



TOURISM BRITISH COLUMBIA
C A N A D A

RESEARCH SERVICES

ECONOMIC VALUE OF THE COMMERCIAL NATURE-BASED TOURISM INDUSTRY IN BRITISH COLUMBIA

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Executive Summary

The Wilderness Tourism Association (WTA) secured funding from the provincial government (Ministry of Sustainable Resource Management) to measure the size and characteristics of the commercial nature-based tourism industry in 2001. The primary objective of the project was to measure the economic impact of commercial nature-based tourism to the economy of British Columbia. The project was initiated in the spring of 2002 and was coordinated by Research Services, Tourism British Columbia on behalf of the Wilderness Tourism Association.

- A database of nature-based tourism businesses was established and demonstrated that there are approximately 2,250 businesses offering nature-based activities in the province of British Columbia, excluding simple accommodation facilities¹ and stand-alone campgrounds.
- In 2001, just under 966,000 tourists spent a total of \$908.9 million dollars while at nature-based tourism businesses in British Columbia.
- When all spin-off impacts² are accounted for, the total GDP impacts of commercial nature-based tourism are estimated at \$782.9 million, while total employment resulting from commercial nature-based tourism activities is estimated at 20,776 earning some \$556.2 million in wages and salaries and benefits during 2001. This resulted in over \$206.7 million going to government coffers, of which \$78.5 million went to the provincial government.
- In addition, investment by existing commercial nature-based tourism companies increased provincial GDP by \$11.3 million and increased employment in the province by 213 jobs after accounting for all spin-off impacts. Governments received an additional \$926,000 in taxes; the provincial government being better off by a total of \$417,000. This does not include investment in new businesses in 2001.
- By definition, this project **does not** estimate economic impact from frontcountry nature-based experiences like downhill skiing or golfing, or expenditures by individuals participating in non-commercial nature-based activities such as self-guided hiking and kayaking. Tourist expenditures before and after visiting nature-based tourism businesses and that of locals (non-tourists) that use nature-based tourism businesses are not included in the economic impact figures.

¹ Simple accommodation facilities are businesses that do not provide any facilities for nature-based activities other than accommodation and are not included in this count. However, comprehensive and standard lodges are included in this analysis. A comprehensive lodge is a destination lodge (fixed roof) and offers activities at an extra cost (which could be embedded in the package price). This type of lodge will provide food, although it may have a for-purchase restaurant. A standard lodge is destination lodge (fixed roof) but does not offer activities at an extra cost, although those activities may be easily accessible from the lodge. This type of lodge may offer food, within a package price or in a for-purchase restaurant.

² See Appendix A for a definition of spin-off (indirect and induced) economic impacts.

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Introduction

In 2001, 22.4 million tourists spent \$9.2 billion dollars in British Columbia³. A substantial number of tourists who travel to British Columbia are attracted by the *Super, Natural British Columbia*[®] brand and enjoy nature-based activities. In the past decade in British Columbia, consumers have demonstrated a growing demand for all types of nature-based activities including outdoor/eco/adventure/wilderness activities. Generally, the nature-based sector of the tourism industry refers to those tourism experiences that are directly or indirectly dependent on the natural environment and require a land or water base to operate.

The Wilderness Tourism Association (WTA) secured funding from the provincial government to measure the size and characteristics of the commercial nature-based tourism industry in 2001. The primary objective of the project was to measure the economic impact of commercial nature-based tourism to the economy of British Columbia. The project was initiated in the spring of 2002 and was coordinated by Research Services, Tourism British Columbia on behalf of the Wilderness Tourism Association.

The project consisted of several components (Figure 1). First, an operational definition of commercial nature-based tourism was established. Second, a database of nature-based tourism businesses was developed. Third, information was collected from those nature-based tourism businesses through a short telephone survey followed by a more detailed mailback questionnaire. Financial statements were also collected from a smaller sample of tourism businesses. In addition, information about tourism businesses was collected from a secondary data source (Workers Compensation Board). Fourth, all information was collated and analyzed to produce two reports. This report outlines the economic impact of commercial nature-based tourism in British Columbia for 2001. A second report describing characteristics of commercial nature-based tourism in British Columbia will be released in the near future.

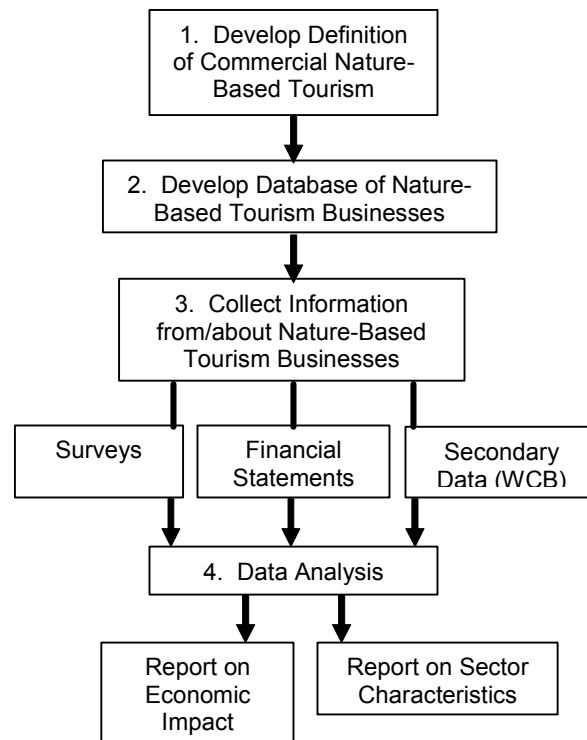


Figure 1. Components of the Commercial Nature - Based Tourism project.

³ This study estimates the economic impacts of the commercial nature-based tourism industry in 2001. In 2003, 21.9 million tourists spent \$9.0 billion dollars in British Columbia.

Methods

Research Services, Tourism British Columbia hired CGT Research International to develop an operational definition of commercial nature-based tourism, to build a database of nature-based tourism businesses and to collect information from nature-based tourism businesses. In addition, Jim Johnson, principal of Pacific Analytics was hired to use the database of nature-based tourism businesses, financial statements and other secondary data sources to estimate the economic impact of the sector. The Wilderness Tourism Association provided assistance to Tourism British Columbia through all components of the project.

Definition

In order to accurately identify nature-based tourism businesses, an operational definition of what constitutes nature-based tourism and nature-based tourism businesses was developed. This definition provided a set of criteria to identify businesses that are part of the nature-based tourism population, and screen out those that are not. The definition was developed with considerable input from the Wilderness Tourism Association executive and was reviewed by a group of nature-based tourism businesses.

Nature-based tourism refers to those tourism experiences that are directly or indirectly dependent on the natural environment and require a land or water base. The sector includes activities undertaken in mid and backcountry tourism zones⁴ but does not include frontcountry experiences such as downhill skiing, golf or other destination resort activities. For the purposes of this study, tourism businesses must meet each of the following criteria to be considered a nature-based tourism business:

1. Businesses actively market products and services to tourists⁵ who are engaging in nature-based activities.
2. Businesses' primary source of revenue is from clients, tourists or non-tourists, who are engaging in nature-based activities.
3. Businesses' primary business function is not retail sales.
4. Businesses must be able to estimate the percentage of their revenue generated from tourists.
5. Businesses provide products or services *related* to the activities included in the following list (Table 1). Activities that are **not** included in the following list are not considered nature-based under this definition (e.g. golf or downhill resort skiing). Depending upon the business's approach to providing their product or service, activities may fall within

⁴ The frontcountry tourism zone services large volumes of tourists in a naturally scenic though substantially human altered environment. The midcountry tourism zone is characterized by the provision of recreation experiences for 'intermediate' numbers of visitors in a quality natural environment. The backcountry/wilderness tourism zone provides a high quality wilderness experience in a pristine environment to a smaller clientele (Source: Ethos Environmental).

⁵ Tourists are travelers who are outside of their usual environment on an overnight trip that lasts at least one night.

differing nature-based tourism sub sectors, e.g. a business running an inn may qualify if they actively market and provide nature-based activities to tourists.

Table 1. Activities included in the definition of commercial nature-based tourism.

● Bird watching	● Fresh water fishing	● Riding all terrain vehicles (ATVs)
● Back country or tour skiing	● Guest ranch	● River tours
● Canoeing	● Hang gliding or para-sailing	● Rock climbing, mountaineering or ice climbing
● Cat skiing or cat snowboarding	● Heli-skiing or heli-snowboarding	● Salt water fishing
● Caving or spelunking	● Hiking or backpacking	● Scuba diving or snorkelling
● Cross country or skate skiing	● Horseback riding or trail riding	● Sea kayaking
● Cultural or historic tourism (nature-based)	● Hunting	● Snowmobiling
● Cycling or mountain biking	● Llama trekking	● Surfing
● Day sailing/windsurfing	● Multi-day yacht cruising	● Whale watching
● Dog sledding	● Power cruising	● White water kayaking
● Education (nature / outdoor)	● Rafting	● Wildlife/nature observation including photography

*Transportation services (air, rail, bus, etc.) that do not offer additional nature-based activities were not included here.

Database Development

After the definition was established development of an inventory of businesses that fit that definition was initiated. Over 20 lists from various government agencies, sector associations and marketing websites were used to establish an inventory of tourism businesses. The inventory was completed in order to estimate the size (or universe) of commercial nature-based tourism and to establish a nature-based tourism businesses database (NBTB Database). The company name, contact name, email address, website address, mailing address, phone and fax numbers were collated into a database. Duplicate businesses were screened by company name and phone number and were removed from the NBTB Database.

Data Collection

Using the contact information from the NBTB Database, a telephone survey of nature-based tourism businesses was conducted. Questions were designed to assess if each business in the inventory met the above stated definition of commercial nature-based tourism. Information was also collected about the number of client days, primary client activities, employment levels and willingness to participate in future components of the study. In addition, businesses were asked to name other nature-based tourism businesses in their region which helped to ensure the NBTB Database was complete. A follow-up mailback questionnaire collected more detailed information from the businesses including: business characteristics, client characteristics, barriers to growth revenue and revenue forecasts. All data from the telephone survey and the mailback questionnaire were entered into the NBTB Database for subsequent analysis.

Analytical Methods to Determine Economic Impacts

Given the relative heterogeneity of the industry, it was first necessary to categorize the various nature-based tourism businesses into groups that were more-or-less homogeneous in their operating activities. This resulted in the sub-division of the industry into 13 unique tourism sub-sectors (Table 2). Once the sub-sectors were defined, each nature-based business in the NBTB Database was coded to one of these sub-sectors according to the primary activity of their clients. In this way one is able to identify the total (universe) number of businesses in each sub-sector.

Table 2. Sub-sectors of the commercial nature-based tourism sector of the tourism industry.

• Adventure Lodges Comprehensive Lodge *	• Guest Ranch	• Land-Based Summer***	• Other Marine*****
• Adventure Lodges Standard Lodge **	• Guide Outfitters ⁶	• Land-Based Winter****	• River Rafting/Kayaking/Canoeing
• Boat Charters	• Heli-Skiing ⁷	• Ocean Kayaking	• Saltwater Fishing
• Freshwater Fishing			

*Comprehensive Lodge = A destination lodge (fixed roof) and offers activities at an extra cost (which could be embedded in the package price). This type of lodge will provide food, although it may have a for-purchase restaurant.

**Standard Lodge = A destination lodge (fixed roof) but does not offer activities at an extra cost, although those activities may be easily accessible from the lodge. This type of lodge may offer food, within a package price or in a for-purchase restaurant.

**Simple Accommodation (not included in this analysis) refers to establishments that do not provide any facilities other than accommodation. In non-urban regions, these businesses would include many motels that form an important link to nature-based tourism. It should be noted that the category "Simple Accommodation" has not been included in this analysis because at this time it was not possible to develop a comprehensive and accurate listing of all businesses. However, the NBTB Database may be enhanced to include these businesses in the future.

***Land-based summer includes businesses that offer activities in the summer and are dependant on the land-base. These activities include mountain-biking tours, other cycling tours, ATV experiences, bird-watching, nature-based cultural tourism, education, hang-gliding/parasailing, hiking/backpacking, horseback riding, llama trekking, rock-climbing, day sailing and wildlife or nature observation including photography.

****Land-based winter includes businesses that offer activities in the winter and are dependant on the land-base. These activities include back country ski touring, cross country skiing, winter education, snowmobiling and cat skiing/snowboarding

*****Other Marine includes scuba diving, wildlife viewing (whale watching), sail cruising, pocket or power cruising and marinas.

The next step was to determine the total tourism revenues earned by all firms in each sub-sector. Unfortunately, the mailback questionnaire was only able to establish tourism revenues for a small subset of companies: in the neighbourhood of five businesses in each sub-sector, although some had slightly more and others had less.⁸ Hence, for most sub-sectors, the number of businesses with valid revenue estimates was not considered large enough to determine average revenues per business with

⁶ The data for Guide Outfitting were derived from a different economic study: *The Guide Outfitting Industry in British Columbia: An Economic Analysis of 2002*, prepared by Pacific Analytics Inc., December, 2003. Although that report used a much more precise approach to determining overall revenues, it uses exactly the same methodology as this report to convert revenues into Output, GDP, employment and tax estimates and for determining indirect and induced spin-off impacts.

⁷ The data for Heli-skiing were derived from a different economic study: *Socio-Economic Benefits of Helicopter and Snowcat Skiing in British Columbia*, prepared by Brent Harley & Associates, June, 2002. The study uses a different methodology for determining overall revenues, but uses essentially the same approach as the present study for estimating Output, GDP, employment and tax impacts and for assessing indirect and induced impacts.

⁸ For this project, the NBTB Database also was augmented by revenue estimates collected from a number of firms as part of other studies conducted by Pacific Analytics Inc., although these estimates, being confidential, have not been included permanently in the Database.

an acceptable level of accuracy. This required finding another way to estimate revenues for some or all firms in each sub-sector.

The solution chosen was to develop proxy revenue estimates using payroll data from the Worker's Compensation Board (WCB). The first step was to match WCB data against the firms in the NBTB Database, with approximately 600 matches being made. This allowed payroll-to-revenue ratios to be calculated for each company with a revenue estimate in the NBTB Database. With that, it was a simple matter to calculate an average payroll-to-revenue ratio for each sub-sector.

The next step was to apply these average ratios to each of the matched firms in the WCB database, assign proxy revenues and include these additional revenues in the NBTB Database. From this new, larger sample of company-specific revenues (based on anywhere from 25 to 50 samples including both the original and the proxy revenue estimates in each sub-sector), average revenue estimates per nature-based business were estimated for each sub-sector. Finally, the average revenue per business was applied to the universe total of companies in each sub-sector, from which total revenues earned for each sub-sector were calculated.

Once an estimate of total revenues earned by each sub-sector was calculated, it was then necessary to determine the overall economic impacts of these revenues on the provincial economy.

Over the last year, a number of financial statements have been collected from various nature-based tourism businesses. These estimates itemize the types and total revenues earned plus the detailed expenses, including payroll and capital asset acquisitions. These statements were coded to a uniform system of accounting and an "average" financial statement generated for each sub-sector. After that, the average financial statement was weighted or 'grossed up' so that total tourism revenues equalled total tourism revenues calculated from the NBTB Database.

The next step was to map the accounting codes into National Accounting categories in order to create average Input-Output tables for each tourism sub-sector.⁹ Once the Input-Output tables were developed (which tell one the direct impacts of the particular sub-sector), the data were run through Statistics Canada's BC Input-Output Model. This model enabled a calculation of indirect and induced impacts.¹⁰

Unfortunately, the number of financial statements collected was not large enough to calculate impacts for each sub-sector with a reasonable degree of precision. Consequently, at present the results of this project cover only the total commercial nature-based tourism industry. It is possible that if various sub-sector associations and the businesses they represent decide that having accurate and credible estimates for their specific sub-sector is of value then the data can be enhanced.¹¹

⁹ See Appendix A for an in-depth discussion of how the construction of Input-Output tables is undertaken.

¹⁰ Again, see Appendix A for a definition of spin-off (indirect and induced) economic impacts.

¹¹ See, for example, *The Guide Outfitting Industry in BC: An Economic Profile Of 2002*, prepared for GOABC by Pacific Analytics Inc. which identifies direct, indirect and induced impacts for the Guide Outfitting Industry on a regional basis.

Results

The Nature-Based Tourism Database

The inventory of nature-based tourism businesses yielded a total of 2,253 tourism businesses.¹²

Table 3. The number of nature-based tourism businesses by sector (2001).

Nature-Based Sector*	Number of Businesses (2001)
Comprehensive Lodge	52
Standard Lodge	43
Guest Ranch	71
Guide Outfitters	236
Freshwater Fishing	261
Saltwater Fishing	203
River Rafting/Kayaking/Canoeing	119
Ocean Kayaking	137
Heli-Skiing	32
Land-Base Summer	451
Land-Based Winter	100
Boat Charters	298
Other Marine	250
Total	2,253

*See Table 2 for definition of lodge types, land-based summer and land-based winter.

The Economic Impacts

The impacts of any industry can be subdivided into two components. The first corresponds to the impacts from the day-to-day operations and involves the actual provision of services to clients. The second component refers to the impacts from these same businesses investing annually in facility refurbishment and upgrades (capital asset acquisitions). Excluded from the analysis is the investment in new businesses in 2001, and thus the resulting impacts must be considered to be conservative.

It should be noted that a large percentage of commercial nature-based tourism clientele are from outside the province. This means that a large proportion of the economic impacts are export-based, and represents a pure gain to the province. Impacts from each of these components are outlined below.

¹² The database is undergoing continual updating and refining, and consequently the estimated number of businesses in each category is expected to change as more comprehensive information is obtained. Also, the number of businesses will fluctuate due to businesses closing or opening.

Operations

All nature-based tourism businesses collect fees from their clients for services, purchase goods and services required to provide those services (e.g., food, insurance). As explained in Appendix A, the difference between the revenues and the purchase of goods and services is equal to the Gross Domestic Product (GDP) contribution of the industry. In addition, the industry employs people to deliver those services, and they are paid wages and benefits (labour income). Finally, the industry pays taxes and levies to the various levels of government. Some of these taxes are paid by the client through the tourism company (e.g. GST, accommodation taxes, PST, hunting and fishing licenses). Other taxes are paid by the individual tourism companies, usually for the right to use government property (e.g., crown land leases, park user fees, municipal property taxes), or for other rights (e.g., satellite telephone licenses, water licenses). In addition, companies also pay another level of taxes to government. When a company purchases a good (and sometimes a service), there often is a federal or provincial tax embedded in the purchase price. For example, the price of gasoline at the pump consists of a multitude of federal and provincial taxes, even though on the financial statement the entire cost of gasoline is assigned to fuel purchases alone. Under National Accounting (as explained in Appendix A), these taxes are removed, and the true contribution to governments can be identified. Table 4 below highlights the direct, indirect and induced impacts¹³ of nature-based tourism businesses using National Accounting standards.

Table 4: Economic impacts of commercial nature-based tourism businesses in British Columbia

OPERATIONS - TOTAL				
	Direct Impacts	Indirect Impacts	Induced Impacts	Total Impacts
Client Spending*	\$908,853,904			
Output**	\$854,317,854	\$445,595,031	\$252,278,260	\$1,552,191,145
GDP (Value Added)	\$429,462,786	\$213,339,620	\$140,097,644	\$782,900,049
Labour Income	\$321,607,449	\$146,870,478	\$87,769,902	\$556,247,828
Employment (PYs)	13,927.5	4,434.8	2,413.6	20,775.9
Total Taxes and Levies	\$135,863,411	\$46,445,999	\$24,377,757	\$206,687,168
of which:				
<i>Federal</i>	\$78,586,330	\$20,072,473	\$11,554,991	\$110,213,794
<i>Provincial</i>	\$49,296,435	\$20,158,304	\$9,040,480	\$78,495,218
<i>Municipal</i>	\$7,980,646	\$6,215,222	\$3,782,287	\$17,978,155
# of Clients	965,779			
# of Client-Days	2,457,178			

* Client spending refers to all expenditures by clients at nature-based tourism operations excluding travel to and from the facility. It includes all taxes paid directly by the client as well as any gratuities.

** Output essentially refers to the revenues (excluding client taxes but including gratuities) earned by the operations, with some minor differences as outlined in Appendix A.

Overall, in 2001, just under 966,000 tourists spent a total of \$908.9 million dollars while at nature-based tourism businesses in British Columbia. It should be noted that this does not include any

¹³ See Appendix A for a definition of spin-off (indirect and induced) economic impacts.

spending by clients travelling to and from British Columbia or travel within British Columbia to and from nature-based businesses. Nor does it include any spending on accommodation, food and beverage prior to and after their nature-based experience. Although this spending is not accounted for in this report, it can be substantial and much of it should be considered a direct result of the commercial nature-based tourism industry¹⁴.

This spending generated direct GDP of almost \$429.5 million, resulting in 13,928 full-time equivalent jobs earning some \$321.6 million in wages, salaries and benefits. Total direct taxes and levies and estimated at \$135.9 million, of which \$49.3 million goes to the provincial government.

When all spin-off impacts are accounted for, the total GDP impacts of commercial nature-based tourism are estimated at \$782.9 million, while total employment resulting from commercial nature-based tourism activities is estimated at 20,776 earning some \$556.2 million in wages and salaries and benefits. This resulted in \$206.7 million going to government coffers, \$78.5 million to the provincial government and \$18.0 million to municipal governments.

Annual Capital Acquisitions

In addition to these operational impacts, nature-based tourism also contributes to the provincial economy through their purchase of capital goods. Table 5 highlights the estimated impacts stemming from this capital acquisition.

Table 5: Economic impacts of commercial nature-based capital investment in British Columbia.

INVESTMENT - TOTAL					
	Direct	Impacts	Indirect Impacts	Induced Impacts	Total Impacts
Investment	\$30,679,687				
Output	\$15,094,695		\$5,487,362	\$3,322,191	\$23,904,248
GDP (Value Added)	\$6,590,531		\$2,880,518	\$1,844,912	\$11,315,961
Labour Income	\$4,678,293		\$1,911,637	\$1,155,820	\$7,745,750
Employment (PYs)	130.3		50.6	31.8	212.6
Total Taxes and Levies*	\$419,622		\$171,463	\$334,503	\$925,589
of which:					
<i>Federal</i>	<i>\$160,566</i>		<i>\$45,514</i>	<i>\$109,010</i>	<i>\$315,090</i>
<i>Provincial</i>	<i>\$181,530</i>		<i>\$77,190</i>	<i>\$158,370</i>	<i>\$417,090</i>
<i>Municipal</i>	<i>\$77,526</i>		<i>\$48,759</i>	<i>\$67,123</i>	<i>\$193,409</i>

It is estimated that nature-based tourism businesses re-invested \$30.7 million in capital acquisitions in 2001 which generated, after all imports are factored out, a total of \$6.6 million in direct provincial GDP. This investment was responsible for 130 FTE jobs earning \$4.7 million in salaries and \$420,000 in taxes, of which \$182,000 went to the provincial government.

¹⁴ See, for example, *The Economic Value of Additional Spending by Fishing Clients of the Babine River Corridor Park*, prepared for the Babine River Foundation by Pacific Analytics Inc., January 2003, where additional spending per client is estimated at \$3,200, **excluding** travel costs to/from British Columbia.

After accounting for all spin-off impacts, the investment by nature-based tourism businesses increased provincial GDP by \$11.3 million and increased employment in the province by 213 jobs. Governments received an additional \$926,000 in taxes; the provincial government being better off by a total of \$417,000.

Limitations and Future Directions

This project is a first attempt to carefully measure the contribution of commercial nature-based tourism to the economy of British Columbia. The methodology is still undergoing improvements and enhancements and, in addition, construction of the NBTB Database (determining the universe of companies and their activity types) and updating of actual data, including establishing greater samples of revenues, is still progressing. In addition to this, there have been several studies (of Guide Outfitting and Heli-Skiing) that have provided in-depth regional statistical information that was included in this study. It is hoped that over time, other Associations and the businesses that they represent will undertake such comprehensive studies of their own sectors, and therefore provide statistically valid information to the project. With greater participation by Associations, it may be possible at some future date to produce sub-sector results at a regional level.

Given that this is the initial report of this project, the results presented in this report must be considered preliminary and should be used with caution. Nevertheless, at the level of total activity at the provincial level, the data do represent a reasonable estimation of commercial nature-based tourism activity.

By definition, this project **does not** estimate economic impact from frontcountry nature-based experiences like downhill skiing or golfing, or expenditures by individuals participating in non-commercial nature-based activities such as self-guided hiking and kayaking. Tourist expenditures before and after visiting nature-based tourism businesses and that of locals (non-tourists) that use nature-based tourism businesses are not included in the economic impact figures.

Appendix A: An Input-Output Primer

National Accounting (also termed Economic Accounting) assumes a company undertakes two steps in its production process. First, it purchases material inputs from other industries; and second, it transforms those material inputs into finished goods (or services), ready for resale. Take as an example a Restaurant. Restaurants buy fresh vegetables, meat, etc. from the Agriculture sector. Using other material inputs (e.g., electricity, cooking oil, etc.), it transforms them into finished dishes, which, in turn, are sold at a selling price higher than the cost of its inputs. The difference between the selling price and the material input cost is the “mark-up” or “value-added”. This value-added is used to pay for the kitchen and wait personnel, any taxes levied by governments, the depreciation of equipment, any interest costs the restaurant may have, and will also generate, the owner hopes, a profit.

National Accounting asserts that the value which the restaurant sector adds to the economy (hence, the term “value added”) is equal **not** to the total revenues of Restaurants, but only to this “mark-up” value. That is, the value of an industry to an economy is the difference between the value of its output (effectively, total operating revenues) and the cost of its material inputs. In this way, the Restaurant industry does not claim the value of the agriculture inputs it uses, which should rightly be accounted for by the Agriculture industry. As a result, there is no double counting when measuring the value of the entire economy.

In other words: the value-added of the commercial nature-based tourism industry is the revenue from all of its sales to clients (output) minus all of its costs for payments to other firms for goods or services (material inputs), or:

$$\text{Value Added} = \text{Output (or Final Sales)} - \text{Material Inputs}$$

Another way of defining value added is that it is the sum of an industry’s payments to employees, for indirect taxes, for depreciation and interest costs, and for profit:

$$\text{Value Added} = \text{Labour} + \text{Indirect Taxes} + \text{Depreciation} + \text{Interest Costs} + \text{Profit}$$

The resulting value-added of any firm (or industry) is available to be shared among labour (wages, salaries and benefits), indirect taxes and “operating surplus.” The operating surplus itself is shared between payments for the use of physical capital (depreciation), payments for the use of monetary capital (interest costs), and payments (profits) to the owner(s) of the enterprise. Value-added is an industry’s contribution to, or *direct impact* on, the economy. And the sum of value-added of all industries is termed the country’s Gross Domestic Product (GDP).

An important distinction needs to be made between Financial Accounting and National Accounting. Under financial accounting, an industry which has a high value added (i.e., contributes a lot to the economy), can be unprofitable if, for example, its payments to labour or for interest costs are too high. Alternatively, low value-adding industries can be very profitable to their owners, depending on their usage of labour and their capital structure.

Economists have standardized the measure of these flows and the inter-relationships of inputs and outputs among industries through the concept of Input-Output (I/O) analysis. The **MAKE** matrix (the top section of Appendix Figure 1) identifies the various types of output the sector produces. The **USE** matrix (the bottom section of that same Figure) highlights all of the various types of inputs used to

produce that output.¹⁵ One can readily determine from these tables that subtracting total Material Inputs from total Output leaves Gross Domestic Product (GDP). This GDP is equal to the sum of Wages and Salaries, Benefits, and Operating Surplus.

Appendix Figure 1: Example of MAKE and USE Matrices

MAKE MATRIX	2002	2001	2000
Accommodation Services*	67,202,330	65,608,428	62,046,347
Other Activities	1,770,996	2,253,910	2,443,441
TOTAL OUTPUT	68,973,325	67,862,338	64,489,788
USE MATRIX	2002	2001	2000
Agric, Forestry, Fishing & Mining	\$502,421	\$457,503	\$449,423
Utilities	\$206,975	\$221,603	\$208,591
Constuction	\$1,771,285	\$1,806,699	\$2,354,769
Food & Beverage Manufacturing	\$2,449,916	\$2,449,283	\$2,269,300
Textile, Clothing & Leather Manufacturing	\$12,431	\$16,064	\$14,814
Wood, Pulp and Paper Manufacturing	\$71,828	\$92,821	\$85,599
Petroleum and Coal Products	\$768,922	\$757,305	\$779,345
Chem, Plastic and Rubber Manufacturing	\$201,184	\$259,985	\$239,755
Non-Metallic Manufacturing	\$59,521	\$76,917	\$70,932
Fab. Machinery & Equipment Manufacturing	\$79,707	\$103,003	\$94,989
Other Manufacturing	\$738,486	\$779,470	\$716,575
Wholesale Trade	\$1,006,303	\$1,016,773	\$1,004,525
Retail Trade	\$611,288	\$948,441	\$887,489
Transportation Services	\$5,417,250	\$4,789,622	\$4,735,112
Informational & Cultural Services	\$804,445	\$815,248	\$785,376
Finance, Insurance & Real Estate Services	\$1,820,438	\$1,799,317	\$1,918,030
Business Services	\$1,053,374	\$927,093	\$922,929
Education and Health Services	\$288,952	\$245,398	\$230,347
Community, Personal & Repair Services	\$366,008	\$378,243	\$360,484
Operating, Office and Café Supplies	\$636,049	\$679,271	\$613,486
Travel & Entertainment	\$800,442	\$726,625	\$711,103
Advertising and Promotion	\$2,544,359	\$2,943,948	\$2,941,458
Transportation Margins	\$151,840	\$154,988	\$150,445
TOTAL MATERIAL INPUTS (less taxes)	\$22,363,422	\$22,445,620	\$22,544,874
Commodity (Product) Taxes	\$764,198	\$762,644	\$784,687
Indirect (Production) Taxes	\$526,023	\$522,686	\$539,972
Federal Taxes	\$41,721	\$28,536	\$39,709
Provincial Taxes	\$4,591,194	\$4,154,573	\$4,421,436
Municipal Taxes	\$199,557	\$173,229	\$182,799
TOTAL MATERIAL INPUTS	\$28,486,114	\$28,087,288	\$28,513,477
Wages and Salaries	\$29,327,752	\$28,848,122	\$25,480,871
Supplementary Labour Income	\$1,389,305	\$1,386,204	\$1,194,577
Operating Surplus	\$9,770,154	\$9,540,724	\$9,300,863
GDP	\$40,487,211	\$39,775,050	\$35,976,311
GDP-TO-OUTPUT RATIO	0.587	0.586	0.558

Source: Data taken from *The Guide Outfitting Industry in British Columbia: An Economic Analysis of 2002*, prepared by Pacific Analytics Inc., December, 2003.

¹⁵ Output is closely associated with industry revenues and client spending, but there are important differences. Likewise, the inputs used by the Guide Outfitting Industry are highly related to industry expenses. But, again, the differences are important. For a summary of these differences, see the next sub-section: *Technical Differences*.

The GDP-to-Output ratio is a measure of the direct contribution to the economy *per dollar of output*. Clearly, an industry that requires a lower dollar value of inputs to produce a given dollar of output is a higher value-adding industry. One must note, however, that a higher GDP-to-Output ratio does *not* imply that the industry is more important to the economy. It merely states that for every dollar of output the impact on the economy is greater. Obviously, when examining an industry's importance to an economy one must also take into account the total output of the industry. There is, however, another important characteristic of an industry that must be examined if one is to determine the importance of a sector to the local economy: its *linkages* to other industries.

When inputs such as fresh produce or meat are purchased by the Restaurant sector, the industries supplying those goods and services (in this case farmers, food manufacturers, and food wholesalers and retailers) increase their own economic activity. This increased activity itself creates demand for other products. Farmers, for example, may need more fertilizers for their land and more petrol to run their machinery. Food wholesalers may require additional box material. The demand for extra fertilizers and petrol and box material will, in turn, stimulate activity in the fertilizer, petrol and box industries. The increased activity in the fertilizer industry will create greater demand for its own inputs, perhaps some chemicals. And so it continues down the chain of industries. The sum effects of all this additional economic activity are known as *indirect impacts*.

Such indirect impacts (also known as "multiplier effects" or "spin-offs") on the economy clearly are important. They should not be ignored (as they usually are with financial accounting) if we are to measure the true benefits of an industry to an economy. An interesting observation is that, while it is true that high value-adding industries have low indirect impacts, those industries with relatively lower direct impacts have relatively higher indirect impacts. This is because, by definition, low value-adding industries consume more inputs per dollar of output and thus have a greater impact on their supplying industries. It should be noted, however, that the level of indirect impacts is highly influenced by the type of goods and services demanded and by the propensity of the companies (or the economy) to import those particular goods and services. The higher the propensity to import the required goods and services, the lower will be the effects on the local economy. Indeed, an industry that imports all its inputs will have virtually no indirect impact on the economy, save the small level of distributive activity (wholesale, retail and transportation margins) the imports may generate.

Increased industrial activity has a third effect on the economy. When additional wages and salaries are paid out, those dollars (appropriately adjusted for taxes and savings) are available to be re-spent on consumer goods and services. Take, for example, an additional \$1 million in wages resulting in say, an increase of disposable income of \$750,000. Depending on the spending patterns, this may result in extra consumer spending of say, \$500,000 in the retail sector (the remaining being spent in the entertainment sector, restaurant sector, etc.). This will increase the economic activity of the manufacturers and other suppliers of consumer goods who, in turn, will increase their own employment and their own wage payments. The sum effects of this additional activity due to increased wages are known as *induced impacts*. Again, it should be clear that, like indirect impacts, induced impacts are highly influenced by the economy's propensity to import, as well as by taxation and savings rates, the level of wages paid to employees and the level of capacity at which the economy is operating.

The question arises: given that there are many levels of indirect and induced spending which affect many, many different firms and industrial sectors, how can we estimate these impacts on the economy? Fortunately, economists have developed a method to estimate these impacts, by using the same input-

output tables to which we already have been introduced.¹⁶ However, since the base information is coming from financial statement data directly provided by businesses, it is critical to understand how financial statement data are re-structured to meet National Accounting standards. These differences are discussed below.

Technical Differences

Although the National Accounting (Input-Output) measurement of the value and impacts of Guide Outfitting begins with the same set of data as the financial results of the industry, a number of adjustments are required in order to conform to strict National Accounting standards. To avoid possible confusion, these technical differences between Financial Accounting and National Accounting should be understood. The intent here is not to provide a comprehensive or definitive discussion of these differences, however, but rather to provide a cursory overview. For a more in-depth discussion of the differences and of the methodology underlying National Accounting, the interested reader is referred to the National Accounting compendium published by the UN.¹⁷

The following outlines the major differences:

1. The first and perhaps most important difference is that National Accounting measures all non-tax related revenues and expenses related to production, even those not itemized on the corporate income statement. Hence, gratuities paid to staff are included as output (in the case of the Guide Outfitting Industry, as an increase in sports revenues). This increases output but not material inputs, and therefore it increases the estimate of GDP (Output - Inputs) by precisely the amount of gratuities. Using our other definition of GDP (GDP = indirect taxes + wages, salaries and benefits + operating surplus), we see that the increase in GDP is reflected in an increase in wages and salaries equal to the reported gratuities.

Another (usually) off-budget item is an estimate of the value of imputed room and board. On the Output side there is an increase in lodging revenues and, since the provision of room and board is a value to the employee, it is considered equivalent to a wage subsidy, and thus contributes to overall GDP. Normally, the cost of food is already accounted for within the financial statement, thus the net impact on GDP is equal to the value of the imputed room and board. Statistics Canada has standard values that it uses to assess the value of this room and board and it is that standard that is used in this report.

2. At the same time, National Accounting omits revenues not directly related to the production process. Generally, these incomes are limited to interest and dividend earnings, but include non-operating revenues related to rental incomes, commissions and the like.
3. A third difference is that, under National Accounting, the value of each input in the USE matrix is stated in "producer" prices. That is, all wholesale, retail, and transportation costs included in the "purchaser" price of a commodity are removed, as are all commodity taxes, indirect taxes and import duties. These "distributive and tax margins," as they are called, are explicitly recognized in the USE matrix as separate line items. The reader should understand that this does not in any way reduce the total cost of inputs to the industry; it simply re-assigns the costs to different input categories.
4. A fourth difference lies in the treatment of merchandise sales. National Accounting treats the purchase of merchandise as partly a purchase from the manufacturer of the good (equal to the cost

¹⁶ For a detailed discussion of the underlying mathematics of Input-Output analysis, see *Input-Output Analysis: Foundations and Extension*, Ronald E. Miller and Peter D. Blair, Prentice Hall, 1985

¹⁷ *System of National Accounts*, Statistical Papers Series F No 2 Rev. 4, New York, 1993

price of the good less distributive and tax margins) and partly a purchase from the retailer (equal to the mark-up for the good). Consequently, in an input-output table for a sector selling some retail goods, there is no recognition of the cost of the merchandise on the input (USE) side, and only the mark-up value is recognized on the output (MAKE) side. The cost of the merchandise is captured in the Manufacturing sector as output. It is for this reason that some analysts recognize certain manufacturing industries as **direct** tourism, even though tourists do not actually buy any goods directly from those manufacturers.

5. Related to this unusual approach to merchandise sales is the treatment of “service margins.” When a firm purchases a product (such as liquor, beer or wine) and re-sells it with a mark-up without any fundamental change to it, National Accounting recognizes only the mark-up or “service margin” as output. It then treats the purchase cost of the product (less distributive and tax margins) as an output to the original producer of the good. The main instance that affects most industries (besides retail sales) is alcohol sales. In this case, only the service margins are recognized as output, and the costs are assigned to the alcohol manufacturing sectors (beer, wine and liquor/distillers). In effect, then, the alcohol manufacturing sector is a direct provider to tourists under National Accounting principles.

The following simplified diagram may help explain some of these differences. On the left hand side is a financial statement containing revenues for rooms, food and beverage, rental income, merchandise sales, and interest and dividend payments. Room and Food & Beverage revenues are mapped directly into the Accommodation and Restaurant categories, but with the addition of (say, 10%) gratuities. Rental Income is part of the production process and therefore is entered on the National Accounting side. Merchandise under National Accounting is the net value. Interest and Dividends are not part of production, and they are excluded from the right hand side. Operating Expenses are mapped and broken down according to their constituent parts: the cost at the factory gate, the distributive (wholesale, retail and transportation) costs, and the various taxes and duties. Wages go directly into the Wages and Salaries component, but include the gratuities.

