

DEA RESEARCH DISCUSSION PAPER  
Number 43  
September 2001

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# **Satellite and resource accounting as tools for tourism planning in southern Africa**

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**Cover illustration by Helga Hoveka**

Work on this paper has been funded from the United States Agency for International Development (USAID) Regional Office for Southern Africa through the Natural Resource Accounting for Southern Africa (NRASA) project. Further funding was provided indirectly by the Department for International Development (DFID), the Swedish Government (Sida) and the Namibian Government.

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## Acronyms

CBNRM	community based natural resource management
SAM	social accounting matrix
SNA93	System of National Accounts, 1993
TARA	tourism asset resource accounts
TSA	tourism satellite accounts

## Acknowledgements

The authors thank all the government and private agencies in South Africa, Namibia and Botswana and the numerous individuals who gave freely of their information and assisted with the work. In particular, the study benefited from the efforts of Mampiti Matete, Florette Fleermuys, Michael Humavindu and Simon Masirembu. We thank the Natural Resource Accounting for Southern Africa (NRASA) project steering committee for initiating the study and providing support and assistance. In particular, Glenn-Marie Lange, Rashid Hassan, Chris Brown and Danie Swart provided essential guidance. Opinions expressed in this paper should be attributed solely to the authors.

## **Abstract**

*The potential for improvements to tourism planning through development of tourism satellite accounts (TSA) to measure economic activity, and tourism asset resource accounts (TARA) to measure the natural asset base, was studied in southern Africa. All countries should pursue plans to develop TSA, TARA and economic models for tourism planning. Basic TSA, including consumption, production, supply and use, employment and capital tables are required. TSA development should take place step by step. Specific data collection surveys are needed, as are agreements between stakeholders. Surveys should be focused on both tourists and the suppliers of tourism products, and should be carried out by central tourism agencies in collaboration with national accounting agencies. TARA should be approached from the point of view of both physical accounts for specific resources, and land accounts for general tourism activity and potential. TSA and TARA should be integrated with input–output/SAM modelling tools. Countries should match the rigour of their TSA and TARA development with their anticipated capacity to make and use them in analysis and planning. Donors could assist in the process, especially in a regional context.*

## 1. INTRODUCTION

This paper is an assessment of the potential for development and use of tourism satellite and natural resource accounts for planning and policy analysis of tourism in southern Africa. The province of KwaZulu-Natal in South Africa, Namibia and Botswana were specifically examined in case studies of varying intensity. The availability of data, potential for collection of data, the extent of any accounting activities, and the usefulness of these activities for the tourism planning process were assessed.

Tourism has an increasingly important role in the economies of southern African countries. It is a major source of foreign exchange, income and employment, and is seen as having significant potential to contribute to economic growth in the region (Hoff and Overgaard Planning Consultants, 1993; Ministry of Finance and Development Planning, 1997; DEAT, 1996). In the global tourism market, southern African countries enjoy certain comparative advantages, due to their having unique, unusual and world renowned natural and cultural assets. Tourists in southern Africa embrace business and leisure travellers, as well as domestic and international visitors. Tourism based on natural assets (national parks, game reserves, unique wildlife and biological diversity, unique scenery) and cultural attractions, is regarded as important.

Accounts, as assessed in this paper represent those which are functionally similar to, but peripheral to each country's *national accounts*, as described by CEC et al. (1993) in the 'System of National Accounts' (SNA93). These may be defined as *satellite* accounts. National and satellite accounts are used to present data and statistics on the economic activity (flow accounts) and the stocks of wealth (stock or capital accounts) in a country. They are compiled for successive time periods providing information for monitoring, analysis and evaluation of the performance of an economy over time. The data in them can be used for economic analysis, decision making and policy making.

The SNA93 categorise economic activities on the basis of production system, or into *industries*, such as agriculture, mining, fishing, manufacturing, services, etc. The classification does not include tourism, which is a demand-based concept. Consumption by tourists, or tourism economic activity is hidden within different industries in the conventional national accounts. Thus, in the national accounts, tourism might make up some parts of 'services', 'manufacturing', 'fishing', etc. Tourism satellite accounts (TSA) assemble data on the economic activity of tourism separately, as an annex to the national accounts (CEC et al., 2001).

Further, the SNA93 do not include most natural assets in the definition of capital. Since much economic activity is based on the use of resources from the natural environment, and as a depository for waste, this is a fundamental omission. In as much as the national accounts do not account fully for depletion, degradation or appreciation of the natural asset base, they are incomplete and misleading. This has given rise to attempts to develop satellite *natural resource accounts*, as described in a specific manual (UN, 2000). Tourism commonly makes use of natural assets, for example, wildlife and beaches, so there is a case for development of specific accounts for these. For this we have coined the term 'tourism asset resource accounts' (TARA).

In Africa, the need to ensure that tourism development is economically efficient is fundamental. Planners need to ensure that income, employment, equity and growth are best promoted by tourism policy. Questions such as: which tourism commodities provide the most income, employment, directly and also through linkages and multipliers, are important. So are questions relating to the vulnerability of different tourism commodities and systems, both locally and regionally, to

economic leakage or to political disturbance. These questions must be answered through the tourism planning process, which in turn needs to be integrated into the broader economic planning framework.

Tourism agencies in southern Africa all keep basic statistics on tourism (Department of Tourism, 2000; Tourism KwaZulu-Natal, 2000; Ministry of Environment and Tourism, 1995, 1997). These data can provide basic economic indicators and can be used in various analytical frameworks to assess policy options. For example, crude analyses of the impacts of tourism can be derived using existing data in input–output/social accounting matrix (SAM) models. This approach has been used by WTTC/WEFA (1999) for most countries in the world, WTTC (1999) for southern Africa, and by Grant Thornton Kessel Feinstein (2000a, 2000b) and Conningarth Consultants (2001) in South Africa. Existing tourism statistics can also be used in cost-benefit analyses of different options for tourism development, which have assisted to some extent to improve the planning process.

We considered the merits of using accounting tools as the statistical base to improve tourism planning in southern Africa. We considered the two types of accounts: those accounting for tourism as an economic activity (TSA), and those accounting for the natural asset base for tourism (TARA).

Various manuals have been developed for the development of TSA (OECD, 2000; WTO, 1999a, 1999b, 1999c, 1999d, 1999e, 1999f; UN et al., 2000). The WTO approach and that used by WTTC/WEFA (1999) are now the two most commonly used for compiling TSA. The WTO approach is very comprehensive and requires a detailed database—which is often not practically available. The WTTC makes use of a macroeconomic models to develop simulated TSA, and has done this for countries throughout the world. The data requirements are smaller, but the results less useful.

Full TSA, based on the WTO approach, have been developed by a number of, mostly developed, countries including Sweden (Nordström, 1995), Canada (Smith, 1995; Lapierre & Hayes, 1994) Norway (Evensen, 1998), Australia (ABS, 2000), New Zealand (National Accounts Division, 1999) and the USA (Kass and Obuko, 2000). Development of full sets of such accounts is expensive and time consuming. No countries appear to have explicitly developed TARA. Basic TARA have, however, been developed incidentally as part of land accounts, as described by the UN (2000), or as part of specific environmental economic valuation studies, such as those of Bell (1997) and Barnes (1995a; 1995b).

## **1.1 Definitions**

This paper is written from a tourism economics perspective, but many of the definitions adopted are from the accounting literature. To avoid confusion, these bear some elaboration. According to CEC et al., *tourism* is defined as: ‘the activities of persons travelling to and staying in places outside their usual environment, for not more than one consecutive year for leisure, business and other purposes, not related to the exercise of an activity remunerated from within the place visited’ (2001:13). We define *nature-based tourism* as ‘all forms of tourism that rely on or incorporate visitation to natural environments’. The exact definition of ‘natural environments’ is not always clear, but for our purpose we assume that the definition is restricted to environments that are not primarily man-made in recent times.

We use a definition for *tourism industries*: ‘groups of establishments producing the goods and services purchased by tourists’, taken from that of CEC et al. (2001:46). Tourism industries produce *tourism products* (or commodities). Tourism products can be ‘characteristic’ (they would not be

produced without tourism), ‘connected’ (partially characteristic) or ‘non-specific’ (general consumer products) (CEC et al., 2001:39). A ‘check list’ of tourism products for a southern African country is presented in Table 1. We define *tourism ratio* as the proportion of gross output, value added, employment, capital, or other measure of an industry that is attributable to tourism.

We define *tourism satellite accounts* as physical and monetary accounts of tourism activity in the economy, offset from the national accounts, and we define *tourism asset resource accounts* as physical and monetary accounts of the natural assets, which make up the base for tourism. The basis of the definition of tourism is the activity of visitors who have a set of demands. Thus, the basis of TSA is *tourism consumption*, defined as ‘the expenditure made by, or on behalf of, a visitor before, during and after the trip and which expenditure is related to that trip and which trip is undertaken outside the usual environment of the visitor’ (CEC et al., 2001:37).

Tourism consumption is supplied by economic units, which provide tourism products, as defined above. Several definitions are important here. The data in the TSA measure the *value* of tourism in terms of gross output, value added and employment. Use of TSA in analysis with input–output/SAM models, can measure the *impact* of tourism in terms of gross output, value added and employment. Here, the direct impacts (consumption), indirect impacts (linkages) and induced impacts (multipliers) are measured.

According to CEC et al., *gross fixed capital formation* is defined as the ‘total value of a producer’s acquisitions, less disposals, of fixed assets during the accounting period plus certain additions to the value of non-produced assets by the productive activity of institutional units’ (2001:34). *Fixed assets* are ‘tangible or intangible assets that are produced as outputs from processes of production and that are themselves used repeatedly or continuously in other processes of production for more than one year’ (CEC et al., 2001:34).

Only *economic* capital assets are included in the TSA, in accordance with the SNA93 rules. These include all man-made assets as well as ‘natural assets (a) over which ownership rights are enforced by institutional units either individually or collectively, and (b) from which economic benefits may be derived’ (UN, 2000:26). TSA thus do not include most natural assets within capital accounts.

Many natural assets are instead *environmental assets*, defined as ‘all those non-produced natural assets that function as providers, not of natural resource inputs into production, but of environmental services in waste absorption, ecological functions such as habitat and flood and climate control, or other non-economic amenities such as health and aesthetic values’ (UN, 2000:26). Both economic and environmental assets should be included in tourism asset resource accounts (TARA), as defined above, since the natural assets, which form the basis for tourism, can exhibit economic and environmental functions simultaneously,

**Table 1: A 'check list' of tourism products for southern Africa**

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**A**    *Specific products*

*Tourism characteristic products*

Accommodation

Hotel and other lodging services

Second homes on own account or for free

Food and beverage services

Restaurants

Beverage serving establishments

Transport

Passenger transport

Rail transport services

Road transport services

Air transport services

Water transport services

Support services

Transport equipment

Rail transport equipment

Road transport equipment

Rental

Own vehicle

Fuel, oil, etc.

Air transport equipment

Travel agency, tour operator, and tour guide services

Travel agency services

Tour operator services

Tourist information and tour guide services

Cultural services

Recreational and other entertainment services

*Tourism connected products*

Goods

Services

**B**    *Non-specific products*

Goods

Services

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## 1.2 Description of tourism satellite accounts

TSA are well established and deserve some description. The data for these are normally derived from two sources. First there are tourism *expenditure* data which are usually collected by provincial and national tourism agencies. They are obtained from immigration statistics, specific visitor surveys, tourist destination registers and household surveys. Second there are *production* data which describe the characteristics of the producers of tourism products. The latter are hidden within the national accounts and can be extracted for the TSA if the tourism ratios are known. The tourism ratios generally need to be determined through specific surveys of the supply industries. If tourism and national accounts information is very detailed and exhaustive, then reasonably comprehensive TSA could be developed for them. However, if not, then extensive and specific surveys are needed.

A set of TSA can be described more specifically as a series of some ten tables, and complete development of these is a major undertaking, often out of reach in developing countries, due to financial and person-power constraints. Tables containing the following information are arguably the most valuable in terms of providing information for policy planning and tourism management.

*Expenditure accounts* show the consumption of tourists by category of tourist (e.g. domestic, foreign, inbound, outbound, same-day, overnight, business, leisure, nature-based, non-nature based, etc.) and by specific tourism product/commodity (e.g. hotels, restaurants and bars, car hire services, bus services, etc.). A typical list of tourism products is presented in Table 1. These tables disaggregate data between outbound, inbound (imports and exports respectively) and domestic tourists.

*Production accounts* show the gross tourism output for each tourism industry (hotels and lodges, eating and drinking places, passenger rail, passenger bus, taxis, etc.) and by product. They also briefly present intermediate inputs, value added, as well as employee compensation by industry. Both tourism industries and non-tourism industries that supply tourists' demand are included.

*Supply and expenditure accounts* show production in producer prices (imports, government sales, wholesale and retail trade margins by tourism industry) and consumption (as intermediate consumption, personal consumption government expenditures, exports, private investment, changes in inventories) by industry. These are effectively the *supply and use* tables of SNA93. They allow reconciliation between the expenditure and the production accounts, which are often derived from different data sources which is very useful for data validation.

*Tourism value added accounts* represent further development of the production accounts and show more detail on the computation of value added resulting from tourism production. Here the data is computed by industry (tourism and other). Tourism ratios, derived from specific surveys of the industries, are used to calculate the proportion of each industry applicable to the definition of tourism.

*Tourism employment accounts* present values on total employment and compensation by industry—tourism and other. Tourism ratios are again commonly employed to get the values applicable to tourism.

*Tourism capital accounts* provide data on the capital flows and stocks by industry, the former providing information on capital formation, and the latter providing information on the stocks of capital at the end of the relevant period. Again, tourism ratios are employed to get the values applicable to tourism. Detailed specific surveys are required to get at capital values, which are

directly linked to provision of services to tourists. The distinction between investment in and consumption of capital (a flow concept) and assets (a stock concept) needs to be clear. As stated, only economic capital assets are included in the TSA, in accordance with the SNA93 rules.

### ***1.3 Use of TSA and TARA for analysis and planning***

The development of TSA should allow the contributions of the tourism industry to be separated out from the core national accounts in which they are hidden. It allows them to be analysed individually, while retaining their relationships with the core accounts. TSA thus allow comparisons to be drawn between the tourism industry and other industries in the economy, and provide information about the effects that tourism activities have on a nation's production, income, wealth and employment. The information can be used to determine the value of tourism, and its component industries, relative to that of other sectors competing for resources.

South Africa and Botswana have analytical models in the form of input–output/SAM (CSO, 1998a; Conningarth Consultants, 2001), and these can be used to determine the different *impacts* of various tourism activities on the economy, due to indirect and induced effects. Namibia has embarked on the development of a input–output/SAM (Conningarth Economists, 2001). A direct link between the TSA tables and a national input–output/SAM model can be established.

An input–output table is essentially a snapshot of the transactions among industries of a country in a particular year. Each entry in the table measures the purchases (inputs) by one industry (column) of another (row) industry's production (output). Thus, each column represents an annual expense statement for the column industry for the year for which the table was compiled. For example, to produce a year's worth of meals, a restaurant needs to buy a variety of goods and services from other industries. In the input–output table there would be a column of entries for the restaurant industry representing these purchases: certain amounts from farmers, food processors, manufacturers, service providers, etc.

The input–output framework allows the restaurant expenditures to be traced as they flow through the economy from one producer to the next. Along each step of the way, industries add value to the economy. The model allows one to trace the flow of expenditures and to track, with reasonable precision, the employment and value added generated by initial tourism expenditures. Thus the impact of these expenditures on the economy is measured. In such analysis, the degree of disaggregation and the accuracy of the coefficients used will affect the value of the results. While existing basic statistics on tourism and generic coefficients will result in crude measures of impact, use of more detailed information from a set of TSA can make the results much more useful. A SAM is an input–output table, which is extended to incorporate disaggregated data on the household sector. This allows the analytical work to include equity and other additional issues.

If TARA are developed, they will provide information on the state of the asset base for tourism: whether this is changing; whether it is being degraded or not; etc. The information can be used to determine what might be needed to ensure the growth and sustainability of the tourism sector. Along with TSA, the TARA can be incorporated into input-out/SAM models to measure the effects of policy changes.

## 2. METHODS

A survey of existing literature and data on tourism for the focus countries was undertaken. Where documented information was not easily available, relevant stakeholders in South Africa, Namibia and Botswana were visited to survey their work and future plans relating to the formulation of TSA and TARA. The data sources available for the development of accounts were examined, and assessed for their rigour, reliability and potential for use. During the field visits and interviews with stakeholders, the possibility for and potential methods for formulating TSA and TARA according to recognised guidelines were reviewed.

A set of preliminary TSA for Namibia was developed using the existing data. This exercise is described in Suich (2001). During the study, any important data gaps and inconsistencies of information were identified. The capacity for the agencies in question to undertake the development of TSA and TARA accounts, and to use them productively for analysis and planning, was also assessed. Further, the likely economic benefits to be derived from development of TSA and TARA were subjectively assessed, relative to the likely costs involved.

We attempted to examine all relevant primary and secondary data sources in the three countries concerned and extracted and collated these to determine their suitability for development of satellite accounts. We focused on three main data sources. Firstly there were the *tourism statistical units* associated with government and parastatal tourism agencies (such as Tourism South Africa, the Department of Tourism and the Directorate of Tourism in South Africa, Botswana and Namibia respectively) and provincial governments (such as Tourism KwaZulu-Natal). Secondly there were the *national central statistical agencies*, responsible for producing the national accounts. Thirdly there were the results of *various specific research studies* on tourism and tourists.

Specific research studies include surveys of tourists (demand) tourism operators (supply), and households to acquire disaggregated data on such things as expenditures, costs, income, economic value, economic impacts, etc. Examples, here, include PPMIU (1997), Barnes et al. (1999) and CSO (1988b). A number of such key sources were used to derive tourism ratios and measures of expenditure and production for the study. The results of TSA constructed in other (mostly developed) countries have also been utilised. Studies in which analytical and planning tools have been used to try and make tourism more efficient were also reviewed. An example here is that of Conningarth Consultants (2001).

Money values given in this paper are either in South African Rand (R), Namibia dollars (N\$), Botswana pula (P), or United States dollars (US\$), where R1,00 = N\$1,00 = P0,74 = US\$0,14.

## 3. FINDINGS

### 3.1 *Tourism satellite accounts*

In South Africa, Namibia and Botswana, TSA are needed to improve planning in the tourism sector. No full TSA are available in the three countries studied. The constraint has been *lack of sufficient data* and the attempts to develop TSA have had to rely on major assumptions. However, all countries intend to develop basic TSA and are at various stages in the process of developing statistical bases for this. Botswana has funded surveys in place, South Africa has a government-funded project planned and Namibia is planning surveys and seeking funding. We consider these efforts will be amply repaid in terms of improved economic efficiency in tourism. Any degree of TSA development will be better than none.

The South African tourism industry, with consumption estimated at some R23,2 billion in 1999 (WTTC, 1999), is some 20 times larger than those of Namibia and Botswana. It is significantly more complex and requires a correspondingly more sophisticated approach to the development of TSA. Nevertheless, the basic findings are similar for all countries.

In the case study of Namibia the findings from the preliminary set of TSA developed with existing data, suggest that initially, the most complete measure of gross tourism output, could be obtained with a demand-side approach. Suich (2001) describes the exercise in detail. Table 2 shows a summary of basic output figures from the accounts, developed from expenditure and production data. The information on production is more incomplete than that on expenditures.

**Table 2: Comparison of tourism gross output estimates for Namibia, 1996**

Tourism product	Tourism gross output estimates derived from:			
	Expenditure data		Production data	
	Proportion of total (%)	Value N\$ million	Tourism ratio (%)	Value N\$ million
<i>Characteristic goods and services</i>				
Accommodation				
Hotel and other lodging services	27	310	96	341
Food and beverage serving services				
Restaurants and bars	13	152	30	41
Transport [total]		[317]	[88]	[272]
<i>Passenger services</i>				
Rail			88	4
Road			88	4
Air			88	231
Domestic	7	87		
International				
<i>Transport equipment</i>				
Rail			88	1
Road				
Rental	12	140		
Own vehicle				
Petrol, oil				
Air			88	20
Travel agencies, operators, guides	8	90	97	12
Cultural and recreational services	7	87	27	49
<i>Connected goods and services</i>				
Goods				
Handicrafts	4	45	90	17
Personal consumption	12	146		
Services			1	4
Other	10	122		
<b>Total</b>	<b>100</b>	<b>1 179</b>	<b>-</b>	<b>724</b>

Source: Suich (2001)

Ultimately in TSA development, both demand and supply data is needed. Development of a basic tourism supply and use table should be a target. Surveys of tourists and producers are needed to provide more empirical data. Demand (expenditure) data—differentiating between exports (inbound) and imports (outbound), domestic and foreign, and nature-based and ‘other’ as well as between different tourism products—are needed. Inventories of producers are needed with survey information on output, intermediate inputs, employment, capital formation/consumption and taxes. Improved and timely collation of tourism arrival data by immigration authorities is also needed.

*Basic* TSA are required—though initially not very detailed ones. Technical and human resources are scarce and the capacity to compile and make use of very detailed accounts is limited. None of the three countries have so far fully developed their national accounts, which form the basis of TSA. They should continue to pursue this. For each of the countries studied there is an optimal level of development for their TSA. Among the three countries, South Africa, with a relatively very large and multi-dimensional tourism industry, requires the most sophisticated TSA. Basic consumption, production, supply and use, employment and capital accounts are needed. In Namibia and Botswana relatively basic TSA including these elements will suffice. The process of TSA development should be a step by step one.

The completion of *specific surveys* is needed in all three countries. Agreements are needed between stakeholders (tourism agencies, statistical agencies, immigration authorities, environmental agencies, tourism trade associations and others) to ensure a consistent and structured framework for data collection. As far as is practical, data collection should comply with WTO recommended procedures. Surveys should be focused on the suppliers of tourism commodities and the consumers (tourists) themselves—including domestic tourists. Additional work can supplement this, including modelling of tourism enterprises to corroborate the statistical findings. Generally the best setting for these surveys is initially within the statistical units of the specific central or local tourism agencies/authorities. These units should also aim to take over the production and maintenance of the TSA, in collaboration with the central bureau of statistics. However, depending on capacity and leadership, specific circumstances may dictate otherwise.

The findings for South Africa, Namibia and Botswana are applicable to other southern African countries which have basic structures in place for tourism planning. The level of development of TSA should be tailored to the local capacity constraints. In addition to national efforts, there is a case for an additional regional (southern African) approach to the development of TSA. Regional integration in tourism planning and marketing is essential for each country’s efficiency, and this integration will also benefit from the development of accounts.

### **3.2 *Natural capital for tourism***

In all three countries studied, and indeed in southern Africa generally, TARA are needed to improve planning in the tourism sector. Even basic TARA would help to ensure efficiency and sustainability in tourism. Attempts should be made to develop these. The process would be best co-ordinated from within environmental/nature conservation/land use planning agencies, working closely with the producers of tourism satellite accounts.

While TARA do exist for some of the natural assets involved in tourism, these assets are mostly used for a range of tourism and non-tourism activities, and there is no clear approach in southern Africa for linking these assets to tourism. Tourism planning has been linked only indirectly to the

study of its asset base. Much needs to be done and, in the context of this study, a conceptual framework has been built indicating the way forward.

The natural capital base for tourism is made up of both economic and environmental natural assets as defined above, and is a conglomerate of factors and assets. This base produces both tourism activities and environmental services. We deal first with accounts for the productive asset base, and later with accounts for the asset base in terms of environmental health. Further, we would look at TARA for the productive tourism asset base from two angles:

1. Basic sets of data on *specific* assets, such as wildlife stocks, water, land allocated to conservation and other uses can be collected and set up as physical accounts. The physical status and environmental health of these stocks can usually be measured fairly easily, but their values cannot. This is because they are used in complex spatial and temporal ways, to produce many products, of which tourism (itself comprising many alternative products) is only one.
2. The stock of assets underpinning the tourism products can be conceptually classified, more *generally*, according to the amount of *tourism activity* or *tourism potential* that they generate, or can generate. Because of the huge complexities and difficulties involved, these classifications must be made subjectively, based on the spectrum of natural and other assets on hand. Although the measurement is somewhat difficult, subjective and subject to error, the information can be relatively easily linked to tourism values and output. The environmental health of these ‘stocks’ of assets can albeit with difficulty, be measured with the values of tourism in mind.

Table 3 shows a preliminary classification of the types of asset accounts that could be developed to assist with the sound planning and development of tourism in southern Africa. Of the specific resources listed some are easier to measure than others. Botswana has already developed a set of physical wildlife accounts. In Namibia and KwaZulu-Natal the data on wildlife stocks is less spatially complete and would require some collation. Nevertheless, we consider that wildlife accounts will be very useful for tourism planning. Water as an input to tourism is very important, especially in countries like Namibia and Botswana and it is thus a key asset. Resource accounts data on water can be very useful for tourism planning and management. It is questionable whether the other more specific assets listed in Table 3 can be measured well enough in physical terms to be useful in tourism development. If ways could be found to measure them they could be considered. Nature-based tourism is highly variable spatially, and it is clear from the analysis that spatial mapping of the assets should be important in the accounting process.

General natural asset accounts for tourism would seem to hold promise, though they are difficult to measure without subjective assessment. Some work has been done on this in Botswana, and in Namibia by Barnes (1995a; 1995b). Land was studied with the aim of making spatial inventories of the natural resource uses, including tourism. Use was made of financial and economic enterprise models to derive the gross output and value added and employment generated by the activities. The inventory was surveyed once more considering the potential of the ‘package’ of natural and man-made assets to generate income. Tourism was a large component of this study, and the government’s statistical base of tourism establishments was used. The result is a map of potential for tourism as described above. This has proved extremely useful in tourism planning, and could be developed further towards an accounting framework, which could possibly be linked to TSA. The system for land accounts, described in the UN manual on natural resource accounting (UN, 2000), should form the basic accounting framework.

Environmental health can be treated with use of key indicators, as described in detail by Dixon et al., in the Caribbean, and which are measured and monitored over time (2000). Namibia has a basis for this in its 'State of the Environment' reporting programme.

**Table 3: A typology of natural asset accounts for tourism**

Asset	Tourism values	Ease of measurement of:		
		Physical stocks	Environmental health trend	Suitability/feasibility?
<b>Specific asset accounts</b>				
Wildlife	Poor	Good	Good	High
Water	Poor	Good	Good	High
Vegetation	Poor	Good	Good	High
Biodiversity	Poor	Good	Poor	Moderate
Scenery	Poor	Moderate	Good	Moderate
Land use	Moderate	Good	Good	Moderate
<b>General asset accounts</b>				
Current tourism activity	Good	Moderate	Moderate	High
Potential for tourism	Good	Moderate	Moderate	High

### 3.2.1 Specific asset accounts

The development of natural resource accounts in South Africa, Namibia and Botswana has not so far addressed specific tourism asset base accounts. Botswana is currently developing physical wildlife accounts. These are based on data from country-wide national aerial counts of wildlife stocks, which have been carried out almost annually since 1987. This is the only data set in the three countries which provides easily collated accounts. In South Africa and Namibia, many detailed aerial wildlife surveys have been done in parks and on specific properties and land use categories. However, the methods used differ and results are often incomparable, so that this data is not collated and reconciled in a form useful for accounting at the national level. In Namibia, surveys initiated in 1997 are likely to result in countrywide data useful for planning.

The Botswana wildlife accounts contain data which has somewhat wide margins of error, making it difficult to detect statistically valid trends. However it does show, for example, significant increases in the elephant population. The data on consumptive off-take of wildlife through hunting, capture, etc., available in Botswana is of low quality and requires improvement before it can be used to measure production. In addition, the wildlife resource is multi-dimensional and is used for numerous competing productive activities. The valuation of the wildlife resource as a base for tourism is difficult in this context.

Barnes (1998a; 1998b; 2001) undertook a detailed analysis of the potential for the wildlife resource in Botswana to generate direct use values, including those of tourism. An enterprise modelling and linear programming approach was used to examine the wildlife resources present in Botswana around 1991. The results showed the combinations of wildlife uses which would maximise the gross value added. Table 4 shows some of the results from this study. The value of the wildlife resource as a generator of tourism value can be extracted from the values for wildlife viewing,

safari hunting, community wildlife use and game ranching. This is the closest thing to a measure of the value of the standing stock of wildlife, for tourism at the national level. Because empirically determined enterprise models were used, it is possible to work back to get gross output, employment, capital investments as well as the gross value added. It should be noted, however, that the measures of gross output and value added derived by Barnes were calibrated in shadow prices—as measures of economic efficiency rather than the statistical measures used in resource accounting. They could be converted accordingly.

**Table 4: Optimal combinations of wildlife uses and/or livestock production to maximise gross value added on land allocated to wildlife in Botswana, 1991**

Wildlife/rangeland use	Measure of allocation between activities			
	Net value added <sup>1</sup> (P '000 000)		Land requirements <sup>2</sup> (ha '000 000)	
	All possible activities included	Non-Consumptive activities only	All possible activities included	Non-consumptive activities only
Wildlife viewing	93,5	92,5	3,9	3,9
Safari hunting	5,4	0,0	3,9	0,0
Community use, high <sup>3</sup>	1,3	0,7	1,2	0,6
Community use, low <sup>3</sup>	1,0	0,2	13,3	2,1
Game ranching	0,8	0,8	0,1	0,1
Cattle ranching	3,2	3,2	0,7	0,7
Ostrich farming	10,9	0,0	0,0	0,0
Crocodile farming	2,5	0,0	0,0	0,0
Elephant cropping	0,4	0,0	4,0	0,0
Product processing <sup>4</sup>	0,2	0,0	0,0	0,0
<b>Total: wildlife only</b>	<b>116,0</b>	<b>94,2</b>	<b>26,4</b>	<b>6,7</b>
<b>Total: wildlife + livestock</b>	<b>119,2</b>	<b>97,4</b>	<b>27,1</b>	<b>7,4</b>

<sup>1</sup> Net value added to the national income per annum (net value added is gross value added less depreciation)

<sup>2</sup> Includes very small amounts of land for ostrich/crocodile farming and product processing

<sup>3</sup> Community-based wildlife use projects in high- and low-quality areas

<sup>4</sup> Medium-scale tanning enterprises

Source: Barnes (1998a; 1998b; 2001)

The development of basic water accounts has been undertaken in the three countries and these are in the process of being refined and improved. As part of this it is intended to ultimately survey the use of water by the tourism sector and include this component in the accounts. This will provide important information on the value of water resources used for tourism and thus the value of a generally important component of the natural resource base for tourism.

In South Africa and Namibia, partial land and forest accounts are being developed. These form part of the natural base for tourism. The accounts can be developed physically, but use of land and forests is multi-dimensional and the problems associated with valuing the wildlife resource for tourism are applicable here. A similar approach to valuation to that used for wildlife could be applied to land and forest resources.

The development of physical accounts for wildlife, land, forests and other tourism resources, as well as the use of valuation approaches such as that described above, have great potential for improving the planning of tourism—particularly nature-based tourism. These approaches will require more investment in economic person-power, and specific allocation of this toward land valuation work.

### **3.2.2 General asset accounts**

The potential for the development of general land asset accounts has been tested in Namibia, where Barnes (1995a; 1995b) did a spatial analysis of the existing and potential use values of natural resources in parts of Namibia. This was an exercise aimed at measuring the current potential values of natural resources being enclosed within community-based natural resource management (CBNRM) initiatives. The approach was used as tool in land use and CBNRM planning.

In this study, land was subjectively mapped into zones or units of relatively homogeneous potential for natural resource use. A team of people knowledgeable about the area was used in a Delphi approach to get consensus on the zones. Within each of the zones, current resource use activities were documented and the potential for development within the existing policy and land use framework was also documented. Again, the potential was subjectively determined, and checked using a Delphi approach.

Detailed spreadsheet budget and cost-benefit models on different resource use activities, based mostly on empirical data, were used to allocate certain values to the physical data on activities for each zone. The picture that emerges is spatially allocated set of data showing the resource base in terms of its potential to generate value.

Table 5 shows some results for tourism activities in one of the zones. The models allow extraction of data compatible with TSA and relevant to tourism planning, such as gross output, gross value added, employment and capital formation. The approach could thus be used to create general spatial physical and monetary stock accounts for the asset base for nature-based tourism. However, along with the development of specific asset base accounts this will require more investment in economic person-power and specific allocation of this toward land valuation work.

**Table 5: Example of current and potential values, attributable to tourism, in an 850 km<sup>2</sup> land capability zone (Zone 5a, Caprivi region, Namibia, 1994)**

Activity	No. units	Examples of estimated values (N\$)		
		Net value added	Community income	Community wages
<b>Current values</b>				
Wildlife viewing lodge	1	220 500	81 000	81 000
Wildlife viewing tented camp	1	140 300	32 400	32 400
Campsite (developed)	0	0	0	0
Campsite (basic)	0	0	0	0
Rest camp	0,62	240 560	31 000	27 280
Safari hunting lodge	0	0	0	0
Fishing lodge	0	0	0	0
Crafts sales	40	20 860	29 800	0
Traditional villages	1	20 000	24 000	10 000
Guiding activities	0	0	0	0
Total current tourism values	-	642 220	198 200	150 680
<b>Potential values</b>				
Wildlife viewing lodge	1	220 500	81 000	81 000
Wildlife viewing tented camp	1	140 300	32 400	32 400
Campsite (developed)	1	12 700	12 400	5 400
Campsite (basic)	1	3 700	4 000	1 800
Rest camp	0	0	0	0
Safari hunting lodge	0,56	216 890	27 950	24 590
Fishing lodge	0	0	0	0
Crafts sales	105	59 200	86 380	0
Traditional villages	1	20 000	24 000	10 000
Guiding activities	6	3 150	4 500	0
Total potential tourism values	-	676 440	272 630	155 190

*Source:* Barnes (1995a; 1995b)

### **3.2.3 Environmental indicators**

As stated, TARA can be developed specifically to account for the environmental health of the tourism natural asset base. Dixon et al. (2000) described the links between tourism and the environment in the Caribbean. The causes of environmental problems—caused by tourism and by other economic sectors—and the effects of these on tourism are described. The incentives to invest in the asset base for tourism and environmental care differ depending on the link between source and effect of the problem. These issues are all relevant in the southern African environment. The problems associated with tourism in the southern African coastal environment in particular, are similar to those in the Caribbean. Elsewhere, where wildlife stocks and wild lands are important, the

threats to the asset base are primarily due to competition for land, or excessive use of the resource by tourism and other industries.

The development of specific and general TARA, as described above, will make it possible to define the indicators of the health of the asset base. The policy issues that surround incentives for investing in and preserving the health of the base will be clearer. Issues such as certification of tourism products, modification of property rights and institutional structures to ensure incentives for asset preservation and capture of rents from tourism will be clear. This will enable development of policy environments which strengthen rather than threaten the tourism industry. We see development of environmental indicators as a second stage in the development of TARA.

## **4. CONCLUSIONS AND RECOMMENDATIONS**

### **4.1 Conclusions**

The study has provided the answer to the question of whether southern African countries need to invest in the development of tools for planning tourism, such as TSA, TARA and input–output/SAM models. The answer is *yes*. South Africa, Botswana, Namibia and other southern African countries should invest in at least basic TSA, basic TARA in the form of tourism land and resource accounts, and input–output/SAM methodology. In all cases, the decisions regarding investment in these tools should rest on whether they will make tourism more economically efficient and sustainable.

The second question answered surrounds the level of detail in which TSA and TARA should be developed in southern Africa. This revolves around the degree of accuracy in surveys, the degree of disaggregation and detail in the accounts, whether accounting needs to be annual or only periodic, and whether less crucial accounting tables are needed or not. In all cases the answer should be based on the planning requirements of the country and sector, as well as the capacity available in the country to develop and utilise such accounts.

A third question arose as to what surveys and studies are needed to develop the basic accounts. The answer, in South Africa, Namibia and Botswana, is that *expenditure surveys* will be needed, of visitors and domestic tourists at national border entry/departure points, as well as at destinations in the country. *Producer surveys* will also be needed—at least for accommodation, food/beverage and transport products—with the aim of obtaining values for output, value added, capital, employment, and tourism ratios. For TARA accounts, as a minimum, basic specific land and asset mapping surveys to document tourism potential will be needed.

The fourth question answered is about who should develop these tools, who should use them and where should they be ‘housed’. Ideally, TSA should be developed and maintained either by the national tourism agency or by the central statistical agency. Less preferable is for them to be made by environmental agencies or regional tourism/statistical agencies. The use of these accounts will tend to be by the tourism and economic planning agencies. In the case of TARA, the most appropriate makers and users will be environmental and/or land-use planning agencies, which are multi-disciplinary and control investment in the tourism base. In all cases, flexibility is essential to ensure that effective use of available leadership and capacity is made.

The fifth question concerns who should pay for the development of TSA, TARA and input–output/SAM models. The answer is that both donors and governments should pay. Donors have a role in (supporting government in) funding initial or periodic surveys and project/program

development. Ongoing institutionalised surveys and analysis should be within the country's means and should be funded, at least primarily, by government.

## **4.2 Recommendations**

1. It is recommended that South Africa, Namibia and Botswana all go ahead with their current and emerging plans to develop TSA and economic models for tourism planning, and that they initiate steps to develop TARA. Other countries in southern Africa should follow suit.
2. Countries should ensure that the initial rigour and degree of detail in their TSA and TARA match their anticipated technical and human capacity to make and use the tools for planning and analysis.
3. The TSA, TARA and other planning tools for tourism should be housed where there are leadership and skills to make and use the tools, but this needs to be flexible in case conditions change.
4. It is recommended that a regional project be developed, to be funded by a willing donor, to assist southern African countries, including South Africa, Namibia and Botswana, develop TSA, TARA, and economic tourism planning models. The project could provide specific technical assistance and training with the aim of developing both national and regional tourism planning tools.

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