Enhancing Financial and Economic Yield in Tourism:

Public Sector: Central Government Benefits and Costs of Tourism

Ross Cullen
Susanne Becken
Geoff Butcher
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David G. Simmons
Nick Taylor

Yield Report 10
ACKNOWLEDGEMENTS

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November 2007

www.lincoln.ac.nz/trrec/tsmyield
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Acknowledgments

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Chapter 1
Executive Summary

Public Sector Inputs (Costs and Benefits)
This report describes the national public sector direct inputs, and outline society’s indirect inputs, into tourism production and consumption. The public sector and societal benefits that accrue from tourism will also be assessed. A subsequent report (Yield report 11) examines Local Government Costs and Benefits alongside the Regional Yield (value added) generated from tourism.

The objective of this strand of the research project is to collect data that will be used in Phase II of the project (Enhancing the financial and economic yield for tourism) to determine if tourism is generating both economic and sustainable yield. Tourism is a major component of the New Zealand economy and the flow of visitors both domestic and international each day in New Zealand is a significant feature of New Zealand society. Calculation of economic and sustainable yield requires estimation of the economic and social benefit and costs of tourism. This part of the project tackles the challenging task of estimating the costs that tourism imposes upon the New Zealand public sector or New Zealand society, and the revenues and other benefits that tourism provides to the public sector or to New Zealand society. Table 1 below illustrates the types of benefit and costs that we have investigated and the two spatial levels at which they have been studied. A subsequent report (Yield report 11) examines Local Government Costs and Benefits alongside the Regional Yield (value added) generated from tourism, as tourist expenditure flows through the economy.

Table 1
Examples of Tourism Benefits and Costs

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>Regional /local</th>
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<tr>
<td>Public Sector Benefits</td>
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<td>(revenue) : monetised</td>
<td>Taxes (PAYE)</td>
<td>National transfers</td>
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<td>GST</td>
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<td>Public Sector expenditure</td>
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<td></td>
</tr>
<tr>
<td>(costs) : monetised</td>
<td>Tourism Marketing</td>
<td>Public Transport</td>
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<tr>
<td>Chapter 4</td>
<td>National Museums</td>
<td>Local Museums, Galleries</td>
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<td></td>
<td>Search &amp; Rescue</td>
<td>Events</td>
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<td>Air Pollution</td>
</tr>
<tr>
<td>Chapter 4 and 5</td>
<td>GHG emissions</td>
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<tr>
<td>Social benefits (advantages)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>listed : non-monetised</td>
<td>Preservation and</td>
<td>Diversified local economies (and employment) access to services</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>retention of culture(s)</td>
<td></td>
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<tr>
<td>Social costs (dis-advantages)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>listed : non-monetised</td>
<td>Volunteer services</td>
<td>Crime, Congestion – site, Noise</td>
</tr>
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<td>Chapter 5</td>
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</tbody>
</table>

Many of the benefits and costs of tourism are already measured in dollars and recorded in financial transactions. The magnitudes of some non-financial items can be quantified by way
of non market valuation techniques. Others, particularly in the social dimension, can be described but are not easily quantified or measured in dollars. We have used existing financial data where they are available, shadow prices where they are available and qualitative assessments in cases where there is no financial or economic data available. In our attempt to provide an initial assessment we have focused most attention on the largest items and some smaller items have not been tackled.

At the macroeconomic level tourism value added comprised 4.9 percent of GDP in 2003/04. Tourism employs directly or indirectly, 15 percent of the New Zealand workforce. For some regions including Northland, Gisborne, Marlborough, Nelson, West Coast and Otago tourism is a relatively large share of their regional economy. In Northland, Coromandel, Eastland, Marlborough, Nelson, West Coast, and Otago regions tourism’s share of regional direct employment exceeds eight percent. Tourism’s share of employment exceeds 20 percent in Hurunui district and fifty percent in Mackenzie District.

Tourism’s share of GDP indicates that it contributes $1.43 billion in direct taxes. The tourism industry paid $1,211 million of non-deductible GST in 20003/04. $487 million of the GST was paid by international visitors. International visitors are estimated to pay $100 million per annum on cigarette and alcohol excise taxes and gaming taxes.

Many parts of the New Zealand public sector provide services that benefit tourism. The Department of Conservation receives revenues from and provides services to tourism that we estimate have a net cost of $79 million per annum. This may underestimate the true tourism related net cost of conservation activities by 50 percent. Tourism in New Zealand typically involves significant amounts of travel and we estimate that tourism contributes 15.5 percent of national road vehicle km. New Zealand captures significant amounts of revenue from road users including $421 million directly or indirectly from tourism which is balanced by tourist' contribution to revenue via user charges. ACC is an exception, because international visitors share accidents is double their 1.5 percent share of vehicle km. Transport accidents are a major cost and we estimate that tourism imposes ACC costs of $72.1 million per annum. The net cost from tourist transport to ACC is $8.5 million. Passenger clearance costs for international visitors are only partly recouped from travelers and we estimate that tourism has a net deficit of $36 million per annum. International marketing by Tourism New Zealand costs $65 million per annum. The payoff from this state funded activity is a continuing flow of tourists to New Zealand who bring revenue and impose costs on New Zealand. More than one million visitors per year enjoy the exhibits at Te Papa. The net subsidy per visit to Te Papa is $15.30 and the total subsidy to tourism $13.4 million per annum. Tourism’s share of national search and rescue costs is approximately $10 million per annum.

Travel by visitors imposes environmental and social costs as well as financial costs. Recent research by the Ministry of Transport has identified air and water pollution, noise pollution, CO2 emissions, congestion and external costs of transport accidents as significant items whose shadow price can be estimated. Based on information from that study we have estimated the external costs associated particularly with tourist’s road travel. We calculate that tourism’s share of these costs is $280 million per annum.

Tourist densities have increased steadily in New Zealand during the past two decades. The flows of both domestic and international visitors can be a mixed blessing to communities. Quantifying these benefit and costs can be completed in some cases by using existing social
statistics or other indicators such as trends in availability of medical services or restaurants in small communities. Where possible we have provided examples from existing studies of the ways that tourism has benefited (seasonal employment, better facilities in National Parks, greater frequency of public transport) or imposed stresses or social costs (crowded local parking, increased demands on volunteers, loss of cultural integrity) at national, regional or local level. Non market valuation studies have been completed in USA, Australia and other countries to estimate dollar values of some of these tourism related items but few such studies have been completed in New Zealand.

1.1 Summary Points

As noted in the introduction, this report was originally presented as an internal discussion document with a view to aligning the approach and methods with key tourism stakeholders. The data assembled indicate there are some large public sector benefit and costs associated with tourism at the national level. However tourism is of major importance for several regions and districts. We recognise that there are several issues that might be researched further particularly if they are judged important to determination of economic and sustainable yield at national or regional level.

The following were offered as summary points for the advisory group comment or elaboration.

• Tourism is largely an individual activity and makes extensive use of private sector provided goods and services. However, tourism is reliant upon many services provided by government: central, regional and local. Outside of directly linked government agencies/units there is weak understanding of the impact of tourism on government etc.

• For this first level of analysis tourism marketing (rather than management) appears to be the biggest single item of direct public sector expenditure.

• Public sector financial benefits appear to be positive but the inclusion of relevant environmental costs (including accidents, noise and carbon costs) may paint a significantly different picture. In such an analysis tourism’s contribution would need to be considered alongside other productive sectors of the economy.

• While the national picture for public sector involvement in the tourism sector appears positive in some local cases the benefit/cost ratios might look worse (or negative) when compared with the whole economy.
Chapter 2
Introduction

This Report is one of a series of reports within the government funded research programme “Enhancing the financial and economic yield for tourism”. The research follows two streams: an analysis of private sector investment and management and a parallel analysis of public sector benefit and costs arising from the operation of the tourism sector in New Zealand. It is towards this latter objective that the current report is directed. It aims to quantify the level of the public sector (local, regional, and national) direct inputs, and outline society’s direct and indirect inputs, into tourism production and consumption. The public sector and societal benefits that accrue from tourism are also assessed. We use a systematic approach to determine these magnitudes item by item. The topics are examined in the following order:

- The National Public Sector – The Macro Economic Perspective
- Tourism and the Public Sector - Benefits and Costs,
- Tourism and State Sector Agencies
- Tourism and Society - Benefits and Costs

The public sector provides a wide array of services and a very large number of organizations provide those services. Figure 1 illustrates the range of national institutions and hints how challenging it is to identify all linkages between tourism and the national public sector. The tourism sector has obvious direct linkages with some public sector activities and services such as recreation sites managed by Department of Conservation, national museums, airport services, immigration services, and international marketing by Tourism New Zealand. Less obvious are the linkages between tourism and Inland Revenue, the New Zealand Symphony Orchestra, New Zealand and regional Fish and Game Council services, and Sport and Recreation New Zealand. The key focus of this study is the State Services and other parts of the State Sector that are directly impacted by or provide services to tourism.
Figure 1
New Zealand Public Sector and State Services Institutions

Public Service Departments
- Ministry of Agriculture and Forestry
- Archives NZ
- Department of Building and Housing
- Department of Child, Youth and Family Services
- Department of Conservation
- Department of Corrections
- Crown Law Office
- Ministry for Culture and Heritage
- Ministry of Defence
- Ministry of Economic Development
- Ministry of Education
- Education Review Office
- Ministry for the Environment
- Ministry of Fisheries
- Ministry of Foreign Affairs and Trade
- Government Communications Security Bureau
- Ministry of Health
- Inland Revenue Department
- Department of Internal Affairs
- Ministry of Justice
- Department of Labour
- Land Information NZ
- Ministry of Māori Development
- National Library of NZ
- NZ Customs Service
- Ministry of Pacific Island Affairs
- Department of the Prime Minister and Cabinet
- Ministry of Research, Science and Technology
- Serious Fraud Office
- Ministry of Social Development
- State Services Commission
- Statistics NZ
- Ministry of Transport
- The Treasury
- Ministry of Women’s Affairs

Crown Entities
- State Services
- Non-State Services, but wider State sector
- Non-Public Service Departments
  - NZ Police
  - NZ Defence Force
  - NZ Security Intelligence Service
  - Parliamentary Counsel Office
  - Parliamentary Service
    - Office of the Clerk

Crown Entities
- Crown Research Institutes (9) (not covered by the State Services Commissioner’s integrity and conduct mandate)
- Radio NZ Ltd
- Television NZ Ltd
- NZ Venture Investment Fund Ltd

Crown Entity Companies
- School Boards of Trustees
  - School Boards of Trustees - (2,531 in Dec 04)
  - Correspondence School

Tertiary Education Institutions
  - Universities (8)
  - Polytechnics/Institutes of Technology (20)
  - Colleges of Education (2)
  - Wananga (3)

State Owned Enterprises
- Agriiquality NZ
- Airways Corp
- Animal Control Products
- Aurecon NZ
- Electricity Corp
- Genesis Power
- Landcorp Farm
- Learning Media
- Meridian Energy
- Met Service
- Mighty River Power
- NZ Post
- NZ Railways Corp
- Quotable Value Ltd
- Solid Energy
- Timberlands
- Transmission Holdings
- Transpower

Last updated: 9 March 2005
State Services Commission

Reserve Bank of NZ

Air NZ

Public Finance Act 4th Schedule Organisations:
- Agricultural and Marketing Research and Development Trust
- Asia NZ Foundation
- Leadership Development Centre Trust
- NZ Fish & Game Council
- Regional Fish & Game Councils (12)
- Game Bird Habitat Trust Board
- NZ Government Property Corporation
- NZ Lottery Grants Board
- Ngai Tahu Claims Trust
- Pacific Island Business Development Trust
- Pacific Co-operation Foundation
- Railways Transferee Companies
- Reserves Boards (26)
- Road Safety Trust

Offices of Parliament
- Controller & Auditor-General
- Parliamentary Commissioner for the Environment
The objective of this strand of research is to provide data that will be used later in the research programme to estimate economic, sustainable and regional yield from tourism in New Zealand.

Figure 2 is derived from Figure 1 records the key state sector agencies against which it would be possible to review tourism’s benefits (revenues) and costs (expenditures). Depending on the desired level of analysis the research task could be very demanding. To manage this task within the overall constraints of the research programme we have first restricted our analysis to first round (direct) effects and then to those agencies where services to the tourism sector emerge as a major component of their activity.

Figure 2 summarises the agencies or services that have been considered so far in this analysis and that are discussed in more detail below. It also indicates agencies that might deserve further attention for determining public sector input into tourism.

**Figure 2**

**Key State Agencies Analysed for their Provision of Tourism Related Goods and Services**

<table>
<thead>
<tr>
<th>Agencies and services considered:</th>
</tr>
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<tbody>
<tr>
<td>Ministry of Tourism: Tourism research</td>
</tr>
<tr>
<td>Tourism New Zealand: International marketing</td>
</tr>
<tr>
<td>Foundation for Science, Research and Technology: Tourism Research</td>
</tr>
<tr>
<td>Department of Conservation: Management of conservation land and visitor facilities</td>
</tr>
<tr>
<td>Nature Heritage Fund: Land acquisition</td>
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<tr>
<td>Transit New Zealand/ Land Transport New Zealand: Road infrastructure (capital, operation and maintenance)</td>
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<tr>
<td>Accident cost compensation: Road transport accidents</td>
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<tr>
<td>Ministry for Agriculture and Forestry: Airport border control</td>
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<tr>
<td>New Zealand Customs Service: Airport customs</td>
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<tr>
<td>Various agencies: Search and Rescue</td>
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<tr>
<td>National Museums/Library: Operation and maintenance of Te Papa</td>
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</tbody>
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<table>
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<tr>
<th>Agencies that might need further consideration:</th>
</tr>
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<tbody>
<tr>
<td>Ministry of Economic Development: Major Regional Initiatives</td>
</tr>
<tr>
<td>Te Puni Kokiri: Tourism-related programmes</td>
</tr>
<tr>
<td>Trade and Enterprise: Tourism-related programmes</td>
</tr>
<tr>
<td>Accident cost compensation: Non-road transport accidents</td>
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<tr>
<td>Transport Accident Investigation Commission</td>
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<tr>
<td>Maritime Safety Authority</td>
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<tr>
<td>Civil Aviation Authority</td>
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<tr>
<td>Occupational Safety and Health</td>
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<tr>
<td>Police</td>
</tr>
<tr>
<td>Ministry for the Environment: Tourism-related programmes</td>
</tr>
<tr>
<td>Statistics New Zealand: Tourism-related statistics</td>
</tr>
<tr>
<td>Inland Revenue: Tourism-related costs</td>
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<tr>
<td>Ministry for Culture and Heritage</td>
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<td>Ministry of Transport</td>
</tr>
<tr>
<td>Historic Places Trust</td>
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<tr>
<td>Arts Commission</td>
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<tr>
<td>Sport and Recreation NZ : Tourism related programmes /sponsorship</td>
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<td>Fish and Game NZ</td>
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<tr>
<td>Etc.</td>
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</tbody>
</table>

State owned enterprises which act in the nature of a private sector trading entity (e.g. Air New Zealand) will be considered under the private sector objective
The information obtained on these benefits and costs is being made available in this interim report to allow opportunity for comment before the research project proceeds to the next stage.

2.1 Report Organization

This Report commences by explaining the key decisions underpinning the research including the definition of tourism, and the methods used to estimate benefits and costs associated with tourism. It briefly explains some of the approaches that have been used in other countries to quantify some of the non market costs associated with tourism. Once these key issues are explained the report turns to examine the impact of tourism on national public revenues including GST, and other forms of indirect taxation. The following sections focus on: tourism’s impact on the national economy; and key lead public sector agencies such as the Ministry of Tourism, Tourism New Zealand and the Department of Conservation, and significant expense drivers such as tourism and the transport sector; tourism and national museums; tourism and Search and Rescue. As noted previously a subsequent report (Yield Report 11) examines the direct and indirect impacts of tourism on two regions Christchurch and Rotorua. The final section of the report explores the impacts of tourism on social benefit and costs at both national and regional/local levels, and defines some initial indicators through which to examine sustainable yield from tourism.

2.2 Definition of Tourist/Tourism

A recent Australian study (APC, 2005) has provoked considerable discussion because of its unusual definition of tourism that focuses attention on leisure travellers and excludes for example business travel and some travel to visit friends and relatives. The World Tourism Organization (and New Zealand) statistics apply a definition of visitors as being the sum of same-day visitors and overnight visitors (also called tourists). More precisely they say that “the term "visitor" describes

"any person traveling to a place other than that of his/her usual environment for less than 12 months and whose main purpose of visit is other than the exercise of an activity remunerated from within the place visited".

Further, they distinguish the following types of visitors:

(a) International visitors
   (i) Tourists (overnight visitors)
   (ii) Same-day visitors

(b) Domestic visitors
   (i) Tourists (overnight visitors)
   (ii) Same-day visitors.

All visitors are included in the New Zealand Tourism Satellite Account. The definition of usual environment (e.g. further than 40km) is not prescribed by the WTO and has been left for individual countries to define for their own purposes.

“Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated
from within the place visited.” (Tourism Satellite Accounts, para 2.1) “The persons referred to in the definition of tourism are termed ‘visitors’. A visitor is any person travelling to a place other than that of their usual environment for less than 12 months and whose main purpose of trip is other than the exercise of an activity remunerated from within the place visited.” (Tourism Satellite Accounts, para 2.4)

We use WTO and Statistics New Zealand definitions in this report.

2.3 Benefit and Costs of Tourism

Tourism is a major component of the New Zealand economy. Tourism value added comprised 4.9 percent of GDP in 2003/04 and the sector directly generates about 6.3 percent of total employment in New Zealand. If tourism has value added and employment multipliers of 2.6 and 2.3 respectively, then it is responsible for about 13 percent of New Zealand value added (GDP contribution) and 15 percent of New Zealand employment. These macroeconomic effects of tourism are achieved by the use of large amounts of resources including labour, capital and many other items that could be used for other activities if there were no tourism sector in the economy. Section 3.1 discusses the need for care in discussions of the macroeconomic benefits of tourism.

When we turn our attention to microeconomic components of the economy we estimate benefit and costs associated with tourism in a static partial equilibrium sense. These partial equilibrium analyses assume that the levels of specific prices and costs are not significantly affected by the volume of tourism in the economy. Costs include: financial costs of providing services such as museums and transport; environmental costs such as air and water pollution; and social costs such as increased crime and aircraft noise in cities and in National Parks. Benefits of tourism include: revenues such as GST; entrance charges and donations; and a greater range and quality of services available for New Zealand residents. We have used the most recent available annual data in the Interim Report. Note that in the transport section 2001 data and $ are used. In many instances there are likely to be major changes over time as international tourist numbers increase. These would affect annual costs of airport services, congestion costs, concessions income to DOC. As there is a policy focus to the research we point to the main drivers of the changes in costs or benefits where they are identified, although drivers in the two case studies may be more relevant to those two regions than to other regions.

A static approach to cost and benefit estimation could be complemented by dynamic analyses. Computable General Equilibrium (CGE) models can be employed to explore what changes in the New Zealand economy would occur if a sector such as tourism were to diminish in scale, or at the limit vanish. Testing such an extreme shock to the New Zealand economy requires making some major assumptions about changes in real wage rates, taxation rates, and exchange rates. CGE modeling is expensive and would require the building an alternative model of the tourism economy in New Zealand.

Table 2 below illustrates the types of benefit and costs that we have investigated and the two spatial levels at which they have been studied.
Many of the benefits and costs of tourism are already measured in dollars and recorded in financial transactions. The magnitudes of some non-financial items can be quantified by way of non-market valuation techniques. Others, particularly in the social dimension, can be described but are not easily quantified or measured in dollars. We have used existing financial data where they are available, shadow prices where they are available and qualitative assessments in cases where there is no financial or economic data available. In our attempt to provide an initial assessment we have focused most attention on the largest items and some smaller items have not been tackled.

### 2.4 Approach Taken to Assessing Public Sector Costs and Benefits

There is no clear guidance in economic theory on the correct method to allocate shared costs of a service to users. Any allocation of costs and attribution of benefits to tourism require analysts' judgment about what is appropriate. In many instances there are shared costs of providing a service to both local residents and to visitors whether domestic or international. It is particularly difficult to allocate costs of public sector services to tourism when there have been significant changes in policy and in the role of government in past years or decades.

There are at least two ways that costs could be attributed to tourism: average total costs per visit will attribute costs equally over all users. In contrast, marginal costs per visitor will attribute only change in variable costs to tourism. As an example of average cost allocations, a nation or a region decides to construct a new museum, to achieve three objectives: preservation of culture, display of culture, and to provide a tourist attraction. In this case there is a strong argument for basing cost attribution to tourism on their share of average total costs as the museum was provided in part for tourists to visit, and fixed costs as well as variable costs.

### Table 2

#### Examples of Tourism Benefits and Costs

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<tr>
<td><strong>Social costs</strong> (dis-advantages) listed : non-monetised</td>
<td>Volunteer services</td>
<td>Crime, Congestion – site, Noise</td>
</tr>
<tr>
<td>Chapter 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
costs have been incurred to meet tourism's needs. An example for allocating average costs to tourism is found in our analysis visitation costs to Te Papa the national museum.

Alternatively a region may for many years have provided a museum to preserve and display its cultural heritage. There are no charges for entry and the costs of the museum are funded by local property taxes rates collected from local residents (e.g., Canterbury Museum Trust Board, 2004). If the museum becomes a tourist attraction but does not require expansion of capacity to meet a tourism-led increased demand for visits, then a case can be made for using marginal costs (e.g. electricity consumption) to allocate costs to tourism. The case of traffic congestion is an example where marginal costs have been applied. Tourists may have greater discretion over their time of use of roads than local daily patterns and therefore attempt to avoid peak use periods. We have recognized this time of use factor when calculating congestion costs associated with tourism using off peak marginal costs provided in a recent Ministry of Transport study (2005).

In cases where the data did not provide identification of the most appropriate approach (i.e. average versus marginal costs) and the specific revenue or expenses of a service solely attributable to tourism, we apportioned expenses and revenue according to estimated levels of per day visitor density, which were easily derived from national visitor monitors\(^1\). Tourism's share of local amenity (e.g. parks, botanic gardens) use is an example of this approach. This approach could be refined in some instances, for example in the case of road usage where roading costs were allocated according to vehicle type. Cars impose much lower roading costs than do heavy trucks and allocation of roading costs to tourism cannot be based solely upon tourist' share of total km of driving on the roads. Their share of costs could be adjusted to recognize the low impact that a km of car travel has compared with a km by heavier vehicle

A number of the costs and benefits of tourism are likely to be non-monetised. That is they are not traded in markets and no prices exist for them. Examples of non-market costs that might be included in estimates of sustainable yield include increased pollution and crime associated with tourism. An example of a non-market benefit is improved access to services for residents of a region as a consequence of regional tourism. Where there are avoided costs of travel for example to a school, because tourism helps sustain a school in a region, these avoided costs might be estimated as an indicator of the benefits to local residents occurring because of the presence of tourism. Tourism also provides a significant proportion of employment in some regional economies and rural communities, which brings both economic and social benefits, but these have not been quantified.

We have searched databases of non-market valuation studies to identify any that may be used to provide estimates of currently non-monetised costs or benefits of tourism in New Zealand, but such studies are rare for tourism. Overseas studies such as Bennett, van Bueren and Whitten, (2004) analysis of Australia rural area depopulation is of interest. In this research the authors investigate the value that Australian households attach to maintaining rural population, and could be repeated in New Zealand to determine the publics’ willingness to pay to prevent rural depopulation.

\(^1\) The New Zealand Tourism Research Council (hosted by the Ministry of Tourism) collects omnibus International Visitor and Domestic Travel Studies. See www.trenz.govt.nz
Chapter 3
National Public Sector – The Macro Economic Perspective

3.1 National and Regional Development Goals

3.1.1 The Effect of Tourism on the National Economy

In an efficient economy there is not necessarily a benefit in generating employment in one sector because it simply takes resources from another sector and doesn’t necessarily increase either economic activity or welfare. CGE modelling requires that the model be “closed”, and closure commonly assume no net change with respect to employment, taxes and balance of payments on current account. That is to say that there is an explicit presumption that there will be no change in employment (assuming that there will be a change in real wages rates to clear the market), the government fiscal balance (direct tax rates will change as necessary) and the balance on current account (exchange rate will change as necessary). Notwithstanding these assumptions, CGE modelling could demonstrate the likely changes in real wages and GDP in the absence of tourism assuming total employment was unchanged, or could show the change in employment assuming real wages were unchanged, or the change in GDP assuming the standard closure conditions. Most economist’s would reject the possibility that real wages would not change, but results under this scenario would give the upper limit to the employment effects of a loss of tourism.

Currently tourism directly generates about 6.3 per cent of employment and 4.9 per cent of value added in New Zealand. The low value added per person employed could be associated with either low wages, low levels of capital or low returns to capital. Hence there is a prima facie case that tourism may not be as good as other industries in generating market income. Whether this is actually so will be better determined by the work being done on residual income in tourism in the private sector analysis of the broader yield research programme. Nonetheless, the fact that tourism is able to pay well enough to attract the resources it needs suggests that it is as commercially attractive at the margin as any other form of economic activity. Moreover, it is not necessarily a bad thing to generate low-wage and low-skill jobs if these are the jobs that are in demand by some sectors of the labour market.

Government often has a general policy of trying to stimulate employment, or at least to reduce unemployment, although the current low levels of unemployment probably mean that this is less important in New Zealand that it has been on average over the last three decades. Even in times of high unemployment there is no agreed value to place on job creation or additional national income.

The direct level of employment and value added is much less than the total level of value added and employment. Previous work has estimated a national employment multiplier for tourism of 2.3 and a national value added multiplier of 2.6. Although these figures are now somewhat dated, they suggest that tourism is responsible in total for employment of perhaps 15 percent of the labour force and 13 percent of value added in New Zealand.

---

2 Computable General Equilibrium
4 NZ Tourism Board and NZ Institute of Economic Research, 1992.
5 They are based on a 1986/87 input-output table.
3.1.2 The Effect of Tourism on Regional Economies

Government’s generally have an objective of regional development, by which they usually mean development outside of the main centres. Data on tourism expenditure and employment is not disaggregated by size of centre, but we do have estimates of the value of tourism by Regional Tourism Office areas and can compare these with other data on employment and regional GDP. The results are shown in Table 3 and they suggest that some of the peripheral regions have much larger proportions of national tourism than they do of national economic activity as a whole.

### Table 3
Regional Shares of Tourism Compared to Shares of Value Added and Employment

<table>
<thead>
<tr>
<th>RTO Tourist Expenditure</th>
<th>Total Regional Value Added (2000/01)</th>
<th>Total Regional Employment (2000/01)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value ($m)</td>
<td>Proportion Of NZ</td>
<td>Value ($b)</td>
</tr>
<tr>
<td>Northland</td>
<td>664</td>
<td>4.5%</td>
</tr>
<tr>
<td>Auckland</td>
<td>3853</td>
<td>25.9%</td>
</tr>
<tr>
<td>Coromandel</td>
<td>384</td>
<td>2.6%</td>
</tr>
<tr>
<td>Waikato</td>
<td>799</td>
<td>5.4%</td>
</tr>
<tr>
<td>Bay of Plenty</td>
<td>436</td>
<td>2.9%</td>
</tr>
<tr>
<td>Rotorua</td>
<td>567</td>
<td>3.8%</td>
</tr>
<tr>
<td>Lake Taupo</td>
<td>396</td>
<td>2.7%</td>
</tr>
<tr>
<td>Eastland / Gisborne</td>
<td>216</td>
<td>1.5%</td>
</tr>
<tr>
<td>Taranaki</td>
<td>249</td>
<td>1.7%</td>
</tr>
<tr>
<td>Hawkes Bay</td>
<td>404</td>
<td>2.7%</td>
</tr>
<tr>
<td>River region</td>
<td>706</td>
<td>4.7%</td>
</tr>
<tr>
<td>Ruapehu</td>
<td>141</td>
<td>0.9%</td>
</tr>
<tr>
<td>Manawatu</td>
<td>264</td>
<td>1.8%</td>
</tr>
<tr>
<td>Wairarapa</td>
<td>234</td>
<td>1.6%</td>
</tr>
<tr>
<td>Wellington</td>
<td>670</td>
<td>4.5%</td>
</tr>
<tr>
<td>Marlborough</td>
<td>207</td>
<td>1.4%</td>
</tr>
<tr>
<td>Nelson</td>
<td>412</td>
<td>2.8%</td>
</tr>
<tr>
<td>Canterbury</td>
<td>2048</td>
<td>13.8%</td>
</tr>
<tr>
<td>Hurunui</td>
<td>129</td>
<td>0.9%</td>
</tr>
<tr>
<td>Central South Island</td>
<td>149</td>
<td>1.0%</td>
</tr>
<tr>
<td>Mackenzie</td>
<td>157</td>
<td>1.1%</td>
</tr>
<tr>
<td>West Coast</td>
<td>321</td>
<td>2.2%</td>
</tr>
<tr>
<td>Lake Wanaka</td>
<td>162</td>
<td>---</td>
</tr>
<tr>
<td>Queenstown</td>
<td>392</td>
<td>---</td>
</tr>
<tr>
<td>Central Otago</td>
<td>125</td>
<td>7.4%</td>
</tr>
<tr>
<td>Dunedin</td>
<td>431</td>
<td>---</td>
</tr>
<tr>
<td>Fiordland</td>
<td>92</td>
<td>---</td>
</tr>
<tr>
<td>Southland</td>
<td>276</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total New Zealand</td>
<td>14,884</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

| Numbers in brackets are part of a region and hence are not added to get the total.

6 Butcher (2002) commented as follows: “A review of published policy of the two major coalition parties and the supporting Green party suggests that while all have objectives of regional development and employment generation, they generally wish to pursue this through improving social services in the regions and providing facilitation and support to industry. There seems to be a belief that there are sufficient commercially viable development opportunities available to meet the employment objective, but there is an expectation that there will be financial market failure in some cases, particularly in projects with a long term focus.


8 In some cases the geographic definitions are not identical.
The fact that tourism is a larger share of peripheral economies than are other industries suggest that tourism promotes general social objectives of regional development. Examples of peripheral centres where tourism is relatively important include Northland, Gisborne, Marlborough, Nelson - Tasman, West Coast and Otago. The importance of tourism is even greater in smaller areas such as Thames-Coromandel, Mackenzie and Hurunui districts, and probably for other areas for which data are not available (e.g. Fiordland, Catlins, Ruapehu).

Another way of viewing the importance of tourism in the peripheral regions is to see how large its share of employment in those regions is. Data limitations make the results shown in Table 4 approximate only, but notwithstanding this, the importance of tourism for some of the peripheral economies is obvious.

Table 4  
Direct Tourism Employment as a Share of Regional Employment

<table>
<thead>
<tr>
<th>Regional Tourism Forecasts</th>
<th>Regional I-O Tables</th>
<th>Tourism share of Regional Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value ($m)</td>
<td>Proportion Of NZ</td>
<td>Implied Tourism Employment*</td>
</tr>
<tr>
<td>Northland</td>
<td>664</td>
<td>4.5%</td>
</tr>
<tr>
<td>Auckland</td>
<td>3853</td>
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<tr>
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</tr>
</tbody>
</table>

Assuming that the distribution of employment is the same as the distribution of expenditure. This probably understates employment in small centres where labour productivity tends to be lower than in large centres.

** This compares with the 6.2 % estimated in the tourism satellite accounts, and is due to slight differences in timing and coverage (HLFS versus Census + seasonality adjustments).
Approximately nine percent of Northland and Gisborne employment is in tourism, and in more districts which are more focused on tourism such as Coromandel, Hurunui, Mackenzie, West Coast and Queenstown-Lakes the proportions are in the range of 20 – 50 per cent.

Not only is tourism a disproportionately large part of the peripheral regional economies, it also has multiplier effects which boosts the regional economy still further and also increase the diversity of economic activity. This has flow-on benefits to other businesses and residents of the region who can now get goods and services locally which formerly they had to get from outside the region\(^9\). These multiplier effects vary significantly by region according to size and economic diversity of the regional economy, but in 1990/91 typical tourism employment multipliers were of the order of 1.2 for very small economies such as Kaikoura district\(^{10}\), and in the late 1980s\(^{11}\) were of the order of 1.6 – 2.0 for medium economies such as Southland, West Coast, Northland and Gisborne, 2.1 for large regional economies such as Canterbury and Auckland, and 2.4 for New Zealand. The trend towards increasing specialization and centralization of production in many manufacturing and service industries since then has probably led to some reduction in tourism multipliers in the last 15 years, but while there have been updates for some particular regions\(^{12}\), no comprehensive work has been done to update regional tourism multipliers\(^{13}\).

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9 These are considered elsewhere in the report.
10 Butcher, 1998. Multipliers in that study were based on a 1990/91 national input-output table.
11 New Zealand Tourism Board and NZIER 1992. Multipliers in that study were based on a 1986/87 input – output table.
12 For example, TREC reports on, Rotorua, Westland, Kaikoura and Christchurch in the period 1997-2004. These were based on a 1995-96 input-output table, except Christchurch which was based on 2000-01 regional table.
13 Regional and national I-O tables have been estimated for 2000/01 and could be used to do this.
Chapter 4
Tourism and the Public Sector (Benefits and Costs)

4.1 National

4.1.1 Public Revenues
Primary forms of public revenue are user charges and taxes. User charges have been taken into account in assessing the net costs/benefits of government provision of a range of services including airports and border control, health, roading and Department of Conservation. Taxes are a more general form of revenue gathering, and the question is whether tourism increases the tax take of New Zealand, whether direct tax (PAYE and Company Tax) is a benefit or simply a cost of production, and whether indirect tax (GST and excise tax) is a benefit.

In this study we report the total tax take associated with tourism, but describe only the net level of consumption taxes as a benefit of tourism.

This approach will be considered further at the point where we calculate tourism yield for the sector and regions.

4.1.2 Static or Dynamic Analysis
We have considered the possibility of estimating the net change in all taxes associated with tourism by using a CGE\textsuperscript{15} model of the New Zealand economy. The procedure would be to “shock” the model with a total removal of tourism activity and then to see what the economy would look like five years later. An analytical issue is that a CGE model has to be closed with respect to various parameters. Typically, a model might be closed with regard to employment, taxes and balance of payment (assuming that there will be a change in real wages rates, direct tax rates and the exchange rate in order to clear the market). Hence the results of such modelling would tell us little about the effects of tourism on employment or government income, because the model has assumed that in the long run there will be no impact. However, these constraints can be specified in different ways and it would be possible, for example, to hold tax rates constant and estimate the effect on the tax take of a loss of all tourism activity and a reallocation of tourism resources into other activities.

We have decided not to undertake such analysis at this stage of the project, and will only undertake it if the steering group strongly recommends that we do so\textsuperscript{16}. We do give a lower order of magnitude of the likely net impacts on GST in a CGE framework of a loss of tourism.

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\textsuperscript{14} With the exception of excise taxes on motor spirits, cigarettes and alcohol.
\textsuperscript{15} Computable General Equilibrium.
\textsuperscript{16} We could also run CGE analysis to find the effects on employment if there was no reduction in real wages (which would give us an upper bound to the net employment impacts of tourism), or the effects on total GDP if resources were reallocated from tourism to other sectors.
4.1.3 Direct Taxes

No data are available within the TSA or from other sources about direct tax by sector. In general terms direct tax is levied on various proportions of value added. Personal tax is levied on the wages component of value added and company tax is levied on part of the operating surplus proportion. To find out the proportion of tax that is actually generated by a particular business or industry is complex\(^{17}\). Low wage industries have lower average tax: income ratios than do high wage industries\(^ {18}\), while operating surplus includes both profit (with its associated company tax) and interest (with its associated mix of personal tax and company tax).

Given the lack of specific tax data for tourism and given that a highly geared and low profit business may still generate significant tax through interest payments\(^ {19}\), we have estimated the direct tax generated by tourism as a proportion of total direct tax equivalent to tourism’s proportion of total value added. In 2003-04 national GDP (at market prices) was $130 billion and direct tax was $29.2 billion. The tourism satellite account shows tourism value added as being 4.9 per cent of GDP\(^ {20}\), and hence we estimate that tourism generates direct tax of $1.43 billion. As noted earlier, we do not consider direct tax to be a net national benefit arising from tourism. A better measure of the net financial benefit of tourism would be the change in GDP arising from a cessation of tourism, with the loss being calculated within a CGE framework\(^ {21}\).

4.1.4 Indirect Taxes

The primary forms of indirect tax are GST and excise tax on petrol, cigarettes and alcohol. Indirect tax is generally considered not to be a cost of production because the resources may otherwise be used in a way which does not generate a consumption tax. However, indirect tax is also generally not a benefit because it is simply a transfer between consumers and the government. However, indirect tax from foreigners is a net benefit to New Zealand\(^ {22}\).

**GST Revenue and Benefits**

In New Zealand, GST is levied on virtually all products used within New Zealand except rented dwellings and financial services. Each producer gets a refund of GST paid on inputs purchased and charges GST on the value of sales. In effect the tax cascades forwards through the production chain and is paid entirely by the consumer who can not claim a refund of GST.

\(^{17}\) To estimate it for tourism, which is a combination of parts of a number of industries, is even more difficult.

\(^{18}\) Because of New Zealand’s progressive personal income tax rate.

\(^{19}\) Some people may hold the view that tourism is highly geared and of low profitability from the owner’s perspective, but this does not imply that the business as a whole generates low levels of tax once the tax on interest is taken into account.


\(^{21}\) Tax income relates to the way GDP is allocated rather than the level of GDP that is earned. The change in GDP approximates benefit if we assume no change in resource use, as is implicit for labour in specifying that employment levels remain unchanged.

\(^{22}\) Indirect tax paid by locals is a transfer from consumers to government, except to the extent that the tax is a proxy for some social cost. Excise taxes on alcohol, tobacco and gaming are in part levied to reflect the social and particularly the medical costs associated with these activities. However, since health care is not free to foreign visitors and since any personal effects suffered by foreign visitors are not a cost to New Zealand, the taxes can be seen largely as a net benefit to New Zealand.
There is no GST levied on exports. At a philosophical level this might have been justified on the grounds of “no taxation without representation”, but in fact the justification on a more practical level appears to have related more to the perceived elasticity of demand in domestic markets compared with overseas markets. Domestic consumers can not avoid the tax by changing their mix of consumption and so there will be no distortion of production and consumption by a domestic GST. The international community can avoid the tax by using product from a different market, and hence levying GST on exports will cause a significant distortion in the mix of domestic production.

From this perspective levying GST on international visitors is likely to be distortionary, particularly since GST is not levied on other exports, and is undesirable if it reduces their international competitiveness. However, there is no practical way of avoiding this distortion without encouraging significant tax evasion by domestic consumers getting foreigners to buy things for them at GST-exempt prices.

Non-deductible GST paid by the tourism industry in 2003-04 was $1,211 million. This includes $9 million paid on the $1,935 million of domestic business and government tourism, $715 million paid on the $7,152 million of domestic household tourism and $487 million paid on the $16,530 million of international tourism. The reason for GST being less than 11.11 % (one ninth) of the gross value of household and international tourist expenditure is that GST is not payable on financial services, international air fares, private rented dwellings and production by small businesses (such as a one-person guiding business) with a turnover less than $40,000 per year which do not have to be registered for GST. GST is also not payable on foreign agent’s fees where the agent is selling to someone who is overseas.

From a static perspective, one could certainly regard the entire $487 million international visitor GST as a benefit to the New Zealand economy. From a dynamic perspective there would be a benefit which, in broad terms, is probably similar. CGE modelling could give a more rigorous answer than this, but we base our estimate of the dynamic impact on an assumption that the resources currently in international tourism would go into a mix of export production and import substitution. The alternative export production would not generate any GST and the import substitution would not generate any net GST (an increase in GST on domestic production and a reduction in GST on imports).

There may be also some net benefits arising from GST on domestic tourism. If tourism was not available in New Zealand to New Zealand residents then they would go overseas to get tourism experiences and GST would hence be lost to the New Zealand economy. We have ignored this possibility in our estimates of the GST benefits of tourism.

23 In principle GST is levied on all services which are consumed in New Zealand, which is why the foreign agents’ fees are not GSTable. There has been a suggestion that some producers sell the service directly to a foreign client and do not declare this revenue for GST purposes. However, we have not found hard evidence of this.

24 This is an inevitable outcome if the CGE model assumes no deterioration of the current account, which seems very reasonable in New Zealand’s current circumstances. We also ignore the possibility of long term unemployment of resources, but this in any case would not generate GST either.
**Fuel Excise Tax**

The benefits of fuel excise tax have been incorporated already into estimates of the net costs of road transport associated with tourism.

**Cigarette and Alcohol Excise Tax and Gaming Duty**

In New Zealand, total tobacco excise tax in 2003/04 was $860 million and total alcohol excise tax was $490 million. Gaming tax was $306 million. Currently international visitor nights of those aged 18 and over are approximately 42 million per year and domestic resident nights of those aged 18 and over are approximately 375 million person-nights. Hence in the age range where people are legally able to purchase cigarettes and alcohol, international visitor-nights are approximately 11 per cent of total person-nights in New Zealand.

Because visitors are aware of the high excise taxes on tobacco, we know that they tend to buy cigarettes duty free on the way into the country and hence avoid the tax. They probably do so to a lesser extent with alcohol, which is a lot heavier and more awkward to carry per $ of tax saved.

If we assume first that international tourists are equally as likely as locals to drink, smoke and gamble and second that international visitors buy half their cigarettes and alcohol duty-free, then the excise tax from international visitors is around $100 million per year.

4.1.5 Tourism and State Sector Agencies

A wide range of Government agencies are involved in tourism at a national level. It is difficult to determine boundaries for this present analysis and make decisions about what agencies are directly involved in tourism and in what form. Figure 2 (previously presented in the introductory chapter) has summarised the agencies or services that have been considered so far in this analysis and that are discussed in more detail below. It also indicated agencies that might deserve further attention for determining public sector input into tourism.

---

25 Note that the definition of visitors excludes those who stay for more than one year continuously in the country.
26 Approximately 47 million international visitor-nights per year. 89% of all visitors are aged 18 and over.
27 $\frac{42}{42+375} = 10.07\%$
28 $10.07\% \times [50\% \times (\$860\ m + \$490\ m) + \$306\ m] = \$98.8\ million$
## Figure 3
**Key State Agencies Analysed for Their Provision of Tourism Related Goods and Services**

### Agencies and services considered:
- Ministry of Tourism: Tourism research
- Tourism New Zealand: International marketing
- Foundation for Science, Research and Technology: Tourism Research
- Department of Conservation: Management of conservation land and visitor facilities
- Nature Heritage Fund: Land acquisition
- Transit New Zealand/Land Transport New Zealand: Road infrastructure (capital, operation and maintenance)
- Accident cost compensation: Road transport accidents
- Ministry for Agriculture and Forestry: Airport border control
- New Zealand Customs Service: Airport customs
- Various agencies: Search and Rescue
- National Museums/Library: Operation and maintenance of Te Papa

### Agencies that might need further consideration:
- Ministry of Economic Development: Major Regional Initiatives
- Te Puni Kokiri: Tourism-related programmes
- Trade and Enterprise: Tourism-related programmes
- Accident cost compensation: Non-road transport accidents
- Transport Accident Investigation Commission
- Maritime Safety Authority
- Civil Aviation Authority
- Occupational Safety and Health
- Police
- Ministry for the Environment: Tourism-related programmes
- Statistics New Zealand: Tourism-related statistics
- Inland Revenue: Tourism-related costs
- Ministry for Culture and Heritage
- Ministry of Transport
- Historic Places Trust
- Arts Commission
- Sport and Recreation NZ: Tourism related programmes/sponsorship
- Fish and Game NZ
- Etc.

### Tourism Marketing
New Zealand applies considerable efforts promoting the country as an international tourist destination. The primary public sector organization involved is the New Zealand Tourism Board which trades as Tourism New Zealand. The marketing efforts include a wide range of activities including marketing communications, support for events, in New Zealand and overseas, marketing research, online marketing, public relations, product marketing, trade training, stakeholder communications, tourism development, market support offshore. The total cost of these international tourism marketing activities by Tourism New Zealand was $64 million in the 2003/04 financial year, Table 5.
Table 5
Cost of International Tourism Marketing Activities by Tourism New Zealand

<table>
<thead>
<tr>
<th>Expenditure Item</th>
<th>Actual Spend YTD 30 June 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Campaign:</strong></td>
<td></td>
</tr>
<tr>
<td>Marketing Research</td>
<td>$1,909,084</td>
</tr>
<tr>
<td>Marketing Communications</td>
<td>$31,008,448</td>
</tr>
<tr>
<td>Events</td>
<td>$937,909</td>
</tr>
<tr>
<td>PR International Media</td>
<td>$4,809,624</td>
</tr>
<tr>
<td><strong>Sub Total:</strong></td>
<td><strong>$38,665,065</strong></td>
</tr>
<tr>
<td><strong>Channel:</strong></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>$2,987,358</td>
</tr>
<tr>
<td>Trade Training &amp; Facilitation</td>
<td>$5,062,427</td>
</tr>
<tr>
<td>Market Support Off Shore</td>
<td>$7,518,432</td>
</tr>
<tr>
<td><strong>Sub Total:</strong></td>
<td><strong>$15,568,217</strong></td>
</tr>
<tr>
<td><strong>Capability:</strong></td>
<td></td>
</tr>
<tr>
<td>Stakeholder Communications</td>
<td>$1,184,622</td>
</tr>
<tr>
<td>Product Marketing</td>
<td>$1,075,651</td>
</tr>
<tr>
<td>Tourism Development</td>
<td>$2,388,837</td>
</tr>
<tr>
<td>NZ Market Support</td>
<td>$5,048,884</td>
</tr>
<tr>
<td><strong>Sub Total:</strong></td>
<td><strong>$9,697,994</strong></td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>$63,931,276</strong></td>
</tr>
</tbody>
</table>

The immediate impacts of these marketing efforts include greater visibility and availability of information about New Zealand for prospective international visitors. The payoffs from these efforts are expected to be enhanced international visitor numbers and increased yield from New Zealand tourism. We do not attempted to directly measure the link between marketing expenditures and increased visitor numbers and yield and that task would require some econometric research. The expenditures can be considered part of the total cost to New Zealand associated with tourism and the total expenditures compared to the foreign exchange earnings and yield that New Zealand garners from international visitors.

**Tourism Research**

A number of tourism research projects are funded by the public sector in 2004/05. The Ministry of Tourism spends $4.099 million on research and statistics (core data sets) and the Foundation of Research Science and Technology spends $1.148 million on tourism research. The major public domain tourism research projects in the 04/05 financial year are outlined below (Table 6).
Table 6
Major Public Domain Research Projects 2004/05

<table>
<thead>
<tr>
<th>Research</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT Research and statistics</td>
<td>$4,099,000</td>
</tr>
<tr>
<td><strong>FRST Funded Projects:</strong></td>
<td></td>
</tr>
<tr>
<td>An Integrated Model for Tourism-Related Management in Natural Areas</td>
<td>$228,000</td>
</tr>
<tr>
<td>Innovation in New Zealand tourism through improved distribution channels</td>
<td>$320,000</td>
</tr>
<tr>
<td>Growing regional Maori tourism business</td>
<td>$480,000</td>
</tr>
<tr>
<td>Tourism and Energy Use</td>
<td>$120,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$5,247,000</strong></td>
</tr>
</tbody>
</table>

Department of Conservation

DOC has annual expenditure of approximately $243 million\(^{29}\) (Table 7). Revenue comes from concessions ($10 million, but only $2.5 million after expenses), hut and camp fees ($5.6 million), other revenue from recreation ($2.2 million), retail sales ($3.3 million), leases and rents ($0.3 million), resource sales ($0.6 m), donations ($2.2 m) and other income ($4.0 million).

The question of whether DOC expenditure is used for providing for visitors has no simple answer. Clearly visitors spend a lot of time on the conservation estate and presumably they do this because of the quality of the environment. A major part of DOC spending goes on preserving this quality, but arguably this would be done even if there were no visitors. In this sense DOC is acting like a museum curator and the same arguments that apply to the allocation of museum costs between the community and users/visitors apply to the allocation of these DOC costs\(^{30}\).

\(^{29}\) DOC Annual Report for the year ended 30 June 2004. p 110

\(^{30}\) In simple terms the argument is that the costs will be incurred regardless of the level of visitor use and hence no cost should be attributed to visitors. The counter-argument is that because visitors enjoy the benefits, they should meet part of the costs. Moreover, there is a strong possibility that the government is only willing to spend so much money on conservation because of the high level of public use.
We have taken the initial view that the only DOC costs that can be attributed to
visitors are those costs, which are incurred to provide services that would not be
needed if there were no visitors\(^\text{31}\). On this basis we estimate DOC costs associated
with tourism (including all forms of recreation) to be around $79 million per annum.
If we were to add in some proportion of the costs of managing natural and heritage
values, we could increase this figure by $25 – 50 million per year\(^\text{32}\). These figures
may be an understatement of true costs because DOC expenditure in any given year is

\(^{31}\) There is an argument for excluding some of the track and hut costs on the grounds that these are
needed for access for pure conservation work. Likewise there is an argument for including some of
the more direct conservation charges on the grounds that visitors introduce pests (primarily weeds)
and hence are responsible for some of those costs. We have no basis for estimating the comparative
costs and benefits so we assume that the net cost/benefit is minor.

\(^{32}\) These natural heritage costs are being incurred primarily because of the consumer surplus
associated with use and non-use benefits accruing to New Zealand residents, and at a minimum the
benefits should exceed the costs of managing these natural and heritage values. However, we know
neither the total benefits nor the split between use and non-use values. Hence we have no informed
basis for allocating any particular share of costs to visitors.
not necessarily sufficient to maintain assets\(^{33}\) and does not include a cost of capital (interest) on those assets.

We are not able to split the DOC-associated tourism costs between visitor types because the data on visitor numbers and visitor type are very weak\(^{34}\). DOC is working to improve data in this area, but it will not be available for some time.

**Other Public Land Acquisition – Nature Heritage Fund**

Significant money is being spent on acquisition of land for conservation and recreation purposes via “Pastoral lease tenure reviews” and on other land via purchases by the Nature Heritage Fund. This could cost of the order of $200 million over a period of perhaps 10 years - an average of $20 million per year. The land is being acquired to achieve multiple objectives including nature conservation, recreational access, and retention of visual landscape values, which are enjoyed primarily by visitors. A very rough estimate based upon an annual cost of $20 million per year and a quarter to a half of the values relating to recreational access and landscape amenity is that the cost of these activities attributable to tourism is of the order of $5 - 10 million per year.

**Transport Agencies**

Transport involves a number of agencies under the Ministry of Transport. These are Land Transport New Zealand and Transit New Zealand for road transport, the Civil Aviation Authority and Maritime Safety Authority for air and sea transport, and New Zealand Police and Transport Accident Investigation Commission for other services.

Public sector involvement is most notable in land transport, which comprises road and rail transport. Roads are provided as a collective good and they are managed by the public sector. Transit NZ manages state highways and Territorial Local Authorities manage local roads. In contrast, the rail system is owned and operated by private companies but the land on which they operate belongs to the Crown and is leased for a nominal sum. Because of its commercial nature rail travel is not considered to be part of public sector input into transport.

**Visitor Transport**

Travel behaviour of international and domestic tourists (i.e. overnight visitors) was analysed using data from the International Visitor Survey and the Domestic Travel Study 2001. Passenger-km (pkm) and vehicle-km (vkm) were estimated based on travel itineraries provided in the IVS and DTS. Accordingly travel distance reflects inter-city travel (i.e. between over-night stops). This distance is a minimum estimate

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\(^{33}\) For example, the Visitor Asset Management System (VAMS) suggests that the requirement for maintenance on huts and camps was $11.6 million, the annual budget allocation was $10.2 million, and the actual expenditure in 2003/04 was $3.67 million.

\(^{34}\) DOC is working on better estimates of visitor numbers and visitor origins. However, the fact that Conservation parks and National Parks have free entry means that such data can not be gathered as part of some financial transaction. Some data are potentially available on the origin of visitors on the “Great Walks”, but we have not been able to access this as yet. Even when we do so, it will tell us little about the far more common use made via short walks. DOC has provided some estimates of visitor numbers, but they caution that these have a very large error margin. Some information on visitor use is available from the IVS and DTS, but it is of limited value because the record of “places visited” does not tell what people do at those places, nor does it tell what they have done in between “places visited” that they have recalled or thought were worth mentioning.
since intra-destination, or intra-city travel is not included, nor are side trips or day trips from over-night locations. It is this minimum travel distance that is applied in the analysis of allocation road costs and revenues to tourism.

The passenger-kilometres (pkm) travelled by each domestic and international overnight tourists can be seen in Table 8, broken down by major transport categories (road, water, air and train). Road transport is most important in terms of total distance travelled.

Table 8
Passenger Kilometres by Domestic and International (overnight) Tourists 2001

<table>
<thead>
<tr>
<th>Transport Mode</th>
<th>Domestic Tourists (million pkm)</th>
<th>International Tourists (million pkm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total road</td>
<td>7,699</td>
<td>1,725</td>
</tr>
<tr>
<td>Total water</td>
<td>99</td>
<td>39</td>
</tr>
<tr>
<td>Total air</td>
<td>2,234</td>
<td>610</td>
</tr>
<tr>
<td>Total train</td>
<td>89</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL</td>
<td>10,121</td>
<td>2,413</td>
</tr>
</tbody>
</table>

In addition, transport use of domestic day-visitors was estimated. The DTS (Tourism Research Council, 2001) provides data on travel sectors by transport modes (a travel sector is defined as travel between the origin and any stop of an hour or more and/or the main destination of the day trip). Assuming an average distance of 40 km per travel sector (i.e. out of the visitor’s usual environment) the total of pkm travelled by domestic day visitors would be approximately 3,338 million pkm. Of these, 91 percent are by private or company car, 5 percent by other transport modes (e.g. ferries and motorcycles), 2 percent by air travel and 1 percent each for rental cars, trains and busses.

The most common unit for analysing costs of road transport is vehicle-kilometres (vkm). For tourists and day-visitors these were derived from pkm by assuming average load factors for different transport modes. Based on earlier studies (Becken, 2000) the load factors applied for cars (private, rental and company) were assumed to be 2 passengers per vehicle, buses were assumed to have an occupancy level of 25 passengers, and motorcycles were designated a load factor of 1. The total vehicle-km travelled on New Zealand roads by domestic overnight visitors in 2001 were 3,855 million, of which 95 percent were by cars, campervans, or taxis. For international visitors, the total amount of vehicle-km travelled was 574 million. Again, 95 percent were by cars, campervans, or taxis. Domestic day visitors travelled 1,538 million vkm on New Zealand roads (travel sectors by “other modes” are excluded because an unknown proportion is on roads). This means that of all vehicle-km travelled by visitors in New Zealand only 9.6 percent can be attributed to international visitors. All together, domestic visitors (tourists and day-visitors) make up 14 percent of national vkm (38.6 billion in 2001) and international tourists contribute 1.5 percent. Hence, tourism makes up 15.5 percent of national road vkm.

Revenue and Costs Associated with Visitor Land Transport

The public sector recovers costs by charging operators and users in the form of taxes on transport fuel (excise tax), licensing fees, road user charges, rates and other fees or...
fines (e.g. for parking) (see Ministry of Transport, 2005). The current system in New Zealand aims for full cost recovery, i.e. users pay approximately according to their level of usage in a system of fully allocated costs. Investment (i.e. capital costs) in land transport is charged to users in the year in which it is made; no future interest or depreciation is charged. A differentiation in charges is made between different types of users (e.g. registration fees differ for vehicle types) according to principles of attribution and equity. Currently, non-financial costs are not recovered (e.g. environmental externalities).

- **Fuel taxes:** In 2003, the tax on a litre of 91-unleaded petrol was 50 percent; a total of $1,092.6 million was raised in 2001/02. This was used for the National Roads Fund, ACC (new claims), local Authorities, the Crown Account and some other minor items (e.g. Crown Minerals Group).
- **Registration fees:** motor vehicle registration and licensing costs are fixed but vary for different vehicle types. The fees constitute a fixed annual cost for the user that is independent of usage. Motor vehicle Licensing and Registration raised $567.8 million in 2001/02.
- **Road user charge:** to be paid by diesel vehicles and heavy vehicles; total revenue in 2001/02 was $583.7 million all of which is allocated to the National Roads Fund.
- **Rates:** Costs are also recovered through Regional Council Rates and Local Authorities Transport Rates; these are paid in relation to the value of properties. The contribution of rates makes up 13 percent of public sector revenue for road transport.

In the simplest scenario one can estimate that visitors (domestic and international) account for 15.5 percent of vkm and are therefore assumed to contribute about this proportion to revenue and costs (see Table 9).

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>$million</th>
<th>Visitor Share $million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel duties</td>
<td>1,092</td>
<td>169</td>
</tr>
<tr>
<td>Road user charges</td>
<td>584</td>
<td>91</td>
</tr>
<tr>
<td>Motor vehicle licensing and registration</td>
<td>568</td>
<td>88</td>
</tr>
<tr>
<td>Local Authority rates</td>
<td>291</td>
<td>45</td>
</tr>
<tr>
<td>Regional Council rates</td>
<td>61</td>
<td>9</td>
</tr>
<tr>
<td>Police fines</td>
<td>82</td>
<td>13</td>
</tr>
<tr>
<td>Government funding for fire services</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Motor vehicle insurance charge fire levy</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,715</strong></td>
<td><strong>421</strong></td>
</tr>
</tbody>
</table>

It is important to note that international tourists do not pay rates directly, but only through their commercial accommodation. Rates are a significant contribution to the public sector’s revenue for road transport and it is possible that an international tourists’ contribution to rates (per visitor night) is less than that of a New Zealand resident. Domestic visitors pay rates at their place of residents, which on average
should mean that they pay their fair share for the use of local roads. No adjustments are made to the above figures; hence it is assumed that visitors are no different from other users.

A proportion of road user charges goes directly to the Government and is not reinvested into transport. Visitors through their road charges contributed $97.4 million to the Crown. Unless a fair share is reinvested in services from which visitors alone can benefit, visitors’ road user charges constitute an overall benefit to the public sector.

Land transport revenue covers costs for capital, operation and maintenance of the road system, as well as other services, such as ACC and police. In total, the expenditure for transport amounted to $2,714.7 million in 2001/02 (Ministry of Transport, 2005). Operation and maintenance costs were $1,516.4 million. The largest cost items for operation and maintenance are local roads, followed by State Highways and ACC claims. In 2001/02, the total capital costs were $381.6 million, most of which were for State Highways. Public transport causes costs of $124 million per year. Assuming that costs are the same for every vkm travelled, visitors would cause $420.8 million of costs for land transport, according to their 15.5 percent share of vkm.

The Ministry of Transport (2005) study shows that costs are not equally distributed across the whole road system and also differ for vehicle types and road types. For example, cars recover 68 percent of costs to the public sector, while trucks and buses recover only 51 percent and 56 percent, respectively. It is plausible that visitors transport behaviour might differ from non-visitor road users. No quantitative information was available on potential inequalities, but possible trends are discussed below.

A large majority of visitors travel by car, in particular domestic visitors. If visitors use heavy vehicles less compared with other industries (e.g. forestry) and the average road user, tourism is contributing above average to cost recovery. However, it is possible that rental vehicle users get a better deal out of their vehicle registration/license (fixed costs), because the average rental vehicle drives further than private cars. Registration fees and licenses are slightly higher for taxis and rental vehicles and it is possible that the higher usage is correctly accounted for. No data were found that provide average annual travel distances for rental cars compared with private cars. It is also possible that rental vehicles are on average more fuel-efficient than private vehicles (they are typically newer) and as a result they pay less per vehicle-km in fuel tax than other vehicles. This means that users of rental vehicles are possibly under-charged. No adjustments are made to the above figures that assume that visitors are not different from other users.

It is useful to distinguish four different types of roads:
- National urban roads
- National rural roads
- Local urban roads
- Local rural roads.
In terms of road types, rural local roads constitute the largest cost for the public sector in terms of road operation and maintenance relative to cost recovery. Cost recovery on rural local roads is only 40 percent (Ministry of Transport, 2005). Urban roads (both State Highways and Local Roads) are characterized by a much higher cost recovery. It is possible that visitors are less likely to use urban roads than the average road user. Earlier studies (Forer & Simmons, 1998; Becken & Wilson, submitted) on visitor transport as well as the spatial distribution of tourist attractions indicate that visitors are mainly using national rural roads; i.e. State Highways linking regional or urban destinations. Overall, visitors are probably less likely to use the above-average cost rural local roads. No adjustments are made to the above figures that assume that visitors are no different from other users.

ACC claims from transport accidents are a major cost item for the public sector. A basic assumption would be to allocate 15.5 percent of those costs to tourism, according to vkm travelled. Accident statistics, however, show that international visitors are more likely to be involved in accidents (see also Page & Meyer, 1996; Page, Bentley, Meyer & Chalmers, 2001). Data were available from the Land Transport Safety Authority (2004 and personal communication with W. Jones, 22/04/05) that show that international visitors are involved in about 3 percent of all crashes (both fatal and non-fatal)\(^{35}\). This proportion is higher (two times) than international visitors’ share of vkm of 1.5 percent. If visitors paid their fair share they would have to contribute 3 percent of road users’ charges to ACC, which would result in $12.7 m for the 2001/02 year (Ministry of Transport, 2005) instead of the $6.4 m assuming a contribution of 1.5 percent. Overall, domestic plus international visitors are responsible of 17 percent of all ACC claims, which results in a total cost of $72.1 million.

**Border Control at Airports**

Government agencies provide four core services to international air passengers (domestic air travellers are not included as costs are already funded by airlines operating within New Zealand; these costs are passed on to passengers) (Table 10).

- **Aviation security services**
  Provided by the Aviation Security Service (Avsec) to protect individual travellers, airlines and New Zealanders. Costs are fully paid by users.

- **Biosecurity services**
  Provided by the Ministry of Agriculture and Forestry (MAF) to protect New Zealand from “natural” threats knowingly or unwittingly brought into the country by air passengers which could endanger the health and/or well-being (including economic well-being) of New Zealand and New Zealanders. Costs are met by the Crown (100%, see Table 6).

- **Customs**
  Provided by the New Zealand Customs Service to protect individuals and the community from potential risks arising from terrorists and traffickers in illegal goods.

- **Immigration services**
  Provided by the New Zealand Immigration Service to protect New Zealand from

\(^{35}\) This figure varies between 1.6% and 3.8% depending on whether one only includes tourists (as identified by LTSA) or immigrants, students and other drivers with an overseas license.
non bona fide and undocumented travellers.

### Table 10

<table>
<thead>
<tr>
<th>Agency</th>
<th>Existing Service</th>
<th>$m</th>
<th>Crown Contribution $m</th>
<th>Share Paid by the Crown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avsec</td>
<td>International departing passenger screening</td>
<td>11.42</td>
<td>$0m</td>
<td>0%</td>
</tr>
<tr>
<td>Customs</td>
<td>Passenger, crew and craft clearance</td>
<td>19.67</td>
<td>$14.34m</td>
<td>73%</td>
</tr>
<tr>
<td>MAF (Biosecurity)</td>
<td>Passenger and aircraft clearance</td>
<td>18.62</td>
<td>$18.62m</td>
<td>100%</td>
</tr>
<tr>
<td>Immigration</td>
<td>Passenger clearance and turnaround of inadmissible passengers</td>
<td>4.83</td>
<td>$3.23m</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$54.54</strong></td>
<td><strong>$36.19m</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note: the Government is changing the current systems and expect that passenger clearance services will cost an extra $27.8 million a year, increasing the total cost for providing passenger clearance services at international airports to $83 million. How this will be shared between the New Zealand taxpayer and those people and organisations that benefit from the services, is currently under discussion.

It still has to be clarified to what extend costs occur as a result of air travel (e.g. at the Civil Aviation Authority) that are not fully recovered by means of user charges.

**Sea Transport**

Visitors use large passenger ferries (e.g. the Cook Strait ferries), smaller ferries or catamarans (e.g. Stewart Island high-speed catamaran) and smaller recreational boats and yachts. So far, it has been decided that costs associated with Border control at seaports can be neglected.

Contact has been made with the Maritime Safety Authority and costs resulting from developing and maintaining safety standards for water-borne adventure activities as well as water passenger transport are currently investigated.

**Search and Rescue**

Search and Rescue is a public service funded by both the Government and a combination of public donations, private fundraising and sponsorship. The area for which New Zealand is responsible in terms of international rescue stretches from Antarctic waters to close to the equator and from the middle of the Tasman Sea to the Pacific close to Chile. People in need of search and rescue in this territory will be rescued by New Zealand resources and only in very rare cases is an attempt is made to charge the beneficiary of the service.

There is currently no single national organisation that is responsible for search and rescue, but a number including 14 government organisations deal with this. These include the New Zealand Police, Maritime Safety Authority and the Rescue Coordination Centre. It has been estimated that the total cost (direct plus indirect) to the Crown is between $12-15 million per annum. In addition, a substantial amount of volunteer time is consumed for search and rescue (about 5100 people per annum contribute some of their time).
In 2003/04, 2133 search and rescue incidents were recorded; 83 lives were lost. Altogether, 14 percent of incidents involved non-New Zealanders. It has been estimated that about 75 percent of these are ‘tourists’ to New Zealand, whereas the remainder are in transit (e.g. passing through New Zealand waters). Of the 86 percent of incidents, about 80-90 percent could be related to recreational activities (those engaged in commercial activities are usually better equipped, e.g. fishermen). This means that altogether 10.5 percent of incidents involved international tourists and 73.1 percent involved domestic recreationists (i.e. in this context assumed to be either day-trip visitors or overnight tourists) (pers. comm. J. Graham, NZ Search and Rescue Council). In summary, the cost for search and rescue attributable to tourism is about $10 million per annum. The above cost does not take into account the service of volunteers (which is an input by society). The number of rescue incidents is increasing, as is the proportion of events involving international tourists.

**National Museums/Libraries**

Some visitors to New Zealand can visit publicly provided national, regional and local museums and galleries. Te Papa in Wellington is an example of a publicly provided museum that attracts large numbers of visitors from both outside the Wellington Region and from overseas. During 2003/04 Te Papa attracted 1,289,035 visitors. In 2003/04, 2518 visitors to Te Papa were interviewed and information acquired on their origin. Based on the information from the survey the distribution of origins of visitors aged sixteen plus years to Te Papa was:

- Wellington City: 22%
- Wellington Region: 10%
- Rest of New Zealand: 22%
- International: 45%
- Unknown: <1%

The cost of Services for 2003/04 for Te Papa was $35.9 million. Depreciation of $12.9 million is largely unfunded as Government provides funds to Te Papa for capital by way of capital injection.

Te Papa had the following revenue sources:

- Revenue Crown: $18,139,000
- Commercial Revenue: $11,194,000
- Other Revenue: $7,557,000
- Special Purpose Funds: $975,000
- Total Operating Revenue: $37,865,000

There is no entrance fee to Te Papa but a gold coin donation is requested from visitors. In 2003/04, donations totalled $124,000. The mean donation is 9.6 cents per visitor.

Total non-Crown revenue is $19,726,000. This implies that ($35,932,000 - $19,726,000) $16,206,000 of operating costs is met by the Crown. Allocating this amount over all visitors we estimate the mean subsidy is $15.30. If we assume that every international visitor and those from outside the Wellington region are visitors (i.e. a total of 876,544 according to the above data) the total subsidy to tourism through Te Papa is $13.4 million.
The National Library of New Zealand provides a range of services to users including providing access to books, maps, serials, music scores, CDs, DVDs and videos. Visitors can access those items and exhibitions at zero charge either in person or in some cases via electronic systems. Nine exhibitions were held during 2002/03. The National Library does not collect data that allows identification of visitors but information gleaned from exit interviews of Gallery visitors indicates that overseas visitors are less than 10 percent of the total (G. Pittams pers comm. 24 March 2005). More than 9000 people visited one exhibition in 2002/03.

Operating Expenses for the National Library in the year to June 2003 totalled $43,175,000 inclusive of depreciation. Revenue for the National Library total $44,064,000 of which $40,719,000 came from the Crown and $3,345,000 from other unspecified sources.

Given the lack of data on both total number and ‘visitor’ users of the National Library services it is not possible to estimate an average cost per user. Given that 94.3 percent of the National Library revenue comes from the Crown, most users (including visitors) of National Library services are heavily subsidised.

**Overview of Central Government Benefits and Costs**

In Table 11, an attempt is made to summarise public sector benefits (revenues) and costs due to tourism for the period 2003-04. It is noted, however, that services are incomplete and that in many cases it is not possible (at this stage) to monetise the benefits associated with a direct cost, for example in the case of research or marketing. Notwithstanding this, the summary shows that the largest investment is international marketing, followed by visitor services provided by the Department of Conservation.

<table>
<thead>
<tr>
<th>Table 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Government Financial Benefits and Costs (2003-04)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Sm/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax - GST from international visitors</td>
<td>+481</td>
</tr>
<tr>
<td>Tax - Excise tax from international visitors</td>
<td>+35</td>
</tr>
<tr>
<td>Transport infrastructure (including roading and fuel taxes), Border Controls (including Customs and Immigration), ACC revenues</td>
<td>+97</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th>Sm/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism Marketing, Research and Policy, Major Regional Initiatives</td>
<td>-81</td>
</tr>
<tr>
<td>Culture, Recreation, Environment and Heritage Access Costs</td>
<td>-103</td>
</tr>
</tbody>
</table>

Net Financial Benefit to Central Government: +429

Our analysis shows that central government received $613 million more in revenue than it would have had tourism not exist in the economy. On the other hand, it expended $184 million in the various activities it supports relating to the tourism industry. This provides a Net Financial Benefit to central government from tourism of $429 million.

In addition to this Net Financial Benefit from tourism, it is useful to consider the wider contribution of tourism to the economy, and how central government benefits from this activity. For instance, in the 2003/04 year tourism generated $17.5 billion of direct
expenditure. This in turn directly and indirectly generated $12.5 billion of value-added, and supported 173,000 jobs\textsuperscript{36}. All of this activity generated costs and benefits to central government, with the benefits including the full range of general taxes that apply in New Zealand (e.g. PAYE, company taxes, GST, excise taxes, fuel taxes etc).

While the analysis of net government benefit in Table 11 assumed that the capital and labour employed directly and indirectly in tourism would, in the absence of tourism, be employed in other sectors with similar levels of profitability and tax, this is an optimistic assumption. Tourism has attracted those resources because it has been able to persuade investors and labour that their returns will be better in tourism than elsewhere, and hence the net benefits to central government almost certainly significantly exceed the estimates in this analysis.

There are, however, other social and physical environmental costs and benefits associated with tourism, on which it is not possible to put a financial value (e.g. tourist impacts on natural assets). These are discussed in Chapter 5. Decision makers are encouraged to view this Net Financial Benefit to central government alongside these other costs and benefits when considering central government’s support for tourism. As noted previously a separate analysis of local government expenditures and regional tourism yield is presented in a separate report (Report 11).

5.1 Environmental Costs

External costs to the environment result from a large number of tourist activities. Transport has been identified as the most important source for environmental costs and will be discussed below. Other environmental costs from non-transport activities are not analysed.

For the environmental costs in relation to climate change associated with road travel (i.e. CO₂ emissions) we followed the approach of estimating vehicle-km by visitors (see also the transport section in Chapter 3) and applying emission factors.

As pointed out in the Ministry of Transport (2005) report most (non-climate change related) external costs occur in urban areas. In particular, the analysis considered air pollution, water quality and quantity and climate change impacts. Apart from greenhouse gas emissions, the external costs were only considered in urban centres. To this end we assumed that every visitor would travel 40 km in Auckland, 30 km in Wellington and 24 km in Christchurch with two people per vehicle. The inter-city travel distance is calculated from city centre to centre, so to some extent travel within the three main centres is accounted for.

5.1.1 Climate Change

Based on the Ministry of Transport report (2005) the climate change costs from road transport (a total of $317 million in 2001/02) that can be attributed to tourism (according to its 15.5% share of vkm) amounts to $47.6 million. In addition, CO₂ emissions have been estimated for air, rail and sea transport (based on earlier studies, e.g. Becken, 2002; Becken & Cavanagh, 2003). The total pkm by air travel in 2001 by tourists amounted to 2,843,573,030 pkm. This is equivalent to about 537 kilo-tonnes of carbon dioxide emissions. At a cost of $25 per tonne, the total cost is $13.43 million. It is important to understand the effect of air transport emissions is about 2.7 times that of carbon dioxide alone. In this study, only carbon dioxide is considered, because the proposed carbon tax initially only considers carbon emissions.

In 2001, domestic tourists travelled 88.67 million pkm by train and international tourists travelled 39.52 million p-km. A CO₂ emission factor of 98.9g/MJ is applied (Becken, 2002) and a carbon cost of $25 per tonne of CO₂ is assumed. The total external cost for tourist rail travel is therefore $317,000 in 2001. In 2001, international and domestic tourists traveled 138.24 million pkm by ferries or other boats. Assuming an emission factor of 165.1 g CO₂/MJ (Becken, 2002) and a carbon cost of $25 per tonne of CO₂ the external cost would be $571,000.

5.1.2 Other External Environmental Costs from Road Transport

The Ministry of Transport (2005) estimated external costs (in urban areas) from road transport. The costs were:

Air pollution: $442 million
Water quality: $28 million
Water quantity: $98 million
The Ministry of Transport also provided average costs (AC) per vkm for air pollution (2.67c/vkm), water quality and quantity (0.76c/vkm). Based on those cost factors it was possible to estimate environmental costs from tourist travel in the urban centres of Auckland, Wellington and Christchurch (Table 28). A similar methodology was followed as already outlined above in the section on congestion.

Table 12  
External Environmental Costs from Urban Visitor Transport

<table>
<thead>
<tr>
<th></th>
<th>Domestic (2001)</th>
<th>Per person</th>
<th>Local Air Quality</th>
<th>Water Q&amp;Q</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day visitors</td>
<td>Overnight</td>
<td>vkm</td>
<td>Cost ($)</td>
</tr>
<tr>
<td>Auckland</td>
<td>7650663</td>
<td>2,491,107</td>
<td>20.00</td>
<td>5,415,705</td>
</tr>
<tr>
<td>Wellington</td>
<td>3808934</td>
<td>1,477,050</td>
<td>15.00</td>
<td>2,117,037</td>
</tr>
<tr>
<td>Christchurch</td>
<td>5207841</td>
<td>1,830,145</td>
<td>12.00</td>
<td>2,254,971</td>
</tr>
<tr>
<td></td>
<td>International (2001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Per person</td>
<td>Overnight</td>
<td>vkm</td>
<td>Cost ($)</td>
</tr>
<tr>
<td>Auckland</td>
<td>10,406,617</td>
<td>20.00</td>
<td>5,557,133</td>
<td>1,581,806</td>
</tr>
<tr>
<td>Wellington</td>
<td>2,008,662</td>
<td>15.00</td>
<td>804,469</td>
<td>228,987</td>
</tr>
<tr>
<td>Christchurch</td>
<td>3,228,545</td>
<td>12.00</td>
<td>1,034,426</td>
<td>294,443</td>
</tr>
</tbody>
</table>

The total environmental costs from visitor transport amounted to $84 million in 2001/2002. The largest components are carbon costs from road transport and air travel ($62m).

The costs associated with air pollution, water and noise are shown in Table 29, both for domestic visitors and international visitors. The total environmental costs in all three centers for tourism is $26,001,000 per annum.

Table 13  
External Costs from Visitor Transport

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (million)</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road transport carbon costs</td>
<td>$47.6</td>
<td>Visitors are no different from other transport users</td>
</tr>
<tr>
<td>Air travel carbon costs</td>
<td>$13.4</td>
<td>Only carbon dioxide considered</td>
</tr>
<tr>
<td>Rail and sea carbon costs</td>
<td>$0.9</td>
<td></td>
</tr>
<tr>
<td>Air pollution (road transport)</td>
<td>$17.2</td>
<td>Visitors are no different from other transport users</td>
</tr>
<tr>
<td>Water quality and quantity (road transport)</td>
<td>$4.9</td>
<td>Visitors are no different from other transport users</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$84.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

5.1.3 Non-Transport Environmental Effects of Tourism

Impact on Natural Assets

Visitors to natural sites can cause a range of harmful impacts including: physical damage to fossils and other features of caves; track presence both for vehicles and foot traffic in sand dunes and other sites; litter at sites; microclimate change in confined sites such as caves; change in numbers of species present and/or behavioural change in species such as seals at sites; damage to vegetation and animal species at sites Hughey et al., (2002). Techniques
have been developed to help asset managers determine how likely is damage of each of those types and how important are the assets being managed. A two dimensional diagram adapted from Hughey et al., (2002) illustrates the essence of the framework for managers of e.g. caves, sand dunes, sea lion haul out sites, geothermal features.

Table 14
Asset Importance

<table>
<thead>
<tr>
<th>Asset Fragility</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilient</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tourism in New Zealand has caused environmental damage at some sites. Urlich et al., (2001) completed a survey of environmental effects of visitors at three natural assets on the West Coast, South Island: scenic icon sites, seabirds and caves. They report that at scenic icon sites visitors were well catered for and their effects were well managed. At seabird sites and at caves, management was inconsistent, the sites were more sensitive and less resilient to impacts. Seabird behaviour change was noted at some sites. Caves are among the most fragile natural sites and damage has occurred in e.g. Fox River tourist cave from foot traffic on geological formations, graffiti on walls, water quality issues, introduction of exotic species and several other effects (Ulrich et al., (2001). It is well beyond the scope of the current research project to determine how widespread are tourist effects on natural sites, and how significant these effects are. Some parts of the New Zealand environment are exposed to major threats from introduced species such as possums, cats, rats and stoats. Those threats are often severe and occur in many areas of New Zealand. The harmful effects that tourism may have on natural sites are likely to be confined to relatively small areas, and in some cases they may be reversible.

Tourism in many focuses on specific natural sites and visitors to sites can contribute revenue that can be used to maintain sites, or even combat some of the threats to species at the site of generally Booth et al., (2002). Visitors to Mt Bruce in the Wairarapa can donate money for wildlife management. Visitors to Fox and Franz Josef Glaciers can donate money to maintain toilets and environment protection at those sites Cullen et al, (2001).

Tourism Effects on Water, Wastewater and Solid Waste Systems.

Tourists use water for washing cooking, food preparation, boat washing and other purposes. They add to the flows in wastewater systems and contribute waste to the solid waste stream. The demands that tourism makes on water, wastewater and solid waste disposal systems can contribute to water shortages, to pressure on sewerage and solid waste systems and in some cases to environmental damage. The use that tourism makes of the water and waste systems has been investigated in several studies of tourist regions of New Zealand (Butcher et al 1998; Cullen et al., 2001, 2003, 2004).

These studies have documented the shares of water used by tourism, and their contributions to the wastewater and solid waste streams. For small townships at peak holiday periods tourism can use up to 50 percent of a township’s water per week. Growth in visitor numbers to a township is likely to exacerbate these pressures. In areas with low rainfall during holiday periods the tourist driven spike in water use can exert considerable pressure on town water sources and invoke search for additional water supplies.
The pressures that growing visitor numbers impose upon these publicly provided systems are little different to the pressure imposed by residents and businesses. Hence there is little merit is differentiating the role of tourism in these cases from other users. Some keys to successful managing water supply, wastewater and solid waste systems in TLA include: modern infrastructure that is adequate to meet the demands; metering of water supplied; use of charging systems that allocate costs, provide incentives to economise on usage and garner sufficient revenue to meet the full costs of the systems (Hanemann, 1998). Many TLA in New Zealand do not fully meet those criteria and their water and waste systems are susceptible to: stricter water, health and environmental standards; growing demand and peak demand pressures; financial viability issues. The New Zealand government has recognised that some smaller TLA need assistance with financing new infrastructure to cope with growing demands from tourism and other drivers. A total of $11 million has recently been made available by central government for TLA to upgrade their water and sewerage infrastructure (Ministry of Tourism 2005).

5.2 Social Benefit and costs

The following Table shows the framework for the analysis of social benefit and costs.

Table 15
Framework for the Analysis of Social Benefit and costs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Possible sources of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Societal Benefits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Improved social environment and increased cultural tolerance | Increasing cultural interaction between visitors and residents that provides a cosmopolitan character to larger urban areas and social diversity to rural towns, and encourages tolerance among ethnic groups. | (1) Media reports.  
(2) Interviews with key informants from national ethnic organisations.                                      |
| Strengthened Maori cultural values and social practices | The contribution of tourism to strengthening Maori culture by transferring knowledge to future generations, sustaining traditional practices and protecting heritage sites. | (1) Statistics of Maori tourism enterprises.                                                             |
| Improved quality & access to services for NZers | Improved access to health, educational and social services in rural and remote areas.                                                                                                                      | (1) Ministry of Education statistics on rural schools.  
(2) Ministry of Health statistics on rural health services.                                                 |
| Improved quality of environment for Nzers    | Increased opportunities for recreation and leisure, including enhanced facilities in and around natural areas, enhanced heritage and cultural resources and a wider range of “events”. | (1) DOC statistics and reports.                                                                           |
### Regional/Local Public Sector Benefits

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Data Sources</th>
</tr>
</thead>
</table>
| Stimulus to regional/local economic development                          | Economic development in other industrial sectors in the region stimulated by any population growth associated with the tourism sector.                                                                         | (1) Census statistics for population growth - community and TLA.  
(2) Census and labour market statistics to determine the composition of sources of employment for residents & changes over time.  
(3) Unofficial statistics collected from local businesses & compiled by regional/local development and training agencies. |
| Diversification of employment base                                       | The growth & development of tourism enterprises within a region that has traditionally relied on other natural resource industries to provide employment for residents. This variable indicates the degree of robustness of the employment base to fluctuations in commodity price cycles. | (1) Census and labour market statistics to determine the composition of sources of employment for residents & changes over time.  
(2) Unofficial statistics collected from local businesses & compiled by regional/local development and training agencies. |
| Trends in the local property market                                      | The flow on effects of the growth of tourism activities on developments in the local property markets.                                                                                                       | (1) Building permits & subdivision records from TLAs.  
(2) Section, house & rental trends from real estate agents.                                           |
| Impacts of seasonal fluctuations in tourism activity on the regional/local economy. | The effects of seasonal fluctuations of tourism activity on the turnover of business firms outside the sector and the pattern of labour migration.                                                               | (1) WINZ records.  
(2) Unofficial statistics collected from local businesses & compiled by regional/local development agencies. |

### Regional/Local Societal Benefits

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Data Sources</th>
</tr>
</thead>
</table>
| Improved quality & access to services for residents & businesses        | Any improvement in quality & access to services & facilities (education, health, transport, telecommunication) available to residents and businesses due to population growth generated by tourism development. | (1) School rolls.  
(2) Primary health care provision from PHOs.  
(3) telecommunications data from major providers  
(4) Interviews with key informants from social services, health services, schools, central government agencies & TLAs. |
| Improved quality of local environment for residents                     | Any improvement in the amenity values available to residents.                                                                                                                                               | (1) Annual private & public expenditure on recreational assets (e.g. parks).  
(2) TLA measures to protect & enhance natural resources.  
(3) Surveys of ratepayers’ satisfaction with TLA services. |
| The enhancement of heritage sites and artefacts.                        | The development of historical buildings and sites for visitors that also provide leisure activities for residents.                                                                                           | (1) Records of the Historical Places Trust.                                                      |
| Access to local festivals and events.                                  | The organisation of festivals and events to attract visitors that provide a wider range of leisure experiences for residents.                                                                               | (1) Event schedules & attendance records of TLAs and regional tourism agencies.  
(2) Surveys of ratepayers’ satisfaction with TLA services.  
(3) Visitor surveys at events |
### National Societal Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer services</td>
<td>The negative effects of the development of the tourism sector on the involvement of citizens in voluntary organisations including increased demand for social services funding provided by central government.</td>
<td>(1) Information from central government agencies such as MSD. (2) Information from national offices of voluntary organisations. (3) Official statistics on community involvement.</td>
</tr>
<tr>
<td>Social &amp; cultural costs</td>
<td>The commercialisation of Maori culture and any inappropriate use of Maori culture in tourism enterprises. Cultural clash between hosts and visitors.</td>
<td>(1) TPK</td>
</tr>
</tbody>
</table>

### Regional/Local Societal Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community inputs (e.g. volunteer services)</td>
<td>The negative effects of the development of the tourism sector on the involvement of residents in the activities of voluntary organisations; through higher labour force participation rates, longer hours of work, and an increase in non-standard work practices.</td>
<td>(1) Interviews with key informants from voluntary organisations. (2) Official statistics on community involvement at national/local level.</td>
</tr>
<tr>
<td>Local social external costs (crime, congestion, noise)</td>
<td>Any adverse effects of visitors &amp; their activities on the lifestyle of residents; including crime rates, substance abuse, noise levels, parking problems, road safety, and traffic congestion.</td>
<td>(1) Media reports. (2) Police statistics. (3) RMA hearings &amp; submissions. (4) Interviews with key informants from social services, central government agencies &amp; TLAs. (5) Monitoring records of TLAs. (6) Visitor numbers.</td>
</tr>
<tr>
<td>Impact on social cohesion in the community</td>
<td>Any negative effects on social cohesion in the host community arising from the development of the tourism sector and/or the arrival of significant numbers of visitors, language students and tourism workers.</td>
<td>(1) Media reports. (2) Trends in visitor numbers and the rolls of language schools. (2) Public input to RMA hearings &amp; submissions. (3) Interviews with key informants from the community. (4) Host community surveys on attitudes to tourism.</td>
</tr>
</tbody>
</table>

### 5.2.1 Introduction

The commentary provided in this paper relates directly to the above frame. The order of the presentation discusses first items that represent national and then regional/local societal benefits of tourism, and second items that represent national and then regional/local societal costs of tourism. The selection of items was guided by potential applicability and priority to the industry, authorities and communities likely to use the framework, as well as the availability of either quantitative or qualitative data on an item.

It should be noted that benefits may in some instances have some element of cost associated with them. For example a tourism generated property boom may create jobs and provide further economic growth, but these are not without pressures on public infrastructure, low-income families - increased housing costs, and the natural environment. Also in the
discussion of the benefits, as well as the costs, it is hard to avoid repetition of some of what was said at the national level when discussing the regional/local level.

The commentary on social yield of tourism has been a desk study to this point, although as the references provided indicate, there is a considerable research based to draw from in the Taylor Baines and Associates, Lincoln University and CRESA studies of tourism in specific communities. In the second phase of research it is expected that field research will take place to develop these items and identify further ones, provide empirical evidence to support their use and obtain industry views on the most important items and their utility.

5.2.2 National Societal Benefits

Improved Social Environment and Increased Cultural Tolerance
As discussed previously in the section discussing social and cultural costs, the interaction provided by international visitors is a means for promoting tolerance between different ethnic groups by enabling residents to have face-to-face meetings with international visitors (Shone et al. 2003: 36). Residents of larger urban areas may also experience a diversity of cultural practices (e.g. food and events) provided by tourism enterprises in specific precincts of the city. In Christchurch, for example, there are numerous restaurants and souvenir shops situated just north of Cathedral Square that cater for international visitors, the market in Cathedral Square and the Arts Centre, which provide a cosmopolitan atmosphere for local residents. Even residents of small rural towns may appreciate this social diversity. At Methven, for example, initial tension between Japanese skiers and local residents was replaced by pride in the multi-cultural character of the community after several Japanese families took up permanent residence in the town (McCrostie Little and Taylor 2000: 27).

Strengthened Maori Cultural Values and Social Practices
Maori tourism which has culturally appropriate values and social behaviour can strengthen Maori culture by transferring knowledge to future generations, sustaining traditional practices and protecting important heritage sites.

Although some Maori tourism enterprises in Rotorua are able to combine business success while supporting Maori values, other Maori enterprises operate under a strictly western business model (Tahana et al. 2000: 79 cited in Zygadlo et al. 2003b: 39). Thus a distinction can be made between two forms of Maori tourism enterprises: the first describes an enterprise owned and/or managed by Maori that maintain the integrity of the culture, and the second represents an enterprise that is merely owned and/or managed by Maori (Zygadlo et al. 2003b: 14-15). It is this first form of Maori tourism enterprise that can strengthen culture values and social practices.

Zygadlo et al. (2003a) adopted a Kaupapa Maori research approach to study seven Maori tourism enterprises in Canterbury. The researchers employed values derived from a Maori epistemology to develop a culturally relevant approach for understanding Maori tourism through case studies of Maori tourism enterprises. Using a framework of ten values, they interviewed representatives of seven enterprises to discuss the significance of each of the values and identify the particular strategies that were employed to ensure those values were applied to the business. Through wairuatanga, for instance, enterprises express the spiritual element in their products through the sharing of knowledge (e.g. stories, customs), while the personal spirituality of Maori (e.g. the spiritual connection of carvers with pounamu) is expressed as they interact with visitors. The researchers concluded that the effective practice
of Maori tourism includes Maori retaining control over their own development; making a distinction between general Maori participation in tourism and value-based development; adopting values and strategies that provide sustainable tourism development; and establishing tourism enterprises that have specific cultural elements (Zygadlo et al. 2003a: 32).

**Improved Quality and Access to Services for New Zealanders**

Tourism development can arrest, and sometimes reverse, the rate of population decline in rural and remote areas of New Zealand that have traditionally been dependent on a narrow economic base. This development may help maintain, or even improve, the public’s access to essential health, educational and social services. The arrival of tourism workers and their families creates increased demand for all these services, while visitors require access to health services. This expanded population base allows more financial and other resources to be released by service providers to improve the quality of services.

**Improved Access and Services in Parks**

Data on visits to New Zealand National Parks are not readily available (G Cessford pers com 3/5/05) but the DOC Annual Report (2004) comments there were 33 million visits to the public conservation estate, an 18 percent increase over 2001 visitor numbers. The growth in visitor numbers has led to significant changes in accessibility and in services available in New Zealand parks including:

1. Greater range of and frequency of services available – e.g. boats on Milford Sound, helicopter flights, guided walking options e.g. Milford Track. In the absence of the volume of particularly international visitors many of these services are likely to be absent.
2. Improved service quality – hotels, mountain guides, visitor information centres, walking tracks. In the absence of the volume of particularly international visitors many of these services are likely to be lower.
3. Improvements in road quality, reduced travel times and costs e.g. sealed, shaped, wider road in Eglington valley. Without the high visitor numbers the road is unlikely to be sealed and travel costs and time would be significantly greater.

The first of those items may provide benefits for some New Zealand visitors to the parks. New Zealand visitors may be attracted to the parks because of the range and frequency of services available. In their case the consumer surplus they obtain from their visit may be partly attributable to the services available in the park. New Zealand residents who would have visited the park in the absence of these services may obtain benefit from the increased frequency of services (a type of Mohring Effect) and from the greater range of services.

Similarly the improved service quality is likely to benefit many New Zealanders who visit parks. Part of the consumer surplus they obtain from their visit may be attributable to the improved service quality available in the park. New Zealand residents who would have visited the park in the absence of these services may obtain benefits from the improved quality of services.

Many Travel Cost Method studies have been completed showing the importance of travel costs as determinants of visitation rates to parks and other recreation sites (Kerr et al., 1986, Clough and Meister 1989). Lower transport costs for visits to parks are likely to increase the size of the consumer surplus New Zealander get from their park visits. These lower costs will be a windfall for people who would have visited the park even if there were higher travel costs. The lower travel costs may also result in some New Zealanders visiting parks who
would not otherwise have done so if travel costs were higher. Quantifying the magnitudes of those effects requires park specific research.

**Improved Quality of Environment for New Zealanders**

Tourism has provided more recreational opportunities for New Zealanders as the same facilities in natural areas, heritage and cultural resources, and events that are available for international visitors can be accessed by domestic visitors. The establishment of national parks, and the enhancement of walking tracks, access roads and huts in those parks, has widened the range of people who have been able to enjoy the beauty of these significant natural areas. Visitor interest has also provided impetus for the conservation of heritage buildings (e.g. the old stone store at Russell, stone buildings in Oamaru and Maori cultural sites by communities and councils (Warren and Taylor, 2001). Council and privately sponsored events both in the larger urban centres, and in some rural towns, entertain visitors and residents alike. All these attractions have enhanced the quality of the physical and social environment for all New Zealanders by allowing them to experience a much wider range of recreational and leisure activities than provided by the development of other sectors of the economy.

5.2.3 Regional/Local Public Sector Benefits

**Stimulus to Regional/Local Economic Development**

Employment and population growth associated with the tourism sector can stimulate economic development in other sectors in a region by providing those sectors with an expanded market for goods and services. This is most clearly evident for well-established tourism destinations such as the Bay of Islands and Queenstown where the construction sector has profited from the demand for retirement and holiday homes. In rural areas people, who are the owners or employees of a small-scale tourism enterprise, often operate another business, or have a job, in a primary sector. The complementary nature of this development strategy allows tourism enterprises to become established, while later giving their owners and employees a degree of protection from downturns in the commodity prices of primary products. In cities, where large-scale enterprises dominate the tourism sector, the stimulus provided to other sectors by population growth associated with tourism is not such a significant benefit as the economic base is much broader.

Change in usually resident population over time was considered as an item, especially for the smaller centres. For the larger centres population growth is due to numerous interrelated drivers. However, as can be seen from Table 2, the results are inconsistent for the smaller centres and only Methven grew steadily (23%) over this 15 year period. This measure would need to be used with great caution and with local interpretation of the results, to understand links between population and employment in the main resource-based sectors including tourism (Taylor et al., 2001) and further work is suggested for Phase 2.

**Diversification of Employment Base**

A major finding from a series of case studies of resource communities undertaken by Taylor Baines and Associates is that some communities are buffered from fluctuations in commodity prices by the diversity of their local economy, especially when tourism is a major activity (Taylor et al. 2001:148). Thus the development of tourism enterprises in a region, where residents have traditionally held jobs in other natural resource industries, protects the employment base from the worst effects of downturns in commodity prices. Diversification through tourism development has become a feature of many resource communities in New

Although many of the jobs in tourism are semi-skilled, seasonal and low paid, the sector does provide opportunities for women and young people to participate in the workforce in rural areas where often there are few jobs available for them in other natural resource dependent industries.

The team have considered data on changes in occupational structure, full/part time employment, unemployment rates, participation rates, employment by sector as useful items for estimating social yield of the tourism sector through economic diversification. However there are a number of issues with these data. Through a FRST funded project on employment, Taylor Baines have been able to largely reconcile different classifications of occupations over time so as to produce time series from 1981 to 2001. However, these data are only available at the level of territorial local authorities at this point, ruling out their use in smaller communities that are often the focus for tourism activity. Furthermore, the data sets are difficult to manage and not publicly available. Another problem with employment is being able to distinguish whether a job identified through official statistics, such as a bus driver or cleaner, is a job in tourism or some other sector. Another point to consider is the seasonal nature of the industry - an individual who is a tourism worker on census night might not be one in midwinter and vice versa. These problems are not insurmountable and further work on employment is recommended for Phase 2 of the research.

Trends in the Local Property Market

Growth in tourism activities in rural areas can affect trends in the local property market in terms of section and house prices, construction costs, and rentals. Rapid development of these activities increases the upward pressure on prices, and escalates demand for rural land to be subdivided. The proportion of dwellings owned by people who are not usually resident may also rise as the area becomes a popular locality to own a holiday home.

Sometimes these boom conditions create a shortage of affordable accommodation for low-income families, and make it difficult for tourism workers from outside the region to be adequately housed (e.g. Queenstown). The expansion of the built environment, whether tourism infrastructure or residential housing, provides economic opportunities for developers, builders and subcontractors from the region. Should this development be poorly managed, however, there is a risk that the expansion of the built environment will have negative effects on the features that attract visitors to the area.

Impacts of Seasonal Fluctuations in Tourism Activity on the Regional/Local Economy

Many tourism activities are seasonal in character because of the nature of the activity itself (e.g. skiing in Canterbury), or variations in demand for that activity during the calendar year. Seasonal fluctuations in activity not only affect the turnover and employment levels of tourism enterprises, but also affect those of other firms in the regional economy that supply goods and services to the tourism sector. The pattern of labour migration in a region is also influenced by these seasonal fluctuations in levels of tourism activity.

In rural areas where seasonal fluctuations in activity are pronounced (e.g. Bay of Islands, Methven), tourism does not provide a stable source of revenue and employment for residents.
Tourism in the Bay of Islands has a summer focus, and enterprises there need to develop products that would extend the shoulder seasons into May, August and September, and attract visitors during the winter months (Warren and Taylor 2000: 14). Methven has a dual economy, with the high seasons of snow tourism and agriculture complementing each other by allowing workers to move between seasonal occupations. Employment at the Mt. Hutt skifield, near Methven, peaks at 260 from July to September and falls to 9 full-time positions during the summer. About three-fifths of the skifield’s staff return annually to work and ski. These transient workers are part of a ski/work/travel nexus that revolves seasonally around Australia, New Zealand, Japan, Korea, United States and Europe (McCrostie Little and Taylor 2000: 7, 9).

5.2.4 Regional/local Societal Benefits

Improved Quality and Access to Services for Residents and Businesses

Population growth generated by tourism development can improve the access of the residents and businesses of a region to services such as education, health, transport and telecommunication. An expanded population base helps maintain the financial viability of the services that already exist in an area, while also providing opportunities for those services to be enhanced by government or the private sector.

Methven, for example, has a robust cluster of health services within its dual economy of snow tourism and agriculture. As Mt Hutt skifield developed, medical services that had been lost to Ashburton, returned and expanded. Unlike many townships of a similar size (population of Methven 2001 1,134) Methven had a medical centre of two doctors, one locum and four practice nurses in 1999. A dentist and an optician visited every week. The township also had a pharmacy, an acupuncture clinic, two physiotherapy clinics, a sports massage clinic, a gym and a retirement home with 12 beds and serviced flats. This broad range of health services is based on the population increase in the area during the snow season; the medical and physiotherapy services required by visitors; and the general health requirements of residents (McCrostie Little and Taylor 2000: 16, 27-28).

Improved Quality of the Local Environment for Residents

Tourism development can improve amenity values for residents by providing better access to recreational opportunities in their town, city or region. Additional investment in an improved built environment, including cultural and heritage resources has benefits for locals and visitors alike (Warren and Taylor, 2003). Similarly, investment in tracks, roads, huts and other infrastructure of national parks, for instance, benefits local people as well as visitors. Moreover, any measures to mitigate negative effects of any economic activities on the biophysical environment, or even to enhance that environment, not only improves the calibre of the tourism product, but also improves the quality of life for residents.

The Enhancement of Heritage Sites and Artifacts

Tourism development can help communities to maintain and enhance historical buildings and cultural sites for visitors that also provides leisure and educational activities for local people and their children. With heritage tourism becoming a significant component of the tourism market, some communities have restored sites, buildings and artifacts to represent their history to visitors (Warren and Taylor, 2001). In so doing these communities educate their own residents about their regional history and build a sense of identity. A mural scheme at Katikati, for instance, is part of a strategy to attract visitors to the district. The murals, which are scattered throughout the main streets of the town, portray people and scenes from local
history, and are a visual expression of local identity that recalls the arrival of the first party of immigrants from Ulster to the district in 1875 (McClintock 1998: 11, 14).

**Access to Local Festivals and Events**

Territorial local authorities, community organisations and private sponsors promote festivals and other events as a strategy to attract visitors and generate economic growth in their regions. These events vary in duration from sophisticated arts festivals that may run for several weeks to annual sporting events, such as marathons or horse races, that only last a day. For example, community leaders in Riverton and the Southland District Council promoted a series of events during the later part of the 1990’s to enhance the town’s image as a tourism destination. These events included the Around the Beach Golf Challenge, Riverton Variety Day, the Model Miniatures Exhibition and the Festival of the Horse Cavalcade. Through events like these residents experience a wider range of leisure experiences than would usually be available in their area.

5.2.5 **National Societal Costs**

**Social Costs from Visitor Transport**

Accidents

Total external costs for accident were estimated to be $670 million in 2001/02 (Ministry of Transport, 2005). As already discussed above (ACC claims) international drivers are more likely to be involved in an accident. The same adjustment as above is made to the item of accident externalities, i.e. overall tourists are responsible for 17 percent of all costs (14% for domestic tourists and 3% for international tourists). This assumes that the nature of accidents caused by tourists is the same on average than all non-tourism accidents. Total external accident costs by tourism amount to $113.9 million.

Congestion Costs of Tourism

Vehicles on roads can create congestion and increase travel times and costs for road users. Each vehicle on a congested road creates a reciprocal externality – the impacts are felt by the other users of the road, but not by third parties who are not road users. Tourists travelled in excess of 4.4 billion vehicle km in New Zealand in 2001 and along with other travellers will contribute to the congestion costs. We have developed numerical models to estimate vkm attributable to tourists in three main centres, Auckland, Wellington and Christchurch. We estimate that domestic tourists and day visitors travelled 366 million vehicle km and international visitors 277 million vkm in the three centres (Table 32).

A recent study by Ministry of Transport (2005) has estimated total annual congestion costs for New Zealand roads at $1 billion. Table 32 reports their estimates of average and marginal congestion costs per vehicle km travelled in a range of settings.
Table 16
Congestion Costs
(Derived from Ministry of Transport (2005), Table B9.1)

<table>
<thead>
<tr>
<th></th>
<th>Average Costs - c/VKT</th>
<th>Marginal Costs - c/VKT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Peak</td>
</tr>
<tr>
<td>Auckland</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Wellington</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Christchurch</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Other urban &gt; 50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter – urban SH analysed</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Total rural SH network</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

To provide an estimate of the congestion costs that tourists create on New Zealand roads we need information on the distribution of their vkm between urban and rural roads, and whether they are peak or off peak users of roads. No readily available data has been found on the distribution of vehicle km by tourists so an alternative methodology is employed. Data are available from Domestic Travel Surveys and International Visitor Surveys reporting numbers of trips and numbers of nights spent in regions. We use that data to estimate the magnitude of congestion costs created by tourists.

Table 32 shows estimated congestion costs for Auckland, Wellington and Christchurch for three levels of costs per vehicle km travelled. The estimates are based upon the following assumptions about daily travel by tourists: Auckland, 40 km per bed night or day visit, Wellington 30 km per bed night or day visit and Christchurch 24 km per bed night or day visit within the relevant urban area. We assume there are two tourists in each vehicle.

Tourists are likely to have some discretion over their time of travel. It is likely that tourists and day visitors travel where possible at off-peak times. Arguably tourists and day visitors are additional or marginal users of the road network. The congestion costs associated with their travel may be best described by ‘MC off peak’ (marginal cost off peak time) in each of the three centres. The table below (Table 33) reports total congestion costs attributable to tourism using three costs per vkm.

Table 17
Tourist and Day Visitor Road Congestion Costs

<table>
<thead>
<tr>
<th></th>
<th>AC Peak</th>
<th>MC Peak</th>
<th>MC Off Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>$32,877,419</td>
<td>$147,948,386</td>
<td>$65,754,838</td>
</tr>
<tr>
<td>Wellington</td>
<td>$2,188,393</td>
<td>$30,637,513</td>
<td>$5,470,984</td>
</tr>
<tr>
<td>Christchurch</td>
<td>$2,463,967</td>
<td>$28,335,625</td>
<td>$7,391,902</td>
</tr>
<tr>
<td>Total</td>
<td>$37,529,780</td>
<td>$206,921,525</td>
<td>$78,617,725</td>
</tr>
</tbody>
</table>

These calculations indicate that tourism can create significant additional congestions costs in the three main urban centres. The figure estimated for tourist road congestion cost, MC off peak, $78.6 million, is 78 percent of national road congestion cost of $1 billion.
Noise

The Ministry of Transport (2005) estimated noise external costs in urban areas. These were $289 million in total; marginal costs (MC) per vkm for noise were estimated to be 0.61c/vkm. This factor is applied to vkm in major centers (Auckland, Wellington, Christchurch) following the above methodology for congestion. Costs were $3.9 million in those three centers. Domestic tourism caused $1.2 m in Auckland, $0.48 m in Wellington and $0.52 m in Christchurch. The respective figures for international tourism were $1.3 m, $0.18m and $0.24m.

No specific studies were found on noise pollution and external costs. Auckland Airport pays annually about $475,000 for noise mitigation. Part of this is to help homeowners in the affected region to upgrade their houses (e.g. insulation). The total expected cost of this project are estimated to be less than $15 million (upgrade of about 4000 homes, due to the construction of a new runway). These costs form part of the business planning and are not external costs.

In total, the social costs from visitor transport amounts to $196.4 million in 2001/2002 (Table 34).

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (million)</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport accidents (external costs)</td>
<td>$113.9</td>
<td>International tourists cause more accidents than other users; accidents are of the same nature as the average.</td>
</tr>
<tr>
<td>Congestion</td>
<td>$78.6</td>
<td>Visitors are off peak, additional users of roads</td>
</tr>
<tr>
<td>Noise (road transport)</td>
<td>$3.9</td>
<td>Visitors are no different from other transport users</td>
</tr>
</tbody>
</table>

Volunteer Services

There has been a steady growth in international visitors to New Zealand over many years, and domestic visitors have also helped to boost the development of the country’s tourism sector. Likewise employment in the sector has grown steadily, thereby increasing the job opportunities for local residents. Many of the jobs generated by the sector are seasonal in nature, and have encouraged people (e.g. women and youth) to participate in the labour force.

At least a fifth of tourism enterprises in New Zealand are based in rural areas. Many tourism enterprises in rural areas are operated in conjunction with another business or other employment. More women than men are involved in rural tourism enterprises as both working owners and employees. Men predominate as full-time employees and women as part-time employees (Warren and Taylor 1999: 10, 17-19).

This heavy involvement of both rural women and men in tourism enterprises, often in conjunction with other businesses, means that the time available for these people to participate in voluntary services has become more limited. This has a negative impact for a wide range of voluntary organisations in rural communities, but is most marked for emergency (e.g. ambulance and fire brigade) health and social services. With many of these services experiencing difficulties in obtaining voluntary help, community demand for funding from central government sources has increased.
**Social and Cultural Costs**

While Maori owned and/or managed enterprises are estimated to be about one percent of total enterprises in the tourism sector, they comprise around seven percent of rural tourism enterprises (Warren and Taylor 1999: 48). The values of Maori-centred tourism described in Zygadlo et al. (2003a and 2003b) reveal that there are significant cultural differences between the way Maori and Pakeha manage their tourism enterprises.

Many Maori have concerns about managing the boundaries between commercial tourism and tikanga. There is a conflict of values between traditional practices that emphasise contribution and commercial practices that require a enterprise to sell a tourism product. Management issues include what type of access should be given to waahi tapu sites, how much visitors can be told about local culture and history, and what needs to be done when the local marae is unavailable because of a hui or tangi. There is also the issue of the integrity of the cultural product that is sold by a Maori owned and/or managed enterprise. In order to maintain cultural integrity an enterprise needs to provide tourist experiences that are authentic, and that may require both the operators and employees of an enterprise to increase their knowledge of te reo and tikanga (Warren and Taylor 1999: 51-52). There is always a risk, however, that the interaction between the cultures of the hosts and the visitors may have unintended consequences. TRREC’s study of Maori and Tourism in Rotorua (reported in Simmons and Fairweather 2000: 29), for example, found that while kapa haka provides employment and cultural training for Maori, its standardisation can move performances away from their original style.

This issue of cultural integrity may be even more pronounced for a tourism enterprise that is neither owned or managed by Maori, but has a Maori cultural component as part of its product. In this case there is increased risk that commercial imperatives may compromise the integrity of the cultural activity being experienced by visitors. Maori in Rotorua, for instance, consider that as Maori culture is a ‘public’ resource, it needs some form of monitoring to control its commercialisation (Simmons and Fairweather 2000: 30). Furthermore, TRREC’s study of Tourism and Maori Development in Westland (reported in Simmons and Fairweather 2001: 20) notes that Maori respondents perceived the inappropriate use of Maori cultural components in Pakeha tourism enterprises as having a negative effect on Maori culture.

Many residents of Christchurch, who were surveyed as part of a study of community perceptions of tourism, viewed the cultural interaction provided by international visitors as a way of promoting tolerance between different ethnic groups (see the section - Improved social environment and increased cultural tolerance - for a more extensive discussion of this point), but others considered that there was a cultural clash between hosts and visitors. The latter group noted that interaction with Asian visitors to the city was unsatisfactory, as they felt these visitors were rude and arrogant towards them. Thus contact between hosts and visitors, who have many differences in cultural values and practices, is potentially both a positive learning experience and the source of much misunderstanding and uncertainty between different ethnic groups (Shone et al. 2003: 36, 38).

**5.2.6 Regional/local Societal Costs**

**Community Inputs (e.g. volunteer services)**

The tourism sector, like other sectors of the national economy, has experienced increases in non-standard work practices, longer hours of work and higher labour force participation rates,
which hinder the involvement of residents in the activities of voluntary organisations. At the regional and local levels, voluntary organisations often find it difficult to maintain services in a tight labour market situation that draws many women back into the labour force. Compounding these factors are the seasonal nature of tourism, and its reliance of itinerant workers from outside the region. These characteristics of the sector make it even more difficult for a voluntary organisation to maintain its activities with a declining membership base (Warren et al. 2000: 15).

In spite of the competing demands of paid employment and voluntary work on their time, it is evident that some residents of rural New Zealand still have a strong commitment to voluntary work, and make a significant contribution to the social capital of their communities. A study of 60 farm men and women with multiple jobs in the Ashburton District, for instance, found that voluntary work for schools, churches, community organisations and sports clubs comprised about two-thirds of activities undertaken by 42 respondents during the previous year which they defined as a “job” (Taylor et al. 2004: 74).

**Local Social External Costs (e.g. crime, congestion, noise)**

Visitors and their activities can have adverse effects on the lifestyles of residents of the host community. These effects may include rising crime rates, increased levels of substance abuse, parking problems, traffic congestion, road accidents, rising noise levels, queuing for basic goods and services, and over-crowding of particular localities (Baines et al. 2000: 16, Fitzgerald 2000: 28, McCrostie Little and Taylor 2000: 27, Warren and Taylor 2000: 4&15, Warren et al. 2000: 10, 16-17).

In certain situations it may be the behaviour of the visitors themselves that may be the source of these effects (e.g. by introducing addictive substances to the community or by their unfamiliarity with local driving conditions). In other situations it may be their numbers (e.g. traffic congestion, queuing) in a relatively small settlement that may be the problem, while occasionally their affluence and alternative lifestyle is a catalyst for people from the host community to behave inappropriately (e.g. theft from motor vehicles).

**Noise in National Parks**

Increased visitor numbers may lead to congestion in some parks, greater noise from cars, buses, aircraft, more structures in parks. For many visitors these items can detract from their visit to a National Park. Booth _et al._, (1998) report on two years monitoring of aircraft effects on the Milford Track. In 1998 the mean number of aircraft noted by those surveyed was 14. Similar proportions of people reported in 1998 they felt neutral about aircraft activity (45%) as felt annoyed by them (48%). Booth _et al._,1998 conclude that as the proportion of people who stated they were annoyed had doubled in one year and exceeded 25 percent of those surveyed, an annoyance threshold had been reached an action was required to manage aircraft activity in parks. Rogers (1995) reports 60 percent of visitors surveyed in the Blue Lake area of Mount Cook National Park stated that scenic flight noise caused a ‘moderate to great intrusion’ on their enjoyment. The numbers of people affected by the scenic flights over some National Parks are likely to be large. In 2003/04, 14,185 people walked the Milford Track and 34,430 in total walked Fiordland Great Walks.

Quantifying the aircraft disamenity effect in dollar terms requires non market valuation studies. A growing number of non market valuation studies of recreation have been completed Hanley _et al._, (2003) and there is literature on disamenity effects of noise including in parks (Komanoff and Shaw 2000; Navrud 2002). In the USA noise from jet skis
was estimated to impose costs on beachgoers of US $908m per annum (Komanoff and Shaw 2000) and the costs per beachgoer are highest at secluded lakes with an average cost of US$7.02 per day. Navrud (2002) provides a comprehensive survey of economic valuation of noise studies but no studies of disamenity effects of noise for recreationists are reported.

It is reasonable to conclude that increased aircraft flights over National Parks impose costs on some recreationists but estimates of cost per recreationist, total numbers affected, and total disamenity cost of aircraft noise requires some careful research in the most effected parks.

**Impact on Social Cohesion in the Community**

The arrival of significant numbers of visitors, language students and workers from outside the region is characteristic of the development of the tourism sector. The volume of these arrivals often fluctuates with the seasonal pattern of the industry and the daily movements of visitors, and may have significant negative effects on the social cohesion of the host community. The industry’s reliance on itinerant workers from outside the region may also compound these effects.

A high proportion of unoccupied dwellings in a township, such as Manapouri, often indicates that it is a holiday settlement with a large proportion of holiday homes (Fitzgerald 2000: 23). The absence of the occupants of these dwellings for much of the year does little to strengthen the social cohesion of this type of settlement. In other settlements there may be social division between newcomers operating tourism enterprises and more established residents because of their conflicting attitudes to resource management (Baines *et al.* 2000: 19, Warren *et al.* 2000: 15).

Data for total population and resident population on four census nights (1986 - 2001) is provided for Rotorua, Christchurch and four Canterbury region communities (Tables 35 and 36). The proportion of total population as a ratio of the usually resident population for the two major urban centres is relatively constant over the 15 year period (Rotorua 1.07 in both 1986 and 2001 and Christchurch 1.015 in 1986 and 1.025 in 2001). Methven also has a relatively constant ratio - 1.00 in 1986 and 1.01 in 2001 - as its visitor numbers peak during winter. The ratios for Kaikoura, Akaroa and Hamner Springs have increased over the period (Kaikoura 1.07 in 1986 to 1.39 in 2001, Akaroa 1.21 in 1986 to 1.38 in 2001, Hamner Springs 1.80 in 1986 to 2.23 in 2001.)

<table>
<thead>
<tr>
<th>Table 19</th>
<th>Selected Areas - Total Population on Census Night 1986-2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roturua</td>
<td>51,990</td>
</tr>
<tr>
<td>Christchurch</td>
<td>300,054</td>
</tr>
<tr>
<td>Akaroa</td>
<td>723</td>
</tr>
<tr>
<td>Hamner Springs</td>
<td>1,131</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>2,208</td>
</tr>
<tr>
<td>Methven</td>
<td>924</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand
Table 20
Selected Areas – Usually Resident Population 1986-2001

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Roturua</td>
<td>48,855</td>
<td>50,772</td>
<td>52,963</td>
<td>52,593</td>
</tr>
<tr>
<td>Christchurch</td>
<td>295,746</td>
<td>303,411</td>
<td>325,250</td>
<td>316,224</td>
</tr>
<tr>
<td>Akaroa</td>
<td>597</td>
<td>609</td>
<td>642</td>
<td>576</td>
</tr>
<tr>
<td>Hanmer Springs</td>
<td>630</td>
<td>516</td>
<td>576</td>
<td>660</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>2,061</td>
<td>2,028</td>
<td>2,207</td>
<td>2,106</td>
</tr>
<tr>
<td>Methven</td>
<td>921</td>
<td>975</td>
<td>1,073</td>
<td>1,134</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand

Another useful indicator of the influence of visitors in a community is the number of unoccupied dwellings on census night at the end of March - usually well outside the domestic tourism season. Data for the four census nights (1986 - 2001) is provided for Rotorua, Christchurch and four Canterbury region communities (Table 37). Both Akaroa and Hanmer Springs have large numbers of empty dwellings (mostly holiday homes) in their housing stock (around 55-60% of the total) whereas Christchurch City is very low (3.5%). This is an indicator of problems for social cohesion and community viability in the smaller communities when many people are absent from the community for long periods.

Table 21
Selected Areas – Housing Stock 2001

<table>
<thead>
<tr>
<th>Area</th>
<th>Occupied Private &amp; Non Private Dwellings</th>
<th>Unoccupied Dwellings</th>
<th>Total Dwelling Stock</th>
<th>% of Dwellings Unoccupied on Census Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roturua</td>
<td>18,750</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Christchurch</td>
<td>123,276</td>
<td>4,443</td>
<td>127,719</td>
<td>3.5</td>
</tr>
<tr>
<td>Akaroa</td>
<td>324</td>
<td>483</td>
<td>807</td>
<td>59.9</td>
</tr>
<tr>
<td>Hanmer Springs</td>
<td>327</td>
<td>402</td>
<td>729</td>
<td>55.1</td>
</tr>
<tr>
<td>Kaikoura</td>
<td>897</td>
<td>171</td>
<td>1,068</td>
<td>16.0</td>
</tr>
<tr>
<td>Methven</td>
<td>495</td>
<td>93</td>
<td>588</td>
<td>15.8</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand

* Data not obtained on unoccupied dwellings on census night for Rotorua

5.3 Assessing Sustainable Yield

As noted above the social benefits and costs arising from tourism development are increasingly well documented in New Zealand\(^\text{37}\).

While an overall assessment of the variety of factors discussed above is difficult to achieve (and varies both between and within communities) Shone et al (2005) list a range of benefits and costs arising from tourism. Without exception the benefits (stimulation of economic

activity, employment, improved community facilities and cultural interaction – are listed as the common four major benefits) are seen to outweigh costs (commonly traffic, crowding and infrastructural stresses) – with many of the challenges posed by tourism being argued to be overcome with better advance planning and service provision. In searching for a single indicator of community acceptance towards the end of their surveys they asked respondent whether they thought they would they like to (a) see more (b) retain the present level, or (c) see less tourism – in their communities.

In spite of tourist per day densities ranging from three to 53 percent results show that for each of the study locations there was strong support for tourism among community residents, with an overwhelming majority of respondents indicating a desire for the continued presence of tourism in their communities. In four of the five study areas, over one-half of all residents surveyed wanted to see “more tourism in their hometowns” than presently experienced (Akaroa 52%, Westland 60%, Rotorua 65 and Christchurch 61%) the exception to this was Kaikoura 39%, however, in spite of on-going rapid growth this proportion was significantly larger than those wanting to see less tourism (23%). Thus the conclusion is that “when taken together, our research indicates that residents in (these communities) appear supportive of tourism in their communities” (p 104). Their research concluded that with appropriate planning and local government engagement tourism is largely a social (and economic) benefit for communities.

These effects are especially noted for dispersed rural communities and underscore much of the emphasis on tourism’s potential as a tool for regional development.

Running counter to the above social assessment is the environmental costs brought about by tourist travel modes and their individual itineraries (dispersion). The degree to which tourists disperse is an important basis for regional development. From the analysis of tourist types (Report 12), it can been seen that camping tourists travel most sectors whilst in New Zealand (20), followed by backpackers (15), FITs (12), coach tourists (9), and home visitors (6). The number of travel sectors alone does not provide information on where tourists travel. Coach tourists are most likely to visit the Top 10 destinations, especially Auckland (about twice per tourist), Christchurch, Queenstown and Rotorua. Coach tourists’ travel patterns are highly concentrated. In contrast, camping tourists show a more even spread of visitation across the Top 10 destinations (similar to FITs). For camping tourists, only 43 percent of all visited destinations are within the Top 10 for camping tourists. The proportion for coach tourists is 72 percent. The other tourist types are relatively similar with slightly over half of the destinations visited being within the Top 10 (60% for home visitors, 55% for backpackers and 52% for FITs). This means that camping tourists are the most dispersed tourists of all and are therefore likely to visit smaller centres outside the major tourist hubs.

While extensive travel and dispersion into less visited areas can be seen as beneficial for development, it comes at an environmental cost, initially measured here through a single indicator reporting CO₂ emissions. These vary by both distance traveled and mode of travel (represented here as a air/surface split).Coach tourists are by far the largest user of air transport (533 km per tourist trip); whereas camping tourists dominate road travel (3293 km per tourist). Home visitors travel the least distance, 1199 km in total. The camping tourist produces most CO₂ emissions during their stay in New Zealand, followed by the backpacker and coach tourist. From such an analysis it can be seen that in a typical visit to New Zealand, and even at a cost of NZ$25 / tonne tourisť’s CO₂ costs vary between $2.65 to $6.67 per trip (for the transport component). The (current) low value of CO₂ costs in comparison with total
visitor spending per trip suggests that CO$_2$ effects are unlikely to affect visitor numbers and the sustainability of tourism.

A consideration of sustainable yield requires the addition of non-quantitative value assessments to the range of indicators that might be considered. We have made an initial attempt to do this in a final aspect of the overall research programme where we have sought to integrate the above measures onto a framework for considering the sustainable yield from tourism$^{38}$.

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38 Details of this analysis can be found in Report 12 Yield Associated with Different Tourist Types, and in Report 1 Yield Research Programme Summary.
Chapter 6
Discussion

Nationally, there are two major net revenue streams from tourism: GST from international tourists of $481 million per annum and excise taxes from international tourists of $35 million per annum. A surplus of $97 million is also reported from roading and fuel levies and other levies (Statistics New Zealand, 2005).

For the economy as a whole, tourism also generates direct taxes of $1430 million per annum, and $730 million of GST on domestic tourism. However, we argue that a similar amount of direct taxes might be paid by another sector that used the same volume of resources as are used by tourism. While it would be possible to view all taxes ($2.7 billion pa) generated by tourism as a benefit of tourism and place these alongside tourism's share of all government expenditure, we have focused on only net costs and benefits that are achieved by using resources in tourism rather than in some other sector.

Government expenditure at the national level was grouped into two areas:

- ‘Core’ public sector tourism activities (e.g. Tourism New Zealand, Ministry of Tourism) ($81m)

  International marketing by Tourism New Zealand costs $64.3 million per annum. The payoff from this state funded activity is a continuing flow of international tourists to New Zealand and their economic, fiscal and social impacts. At ports of entry passenger clearance costs are partly met by the Crown and partly by users (New Zealand Treasury, 2005). We have allocated 59 percent of the Crown contribution to tourism, a total of $21.4 million per annum. Central government also purchases $5.3 million policy advice, $5 million for regional development initiatives, and $4.1 million of research through their Ministry of Tourism which in the 2004 year also had a special allocation of $2.3mn for implementation of the national tourism strategy.

- ‘Related’ public sector infrastructure tourism activities (predominantly for access to environment, culture and heritage, conservation, border control ($103mn).

  While, many agencies of the New Zealand public sector provide services that benefit tourism, the largest costs accrue through the provision of site access and activities by the Department of Conservation (DOC). While DOC receives revenues from tourists, it provides services to tourism that we estimate have a net cost of $79 million per annum (Department of Conservation, 2004). This may underestimate the true tourism-related net cost of conservation activities by $25-50 million per annum, if we were to add in some proportion of the costs of managing natural and heritage values, and potential imbalances in annual capital expenditures. At the national level we similarly judge that Te Papa (the National Museum), the Ministry of Culture, Search and Rescue and Nature Heritage each incur significant net costs because of tourism in the range $5 million - $10 million per annum.

Tourism in New Zealand typically involves significant amounts of travel and we estimate that tourism contributes 15.5 percent of national road vehicle km. New Zealand captures significant amounts of revenue from road users and we estimate that domestic tourists’ travel generates a financial surplus of $109.2 million, and international tourists’ travel a revenue outflow of $11.9 million for a combined surplus of $97.3 million. It is similarly estimated that domestic and international tourists also contribute a net $18 million and $1 million per annum.
year respectively towards Accident Compensation Commission funds but these are held against future claims.

Taken together, central government collects tax and excise revenue of over $500 million per annum from international tourists. Beyond this revenue, roading generates an additional net surplus of $97.3 million per annum. Direct costs for government services to tourists arise largely from offshore marketing, research and policy advice to total $81 million. Resource conservation (particularly providing access to and services within national parks, culture and heritage costs incur an additional $103 million of government expenditure. On this basis we estimate that tourism’s net central government revenues exceed costs at the national level for a net gain just in excess of $400 million per annum.

Monetized external costs for road transport are well documented by the Ministry of Transport (2005). Travel by visitors imposes environmental and social costs as well as financial costs. International visitor’s share of accidents is reported as double percent share of vehicle km. Ministry of Transport (2005) has also identified air and water pollution, noise pollution, CO\textsubscript{2} emissions, congestion and external costs of transport accidents as significant items whose shadow price can be estimated. Based on information from that study we have estimated the annual costs associated with tourist’s road travel to be: road accident externalities $57 million; congestion costs $78.6 million; noise from transport $3.9 million. Transport uses large volumes of fossil fuel and contributes to climate change and to air and water pollution. We calculate that tourism's share of these costs is $80 million per annum, of which carbon costs are $62 million per annum. These figures are examples of shadow costs and are key indicators of the sustainability costs associated with tourism. Under present resource management and pricing regimes similar cost estimates would be anticipated for other productive sectors (e.g. agriculture, forestry) of the New Zealand economy (Patterson and McDonald, 2004).

A number of external costs and benefits can be described. Among these transport externalities have received the greatest attention and have been estimated as $223 million per annum. Even if they were included in the above comparison central government funds would still be seen as a net surplus on activities and services to the tourism sector. While not included in our assessment of net revenues we note that tourism also generates direct taxes of 1,430 million plus GST on domestic tourism of $788 million per annum. As noted above, these have not been included in our assessment on the assumption that deployment of these resources in other sectors would generate similar costs and revenue.

For other dimensions of sustainable yield we note that tourism impacts the environment at a limited number of fragile sites, and imposes noise costs on recreationists in some national parks. Conversely, tourism brings substantial external benefits to many New Zealand residents via improvements in the range and quality of services available in cities, towns and national parks. Tourism contributes to more diverse cosmopolitan communities that are attractive to many people. The dollar magnitudes of these external benefits have not been estimated in New Zealand hence it is difficult to assess their importance and to compare them with the fiscal costs that have been quantified. Notwithstanding this, current assessments of the social impacts of tourism indicate that New Zealand residents consistently list greater benefits from tourism than social and community costs (Shone, Horn, Moran, Simmons, 2005).

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Tourist densities have increased steadily in New Zealand during the past two decades. The flows of both domestic and international visitors can be a mixed blessing to communities. Quantifying these costs and benefits can be completed in some cases by using existing social statistics or other indicators such as trends in availability of medical services or restaurants in small communities. Where possible we have provided examples from existing studies of the ways that tourism has benefited (seasonal employment, better facilities in National Parks, greater frequency of public transport) or imposed stresses or social costs (crowded local parking, increased demands on volunteers, loss of cultural integrity) at national, regional or local level. Non market valuation studies have been completed in USA, Australia (Bennett, van Bueren and Whitten, 2004) and other countries to estimate dollar values of some of these tourism related items but few such studies have been completed in New Zealand.

In summary, the objective of this research project has been to evaluate the impacts of tourism upon the New Zealand public sector. This strand of the research project has collected data that will be used elsewhere in the research programme to determine if tourism is generating both economic and sustainable yield. Our findings indicate that central government derives a cash surplus from its tourism sector based activities. Taking 'net' revenues into account we estimate a net annual cash flow to central government of just over $400 million. Notwithstanding this assessment there are a number of caveats that need be borne in mind. Most of these focus on the core approach – the determination of ‘marginal’ costs and the relationship between static and equilibrium based conceptualisations of the national economy, and the role that tourism might play within it. There also exist significant temporal elements to government investment and how past costs might be considered in the present (political) economy.

Attempts to report on sustainable yield draw attention to the fact that while many of the economic costs and benefits of tourism are measured and recorded in existing financial transactions, revealing the magnitude of some social costs and benefits, remains problematic (Northcote & MacBeth, 2007). Some are able to be quantified by way of non market valuation techniques or mitigation cost measures, while others can be described but are not easily quantified or measured in dollars. We have used existing financial data where they are available, shadow prices where they are available and qualitative assessments in cases where there is no financial or economic data available. An initial model using regional dispersal and some environmental costs from tourists’ travel patterns is presented in Report 12 (Yield and Tourist Types).

The research frames a number of broader policy issues including whether, given tour and travel patterns in New Zealand, central government offers adequate support to peripheral economies where tourists can overwhelm the funding capability of the local resident population. To answer such policy questions adequately it becomes important to separate initial capital costs from those arising during ongoing operations and maintenance (Market Economics, 2003, Cullen, Dakers & Meyer-Hubbert, 2004). If tourism in New Zealand continues to grow in volume increasing revenue seems likely to arise from local authorities for infrastructure support, especially. Subsequent analysis would also need to question whether councils effectively deploy the full suite of cost recovery mechanisms available within existing legislation.

As a second set of questions raised by the research focus on the pricing of traditionally free services, e.g. national park facilities, and urban facilities such as museums and art galleries. Analysis of such a question would need to take into account national (brand image) and local
(collection efficiency, substitutes and compliments) to be resolved adequately. This question remains particularly salient given the significance both in terms of visitation to (Tourism New Zealand, 2005) and satisfaction from (Tourism New Zealand, 2006) New Zealand’s natural environments.

As noted in the introduction, this project comprises one of several themes and approaches in our assessment of financial, economic and sustainable yield for tourism, which has the twin goals of determining ‘high-yield visitor (types)’ and developing tools for both the public and private sectors to enhance tourism’s performance in the national economy.
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