

# 11 Water based tourism and recreation in northern Australia

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## **1. SUMMARY**

### **1.1 Why is it critical to consider the role of tourism and recreation in the development of northern Australia?**

Tourism can potentially make a strong contribution to incomes, jobs and economic diversification in northern Australia. It is important to consider potential synergies and conflicts between this sector and Indigenous interests, agriculture, the beef sector, mining and commercial fishing and aquaculture in the sustainable development of the region.

### **1.2 Current status**

The volume of tourists into northern Australia is small by national standards yet it is locally significant in its contribution to regional economies. An estimated 4 million tourists visited northern Australia in 2006/07 including domestic and international visitors. Total visitor expenditure in the region was estimated to be just over \$2.8 billion in 2006/07 (Chapter 16).

### **1.3 Is the tourism industry sustainable?**

Northern Australia's tourism and recreation is primarily nature-based. Visitors generate wastes and use water. Water based tourism and recreation are intrinsically linked to recreational fishing. Catch is locally significant and in some areas is detrimental to stocks, particularly near large population centres and popular tourist destinations. These external costs are borne by residents, but they may also deter tourists and other visitors seeking 'pristine' places. However, such impacts are currently very small in aggregate and highly localised; those seeking solitude can find it readily, for the region is lightly used by visitors by international standards. Long term sustainability may be affected by climatic impacts, including rising sea levels.

### **1.4 What are the likely future trajectories?**

Strengths of tourism and recreation in northern Australia include iconic natural attractions, unique history and culture, favourable climate (during southern winter) and an established industry. Development pressures on competing sites elsewhere in the world could enhance the comparative economic advantage of northern Australia. Alternatively this advantage could be weakened if water use by primary industries degrade or are perceived as degrading the natural assets that are the foundations of the region's tourism.

Competitive weaknesses of the region include geographic isolation (lack of air and road access), seasonal closure of roads, industry fragmentation due to geographical dispersion, and highly seasonal visitation.

Coordinated marketing of tourism across the jurisdictions may increase the diversity of visitors' opportunities, prolong their stays and increase their spending in the region. Linking northern Australia to Malaysian, Indonesian and Pacific island tourism may bring similar advantages.

Increased benefits from tourism may require improved tourism infrastructure and amenities, including camping and accommodation facilities, waste disposal facilities, signage and

accessibility. Local funding of infrastructure in regional areas of northern Australia is difficult because populations and rate revenues are both small. User pays systems may be required.

## **1.5 Key factors that will enable sustainable development of the sector**

### *Diversification of opportunities for visitors*

Diversification would attract a broader range and larger number of tourists. The area is large and land and waterscapes diverse, and a greater variety of products, from wilderness walking to tourist resorts, and from highly active to very restful, can be accommodated. Tourism based on Indigenous culture and run by Indigenous communities is already operating on a small scale and has a potential to grow.

### *Building and maintaining greenness - image and reality*

The region's reputation for its 'wild' places and remoteness should be built upon and sustained as other remote and once pristine places on the planet are degraded. Careful water resource allocation and management, and the conservation of native ecosystems are necessary foundations for the sector. Building effective water allocation and biodiversity conservation institutions is a prerequisite – tourism and recreation need river flows and aquifer levels to be maintained if scenery, wildlife and fisheries are to continue to attract tourists. Increasing protected areas and managing them well adds to these 'natural' attractions. Building on these real foundations, the region needs to be aware of the damage that perceptions of regional scale degradation can do to their hard-won image. Any large scale and well publicised industrial or mining development can have this effect even if the biophysical impacts are relatively small.

A growing tourism and recreation sector will generate more greenhouse gases than now (Section 4.5.6), and alternative energy sources and recycling of water can help maintain the reality and image of 'greenness'.

### *Accommodation, infrastructure, amenities and services*

Roads, airports, water and electricity supplies, medical facilities and police services, hotels suiting a range of budgets, campsites – these and other facilities and services will need to grow to enable growth of the sector. Careful planning, construction and management can reduce negative impacts. A road on a floodplain, for example, can transform water flows and ecological systems depending on them.

### *Fair funding for public infrastructure, amenities and services*

The tourist industry and visitors expect public facilities to be good but do not expect to pay for them. The burden often falls on local governments and ratepayers, who may get little benefit from the visitors, and may bear some congestion costs. Fairer distribution of costs is needed. A levy or user-pays based system may assist in ensuring adequate funding is available to provide and maintain services and facilities.

## 2. INTRODUCTION

### 2.1 Overview of Structure and Approach

Water based tourism and recreation is a regionally significant industry in northern Australia. This chapter aims to provide an overview of the industry in northern Australia and outline potential areas for industry development. The economic, social and environmental impacts of tourism development are outlined as well as practices, infrastructure and incentives that can be implemented to maximise net benefits from tourism activities.

Section Three provides an overview of the present status of water based tourism and recreation in northern Australia and a brief history of its development. The overview includes an outline of the factors influencing successes and failures of water based tourism and recreation in the region. The main types of tourism and recreation activities in the region are described. These include:

- recreational fishing;
- on-farm tourism;
- nature-based tourism; and
- four-wheel drive tours.

Section Four outlines possible development trajectories for tourism and recreation in northern Australia and likely impacts. Different types and locations for tourism development are discussed. The socio-economic requirements for tourism and recreation development are described including:

- capital needs and infrastructure;
- skills and labour requirements;
- energy supply and demand; and
- market trends and risks.

The socio-economic and bio-physical impacts of tourism and recreation development in northern Australia are outlined. Socio-economic impacts include:

- options costs and lock-in rates;
- economic benefits and costs, and job creation;
- social impacts; and
- economic and job multipliers.

Biophysical impacts include:

- recreational fishing;
- boating;
- pollution;
- urbanisation associated with tourism development;
- impacts of people and facilities on scenery; and
- greenhouse gas emissions.

The requirements to maximise the positive impacts and minimise the negative impacts of tourism and recreation development in northern Australia are discussed in terms of:

- practices;
- infrastructure; and
- regulations and incentives.

Section Five describes the biophysical, economic and social knowledge gaps in addressing the impacts (positive and negative) of tourism and recreation development in northern Australia.

### 3. STATUS OF TOURISM AND RECREATION IN NORTHERN AUSTRALIA

Regional tourism makes a significant economic contribution to regional, state/territory and the national economy (1).

The volume of visitors into northern Australia is small by national standards – yet it is locally significant. Tourism generates significant regional income and employment.

In Karumba and Normanton tourism generated \$11 million in direct expenditure in 2002/03 and created employment for 8 per cent of the regional workforce. The distribution of income isn't necessarily spread equally throughout the regional economy. Indigenous people are largely disengaged from the tourism industry.

Source: (34)

The estimated number of visitors to northern Australia and total visitor expenditure are summarised in Table 3.1.

Table 3.1 Estimated visitor numbers and expenditure in northern Australia, 2006/07 <sup>a</sup>

	Western Australia	Northern Territory	Queensland	Total Northern Australia
<b>International</b>				
Visitors ('000)	66	351	155	572
Expenditure (\$m)	19.0	398.0	81.0	498.0
<b>Domestic</b>				
Visitors ('000)	773	2,060	1,538	4,371
Expenditure (\$m)	358.7	1,085.1	867.0	2,310.9
<b>Total Visitors</b>				
Visitors ('000)	839	2,411	1,693	4,943
Expenditure (\$m)	377.7	1,483.1	948.0	2,808.9

<sup>a</sup> Limited regional data were available on visitor number and expenditure. Estimate may include visitors to surrounding regions (outside of the northern Australia region) and, therefore, may be overstated.

Source: Tourism Research Australia (2) (3) and EconSearch analysis.

It is estimated that approximately 4.9 million people visited destinations in the northern Australia region in 2006/07. Direct expenditure by these visitors was estimated to be approximately \$2.8 billion ( (4) and EconSearch analysis).

### 3.1 Western Australia

The Kimberley region comprises the western part of the northern Australia region. Water based tourism and recreation in the northern Australia area within WA include:

- Purnululu National Park (creeks and gorges)
- Mitchell River National Park (Mitchell River and Mitchell Falls)
- Geike Gorge National Park
- Tunnel Creek National Park
- Windjana Gorge
- Lake Argyle
- Gibb River Road

Tourism data including visitor numbers, visitor expenditure and accommodation statistics were available for selected Statistical Local Areas (SLAs) and Tourist Regions (TRs) in WA. Where data were not available this was generally due to confidentiality. The data for TRs may incorporate areas outside the boundaries of the northern Australia region but are useful for examining the trends in tourism activity in the region over time.

Number of visitors and visitor expenditure in northern Australia (WA) are in Table 3.2.

Table 3.2 Estimated visitor numbers and expenditure in northern Australia (WA), 2006/07

	Broome (\$)	Derby-West Kimberley (\$)	Wyndham-East Kimberley (\$)	Total Northern Australia (WA)
<b>International</b>				
Visitors ('000)	36	12	18	66
Expenditure (\$m)	14.0	1.0	4.0	19.0
<b>Domestic</b>				
Visitors ('000)	213	71	77	361
Expenditure (\$m)	228.0	22.0	28.0	278.0
<b>Total Visitors</b>				
Visitors ('000)	-	-	-	839
Expenditure (\$m)	-	-	-	377.7

Source: (2) and EconSearch analysis.

There was an increase in the number of accommodation establishments in the Kimberley region over the period 2004 to 2008 (September quarter) (Figure 3.1) Accommodation establishments include the number of hotels, motels and serviced apartments with 5 or more rooms.

Bed occupancy rate in the North West Tourism Region (TR) (encompassing the broader Kimberley Region) decreased slightly over the 5 years to 2008 (Figure 3.2). This decrease was associated with an increase in the amount of accommodation available in the region and a slight decrease in the number of visitor nights. Takings from accommodation increased steadily over the 5 years, but are not adjusted for inflation (Figure 3.2).



Figure 3.1 Number of accommodation establishments, northern Australia (WA), 2004 to 2008  
<sup>a</sup> Data for 2004 include hotels, motels and serviced apartments with 15 or more rooms. Data for 2005 to 2008 include hotels, motels and serviced apartments with 5 or more rooms.  
 Source: (5)

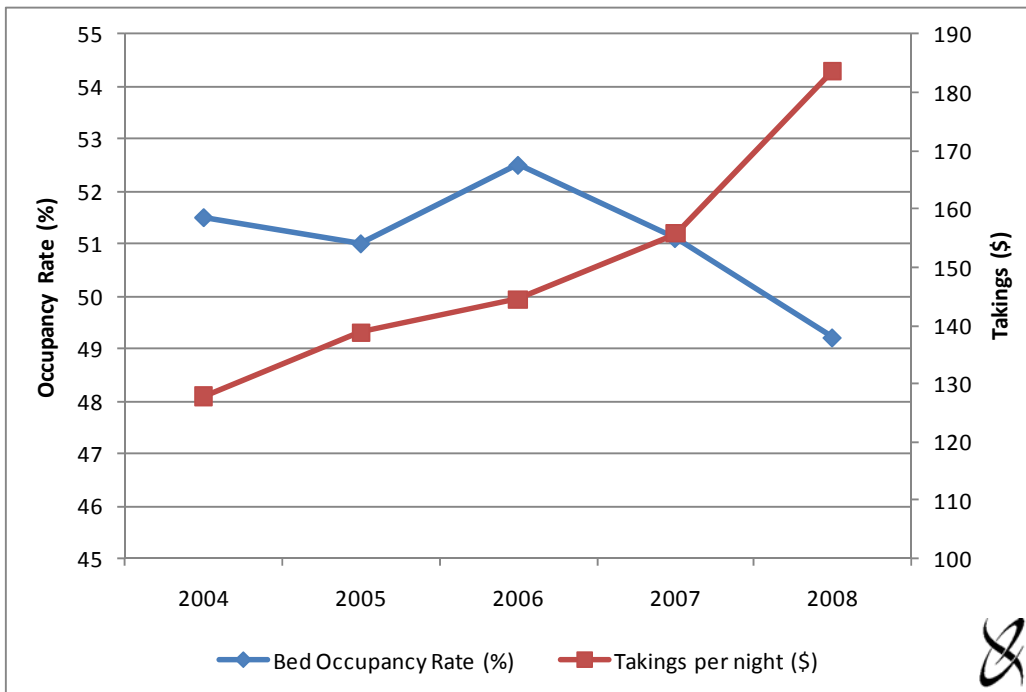


Figure 3.2 Occupancy rate and takings per night, North West TR, 2004 to 2008  
<sup>a</sup> See note for Figure 3.1.  
 Source: (5)

### 3.2 Northern Territory

Tourist areas of the Northern Territory (NT) within the northern Australia region include:

- Darwin and surrounds;
- Katherine and surrounds;
- Kakadu; and
- Arnhem Land.

Water based tourism and recreation in the NT region includes:

- Katherine Gorge (Nitmiluk National Park)
- Pine Creek
- Mataranka – tropical thermal pool
- Eusey National Park
- Victoria River region – fishing, camping
- Daly River region – fishing, camping, hot springs, gorges and rivers
- Mary River region – fishing, wetlands, birdlife, crocodiles

Tourism data including visitor numbers, visitor expenditure and accommodation statistics were available for selected SLAs and TRs in the NT. Where data were not available this was generally due to the need to maintain confidentiality when the number of businesses is small. The data for TRs may incorporate areas outside the boundaries of the northern Australia region but are useful for examining the trends in tourism activity in the region.

Number of visitors and visitor expenditure in northern Australia (NT) are in Table 3.3.

Table 3.3 Estimated visitor numbers and expenditure in northern Australia (NT), 2006/07

	Darwin (TR)	Katherine (TR)	Kakadu (TR)	Total Northern Australia (NT)
<b>International</b>				
Visitors ('000)	153	48	54	351
Expenditure (\$m)	99.0	-	-	398.0
<b>Domestic</b>				
Visitors ('000)	1,198	268	153	2,060
Expenditure (\$m)	807.0	-	-	1,085.1
<b>Total Visitors</b>				
Visitors ('000)	1,351	316	207	2,411
Expenditure (\$m)	906.0	-	-	1,483.1

Source: (2) and EconSearch analysis.

Between September 2004 and September 2008 the number of accommodation establishments increased overall, although the number of establishments in the region has declined slightly in the last two years (Figure 3.3).

Bed occupancy rates in selected TRs within the northern Australia region are illustrated in Figure 3.4 and are summarised below:

- Occupancy rates increased from 29 per cent to 38 per cent in the Arnhem TR between 2004 and 2008. This increase was the result of both an increase in number of guest nights and a decrease in the availability of accommodation in the region.
- In the Darwin TR occupancy rates increased steadily, despite an increase in availability of accommodation, as a result of an increase in visitor nights.
- Occupancy rates fell in both the Katherine TR and the Kakadu TR although this appears to be the result of an increase in the quantity of accommodation available rather than decline in visitor nights.

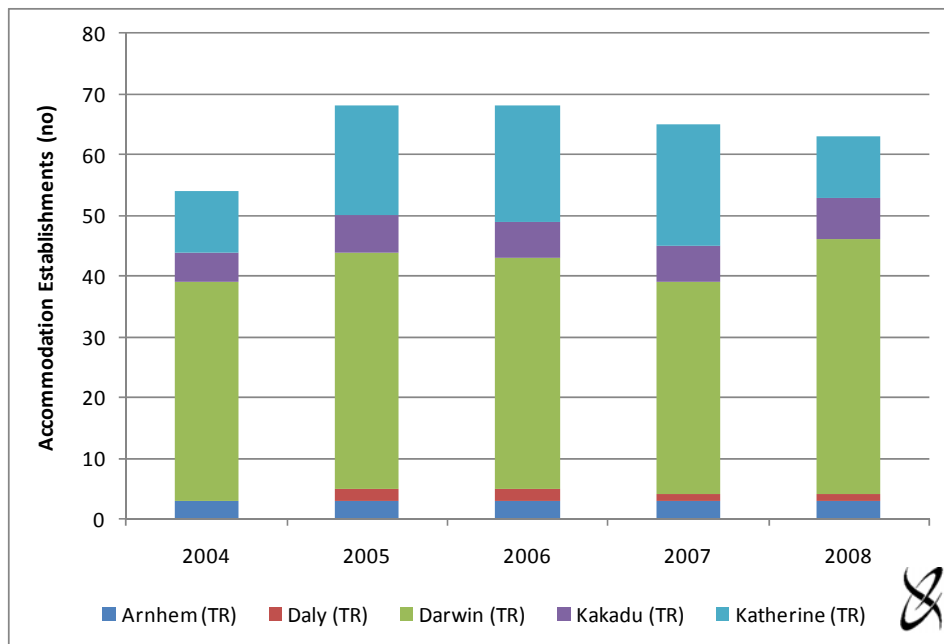


Figure 3.3 Number of accommodation establishments, northern Australia (NT), 2004 to 2008<sup>a</sup>  
<sup>a</sup> See note for Figure 3.1. (6)

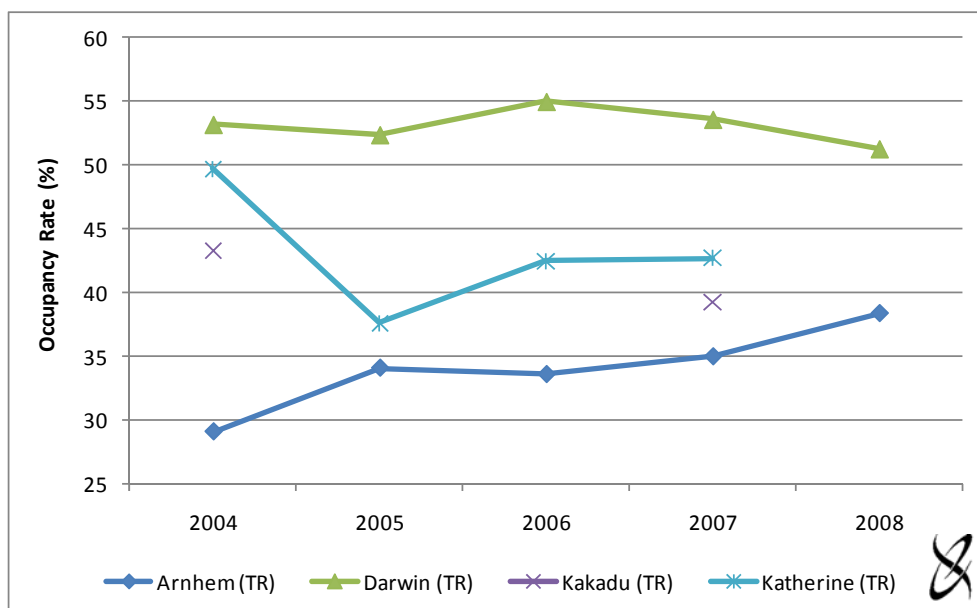


Figure 3.4 Occupancy rate, northern Australia (NT), 2004 to 2008<sup>a</sup>

<sup>a</sup> See note for Figure 3.1.

Source: (6)

Average takings from accommodation are illustrated in Figure 3.5 and summarised below:

- In the Arnhem TR average takings per night declined between 2004 and 2006 but increased in the following two years.
- Takings per night increased in the Darwin TR and Kakadu TR. In the Darwin TR average takings per night increased from \$128 in 2004 to \$186 in 2008 an increase of 45 per cent in nominal terms.
- Average takings per night increased marginally in the Katherine TR.

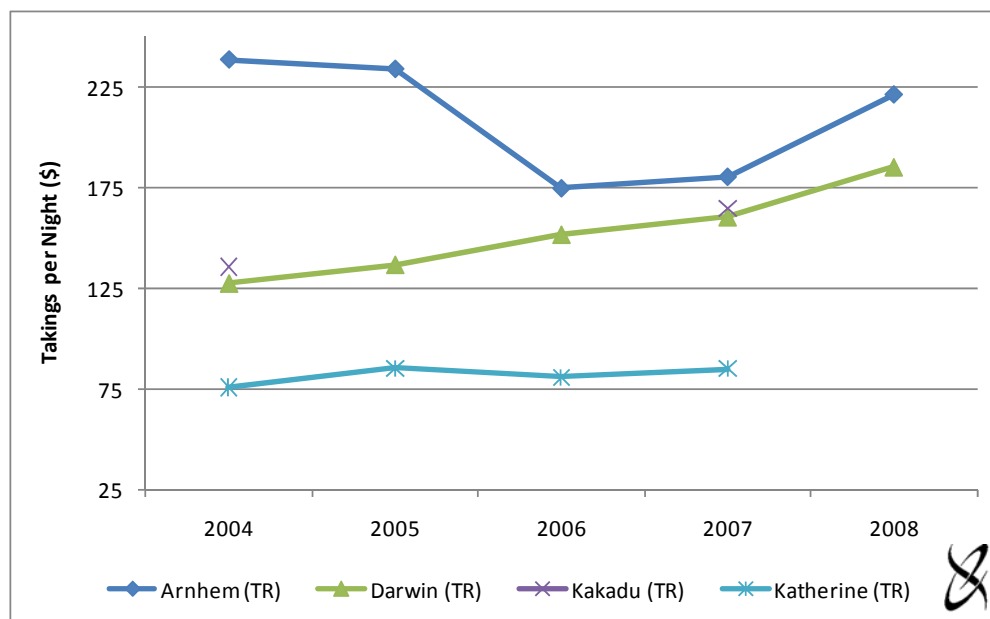


Figure 3.5 Takings from accommodation, northern Australia (NT), 2004 to 2008<sup>a</sup>

<sup>a</sup> See note for Figure 3.1.

Source: (6)

3.3 Q

Areas of Queensland within the northern Australia region include parts of the Tropical North Queensland TR and the Outback TR.

Tourism data including visitor numbers, visitor expenditure and accommodation statistics were available for selected SLAs and TRs in QLD. Where data were not available this was generally due to confidentiality issues. The data for TRs may incorporate areas outside the boundaries of the northern Australia region but are useful for examining the trends in tourism activity in the region over time.

Visitor numbers and expenditure for selected statistical local areas in the northern Australia region in QLD are in Table 3.4.

Table 3.4 Estimated visitor numbers and expenditure in northern Australia (QLD), 2006/07

	Cook (S)	Douglas (S)	Flinders (S)	Mount Isa (C)	Total Northern Australia (QLD)
<b>International</b>					
Visitors ('000)	9	126	6	14	155
Expenditure (\$m)	2.0	76.0	1.0	2.0	81.0
<b>Domestic Day</b>					
Visitors ('000)	78	419	66	95	1,538
Expenditure (\$m)	26.0	295.0	22.0	40.0	867.0
<b>Total Visitors</b>					
Visitors ('000)	-	545	-	-	1,693
Expenditure (\$m)	-	371.0	-	-	948.0

Source: (2) and EconSearch analysis.

The number of accommodation establishments in selected SLAs in northern Australia (QLD) over the period 2004 to 2008 is illustrated in Figure 3.6. The number of establishments generally followed a declining trend from 2005 to 2008 with the exception of Douglas Shire where the number of establishments increased slightly.

Occupancy rates in the Tropical North Queensland TR and Outback TR over the period 2004 to 2008 are in Figure 3.7 and summarised below:

- The average bed occupancy rate fell from 55 per cent in September 2004 to 47 per cent in September 2008. This decline was the result of both a fall in visitor nights and an increase in the amount of accommodation available.
- In the Outback TR the average occupancy rate increased slightly from 33 per cent in September 2004 to 35 per cent in September 2008. This increase was primarily due to an increase in the number of room nights occupied.

Average takings from accommodation in the Tropical North Queensland TR and Outback TR over the period 2004 to 2008 are illustrated in Figure 3.8 and summarised below:

- In the Tropical North Queensland TR average takings per night increased by 9 per cent in nominal terms from \$139 per night in 2004 to \$152 per night in 2008.
- Between 2004 and 2008 takings increased by almost 20 per cent in nominal terms in the Outback TR from \$82 to \$98 per night.

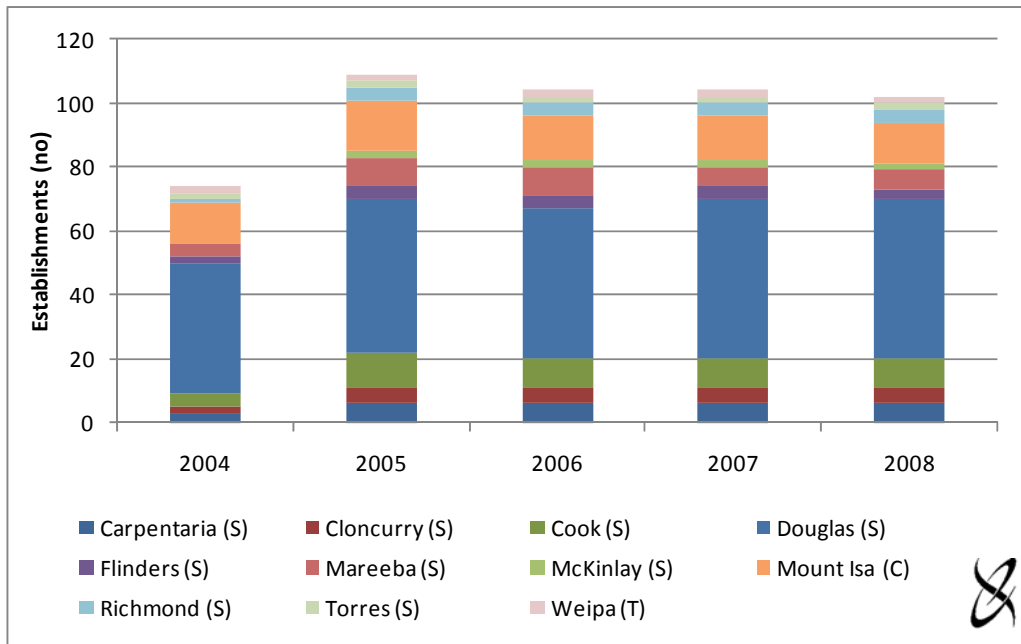


Figure 3.6 Number of accommodation establishments, northern Australia (QLD), 2004 to 2008

<sup>a</sup> See note for Figure 3.1.

Source: (7)

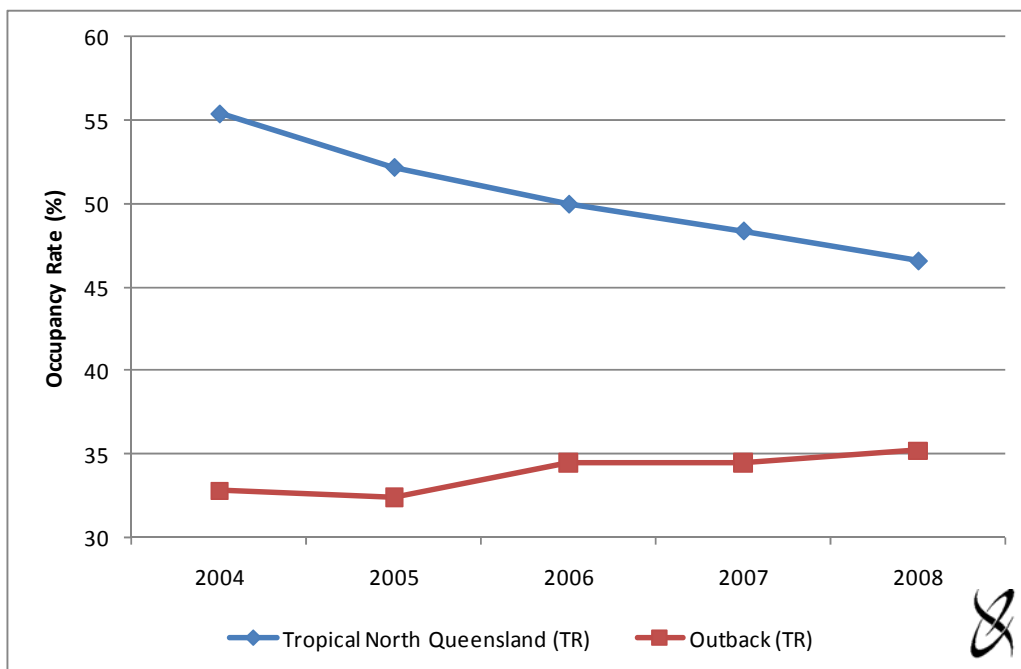


Figure 3.7 Occupancy rate, northern Australia (QLD), 2004 to 2008 <sup>a</sup>

<sup>a</sup> See note for Figure 3.1.

Source: (7)

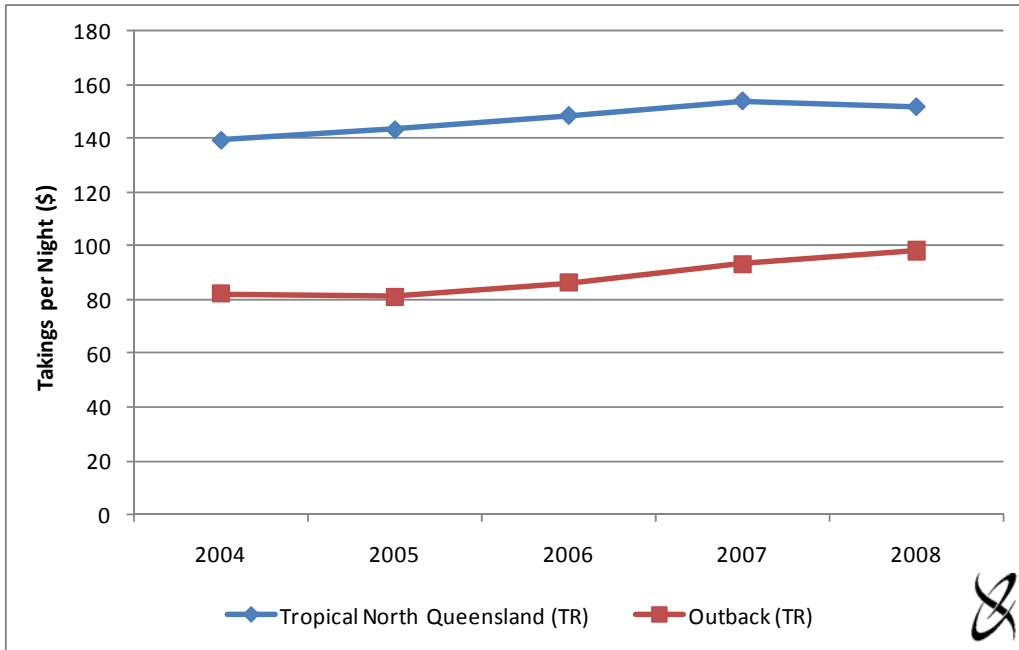


Figure 3.8 Takings from accommodation, northern Australia (QLD), 2004 to 2008<sup>a</sup>

<sup>a</sup> See note for Figure 3.1.

Source: (7)

### 3.4 Main types of tourism and recreation

The main types of tourism and recreation activities undertaken in northern Australia are summarised in Table 3.5 and outlined in further detail in the following sections.

Table 3.5 Main types of tourism and recreation activities, northern Australia

<b>Tourism and Recreation Activity</b>	<b>Description</b>
Indigenous tours	Traditional cultural lifestyles, cultural centres and history
Outback experience	Working stations, farm stay
Four wheel drive	Self drive Organised tours Savannah Way, Gibb River Road
Conservation tourism	Volunteer programs
Hunting/fishing	Hunting tours Recreational fishing (Broome) Fishing charter Fishing competitions
Nature based tourism and activities	Bird watching National Parks (including Purnululu and Mitchell National Parks) Caves and fossils Gorges and waterfalls (e.g. Mitchell River and Mitchell Falls, Geikie Gorge, Fitzroy Crossing) Wilderness (e.g. El Questro Wilderness Park) Water based experiences (e.g. Kununurra/Ord River, Lake Argyle)
History	Mining History World War II Chinese Pearling industry (including Broome)
Lifestyle	Resorts Beaches Diving Snorkelling

Source: (8)(9)

Fly-in visitors to Darwin make up approximately three quarters of all visitors to the Northern Territory (TRA 2008). Fly-in visitors to Darwin are comprised of the following groups:

- stop over passengers (in Darwin for less than 24 hours);
- short-break passengers (1 – 3 days); and
- long break passengers (more than 3 days).

In a survey of fly-in visitors (undertaken by Tourism Research Australia), participants were asked to detail the activities they undertook while in Darwin and the surrounding areas. Popular activities are in Table 3.6.

Table 3.6 Activities undertaken by fly-in visitors to Darwin, 2008

Activity	Proportion of survey respondents
Dining out	69 per cent
Visiting markets	51 per cent
Shopping	50 per cent
Visiting national parks or nature reserves	44 per cent
Going on boat trips or cruises	40 per cent
Visiting waterfalls/waterholes	36 per cent
Museums	33 per cent
Driving tours	20 per cent
Aboriginal rock art sites	17 per cent
Fishing	16 per cent
Aboriginal guided tours	6 per cent
Four-wheel driving	6 per cent

Source: (4)

The majority of fly-in visitors to Darwin indicated that they would visit again and stay longer on their subsequent visit. Visitors who stated they would return were likely to do so because of the lifestyle and range of activities on offer (4).

Recreational fishing is intrinsic to Northern Territory lifestyle and culture. Per capita participation in recreational fishing is the highest in the Northern Territory compared to other Australian states and territories (10). Robinson (11) suggests that an average of \$51/barramundi is spent by each recreational angler in Queensland, implying total expenditure per annum of \$22 million on recreational fishing for barramundi in that state.

The Mud Crab Fishery is important to recreational fishers. Surveys in 2000 and 2001 indicated that catch by recreational and Indigenous fishers was in excess of 80,000 crabs in both years. The majority of recreational crabbing activity is undertaken in the Darwin Harbour/Shoal Bay area, the McArthur River and the Roper River. Recreational crabbing is allowed in all coastal and estuarine waters except in the Kakadu National Park (12).

A number of the visitor destinations in the northern area of Australia, such as the Carpentaria Shire in North-West Queensland, offer nature based tourism. This has environmental impacts. In the Carpentaria Shire fishing is a key activity and major drawcard for visitors. It is estimated that recreational catch in the Carpentaria area is equivalent to the commercial catch (approximately 300 tonnes) (9). The commercial barramundi catch per unit effort trend in the Territory, an indicator of fish stock, is not alarming but bears watching (Section 4.5.1).

Grants of freehold title to Indigenous people under the *Aboriginal Land Rights (Northern Territory) Act, 1976*, applied to the recent Blue Mud Bay case, confirmed Indigenous landowners' exclusive rights to control access to water above the low water mark. Recreational fishers may have to acquire permits from Indigenous landowners to fish. The decision implicitly acknowledges the adverse impacts of commercial and recreational fishing in the inter-tidal zone on traditional owners' social, cultural and economic interests. It affects

more than 5,000 kilometres (or around 85 per cent) of the Territory's coastline (Altman et al., 2009, Chapter in this report – 'Indigenous interests in land and water'). It is not yet known how Indigenous groups will choose to implement these property rights, nor under what conditions they may grant access to fishers and tourism operators.

A number of grazing properties in northern Australia have diversified into on-farm tourism. Challenges and impediments to on-farm tourism include:

- provision of adequate infrastructure e.g. water, sewerage and electricity;
- managing visitors on-farm;
  - fire control
  - interference with gates/fences
  - minimising interaction with stock
  - waste
- ensuring appropriate leases and licences are held and obtaining information about requirements/conditions;
- cost/availability of liability insurance; and
- finding appropriately skilled staff.

Much of the pastoral land in northern Australia is under pastoral lease. These leases govern stocking conditions including the level and type of stock allowed to be grazed on the land. In WA pastoral leases are governed by the Pastoral Lands Board under the *Land Administration Act (1997)*. If the appropriate diversification permit is obtained, pastoral lessees can operate tourist enterprises. Where Native Title has been granted to a particular area, tourism operators and/or landholders must negotiate with Traditional Owners before expanding tourism operations (Greiner and Larson 2004).

Nature based tourism and activities involve the status of the natural environment as a significant element of the attraction or setting. Components of the natural environment that act as potential tourism resources, either individually or in combination, are summarised in Table 3.7.

Table 3.7 Nature based tourism resources

Category	Element
Climatic	Warm weather, cool weather (for winter sports), low precipitation, moderate cloud cover, moderate breezes
Hydrological	Oceans/seas, lakes, rivers, waterfalls, geothermal water, glaciers, snow, wetlands
Lithospheric	Mountains, beaches, canyons, caves, fossils, dunes, gemstones
Biotic	Plants, animals, insects, reptiles, fish
Celestial	Stars, eclipses, aurora borealis/australis

Source: (13)

Northern Australia offers all of the nature based tourism resources listed in Table 3.7. A number of destinations within the region offer multiple nature based attractions for visitors.

Self-drive visitors comprise mostly domestic adventure travellers aged in their forties and fifties. The key motivations of self drive visitors to the region are to experience the scenery, landscape and nature of northern Australia. A survey of independent travellers (self-drive) in

the North Kimberley region highlighted that visits to water-based attractions were popular activities (Greiner et al. 2005). Popular sites in the North Kimberley include:

- Tunnel Creek
- Emma Gorge
- Windjana Gorge
- Mt Barnett
- Imintji
- Silent Grove/Bell Gorge
- Galvin Gorge

In the Kimberley region (WA) self drive visitors make up a significant proportion of total visitors to the area and, accordingly, are important to the region in terms of economic benefit to businesses and communities (14).

### **3.5 Factors influencing successes and failures**

#### *Strengths and successes*

Factors that contribute to the strength and success of water based tourism and recreation in the northern Australia region are:

- Iconic natural attractions including National Parks and World Heritage National Park (Kakadu)
- Unique historical and contemporary culture
- Favourable climate during southern winter
- Infrastructure investment in some areas of the region (eg. Convention centre and cruise terminal in Darwin)
- Sound industry performance over last 5-years
- Ability to meet growing international demand for nature and cultural tourism experiences
- Active marketing program and branding
- Ability to collaborate with other government agencies on major projects
- Increasing amount of new and refurbished accommodation facilities

#### *Weaknesses and failures*

Following is summary of the weakness that may result in failure of water based tourism and recreation development in northern Australia.

- Access to attractions.
  - Tour operators in the Kimberley region (WA) indicated that access to some attractions is currently restricted by pastoral lessees (15).
  - Lack of security of tour and tourism access to sites.
- Framework for negotiation with Traditional Owners.
  - Tour operators in the Kimberley region indicated that there was a lack of process in negotiation with Traditional Owners. Collaboration with Traditional Owners may result in the development of Aboriginal guided tours (15).
- Visitor numbers and visitor impact.

- A limiting factor in the Kimberley that applies for the whole of northern Australia is the changing nature of the destination as a result of increasing visitor numbers and popularity of the region (15).
- Management of visitor impact (litter, waste) as visitor numbers increase
- Increasing competition in the tour industry.
- Availability of accommodation and tourism facilities and services.
- Geographic isolation from other destinations and major centres – limited air and road access.
- Seasonal closure of roads within the region.
- Development requirements to meet the demand for business tourism.
- Geographical dispersion of industry causes fragmentation.
- Highly seasonal visitation.
- Challenges engaging Indigenous communities.
- Constraints to investment – geographical constraints and lack of integrated businesses.
- Reliance on domestic tourism – a low growth sector.
- Dependence on government marketing and development expenditure.
- Lack of diversity and innovation in tourism products.
- Fishing tourism may be unsustainable in some areas.

## 4. POSSIBLE DEVELOPMENT TRAJECTORIES AND IMPACTS

### 4.1 Development trajectories and opportunities

The following sections provide an overview of some areas of tourism and recreation development potential in northern Australia. Economic analysis of development trajectories is presented in Chapter 28 of this report.

#### 4.1.1 Australian tourism industry forecast

Tourism forecasting (16) highlights macroeconomic challenges that the industry faces in the short to medium term. These include:

- global economic recession;
- collapse in wealth (world stock markets and housing prices);
- exchange rates; and
- rising fuel prices.

A summary forecast of visitor numbers and consumption expenditure for Australia is provided in Table 4.1.

Table 4.1 Visitor numbers and expenditure, Australia, 2008 to 2018

	Inbound Visitor Arrivals		Domestic Visitor Nights		Total Tourism Expenditure <sup>a</sup>	
	('000s)	(annual % change)	(million)	(annual % change)	(\$ billion)	(annual % change)
2008	5,586	-1.0%	271.8	-5.8%	90.8	-0.7%
2009	5,365	-4.0%	261.1	-3.9%	88.4	-2.7%
2010	5,529	3.1%	263.6	0.9%	91.5	3.5%
2011	5,910	6.9%	265.1	0.6%	93.8	2.5%
2012	6,257	5.9%	266.1	0.4%	95.6	2.0%
2013	6,574	5.1%	266.9	0.3%	97.4	1.9%
2014	6,907	5.1%	267.7	0.3%	99.3	1.9%
2015	7,231	4.7%	268.5	0.3%	101.1	1.8%
2016	7,554	4.5%	269.2	0.3%	102.8	1.7%
2017	7,887	4.4%	269.9	0.3%	104.6	1.7%
2018	8,230	4.4%	270.6	0.3%	106.4	1.7%

<sup>a</sup> Tourism expenditure reported in 2008 dollars.

Source: (16)

**Development Trajectory One (Australian Forecast)** - Future tourism growth in northern Australia is in line with forecast visitor numbers and expenditure for the Australian industry. Based on the forecast for Australia, tourism expenditure in northern Australia reaches \$3.3 billion by 2018 (in real terms).

Economic analysis of this level of growth in tourism expenditure in northern Australia is outlined in Section 4.4.4.

#### **4.1.2 Potential development in northern Australia**

There are a number of potential areas of development for tourism and recreation in northern Australia. Development could include expansion of existing activities and tourism numbers as well as attracting new types of visitors to the region. Tourism development is likely to be nature-based taking advantage of the significant natural and cultural assets of the region.

Specific areas for potential development are discussed in the following sections. Many of the types of development are relevant to the broader northern Australia region.

##### *East Arnhem Land (Northern Territory)*

Tourism development opportunities being explored for the East Arnhem Land in the Northern Territory include:

- Voluntourism – tourists pay to travel to the region and volunteer their time working on special projects e.g. coastal rehabilitation and protection.
- Special Interest Market/Knowledge Market – people or groups with a particular special interest (e.g. bird watching, medicinal plants, and Indigenous art) pay to stay and visit the homelands and learn from local Indigenous people.
- Eco-tourism experiences.

There are a number of existing tourism operators based in East Arnhem Land offering a number of activities including fishing, cultural tours, visits to pristine natural environments and sightseeing (NT Tourism 2008b).

##### *Kimberley (Western Australia)*

A number of existing tourism activities in the Kimberley have been identified as having potential for further improvement, development and marketing, as summarised below.

Takings from accommodation in the broader North West area of WA increased by approximately 8 per cent per annum (in real terms) over the years 2004 to 2008. The number of guests and nights occupied fluctuated between years but also followed an increasing trend (5).

Table 4.2 Tourism activities in the Kimberley, WA

Experience	Activities	
Outdoor adventure experiences	Four-wheel driving Camping Bush food	Fishing Gorges, rivers and lakes Crocodiles
Scenic nature based experiences	Scenery Vegetation Coastlines Gorges	Rock formations Rivers and lakes Wildlife
Beachside resorts in Broome	Pools Bars and restaurants	Beaches Weather
Indigenous experiences	Arts and crafts Meeting locals Authentic ceremonies	Story telling Experiencing Indigenous way of life

**Development Trajectory Two (Growth in Visitors to the Kimberley)** – Number of visitors to northern Australia (WA) increases by 8 per cent per annum. Growth in the remainder of northern Australia is consistent with national forecasts.

Economic analysis of growth in tourism in the Kimberley was undertaken and the results of the analysis are presented in Section 4.4.4.

#### *Cape York (Queensland)*

The main activities undertaken by visitors to Cape York include:

- Four-wheel driving
- Camping
- Exploring
- Fishing (including fly-in/fly-out visitors)
- Swimming
- Relaxing
- Sightseeing (including fly-in/fly-out visitors)
- Bird watching (Iron Range and Lockerbie Scrub)

There is potential to expand and further develop these market segments. One of the most appealing facets of Cape York as a visitor destination is the “true wilderness”. There are a number of potential experiences associated with the cultural and natural assets of the region (Tourism Queensland 2008).

#### *Darwin (Northern Territory)*

Research has been undertaken into fly-in visitors to Darwin to assess the opportunities and impacts of transforming Darwin into a ‘stopover’ destination. Visitors who fly into Darwin

account for almost three quarters of the total number of domestic and international visitors to the NT.

As discussed in the sections above, there are a number of potential areas for tourism growth in northern Australia. Accordingly, there may be grounds for above average growth in northern Australia.

**Development Trajectory Three (25 per cent above Australian forecast)** - Future tourism growth in tourism within northern Australia is 25 per cent higher than forecast growth for the Australian industry. Tourism expenditure in Northern Australia reaches \$4.1 billion by 2018 (in real terms). This level of growth is equivalent to an annual growth rate of approximately 3.5 per cent.

Economic analysis of the likely impact of higher than forecast growth in northern Australia was undertaken. The results of this analysis is presented in Section 4.4.4.

#### 4.2 The critical importance of landscapes, water, plants and animals in the sustainable development of the sector

The major attraction for tourists to the northern Australia region is the pristine natural environment of mountains, rock formations, riverine systems and coastlines, and their plants and animals. Water based attractions include rivers, waterfalls, gorges, waterholes, lakes and estuaries. Tourists and other visitors use the natural assets of the region in their activities, including water sports, fishing, bush walking, sightseeing and bird watching. Irrigated agricultural development and mining can conflict with the biophysical requirements of tourism and recreation if using the same water resources.

Straton and Zander (17) have used choice modelling to estimate the values of selected components of the Fitzroy, Daly and Mitchell Rivers and their floodplains to residents and city dwellers. The questionnaires were designed to reveal the willingness of each responding household to make a one-off payment for each of three levels of ecological condition for each component, and for alternative levels of agricultural income. Tables 4.3-4.5 summarise the results.

Table 4.3 Willingness of resident and non-resident households to make a one-off payment for alternative ecological conditions and levels of agricultural income in the Fitzroy Catchment

	Residents of the Fitzroy River catchment	Indigenous residents of the Fitzroy River catchment	Residents of Perth and Melbourne
Medium level area of floodplain in good environmental condition	\$117.59 - \$121.03	\$110.79 - \$122.11	\$30.16 - \$47.43

Highest level area of floodplain in good environmental condition	\$139.50 - \$146.08	\$96.24 - \$118.97	\$132.74 - \$151.70
Medium level quality of the river for recreational fishing	\$223.09 - \$252.84	\$185.79 - \$200.50	\$70.62 - \$78.14
Highest level quality of the river for recreational fishing	\$222.95 - \$243.85	\$223.65 - \$260.60	\$143.33 - \$150.27
Medium level condition of waterholes important to Aboriginal people	\$228.36 - \$250.59	\$264.36 - \$290.55	\$141.77 - \$151.68
Highest level condition of waterholes important to Aboriginal people	\$314.58 - \$363.08	\$347.51 - \$426.38	\$281.32 - \$282.64
Medium level income from irrigated agriculture <sup>a</sup>			\$110.09 - \$122.04
Highest level income from irrigated agriculture <sup>a</sup>			\$82.10 - \$87.60

<sup>a</sup> Values that were omitted for irrigated agricultural income were not statistically significant.

Source: (16)

Table 4.4 Willingness of resident and non-resident households to make a one-off payment for alternative ecological conditions and levels of agricultural income in the Daly Catchment

	Residents of the Daly River catchment	Indigenous residents of the Daly River catchment	Residents of Darwin and Sydney
Medium level area of floodplain in good environmental condition	\$52.58 - \$69.26	\$115.86 - \$129.80	\$61.11 - \$63.07
Highest level area of floodplain in good environmental condition	\$94.45 - \$128.81	\$101.43 - \$156.06	\$155.23 - \$176.83
Medium level quality of the river for recreational fishing	\$191.15 - \$221.21	\$152.36 - \$163.72	\$92.90 - \$111.18
Highest level quality of the river for recreational fishing	\$243.81 - \$244.92	\$342.78 - \$344.75	\$154.62 - \$156.42
Medium level condition of waterholes important to Aboriginal people	\$178.63 - \$197.70	\$329.16 - \$340.28	\$117.98 - \$157.44
Highest level condition of waterholes important to Aboriginal people	\$266.89 - \$282.75	\$429.42 - \$447.22	\$204.80 - \$226.55
Medium level income from irrigated agriculture <sup>a</sup>			\$71.57 - \$118.20
Highest level income from irrigated agriculture <sup>a</sup>			\$28.13 - \$47.22

<sup>a</sup> Values that were omitted for irrigated agricultural income were not statistically significant.

Source: (16)

Results indicate that respondents for all three rivers value the highest level condition of waterholes important to Aboriginal people the most. Respondents for all three rivers living in a city are willing to pay more for the highest levels of area of floodplain in good environmental condition, quality of the river for recreational fishing and condition of waterholes important to Aboriginal people than they are for the medium levels. They are also willing to pay more for the medium level of income from irrigated agriculture than they are for the highest level. Sampling was random and stratified. The implication is that residents of the region and of Brisbane and Canberra generally want tropical river systems to be in good condition for environmental, recreational and cultural values and uses, and they value medium rather than large scale expansion of irrigated agriculture.

Abstraction of water for urban, mining or agricultural uses would impact on these values. Except where other citations are given, the causal explanations of this are based on Pusey and Kennard ('Aquatic conservation' chapter, this report). As Straton and Zander show, fishing is a major attraction to the region. Freshwater flows to the ocean increase growth rates of fish and prawns, probably because of the nutrients they carry. Faster growth rates lead to better survival of young fish, consequently to bigger catches. Stream flows enable mature fish of species such as barramundi to migrate downstream to spawn in estuaries, and the young fish to migrate upstream where they feed and grow until ready to spawn. These movements are necessary for maintaining stocks, but the fish are also more likely to meet a fishing line because they move. Commercial catch per unit effort, a measure of fish stocks plus catchability, generally increases as stream flow increases unless the fishery is being over-harvested. Fished species that depend on freshwater flow include mud crabs, banana, tiger and endeavour prawns, barramundi, king threadfin, grunter, mackerels and sharks.

Table 4.5 Willingness of resident and non-resident households to make a one-off payment for alternative ecological conditions and levels of agricultural income in the Mitchell Catchment <sup>a</sup>

	<b>Residents of Brisbane and Canberra</b>
Medium level area of floodplain in good environmental condition	\$67.78 - \$74.04
Highest level area of floodplain in good environmental condition	\$171.13 - \$203.74
Medium level quality of the river for recreational fishing	\$107.31 - \$107.38
Highest level quality of the river for recreational fishing	\$153.53 - \$174.50
Medium level condition of waterholes important to Aboriginal people	\$131.82 - \$155.63
Highest level condition of waterholes important to Aboriginal people	\$277.91 - \$278.95
Medium level income from irrigated agriculture	\$146.52 - \$223.58
Highest level income from irrigated agriculture	\$130.60 - \$136.31

<sup>a</sup> Results for residents of the Mitchell catchment were omitted because they were not statistically significant. There are no estimates for Indigenous residents because the statistical models did not converge.

Source: (16)

Dams and weirs impact on fisheries by impeding fish movements, and by blocking flows of sediments and nutrients to estuaries. Damming of rivers and abstraction from surface or groundwater can affect the volume of flows, and their duration, frequency, variability and seasonality (Cresswell et al., 2009 - Chapter 1– Water Resources). The structure, composition and functioning of aquatic systems is strongly determined by these flow attributes, and changes in any of them will result in ecological changes. Mangroves, salt flats, marshes, floodplains and billabongs all require freshwater inputs to maintain them. Abstraction from groundwater can impact directly on wetlands by lowering the water table (Cresswell et al., 2009 - Chapter 1– Water Resources). These aquatic systems contribute to the scenery of the region, and the abundance and diversity of its terrestrial fauna and birds. They are also habitat for fish. Their current structure, composition and functioning depends of maintaining the long term flow regimes to which their plants and animals are adapted. Damming affects volume of flows because it increases evaporation, and water abstracted from a dam may not return to a river. It changes seasonal flow because it stores water during the wet season, when downstream flooding would otherwise occur, and releases it during the dry season when humans need it, causing water to flow through systems adapted to dryness at that season. Dams reduce the frequency of floods by storing any rainfall that would otherwise flow, and they reduce flood variability by storing as much as possible, and release only the amount required by downstream users.

Development can have other impacts. Roads built to support development, including tourist development, can impact on water flows, in particular when slopes are gentle, as they generally are on the extensive floodplains of northern Australia. Agricultural runoff can carry pollutants that potentially harm fish (18). Clearing of riparian vegetation and loss of wetlands can reduce their buffering effects and enhance the ability of runoff to transport pollutants (Pusey and Kennard, Chapter 3 - Aquatic Systems). Mosaic development of groundwater to irrigate pasture and fodder for cattle can affect stream flow and fish habitat and food sources through the draw-down of aquifers. In addition, cattle can erode stream banks and affect sediment and nutrient loads, and degrade aquatic systems by trampling.

There is little doubt that sea levels are already rising, but there is uncertainty about the future magnitude of change. The inundation of freshwater wetlands by the sea may occur over a vast spatial scale. If the severity of monsoonal storms increases as expected then the potential area inundated by storm surges is likely to increase accordingly, further impacting on coastal wetlands and floodplains, and on the tourism industry in the long term.

Although there is reasonably good understanding about the directions of causal relationships (i.e. +ive or –ive) among freshwater flows, mangroves, salt flats, marshes, floodplains and billabongs wetlands, fish habitat, and fish abundance, quantifying the consequences of water development and climatic change for tourism is not feasible in this report. This is because some of the relationships are lagged (for example changes in erosion-sedimentation regimes that impact on fish habitats), some have thresholds that mark switches to another state (eutrophication, for example) that may not be readily reversible, some impacts are cumulative, and most impacts interact with each other. Climatic change adds further uncertainty because its trends, magnitudes and thresholds are not known. In these circumstances wise development policies and practices take a precautionary approach, proceed with an awareness of thresholds and potentially irreversible changes, explore development opportunities with pilot policies and projects and learn from them, and avoid as far as possible irreversible commitments of natural assets or infrastructure.

### **4.3 Social and economic factors in the development of tourism and recreation**

The ability for tourism development to succeed in a particular region depends on a wide range of factors: the demand for the types of tourism the region provides; how and where tourism is marketed; costs of travel; competition from other regions in Australia and elsewhere; natural and cultural attractions; infrastructure and facilities, product development; and industry and community support (19).

#### **4.3.1 Capital needs, infrastructure**

Successful development of tourism and recreation may require improvement to the existing products and infrastructure, including:

- Access – it should be reliable and competitively priced. Transport infrastructure and services could include sealed roads, airports, railway lines, harbours, buses, light aircraft and hire cars.
- Accommodation – a range of accommodation facilities to suit different needs and budgets.
- Attractions and activities – In addition to visiting natural attractions visitors require other activities.
- Amenities – visitors need amenities at and on the way to destinations and within close proximity to attractions and accommodation facilities.
- Atmosphere – the responses of residents to tourists can influence their numbers.

In the northern part of the Northern Territory good roads are needed to give access to national parks and other tourist attractions. Quality of roads is especially important for attracting fly-in tourists to attractions around Darwin (20). Many tourist sites in northern Australia aren't accessible during the wet season. Year round access to key tourism sites in northern Australia would be ideal, however the level of investment required to achieve this is likely to be prohibitive.

The level of infrastructure required depends on the type of tourism market. Camping is a pleasurable experience for many tourists. Amenities for this market do not need to be of luxury standard and affordable, clean and comfortable accommodation options are often preferred.

Tourists use infrastructure including roads, waste disposal systems, boat ramps and amenities. The majority of infrastructure in northern Australia is provided by the various local governments. There is no direct contribution to local government income by tourists and visitors (i.e. through council rates). A planned tourism development can contribute to the cost of providing and maintaining infrastructure and services (i.e. through visitor contribution).

#### **4.3.2 Skills, labour**

In many areas of northern Australia tourism is seasonal, and so are the jobs it generates. Remoteness and seasonality of work make it difficult to attract and keep good staff.

Improved skills and capabilities are required to support tourism development, including:

- hospitality and service;
- guiding;
- environmental and cultural heritage;
- interpretation skills;
- visitor health and safety;
- managing people with disabilities;
- business development and management; and
- tourism operators.

#### 4.3.3 Energy supply and demand

In addition to energy use in transport, tourism requires energy for water heating, air cooling, refrigeration, lighting, electrical appliances and water pumps. Where there is no mains electricity diesel generators are used, causing noise, water and air pollution. Some operators already use solar energy and this is likely to increase.

#### 4.3.4 Markets trends & risks

There is a case for marketing the region as a whole, and avoiding competitive marketing among the jurisdictions. Complementary places and activities in different jurisdictions could be linked to reduce advertising costs to the industry, travel costs for tourists, and to enhance their experience. Market opportunities and threats are summarised in Table 4.6.

Table 4.6 Tourism market opportunities and threats in northern Australia

<b>Opportunities</b>
<ul style="list-style-type: none"><li>• Growth in independent experience based travel, increased social and environmental awareness.</li><li>• Growth in outdoor adventure experiences and scenic nature based experiences.</li><li>• Trend towards more frequent short-stays with increased focus on high quality product and service standards.</li><li>• Global economic growth resulting in increased discretionary expenditure.</li><li>• Growth in outbound travel from selected markets (e.g. China, Korea and India).</li><li>• Increased domestic visitation particularly from Sydney, Melbourne and Brisbane.</li><li>• Expansion of aviation capacity and growth in cruise ship industry.</li><li>• Increased affordability of access resulting from low cost carrier routes in Asia (NT in particular).</li><li>• Increased traveller confidence due to absence so far of large international shocks over the last two years.</li><li>• Increasing use of the internet for travel planning and booking.</li><li>• Increasing number of “Grey Nomad” travellers.</li></ul>

#### Threats

- Competition from other “Outback” destinations and from global destinations.
- Growth in domestic travel impeded by fuel costs, household debt levels and reduction in leisure time.
- Increased outbound international travel due to low cost airlines and strong Australian dollar.
- Shortage of appropriately skilled labour and difficulty attracting labour in regional areas.
- Potential increase in water abstraction and damming of rivers.
- Climate change impacts on the environment.
- Negative perception of some areas due to media and news relating to remote Indigenous communities (NT in particular).
- Risks associated with traveller confidence – war, terrorism and diseases.

Source: (20) (9) (8) (21).

#### *International Visitors*

According to surveys undertaken by Tourism Research Australia (2) top markets for international visitors to northern Australia are:

- United Kingdom
- Germany
- Switzerland
- Japan
- North America
- China
- New Zealand
- United States
- Netherlands

Economic recessions in Japan and the USA and the currently high relative value of the Australian dollar are threats to demand in the short term. Another challenge is the lack of direct flights from Europe.

Established international tourism markets are likely to remain the main focus of marketing activities promoting Tropical North Queensland. Other markets that currently account for a smaller proportion of visitors (including India, Italy, Korea, France and Scandinavia) will also be targeted (8).

Growth is expected from a number of international markets, including:

- Canada
- Scandinavia
- France
- Italy
- New Zealand

### *Domestic Visitors*

The domestic markets together with established international markets for visitors are expected to continue to be the primary source of visitors to the northern Australia (20).

Tourism Tropical North Queensland (8) has identified couples from mid-life (45 – 65 years) households from Sydney, Melbourne and Brisbane as a likely market. ‘Grey nomads’ are another key tourist segment and will increase in numbers over the coming decades (9).

Marketing for outdoor adventure experiences and scenic nature based experiences is largely aimed at ‘empty nesters’ (persons aged 55 and over) and outdoor adventure enthusiasts (aged 25 and over) (21).

## **4.4 Social and economic impacts of tourism and recreation**

### **4.4.1 Option cost and lock-in risk**

The option cost of an investment in tourism is the future, unknown opportunities that are precluded once the investment is made. For example, a suburban development precludes future options for using the vegetation that was cleared to build the suburb. Lock-in is closely related, and it is caused by the irreversibility of an investment – the suburban development, for example, has locked resources into that particular use. Major tourist developments like airports, harbours and large highways do remove options and are effectively irreversible, but these costs and risks are offset if their use is shared with other sectors, civilian or military. Other tourists facilities would have relatively low option costs and lock-in risks compared with irrigated agriculture or mining because relatively little land is cleared and the levels of water use are unlikely to have irreversible impacts on aquatic or terrestrial ecosystems.

### **4.4.2 Economic benefits and costs, and job creation**

Potential economic benefits and costs and job creation from tourism and visitor activities are summarised in Table 4.7.

Table 4.7 Economic benefits and costs of tourism

<b>Potential benefits</b>	<b>Potential costs</b>
Increased incomes for those getting the jobs created directly or indirectly by the growth of tourism, and for businesses related to tourism and recreation	Increased prices of many goods and services, property rents and prices where tourist development occurs
Reduced transport costs for residents and businesses using improved transport networks	Congestion at natural assets and public facilities borne by residents and visitors
Incomes for new businesses created directly or indirectly as a result of tourist development	

Enjoyment of natural assets and new facilities by residents and tourists	
--	--

Net economic benefit (benefits less costs) is a measure of economic efficiency. It is not the same as economic impact, which is about changes in the size of the regional economy, the structure of its sectors, or changes in employment. An investment with large impacts is not necessarily an efficient one, but benefit-cost analysis can only be applied to defined projects, which is outside the scope of this report. Impacts are addressed below (Section 4.4.4), using data derived from input-output models

Tourism in northern Australia has the potential to assist in regional development and encourage development of new enterprises. This development is encouraged by a number of factors, including:

- industry characterised by a large number of small businesses therefore low individual capital requirements;
- few barriers to entry;
- labour intensive with employment opportunities at a variety of skill levels; and
- tourism activity is distributed across a number of industry sectors.

#### **Case study of recreational fishing tourism in the Gulf of Carpentaria**

Recreational fishing is major attraction for tourists in northern Australia. The visitor profiles of recreational fishers in northern Australia are quite different from national and State averages. Tourists attracted to Karumba and Normanton for fishing during the 2002/03 season stayed for an average of approximately 20 nights compared to the State tourism average of 3 nights.

In Normanton and Karumba, the economic benefits of tourism are clearly appreciated by residents, mostly in terms of business income and employment opportunities. The negative social impacts associated with recreational fishing in the Gulf of Carpentaria are mostly concerned with crowding as well as inequity of benefit distribution and resource stress. Tourism employs 180 people, around 16% of the working population. However, even though Indigenous people represent 60% of the population, only 7% of jobs in tourism were occupied by them. While economic and employment benefits were concentrated amongst the non-Indigenous minority, congestion around favourite recreation venues was experienced by the wider population. The study also demonstrated that tourists were heavy users of potable water, including cleaning boats with it. Following the end of the tourist season, the entire population was exposed to water limitations due to over-use by tourists. In one instance, school teachers found that tourists had taken fresh water from the local school.

Source: (9)

Tourism development assists in diversifying regional economies and can assist in supporting communities affected by a decline in traditional industries.

### 4.4.3 Social impacts

#### *Potential positive Impacts*

Sustainable tourism can build the reputation of the destination region thus contributing to social capital. Improving the reputation may lead to increased investment and other benefits (Pearce 2008) Unsustainable tourism can affect reputation negatively.

Tourism requires infrastructure and facilities that bring local benefits, such as roads, paths, barbeque facilities and public toilets, police stations and health services (Beeton 1998; Cock and Pfueller 2000).

Community-based tourism (22) (23) can enhance local knowledge, leadership, skills, social networks, community cohesiveness, partnerships with extra-community organisations, motivation and confidence. However, such improvements are rare (24).

From a social perspective, sustainable tourism requires inclusive decision making, involving tourism operators, heritage and resource managers, visitors and residents. Heritage places have special values and socially sustainable tourism recognises and maintains these values, respects cultural rights and incorporates heritage recognition into business planning and visitor experiences (25).

#### *Potential negative impacts*

Potential negative impacts of increased tourism include: over-crowding of local facilities and reduced access to infrastructure; adverse changes in the seasonality of employment; increases in rents and prices; disruption to cultural practices; and introduction of activities such as prostitution and gambling (26). Companies and individuals who directly or indirectly benefit from the tourism sector are less likely to be concerned by these negative consequences. This raises the issue of equity, which has emerged as a key concern for social impact assessment in tourism as well as other sectors.

Tourism may propagate inequities in power distribution within destination communities. Local elites can retain the benefits from tourism while the negative impacts are borne by those who have not benefited. These inequities may occur with eco-tourism or cultural tourism due to the potential for disingenuous marketing and deal making with local elites (Scheyvens 1999). One strategy for reducing the potential for such inequities is through a community capacity building approach that precedes tourism development. The rationale of this strategy is that wider understanding of the potential social impacts of tourism may help communities reduce the risks of inequity, along with other negative impacts (22).

### **Case study of the Gibb River Road in North Kimberley**

Tourism in the north Kimberley mostly consists of visits to very remote pastoral properties. Tourists are attracted by features such as the Gibb River, Bell Gorge, Manning Falls and Lennard River falls.

There are generally good relationships between tourists, tour operators and landholders, characterised by mutual respect and trust. One of the defining features of generally positive impacts from tourism is the direct involvement of residents in providing many of the services, such as accommodation and meals, thereby earning income and enjoying social interaction in a manner suitable to residents.

While the overall impacts were positive, there were negative impacts. Self driven tourists and tour operators entered pastoral properties without permission, and pastoralists had lost cattle as gates were left open. Some cattle had been shot by visitors. Tourists are said to spread weeds in their vehicles and clothing. Some tour operators trespassed on landholders properties for to set up bush camps.

In terms of equity of impacts, both Indigenous and non-Indigenous residents benefited from tourism, albeit limited in the case of the former (Yuco 2003). Indigenous communities directly benefiting from tourism include Mowanjum and Kalumburu, who operate an arts centre and accommodation facilities, respectively. Other Indigenous communities including Mount Barnett, Imintji, Marunbabidi, and Kandiwal receive indirect income from tourism by sub-leasing infrastructure for tourism.

Source: (15)

#### **4.4.4 Economic and job multipliers**

##### *Multipliers*

A multiplier is an index (ratio) indicating the overall change in the level of activity that results from an initial change in economic activity. Input-output (I-O) multipliers are an indication of the strength of the linkages between a particular sector and the rest of the regional economy. As well, they can be used to estimate the impact of a change in that particular sector on the rest of the economy.

A multiplier is a measurement of the impact of an economic stimulus. The stimulus we apply is normally an increase in final demand by a specific sector, which causes that sector to grow and influence growth in other sectors. The impact of the stimulus can be measured using a number of indicators including a change in gross regional product and employment in the whole regional economy.

The economic benefits of tourism and recreation are generated through the demand for local goods and services. The distribution of the economic benefits is likely to be uneven within and between regions (19). A number of factors influence the distribution of tourism and recreation benefits, including:

- location of tourism attractions, population centres and tourism routes;
- attractiveness of the region;

- linkages among economic sectors/industries;
- the pattern of visitor expenditure (visitor type); and
- the extent of leakage from the regional economy.

### *Tourism Expenditure*

These methods and data were used to estimate tourism expenditure by industry sector for northern Australia for 2006/07.

- The primary data for 2006/07 were sourced from Tourism Research Australia (TRA), and adjusted to account for differences in regional boundaries and to ensure they were consistent with the regional I-O model.
- Base data included total tourism expenditure by region (Tourist Regions and SLAs) and expenditure profiles, by region, across a range of goods and services (e.g. food and drink, fuel, transport, shopping, etc.).
- Estimates were available for domestic day, domestic overnight and international visitor expenditure.
- The second adjustment to the base data was the application of more detailed expenditure breakdown from the ABS *Australian National Accounts: Tourism Satellite Account, 2006/07* for both domestic and international visitor expenditure (27)-(Table 12).
- The base data tourism expenditure estimates were converted from purchasers' to basic prices (i.e. reallocation of net taxes (taxes minus subsidies) and marketing and transport margins) to make the data consistent with accounting conventions used in the national, state and regional I-O models. Purchasers' to basic price ratios for tourism expenditure categories were derived from (27)-(Table 8).
- The final adjustment to the base data was the allocation of the tourism expenditure data in basic prices to the relevant input-output sectors (50 intermediate sectors, taxes less subsidies or imports) in which the expenditure occurred, thus compiling a profile of sales to final demand. This process was undertaken for each type of tourism expenditure (domestic day, domestic overnight and international visitor) and the results aggregated to form a single tourism demand profile. The final tourism expenditure profile for northern Australia for 2006/07, as published in the I-O model, is detailed in Table 4.8.

Table 4.8 Tourism expenditure in northern Australia, 2006/07

	Tourism Expenditure (\$m) <sup>a</sup>
Food products	89.6
Wine & other beverages	25.9
Textiles, clothing and footwear	11.1
Printing and publishing	10.5
Metals and metal products	11.1
Machinery and equipment	11.0
Other manufacturing	11.1
Wholesale trade	74.4
Retail trade	315.6
Accommodation, cafes & restaurants	526.7
Road transport	167.8
Rail, pipeline & other transport	32.1
Services to transport; storage	144.3
Ownership of dwellings	123.0
Property and business services	27.5
Education	17.9
Cultural and recreational services	120.1
<b>Total intermediate expenditure</b>	<b>1,720.0</b>
Taxes less subsidies <sup>b</sup>	198.0
Imports	890.8
<b>Total</b>	<b>2,808.9</b>

<sup>a</sup> In basic prices, that is, net of net taxes (taxes minus subsidies) and marketing and transport margins.

<sup>b</sup> Principally Good and Services Tax (GST) less subsidies.

Source: (16) (27) and EconSearch analysis.

It is estimated that a total of \$2.8 billion was spent by visitors to northern Australia in 2006/07. As expected expenditure was highest in tourism related industries, including:

- accommodation, cafes and restaurants;
- retail trade;
- transport and services to transport (e.g. travel agents and tour operators); and
- cultural and recreational services.

Expenditure by tourists accounted for approximately 17 per cent of total value of exports from northern Australia in 2006/07.

#### *Economic and Population Impact of Development Trajectories*

Estimates of economic and population impact were calculated for development trajectories for water based tourism and recreation in northern Australia. The trajectories used as a basis for the analysis are detailed in Table 4.9.

Table 4.9 Development trajectories, water based tourism and recreation, northern Australia

<b>Trajectory</b>	<b>Description</b>
Trajectory One – Australian Forecast	Future tourism growth in northern Australia is in line with forecast visitor numbers and expenditure for the Australian industry. Based on the forecast for Australia tourism expenditure in northern Australia reaches \$3.3 billion by 2018 (in real terms).
Trajectory Two – Growth in Visitors to the Kimberley	Number of visitors to northern Australia (WA) increases by 8 per cent per annum. Growth in the remainder of northern Australia is consistent with national forecasts.
Trajectory Three – 25 per cent above Australian Forecast	Future tourism growth in tourism within northern Australia is 25 per cent higher than forecast growth for the Australian industry. Tourism expenditure in Northern Australia reaches \$4.0 billion by 2018 (in real terms). This level of growth is equivalent to an annual growth rate of approximately 3.5 per cent.

A summary of the method used and results of the analysis are provided below. Detailed results of the analysis are included in Appendix One.

Estimates of economic and population impact were based on estimates of tourism expenditure under each scenario. The current level of tourism expenditure in northern Australia is in Table 4.8. Estimates of expenditure for each development trajectory are in Figure 4.1.

Estimates of total (i.e. direct plus flow on) regional economic impact were calculated for a 10 year period. Gross regional product (GRP), employment and population impacts for each trajectory are summarised in Figures 4.2 to 4.4.

#### *Tourism Expenditure*

Baseline tourism expenditure is maintenance over the next ten years in real terms of the current level of expenditure, estimated to be approximately \$2.8 billion.

Under trajectory one, tourism expenditure increases in line with national forecasts. Total tourism expenditure in northern Australia increases from its current level (\$2.8 billion) to \$3.2 billion after 10 years, an increase of 14 per cent overall (Figure 4.1).

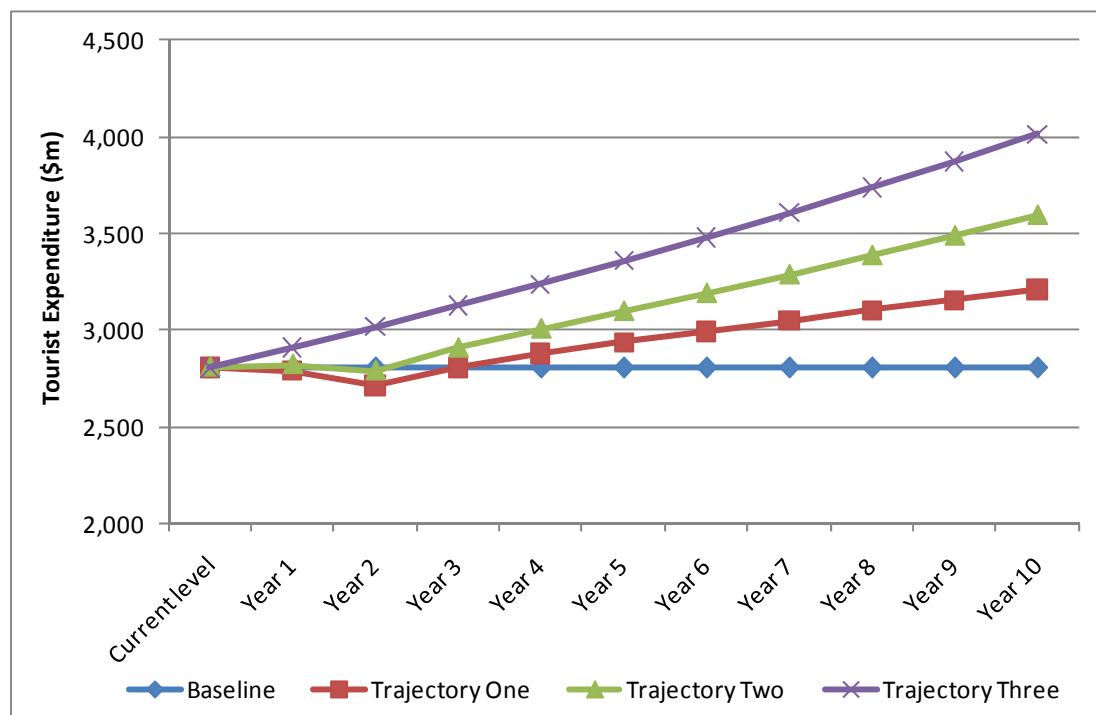


Figure 4.1 Tourism expenditure, northern Australia development trajectories<sup>a</sup>

<sup>a</sup> In 2009 dollars.

Source: (16) (27) and EconSearch analysis.

Under trajectory two, tourism expenditure in the Kimberley (WA) increases by approximately 8 per cent per annum while expenditure growth in the remainder of the region is in line with the national forecast. Under this scenario tourism expenditure reaches \$3.6 billion by year 10, an increase of 28 per cent from the current level of expenditure (Figure 4.1).

Tourism expenditure under trajectory three increases to 25 per cent above the national forecast over 10 years. Under this scenario total tourism expenditure reaches \$4.0 billion by year 10. This level of expenditure is 43 per cent above existing levels of expenditure and represents a compound growth rate of 3.6 per cent per annum over the 10 year period.

### *Gross Regional Product*

Tourism's current contribution to northern Australia is around \$1.5 billion in GRP, which represents around 10 per cent of regional economic activity.<sup>1</sup>

Under trajectory one, total GRP in northern Australia attributable to growth in tourism expenditure would increase from \$1.5 billion to just over \$1.9 billion by Year 10, an increase in tourism related GRP of 13 per cent above current levels.

If tourism expenditure increases in line with trajectory two total GRP attributable to tourism will increase from \$1.5 billion to just over \$1.9 billion by Year 10, a net increase of approximately \$385 million or 25 per cent (Figure 4.2).

<sup>1</sup> Gross regional product in northern Australia was estimated to total approximately \$15 billion in 2006/07.

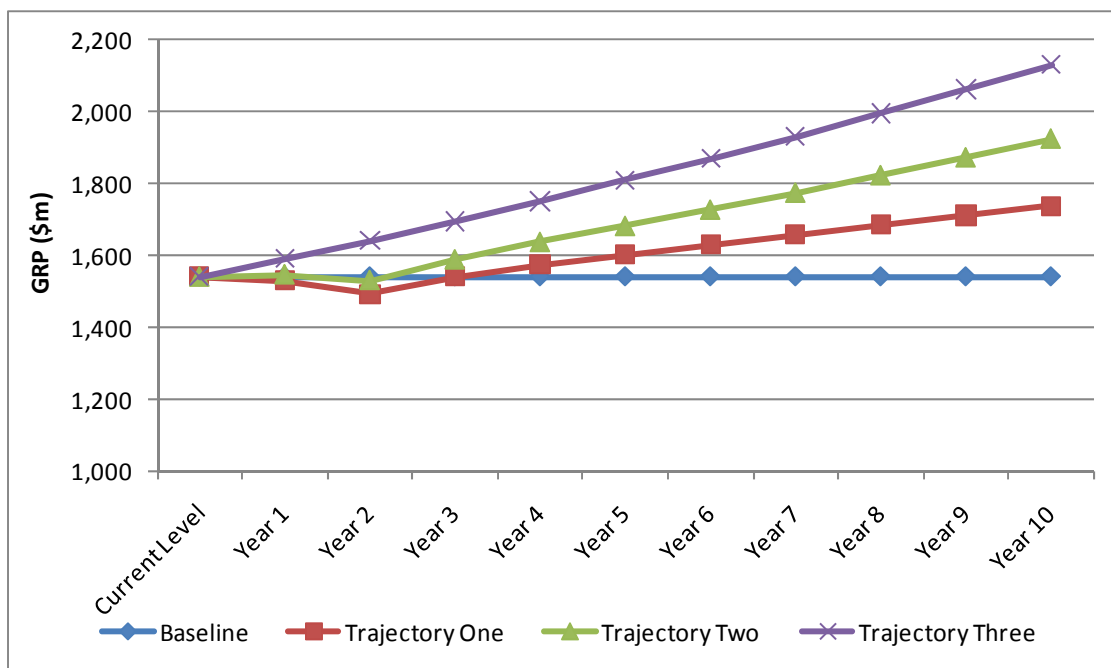


Figure 4.2 GRP impacts of northern Australia tourism development trajectories<sup>a</sup>

<sup>a</sup> In 2009 dollars.

Source: EconSearch analysis

Under trajectory three tourism expenditure increases by approximately 4 per cent per annum. GRP relating to this additional tourism expenditure is estimated to increase, above current levels, by \$590 million to approximately \$2.1 billion after 10 years of growth (Figure 4.2).

### **Employment and Population**

Employment currently generated by the tourism sector, directly and indirectly, is estimated to be around 16,100 full-time equivalent (FTE). This represents approximately 12 per cent of the region's total labour force.

If tourism expenditure in northern Australia were to stay at current levels, total tourism related employment would decline over the next 10 years. This decline would be expected because of labour productivity improvements across all sectors (Figure 4.3). Related to the decline in employment is a decline in the population of northern Australia (Figure 4.4), because a proportion of workers leaving the industry are assumed to leave the region and take their families with them.

Under trajectory one, net employment is estimated to increase by around 330 FTEs after 10 years. Total tourism related employment would be approximately 13 per cent higher under trajectory one than if tourism expenditure remained at its current level (Figure 4.3). Associated with the increase in employment would be an increase in population above base case of approximately 2,400 persons by year 10 (Figure 4.4).

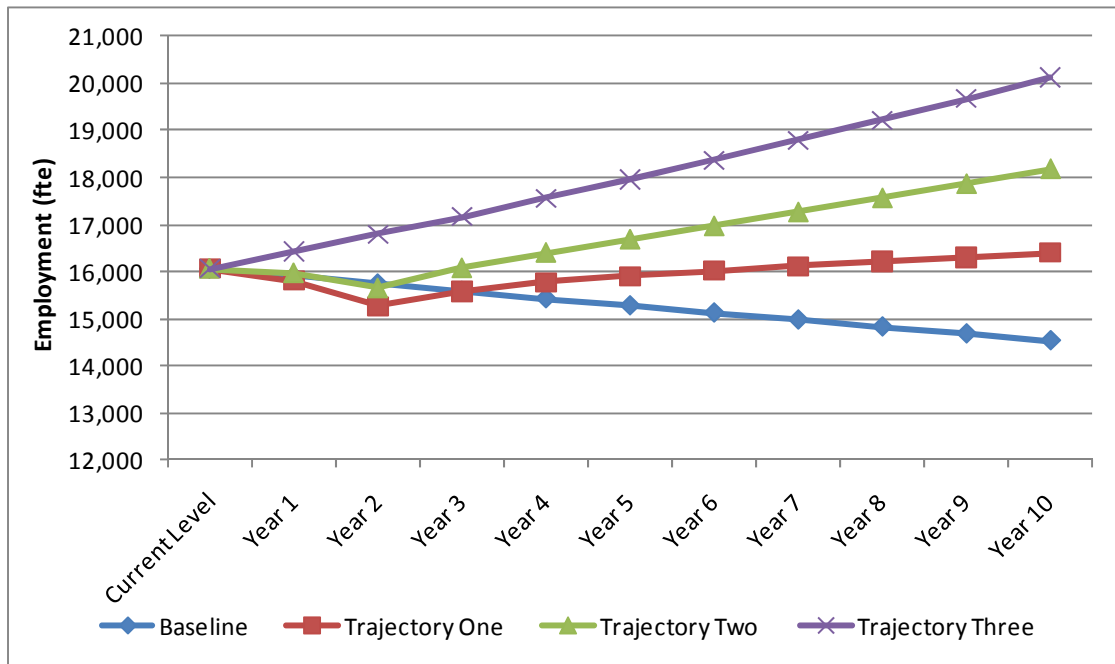


Figure 4.3 Employment impacts of northern Australia tourism development trajectories  
 Source: EconSearch analysis

After 10 years of growth under trajectory two, total employment would be 25 per cent higher than if the current level of expenditure continued (Figure 4.4). Under trajectory two there would be a net increase in tourism related employment of approximately 2,100 FTEs by year 10. Associated with this increase in employment would be an increase in regional population above base case of almost 4,700 persons by year 10 (Figure 4.4).

Under trajectory three, tourism related employment is expected to increase to 20,100 FTEs by year 10. This employment is 39 per cent higher than the estimated employment if current levels of expenditure were to continue.

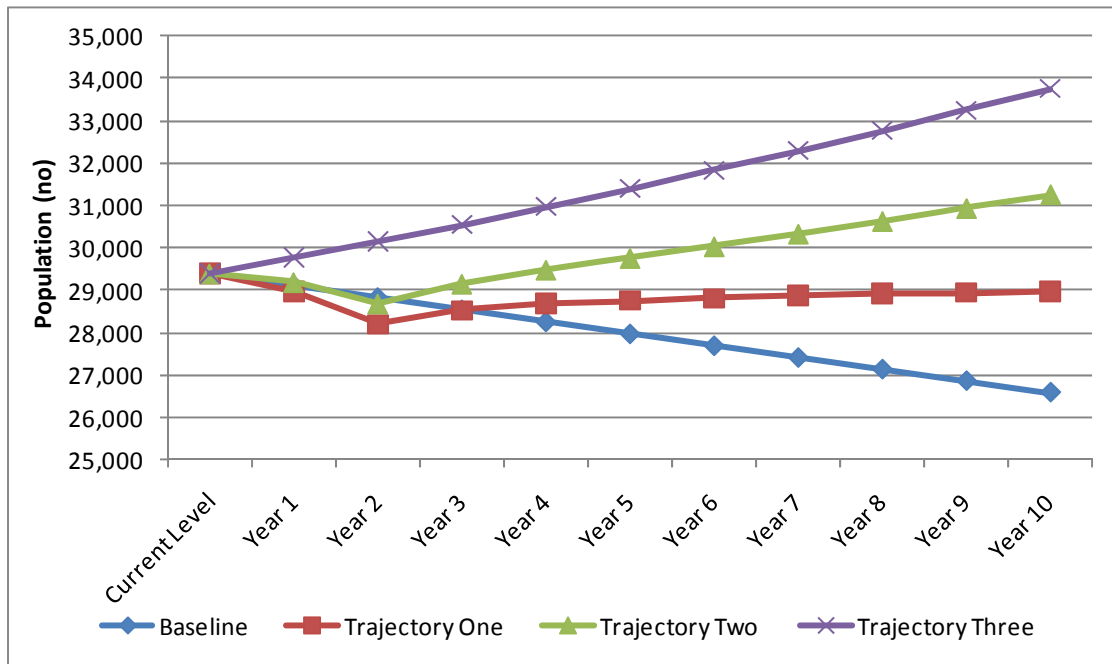


Figure 4.4 Population impacts of northern Australia tourism development trajectories  
 Source: EconSearch analysis

## 4.5 The biophysical impacts of tourism and recreation

This section is based on Pusey and Kennard, 2009, Chapter 3 in this report, unless other references are given.

### 4.5.1 Recreational fishing

The importance of recreational fishing to visitors has been emphasised already. Some 90 per cent of over 100,000 visitors to the Gulf of Carpentaria listed recreational fishing as a main reason for their visit. Overfishing of barramundi has been noted in heavily fished areas. Pest fish species have been used as live bait by visitors. Species such as the endangered sawfish are sometimes recreational by-catch. Consequently, the act of ‘tourist fishing’ places pressure on its sustainability and, therefore, that of the tourism industry.

Figure 4.5 shows the commercial catch per unit effort of barramundi. This, if accurate, would show the health of stocks fished by commercial and recreational fishers, because many will be fished by both. Figure 4.5 is not authoritative, but neither does it cause alarm. It is, though for only a short run of years, and there are many contestable assumptions and sources of systematic bias in both catch and effort data (28).

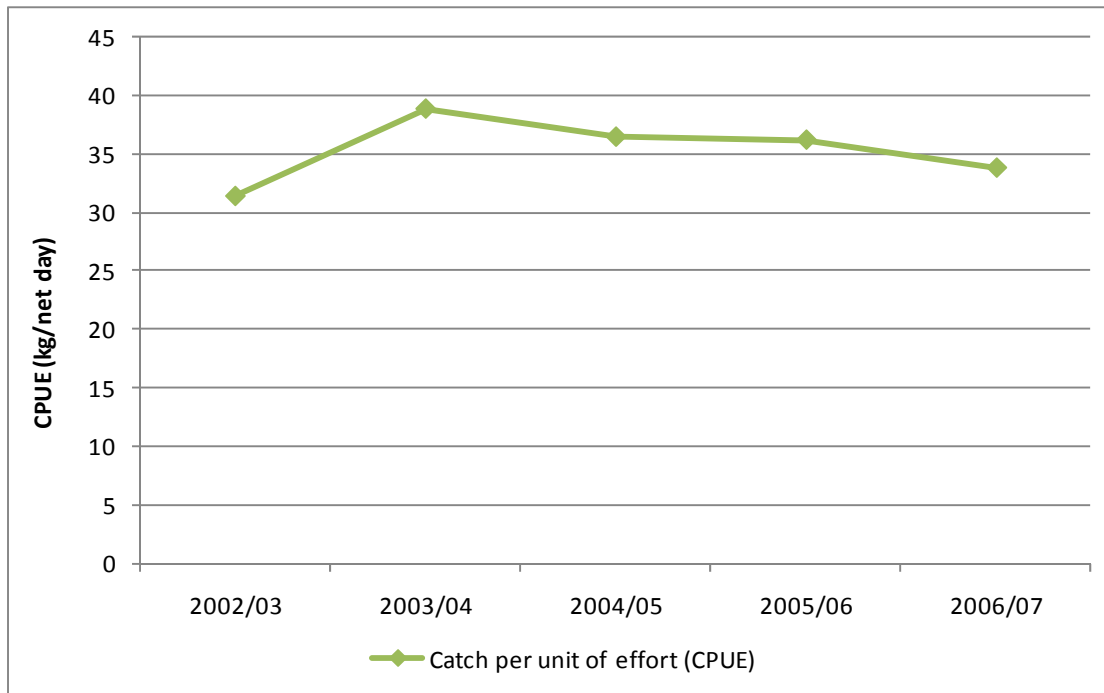


Figure 4.5 Catch per unit effort, Barramundi Fishery, northern Australia (NT)  
Source: (12) (29) (30) (31) (32).

Figure 4.5 shows the commercial catch per unit effort of barramundi. A sustained decline would, subject to errors, indicate declining stocks. The stocks are shared by recreational and commercial fishers. These data are for only a short run of years, and there are contestable assumptions and sources of bias in both catch and effort data (28). Figure 4.5 is not authoritative, but it does not suggest that stocks are declining.

#### 4.5.2 Boating

Boating can negatively affect aquatic systems. Wakes from boats can increase the rate of bank erosion resulting in loss of riparian vegetation, undercutting of banks and increased sediment inputs and turbidity. The importation of aquatic weeds on boat trailers and outboard motors is also a concern. Consequent changes in habitat and food supply caused by these factors are likely to alter the abundance of species targeted by anglers. These impacts are not widespread but need to be considered as a potential problem as the industry grows. Whether it is better to concentrate these impacts or spread them is a useful research project.

#### 4.5.3 Pollution

Visitors' urine, food wastes and detergents affect nutrient concentration or availability, which can enhance algal growth in the nutrient-poor waters of many northern Australian freshwaters, with a potential for causing algal blooms. Phosphorus is commonly a limiting nutrient, and detergents supply this. Detergents also reduce the surface tension of water on which many aquatic invertebrates depend for movement and respiration. They are part of the food web of fish sought by anglers. Sunscreens have a similar effect, and they are applied liberally in this sunny region. Insect repellents can be toxic too, and they are used around water where flies and mosquitoes are abundant. Adding to this mix, oil and fuel pollution increase in areas of high boat use. These impacts are currently small and localised, but need to

be taken into account as a consequence of growth in tourism and recreation. Again, is it better to concentrate such impacts, and manage them locally, or disperse them?

#### **4.5.4 Urbanisation associated with tourism development**

Growth in tourism causes some regional centres to grow, and this impacts on freshwater systems. Roads, car parks, buildings and storm drains increase runoff substantially, and cause flashier floods, which in turn can lead to channel erosion. This water can carry oils and other hydrocarbons, nutrients, herbicides and pesticides from gardens and parks. Urban areas require domestic water supply from dams or bores which can affect local wetlands. Effluent from sewage works are discharged into nearby creeks and rivers. These impacts are locally concentrated.

#### **4.5.5 Impacts of people and facilities on scenery**

An increase in tourist numbers, roads, infrastructure and facilities can all detract from scenic value. Careful siting of roads and powerlines, and design of facilities can help blend them into the landscape. Good buildings can themselves become scenic assets. Zoning can control the density and type of development from 'wilderness' to theme park and thus attract a range of visitors. Total numbers can thus increase while also enhancing the experience for each group. An individual with a range of preferences could pick one from each zone, stay longer and spend more. Visitor numbers can be managed through fees or permits.

#### **4.5.6 Greenhouse gas emissions**

Tourism contributes very approximately 5 % to Australia's total greenhouse gas (GHG) emissions. Most of the emissions stem from transport, mainly air travel (57%) and other transports (7%). Accommodation and sustenance of tourists amounts to approximately 12% of the tourism total.

In northern Australia, outside the major cities, the main visitor destinations are natural and cultural attractions. While there are some smaller local airports, most regional travel is by road. Distances are large. Existing data are unsuitable for estimating visitor numbers and associated GHG emissions because the northern Australian visitor is very different from the average Australian tourist. The Bureau of Tourism provides aggregated data for regions, but their source data are too sparse to support sufficiently precise emissions estimates (33). Baseline data for estimating emission changes due to development are needed on the current number of tourists, where they came from, mode of transports, length of stay, type of accommodation, and places visited. This will enable the estimation of GHG emissions per tourist.

### **4.6 If the potential development trajectories were to occur, what would be required to maximise their positive impacts?**

Potential positive impacts associated with the development trajectories (section 4.3.2.) are:

- Increased incomes for those getting the jobs created directly or indirectly by the growth of tourism, and for businesses related to tourism and recreation.
- Reduced transport costs for residents and businesses using improved transport networks.
- Incomes for new businesses created directly or indirectly as a result of tourist development.

- Enjoyment of natural assets and new facilities by residents and tourists.

Measures to maximise these impacts are summarised in Table 4.10.

Table 4.10 Measures to maximise positive impacts of tourism development

<b>Impact</b>	<b>Practices</b>	<b>Infrastructure</b>	<b>Regulations and Incentives</b>
Increased individual and business incomes	Encourage training, skills development and employment of local population. Incorporate local produce into retail and food outlets to encourage purchase of local goods as part of the tourism experience.	Employment of locals for infrastructure projects rather than import labour.	Provide training to local labour force to build skills capacity in the region.
Reduced transport costs and improved transport networks.		Design road and other transport infrastructure to suit both tourist and resident needs.	
Incomes for new businesses	Encourage diversification of existing local businesses (e.g. on-farm tourism).		Remove/modify regulations to facilitate diversification of business activities.
Enjoyment of natural assets and new facilities by residents and tourists.	Encourage locals to interact with tourists and utilise additional recreational facilities, food outlets, retail outlets and services. Encourage community involvement in tourism related events (e.g. events and fishing competitions) and activities.	Ensure services and facilities are suited to needs and budgets of locals and tourists. Offer a variety of interesting and value for money accommodation and activity options.	Encourage tourist contribution for the use of services and facilities (e.g. through visitor levy).

#### 4.7 If the potential development trajectories were to occur, what would be required to minimise their negative impacts?

The potential negative impacts associated with the development trajectories include:

- Loss of options and risks of being locked in by large investments in facilities or infrastructure that cannot be moved, or adapted to another purpose
- Increased prices of many goods and services, property rents and prices where tourist development occurs
- Congestion at natural assets and public facilities borne by residents and visitors
- Export of benefits outside the region, increase in costs to the region
- Locally, increases in benefits to a few, increased costs for many (local capacity building)
- Over fishing and indirect impacts of tourism on fish stocks
- Impacts on aquatic ecosystems
- Impacts on scenery
- Greenhouse gas emissions

Measures to maximise these impacts are summarised in Table 4.11.

Table 4.11 Measures to minimise negative impacts of tourism development

Impact	Practices	Infrastructure	Regulations and Incentives
Loss of options and risks of being locked in by large investments in facilities or infrastructure that cannot be moved or adapted.	Invest in diversity of tourism activities, discourage business monopolies, encourage innovative pilot projects, invest assuming the magnitudes and consequences of climatic change and market shifts are unpredictable.		
Export of benefits outside the region, increase in costs to the region	Invest in regional education and skills. Encourage co-investments between the region and externally-based businesses.		Implement cost-sharing arrangements, perhaps including taxes, for infrastructure, facilities and services.
Locally, increases in benefits to a minority, increased costs for most	Invest in local education and skills. Promote local social networks and		

Impact	Practices	Infrastructure	Regulations and Incentives
	engage them with tourism.		
Decline in fish stocks	Diversify tourism product away from recreational fishing	Improve the variety and quality of infrastructure to broaden the appeal of the destination	Fishing zones with different and adaptable rules affecting seasonality, quotas, species, sizes, keep rules, methods and boat types. Include non-fishing zones in the mix, but make full protection reversible, and adjustable in time and space (such measures are well know already to fisheries authorities).
Quality and availability of fresh water		Ensure water infrastructure is designed to meet total demand not just demand by resident population	Provide incentives to tourists/visitors to minimise their freshwater use e.g. through user charges, education program, volume-based payments by tourism related businesses
Indirect impacts on aquatic ecosystems	<p>Locate roads with an understanding of their impacts on water flows and consequences for wetlands and floodplains.</p> <p>Locate tourism facilities with an understanding of their potential for affecting groundwater levels and polluting surface water.</p> <p>Locate tourism facilities with an awareness of their effects on urban growth and its consequences for aquifer levels, river flows, sedimentation and pollution.</p>		
Impacts on scenery		Locate roads, infrastructure and facilities to blend with and if possible enhance the scenery.	Develop a zoning system with incentives that takes account of the visual impacts of visitor numbers, infrastructure and facilities on scenery.
Litter and waste	Ensure waste services and infrastructure is designed to meet quantity of waste generated by all not just resident population		Development and impose penalties for inappropriate waste disposal

Impact	Practices	Infrastructure	Regulations and Incentives
Greenhouse gas emissions	Adopt energy efficient practices	Ensure accommodation facilities and other infrastructure are developed are environmentally friendly (e.g. energy efficient)	<p>Various environmental related accreditations are available for tourist operators</p> <p>Develop a system for estimating emissions from tourism, identify main sources, and develop policies and incentives to reduce emissions.</p> <p>Investments by governments and corporations should set examples, and incentives should be designed that will encourage the public and visitors to follow. In addition to the substantive contribution this could make, this strategy could enhance the image of the region as clean and green and bring commercial benefits.</p>

## 5. WHAT ARE THE CRITICAL KNOWLEDGE GAPS

Tourism development in northern Australia is likely to happen during a period of rapid globalisation, and unpredictable shifts in markets and climate. Research can increase our understanding and ability to prepare for opportunities and costs the future will bring, but the bio-physical, economic and social systems of northern Australia are subject to unpredictable threshold changes with often unknowable consequences. No matter how much is invested in research, expecting the unexpected is wise. The knowledge gaps we identify below are offered against this background.

### 5.1 Biophysical

Gaps in knowledge about climatic change, aquifer behaviour, river flows and ecological responses are addressed by Cresswell (2009, this report), and Pusey and Kennard, (2009, this report). Such knowledge is fundamental to the development of sustainable tourism and recreation. Modelling of the potential spatial extent of sea level rise will be useful for the long term planning of investments in infrastructure and facilities, and for identifying potential growth centres. Research on the motivations and behaviours of recreational fishers, and on their impacts on stocks will help shape

fisheries policies. Research on the impacts of pollution from the sector on aquatic systems, and on whether it is better to concentrate or disperse these impacts would also help inform sustainable tourism policies.

## **5.2 Economic**

Better understanding of ways to classify different types of visitor and understand their motivations and constraints is a necessary foundation for the diversification of the sector. The potential for tourism based on Indigenous cultures is hardly explored. Better understanding of the motivations and behaviours of tourism businesses is also needed so that incentives and regulations can be designed more effectively.

## **5.3 Social**

Better knowledge of how to minimise the negative social impacts of tourism on local communities, and how to enhance the positive ones might be gained from comparing cases of success and failure from comparable 'remote' regions, such as Canada and Alaska.

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## APPENDIX 1 ECONOMIC IMPACT OF DEVELOPMENT TRAJECTORIES

APPENDIX TABLE 1.1 – Economic and population impact of tourism development

	Year 5			Year 10		
	GRP (\$m)	Employment (fte)	Population (no)	GRP (\$m)	Employment (fte)	Population (no)
<b>Baseline</b>						
Direct impact	856	9,699	17,698	856	9,224	16,831
Flow-on impact	685	5,575	10,264	685	5,302	9,761
<b>Total impact</b>	<b>1,541</b>	<b>15,275</b>	<b>27,962</b>	<b>1,541</b>	<b>14,526</b>	<b>26,592</b>
<b>Trajectory One</b>						
Direct impact	895	10,141	18,262	978	10,543	18,516
Flow-on impact	24	5,758	10,499	74	5,849	10,465
<b>Total impact</b>	<b>1,603</b>	<b>15,899</b>	<b>28,762</b>	<b>1,737</b>	<b>16,392</b>	<b>28,981</b>
<b>Trajectory Two</b>						
Direct impact	944	10,693	18,968	1,095	11,803	20,126
Flow-on impact	53	5,987	10,794	146	6,371	11,137
<b>Total impact</b>	<b>1,682</b>	<b>16,681</b>	<b>29,763</b>	<b>1,925</b>	<b>18,175</b>	<b>31,263</b>
<b>Trajectory Three</b>						
Direct impact	1,023	11,594	20,118	1,223	13,179	21,883
Flow-on impact	102	6,361	11,275	223	6,941	11,871
<b>Total impact</b>	<b>1,809</b>	<b>17,954</b>	<b>31,393</b>	<b>2,131</b>	<b>20,120</b>	<b>33,754</b>

Source: EconSearch analysis