompted comments regarding this aspect of the visitor experience (Table 4.19). The majority of these comments concerned the fact that information was not available about other walks or the need to book them in advance, and that guides were not available to accompany visitors when they requested them. A number of respondents also felt that these other walks were prohibitively expensive, and complained that, after paying the entrance fee, everything outside of the visitor camp had to be additionally paid for. One respondent questioned the need for guides on walks anyway.

Comment	Number of Respondents
No signs	1
Found out too late	1
Guide unavailable	4
too expensive (have to pay for everything out of camp)	3
Banu Nggulung overcrowded - too many tourists	4
Should consider additional treks into the interior	1

**Table 4.19 Comments concerning Rangers and Guided Walks.**

There was also considerable feeling that the Banu Nggulung trail was overcrowded, and that too many tourists were being taken there in groups that were too large. Three people wanted quiet hides as an alternative viewing experience, one for birds and one at a dragon nest. Another respondent suggested developing other, longer trails into the interior of the island.

- **General comments**

It is obvious that peoples' experiences differed widely. A number of different perceptions, and direct quotes from visitors, are included below.

Several people said that the rangers were very friendly and good (see some of the quotes below). There were 8 comments that the park shouldn't be commercialised, and that it is good because there is little to buy. It was felt that the park should be kept basic and environmentally friendly. Another made the comment that added facilities should only be around the camp. Both public toilets and glass-bottomed boats received a few "No!" responses. One respondent felt that promoting the park by encouraging snorkelling and glass-bottomed boats was not a good idea, since they are not the reason people come to the park and can be done elsewhere.

Lots of people mentioned some combination of facilities, service and food being of inferior quality, expensive and in need of improvement. Some said the park was lovely but that the unacceptable standard of facilities and service spoilt it for them. Some said they would stay longer if these areas were improved. One said the high prices made it seem like a money-making park. Rp15,000 is seen as too high a price for accommodation when there is no mosquito net, fan, real bed or breakfast included. Two people mentioned Bukit Luang (orang utan centre in Sumatra) in the context of cheaper/better service and facilities, and in terms of a TV programme of the centre and its animals which they show there.

The issue of boats and transportation was raised by a number of respondents (see some of quotes below). A few people complained about the reliability of the ferry between Sape and Labuan Bajo. A couple of people said that they wouldn't have stayed overnight, or would have stayed longer, if it hadn't been for the erratic ferry timetable, and no ferry on Fridays.

A number of direct quotes are included below, to illustrate the range of feelings which visitors to KNP have about their experience of the park.

- **Quotes about rangers/ guided walks**

"The ranger walk to the main feeding place was much too crowded, too many people and only two rangers. I don't know why we had to pay the rangers because they didn't tell [us] anything about the dragons or give other information, and because the group was so big it was hard to get their attention" *Dutch student*

- **Quotes about accommodation (particularly the problem of rats)**

"The accommodation is the most expensive in Indonesia so far, and I think it is way too much because there was no water, electricity and full of rats and cockroaches" *Dutch student*

"You really should get rid of all those rats in the bungalows and the restaurant. Its disgusting. Already now Komodo is known among travellers for its rathole losmen, and some people don't go there because of the rats. Rp15,000 is an expensive price for a room without breakfast, mandi, mosquito net or fan, and when you just sleep on the floor. At least make a proper bed, so you don't have to sleep among running rats in

the night! Rats are a serious problem, and you have to do something about it, if you still want tourists to come here for more than an hour” *Danish female*

- **Quotes about boats**

“The only thing we couldn’t understand is the behaviour of the boat driver who picked us up from the ferry. He took us to the remote beach and threatened to leave all the backpackers there if we don’t pay him immediately. Everyone on the boat was willing to pay but some people on the boat did not trust the boat driver and they would have wanted to pay at the Komodo harbour. The boat driver was extremely aggressive, he threatened to throw our luggage to the sea if we don’t do as he says. Actually the cost of that small boat to the ferry is far too expensive.” *Finnish student*

“A notice should be placed at both Sape and Labuan Bajo ferry ticket office and the small boat between the ferry and Komodo detailing the cost of this small boat and that a charge is levied. This will save much confusion and problems when people come over to the island.” *British scientist*

“Formalise transportation to Rinca, as those of us coming from and returning to Sape/Bima have a hard time making it to Labuan Bajo to make a trip to Rinca from there (especially as long as there is a boat [ferry?] only every other day.” *Danish student*

- **Generally Positive Quotes**

“The camp is clean and the whole park well looked after. We were also surprised that this place is not touristy, probably because the staff here were friendly and very professional... As a National park this is among the best I’ve ever visited [although] in future it would be nice to see some more trails and information boards here.” *Finnish student*

“A very well run and maintained National Park..... very good and interesting..... hope to stay longer next time.” *British scientist*

“I feel that Komodo National Park is a very important conservation area for the protection of the Komodo Dragons. It would be a shame to see them become even more endangered/extinct forever. I feel very lucky to have seen them in their natural environment in this national park. Thanks for the tour and helpful, well-informed guide. Its great the way the park is kept as natural as possible and you don’t feel like you’re coming to a big ‘tourist trap’, but to a nice park setting.” *Canadian gymnastics coach*

“Major Problems: Food - not very good, very little choice, often not available. Rats - in rooms and cafeteria. Rat traps would help!

Major assets: Guides - excellent and friendly. location - very beautiful and well laid out. Animals - habituated in camp and on trail.

The park is excellent and we enjoyed it very much” *Canadian scientist*

- **Generally Negative Quotes**

“All these things [complaints about accommodation, restaurant, rangers] are bad for people who plan to visit this park and ask me for my opinion and maybe will not come, because of bad stories” *Dutch student*

“Komodo Island has great potential and is an important conservation area, but having worked in and around many national parks in Australia, I was appalled at the unprofessionalism of the staff. The rangers on the whole were unfriendly and uninformative and showed very little interest in being of help to their visitors. This should be a standard part of their job! This also seemed to be the general consensus of everybody I spoke to. They all seemed to feel that they were being taken advantage of and had very little choice or say in what they could do, how long they stayed due to ferries and outrageous boat prices). I find this very sad, as they will not recommend Komodo to others and I realise it is the tourist dollar which pays for the services provided (which unfortunately have been of very poor standard in comparison to other, cheaper places). Instead of being a highlight of many travellers journeys, it seems to have become more of a heartache, and the worried faces and conversations in the cafeteria makes that fairly obvious. I only hope that all the money spent here goes towards maintaining the park, research and studies of the area and its wildlife, as well as training programs for its currently useless staff” *Australian park ranger*

### **4.8.3 Summary and Recommendations**

The preceding analyses have identified a number of important findings with respect to the financial contribution of tourism to KNP. Firstly, entrance fees are set at a low level. The revenue generated from entrance fees does not appear to offset the purely financial costs of tourism to the park, and does not contribute to traditional management costs. The government is essentially subsidising the visits of foreign tourists to the park. This may in part be explained by the lack of a definite linkage between park costs and revenues, and the currently accepted national policy that there should not be any price restriction on access to parks.

Secondly, amongst foreign tourists, demand for entrance to the park appears to be fairly inelastic at the current fee of under US\$1. This suggests that there is scope for increased revenue generation by increasing fees. Small increases would offset the costs of tourism and provide revenue for traditional management costs, and even large increases, whilst having a dramatic effect on visitor numbers, would still result in net increases in revenue to park management.

However, there are important issues associated with the principal of raising entrance fees. Perhaps most fundamental amongst them is the issue of the differential effect of price rises on different user groups. Not all visitors to KNP would be able, let alone willing, to pay vastly inflated entrance fees. Even small rises may be out of the reach of domestic visitors, and rises of several dollars would deter some of the independent

backpacker travellers. However, even quite significant rises in the entrance fee could be comfortably accommodated within package tour prices.

Clearly, as the comments from visitors and operators, and the data presented earlier, illustrate, the elasticity of demand varies across the spectrum of visitors to the park. Thus, the impact of price rises is not confined to the volume of visitation, but will also affect the composition of the visitor population. In the next chapter it is shown that different types of visitor contribute differently to the local economy. In particular, package tourists and cruise passengers, those least effected by park entrance fee rises, contribute far less, and far less widely, than do independent travellers. Hence a rise in entrance fee could have adverse effects for the local economy based on tourism.

The decision of whether and by what amount to raise fees must ultimately refer to park policy on visitor access and pricing. If the park must financially justify its existence, or its expenses with regard to tourism, then fees must be raised to recoup these expenses, or other mechanisms must be constructed to increase revenues. However, a purely financial analysis fails to recognise the aesthetic and amenity values of parks for the general public, which are maximised by token pricing but which increased fees would curtail. This is a political and philosophical argument about the ultimate function of protected areas. In addition it must be recognised that, particularly in rural and under-developed areas, the issue of park pricing is not isolated from the surrounding local and regional economies. Low pricing of public amenities such as parks, resulting in higher visitation rates, can be a deliberate policy to stimulate local economic development in the private sector (Laarman & Gregerson, 1996). It is clear from this research that large increases in fees could have negative effects on the local economy (see Chapter 5).

A small increase in entrance fee, perhaps to US\$5 and perhaps confined to foreign tourists<sup>10</sup>, would have little effect on visitation. However, in isolation it may well have a negative effect on visitor satisfaction. Comments were made from both visitors and operators that increased fees should at least be used for the running of the park, and more specifically to improve tourism facilities, which are perceived by many to be unacceptable at present.

Visitor perceptions are important considerations, since it is generally agreed that around 60% of all tourism is in response to recommendations from personal acquaintances (Nizette, *pers.comm.*). In the independent 'alternative' travel market, which encompasses remote and developing locations, peer perceptions are particularly important in spreading information and opinion about a destination amongst the traveller network. If increased benefits are to be realised, visitor needs must be addressed. With reference to KNP, some visitors appear not to be satisfied with current standards of infrastructure and (to a lesser extent) service in the park. Whilst improvements should be made, it is clear that visitors do not want excessive development. The maintenance of a natural environment and 'wilder' experience is not only important for visitors but also more compatible with the conservation objectives of the park.

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<sup>10</sup> differential pricing is one strategy to increase revenues whilst not discriminating against less affluent visitors.

A clear need is expressed by visitors for more information. This includes educational material such as information boards, wildlife films, naturalist guides etc., but also practical information about the tourism experience in the park. Of particular importance is widely distributed pricing information available before arrival at the park, and also information on the availability of other walking activities and how to go about booking them. Visitors also expressed a desire to know how their fees were being spent in the park. The provision of this information would not only increase tourist expenditure and willingness to pay directly, but also indirectly through increased visitor satisfaction.

Finally, it is noted that considerable visitor expenditure occurs within the park, on optional services such as accommodation, guiding, cafeteria purchases, of which nothing accrues to the park. An increased length of stay in the park would result in increased revenues to the providers of these services and not to the park.<sup>11</sup> This is an additional disincentive for the park to develop an improved tourism experience with increased benefits.

A number of tentative recommendations have been drafted from these findings:

- Establish an explicit pricing policy based on a nationally agreed philosophy regarding the function of parks, and taking into account the effects of pricing policy on different users, visitation patterns, the physical environment and the surrounding local economy.
- The current fee is too low for foreign tourists and should be raised, although caution should be applied over raising the price too high.
- A policy based on 'fair fees' which reflect both (1) ability to pay and (2) payment in proportion to benefits received may be more equitable than a system based upon 'efficient fees' which reflect payment in proportion to the costs on management (Laarman & Gregerson, 1996). With this in mind;
  - Consider a dual pricing system where local domestic tourists (who have a lower income and who already subsidise parks through domestic taxes), pay less than foreign tourists.
  - Consider a tiered pricing system for foreign visitors, whereby package tourists pay proportionally more than independent tourists, reflecting their lesser contribution to visitor expenditure in the park and in the local economy.
  - Consider a universal and low fee in conjunction with a donation box, clearly explaining the need for financial resources and the use to which they would be put, to which visitors can contribute.

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<sup>11</sup> since, in addition, the entrance fee to the park is a one-off and not a daily rate.

- We do not advocate a large rise in entrance fee. However, if a large rise is necessary, consider a series of smaller, incremental rises over a longer period of time. This will be more palatable to visitors.
- Consider consolidating some of the additional fee structures. In particular, (1) the entrance fee and Banu Nggulung walk fees could be combined, and (2) the ferry and local shuttle boat fees could be confined. This would alleviate visitor dissatisfaction and misunderstanding.
- Visitors should be made aware, before arrival at the park, of the pricing structure of the park and the various activities and services available to them. This could be provided at the ferry terminals in Sape and Labuan Bajo, and in publicity material to tourist information offices as far away as Bali and Lombok.
- Visitors should be made aware of the pricing policy of the park, and the use to which entrance fees and other fees are put.
- Improvements could be made to the quality of guiding within the park. In particular, there is a need for training in (1) language skills, particularly English, (2) natural history and interpretive skills, and (3) public relations skills for dealing with visitors.
- A plan for the future development of tourism in the park is required. In particular, a policy is required concerning the provision of terrestrial accommodation services within the park.<sup>12</sup> If overnight accommodation facilities are to be maintained, improvements should be made to the quality of accommodation and food services provided.
- Caution should be applied over the issue of retaining park revenues for management costs, particularly if it is likely to lead to a significant reduction in core government funding, and an increased reliance on tourism for income.

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<sup>12</sup> refer to the environmental considerations in Chapter 3.

## 5. TOURISM AND LOCAL DEVELOPMENT

### 5.1 Introduction

This chapter examines the contribution of tourism to town and village communities surrounding KNP.<sup>1</sup> It addresses principal objective (d) and technical objective (b) of the project;

- raise the income and related benefits which local people gain from tourism based on biodiversity.
- identify the local indigenous peoples' incomes from the sites and identify the additional economic benefit which could accrue to them from tourism and biodiversity.

KNP is situated in a relatively poor, rural area of Indonesia. Tourism to the park has the potential to contribute significantly to the surrounding local economy, through employment and revenue generation, and to stimulate development. However, the extent to which local communities actually benefit, both socially and economically, is open to question. Regardless of the economic value of protected area tourism, the distribution of benefits and costs is rarely equitable, although little empirical work has been carried out (Wells, 1992).

The direct economic impacts of tourism, those arising from initial tourism spending on accommodation, food, etc., will generate knock-on effects of a second and subsequent rounds of spending. These include indirect effects (purchase of goods and services by the direct recipients of tourism revenues) and induced effects (spending of wages by employees of the direct recipients of tourism revenues). However, the local benefits will be tempered by the amount of revenue that either bypasses or leaks from the local economy as a result of the import of goods and services from outside the local area. These relationships are illustrated in Figure 5.1.

Traditional economic analysis would estimate the various economic impacts using macroeconomic techniques such as input-output analysis. Such large-scale techniques are inappropriate for local level enquiries where significant data is often unavailable, but the same sorts of impacts can be identified by direct estimation from primary data sources. Using simple survey techniques, we have attempted to identify the direct economic impacts, and the level of bypass and leakage from the local economy.

The following are the major areas of inquiry;

- What is the magnitude of local economic impact?
- What is the magnitude of local employment generation?

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<sup>1</sup> The 'local community' around KNP has been defined for the purposes of this project as the gateway towns of Labuan Bajo and Sape, and the Island villages of Komodo, Rinca and Kerora (Chapter 1).

- How is revenue distributed within the local economy?
- What level of tourist expenditure bypasses or leaks from the local economy?
- What are the costs associated with tourism for the local community?

Two issues are of particular interest. The first is the division of benefits and costs between the island villages, which have been annexed from the park, and the gateway towns, within which tourism development has been concentrated. The second is the relative contribution of different types of visitors to KNP, as identified in Chapter 2.

### **5.1.1 Methodology and Structure**

The local economic impact of tourism depends on the number of tourists coming into contact with the local communities and the amount that they spend. This has been examined using a four-part process. Firstly, the magnitude of tourist visitation was estimated. Secondly, an inventory was made of all the tourism related businesses, disaggregated by sector. This provided a picture of the ways in which tourism contributed directly to the local economy. Thirdly and fourthly, estimates of the magnitude of economic impact were derived by surveying both the demand-side (tourists) and the supply-side (local individuals and enterprises) of the market. In addition, the number and type of jobs created by tourism were examined by surveying local businesses.

In this chapter, the consolidated results are presented and discussed in sections 5.3 (magnitude of tourism) and 5.4 (revenues and employment). In the interest of clarity, the fine detail of the estimation procedures has been omitted here. The analysis focuses on the distributional impacts of tourism between communities, sectors and individuals. It includes an assessment of leakage and the amount of tourism spending in association with KNP which bypasses the local economy (section 5.5). In addition, the relative contribution to the local economy of different types of tourist are estimated. The effects of tourism on local development are assessed in section 5.6.

Social impacts, and the attitudes of locals towards tourism and conservation have also been assessed, using structured questionnaire surveys of a random sample of the population (section 5.7). A final discussion and recommendations are presented in section 5.8.

It should be noted that analysis has been confined to the impacts of foreign tourists, for a number of reasons. Firstly, it is difficult to separate domestic tourists from domestic business travellers staying in local towns, and so it is safer not to include them. Secondly, some data sources for visitation and accommodation patterns refer only to foreign visitors. Thirdly, local people associate 'tourist' with foreigner, and when questioning local businessmen and townspeople the emphasis was very much on the impacts of foreign visitors. Finally, visitors to the park are predominantly (93%) foreign, so any additional impact of domestic visitors will be small in comparison to that of foreign visitors.

## **5.2 Introduction to the Local Community**

Before attempting to assess the benefit to local people of tourism to KNP, it is necessary to define who these people are. This is not always a simple task, but it is important. There are many different scales of 'local' and many different groups of 'local people' with potential interests in the park.

Any group of people which can be identified as having been dispossessed of land or resources by the establishment of KNP should be considered those most qualified to receive benefit from it. In addition, if tourism is to be effective in controlling illegal utilisation within KNP, the benefits must target the groups responsible for these acts. Within the context of KNP, it is useful to consider both geography and ethnicity when defining this local community.

### **5.2.1 Geography**

The local community can be divided into two groups by their physical location; those who live within the boundaries of the national park and those who do not.

The former group is made up of the villages of Kampung Komodo on Komodo Island, and Kampung Rinca and Kerora on Rinca Island. These villages were not relocated out of the park upon its establishment, but were allowed to remain as enclaves on the island, with utilisation rights over marine areas in the park but no rights other than access over terrestrial areas outside of the enclaves. These people, arguably the most local of the locals, have suffered direct opportunity costs as a result of the ban on hunting, clearing and felling, and the restrictions on marine utilisation. They number approximately 1800. (see Sudibyo, 1995a).

Besides the inhabitants of the park, communities surrounding the park also depend on its resources. The coastal villages of on eastern Sumbawa and on western Flores are seafaring communities who have fished for generations in the waters between these two islands. Their market economy is based on marine products.

KNP lies in the subdistrict of Komodo, Manggarai Regency, in NTT. The centre of the sub-district is the town of Labuan Bajo, with a population of approximately 4,400. There are several surrounding villages bordering the park, with a total sub-district population of approximately 13,500. The neighbouring subdistrict of Sape, Bima Regency, in NTB has seven settlements bordering the park, with approximately 29,000 inhabitants. Of these, approximately 4,300 are located in the subdistrict centre of Sape (Table 5.1, and Sudibyo, 1995b).

Local Area	Number of Settlements	Approximate Total Population	Approximate Population in Tourism Centres <sup>2</sup>
Within KNP	3	1807	914
Sape Subdistrict	7	29,000	4,326
Komodo Subdistrict	7	13,559	4,398
Total	17	44,366	9,638

**Table 5.1 Local Populations in and Around KNP.**

The towns of Sape and Labuan Bajo, besides their proximity to and reliance on the park for resources, act as gateway ports for visitors to the park. It is in these places that the direct financial benefits of KNP tourism are most likely to be felt. In addition, of the villages within the park, only Kampung Komodo receives any benefits from tourism. For the purposes of this study, the tight definition of local people includes the inhabitants of Sape and Labuan Bajo and the inhabitants of Kampung Komodo. The wider definition includes the other settlements in each subdistrict.

### **5.2.2 Ethnicity**

There is a diverse cultural and ethnic mix in the community in and around KNP. Not all groups can be considered indigenous, but many have become firmly integrated into the community. Whether they should be considered as local people when assessing the current division of benefits from tourism is difficult to answer.

The original inhabitants of the islands of the park were the Ata Modo, with a different language and social organisation to the people of the larger surrounding islands. However, there has been tremendous immigration, causing the population to rise dramatically in the last few years, and there are very few of these original inhabitants remaining.

The inhabitants of Sape subdistrict are Bimanese, whilst those inhabiting Komodo Subdistrict are Manggarai people. The major immigrant groups in these areas are Bugis and Bajau from south Sulawesi. The latter were originally nomadic, and only recently began settling coastal parts of Sulawesi, Nusa Tenggara and Maluku (Sudibyo, 1995b).

In Sape and Labuan Bajo there are people with a variety of tribal and geographic origins. Bajo, Bugis and Manggarai are interspersed with West Javan, Sumatran and even Chinese. Of particular concern with regard to tourism is the proportion of the tourism entrepreneurs who are immigrants from further afield, since this is likely to affect the level of leakage of tourism revenue from the local economy.

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<sup>2</sup> *Kampung Komodo, Sape, and Labuan Bajo Respectively.*

### 5.3 The magnitude of tourism in gateway towns

Almost half of all visitors to KNP travel by cruise ship from Bali, Lombok and further afield. These visitors do not pass through the local communities at all, and their only contact with the local economy is through their visit to Komodo island, where they may purchase local souvenirs or contribute to local employment via guiding (see below). The other half of the visitors to KNP pass through the local gateways of Labuan Bajo, and some will come into contact with the community of Kampung Komodo. Estimates of the magnitude of visitation to each of these centres is presented in Table 5.2.

Town	Labuan Bajo	Sape	Kampung Komodo
Transients <sup>3</sup>	0	11,600	4685
Day Visitors	0	0	?
Overnight Visitors	11,000	1,100	0
Bed Nights	33,000	1,100	0

**Table 5.2 Estimates of Visitation to Local Communities Around KNP, 1995/96.**

It is clear that the greatest contact of the local community with foreign visitors occurs in Labuan Bajo. An estimated 11,000 people spend an estimated 33,000 bed nights in and around the town. The other gateway town to the park, Sape, receives far fewer overnight foreign visitors, perhaps 1,000-1,500. However, several thousand foreign visitors pass through the town each year, en route to KNP and the islands to the east. Sape is a transit stop for visitors changing from bus and taxi transport to ferry and charter boats, and as such the contact of local people with tourists is confined primarily to the transport termini. Fewer opportunities will exist for local people to benefit from tourists in Sape than in Labuan Bajo.

The potential for benefits is even more limited for the local people living within the park. The villages on Rinca Island, Kampung Rinca and Kerora, receive no visitors. Kampung Komodo does receive some visitors, and the community comes into contact with many more as a result of the close proximity of the Loh Liang visitor camp. However, no visitors stay overnight in the village, and it does not offer services such as restaurants and shops. Estimating a figure for the number of visitors to the village is both difficult and in some ways irrelevant, since benefits are not related to visitation in the absence of spending opportunities. Fortunately, good figures are available to estimate the contribution to the community via a number of entrepreneurial opportunities that are not related to village visitation (Table 5.3 below).

It is likely that the flow of benefits to local people will reflect the geographical inequalities of visitation and contact with foreign visitors. This will be examined in more depth in the following sections of this chapter.

<sup>3</sup> People for whom the location was a transit stop and not a destination.

#### 5.4 Revenues and Employment in Tourism

A number of sectors of the local economy benefit directly from tourism, and for some it constitutes the major source of revenue. Principal amongst these are the hotel sector, restaurant sector, retail outlets, transport services, charter boats and tour guides. Surveys of tourists and local businesses revealed current levels of tourist spending in the local economy. Estimates broken down by sector and location are presented in Table 5.3.

Sector	Tourism Revenue (US\$)			Total	% of Total
	Labuan Bajo	Sape	Kampung Komodo		
Hotels	146,000	3,500	0	<b>149,500</b>	11.94
Restaurants	178,000	22,500	0	<b>200,500</b>	16.01
Charter Boats	407,000	149,000	0	<b>556,000</b>	44.39
Shops/Goods	200,000	3,000	5,600	<b>208,600</b>	16.65
Transport	92,000	39,000	6,100	<b>137,100</b>	10.95
Other	-	-	900	<b>900</b>	0.07
<b>Total</b>	<b>1,023,000</b>	<b>217,000</b>	<b>12,600</b>	<b>1,252,600</b>	
% of Total	81.67	17.32	1.01		

**Table 5.3 Estimates of Tourist Spending in Labuan Bajo, Sape and Kampung Komodo.**

Approximately US\$1.25 million was spent by tourists in the local communities surrounding KNP. 99% of this was spent in the two gateway towns of Labuan Bajo (82%) and Sape (17%). Only 1% of this expenditure accrues to people living within the park.

The largest amount of spending is in the charter boat sector (c.44% of revenue). Charter tours are the often most expensive item purchased by visitors, and, by their association with KNP, are often the major attraction of a stay in the area. They also provide access to beaches and snorkelling sites. For some, notably more affluent visitors on package tours from Bali, it is their only contribution to the local economy.

Restaurants and retail purchases account for almost one third of tourist expenditure in the local economy. Hotels and public transport contribute a further 10% each.

Location and Sector	Number of Businesses	Number of Jobs in sector	Proportion of Revenue from Tourism (%)	Number of 'full jobs' Supported by Tourism
<b>LABUAN BAJO</b>				
Tourist Hotels <sup>4</sup>	12	72	91	65.52
Hotel Restaurants	11	34	81	27.54
Independent Restaurants	17	76	33	25.08
Charter boats	57	134	75	100
Shops	c.40	95	30	28.5
Guides	*	9	100	9
<b>Total</b>		<b>420</b>		<b>256</b>
<b>SAPE</b>				
Hotels	4	7	68	4.76
Restaurants	13	51	25	12.75
Charter	13	45	100	45
Shops	?	51	3	1.53
Horse Carts	*	(750)	0.1	1
<b>Total</b>		<b>154</b>		<b>65</b>
<b>KAMPUNG KOMODO</b>				
Boat	2	6	100	6
Carving	*	17	100	17
Park Jobs	*	21	6	1.26
<b>Total</b>		<b>44</b>		<b>24</b>
<b>TOTAL</b>		<b>618</b>		<b>345</b>

**Table 5.4 Estimates of Tourism-related Employment in Different Sectors of the Local Community.**

A similar sectoral breakdown is witnessed in tourism-related employment generation. The largest amount of employment (c.42%) is in the charter boat sector of the economy (Table 5.4).

<sup>4</sup> Plus an additional six which receive no foreign visitors.

## 5.5 Leakages and Bypasses

### 5.5.1 Leakages

Sector	Estimated Leakage (%)	Revenue Remaining (US\$)
Hotels	* (see below)	150,000
Restaurants	20	160,000
Charter Boats	58	233,000
Shops/Goods	60	87,000
Transport	93	9,000
<b>Total</b>		<b>639,000</b>

**Table 5.5 Estimates of Leakage of Tourism Revenue From the Local Economy.**

Leakage of revenue from the local economy is related to the magnitude of importation of goods from outside the region, and the level of non-local ownership of tourism-related enterprises. In the local economy surrounding KNP, at least 50% of all visitor expenditure leaks out in this way (Table 5.5).<sup>5</sup> A high proportion of public transport services are government-owned or run by external operators. Similarly, a number of the higher-cost charter operations are externally run and operate out of Lombok or Bima. The high proportion of leakage from retail outlets is due to the tourist demand for manufactured goods (bottled drinks, snacks, cigarettes, postcards, etc.) which are not produced locally. The proportion of leakage from restaurants is lower, given that much of the goods sold by restaurants are fresh produce obtained locally. It is difficult to estimate a figure for leakage from hotels. A number of hotels are non-locally owned but some of these owners are locally resident. The proportion of revenue that is removed from the local economy is unknown.

It is interesting to note that leakage from revenue generating activities in Kampung Komodo are negligible, since they are based upon the provision of labour and primary produce. Whilst the ownership of the shuttle boats appears to be held by Sape residents, much of the revenue is still retained by the village, and all remains within the wider local economy embracing the rural population bordering the park.

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<sup>5</sup> *this does not take into account leakages associated with initial infrastructural and development costs, or overheads.*

### 5.5.2 Bypasses - The Relative Contribution of Different Tourist Types

Tourist Type	Mean Cost of Trip (US\$)	Total Expenditure (US\$)	Total Local Expenditure <sup>6</sup> (US\$)	Mean Local Expenditure per Visitor (US\$)	Proportion of Total cost of Trip Spent Locally (%)
Cruise	600	6,763,200	388	0.03	0.01
Package	300	1,032,000	180,450	52.46	17.49
Independent	97	1,071,727	1,071,727	97.43	100.00
Total	345	8,866,927	1,252,565	48.72	14.13

**Table 5.6 Distribution of Tourist Spending by Type of Tourist.**

Although the average cost per trip of different types of visitor presented in Table 5.6 are not entirely comparable<sup>7</sup>, they do give an indication of the relative contributions of different types of visitor and the magnitude of tourist spending on trips to KNP which completely bypasses the local economy. Package tours fulfil the sole function of providing a visit to the park in the minimum amount of time, but with a certain (fairly basic) level of comfort. Only 17.5% of revenue from this source accrues to the local economy. Cruise trips, whilst advertised principally for their inclusion of KNP on the itinerary, do fulfil other recreational functions (multiple destinations, luxury service, etc.). As such it is a little unfair to imply that the total expenditure on cruise tours is contingent upon the inclusion of KNP on the itinerary. Nevertheless, it remains true that cruise passengers visiting KNP spend over US\$6.5 million for the privilege, of which almost nothing accrues to the local economy.

At the other extreme, independent tourists, once they have arrived in the region, spend all their money locally although, as already highlighted, a substantial proportion leaks out again. It would appear, then, that the amount of tourism spending based on KNP which bypasses the local economy is substantially greater than that which accrues to it. In addition, there appears to be an inverse relationship between average spend on a visit to KNP and average contribution to the local economy. The less affluent, independent visitors, demanding a lesser level of comfort and service, provide a greater contribution to the local economy than the more affluent travellers seeking higher, Western levels of comfort and service.

<sup>6</sup> Before consideration of leakages.

<sup>7</sup> given that the point of departure of different trips is not universal.

## **5.6 Tourism and Patterns of Local Development**

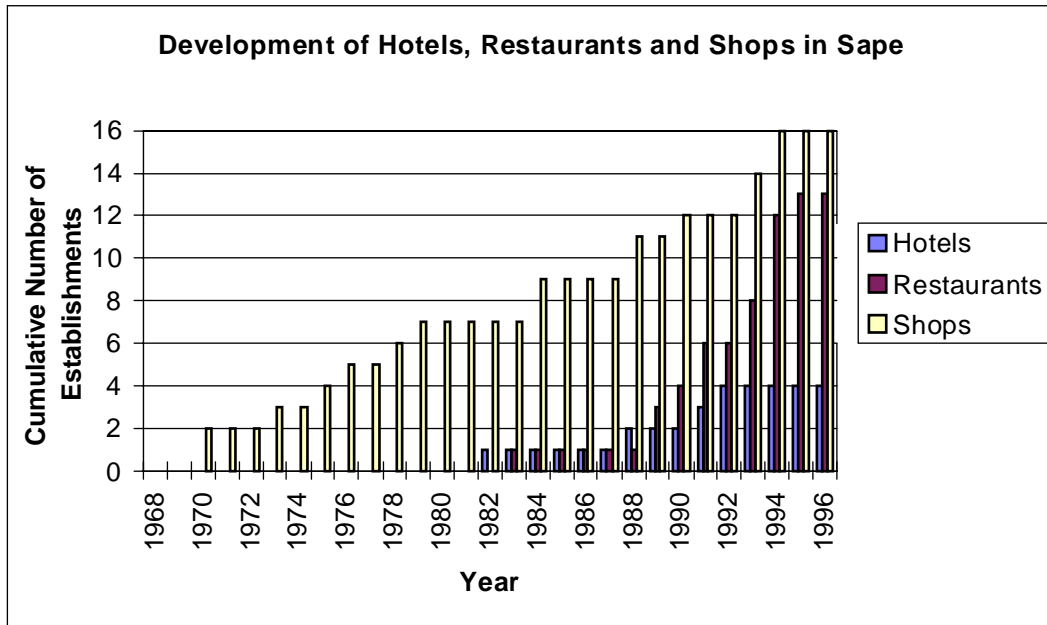
Tourism to Komodo National Park clearly generates large inputs into the local economy, although the lack of linkages with traditional production sectors have resulted in large leakages. Employment opportunities appear to have been created by tourism, although not necessarily at all levels of the industry. The continuing rise in tourism to KNP, and the consequent rise in visitors passing through the gateway towns of Labuan Bajo and Sape, will bring about changes in patterns of local development. The changes in Labuan Bajo are likely to be more marked than in Sape, given the greater volume of foreign visitors staying in the town. A comparison of the situation in Sape with that in Labuan Bajo may assist in identifying those changes.

### **5.6.1 The Rate of Local Development**

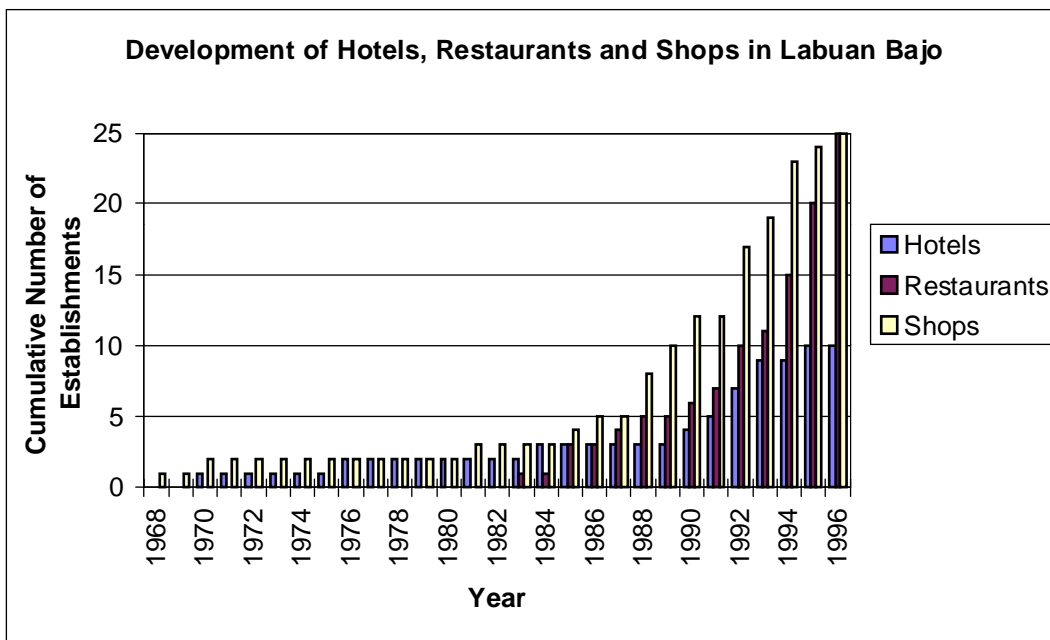
The dates of establishment of hotels, restaurants and a sample of retail outlets were ascertained during survey work in August 1996. The cumulative development of these three types of business in Sape and Labuan Bajo are shown in Figures 5.1 and 5.2 respectively. It appears that marked development in all three has occurred in Labuan Bajo since the late 1980s. In Sape, the development of shops has been more gradual, although the development of restaurants has accelerated since 1988. It is evident that Labuan Bajo has experienced a phase of rapid development in recent years, although whether this is solely due to the rise of tourism to KNP is uncertain, although the two are undoubtedly linked.

However, care must be taken in interpreting this data, since it only presents information on existing enterprises and not those that have closed during the same period. It may be that the apparent rise in development is actually an artefact created by the short longevity and rapid turnover of individual businesses.

Despite this caveat, there has undoubtedly been a period of considerable population growth in both Sape and Labuan Bajo over the past ten years. Most rapid growth has been witnessed in Labuan Bajo, the administrative centre of Komodo Subdistrict. Much of this has been in association with the development of transport infrastructure, namely an airstrip, ferry terminal and harbour for larger vessels (Sudibyo, 1995b).



**Figure 5.1 The development of Local Enterprises in Sape**



**Figure 5.2 The Development of Local Enterprises in Labuan Bajo.**

### **5.6.2 The Style of Local Development**

In Sape, the traditional types of hotel and restaurant still prevail. The dependence of these sectors on tourism is less than their equivalents in Labuan Bajo, and it is unlikely that their development has been much affected by tourism. In Labuan Bajo, it is clear that new styles of accommodation and restaurant are emerging in response to tourism demand.

The traditional losmen and homestays in Labuan Bajo receive very few foreign visitors. Most stay in B Class, tourist hotels. Whilst some independent travellers prefer to pay as little as possible and stay in traditional accommodation, most prefer to pay a small amount more for a higher level of comfort. Within the B Class hotels, those providing greater comfort/facilities receive more visitors. Beach and island resorts, which capitalise on the natural environment surrounding the town, also prosper. However, the more luxurious A Class hotels do not appear to have established themselves. Although four are listed in local government records, only one remains open as of August 1996, suggesting that the development of higher cost, luxury facilities in Labuan Bajo was premature. The town remains essentially an independent, budget traveller location.

The restaurants in Labuan Bajo display a greater diversity of menus than those in Sape, which all serve different forms of Indonesian cuisine. A number of restaurants in Labuan Bajo serve Chinese and European styles alongside Indonesian. Many more now serve western style drinks, such as milkshakes. Although there are many small, local outlets serving food, most tourist custom accrues to the hotel restaurants and to a couple of independent restaurants which cater specifically for the tourist market. These restaurants charge higher prices, provide more 'westernised' menus, and are situated with panoramic sunset views across the bay towards KNP. They have become well known amongst both independent travellers and tour guides/operators, which perpetuates their dominance of the market.

### **5.6.3 Employment and Ownership Issues**

Traditional livelihoods around KNP have been based upon production, principally fishing with a small amount of agriculture. Fishing is primarily carried out by the immigrant Bugis and Bajau people, whilst the native Bima and Manggarai people are primarily farmers. The towns of Sape and Labuan Bajo have become market centres for marine and agricultural produce, and a trading community has developed in these centres. There are relatively complete public facilities and government offices in Labuan Bajo, and to a lesser extent in Sape. As such, employment in the business sector and the civil service has become available to educated sections of the community (Sudibyo, 1995b).

Tourism has provided additional employment opportunities, notably in the charter boat sector and in service enterprises (hotels, restaurants). The former is a direct extension of traditional marine livelihoods, whilst the latter is an extension of the development of town-based business opportunities as described above. Of those employees of tourism-related enterprises who were surveyed, the average age was less

than thirty. Whilst there are no opportunities for female employment in the charter boat sector, between 36% (Labuan Bajo) and 50% (Sape) of town-based business employees were female. The average age of females was less than 25 whilst that of males was greater than 25.

Opportunities appear to be greater for the younger members of the community. In addition, the roles which they adopt are usually subordinate, semi-skilled, and require little by way of formal education beyond basic schooling. In some ways the involvement of local people is determined by their existing skills and capacities; seafarers are equipped to become involved in the charter boat sector whilst traders and entrepreneurs are developing their businesses to encompass tourism.

Training and skills transfer is limited. Some hotel and restaurant employees speak English or (rarely) other foreign languages, and some have undertaken specific tourism training, but this is by no means universal. Wages are comparatively low, although in some cases salary is not a reliable indicator of income, since other, invisible benefits, such as accommodation and food, also flow to employees.

Senior positions in tourism-related enterprises are rarely open to local people, mainly due to a lack of capital to invest in a business. This situation is not unusual, and is not uncommon in the traditional fishing industry either. The large capital investment necessary for specific forms of fishing, and for transport vessels, has resulted in many local fishermen working as hands on boats owned by external entrepreneurs, or borrowing heavily from creditors to run their own boats (Sudiby, 1995b). Similarly, of the restaurants in Labuan Bajo, only 28% are owned by people from Manggarai Regency, the rest being owned by Javanese and other non-local entrepreneurs. The same is true of restaurants in Sape, with just under half of the owners from Bima and the rest from further afield. There appears to be heavy investment from outside the Province in the charter boat industry, and in the development of new, higher class hotels and beach resorts. It is also apparent that large areas of waterfront land in Labuan Bajo are being bought up by external investors in anticipation of an expansion of tourism development in the region.

#### **5.6.4 Gender Issues**

Traditional gender roles predominate where fishing remains the dominant economic activity. Only adult males go to sea, whilst females conduct domestic duties. In some cases women will assist with the processing and selling of marine produce, and with the repair of nets (Sudiby, 1995b). This is precisely the situation in Kampung Komodo. It also remains the predominant situation in Sape and Labuan Bajo. In the questionnaire survey of local people conducted as part of this project (see below), 54% of female respondents in Labuan Bajo and 77% in Sape stated their occupation as 'housewife'.

The development of retail and service sectors of the local economy have provided new opportunities for female employment in more visible roles. Some of these are related to the expansion of tourism. As mentioned above, between 36% and 50% of

employees in restaurants are female, and the same ratio is anticipated for local shops. However, only two out of 38 'tour guides' in Labuan Bajo were female.

The impact of tourism development, or any other development, on gender roles is difficult to ascertain when the hidden roles of women in society are not fully understood. In the same way that salaries are not always a good indicator of material benefits from employment, the sex ratio of visible employment is not necessarily a good indicator of female involvement in an industry or business. This kind of inquiry demands extensive field research in the form of household surveys and investigations. This was beyond the scope of this project.

## 5.7 Local Attitudes and Perceptions

The above analysis presents a picture of the interaction of tourism with the local economy based upon the measurement of revenue and employment generation. The interpretation of these results necessarily originates from an external perception based upon measured variables selected by the investigators. What follows is an attempt to elucidate *local* attitudes and opinions regarding the development of tourism and the arrival of foreign visitors in their community. Three areas of inquiry were focused on. Firstly, the scale and type of interaction of local people with tourists and the tourism industry. Secondly, whether tourism has an economic cost, in terms of inflation.<sup>8</sup> And thirdly, a series of questions aimed at identifying the perceptions and attitudes of local people towards tourism and conservation.

A questionnaire was administered to local people in and around Komodo National Park. Three locations were chosen, based on differences in the level of tourism development in each; Labuan Bajo, Sape and Kampung Komodo. In an effort to select a random sample of the population, interviewers visited residential areas in each location and interviewed one occupant from every other dwelling encountered. Alternate male and female respondents were chosen. A total of 501 questionnaires were completed, according to the schedule in Table 5.7.

Location	Male Respondents	Female Respondents	Total
Labuan Bajo	98	102	200
Sape	95	106	201
Kampung Komodo	50	50	100
TOTAL	243	258	501

**Table 5.7 Breakdown of Questionnaire Respondents by Sex and Location.**

It became clear that the data from Kampung Komodo was suspicious, there being almost total homogeneity of responses throughout the sample. A number of causal factors may have contributed to this result;

1. respondents have given 'expected' answers, i.e. those which they believe the interviewer wanted to receive.
2. respondents have associated interviewers with the park authorities and, through fear of reprisals or otherwise, given 'correct' answers which reflect well on the park and its policy.
3. respondents have given the 'communal' answer, i.e. expressed that opinion which is held by the headman (*Kepala desa*) of the village.

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<sup>8</sup> *Inflation is viewed by Lindberg & Enriquez (1994) as the primary economic cost of tourism at the local level.*

The first and second explanations invoke cognitive processes as the causal factor for the pattern of response. Both scenarios are credible given the parameters within which the survey was carried out. However, our Indonesian research assistant suggested the third reason above as the probable explanation for the data (Muhidin, *pers. comm.*). Whatever the reason, this data is unusable for statistical comparisons. The remainder of the data presentation and analysis is therefore restricted to responses from Sape and Labuan Bajo.

### 5.7.1 Descriptive Statistics

- **Population Statistics**

The mean age of the sample was 39.51, with a standard deviation of 12.05. There was little variation across the locations of the survey. The mean number of children in each household was 3.9 (sd=2.31), again with little variation across locations.

- **Interaction with tourists**

Respondents were asked whether their family was dependent upon tourism (Question 3), and then asked about their interaction with tourists (Question 4). The results of these questions are presented in Table 5.8. 50.5% of respondents in Labuan Bajo said that their families were partially dependent on tourism for income (1.5% indicated that they were completely dependent on tourism), whilst only 10.9% of respondents in Sape said so. In Sape 23.0% of respondents had spoken with tourists, whilst very few had sold goods to, acted as a guide for or provided other services for tourists (8.0%, 0.5%, 4.5% respectively). In Labuan Bajo, interaction with tourists was much greater. 36.4% of respondents had sold goods to tourists and a similar number (34.8%) had spoken with tourists. 25.9% of respondents had provided other services for tourists, whilst 6.6% had acted as a guide for tourists.

QUESTION	LABUAN BAJO	SAPE
Is your family dependent upon tourism for income? (a:partially, b:completely)	a. 50.5 b. 1.5	a. 10.9
What interaction have you had with tourists?		
• Talked with	34.8	23.0
• Sold goods to	36.4	8.0
• Acted as a guide for	6.6	0.5
• Provided another service for	25.9	4.5

**Table 5.8 Interaction With Tourists - Frequencies of 'Yes' Answers to Questions.**

- **Tourism and inflation**

Question 7 asked respondents whether tourism had caused prices to rise and, if so, on what commodities. The results of this question are presented in Table 5.9. Almost three quarters of respondents in Labuan Bajo (73.6%) felt that tourism had caused prices to rise, whilst only a quarter of respondents in Sape (27.5%) felt the same. In Labuan Bajo, 64% of respondents felt that everything had risen in price, including transport, whilst 73-74% felt that only land, food and accommodation prices had risen. In Sape, slightly more people felt that transport prices had risen than other items (33.8%).

QUESTION	LABUAN BAJO	SAPE
Has tourism caused prices to rise?	73.6	27.5
• Land prices	73.0	24.4
• Food prices	73.0	25.1
• Accommodation prices	74.2	26.9
• Transport prices	64.5	33.8
• Everything	64.0	23.0

**Table 5.9 Tourism and Inflation - Frequencies of ‘Yes’ Answers to Questions.**

- **Attitudes towards tourism and conservation**

Question 5 asked whether people would be happy to see more tourists there, and Question 6 asked whether they would be happy for their children to work in the tourism industry. The answers to these questions are presented in Table 5.10. The majority of respondents in both towns indicated that they would be happy to see more tourists there (94.5% and 91.0%). However, a larger percentage in Sape (96.5%) than in Labuan Bajo (81.4%) indicated that they would be happy for their children to work in the tourism industry.

QUESTION	LABUAN BAJO	SAPE
Would you be happy to see more tourists here?	94.5	91.0
Would you be happy if your children worked in the tourism industry?	81.4	96.5

**Table 5.10 Local Attitudes Towards Tourism 1.**

Question 8 asked whether tourists caused any problems, and included an open-ended component in which respondents were asked to elaborate on their answers. The results of this question are presented in Table 5.11. A low percentage of respondents in each town felt that tourism created problems. Of those which elaborated on their answer, the most common complaint overall was regarding tourists clothing, which accounted

for almost all of the additional comments from Sape. In Labuan Bajo, people are also concerned about the effect of tourism on young people and local customs, the latter including both traditional (*adat*) customs and Islamic taboos. In addition, some tourist behaviour seems unacceptable. The most common complaint of this nature was of tourists haggling over prices in shops, and refusing to pay in full for items or if not satisfied with service. However, intimate public behaviour and public consumption of alcohol were also cited as unacceptable.

QUESTION	LABUAN BAJO	SAPE
Do tourists cause any problems here? If so, what? (open ended)	14.6	10.3
	Number of Responses	
Conflict with Customs	4	1
Affects the young people	6	0
Tourist clothing	5	8
Bargaining/arguing over price	5	0
Public behaviour	2	0
Transport costs	0	1

**Table 5.11 Local Attitudes Towards Tourism 2.**

Question 9 on the questionnaire included ten statements, five positive and five negative, regarding tourism and conservation. Respondents were asked to agree or disagree with each statement. When the frequencies of response are ranked in descending order of 'agreement with statement', Table 5.12 is generated. This table also includes a measure of agreement, using the following scale: 0-20%, strongly disagree; 21-40%, disagree; 41-60%, mixed response; 61-80%, agree; 81-100%, strongly agree. Overall, combining responses from Sape and Labuan Bajo, positive statements occupy higher rankings than negative statements. This would suggest that tourism and conservation are viewed favourably by the local population.

Question	% who agreed	+ve or -ve statement	overall opinion
It is good that Komodo and Rinca are protected by the government	93.7	+	strongly agree
Tourists come here because of KNP	90.0	+	strongly agree
I do not like the way that tourists dress	51.8	-	mixed
Tourism benefits the whole community	51.5	+	mixed
Tourism only benefits rich people	47.4	-	mixed
Tourism causes young people to reject traditional customs	32.2	-	disagree
Tourism benefits my family	27.3	+	disagree
Only outsiders benefit from tourism here	24.1	-	disagree
My family has more money because of tourism	23.0	+	disagree
Tourism is damaging our culture	18.5	-	strongly disagree

**Table 5.12 Local Attitudes Towards Tourism and Conservation 1.**

The two statements which support the park and its role in bringing tourism to the area are strongly agreed with (93.7% and 90.0%). The two statements suggesting that tourism damages and erodes culture and traditional customs are disagreed with (32.2% and 18.5%). In addition the suggestion that only outsiders benefit from tourism is disagreed with (24.1%). However, only half of the sample felt that the whole community benefited from tourism (51.1%), with an equal number feeling that only rich people benefited (47.4%). Very few respondents felt that tourism benefited their family or increased their income (27.3% and 23.0% respectively). In addition, over half of respondents do not like the way that tourists dress (51.8%).

If responses are ranked separately for each town, some differences between the two appear (Table 5.13). The range of responses in Sape (99.5% - 13.5%) is greater than in Labuan Bajo (88.0% - 20.5%), and in the former a greater number of statements are strongly agreed or disagreed with (5 vs. 2). This would suggest a greater unity of opinion in Sape than in Labuan Bajo. Of the differences in ranking and percentage agreement between the two towns, the largest concern tourist dress and whether only rich people benefit from tourism. In Labuan Bajo the majority of respondents (65.5%) do not like the way that tourists dress, whereas in Sape it is the minority (38.0%). Conversely, in Labuan Bajo the minority of respondents (35.2%) think that only the rich benefit from tourism, whilst in Sape it is the majority (59.5%).

Question	Labuan Bajo (Rank)	Sape (Rank)	+ve or -ve statement	Overall Opinion
It is good that Komodo and Rinca are protected by the government	88.0 (1)	99.5 (1)	+	strongly agree
Tourists come here because of KNP	82.5 (2)	97.5(2)	+	strongly agree
I do not like the way that tourists dress	65.5 (3) (agree)	38.0 (6) (disagree)	-	mixed
Tourism benefits the whole community	46.0 (4)	57.1 (4)	+	mixed
Tourism only benefits rich people	35.2 (6) (disagree)	59.5 (3)	-	mixed
Tourism causes young people to reject traditional customs	26.3 (8)	38.2 (5)	-	disagree
Tourism benefits my family	38.0 (5)	16.5 (8) (strongly disagree)	+	disagree
Only outsiders benefit from tourism here	34.7 (7)	13.6 (9) (strongly disagree)	-	disagree
My family has more money because of tourism	20.5 (10)	25.5 (7)	+	disagree
Tourism is damaging our culture	23.5 (9)	13.5 (10) (strongly disagree)	-	strongly disagree

**Table 5.13 Local Attitudes Towards Tourism and Conservation 2.**

### 5.7.2 Bivariate Statistics<sup>9</sup>

The pooled answers to questions of respondents from Labuan Bajo were compared with those of respondents from Sape, using Pearson's Chi-Squared test. Of the twenty-four separate questions asked, all but three had a significantly different response from each town. Sixteen had differences which were significant at  $p < 0.00001$ , one at  $p < 0.001$ , one at  $p < 0.01$  and three at  $p < 0.05$ . The three questions which did not yield significantly different answers from respondents in the two towns were;

- would you be happy to see more tourists here?
- do tourists cause any problems here?
- my family has more money because of tourism (agree/disagree)

<sup>9</sup> Further analysis of this data is underway and will be published at a later date.

### **5.7.3 Discussion**

It is evident that the experiences and opinions of people in Sape and Labuan Bajo are significantly different. This is no doubt in response to the different volume and economic input of tourism, and the different history of development in each of these places (see above).

The greater volume of visitors to Labuan Bajo has resulted in a greater interaction of local people with tourists. Half of the respondents from Labuan Bajo felt that they were partially dependent upon tourism for income, as opposed to only 10% of respondents from Sape. However, many more people in Labuan Bajo felt that tourism had resulted in inflation (75% vs. 25%), and significantly more felt that tourism had caused problems in Labuan Bajo. This mostly related to tourist behaviour and dress, and its impact on young people locally.

There appears to be overwhelming support for an increase in tourist numbers in both towns. In addition, the majority of respondents would be happy for their children to work in the tourism industry. However, with regard to the latter point, significantly fewer respondents in Labuan Bajo felt this way than in Sape. This would indicate a more conservative attitude, or a greater awareness, of the cultural changes which contact with tourism can bring about.

The attitudes of local people towards conservation and the role of KNP in attracting tourists were very positive. The positive view towards increased tourism was matched by overall disagreement with statements highlighting the negative aspects of tourism. However, it is clear that there are mixed feelings about the levels of benefit which tourism currently bestows upon local people and the local community. Only half of the sample felt that tourism benefited the whole community, and only around 25% felt that their families had benefited specifically.

### **5.8 Raising local benefits**

The economic benefits of tourism to KNP for surrounding communities include revenue and employment. Estimates indicate that over US\$1.25 million accrues to the local economy, and over 600 jobs appear to be partially supported in tourism-related businesses. However, there are a number of distributional issues and costs which have also been highlighted in this chapter:

- 99% of revenue to the local economy accrues to neighbouring town communities, and not to those communities living within the park who are most disadvantaged by restrictions over resource use within the park.
- At least 50% of revenue leaks out of the local economy as a result of imports and non-local involvement in the local tourism industry.

- Approximately 85% of tourist expenditure on a visit to KNP bypasses the local economy due to the dominant involvement of non-local carriers and package tour operators in the market.
- As a result of the above point, a paradoxical situation occurs whereby the most affluent visitors to KNP contribute the least to the local economy.
- Employment in tourism-related enterprises falls mainly to the young (under thirty), and mainly to males, although the full role of women has not been fully elucidated and requires more research.
- Involvement in the industry is restricted by the levels of education and capital possessed by local people. Existing skills and capacities have been utilised to enter the industry at basic levels, but there is considerable external ownership of businesses, and opportunities for retraining appear to be sparse.
- There are economic costs associated with tourism. Local people perceive inflation to be due in part to tourism. There are also considerable changes in land ownership taking place, with non-local speculators purchasing waterfront land in Labuan Bajo.
- Although not a prime focus of this research, there are some social costs identified by local people. These appear to be more prevalent in Labuan Bajo, which receives more tourist contact.

The survey of local people would suggest that, in general, tourism is viewed favourably. This is understandable in relation to the increased employment and revenue opportunities which tourism promises to supply. However, it is also clear that certain sectors of the local community are not benefiting as much as others. To a large extent the industry appears to be controlled by non-local forces, and constraints are placed upon local people deriving maximum benefit from tourism.

Lindberg and Enriquez (1994) identify four factors which will affect the contribution of tourism to local economies;

- The marketability of the attraction,
- The type of tourist,
- The infrastructure/facilities, and
- The extent of local involvement and linkages.

The marketability of the attraction is uncontested. KNP is a world famous reserve with a unique and charismatic species, and foreign visitors will continue to be attracted in increasing numbers. However, different types of tourist have been shown to have different impacts in this case. In addition, the level of infrastructure and facilities will limit the opportunities that visitors have to spend money. Even given the opportunity to spend, the current situation involves the minimum of local linkages and

involvement. Clearly, there a number of ways in which local benefits could be improved;

- decrease leakages from (increase linkages with) the local economy,
- increase local involvement in the tourism industry, and
- increase tourist spending locally (or change the type of tourist visiting KNP).

Leakages occur because of the paucity of linkages between tourism and the existing local economy. Tourism is a tertiary industry, which is developing in an area where the dominant industry has been primary, i.e. fishing and farming, without the development of intermediate secondary industries. Tourism relies on secondary, manufacturing industries for the supply of processed and packaged retail goods, and for much of its infrastructure (furniture, etc.). The absence of such industries locally, and the lack of linkages where they do exist, accounts for much of the leakage which is witnessed. There is a need to evaluate and develop opportunities to increase local linkages between the tourism industry and the local economy.

The rest of the observed leakage is a result of non-local ownership of tourism enterprises. To address this issue demands an increase in local involvement at all levels of the tourism industry. However, local people who have had little exposure to foreign tourists and their needs, without the necessary skills to transfer from traditional livelihoods, and with no capital to invest, have great difficulty in entering the industry. If the change is to occur, training needs must be addressed, and local enterprises given support to establish themselves. The simplest way to achieve this may be through the establishment of cooperatives similar to that which operates the tourist infrastructure within the park.

The issue of raising the financial contribution of tourism demands two things; increasing the contact which tourists have with the local economy, and increasing opportunities for tourists to spend. Currently, the cruise ship sector of the tourist market based upon KNP is essentially an enclave development. Visitors are completely isolated from the surrounding local community in a self-sufficient, exclusive environment which denies local people the opportunity to benefit. The same is virtually true of most package tourists using charter boats from Sape. These forms of visit could be more integrated with the local community. Of particular importance is the lack of opportunities for people living within the park to benefit from tourism. Training and development of small-scale projects, and a greater integration with the tourism developments within the park, would greatly improve the benefits which inhabitants of the park receive from tourism.

The issues surrounding community participation in tourism, and the raising of local benefits, were discussed at the Workshop on Sustainable Tourism and Biodiversity held in Labuan Bajo as part of this research in April 1996. The following recommendations resulted from discussion groups on the subject:

- Labuan Bajo should be the centre for tourist transport to the island. The already established co-operative should play more of a role in organising

charter transport. Better quality boats, with improved safety facilities, are necessary for tourists.

- Residents of K.Komodo and K.Rinca should be involved in a service co-operative, and permitted to provide drinks and souvenirs to visitors in some capacity.
- Training needs to be provided for local communities, particularly ecological knowledge and language skills for residents of K.Komodo, K.Rinca, and Labuan Bajo, so that they may become involved as quality tourist guides.
- Training should be provided in the making of tourist souvenirs, for residents of K.Komodo and K.Rinca.
- There should be further investigation into zoning in marine areas for tourism, fishing, and mariculture. There are areas of conflict and of complementarity.
- The Labuan Bajo Guiding Association should start a licensing scheme to improve guiding standards and prevent unlicensed hawking.
- There should be improvements in the educational facilities for children in K.Komodo and K.Rinca.
- The Kader Konservasi should be involved in planning and management of tourism activities in the park.
- There should be increased tourist events in Labuan Bajo. Boat races, kite flying, and festivals should be organised.

Some contentious issues were also raised. One concerned the building of hotels on islands within the park. The other was the provision of a donation box or the establishment of a local development fund to which visitors could contribute. These issues raised a number of objections and are clearly less favourable than some of the above initiatives which were suggested.

There is clearly scope for increased involvement of local people in the tourism industry, and increased linkages between tourism and the local economy. The ideas presented here, generated in local discussion groups, provide some suggestions for how this may be achieved. The director of KNP has expressed a commitment to increasing the benefits from park tourism for local people, and future research should be aimed at implementing initiatives to achieve this end.

## 6. INTEGRATION INTO THE INTERNATIONAL MARKET

### 6.1 Introduction

This chapter considers some of the implications of the increasing dependence of tourism in KNP on the international market. It addresses technical objective (e) of the project:

- identify and quantify the benefits and problems created by integration into the international market.

After a brief consideration of the national perspective (section 6.2), the chapter reviews some of the visitation patterns from Chapter 2 (section 6.3). The results of tour operator surveys conducted as part of the research for this project are presented in section 6.4. Finally, the results are discussed in the context of conservation and local development (section 6.5).

### 6.2 The National Perspective<sup>1</sup>

The first five year plan included tourism as part of the Suharto government's plans for economic development. From 1969 tourism became a priority and in 1970 the first tourism master plan for Bali was produced. The purpose of tourism development was to expand employment and business opportunities, to increase foreign exchange earnings and to introduce Indonesia's culture to a wider world.

The sixth five year plan (Repelita VI, 1994-1999) plans to increase tourism in order to create economic and social opportunities and to "actualise the welfare of all Indonesia's people". Its marketing priorities are to maintain its European and North American market share whilst prioritising the Asia-Pacific region. Bali, which is visited by around half of all international visitors to Indonesia, is to be used a springboard for the development of tourism elsewhere, including East Nusa Tenggara.

Indonesia has experienced dramatic growth in international tourist arrivals, with rates of growth far in excess of the international averages. In the decade between 1985 and 1995 annual international tourist arrivals increased by 3.5m, growing by 477%. In the 1990's average annual growth in international tourism has been around 4% per annum (Table 6.1).

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<sup>1</sup> Adapted from Goodwin *et al* 1995.

Year	Total	Annual % increase
1985	749,351	
1990	2,177,566	33.92%
1991	2,569,870	18.02%
1992	3,064,161	19.23%
1993	3,403,138	11.06%
1994	4,006,312	17.72%
1995	4,324,229	7.93%

**Table 6.1 International Tourist Arrivals to Indonesia**

Visitors' average length of stay is significantly longer in Indonesia than in other countries in the region. The diversity of the Indonesian tourism product encourages people to stay longer. Extending the length of stay and the areas visited increases both the total tourism spend in Indonesia and ensures that the expenditure is distributed more widely in Indonesia. In 1995 4.32m international tourists spent US\$5.9bn. Government plans are for 11m international visitors in 2004 spending US\$15bn. The government expects tourism to become Indonesia's largest foreign exchange earner in 1998 with earnings of US\$8.9bn.

The Gulf War dampened international tourist arrivals at the beginning of 1991. 1991 had been declared *Visit Indonesia Year*, and despite the Gulf War arrivals for the year showed a 24% increase over 1990. The earthquake on Flores in 1992 dampened the rate of growth in tourist arrivals at Komodo National Park. There is anecdotal evidence to suggest that the East Timor conflict may have dissuaded some people from visiting Indonesia. However, the dynamism of the Indonesian tourism industry's growth has overridden short term, and often localised, dampening in international tourist arrivals.

### **6.3 The Local Perspective**

Komodo National Park has a visible and charismatic species, it is becoming more easily accessible, and it has spectacular scenery. Tourism has, in consequence, grown rapidly. In the 5 years to 1995 the annual average increase in total park visitor arrivals has been 21.77% culminating in 28,991 visitors in 1995/6.

The proportion of domestic tourists has declined dramatically in the last decade and the park has come to provide services predominantly to foreign tourists. Domestic tourists constituted 40-60% of park visitors in the mid-eighties, this has reduced to 10% in the mid-nineties and to 7.1% in 1995/6. The actual numbers of Indonesian nationals visiting has remained more or less constant, but there has been a significant increase in international arrivals.

Annual growth rates in park admissions have been volatile, but consistently high. Annual growth rates were 30% in 1993/94, 17.5% in 1994/95 and 12.6% in 1995/96 an increase of 3,240 visitors over 1994/95. This growth has been generated entirely by the arrival of foreign tourists as Indonesia, and more remote parts of Indonesia, open-up to the international tourism market.

Tourist infrastructure is being developed rapidly. Tourism development in the gateway town of Labuan Bajo has been marked, as entrepreneurs develop hotels and restaurants and as the fisherman diversify into tourism, ferrying people to and from the park. The local economy is adapting to meet demand from foreign tourists, although at present most of the revenue from tourism bypasses the local economy, and control of the industry rests with non-local entrepreneurs.

The rise in tourism has coincided with a shift in the type of tourist visiting the park, from independent travellers towards more affluent package tourists. The largest rise has been in the cruise ship segment of the market. These forms of visit minimise the contact which tourists have with the local economy, thus limiting the potential for local benefits from tourism.

#### **6.4 Tour Operator Perspectives**

Indonesian tour operators participated in the Komodo Workshop in April, 1996 and in an additional workshop organised for local tour operators in Bali which preceded it (DICE, 1996). There were 24 local operators at the Bali workshop. It was clear from discussions there that a substantial number of those present did not have first-hand experience of the park. They would therefore be unable to brief their overseas clients in any detail.

A survey of tour operators in the UK and Germany who operate to Komodo was conducted by Jordan and Metcalfe, as part of the ODA project.<sup>2</sup> 20 German and 13 UK companies who operate to Indonesia responded to the survey. For the German respondents Indonesia represented 25% of their business, for the UK companies Indonesia accounted for only 1.8%. The sample was selected on the basis of featuring the three national parks covered in this research, rather than identifying companies who featured the three countries.<sup>3</sup> However, it does suggest that for the specialist nature tourism companies which feature Komodo in the UK, Indonesia is not core business. When asked on a scale of 1 to 5 how important Indonesia was to their businesses the mean score for German companies was 2.00 and for UK companies 1.79. These figures include all respondents in the survey which deflates the average, 7 German companies regarded Indonesia as important to their businesses as did 4 UK companies.

The respondents were asked about the volume of their business to Indonesia and about their expectations of growth. We asked the Tour Operators to give figures on

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<sup>2</sup> for a fuller treatment of this research, see Jordan, 1996; Metcalfe, 1996.

<sup>3</sup> For a discussion of the comparative results of the survey see the Comparative Report, Chapter 7.

the number of people they carried to Indonesia in 1995 and to estimate numbers for 1996 and 1997. The expected growth in passengers from Germany to Indonesia between 1995 and 1997 for the 11 operators participating in the survey was 12.5%. The expected growth in passengers from the UK to Indonesia between 1995 and 1997 for the 9 operators participating in the survey was 35.7%.

Operators were asked about their perceptions of the motivations of their clients in choosing to travel to Indonesia. Respondents were asked to indicate the importance of various features on a 1 (not very important) to 5 (very important) scale. The German operators responding to the survey placed shopping above wildlife viewing as the highest scoring features. Amongst UK operators, shopping was considered the least important motivation for travel and wildlife came lower than everything else except art and architecture. Culture and Landscape were the two highest scoring features amongst UK operators. When the same question was asked of visitors to KNP, they also indicated higher mean scores for landscape and culture (Table 6.2).

Feature	Mean Likert Scale Score (1-5, increasing importance)		
	German Operators	UK Operators	KNP Visitors
Markets/shopping	3.6	2.7	2.66
Art/Architecture	3.0	3.2	3.34
Wildlife viewing	3.5	3.2	4.08
Marine environment	3.4	3.6	3.85
History/Archaeology	2.8	3.7	3.23
Landscape/Countryside	3.1	3.9	4.47
Culture/People	3.3	4.2	4.45

**Table 6.2 Tour Operator and Visitor Perceptions of Motivation for Travel to Indonesia.**

The operators were asked a series of questions specifically about KNP. Only 4 German companies regarded Komodo as important to their marketing of Indonesia, and none of the British companies did so. The German operators would like more information about Komodo, suggesting that they would be more receptive than the British operators where the lack of interest is surprising. KNP is not regarded as of much tourist interest by tour operators in the UK.

One third of German operators and half of German operators felt that they had insufficient information to make a judgement about the quality of wildlife viewing in KNP, and this is amongst operators featuring the park in their brochures.

## **6.5 Discussion**

- Indonesia is being promoted as a tourism destination, and international visitor numbers are growing. This situation is reflected in KNP; growth has averaged over 20% since 1990, and 93% of visitors are foreign.
- The park authorities see tourism as a way of generating revenue for conservation. Similarly, the local economy is adapting to incorporate tourism as a significant input. However, given the patterns of visitation, this has placed both the park and the local economy in a position of some dependency on the international tourism market.
- When questioned about Indonesia, and KNP in particular, certain trends emerged. It is clear that Indonesia is viewed as a cultural and beach tourism destination. It is also clear that operators have a low level of awareness of the attributes of KNP as a destination.

Two issues emerge as important from these findings, when considering the implications of international tourism for KNP and the surrounding communities. Firstly, the park and local economy are likely to become vulnerable to fluctuations in the international market. Seasonal patterns of visitation are changing, and chance events such as a natural disaster can have profound effects on visitation rates. Although KNP has unique attributes and attractions for visitors, it has entered a competitive and volatile marketplace. Secondly, there is clearly a lack of linkage between the destination and the marketplace; the awareness of operators in Bali and in Europe appears to be low regarding KNP. This makes it difficult for management to facilitate any reorientation of the product to suit the international market, should such a policy be promoted.

A third issue which has become apparent is the lack of communication between managers and tourists. This is important in the development of a monitoring system for tourism in the park, which is addressed in the comparative report Chapter 8.

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