

THE ECONOMIC VALUE OF TOURISM TO NATIONAL PARKS AND PROTECTED AREAS IN AUSTRALIA

Technical report



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SUSTAINABLE
TOURISM



CRC

THE ECONOMIC VALUE OF TOURISM TO NATIONAL PARKS AND PROTECTED AREAS IN AUSTRALIA

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Glossary

ABS	Australian Bureau of Statistics
CDMOTA	Compact Disk Monitor of Tourism Activity
CGE	Computable General Equilibrium model
DRET	Department of Resources, Energy and Tourism
GRP/GSP/GNP	Gross Regional/State/National Product
GVA	Gross Value Added
IVS	International Visitor Survey
NP-associated	National Park associated spending
NP-generated	National Park generated spending
NVS	National Visitor Survey
QPWS	Queensland Parks and Wildlife Service
SPSS	Statistical Package for the Social Sciences
STCRC	Sustainable Tourism Cooperative Research Centre
TRA	Tourism Research Australia
TSA	Tourism Satellite Account

Abstract

This technical report concludes a project supported by Sustainable Tourism Cooperative Research Centre aimed at reviewing and developing methodology to place an economic value on tourism to Australian national parks and protected areas. In particular this project had a focus on producing state or territory level estimates of the economic value of tourism to national parks. This is in line with the aim of providing information on economic value for state and territory decision makers who are responsible for funding and undertaking the management of national parks. This report includes a discussion of the economic basis of estimating the economic value of tourism to natural environments. A review of Australian studies that use the ‘spending by tourists’ approach to economic value is presented. Methodology developed via a study of the statewide economic value of tourism to national parks in Queensland is outlined and some recommended modifications to that methodology are discussed.

A handbook that provides a step-by-step guide to research the economic value of tourism to national parks at a regional or state and territory level accompanies this technical report. It is titled **Handbook on Measuring the Economic Value of Tourism to National Parks** and is available at www.crcetourism.com.au/bookshop.

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SUMMARY

Objectives of Study

This project sponsored by the Sustainable Tourism Cooperative Research Centre was aimed at reviewing and developing methodology to place an economic value on tourism to Australian national parks and protected areas. In particular, the project aimed to put forward methodology that could be used at the state and territory level to provide measures that are comparable across states. This level of information is relevant to the state and territory governments as the major decision makers on resourcing and undertaking park management. The technical report includes the results of work undertaken to provide a solid background for putting forward a recommended methodology. This includes a review of economic approaches, a review of previous Australian studies and a study undertaken for tourism to Queensland national parks which developed and tested methodology. A handbook which details the recommended methodology accompanies this technical report.

Methodology

This technical report includes a discussion of the economic basis of estimating the economic value of tourism to natural environments, in Chapter 2. This covers measures of spending by tourists and interpretation of these via economic models into measures of economic contribution. Chapter 3 of this technical report includes a review of methodology used in studies to place an economic value on tourism to national parks.

Methodology developed for a study of state-wide economic value of tourism to Queensland national parks is summarised in Chapter 4. A discussion of some recommended modifications to the Queensland study approach is included in Chapter 5. The handbook provides a step-by-step guide to application of the recommended methodology.

Key Findings

This technical report includes a review of key findings of Australian studies of the economic value of tourism to national parks and protected areas. These range from studies of individual national parks to a national level estimate of spending by tourists who visited national parks or state parks. All of these studies show that, even though entry to most national parks is free or a modest charge, there is considerable economic activity due to spending in the region of the national parks by people who visit the parks.

A key finding regarding methodology is the recent trend to include a ‘narrow measure’ of spending, based on the tourists who would not have spent money in the target region if the opportunity to visit the national parks were not available. This and other findings regarding methodology provide the basis for the handbook.

Future Action

The handbook provides a guide for the conduct of future studies at the regional or state/territory level. Further research is suggested to explore the possibility of including a reduced length of stay, if the opportunity to visit the national park did not exist, into the narrow measure of spending by tourists who visit national parks. This could be incorporated into studies undertaken using the handbook.

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Chapter 1

INTRODUCTION

There are many people interested in the economic value of tourism attracted by national parks and protected areas. Interest groups such as the tourism industry and conservation groups want to lobby government for adequate provision and management of such areas. Governments need to make decisions on resourcing the management of these areas. There is internal dialogue between park management agencies, government tourism promotion agencies and treasury departments as budgets are developed. Park management and tourism promotion agencies want to be in a position to use strong economic arguments for funding to manage national parks as conservation and tourism resources.

This report explains that there has been a focus on estimating the economic value of tourism to national parks and protected areas for two reasons. Firstly, while a broad range of economic values of natural environments is recognised, it is difficult to measure many of these. The economic value of a major direct use such as tourism will give a partial economic value for natural environments. The second reason is that information on the economic value of tourism is relevant to decisions on managing and resourcing parks for tourism use. This latter reason has driven many of the studies that have been conducted for Australian National Parks and protected areas.

This report is the culmination of a project supported by the Sustainable Tourism Cooperative Research Centre (STCRC) aimed at reviewing and developing methodology to place an economic value on tourism to Australian national parks and protected areas. This project has drawn on a number of studies into the economic value of tourism in national parks and protected areas supported by the STCRC over its life and reported as STCRC technical reports. In particular, this project has aimed to put forward methodology that could be used at the state and territory level to provide measures that are comparable across states. This level of information is relevant to the state and territory governments as the major decision makers on resourcing parks management. The project included a study for Queensland National Parks (co-funded by the Queensland Government) which involved development of state level methodology and produced results useful to the Queensland Government. Following review of this Queensland study, this project has included the preparation of a handbook to allow the methodology to be applied at a state/territory or regional level in the future.

The project has focused on methodology to report economic values based on 'spending by tourists' who visit national parks and protected areas. It is argued that this approach is relevant for the exercise of comparing the economic value of tourism to parks with investment in management. An alternative approach of measuring economic value as consumer surplus is discussed in this report, but is not its focus.

There are some terms that need to be clarified for the purposes of this report. The term 'national parks' is used as shorthand for national parks, state parks and protected natural environment areas, managed by governments for conservation and visitor use.

As defined by the World Tourism Organization (WTO), 'tourism' comprises the activities of persons travelling to and staying in places outside of their usual environment for not more than one consecutive year for leisure, business or other purposes. The usual environment consists of a certain area around his/her place of residence plus all other places s/he frequently visits (WTO 1995). Included in the Australian economic statistics on tourism are international tourism to Australia, domestic overnight tourism and day trips. Day trips or same day visitors are defined to include trips of a round trip distance of at least 50 km, where the visitor is away from home for at least four hours and excluding commuting between work/school and home (TRA 2009a). Thus activities that may be known as both tourism and recreation can be included in tourism statistics. The terms 'tourism' and 'tourists' are used in this report to include all visitors within the scope of the economic studies and approaches discussed in this report. Some studies include day trip visitors, others do not.

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Chapter 2 provides a solid base for the development of methodology with a discussion of the approaches to understanding the economic value of tourism to national parks, anchored in economic theory and current practice. A range of approaches to defining and measuring spending by tourists is presented. It is useful to interpret the economic contribution that spending makes in an economy in terms of employment supported contribution to gross regional/state product and indirect effects (often called multiplier effects). Chapter 2 includes an explanation of what each of these terms mean, how to generate them and when it is correct to use them.

Chapter 3 contains a review of Australian studies of the economic value of tourism to national parks and protected areas. The listing shows that studies have been undertaken in most state and territories, with most having as their subject a single national park or regional grouping of parks. The range of methodologies varies, therefore giving relevance to this project which focusses on methodology. The economic values revealed have been included for a selection of these studies.

Chapter 4 summarises the Queensland study which was undertaken as part of this project. STCRC has published the method and results of the study in *Valuing Tourism Spend Arising from Visitation to Queensland National Parks*, by Ballantyne et al. 2008. This chapter therefore focuses on why and how the study was undertaken, a summary of results and lessons learned that have been incorporated into the methodology.

Chapter 5 provides background to the methodology as presented in the handbook. It should be read by anyone wishing to apply the methodology.

Chapter 6 presents conclusions from this report.

Chapter 2

APPROACHES TO ESTIMATING THE ECONOMIC VALUE OF TOURISM TO NATURAL ENVIRONMENTS

Why Estimate the Economic Value of Tourism to Natural Environments?

Natural environments provide a range of values to people. National parks and other protected areas generally have the aim of conserving and presenting these natural environment values in their original form. A recent Parks Forum publication on *The Value of Parks* describes environmental, community, health and economic benefits gained from parks (Parks Forum 2008).

One way in which economists have classified and interpreted the range of values is via the concept of Total Economic Value (TEV) which takes an economic and anthropogenic approach to describing values that arise from natural environments. These values include: direct use (including tourism use); indirect use; option and quasi-option values; and existence and bequest values (Pearce and Moran, 1994).

Economic methodologies exist which allow dollar value estimates to be placed on this entire range of values (for example, see Environmental Protection Agency, 2003). However, there is still debate about the efficacy of placing dollar values on some of these values. There are challenges in applying some of these methodologies, especially where there is skepticism about people providing estimates of how much they are willing to pay for things they normally do not have to purchase.

One approach to valuing natural environment areas, such as national parks, has been to focus on placing a dollar value on direct uses such as tourism. This is generally easier than employing some of the more challenging and less accepted methodologies to value indirect use and other values. Thus estimating direct use values can provide a partial economic value of natural environment areas. This may be useful to decision making, for example in evaluating the benefits and costs of proposals that would impact natural environments.

Perhaps the most common reason for people wanting to place dollar values on tourism in national parks is to inform those who make decisions on providing resources for management or expansion of parks. National parks are generally funded from the public purse, and governments, advised by their treasury departments, make decisions on the level of resourcing. It is in the interests of park management agencies, the tourist industry and stakeholders to put forward economic information to support budget bids.

The Economic Basis of Estimating the Economic Value of Tourism to Natural Environments

When estimating the economic value of tourism to national parks, grounding the estimates in economic theory is obviously very relevant. There are two alternative approaches to measuring the value of tourism to national parks and interpreting its economic significance. One, consumer surplus, is a measure of economic welfare and is grounded in microeconomic theory. The other is a measure of contribution of spending by tourists to the economy and fits into frameworks used in national accounting. The different measures fit different purposes and there is no unambiguously best approach. The context for decision making is important when choosing what to measure and present.

Consumer surplus

Consumer surplus is the benefit gained by consumers when what they are willing to pay for a good or service is greater than what they have to pay. Consumer surplus is considered the relevant measure of economic welfare. Many studies have estimated the value of natural environments, including national parks, to tourists in terms of consumer surplus generated by visits, where willingness to pay is above what visitors actually have to pay. This is the appropriate measure to be used in cost-benefit analysis of proposals (Keske and Loomis, 2008), for example to expand the park estate at the cost of competing land uses.

The consumer surplus accruing to visitors to national parks is not able to be observed in any market and must be estimated using economic methodologies. The Travel Cost Method (TCM) has been used for several decades to estimate consumer surplus from use of recreation areas (Bockstael, 1995). It should be noted that consumer surplus estimates are also able to be generated using the methods of Contingent Valuation (Carson, 2000) and Choice Modelling (Bennett, 1999), both of which have the advantage over TCM of incorporating use and non-use values.

This report does not focus on consumer surplus measures. However some of the studies included in the literature review in Chapter 3 generate estimates of consumer surplus.

Spending by tourists

An alternative approach is to estimate spending in the local or target region¹ economy by tourists who visit national parks and usually interpret this in terms of significance to that economy. The particular advantage of this general approach is that the estimated dollar values may be interpreted as indicators, such as contribution to gross (regional/state/national) product or employment generated, which decision makers consider important. This project and report has adopted a focus on measuring and interpreting spending by tourists and this is the subject of the remainder of this chapter.

Measuring Spending by Tourists

In this section, the aim is to recognise what can and should be included in an estimate of spending by tourists who visit national parks. Boundaries need to be placed around both the physical location of spending, to align it with the economy of a target region and also around degree to which the visit to the national park is the motivation for spending in the region.

Studies that measure spending all start from the premise that spending on transport, accommodation, food etc. are all necessary to allow a tourist to visit a national park. It is not simply the cost of a day's excursion or park entry fees (if they exist) that are relevant.

One of the first such studies in Australia (Driml and Common 1995) estimated the direct spending by visitors to a number of World Heritage Areas (WHAs). This study relied on visitor numbers provided by managers of WHAs and published average daily tourist expenditure estimates. The study did not include a survey component that would have allowed visitors to be asked questions on the importance of the attraction of the WHAs to their travel choices. Instead, a conservative assumption was made that to support each visitor's day to the WHA, two days' average expenditure (on accommodation, food and drink, transport etc.) was made in the local economy. While very simple, this study served at the time to highlight that national parks and protected areas were in fact economic resources, not totally 'locked away' from use.

Improvements in methodology have been made possible by researchers thinking more explicitly about what to include in legitimate measures of spending due to national park attractions. This has been combined with survey work where visitor travel choices have been explored. All the approaches discussed in the remainder of this section rely on surveys of tourists to record their spending during their visit in the target region (on the full range of items from accommodation to souvenirs). Estimates of spending by the population of visitors to the target region, or to national parks in the target region, are made based on this survey work.

Carlsen and Wood (2004) took the approach of trying to isolate spending by tourists due to the attraction of

¹ In this chapter, the term 'target region' will be used to refer to a target region for a study or for decision making. This may be the whole country, a state or territory or a sub-state region.

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natural environments, from all spending by tourists in a target region. They developed the concept of the ‘attribution’ factor. Attribution expenditure is considered to be that proportion of all direct spending by tourists to a region that can be attributed to an attraction such as national parks (Jones and Wood 2008). These same authors recommend that the attribution factor is calculated using ‘measures of visitor motivation and activities’ (Jones and Wood, 2008, p. 432) collected for a sample of all visitors to a region.

Alternatively an estimate of spending in a region by people who visit national parks can be obtained by surveying only people who visit parks. This approach has been adopted in numerous studies undertaken for national parks and marine parks in New South Wales (for example, Centre for Agricultural and Regional Economics, 2006a, Gillespie Economics 2006). Lindberg and Destanii (2004) used the term ‘traditional’ spending to include spending by all tourists to a region who visited national parks. Ballantyne, Brown, Pegg and Scott (2008) termed this ‘national park associated’ (NP-associated) spending. This included all spending, on any goods and services while in a target region, by tourists who visited a national park in that region.

The authors who defined the ‘attribution factor’, ‘traditional spending’ and ‘NP-associated spending’ all recognised that these are very broad estimates of spending that may be associated with the attractions of national parks. They all defined narrower estimates of spending based on identifying the sub-component of spending that is net additional spending in a target region due to the attraction of the national park. That is, the spending that would not have occurred in the target region if the opportunity to visit the park did not exist.

This component has been termed the ‘substitution’ effect (Johnson and Moore, 1993, Carlson and Wood, 2004). This is where the visitor would have substituted their visit to the target region with a visit to another region, state or country. Recent Australian studies reporting substitution expenditure include Carlsen and Wood (2004), Tremblay (2007) and Tremblay and Carson (2007).

The approach taken by Ballantyne et al. (2008) in the Queensland case study is a variation of the substitution effect, which they term the ‘national park-generated’ (NP-generated) spending. The main difference between this approach and that of Carlsen and Wood (2004) is that the population of tourists on which the NP-generated measure is based was comprised of only those tourists who visited national parks. NP-generated expenditure estimated in the Queensland case study includes spending by inbound tourists who would not have visited Queensland if the opportunity to visit the parks did not exist. It also includes spending by domestic tourists who would have travelled outside Queensland if the opportunity to visit the parks did not exist. Accordingly, the approach taken is to attribute their total, tourism-related spending in the target region to the national parks, irrespective of how much of their trip was actually spent in the national parks.

Results from these recent studies indicate that the more narrowly defined spending (substitution, NP-generated) is less than 20 percent of the more broadly defined spending (attribution, NP-associated). Results of Australian studies are shown in Tables 1 and 2. It should be noted that the substitution factor and NP-generated factor are not directly comparable as the population of tourists differs. The relationship between broad and narrow measures of spending needs to be tested through more research. As there have been few studies undertaken thus far, it is not recommended that these results be transferred to other studies.

Table 1: Substitution factor (percent of all tourism spending in the region that would not have been spent in the state/territory if the park attraction was not available)

Authors	Location	Substitution factor (%)
Carlsen and Wood 2004	Gascoyne Coast Region	18.5
Carlsen and Wood 2004	Southern Forests Region	9.2
Tremblay 2007	Kakadu National Park region	16.2
Tremblay and Carson 2007	Watakarra National Park	7.0

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Table 2: NP-generated factor (percent of spending by tourist who visit national parks in the region that would not have been spent in the state/territory if the park attraction was not available)

Authors	Location	NP-generated factor (%)
Ballantyne et al.(2008)	Cairns Tourism Region	20.6
	Carnarvon Tourism Region	18.5
	Outback Tourism Region	19.1
	Gold Coast Tourism Region	12.2

Lindberg and Denstadii (2004) defined their narrow measure to account for tourists who would not come at all plus the loss of expenditure where tourists would reduce the number of days they would stay in the region. They found similar results for the tourists who would not come at all. However when they included the loss of days in the region, this produced a larger measure of potential loss to the region if tourists were not able to visit the national parks. The authors termed this a ‘conservative’ measure of the value tourism attributable to the national parks. ‘Conservative factors’ generated from the data of Lindberg and Denstadii (2004) for this technical report, for surveys in national parks in four Queensland regions are shown in Table 3.

The approach used by Lindberg and Denstadii (2004) involved asking respondents about alternative itineraries in detail. This research has not been replicated for Australian National Parks. The larger size of the conservative factor compared to the substitution and NP-generated factors is worthy of note and will lead to a larger value for the narrow spending measure. It is recommended that future research be conducted to refine this approach and compare it with the other approaches to a narrow measure, in order to define an overall best approach.

**Table 3: Conservative factor
(percent of spending by tourist who visit national parks in the region that would not have been spent in the region if the park attraction was not available, including reduced length of stay)**

Authors	Location	Conservative factor (%)
Lindberg and Denstadii (2004)	Girraween	50
	Eungella	34
	Dainterr	57
	Canarvon	76

This discussion has served to illustrate that the selection of what to include in the spending estimates is critical to the dollar value of the spending reported. It is important that studies are explicit about where the physical and behavioral boundaries have been set. The narrow measures of spending provide a conservative estimate of the net attraction of spending by tourists due to the opportunity to visit national parks.

Measures of the Economic Contribution of Tourism

Measures of direct spending have most use if they are interpreted in terms of their contribution to the economy, for example to employment, to gross (national/state/regional) product and in terms of flow-on effects to other industries. This further interpretation of direct spending allows tourism to be compared to other industries and to be better understood as to the extent that it indirectly supports other industries. This all helps with policy considerations such as how much money the government should contribute to management of tourism resources.

This section presents a discussion of the possible range of measures of economic contribution that could be generated from direct spending estimates, what they mean and how they can be used. The discussion is based on what could be achieved using economic models of the economy which explicitly incorporate tourism data. There are however practical issues that will limit the extent to which studies of national park tourism can generate measures of economic contribution, these are discussed in the following section.

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This discussion on the measures of economic contribution of tourism needs to be prefaced by noting the particular characteristics of tourism as an economic activity and how tourism is incorporated into the standard economic approaches to measuring economic contribution.

The definition of the ‘tourism industry’ is via spending by tourists. The typical statistics that describe the overall size of the tourism industry are direct spending by tourists, for example for Australia as a whole, domestic overnight visitors spent \$42.2 billion in the year ending September 2009, while international visitors spent \$17.0 billion in the same year (Tourism Research Australia 2009a, b). Spending by domestic tourists in Australia is estimated using questions asked on expenditure in the National Visitor Survey (NVS) and spending by tourists from overseas is estimated using questions asked on expenditure in the International Visitor Survey (IVS) (Tourism Research Australia 2009a, b).

There is no ‘tourism industry’ included in standard national accounting industry classifications and most standard models of economies. Spending by tourists is a component of the economic activity in sectors including; accommodation, cafés and restaurants, transport and storage, retail trade, cultural and recreational services and education (Pambudi, Van Ho, Spurr, Forsyth, Dwyer and Hoque 2009). Table 4 lists the top five sectors in which spending by tourists is distributed. At the national and state and territory level, Tourism Satellite Accounts (TSA) are generated by taking spending by tourists out of all the relevant sectors and building a new ‘satellite’ sector for the tourism industry. The Australian Bureau of Statistics generates the Australian Tourism Satellite Account (Australian Bureau of Statistics 2009) and the Sustainable Tourism Cooperative Research Centre publishes TSA for Australian states and territories (Pambudi, et al. 2009). All these accounts are models built using Input-Output Tables.

Table 4: Top five sectors for spending by tourists

Sector (top five)	Percentage of national Gross Value Added for that sector contributed by tourism spending %
Accommodation, cafés and restaurants	44.1
Transport and storage	14.1
Retail trade	7.0
Cultural and recreational services	7.0
Education	5.3

Pambudi et al.2009, table 8

As pointed out by Pambudi, et al. (2009), TSA are static models of the economy. They can be used to generate measures of economic contribution of tourism spending. The national and state and territory TSA can be used to generate the following measures of economic contribution; direct output, direct employment, value added, contribution to GSP and indirect effects. TSA cannot estimate the economic impact of a change, such as a change in spending. Pambudi et al. (2009) advise that this is best modeled using Computable General Equilibrium (CGE) models of the economy with a tourism sector. State level CGE models with a tourism sector will be released by the STCRC in 2010.

To date, the main tools for understanding economic contribution of industries at a regional level are regional Input-Output tables and regional CGE models. In order to use these to measure the economic contribution of tourism, they need to have the tourism expenditure explicitly separated out from other sectors. Some of the Australian studies reported in the next chapter have included identifying national park tourism spending within regional Input-Output tables. Some regional level CGE models with a tourism sector have been developed for specific studies (Turton , Hadwen & Wilson 2009).

A summary of the measures of economic contribution produced in the TSA, what they are and when/how to use them in studies of economic values of national park tourism is presented in Table 5. More detailed definitions of the measures are included in Pambudi et al. (2009), see their Appendix A. Regional Input-Output modelling also frequently produces a measure of ‘household income’—which is wages and salaries to regional households.

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The measures of economic contribution apply to a target region, be it a country, state or sub-state region. The boundaries for the tourism spending and the economic models need to be identical. ‘Tourism spending’ is estimated from surveys. Tourism spending will be adjusted by taking off taxes and adding subsidies to provide ‘tourism output’ for use in the economic models. Nevertheless it is tourism spending that is most often reported as the base measure of contribution.

Direct effects of this spending in the satellite sector defined as the ‘tourism industry’ can be reported in terms of; value added, tourism gross (regional/state/national) product and employment. Value added and tourism gross (regional/state/national) product are variations of what is left when the cost of providing goods and services is subtracted from the spending by tourists. They represent the real addition to an economy in the form of wages and salaries, profits, interest and rent. Employment supported by the spending in the tourism sector can be estimated. All these measures may be compared with the other industries defined for the economy or with similarly defined tourism sectors in other regions.

Flow-on effects are created when demand for goods and services from other industries in the economy (excluding imports) is generated by spending in the tourism sector. For example, café’s will source some produce from the local agriculture sector as well as from imports. In addition, the spending of wages and salaries by people employed in the tourism sector will have effects in the defined economy. An understanding of the flow-on effects is important to appreciate the extent to which spending by tourists supports the economy. For example, in a small region, this may be a small economic effect if a large proportion of goods for tourism are imported, but employment supported may be significant.

Total effects are direct plus flow-on effects. It is important to take care in interpreting the larger total effect figures. They should not be used to directly compare industries, due to double counting issues. For instance, in the café example above, the sales from agriculture to tourism will also be recorded as output from agriculture. Direct effects should be used when making comparisons among industries or across regions.

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Table 5: Measures of economic contribution, what they are and when to use them

Measure	What it is	When to use for National Park tourism
Direct effects	direct effects in tourism sector (as defined for the input output table, TSA, or CGE model)—for the target region (country, state or sub-state region)	<input type="checkbox"/> to report the contribution which tourism makes to the tourism sector businesses <input type="checkbox"/> to make comparisons with other industries, countries, regions
Tourism consumption*	all spending by target population of tourists including outside the target region	<input type="checkbox"/> not usually reported—tourism spending is usually reported in preference
Tourism spending (from surveys)	spending by target population of tourists within the target region.	<input type="checkbox"/> to report actual spending in the defined location
Output*	spending adjusted to basic prices (before taxes added, subsidies deducted)	<input type="checkbox"/> not usually reported—tourism spending is usually reported in preference
Gross Value Added*	output less cost of inputs from industries that supply tourism—value added to the economy as wages and salaries, profits, interest and rent	<input type="checkbox"/> Not usually reported—contribution to tourism GSP/GDP is usually reported in preference
Tourism GRP/GSP/GDP*	value added adjusted to prices actually paid (plus tax, less subsidies)—usually marginally higher than value added	<input type="checkbox"/> comparing tourism contribution to the economy with government investment to manage tourism
Employment*	number of people employed by tourism spending (usually includes casual, part time—reporting needs to include this qualification)	<input type="checkbox"/> to report employment supported in tourism sector
Total effects (direct plus indirect) (Note: Indirect effects are also counted as direct effects for non-tourism sectors – thus these measures should not be used as comparisons with other industries, countries, regions)	flow-on effects in the target region economy to non-tourism industry sectors, supported by demand generated by tourism spending	<input type="checkbox"/> to report the contribution which tourism makes across the whole economy <input type="checkbox"/> to report the proportion of direct compared with indirect effects <input type="checkbox"/> to report which non-tourism industries benefit from indirect effects
Total (direct plus indirect) Output*	direct output plus amount of this that flows onto other non-tourism industries in the target region	<input type="checkbox"/> to report total output in the economy supported by tourism spending
Total contribution of Gross Value Added*	value added from direct spending plus value added in non-tourism industries supported by demand from tourism industries	<input type="checkbox"/> not usually reported—total tourism GSP/GDP is usually reported in preference
Total contribution of tourism GRP/GSP/GDP*	tourism GSP/GDP from direct spending plus tourism GSP/GDP in non-tourism industries supported by demand from tourism industries	<input type="checkbox"/> to report total tourism GSP/GDP in the economy supported by tourism spending
Total contribution of employment*	employment supported in tourism sector plus employment supported in non-tourism industries	<input type="checkbox"/> to report total employment in the economy supported by tourism spending

*See the full definition of this term in Pambudi et al. 2009, Appendix A.

Practical issues in estimating economic contribution

Practical issues can fall into the questions of which measures to generate and how to generate them. A review of relevant Australian studies using the ‘spending by tourists’ based approach to estimating the economic value of national park tourism, is included in Chapter 3. All these studies, by definition, have included measures of tourism spending. Roughly half of these studies have also included measures of economic contribution, using multipliers generated from Input-Output analysis.

While the use of multipliers to generate flow on effects is popular with many authors, there are some who caution against the use of all but direct measures. Hughes, Jones, Deery, Wood, Fredline, Whitely and Lockwood (2009) highlight ‘problems with multipliers’. Amongst the issues raised by Hughes et al.(2009) are that; economic models (Input-Output or CGE) are not available for small regions and that small regions have a lot of ‘leakage’ in the form of imports, where there can large margins for error. The size of the region and availability of relevant economic models is an issue because many studies to date on national park tourism spending focus on single parks or regional groups of parks. It is not acceptable to ‘borrow’ multipliers from models that are built at a larger scale, for example state TSA, and apply these to smaller regions.

There have been a number of studies of the economic impact of national parks and marine parks in New South Wales where tourist expenditure data collected by survey has been used to augment regional Input-Output tables. The flow-on effects were then calculated by running the model. This approach of augmenting Input-Output models with tourism data is likely to be more accurate than applying multipliers from existing tables, especially for small regions. It is also likely to be more expensive as it requires additional model construction.

The study by Ballantyne et al.(2008) illustrates the approach of applying relationships from an existing economic model with a tourism sector. In this case the target region was Queensland and the national park tourism spending was estimated on a statewide basis. This study could therefore access an existing Queensland state level economic model with a tourism sector (Office of Economic and Statistical Research 2006). Using a static analysis approach, the proportion that national park tourism spending was of all state level tourism spending was calculated. This was then be used to estimate the proportion of state level contribution to GSP that was supported by national park tourism spending.

Thus the ability to provide acceptable measures of economic contribution rests on practical issues of whether there is an existing economic model with a tourism sector for the target region, or whether the additional expense of constructing a relevant model is justified.

Other important issues raised by Hughes et al. (2009) in defense of reporting only direct spending revolve around the use of the economic measures for policy analysis. They note that Input-Output models do not capture impact—as tourism grows, resources to other sector may be diminished and that can only be captured in CGE models. In addition, Input-Output analysis does not capture net costs and benefits. Both these points are valid. That is why it is important to interpret to stakeholders what economic contribution measures do and do not indicate.

Putting it all Together—and Interpreting to Stakeholders

This Chapter has presented a number of alternative ways to measure tourism spending and several measures of economic contribution. This large number of possible dollar and employment values poses a significant challenge if a simple interpretation to stakeholders is the main aim of the exercise.

There is a potential difference in what different stakeholders are interested in knowing and making available to the public. It is worth noting that many of the studies reported in Chapter 3 have been commissioned or supported by state/territory park management and tourism agencies in order to make information available to stakeholders including treasury departments. There have been differences amongst state treasury departments in terms of preferred economic measures. An approach of generating total regional effects using a broad measure of spending and Input-Output analysis has been accepted for many years in one state. However, advice from at least one state Treasury department to researchers indicated that the narrow type of measure which most closely links tourist spending in the state to the attraction of the national parks was preferred (Carlsen and Wood 2004).

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Another state Treasury department indicated that it preferred the direct contribution to GSP as a measure of economic contribution (Ballantyne et al. 2008). Thus consultation with target stakeholders on preferred measures is recommended as part of research design. Possible interests and relevant measures for different stakeholder groups are listed in Table 6.

Table 6: Stakeholder groups and their interests

Stakeholders	What they may be interested in
Government park management agencies and tourism agencies and their Ministers	Reporting the economic contribution of national parks tourism to the public. The relevant measures of economic contribution of national parks tourism to provide advice to treasury departments.
Treasury departments—which advise on government budget allocations	Relevant measure to use to compare returns to the economy with investment in park management. (Different state and territory treasury departments may have different preferences for measures of economic contribution; therefore it is recommended they be consulted at the start of any research.)
Interest groups such as tourism industry groups and conservation groups	Measures to help lobby government and the public on the importance of national parks Measures to help lobby the public on benefits of tourism to national parks
Local governments	The benefits of national parks to their local region

All measures derived from sound research and analysis can legitimately be reported. What is important is that the bases of these measures are explained in as simple but accurate terms as possible. Also important is that any comparisons are made on a like-for-like basis.

Three key steps are recommended for ensuring that stakeholders are comfortable with the information that is produced from the economic research and are able to use results accurately and effectively. Firstly, work with stakeholders in the research design phase and inform them of the types of measures that can be produced. If for example a state government park management and tourism agencies commission the research, ensure that treasury departments are consulted in the research design phase. Secondly, the researchers should brief stakeholders who commission the work when results are available. Thirdly, a plain English summary document should be produced for use by stakeholders.

Chapter 3

A REVIEW OF AUSTRALIAN STUDIES OF THE ECONOMIC VALUE OF TOURISM TO NATIONAL PARKS

Australian Studies Identified

This review of Australian studies of the economic value of tourism to national parks has focused on those employing the ‘spending by tourists’ approach to measurement. Because the provision of information to decision makers is a theme of this project, an attempt has been made to include all studies commissioned by park management agencies or other government departments. Most of these studies for government have employed the ‘spending by tourists’ approach. A number of these studies have used a consumer surplus approach however have been included for completeness. This review does not include a large number of studies that only measure consumer surplus. The studies identified for the review are listed in Appendix B.

The earliest study reported is from 1994 and studies continue to the present date. Studies have been identified for sites in all states and territories. However the ACT and South Australia have poor coverage as only one national park in the ACT is included in a study of the Australian Alps (Mules, Faulks, Stoeckl, Cegielski (2005) and only one World Heritage Area Site in South Australia is included in Gillespie Economics and BDA Group (2009). Many studies are for a single national park or regional groupings of national parks. Studies with a larger focus worthy of note are: Thapa et al.(2000) including all Tasmanian national parks; Pricewaterhouse Coopers (2003 and 2005 with Parks Victoria) of three major Victorian national parks; Access Economics (2008) study of the Great Barrier Reef and adjacent mainland; Gillespie Economics and BDA Group (2009) covering 15 World Heritage Areas; and Ballantyne et al. (2008) estimating economic values for all Queensland national parks.

Results of a selection of studies are presented below. The studies have been selected to represent the national level and key studies for the states and territories.

Methodologies Employed

Direct spending

Due to the selection process for this literature review, the majority of the studies listed report direct spending by tourists. There is variety in how this is approached. Most of the studies are very clear about how this was defined and how data was collected.

A group of recent studies has placed an emphasis on defining what to include in direct spending. Most of these emanate from work undertaken by Carlsen and Wood (2004) where the concepts of attribution and substitution factors have been introduced in Australia. Lindberg and Denstadli (2004) also explored a variation of the substitution effect at a similar time. Ballantyne et al. (2008) have drawn from the Carlsen and Wood approach and modified it, as discussed in Chapter 2.

The recent trend has therefore been to place more focus on defining a component of spending by tourist to national parks that can be clearly linked to the attractions of national parks in that it would not have occurred if the opportunity to visit the parks was not available. This can be considered a conservative measure of spending.

The studies employing methodologies to identify ‘attribution’, ‘substitution’, ‘NP-associated’ and ‘NP-generated’ and ‘traditional’ and ‘conservative’ spending are indicated in Appendix B.

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Measures of economic contribution

As noted in the previous chapter, roughly half of the studies identified included some form of measure of economic contribution, beyond direct spending. The most popular approach has been to generate flow-on effects for output, value added, GR/S/NP, income and employment (or at least some of these measures) using Input-Output tables.

The main points arising out of a review of methodologies are those discussed in the previous chapter where the practical issues in estimating measures of economic contribution were discussed.

Results of Studies

Australia

Tourism Research Australia (TRA) published national level spending estimates for visitors to national parks/state parks (Tourism Research Australia 2008a).

Method

Data on visitor spending is collected regularly by the NVS and IVS. TRA uses modelling to estimate spending by all tourists using this data. One of the activity categories is visiting 'national parks/state parks'. In 2007, the TRA compiled a report on spending by visitors who had nominated that activity. This is a broad measure of spending as it includes all spending on the trip (for domestic overnight and day trip visitors) and in Australia (for international visitors) by tourists who visited a national park/state park sometime during their trip. The estimates were a sub-set of the TRA modelled expenditure data.

Results

Nearly one quarter of all tourism expenditure in Australia in 2007 was made by tourists who visited national (or state) parks as part of their trip. The expenditure by all tourists who visited national parks was \$15.4 billion, which was 21% of the \$73.6 billion total tourism spend in 2007 (Tourism Research Australia 2008 b,c).

Domestic overnight national (or state) parks visitors spent on average \$146 per night and \$6.6 billion in total. This accounted for 15% of all spending by domestic overnight visitors. Domestic day trip national (or state) park visitors spent \$511 million. This accounted for 3% of all day trip spending. International national (or state) park visitors spent on average \$92 per night and \$8.3 billion in total. Forty-four percent of all overseas visitors visited a national (or state) park and their expenditure represented 54% of all international tourist expenditure.

Fifteen World Heritage Areas

Gillespie Economics and BDA Group produced a report to the Department of Environment, Water, Heritage and the Arts in 2008 which estimates the economic activity associated with 15 of Australia's 17 WHAs (excluding the Great Barrier Reef and Heard Island).

Method

This large-scale study modelled direct expenditure on park management from data supplied by park management agencies. It also modelled visitor expenditure, which is defined as 'money spent by visitors to protected areas during their trip to the region' (page 4). Thus the authors used a broad estimate of tourist spending. Visitor expenditure was estimated from secondary data—estimates of visitor numbers from park management agencies and expenditure from the TRA. No details are provided on the method of compiling the visitor expenditure estimates from the secondary data.

Economic contribution was estimated using regional Input-Output tables, which were constructed for the purpose of this study from state/territory level tables, to best represent the regions in which the WHAs are located. Expenditure on park management and by visitors were separated out in the tables and adjusted for imports. The models were then run to generate results for park management and visitor expenditure.

Direct plus indirect impacts are reported for each WHA on a regional, state/territory and national basis. Note that state/territory impacts are larger than regional impacts due to the state/territory economy providing goods and services that appear as imports at the regional level. Similarly, national level impacts are even higher. The

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measures of economic contribution reported are; output, value-added, income to households, employment.

Results

The addition of the national level contributions from all 15 WHAs gives a national level contribution of:

- \$16 104.3 million in annual direct and indirect national output;
- \$7 246.1 million in annual direct and indirect national value added;
- 83 349 direct and indirect national jobs.

The authors note that 95 per cent of these impacts are from visitor expenditure with the remainder from management expenditure.

Results at the state/territory level for each WHA, for the 15 WHAs grouped by state/territory are summarised in Table 7.

Table 7: Fifteen World Heritage Areas, direct plus indirect state/territory level impacts based on impact of visitor spending, 2006–07

	Output \$million	Value-added \$million	Employment Jobs
New South Wales WHA contribution	4,203.3	1,898.2	21,704
Sydney Opera House	3,221.3	1,447.5	16,448
Gondwana Rainforests NSW	327.3	145.7	1,665
Greater Blue Mountains	305.3	135.8	1,553
Lord Howe Island	14.3	6.3	74
Willandra Lakes	9	4	48
Queensland WHA contribution	4,148.6	1,849.0	24,225
Wet Tropics of Qld	3,036.0	1,354.0	17,654
Fraser Island	705.3	311.8	4,089
Gondwana Rainforests Qld	336.6	148.7	1,938
AFMS Riversleigh	21.8	9.6	126
Victoria WHA contribution	948.9	(Possible error)	5,235
REB and Carlton Gardens	940.5	671.1	5,196
Western Australia WHA contribution	83.7	37.6	503
Shark Bay	60.7	26.7	366
Purnululu	11.7	5.1	71
South Australia WHA contribution	6.0	2.8	47
AFMS Naracoorte	4.6	1.9	29
Tasmania WHA contribution	721.8	313.5	5,372
Tasmanian Wilderness	700.4	303.5	5,131
Macquarie Island	749.0	325.0	5
Northern Territory WHA contribution	257.1	116.9	1,211
Uluru-Kata Tjuta	149.5	66.2	717
Kakadu	48.1	21.1	232

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In order to make further comment on the economic significance of the value measured for the WHAs, they have been compared in this report with data from the Tourism Satellite Accounts for each state and territory. This allows the percentage that WHA value added is of state or territory tourism gross value added (GVA) and the GVA for the entire state or territory economy. A similar comparison has been made for employment. In Table 8 below, the total impacts from Gillespie and BDA (2008) are compared with data from the TSA (Pambudi et al. 2009). All comparisons are of direct plus indirect effects. The comparisons are made on the basis of state or territory level economies, because that information is available from the TSA. However, the regional effects might be significant even if state or territory level effects are not. This is especially likely where WHAs are in the more remote regions and can provide locally important economic and employment opportunities.

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Table 8: Comparisons of WHA results with TSA state and territory values, made for this Report

WHA contributions									
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
Value added, \$ millions									
Tourism direct plus indirect GVA*	11,781	7,207	7,462	1,917	3,101	863	800	596	33,732
State/territory, national total economy GVA*	331,457	239,856	199,507	64,632	149,156	18,373	14,788	22,056	103,9828
WHAs direct plus indirect value-added**	1,898	671	1,849	2	37	313	116		7246
WHA value-added as % of tourism GVA	16.59	9.58	25.52	0.10	1.22	37.35	14.93		22.12
WHA value-added as % of total economy GVA	0.59	0.28	0.95	0.00	0.02	1.75	0.80		0.71
Employment, jobs									
Tourism direct plus indirect employment*	275,000	184800	222,650	56,060	82,560	25,670	17,600	13,350	875,160
State/territory, national total economy employment*	3,383,190	2,620,730	2,153,930	771,740	1,121,340	230,030	107,830	189,910	10,578,700
WHAs direct plus indirect employment**	21700	5235	24225	47	503	5372	1211		83,349
WHA employment as % of tourism employment	7.89	2.83	10.88	0.08	0.60	20.92	6.88		9.52
WHA employment as % of total economy employment	0.64	0.19	1.12	0.00	0.04	2.33	1.12		0.78

*from Pambudi et al 2009

**from Gillespie Economics and BDA Group 2008

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Results from Table 7 and Table 8 are as follows:

- The five NSW WHAs contributed the largest economic value at \$4,203 million in output, \$1,898 million in value-added and 21,704 jobs. This represents a significant 16% of all tourism GVA in the state and nearly 8% of tourism employment.
- The three Queensland WHAs contributed \$4,203 million in output, \$1,898 million in value-added and 21,704 jobs (but this excludes the Great Barrier Reef WHA). The contribution is significant at around one quarter of all tourism value added for Queensland and 10% of tourism employment.
- The contribution of the single Victorian WHA was relatively large as it is an urban site in Melbourne and has a large number of visitors. Output was \$948 million. The value added of \$671 million reported for the Royal Exhibition Building and Carlton Gardens is used in the analysis in Table 8. Employment was 5,325 jobs. The WHA tourism represents about 10% of all tourism value added and 3% of tourism employment.
- The next highest economic value is for Tasmania, with output of \$721 million, value-added of \$313 million and 5,372 jobs. The comparison shows that this is significant in terms of both Tasmanian tourism and the whole economy. The WHA tourism contributes 36% of tourism value added and 20% of tourism jobs. It contributed nearly 2% of all value added in the economy and over 2% of employment.
- The two Northern Territory WHAs contributed \$257 million in output, \$116 million in value added and 1,211 jobs. This was 14 % of tourism value added and nearly 7% of tourism employment.
- Western Australia's two WHAs contributed \$83 million in output, \$37 million in value-added and 503 jobs. These contributions are likely to be regionally significant in these more remote areas.
- The single WHA in South Australia contributed \$6 million in output, \$2.8 million in value-added and 47 jobs. This was not significant in terms of South Australian tourism or the whole economy but is likely to have regional benefits in the vicinity of the WHA.

New South Wales

Studies of the contributions of national parks to regional economic development

A series of studies undertaken for New South Wales national parks and marine parks has addressed direct spending and total regional economic contribution. Studies from 1995 to 2000 focused on the regional economic impact of single national parks. More recently, studies have been undertaken on regional groupings of national parks. Methods and results of a selection of the regionally based studies are discussed below.

Method

A fairly standard approach has been taken for the studies since 1995. Spending by visitors to national parks has been estimated based on results of surveys of visitors to national parks and visitor numbers recorded by the park management agency. The direct spending measure reported is spending by visitors to parks in a defined region that was made on local goods and services in that region. This is a broad spending measure. For north-east NSW, direct expenditure was estimated based on visitor surveys conducted in seven national parks. This was extrapolated to 51 protected areas with visitor numbers of over 1,500 per annum. The recent studies also included analysis of the economic impacts of spending by the government agency on park management. Regional Input-Output tables have been augmented with this data to model direct and indirect effects.

Results

Results for a number of these studies are shown in Table 9. The results show that the regional value-added can be in the millions of dollars even in the more remote regions and in the hundreds of millions of dollars for the larger regions. Employment can be in the hundreds of jobs in the more remote regions and in the thousands of jobs in the larger regions. In the more remote regions the economic impact of park management expenditure rivals that of visitor expenditure whereas in the larger regions, visitor expenditure has a much greater contribution to overall economic impact.

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Table 9: Regional economic impact of expenditure on park management and by national park visitors, New South Wales

	North East NSW	Far South Coast NSW	Western Pastoral Region	Wheat-Sheep Belt	Greater Shoalhaven
Park management					
Direct expenditure		\$7.6 m	\$5.8 m	\$8.4 m	\$13.5 m
Total* regional value added	\$17.0 m	\$8.0 m	\$6.3 m	\$7.5 m	\$13.0 m
Total* household income	\$13.0 m	\$4.8 m	\$4.0 m	\$5.3 m	\$8.0 m
Total* employment,	265 jobs	108 jobs	101 jobs	138 jobs	208 jobs
Visitor expenditure					
Direct expenditure in the region	\$111.0 m	\$78.0 m	\$8.7 m	\$11.7 m	\$207.0 m
Total* regional value added	\$107.0 m	\$54.0 m	\$6.1 m	\$8.8 m	\$152.9 m
Total* household income	\$59.0 m	\$19.5 m	\$2.6 m	\$4.1 m	\$67.8 m
Total* employment	1,650 jobs	813 jobs	102 jobs	157 jobs	3,219 jobs

*direct plus indirect

Victoria

Three Victorian National Parks

The economic value of tourism to Port Campbell, Grampians and Wilson's Promontory National Parks was report by Pricewaterhouse Coopers and Parks Victoria in 2005.

Method

Park management expenditure and visitor expenditure (from secondary data) were analysed to find the economic contribution in terms of total state level output. For each of the national park regions, an attribution weighting was estimated and applied to estimate the expenditure due to the attraction of the national park.

Results

Table 10: Economic value of tourism to three Victorian national parks

	Port Campbell \$ millions	Grampians \$ millions	Wilson's Promontory \$ millions	Total \$ millions
Expenditure on park management	3.1	2.6	1.8	7.5
Visitor expenditure attributed to the national park	145.5	186.6	37.0	369.1
Total economic benefit to the state (total output)	190.4	246.0	50.0	486.6

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Hughes et al. (2009) have commented that there is an element of double counting in the estimates and suggest that if the methodology were revised to exclude a repeat visit factor and possible double counting of daily spending, the results for the Grampians would be \$98 million per annum. This is a result much closer to that derived by Hughes et al. from survey work (see below).

Grampians National Park

A study of the direct expenditure by visitors to the Grampians National Park (Hughes et al. 2009).

Method

A survey of visitors to Halls Gap adjacent to the Grampians was conducted to collect expenditure data. The methodology of Carlsen and Woods (2004) was used to determine the attribution factor. Hughes et al. (2009) argue that the direct expenditure is the best measure for small regions and do not support the use of indirect effects calculated using multipliers for such regions

Results

Average per day spending was \$70.80 and this led to an estimate of total annual spending by all visitors to the region of \$96.4 million. The attribution factor calculated from the survey responses was 78.1%. The annual direct expenditure attributable to the Grampians National Park was \$75.3 million.

Queensland

Four national parks

A study of four Queensland national parks included the regional and statewide flow on effects (Lindberg and Denstadli 2004).

Method

Visitor surveys were conducted in four Queensland national parks. Expenditure data for time spent in the region and in the state were collected. Respondents were asked what alternative itinerary they would have taken in the region and state if the park they were visiting did not exist. The expenditure by traditional method includes all the expenditure in the region by all park visitors. The conservative expenditure is based on day's expenditure that would have been lost if the park did not exist.

Flow-on effects were estimated at the region level based on expenditure in the region. Input-Output tables with a tourism sector were available for Queensland regions, and the national park expenditure was separated out. Flow on effects were estimated at the state level based on data collected in the survey on both regional expenditure and additional expenditure in the state.

Results

The expenditure results reflect the difference in the locations and visitor numbers to the national parks. The results for each national park are shown in Table 11. The conservative expenditure is similar in concept to NP-generated measure reported by Ballantyne et al. (2008). The number of visitors who would have cancelled their trip shows similar proportions to the Ballantyne et al. (2008) study, at around one fifth for all sites. However, the conservative measure is a higher proportion of traditional expenditure as it takes into account that some visitors may have shortened their time spent in the region.

The inclusion of expenditure in the region and also all expenditure in the state by a visitor leads to a high degree of attribution of value to the particular national park. Most studies adopt a regional expenditure boundary, therefore the regional results are likely to be most useful for comparison with other studies.

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Table 11: Four Queensland national parks, economic values

			Conservative as % of traditional	Traditional expenditure Regional effects, direct plus indirect		Traditional expenditure State effects, direct plus indirect	
	Traditional expenditure \$ million	Conservative expenditure \$million	%	Contribution to GRP \$ million	Employment Jobs	Contribution to GSP \$ million	Employment Jobs
Girraween	3.2	1.6	50	1.2	25	5.4	103
Eungella	10.9	3.8	34	4.1	80	44.0	836
Daintree	184.4	106.1	57	54.1	1,366	411.7	7,813
Carnarvon	6.3	4.8	76	2.0	41	17.3	328

State level national park tourism

Ballantyne et al. (2008) provided estimates of Queensland state level, national park tourism spending and the contribution of this to GSP.

Method

A stratified approach was taken to select four tourism regions to represent all tourism regions in Queensland. Surveys of tourists were undertaken in parks in the selected regions, to collect expenditure data. The survey results were extrapolated to all of Queensland for national park associated (NP-associated) spending and national park generated (NP-generated) spending. The contribution of the NP-generated spending to GSP was estimated from pre-existing state level Input-Output tables with a tourism sector. Day trip visitors were excluded from the analysis. More details are included in Chapter 4 of this report.

Results

NP-associated spending was \$4.4 billion per annum, which was 28% of total Queensland tourism spending (excluding day trips). The NP-generated spending was \$749 million for the year and this was 4.7 per cent of total tourism spending in Queensland. The contribution to GSP was \$345 million or 4.9 per cent of the tourism sector's contribution to GSP.

Western Australia

Southern Forests and Gascoyne Coast Regions

Carlsen and Wood (2004) estimated direct spending and developed the attribution and substitution measures for these regional studies.

Method

Surveys were conducted of visitors to these regions to collect data on expenditure, the attractions visited and visitor opinions on whether they would have visited if the particular natural environment attractions did not exist. The attribution factor was the percentage of all visitors who were attracted by natural environment features, based on their behaviour and motivation. The attribution factor was applied to all tourism expenditure to estimate attribution expenditure. The substitution factor was based on respondent who said that they would not have visited the state if the natural environment attractions did not exist. The substitution factor was applied to attribution expenditure to estimate substitution expenditure. Estimates of total visitor numbers to the region were constructed from Bureau of Tourism Research data.

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Results

Table 12: Southern Forests and Gascoyne Coast Regions Western Australia, economic values

	Southern Forest Region	Gascoyne Coast Region
Average expenditure per person per day	\$89.70	\$81.30
Total direct spending—all tourists	\$70.5 million	\$138 million
Attribution factor	88%	92%
Attribution expenditure	\$61.9 million	\$127 million
Substitution factor	9.2%	18.5%
Substitution expenditure	\$5.7 million	\$23.5 million

Tasmania

Two studies look at Tasmanian wide impacts of tourism to Tasmanian national parks.

Method

Tharpa et al.(2000) used a CGE model to estimate impacts of visitor expenditure on the Tasmanian economy. Madden et al.(2002) estimated consumer surplus measures of Tasmanian national parks and used the CGE model used by Tharpa et al.(2000) to estimate impacts of potential park entry fees, but did not provide an update on the Tharpa et al.results for spending by tourists and economic impact.

Results

Tharpa et al. (2000) reported expenditure of \$145.2 million by national park visitors in 1998/99. The modelled economic contribution was 1.26 percent greater gross state product than if there were no national park visits and employment of 4200 or 2.16 percent of state jobs.

Northern Territory

Kakadu National Park

A study by Tremblay (2007) estimates the tourism spending associated with the Kakadu National Park in the context of the Top End region and the Northern Territory.

Method

The study follows the methodology of Carlsen and Wood (2004) in that attribution and substitution factors are developed. The study develops methodology to estimate visitor spending from a visitor survey supplemented by data from the Northern Territory Tourism Monitor.

Results

Total spending by tourists to the Top End region was \$58.1 million to 60.4 million (depending on method used). The overall attribution factor was calculated as 88%, based on results for international (91.6%), interstate (89.0%) and intrastate (70.1%) tourists. Attribution expenditure was \$51.1 million. Substitution factors were generated for both the Top End Region (30.9%) and the Northern Territory (16.2%). From a Top End perspective, \$15.79 million would not have been spent in the region if Kakadu National Park did not exist. From a Northern Territory perspective, \$8.28 million would not have been spent in the Territory if Kakadu National Park did not exist.

Watarraka National Park

Watarraka National Park in central Australia contains attractions including Kings Canyon and is visited by 250,000 people per annum. Tremblay and Carson (2007) estimated direct spending and attribution and substitution expenditure from secondary data.

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Method

Visitor spending was estimated from secondary data, primarily from the Northern Territory Tourism Monitor and the report provides the methodology used. The attribution factor was assumed to be 100 per cent of this region with few other attractions. The substitution factor of 7 per cent was developed based on ‘logical argument and triangulation (rather than primary data)’ (page vii).

Results

Direct spending was estimated at \$40.55 million per annum, and attribution expenditure was assumed to be the same. The estimated substitution value from the Central regional perspective was \$2.84m.

Chapter 4

THE QUEENSLAND STUDY

Background to the Queensland Study

This chapter presents key features of the study of the economic value of tourism to national parks in Queensland. The Queensland Government co-funded this study with the STCRC. The study had the aim of producing results that could be used with confidence by the Queensland Government. Therefore, the study employed methodology that drew on previous studies. However, as will be seen, some new approaches were developed for the study.

There were two major requirements set by the Queensland Government partners in the study that went beyond previous methodology. One was to build a picture of the economic value of tourism to all national parks in Queensland. The Queensland Government had only ten year old estimates of the economic value of tourism to national parks, which were from a desk-based assessment. There was a desire to have up to date and comprehensive estimates of economic value. The other requirement was to produce a measure of economic value in the form of contribution to Gross State Product, which was the economic indicator preferred by Queensland Treasury. The Queensland Government also wanted a methodology that is repeatable in the future.

For the STCRC, the study had the aim of testing the application of methodology, in particular to provide regional level and state level estimates of the economic value of national park tourism. This was to provide a basis for developing a handbook for wider use, as part of this STCRC project. The goals of the Queensland Government and of this overall STCRC project were therefore clearly aligned. Officers from the Queensland Parks and Wildlife Service² and Tourism Queensland formed a Steering Committee for the project and contributed their expertise in key steps of the study.

The study was conducted in 2007 and 2008 and a technical report was published by the STCRC in 2008. This report, by Ballantyne et al. (2008), contains considerable information on the conduct of the study and its results. Therefore only key features which are relevant to the methodology of the handbook are presented here. Some results of further analysis are also included in this chapter.

Major Steps

Study design and conduct

It was decided to estimate both a broad and narrow measure of tourists' spending. Broad spending by visitors to national parks on a regional basis was not available from published data. In addition, there was no way to derive the narrow estimate, without surveying tourists as to their likely behavior if the parks which they were visiting did not exist. Therefore it was decided to survey tourists to collect data on their spending and on their likely behavior if they could not visit the national parks

The questionnaire design was based on one published by Wood, Glasson, Carlsen and Hopkins (2006). This included the set of questions on what tourists thought they would have done if they could not visit the national parks. The final five page questionnaire included questions contributed by the Queensland Government partners.

Queensland has over 500 national parks. The state is divided into 12 'tourism regions'. The study had an aim of developing methodology that could be used at this regional level and also be extrapolated to results for the whole of the state. The cost of surveying in all 12 regions was considered prohibitive and so a means of sampling to represent the whole of the state was required.

² At the time of that study, the Queensland Parks and Wildlife Service was a division of the Environmental Protection Agency. In 2009, it became a division of the Department of Environment and Resource Management.

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This was approached by using the tourism regions as a means of stratifying sampling. The tourism regions were the logical choice as the data on tourism available from the National Visitor Survey (TRA 2009a) and the International Visitor Survey (TRA 2009b) are available for these regions and could therefore be used to define the population of tourists to the region, and to calculate the population of those tourists who visit national parks.

The 12 tourism regions were classified into four types, using expert opinion from QNPWS and Tourism Queensland officers. An additional region was also developed for the Queensland study by altering boundaries of surrounding regions. The classification is shown in Table 13. One region representing each of the four types was selected and surveys were conducted in these.

Table 13: Classification of tourism regions

Classification	Characteristics of tourism to parks	Tourism Regions	Parks surveyed
Iconic	high visitor numbers, likely high attraction of visits to the region due to the existence of the parks and high average direct expenditure value	Tropical North Queensland (including Cairns), Mackay, Whitsundays, Wide Bay, Great Sandy	Cairns region parks
Urban	high visitor numbers, likely low attraction of visits to the region due to the existence of the parks and average direct expenditure value	Brisbane, Gold Coast, Sunshine Coast	Gold Coast hinterland parks
Remote	low visitor numbers, likely high attraction of visits to the region due to the existence of the parks and average direct expenditure value	Capricorn, Carnarvon, Townsville, Toowoomba,	Carnarvon National Park
Outback	low visitor numbers, potentially low attraction of visits to the region due to the existence of the parks and average direct expenditure value	Outback	Outback parks: particularly Lark Quarry & Pine Gully (Hughenden region)

The sampling strategy followed that of Carlsen and Wood (2004) whereby any tourists in the tourism region could be included in the survey. Over 400 tourists were surveyed in the Cairns, Gold Coast and Carnarvon regions and over 200 in the outback region. Most surveys were conducted face-to-face, however questionnaires were left with respondents to mail back.

Analysis

Measures of spending by tourists

The population of visitor nights in a tourism region, by tourists who visited a national park, was estimated from NVS and IVS data. While a single estimate was able to be made from the NVS for domestic visitors, a range had to be estimated for international visitors.

At the analysis stage, a selection was made of those respondents who had visited a national park while in the tourism region. The sample sizes were reduced, but this provided a basis for matching the sample to the population of visitor nights of tourists who had visited a national park.

The mean spending per person per visitor night was estimated from the data—for each sample region. The report by Ballantyne et al.(2008) details the use of a Monte Carlo type simulation analysis to take account of variability in the data and to provide estimated sample means. The broad measure of spending was estimated by multiplying these means by the population for each sample region. This was termed ‘NP-associated spending’. There is a distinction between the NP-associated spending and attribution spending (Carlsen and Wood 2004). NP-associated spending is based on tourists who visited national parks, while attribution spending is calculated

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as a proportion of all tourism spending in a region, based on motivational factors.

The proportion of NP-associated spending that is due to the parks attraction (that is, would not have occurred if the parks were not available to visitors) was termed the NP-generated spending factor. It was calculated from the sample of respondents who had visited a national park as the proportion of respondents who would not have visited the state, or who would have holidayed out of the state. The factors are all around 20 per cent or less, as shown in Table 14. Again, this differs from the substitution factor (Carlsen and Wood 2004) due to the two factors referring to different populations. The NP-generated factor applied to NP-associated spending gives the narrow measure of NP-generated spending.

Table 14: NP-generated (NPG) factor

Region (category)	NPG factor (%)
Cairns (iconic)	20.6
Carnarvon (remote)	18.5
Outback (outback)	19.1
Gold Coast (urban)	12.2

The NP-associated spending results for the 13 regions were estimated using the mean spending per person per visitor night for the four sample regions applied to similarly classified regions and the populations for each region from the NVS and IVS data.

The NP-generated spending results for the 13 regions were estimated by applying the NP-generated factor for the four sample regions to similarly classified regions.

Measures of economic contribution

It was possible to use an existing Tourism Satellite Account for Queensland (Office of Economic and Statistical Research, 2006) to generate an estimate of the contribution of national park tourism spending to Gross State Product (GSP). The proportion of GSP to total expenditure for all Queensland tourism derived from the TSA (46%) was used by Ballantyne et al. (2008) to estimate the contribution to GSP from NP-generated spending.

Additional analysis in this report

In subsequent analysis for this report, the TSA was also used to estimate direct employment supported by the NP-generated spending by applying the ratio of full time equivalent jobs to tourism expenditure to for Queensland to the NP-generated spending. The ratio of full time equivalent jobs supported by tourism spending estimated from the TSA was 1 job per \$169,800 in spending.

Also for this report, the contribution to GSP of NP-generated spending was compared with funding for national park management. The annual funding for national parks management includes activities to manage visitor presence in national parks as well as conservation oriented activities. The research team confirmed with the Queensland Parks and Wildlife Service that the information made available by the agency on the visitor management component of their budget included; capital works, visitor information, on ground services and forward planning. A simple comparison was made between annual value added from NP-generated spending and the annual visitor management budget.

Results

Measures of spending by tourists

The NP-associated spending for Queensland was estimated at \$4.4 billion for the year (excluding day trip visitors). Total tourism spending in Queensland was \$15.9 billion in 2007 (Tourism Research Australia 2008b,c). This figure includes spending by international and Australian tourists inbound to Queensland as well as residents of the state taking trips at least overnight, (also excluding day trip visitors). The NP-associated spending by national park visitors was 28 per cent of this total.

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The NP-generated spending was \$749 million for the year and this was 4.7 per cent of total tourism spending in Queensland.

Measures of economic contribution

The contribution to GSP was \$345 million or 4.9 per cent of the tourism sector's contribution to GSP.

Additional results in this report.

An estimated 4413 full-time equivalent direct jobs in the tourism sector, or 4.2 per cent of tourism full-time equivalent employment in Queensland, was supported by the NP-generated expenditure of \$749 million per year

In order to place the contribution to GSP into some context for decision makers, it is useful to compare it with what is currently spent on management that can be attributed to tourism use of national parks. The Queensland government spent \$67 million on visitor management in 2008 (McNamara, 2008). A simple comparison shows that our conservative estimate of the contribution to GSP of NP-generated spending (\$345 million) is over five times the government visitor management budget.

Chapter 5

DEVELOPING METHODOLOGY—BACKGROUND TO THE HANDBOOK

Introduction

The aim of the handbook is to give clear advice on how to conduct a study to estimate the economic value of tourism to national parks, using the spending by tourists approach. The aim is to describe the methodology so that studies can be replicated across regions and states and territories and across time.

The methodology used for the Queensland study provides the basis for the handbook. However, some issues that came to light during that study and further reflection and advice have led to some modifications aimed at improving the methodology. This chapter provides background to the handbook; in particular explaining why certain approaches are included.

Reflection on the Queensland Study

The Queensland study adopted several key approaches that are recommended for the methodology going forward. These are:

- The study adopted the ‘spending by tourists’ approach to measure economic value.
- The dollar value estimated for spending was also converted into measures of economic contribution.
- The study adopted collection of data by surveys of tourists.
- Stratification based on tourism regions enabled state level values to be estimated.
- The analysis was based on data from only tourists who had visited a national park.
- The study provided both broad and narrow measures of spending by tourists.
- The broad measure (NP-associated spending) were all spending in the target region (the sub-state tourism region) by all tourists who visited a national park during their visit. This value was reported as associated with national park visits but was qualified as being not all directly due the ability to visit parks.
- The narrow measure (NP-generated spending) was derived based on visitors expected behaviour if the parks were not available to visit, collected as part of the survey. The narrow measure included only the spending that would not have occurred in the state if the parks were not available to visit.

Following further reflection, including advice from an international referee, there are a number of areas where the methodology will benefit from some modifications and more clarity on how it should be applied. These revolve around:

- a general approach using tourism regions as the basis for studies
- a clearer definition of the population to be sampled
- a better approach to calculating the population of international visitors to national parks in a region
- a sampling strategy based on information about the population
- simple questionnaire design
- the potential to generate other measures of economic contribution
- interpreting results to stakeholders.

Each of these issues are discussed in turn.

Modifications Included in the Handbook

Using tourism regions as the basis for studies

The handbook recommends that the tourism regions in each state and territory are used as the basis for stand-alone regional level studies or for compilation to state or territory level estimates. This uses the advantage of the regional level data available from the NVS and IVS to define the population of all tourists and of tourists who visit national parks.

The number of tourism regions in each state and territory is shown in Table 15. For most states and territories, the regions cover areas where it may be expected that tourism patterns are internally similar. However, for Western Australia, the division of the state into only five tourism regions means that sub-tourism regions would be more appropriate for this type of study. Carlsen and Wood (2004) took the sub-regional approach in their study of two areas in Western Australia and their approach would be appropriate for other sub-regions in that state.

Table 15: The number of tourism regions in each state and territory

State or Territory	Number of tourism regions
New South Wales	16
Victoria	21
Queensland	12
South Australia	13
Western Australia	5
Tasmania	7
Northern Territory	6
Australian Capital Territory	1

Definition of the population to be sampled

In their work on regions in Western Australia, Carlsen and Wood (2004) focused on regions where natural environment attractions are significant features of the overall attractions of the regions. Their approach was adopt all tourism to the region as their population and to survey any tourists to the region.

The Queensland study initially followed the approach of Carlsen and Wood (2004) of surveying any tourists in a region. It was found that it was difficult to reconcile sample and population data. Therefore the Queensland study approach was modified and adopted as its population the number of visitor-nights spent in a region by domestic and international tourists who had visited a national park. This population was derived from the NVS and IVS. Therefore only survey records for tourists who had visited a national park were used in the analysis. This led to a reduced sample size in all regions. The sample sizes were still adequate for analysis and Monte Carlo type analysis was used to increase certainty on the expected means for spending generated from the samples.

The handbook recommends that the population to be sampled is tourists who visit national parks. This will maximize the sample size able to be obtained from any study budget. This is best achieved by surveying people in national parks or at points where they access national parks.

Calculating the population size

Data from the NVS and IVS are available from TRA. This can be accessed by requesting the required data from TRA. Experienced researchers can access TRA's Compact Disk Monitor of Tourism Activity (CDMOTA) and analyse it themselves. The population of visitor-nights spent in a region by domestic tourists who visited a national park is able to be derived from the NVS regional data. This is based on all domestic visitors who visited a national park/state park.

It is not so straightforward to derive equivalent visitor-nights for international visitors. The IVS does not

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collect information on visits to attractions at a regional level for all respondents, but does so for a sub-sample of respondents. For the purposes of the Queensland study, a range of possible international visitor-nights was estimated (as described in Ballantyne et al. 2008). The handbook provides two alternative ways to estimate the population of international visitors.

Stratifying the sample

The Queensland study did not adopt stratification of the sample to reflect the population. The handbook recommends that the population data for a region is put together before the survey is conducted. If possible, key variables should be explored to see if there are any significant differences that warrant stratifying the sample. For Australia, spending per night by domestic overnight tourists is generally greater than by international tourists. This suggests that at least, the sample size should be proportionate to the number of domestic and international visitor nights. However, this decision should be made for each region based on the evidence from the population data. The overall sample size for the survey will be determined by selecting a suitable sample in each stratum.

Adopting simple questionnaire design

The questionnaire used in the Queensland study was five pages long and included questions for the economic component of the study and on satisfaction with national park facilities. While it is tempting to add questions to a survey that will be put out to the field, it is strongly recommended that the questionnaire be kept as short and simple as possible. The questions on spending in the region are quite onerous on respondents and interviewers as they require careful recall of amounts spent while in the region and anticipated spending and of how many people the spending covered. The basic questionnaire is included in the handbook and it is recommended that nothing be added.

Generating and reporting other measures of economic contribution

In order to meet the preference of Queensland Treasury Department, the Queensland study focused on reporting the contribution to GSP. The Queensland study used the Office of Economic and Statistical Research Queensland Tourism Satellite Accounts as a basis for estimating the contribution to GSP, and this TSA was also used to estimate direct employment—reported in Chapter 4 of this report. This TSA includes only direct effects and does not report flow on effects. Therefore flow-on effects were not included in the Queensland study.

However, as outlined in Chapter 2, there are other measures of economic contribution that are able to be generated provided an economic model with a tourism sector, at the same scale is available or an Input-Output table is augmented with the tourist spending data for the purposes of the study. In Chapter 2, it is noted that a number of different measures may be of interest to stakeholders. The measures suggested in the handbook are not limited to the measures reported in the Queensland study. The handbook suggests the option of modelling spending in an Input-Output model to generate indirect and total effects.

Interpreting results to stakeholders

Feedback from officers of the Queensland government partners who received the report was that, as non-economists, they found it difficult to know which numbers to quote for which purpose. The report was written in a form that would be accessible to people with economic expertise in the Treasury department. However, people in the government agencies without an economic background found difficulty in speaking about the results to people in Treasury and to other clients. Following this feedback, it is recommended that three key steps be taken in working with those who commission the research:

- at the start of the project—a discussion of the measures to be developed and what they mean
- when results are available—a briefing on what the results are and what they mean and how to use them in discussions with the various stakeholders
- preparation of a plain English summary of results and what they mean.

Chapter 6

CONCLUSIONS

This technical report has provided a guide to the economic theory underpinning the measurement of the economic value of tourism to national parks and protected areas. The spending by tourists approach is a popular amongst state and territory agencies which are commissioning research to suit decision makers. However it should be remembered that using consumers surplus to measure changes in economic welfare is appropriate where a cost benefit analysis type approach is to be used—such as for decisions to change land uses.

Generally studies adopt a broad measure of the economic value of tourism to national parks, and cover all spending by tourists who visit national parks while in the region. Some recent studies have also included a narrow measure, to represent the net value of the park's attraction to the economic region of interest (region or state or territory). This is based on spending that would not have occurred in the region if the opportunity to visit the parks did not exist. This has proved to be significantly smaller than the broad measures. Further research is warranted on how to best incorporate into the narrow measure not only tourists who would have substituted a trip to another region altogether, but also the potential reduction in length of stay in a region by tourists if the opportunity to visit parks were not available.

Many studies go beyond reporting direct spending and also interpret this in terms of the target economy by generating measures of economic contribution. The range of measures of economic contribution is discussed as it is important that stakeholders are made aware of what the various measures mean and how they may be used.

A review of Australian studies that use the spending by tourists approach identified studies in all states and territories, however with poor coverage in South Australia and the ACT. National level estimates are available from the NVS and IVS data for 2007. These show that spending by tourists who visited national parks/state parks was nearly a quarter of all tourism spending in Australia in 2007. A study of 15 World Heritage Areas illustrated that some of these are significant at the state or territory level and others are regionally important in terms of economic contribution.

The study undertaken as part of this project for the STCRC to estimate the state-wide economic contribution of national park tourism in Queensland is summarised. This study was important in testing a methodology to select a sample of tourists to survey, given that there are over 500 national parks and protected areas in the state. Stratification based on tourism regions was employed.

Following consideration of the method and results of the Queensland study, a somewhat revised methodology had been proposed. This is written up in detail in the handbook that accompanies this technical report.

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**APPENDIX A: AUSTRALIAN STUDIES OF THE ECONOMIC VALUE OF TOURISM TO NATIONAL
PARKS AND PROTECTED AREAS**

State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
New South Wales	1995	Bennett, J.	<i>Economic Value of Recreational Use—Gibraltar Range and Dorrigo National Parks</i>	Gibraltar Range and Dorrigo National Parks	<ul style="list-style-type: none"> • consumer surplus 	NSW National Parks and Wildlife Service
	1995	Powell, R. & Chalmers, L.	<i>Regional Economic Impact—Gibraltar Range and Dorrigo National Parks</i>	Gibraltar Range and Dorrigo National Parks	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) • 	NSW National Parks and Wildlife Service
	1997	Gillespie, R.	<i>Economic Value and Regional Economic Impact—Minnamurra Rainforest Centre, Budderoo National Park</i>	Budderoo National Park	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) • 	NSW National Parks and Wildlife Service
	1998	NSW National Parks and Wildlife Service	<i>The Contribution of Coolah Tops National Park to Regional Economic Development</i>	Coolah Tops National Park	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	NSW National Parks and Wildlife Service

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State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
New South Wales Continued	1999	Christiansen & Conner	<i>The contribution of Montague Island Nature Reserve to regional economic development</i>	Montague Island	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	NSW National Parks and Wildlife Service
	2001	Powell & Chalmers	<i>The Contribution of Warrumbungle National Park to Regional Economic Development</i>	Warrumbungle National Park	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	NSW National Parks and Wildlife Service
	2001	NSW National Parks and Wildlife Service	<i>The Contribution of Sturt National Park, Kinchega National Park and Mutawintji National Park to Regional Economic Development</i>	Sturt, Kinchega and Mutawintji National Parks	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	NSW National Parks and Wildlife Service
	2003	Gillespie Economics	<i>Fitzroy Falls Visitor Centre: The economic impact of management and visitor expenditure</i>	Fitzroy Falls	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	NSW National Parks and Wildlife Service
	2004	Bultjens & Luckie.	<i>Economic Impact of selected National Parks in North-East New South Wales</i>	National Parks in North-East New South Wales	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, employment (using IO multipliers from secondary data) 	Sustainable Tourism Cooperative Research Centre

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State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
New South Wales Continued	2005	Mules et al.	<i>The Economic Value of Tourism in the Australian Alps</i>	Australian Alps (ACT/NSW/Vic)	<ul style="list-style-type: none"> • direct expenditure • flow on effects (using IO multipliers) • consumer surplus 	Sustainable Tourism Cooperative Research Centre
	2006	Gillespie Economics	<i>Impacts of Protected Areas on the Regional Economy of NE NSW</i>	North-East New South Wales	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) • consumer surplus 	NSW Department of Environment and Conservation
	2006	Centre for Agricultural and Regional Economics	<i>Impact of National Parks on the Regional Economies of the NSW Far South Coast</i>	NSW Far South Coast	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	Report Prepared for the NSW Department of Environment and Conservation.
	2006	Centre for Agricultural and Regional Economics	<i>Impact of National Parks on the Western Pastoral Region of NSW</i>	Western Pastoral Region of NSW	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	Report Prepared for the NSW Department of Environment and Conservation.
	2006	Centre for Agricultural and Regional Economics	<i>Impact of National Parks on the Regional Economies of the NSW Wheat-Sheep Belt</i>	NSW Wheat-Sheep Belt	<ul style="list-style-type: none"> • direct expenditure • direct plus indirect: output, GRP, income, employment (using modelled IO multipliers) 	Report Prepared for the NSW Department of Environment and Conservation.

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State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
Victoria	2003	Pricewaterhouse Coopers	<i>Economic contributions of Victoria's parks</i>	3 Victorian parks—Port Campbell, Grampians, Wilson's Promontory	<ul style="list-style-type: none"> • direct expenditure • flow on effects (using IO multipliers) • from secondary data) 	Parks Victoria
	2005	Pricewaterhouse Coopers, Parks Victoria	<i>The Value of Parks: The economic value of three of Victoria's national parks</i>	3 Victorian parks – Port Campbell, Grampians, Wilson's Promontory	<ul style="list-style-type: none"> • direct expenditure • flow on effects (using IO multipliers) • from secondary data) 	Parks Victoria
	2009	Hughes et al.	<i>Estimating the economic, social and environmental value of tourism to protected areas</i>	Grampians	<ul style="list-style-type: none"> • direct expenditure • attribution expenditure 	Sustainable Tourism Cooperative Research Centre
Queensland	1997	Driml	<i>Towards sustainable tourism in the Wet Tropics World Heritage Area</i>	Wet Tropics WHA	<ul style="list-style-type: none"> • direct expenditure • flow on effects (using IO multipliers) • from secondary data) • consumer surplus 	Wet Tropics Management Authority
	2002	Tisdell & Wilson	<i>Economic, educational and conservation benefits of sea turtle based ecotourism</i>	Mon Repos Conservation Park	<ul style="list-style-type: none"> • direct expenditure • substitution expenditure 	Sustainable Tourism Cooperative Research Centre

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State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
Queensland Continued	2003	Bureau of Tourism Research	<i>Assessment of tourism activity in the Great Barrier Reef Marine Park region</i>	GBRMP and adjacent mainland	<ul style="list-style-type: none"> • direct expenditure 	Bureau of Tourism Research
	2004	Lindberg & Denstadli	<i>Impact of National park visitation on rural economies and government expenditure in Queensland</i>	Girraween, Eungella, Daintree, Carnarvon	<ul style="list-style-type: none"> • direct expenditure • conservative expenditure • direct plus indirect: output, GRP/GSP, income, employment (using modelled IO multipliers) 	Sustainable Tourism Cooperative Research Centre
	2008	Access Economics	<i>Economic contribution of the GBRMP 2006–07</i>	GBRMP and adjacent mainland	<ul style="list-style-type: none"> • direct contribution—value added • (all tourism) 	Access Economics
	2008	Ballantyne et al.	<i>Valuing tourism spend arising from visitation to Queensland national Parks</i>	All Qld Parks	<ul style="list-style-type: none"> • NP-associated spending • NP-generated spending • contribution to GSP (from secondary data) 	Sustainable Tourism Cooperative Research Centre
Western Australia	2004	Carlsen & Wood	<i>Assessment of the economic value of recreation and tourism in Western Australia's National Parks, Marine Parks and Forests</i>	South West Forests, Gascoyne area	<ul style="list-style-type: none"> • attribution expenditure, substitution expenditure 	Sustainable Tourism Cooperative Research Centre

TECHNICAL REPORT

State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
Tasmania	2000	Thapa, Madden & Giesecke	<i>The Contribution of the Parks and Wildlife Service's Estate to the Tasmanian Economy in 1998/99,</i>	All Tasmanian national parks	<ul style="list-style-type: none"> • direct expenditure • contribution to gross state product and employment using CGE model 	Report to the Department of Primary Industries, Water and Environment, Centre for Regional Economic Analysis, University of Tasmania, Hobart
	2002	Madden J.R., Groenewold N. & Thapa P.J.	<i>Estimating the Value of Tasmanian National Parks to Park Visitors</i>	Freycinet NP, Mt Field NP	<ul style="list-style-type: none"> • consumer surplus 	Sustainable Tourism Cooperative Research Centre
	2008	Syneca Consulting	<i>Economic Impact Analysis for Three Capes Track, Tasman National Park</i>	Tasman National Park	<ul style="list-style-type: none"> • direct expenditure, contribution to GSP, direct and total employment (using IO multipliers • from secondary data) 	Syneca Consulting
Northern Territory	2007	Tremblay	<i>Economic Contribution of Kakadu National Park to Tourism in the Northern Territory</i>	Kakadu (NT)	<ul style="list-style-type: none"> • direct regional tourism expenditure • attribution expenditure, Substitution expenditure 	Sustainable Tourism Cooperative Research Centre
	2007	Tremblay & Carson	<i>Economic Value of Tourism in Watarrka National Park</i>	Watarrka NP (NT)	<ul style="list-style-type: none"> • direct regional tourism expenditure • Attribution expenditure, Substitution expenditure (all from secondary data) 	Sustainable Tourism Cooperative Research Centre

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State/Territory	Date	Author	Title	Study Location	Measures reported*	Publisher
World Heritage Areas	1995	Driml & Common	<i>Economic and financial benefits of tourism in major protected areas'</i>	5 World Heritage Areas	<ul style="list-style-type: none"> • direct expenditure (from secondary data) 	Australian Journal of Environmental Management, vol. 2, no. 1, pp. 19-29.
Australia	2008	Tourism Research Australia	<i>National and State Parks Factsheet 2007</i>	All national and state parks	<ul style="list-style-type: none"> • direct expenditure from NVS and IVS 	Tourism Research Australia
Parks Forum	2008	Parks Forum	<i>The Value of Parks 2008</i>	Includes Grampians, (Pricewaterhouse Coopers); Western Australian regions, (Carlsen and Wood 2004)	<ul style="list-style-type: none"> • results quoted from other studies 	Parks Forum
World Heritage Areas	2009	Gillespie Economics & BDA Group	<i>Economic Activity of Australia's World Heritage Areas</i>	15 World Heritage Areas	<ul style="list-style-type: none"> • direct expenditure from secondary data • direct plus indirect: output, value-added, income, employment (using modelled IO multipliers) • 	Department of Environment, Water, Heritage and the Arts

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***Measures reported**

- direct expenditure—includes measures of spending by visitors/tourists as defined for the study
- attribution expenditure—following Carlsen and Wood 2004, spending by visitors/tourists attributed broadly to the attraction of natural environments/national parks
- substitution expenditure—following Carlsen and Wood 2004, spending by visitors/tourists who would have substituted a trip elsewhere if they could not visit the natural environment/national park attractions
- NP-associated expenditure—following Ballantyne et al. 2008, all spending in the region by visitors/tourists who visited national parks in the region
- NP-generated expenditure—following Ballantyne et al. 2008, all spending in the region by visitors/tourists who visited national parks in the region, who would not have visited if they could not visit the national park attractions
- conservative expenditure—Lindberg and Destanii 2004—all spending in the region by visitors/tourists who visited national parks in the region, who would not have visited if they could not visit the national park attractions
- direct plus indirect effects—generated using Input Output models. These could include output, income and employment and could be presented as flow on or total (direct plus flow on) effects. Where indicated as ‘modelled data’, this indicates the data collected on tourists’ direct expenditure was modelled in a regional/state IO table. Where indicated as ‘secondary data’, the multipliers were ‘borrowed’ from pre existing models considered suitable.
- contribution to GSP—contribution to Gross State Product estimated from Input Output tables
- value added—value added component of direct expenditure estimated from Input Output tables
- consumer surplus—consumer surplus estimated using non market valuation techniques.

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STCRC is the world's leading scientific institution delivering research to support the sustainability of travel and tourism—one of the world's largest and fastest growing industries.

Introduction

STCRC has grown to be the largest dedicated tourism research organisation in the world, with \$187 million invested in tourism research programs, commercialisation and education since 1997.

STCRC was established in July 2003 under the Commonwealth Government's CRC program and is an extension of the previous Tourism CRC, which operated from 1997 to 2003.

Role and responsibilities

The Commonwealth CRC program aims to turn research outcomes into successful new products, services and technologies. This enables Australian industries to be more efficient, productive and competitive.

The program emphasises collaboration between businesses and researchers to **maximise the benefits of research** through utilisation, commercialisation and technology transfer.

An education component focuses on producing graduates with skills relevant to industry needs.

STCRC's objectives are to enhance:

- the contribution of long-term scientific and technological research and innovation to Australia's sustainable economic and social development;
- the transfer of research outputs into outcomes of economic, environmental or social benefit to Australia;
- the value of graduate researchers to Australia;
- collaboration among researchers, between researchers and industry or other users; and
- efficiency in the use of intellectual and other research outcomes.