

Concepts of Tourism Yield and Their Measurement

EXECUTIVE SUMMARY



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Given the substantial scope of the report, some specialisation was inevitable. Larry Dwyer and Peter Forsyth, members of the STCRC economic modelling team, assumed primary responsibility for developing the economic measures. Marg Deery, Liz Fredline and Leo Jago developed the social measures and Sven Lundie developed the environmental measures. That said, the interest of all team members is in moving away from the separate development of yield indicators towards an index of 'sustainable yield'. Unfortunately achievement of this task still represents an ongoing challenge for researchers.

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Introduction

Until recently, tourism industry focus has been on visitor numbers rather than yield. Although there has been much said about the need to move past visitation numbers to more meaningful measures of yield, this has been little more than rhetoric. However, there is now widespread recognition of the fact that tourism visitor numbers have little meaning, with the term 'profitless volume' having been used since the early 1990s. A key theme of the Federal Government's *Tourism White Paper* is that, to attract visitors and generate repeat visitation, Australia's tourism industry must earn a reputation for quality, value and variety. To this end, Australian tourism stakeholders should be pro-active in developing new and innovative products and experiences with a focus on developing 'high-yield' niche markets. A focus on 'yield' is an important aspect of business strategies to maintain and enhance Australia's tourism competitiveness.



Aims and Objectives

The primary aim of this report is to develop tools for measuring and enhancing the yield from tourism at the business, regional and national levels. This overall objective subsumes several more specific objectives:

- First, to clarify the different concepts of tourism yield.
- Second, to develop operational measures of yield at the level of the firm and at destination, regional, state and national levels.
- The final objective involves discussion and analysis of the policy implications of the study.



Concepts of Yield

Yield has many dimensions. It can be viewed from the perspectives of a business, an industry, a particular niche market or a nation. Using a narrow definition of 'yield', as used by many tourism stakeholders (and the viewpoint adopted in the White Paper), the concept refers to the expenditure injections of tourists (sales revenues) or the profitability of catering to different visitor markets. Yield can be defined purely from an accounting perspective where it approximates sales revenues per visitor or the financial rate of return to operators, or gross operating surplus of different industry sectors. Alternatively, the profitability to the tourism industry of different market segments can be assessed. Yield can also be defined from a wider economic perspective where it is associated variously, with contribution to Gross Domestic Product (GDP), contribution to gross value added, or employment generated. The following discussion elaborates further on visitor yield, yield as tourist expenditure, financial yield, yield as economic impact and sustainable yield.

Visitor Yield

'Yield', as a demand side concept, relates to the perceived value of the tourist experience from the visitor viewpoint. This concept relates to the satisfaction or 'value' experienced by the visitor from the consumption of products and services. The concept of customer value is an important concept in consumer behaviour. For present purposes the focus is on 'supply side' concepts of yield.

Yield as Tourist Expenditure

Expenditure, whether for total trip or per visitor night is the standard measure of tourism yield. Expenditure measures have limited relevance for policy making to enhance tourism yield. In summary:

- Gross expenditure data do not, in themselves, provide information on the types of goods and services tourists purchase and so give no indication of the industry sectors that receive the sales revenues.
- Gross tourist expenditure includes the import content of the goods and services purchased by tourists. Since these imports must be paid for by the suppliers of tourism products, expenditure levels in themselves do not indicate the sales revenues to domestically based firms' net of imports.
- Since the focus is on sales revenues, the approach neglects the aggregate costs of providing the services to each segment. The expenditure measure of yield takes no account of this, either at the business operator level or at the destination level.
- Gross expenditure per se does not provide information on the relative spread of expenditure in the wider destination.
- The gross expenditure measure does not indicate how the expenditure will impact (sometimes adversely) on other industries and what its net impacts on the economy will be.
- Gross expenditure measures do not in themselves indicate the social and environmental impacts associated with tourist activities.

Financial Yield

Yield can be regarded as the 'rate of profit on tourism sales'. This can be estimated by the share of Gross Operating Surplus (GOS) in tourism consumption made by the tourism market. This measure of yield can apply to the tourism industry as a whole, or to particular sectors of the industry (tourism characteristic or tourism connected industries). Within the report, a number of ways to address the issue of financial yield are provided. These are yield as:

- a rate of profit at industry level
- a rate of profit for the industry or industry sector from a particular market
- a rate of return on capital
- a rate of return at industry level
- a rate of return for the industry from a particular visitor market
- profit at the economy wide level
- the profitability approach to yield.

Yield as Economic Impact

Another set of yield measures relate to the economic impacts of tourist expenditure. The economic impacts refer to the direct plus indirect effects of tourist expenditure on the economy. The expenditure of tourists stimulates economic activity, and creates additional business turnover, employment, household income and government revenue in the host destination. The initial injection of money has *direct, production induced and consumption induced* impacts on the local economy. This process continues and money is circulated around the economy until it eventually leaks away through retained earnings, taxes and imports. This ripple effect in an economy is termed the 'tourism multiplier'. Any calculation of a tourism multiplier, however defined, involves a model describing the mechanisms by which economic impacts are transmitted through the economy.

No single economic measure of yield will cover all of the potential economic impacts of tourist expenditure. This report provides four impact measures of yield:

1. Yield as contribution to Gross Domestic Product (or Gross State Product)
2. Yield as contribution to value added
3. Yield as contribution to employment
4. Yield as contribution to net benefit.

There are two methods of estimating yield using these formulae:

1. One method is to employ a TSA, enabling GDP/GSP, Gross Value Added (GVA), Gross Operating Surplus (GOS) and employment measures of yield to be developed. This approach has been employed by TRA in its recent estimates of tourism yield at the national level.
2. The other method is to employ a Computable General Equilibrium (CGE) model to estimate the economic impacts (and net benefits) of tourist visitation. The CGE model provides measures of the overall impact on economic variables from additional tourism.

Sustainable Yield

On a wider perspective, the notion of 'yield' includes environmental and social value in addition to economic value. Each tourism market segment is potentially associated with economic, social and environmental costs as a result of the mix of services utilised during their stay. These costs, or footprints, vary across market segments depending on the mix of services utilised by the tourist. The notion of sustainable yield would seem to apply at the operator level as well as at the destination level.

At the operator level, an approach which holds some promise of developing the notion of sustainable yield is Triple Bottom Line (TBL) reporting. TBL is becoming the accepted approach for organisations to demonstrate they have strategies for sustainable growth. In effect, TBL is a planning and reporting mechanism and decision-making framework used to achieve sustainable development in both private and public sector organisations - an internal management tool as well as an external reporting framework. An increasing interest in TBL is now evident across business and government internationally. Increasingly, tourism operators want tourism to demonstrate their performance economically, environmentally and socially. This accords with the TBL approach that is increasingly being adopted by firms in all industries. The relevance of TBL reporting to the notion of yield in tourism has not been addressed to date. It is an objective of this report to help to develop standardised, consistent, measurement and reporting methods of tourism yield which are consistent with the TBL approach.



Measuring Tourism's Economic Yield: Recent Results of Tourism Research Australia

The report provides an overview and critique of some recent attempts by Tourism Research Australia to measure tourism yield. Tourism Research Australia has recently undertaken two studies that estimate aspects of tourism yield in Australia. Both appear in the Journal of Tourism Research Australia. The purpose of the discussion is to illustrate how some of the concepts highlighted above can be operationalised. In the first study, TRA estimated yield for eight selected niche markets. Three measures were used. The first was rate of profit on tourism sales; the second was tourism GOS per visitor; and the third was employment generated per thousand visitors from a niche market. TRA makes an imputation for the international airfare component in the expenditure data used to derive its yield estimates.

Proposed Methodology for Measuring Tourism Yield

The first study estimated yield for eight selected niche markets. The three measures were used as described above and the results are shown in Table 1.

Table 1: Yield rates, GOS and Employment Generated in Selected Niche Markets, 2001/02

Niche Market	Tourism consumption Per visitor	Tourism GOS per visitor \$	Yield rate per cent	Employment generated per thousand visitors number
Japanese Honeymooners	3491	483	13.8	25
German Holiday Makers	5401	693	12.8	29
Backpackers	6158	773	12.6	54
NZ Mature	1374	173	12.6	11
Malaysia first timers	1902	237	12.5	17
UK repeat	3662	432	11.8	29
Business	3020	353	11.7	23
Students	11872	1181	9.9	123
All Inbound Visitors	3484	427	12.2	29

Source: Salma and Heaney 2004 Table 1. ABS (2003) and IVS (2000/2001). Yield rate = GOS divided by tourist consumption

A more detailed discussion can be found in the full report.

Limitations

We point out a number of limitations that arise in the use of this approach to measuring yield. First, TRA paper acknowledges that the profitability measure they propose ignores the complexities of differential rate of profit by type of product within the same industry. In applying an average rate of profit to the industry it thus does not distinguish between the different product markets of an industry. The rate of profit in the accommodation industry, for example, is not uniform across all types of property. Caravan parks and 5-star hotels are likely to have very different rates of profit. The above approach to measuring yield does not consider this difference. Rather it assumes an average rate of profit for all types of accommodation. As a result, if a niche market is characterised by the overwhelming use of a particular type of accommodation, applying an average rate of profit in that case will give a yield rate that differs from the actual yield (and so also for all other industry sectors).

The yield measures derived by TRA rely on the Australian Tourism Satellite Account ignoring the economy wide effects of expenditure from the incremental tourist. Yield rates per visitor will be substantially lower once inter-industry effects are recognised. Proper acknowledgement of these effects would require CGE modelling of the tourism expenditure associated with each market segment. Further discussion of the TRA work is provided in the full report.

STCRC Expenditure Yield Estimates

International Visitors by Origin

Simple expenditure measures of yield were estimated using the International Visitor Survey (IVS) data. The STCRC Centre for Tourism Economics and Policy Research has developed measures of tourism yield using data purchased from Tourism Research Australia. The comprehensive data contains estimates of visitor numbers, expenditure per visit, expenditure per night, expenditure patterns, for visitors to Australia on package tours, not on package tours and in total. The data were for the years 2001/02, 2002/03 and 2003/04, taken separately and also averaged over the three year period. The data used in this report applies to fourteen countries and three regions, and to eleven special interest and demographic markets. The expenditure data used to estimate economic impacts of different visitors includes international and domestic airfares purchased within Australia on Australian-owned airlines but does not include any other imputation for the international airfare component that goes to Australian owned airlines or to foreign owned airlines but spent in Australia. Since the injected amounts of expenditure depend upon total numbers of tourists by origin, their daily expenditure, and their length of stay, it is most informative to consider expenditure per night in association with duration of stay. We display this information in matrix form in Figure 1.

Figure 1: Matrix for Total Tourism, Average 2001/2002-2003/2004

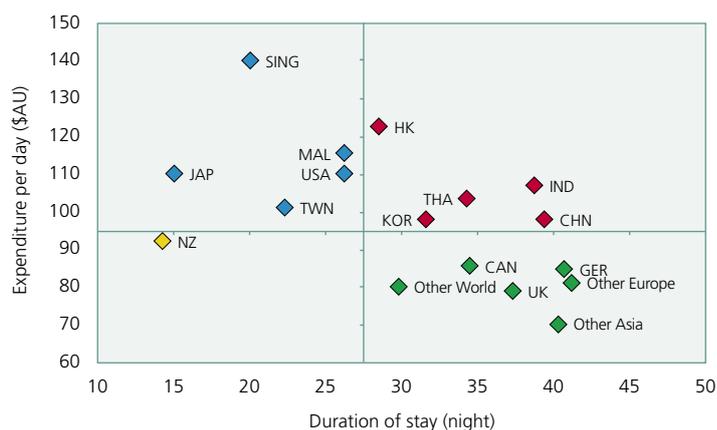


Figure 1 illustrates the following trends:

- Five markets (Hong Kong, Korea, Thailand, Indonesia and China) are in the North East Quadrant. Daily visitor expenditure is in excess of \$94.
- Five markets comprise the North West Quadrant. These are: Japan, Singapore, Malaysia, Taiwan and USA and visitors from these markets spend more per day than the average tourist but spend less time in Australia.
- Six markets comprise the South East Quadrant. These are Canada, UK, Germany, other Europe, other Asia and other World. Tourists from these markets spend less than \$94 per day but tend to stay in Australia for longer than 27.42 days.
- One market, New Zealand, occupies the South West Quadrant. New Zealanders tend to stay for a shorter time in Australia than the representative tourist and spend less per day.

Special Niche Markets

The report goes on to examine the expenditure of six niche markets which have expenditure greater than the average tourist daily expenditure of \$94. These are Japanese Honeymooners, Convention visitors, Malaysian repeaters and Hong Kong and Malaysian first timers. These results are displayed in Figure 2.

Figure 2: Matrix for Selected Niche markets, average 2001/2002 - 2003/2004



Figure 2 indicates that only one market, namely, Malaysian repeaters lies in the high performance North East Quadrant. This is the only market of those selected which has expenditure per night above the average (\$94) and a duration of stay above the average (27.42 nights). Five markets (Conventions, Business, Japanese Honeymooners, Hong Kong and Malaysian first timers) are in the North West Quadrant. Only two markets (UK repeaters and Backpackers) occupy the South East Quadrant. Three mature (over 55) markets (NZ, Malaysia and Canada) are located in the low yield South West Quadrant.



STCRC Economy Wide Yield Measures

International Visitors by Origin

The STCRC has developed measures of economy wide yield. For this purpose, the team has used a CGE model called M2RNSW developed by the STCRC Centre for Tourism Economics and Policy Research (Ray Spurr, Larry Dwyer, Peter Forsyth & Thiep Van Ho). M2RNSW is an adaptation of the standard Monash Multi-regional Forecasting (MMRF) model which is one of a number of CGE models that have been widely used in Australia (Dixon & Parmenter 1996). The basic structure of the M2R model (excluding the 12 tourism industries created by Madden and Thapa) is an adaptation of the standard MONASH Multi-regional Forecasting (MMRF) model. Additional useful equations were added into the standard MMRF version of the M2R model including the development of consistent equations for explaining the percentage deviations in gross state products (GSP) from both income and expenditure sides of national accounts.

Table 2 presents the results of the CGE model simulations using IVS data, with no adjustment for the international airfare component of visitor expenditure overseas but injected into Australia. As in the simple expenditure yield measures above, the annual expenditure data fed into the model were the average for the three year period. The tables contain several yield measures, estimated as outcomes of applying the CGE model to the expenditure data.

Table 2: Economic Impacts of Total Country Expenditure
(annual average period 2001/02 - 2003/04, unadjusted data)

Origin	Real GVA per visitor (\$)	Real value added per visitor night (\$)	Real GOS per visitor (\$)	Real GOS/visitor night (\$)	Real GOS/expenditure (%)	Real benefits per visitor (\$)	Real benefit per visitor night (\$)	Number of jobs per \$m spend
Canada	388.90	10.88	244.51	6.84	8.22	274.52	7.68	6.31
China	476.58	12.18	205.31	5.25	5.47	276.18	7.06	6.25
Germany	466.89	11.50	293.78	7.24	8.46	323.88	7.98	5.97
Hong Kong	434.25	15.49	193.19	7.84	4.88	253.63	9.05	5.32
Indonesia	506.22	13.06	202.49	5.23	5.05	283.21	7.30	6.29
Japan	211.22	14.14	117.73	7.88	7.13	145.54	9.74	5.60
Korea	386.66	12.40	176.07	5.65	5.83	233.46	7.49	6.01
Malaysia	386.22	14.56	148.76	5.61	4.88	212.22	8.00	6.02
NZ	167.40	12.01	110.54	7.93	8.61	127.42	9.15	6.51
Singapore	339.30	17.53	157.68	8.15	5.87	218.99	11.32	6.28
Taiwan	295.66	12.93	137.15	6.00	5.39	179.52	7.85	6.11
Thailand	442.19	12.91	176.26	5.15	5.06	239.15	6.98	6.42
UK	393.09	10.19	261.34	6.80	8.72	292.59	7.57	6.21
USA	372.33	14.14	204.29	7.76	7.04	243.38	9.24	6.27
Other Asia	367.47	9.06	163.89	4.04	5.65	210.84	5.20	6.39
Other Europe	454.88	11.03	277.22	6.72	7.99	315.03	7.64	5.89
Other World	310.47	10.46	177.26	5.97	7.44	215.21	7.25	6.05
Total	332.65	12.13	184.03	6.71	7.16	221.18	8.09	6.13

Source: STCRC Centre for Tourism Economics and Policy Research

The report provides a more detailed discussion of employment generated through inbound tourism, the contribution to Real Value Added, the Gross Operating Surplus, the Net Benefits of inbound tourism and examines the consistency of the rankings of specific markets with regard to yield but based on economy wide yield. These rankings and discussion of the rankings are provided in Table 3.

Table 3: Rankings of Origins, selected yield measures

	Expenditure per Visitor Day	Value added per Visitor Day	GOS per Visitor Day	Net Benefits per Visitor Day	Employment per \$1 million
High Yield Markets	1 Singapore	1 Singapore	1 Singapore	1 Singapore	1 NZ
	2 Hong Kong	2 Hong Kong	2 NZ	2 Japan	2 Thailand
	3 Malaysia	3 Malaysia	3 Japan	3 USA	3 Other Asia
	4 Japan	4 Japan, USA	4 Hong Kong	4 NZ	4 Canada
	5 USA	6 Indonesia	5 USA	5 Hong Kong	5 Indonesia
	6 Indonesia	7 Taiwan	6 Germany		6 Singapore
	7 Thailand	8 Thailand	7 Canada		7 USA
	8 Taiwan	9 Korea	8 UK		8 China
	9 Korea	10 China	9 Other Europe		9 UK
	10 China				
Low Yield Markets	11 NZ	11 NZ	10 Taiwan	6 Malaysia	10 Taiwan
	12 Germany	12 Germany	11 Other world	7 Germany	11 Other world
	13 Other Europe	13 Other Europe	12 Korea	8 Taiwan	12 Malaysia
	14 Canada	14 Canada	13 Malaysia	9 Canada	13 Korea
	15 Other world	15 Other world	14 China	10 Other Europe	14 Germany
	16 UK	16 UK	15 Indonesia	11 UK	15 Other Europe
	17 Other Asia	17 Other Asia	16 Thailand	12 Korea	16 Japan
			17 Other Asia	13 Indonesia	17 Hong Kong
			14 Other world		
			15 China		
			16 Thailand		
			17 Other Asia		

High yield market = above average; low yield market = below average

Table 3 ranks country origin markets from best to worst performance on five different yield measures.

The different measures of yield do not provide generally consistent rankings for the origin markets. Only one origin, Singapore has above average yield performance on all of the measures. High expenditure per visitor day markets - Singapore, Hong Kong, Japan, and USA, generate high GVA, GOS and Real benefits per day. Hong Kong, however, the second greatest daily spending market is the lowest employment generator of all of the origin markets. Malaysia, the third highest expenditure per day origin, while generating above average daily GVA, generates below average GOS per visitor day, Real Benefits per visitor day and employment generated per \$1 million expenditure.

Several markets with below average daily expenditure, such as New Zealand, Other Asia, Canada and UK, generate above average employment per dollar spent. New Zealand also generates relatively high net benefits per day.

International Visitors by Niche Market

Again, this report provides a discussion of employment generated through inbound tourism, the contribution to Real Value Added, the Gross Operating Surplus, the Net Benefits of inbound tourism and examines the consistency of the rankings of specific markets with regard to yield, this time based on niche markets. Table 4 contains several yield measures, estimated as outcomes of applying the CGE model to the expenditure data.

Table 4: Economic Impacts of Selected Niche Market Expenditure
(annual average period 2001/02 - 2003/04, unadjusted data)

Niche	Real GVA per visitor \$	Real GVA per visitor night (\$)	Real GOS per visitor	Real GOS/visitor night (\$)	Real GOS/expenditure (%)	Real benefit per visitor	Real benefit/visitor night (\$)	Number of jobs/\$million expenditure
Backpackers	671.04	10.09	389.81	5.86	7.67	443.22	6.66	6.08
Business	258.92	22.17	261.23	14.56	8.45	191.91	16.29	7.32
Canadian mature (+55)	294.91	11.13	292.21	7.48	8.75	219.99	8.38	6.35
Convention	191.96	24.18	108.72	13.47	6.79	127.27	15.77	6.99
Hong Kong first timers	296.18	14.33	127.54	6.13	5.36	168.54	8.11	5.71
Japanese honeymooners	167.09	27.76	97.45	17.46	8.13	124.08	22.23	4.56
Malaysia first timers	229.00	13.50	93.83	5.52	5.20	127.56	7.51	6.12
Malaysian mature (+55)	186.41	9.56	109.02	5.69	7.64	131.04	6.84	5.65
Malaysian repeaters	458.17	14.81	172.02	5.63	4.81	248.08	8.12	6.00
NZ mature (+55)	158.69	10.19	105.38	6.83	8.74	119.91	7.77	6.45
UK repeaters	343.50	10.16	229.66	6.79	8.74	258.45	7.64	6.19

Source: STCRC Centre for Tourism Economics and Policy Research



The rankings are provided in Table 5.

Table 5: Rankings of Niche markets, Selected Yield Measures

	Expenditure per Visitor Day	Real GVA per Visitor Day	GOS per Visitor Day	Net Benefits per Visitor Day	Employment per \$ 1 million
High Yield Markets	1 Japanese honeymooners	1 Japanese honeymooners	1 Japanese honeymooners	1 Japanese honeymooners	1 Business
	2 Convention	2 Convention	2 Business	2 Business	2 Convention
	3 Business	3 Business	3 Convention	3 Convention	3 NZ +55
	4 Mal repeater*	4 Mal repeaters	4 Can +55	4 Can +55	4 Can +55
	5 HK first timer	5 HK first timer	5 NZ +55	5 Mal repeater	5 UK repeater
	6 Mal first timer	6 Mal first timer		6 HK first timer	
Low Yield Markets	7 Can +55	7 Can +55	6 HK first timer	7 NZ+55	6 Mal first timer
	8 NZ +55	8 NZ +55	7 Backpackers	8 UK repeaters	7 Backpacker
	8 UK repeater	9 UK repeater	8 Mal +55	9 Mal first timers	8 Mal repeater
	10 Backpacker	10 Backpackers	9 Mal repeater	10 Mal +55	9 HK first timer
	11 Mal +55	11 Mal +55	10 Mal repeater	11 Backpackers	10 Mal +55
					11 Japanese honeymooners

High yield market = above average; low yield market = below average; Mal = Malaysian

The report emphasises that the different measures of yield do not provide generally consistent rankings for the origin markets. High expenditure per visitor day markets - Japanese Honeymooners, Convention and Business visitors, generate high GVA, GOS and Real benefits per day. Only two niche markets, Conventions and Business have above average yield performance on all of the measures. Japanese Honeymooners have the highest yield on four measures but generate the lowest employment per dollar of expenditure. Three other high spend markets- Malaysian repeaters, Hong Kong first timers and Malaysian first timers, generate below average employment per expenditure dollar.

On the other hand, two relatively low spend markets – Canadian and New Zealand Matures, generate above average GOS and Real Benefits per visitor night and also above average employment.

From the operator viewpoint, markets such as Canadian and Malaysian Matures, which offer above average daily GOS will be preferred over other markets, such as Malaysian and Hong Kong first timers which provide above average spend and above average GVA to the wider economy.

Thus far, the yield measures that have been developed have been quantifiable in dollar terms. We now turn to develop measures that recognise the relevance of a wider concept of yield that incorporates social and environmental dimensions.



A Framework for Analysing the Social and Environmental Impacts of Tourism

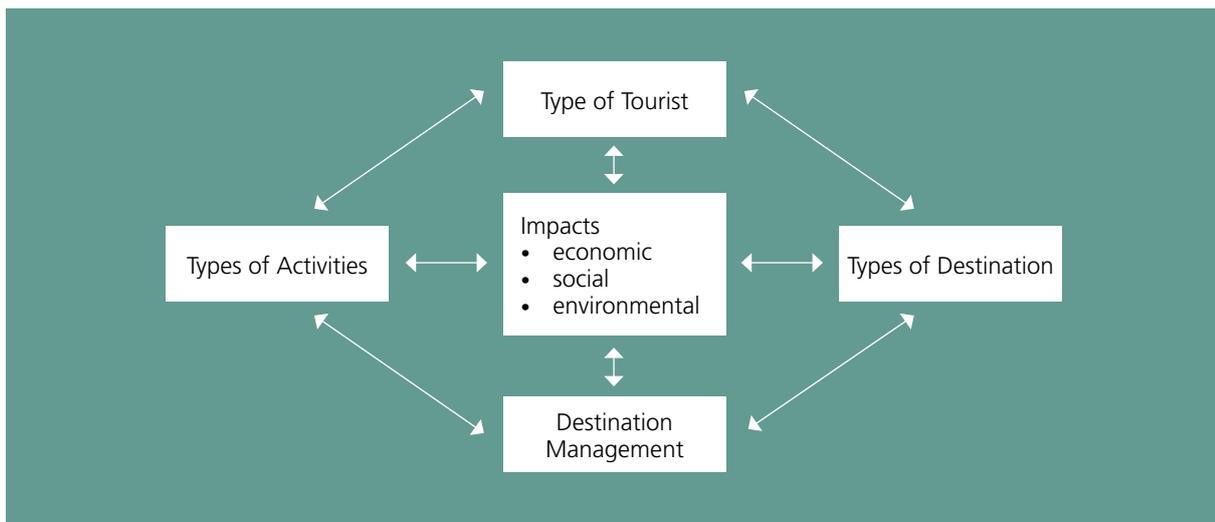
The development of measures of social and environmental yield requires consideration not only of the activities and behaviour of the tourists but also the context in which such activities occur.

In developing a framework for the social and environmental impacts of tourism, a number of key characteristics were examined. The impacts that particular groups of tourists have on their hosts vary with four sets of variables:

1. The characteristics of the tourists
2. The characteristics of the tourism activity
3. The characteristics of the destination
4. Destination management practices.

As illustrated by Figure 3, each of these components relate not only to each other but also directly contribute to the range of impacts identified by the study.

Figure 3: A Framework for Determining the Impacts of Tourism on a Community



In examining the social impacts of tourism as a measure of yield, a number of elements are considered within each of the components of the framework as shown in Figure 3. These are:

- The characteristics of the tourists:
 - o Tourist motivations values and attitudes
 - o Number of Tourists, Composition of Travel Party and Length of Stay
 - o Relative Economic Status of Residents and Tourists
- The characteristics of the tourism activity
 - o Infrastructure
 - o Demonstration Effect
 - o Activities Relating to Local Culture
 - o Level of Interaction
 - o Seasonality
- The characteristics of the destination
 - o Environmental and Heritage Features of the Destination
 - o Social and Cultural Characteristics of Destination
 - o Stage of Economic Development of Destination
 - o Carrying Capacity of Destination
 - o Type of Tourism Products at Destination
- Destination Management Practices.



Incorporating Social Impacts into a Measure of Tourism Yield

Knowledge underpinning a potential measure of social yield lags behind economic and environmental measures because social impact assessment techniques have only recently attracted attention and are generally less developed at this stage. A technique has been devised to assess the social component of tourism yield involving a series of classifications using the framework developed and presented above. However, at this stage the proposed method is untested and further research is required to ascertain its ease of use in practical application. The technique involves five steps:

1. Profile destinations based on their characteristics.
2. Identify the characteristics which define the key market segments of tourists attracted to each destination.
3. Identify the types of activities that each market segment undertakes.
4. Identify the social impacts associated with various activities and travel behaviours.
5. Consider the management practices of each destination and how effective they are in promoting positive impacts and ameliorating negative impacts associated with the tourists and their activities.

In the first step the robustness of the destination is evaluated using a checklist of variables. Then, the key market segments for each destination need to be identified from secondary data sources such as the International Visitor Survey. These segments can then be analysed in terms of the types of travel behaviours they undertake, again such data are already collected in the IVS. The next step involves linking specific activities to social impacts. Finally, destination management practices need to be taken into account as good management can be effective in ameliorating negative social impact and promoting social benefits. Ultimately it may be possible to identify a dollar value for the social yield of various market segments, but substantial research is required in advance of that outcome.

Incorporating Environmental Impacts into a Measure of Tourism Yield

To develop environmental measures of yield, a hybrid approach is employed, combining input-output analysis with an on-site audit for tourist accommodation. The calculation of the environmental impacts of tourists proceeded in two steps, i.e. direct and indirect impacts of tourists. In this approach, the direct (on-site) requirements of different tourists are assessed, while all remaining higher-order requirements (for materials extraction, manufacturing, and services) are covered by input-output analysis. Estimates of the direct impacts of tourist activity on primary energy and water consumption, greenhouse gas emissions and land disturbance were made for four types of accommodations, i.e. vacation hotels, motels, bed and breakfast establishments and hostels, by using two data sources:

1. Energy and water demand for different types of accommodation depending on the latitude; and
2. IVS data on visitor numbers and expenditure.

The report estimates the direct impacts of tourist activity on primary energy and water consumption, greenhouse gas emissions and land disturbance.

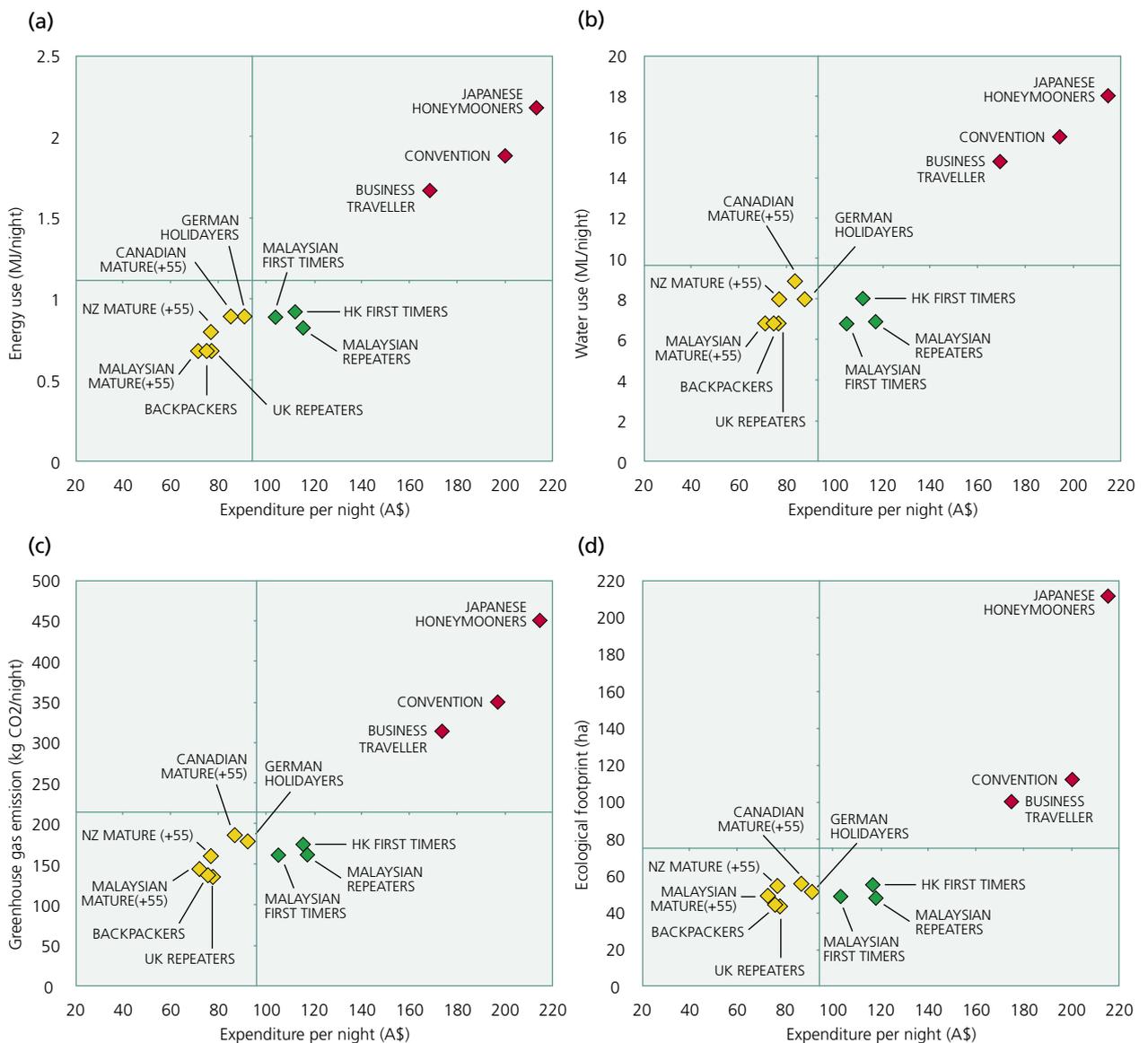
First, primary energy consumption, water usage, greenhouse gas emissions as well as land use and disturbance multipliers (**M**) were determined using the 1994/95 Australian input-output tables, Australian energy consumption and production from the Australian Bureau of Agricultural and Resource Economics, Australian Water Accounts, the National Greenhouse Gas Inventory, and land use and condition data from various sources.

Second, the expenditure data of tourists was re-classified and compressed into the Australian input-output product classification, yielding a commodity input vector \mathbf{y} . Several items turned out to be difficult to classify according to the Australian input-output product classification.

Indirect indicator inventories (\mathbf{M}_y) were then obtained by multiplying each item in the compressed account with its respective multiplier. The results are presented in three ways, i.e. environmental intensity per trip, per dollar spent, and per visitor night.

Figure 4 (a - d) helps to identify preferred markets according to whether economic or environmental impacts of tourists are emphasised. From an economic viewpoint the preferred market segments will be those that generate higher expenditure per night. From an environmental viewpoint, the preferred markets are those that involve less energy and water use, lower greenhouse gas emissions and have a lower ecological footprint per night. Thus, in the matrices of Figure 4 (a - d) the preferred markets from an economic viewpoint lie to the right of the vertical axis, while from an environmental perspective the preferred markets lie below average of each indicator. Therefore, market segments which occupy the South East quadrant are preferred from both perspectives while those that occupy the North West quadrant are the least preferred on both perspectives.

Figure 4: Environmental Indicator Results Per Visitor Night: (a) Energy Use; (b) Water Use; (c) Greenhouse Gas Emissions; (d) Ecological Footprint



The measures that have been developed in the report enable destination managers to better understand the trade-offs between the economic, and environmental objectives of tourism policy. Sustainable Yield

Sustainable yield can be studied from the perspective of the business operator or the destination manager. From a corporate perspective, sustainable tourism operations result from producing a positive and balanced return to all three of these sources of capital, the economic, social and environmental (the triple bottom line). The TBL approach is consistent with, and can form the basis for, the concept of 'Yield' as sustainable return to the firm. From a destination management perspective, each tourism market segment is potentially associated with economic, social and environmental costs as a result of the mix of services utilised during their stay. These costs, or footprints, vary across market segments depending on the mix of services utilised. The measures that have been developed enable destination managers to better understand the trade-offs between the economic, social and environmental objectives of tourism policy.

Further research may include:

- Research on measuring the social and environmental costs and benefits of tourism on a segment-by-segment basis.
- Research on the way tourism produces various environmental, social and cultural benefits as opposed to merely costs.
- The economic, social and environmental effects of each visitor depend upon their expenditure, the characteristics of tourists, characteristics of the destination, characteristics of tourist activity and destination management practices. Further research is needed on the factors underpinning sustainable tourism and their relative influence.
- The difficulties in measuring the TBL need more detailed analysis. Further research is required to help to develop standardised, consistent, measurement and reporting methods of tourism yield which are consistent with the TBL approach.
- Distributional issues need to be further explored as to how they can be incorporated into an operational concept of sustainable yield.
- Research is required as to how tourism yield can be usefully incorporated into the sustainability paradigm. In particular, little is known about the trade-offs between economic, social and environmental costs and benefits, and the implications of this for measuring 'sustainable yield'.
- There is a view that sustainable development should imply direct gains or improvements in all aspects, not just the financial/economic sphere, and that such gains should be an important aspect of how tourism yield is measured. Research is required to clarify and operationalise the notion of sustainable yield as generating positive returns to society in the three dimensions.

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Concepts of Tourism Yield and Their Measurement

EXECUTIVE SUMMARY

The report develops tools for measuring and enhancing the yield from tourism at the business, regional and national level.

It clarifies the different concepts of tourism yield. Different stakeholders (operators, governments, community, researchers etc.) mean different things by 'yield' and this presents a barrier to communication and policy discussion. Each of these concepts is defined and their relevance to firms and destination managers assessed.

The report develops operational measures of yield at the level of the firm and regional, state and national destination management levels.

It also develops ways to measure the yield from different types of tourists. With the increasing sophistication of tourism data sets, such as the Tourism Satellite Account (TSA) and Computable General Equilibrium (CGE) models, it is now feasible to develop new and more useful measures of tourism yield.

The results can improve the capacity for management decision making by tourism stakeholders to promote 'high yield' sustainable tourism that enhances competitiveness in the tourism industry.

The full report, *Concepts of Tourism Yield and Their Measurement*, is available to purchase through the STCRC's online bookshop [www.crctourism.com.au/bookshop]. Alternatively please complete the online order form and send to the STCRC.

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