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Sustainable Tourism Development: Toward the Mitigation of Tourism Destination Impacts

(2004-SD-MS-21)

Synthesis Report

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Prepared for the Environmental Protection Agency

by

Dublin Institute of Technology

Authors:

**Dr Sheila Flanagan, Dr Kevin Griffin, Elaine O' Halloran,
June Phelan, Peter Roe, Elizabeth Kennedy Burke, Anna Tottle, Dr Ruth Kelly**

ENVIRONMENTAL PROTECTION AGENCY

An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle, Co. Wexford, Ireland

Telephone: +353 53 916 0600 Fax: +353 53 916 0699

Email: info@epa.ie Website: www.epa.ie

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SOCIO-ECONOMICS

The Socio-Economics Section of the Environmental RTDI Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in this area. The reports in this series are intended as contributions to the necessary debate on socio-economics and the environment.

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Details of Project Partners

Dr Sheila Flanagan: Project Leader

School of Hospitality Management and
Tourism

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 402 4380

E-mail: sheila.flanagan@dit.ie

Dr Kevin Griffin: Strand Leader

School of Hospitality Management and
Tourism

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 402 7593

E-mail: kevin.griffin@dit.ie

Peter Roe: Research Assistant

School of Food Science and Environmental
Health

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 402 4335

E-mail: peter.roe@dit.ie

June Phelan: Research Assistant

Formerly of the School of Hospitality
Management and Tourism

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 814 6080

E-mail: tourism@dit.ie

Dr Ruth Kelly: Strand Leader

Formerly of The Futures Academy

Dublin Institute of Technology

Bolton Street

Dublin 1

Tel: +353 1 814 6080

E-mail: tourism@dit.ie

Elaine O'Halloran: Project Coordinator

Tourism Research Centre

Dublin Institute of Technology

Marlborough Street

Dublin 1

Tel: +353 1 814 6094

E-mail: elaine.ohalloran@dit.ie

Anna Tottle: Manager

Tourism Research Centre

Dublin Institute of Technology

Marlborough Street

Dublin 1

Tel: +353 1 814 6090

E-mail: anna.tottle@dit.ie

Evelyn Quinn: Research Assistant

Formerly of the Tourism Research Centre

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 814 6080

E-mail: tourism@dit.ie

Elizabeth Kennedy Burke: Strand Leader

Formerly of the Tourism Research Centre

Dublin Institute of Technology

Cathal Brugha Street

Dublin 1

Tel: +353 1 814 6080

E-mail: tourism@dit.ie

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Glossary

Agenda 21	Programme of action adopted by the 1992 United Nations Conference on Environment and Development (the ‘Earth Summit’) in Rio de Janeiro in 1992 to promote sustainable development
CSO	Central Statistics Office
DED	District Electoral Division
DIT	Dublin Institute of Technology
DOE	Department of the Environment
ENFO	The environmental information service of the Department of the Environment, Heritage and Local Government
EPA	Environmental Protection Agency
EU	European Union
ITIC	Irish Tourist Industry Confederation
LAC	Limits of Acceptable Change
LA21	Local Agenda 21 (the initiative whereby local areas work towards a sustainable future)
NBDC	National Biodiversity Data Centre
RTDI	Research & Technological Development and Innovation
SAC	Special Areas of Conservation
SAPS	Small Area Population Statistics
SPA	Special Protected Areas
ASI	Areas of Scientific Interest
SAPS	Small Area Population Statistics
SOT	Surveys of Overseas Tourists
UNCED	United Nations Conference on Environment and Development
UNWTO	United Nations World Tourism Organization
VAS	Visitor Attitude Survey
VICE	Visitor Industry Community Environment (model for sustainable tourism)
VISIT	Voluntary Initiative for Sustainability in Tourism
WCED	World Commission on Environment and Development

Executive Summary

This report recognises tourism as an important source of investment and employment in Ireland, particularly in rural regions and suggests that the impact of tourism be monitored closely because of its direct and indirect impacts on the environment. Furthermore, it acknowledges how tourism interacts closely with other policy areas – transport, energy, environment, regional planning, business and trade – and the need therefore to coordinate and integrate policies. It claims that all stakeholders in the tourism sector, at national, regional and local levels, have a part to play in preserving environmental quality.

While it is generally agreed that sustainability is the only long-term path for tourism, the question of how it should be measured (or attained) remains an issue. This is the challenge that this research attempted to address. The development of indicators for sustainable tourism is of considerable benefit to both government agencies and tourist interests in the determination of management objectives for an area.

Significant growth in the numbers of overseas tourists adds pressure on physical infrastructure and risks placing severe stress on the quality of the environment in the more popular tourist sites. With better information, visitor and area management can be more proactive and capacity issues can be better anticipated and responded to. The purpose of this research therefore has been to develop a model through which destination managers have the ability to ensure that tourism is developed in a sustainable manner.

A key principle of this research project is the United Nations World Tourism Organization (UNWTO) assertion that:

Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability. (http://www.unwto.org/frameset/frame_sustainable.html)

The initial stages of the project involved broad-ranging exploratory investigations, resulting in the development of inventories and analyses of the principal tourism attributes and characteristics of the study area – Tipperary Lakeside, Lough Derg (Figure 1.2). Strand 1 dealt with the quantifiable dimensions of tourism with a focus on three key elements: (i) ecological systems; (ii) economic structure; and (iii) physical structure. Strand 2 of the research concerned the analysis of qualitative dimensions of tourism, focusing on (i) community/social tolerance; (ii) visitor satisfaction; and (iii) political administration. Strand 3 integrated data from both Strands 1 and 2 and resulted in the development of a 'carrying capacity model', which led to the evolution of an environmentally integrated tourism destination management model. This phase also prepared for the dissemination of results through a number of channels: papers and posters presented at conferences; peer-reviewed journal papers; website development; a national workshop and an international conference (to be held on 11 and 12 October 2007). A further outcome was the formulation of an integrated executive training programme. In all cases the outcomes of the project incorporated best practice in relation to EU policies and procedures.

The project also resulted in the facilitation of academic research: raising the profile of sustainable tourism through the development of a multidisciplinary synergistic research team within Dublin Institute of Technology (DIT); the creation of contacts with national and international partners; the networking of practitioners in various fields and highlighting the significance of sustainable tourism at a national policy level.

The overall objective of the research project was to devise and improve methods for the implementation of sustainable tourism management through the use of carrying capacity indicators at a destination level and thereby to facilitate government and tourism business managers in making more informed decisions. The UNWTO (2004) defines

indicators as 'measures of the existence or severity of current issues, signals of upcoming situations or problems, measures of risk and potential need for action, and means to identify the results of our actions'.

The final output of the research is a model of sustainable tourism indicators (the DIT-ACHIEV Model of Sustainable Tourism Management).

This model focuses on six 'fields of interests':

- 1 Administration.
- 2 Community.
- 3 Heritage.
- 4 Infrastructure.
- 5 Enterprise.
- 6 Visitor.

Each field of interest encompasses the three pillars of sustainability (environment, economy and society).

It is anticipated that the use of this model for the examination and future planning of tourism will result in a more viable tourism product in both the immediate and long term, and thereby ensure that a broad range of sustainable principles are adhered to in the management of this important industry.

1 Introduction

1.1 Project Background

This research project, entitled 'Sustainable Tourism Development: toward the mitigation of tourism destination impacts', was funded by the Environmental Protection Agency through the Environmental RTDI Programme 2000–2006. Methodologies such as the development of carrying capacity or sustainable tourism indicators¹ are of considerable benefit to both government agencies and tourist interests, in determining an area's potential and sustainability. With better information, visitor and area management can be more proactive and capacity issues can be better anticipated and responded to.

1.2 Project Rationale

Since the 1990s the global economy has shown exponential growth, transforming the character of the planet and of human life especially (Mebratu, 1998). The paradigm of sustainable development first enunciated in the World Commission on Environment and Development (WCED) report, *Our Common Future*, emphasised that environmental problems can no longer be considered in isolation from others, such as economic development and social disintegration. Today, there are over three hundred published definitions of sustainable development, the products of diverse worldviews, ideologies and vested interests. At its core, however, sustainable development represents a transformation in both the way society approaches growth and the attendant stress that growth places on the environment. According to Redclift (1987), the three major strands of sustainable development are the need to:

- 1 Arrest environmental degradation and ecological imbalance.

- 2 Avoid impoverishment of future generations.
- 3 Ensure equity in the quality of life among present-day populations.

In other words, sustainable development encompasses not only environmental protection, but also economic development and social cohesion (Dooris, 1999). Agenda 21 (arising from the United Nations Conference on Environment and Development [UNCED] in Rio de Janeiro, 1992) represents a blueprint intended to set out an international programme of action for achieving sustainable development for the twenty-first century. It advocates action within the interconnected social, environmental and economic spheres. Since UNCED, the concept of sustainable development has been incorporated into EU and Irish policy formation.

A major challenge to achieving sustainable development in Ireland has been the unprecedented growth in the tourism industry since 1985. Major growth in the numbers of overseas tourists adds pressure on physical infrastructure and risks placing severe stress on the quality of the environment in the more popular tourist sites. In the 1990s Irish tourism growth was significantly ahead of global trends, increasing by an average of over 7 per cent per annum, compared with a global figure of 4.3 per cent (Tourism Policy Review Group, 2003). According to the Tourism Policy Review Group (2003), the number of visitors to Ireland will increase to 10 million by 2012. The main challenge for the tourism industry in Ireland is to develop and promote a product that is environmentally, socially and economically sustainable within the context of an expanding sector. According to the EPA (2000), this requires existing and new developments for tourist use to incorporate adequate protection measures to enhance the quality of the existing environment and to mitigate against negative tourism destination impacts.

¹ As will be discussed later, the concept of 'carrying capacity' was not wholly adopted during this research, as it implies that intervention is only required where 'capacity' has been exceeded, thereby relegating the whole idea of sustainable tourism management.

The regulation and management of an area is important to mitigate against negative tourism impacts. Theobald (1998) comments that there is a need to limit and control tourism, which may threaten sustained use of limited resources. More recently, a chapter of *Ireland's Environment 2004* (EPA, 2004) was dedicated to the 'household and tourism sector' combined. This, the third *State of the Environment* report by the EPA, calls for the impact of tourism to be monitored closely because of its direct and indirect impacts on the environment. It recognises tourism as an important source of investment and employment in Ireland, particularly in rural regions. Furthermore, it acknowledges how tourism interacts closely with other policy areas – transport, energy, environment, regional planning, business and trade – and the need therefore to coordinate and integrate policies. It claims that all stakeholders in the tourism sector, at national, regional and local levels, have a part to play in preserving environmental quality.

'Carrying capacity' and 'sustainability' are complex concepts that tourism managers need to approach in a more comprehensive manner if they are to achieve positive results. Research suggests, however, that putting policy into action is elusive in that the industry (both public and private) is uncoordinated and communication may frequently be limited.

In addition, the concept of 'carrying capacity' can be regarded as a management concept or framework but is not a scientific theory. Devising a technique or method that would allow the assessment of when a destination is full is difficult. Because of the diversity of factors that affect the nature of tourism, this calculation seems to be very problematic given the inherently intangible qualities (i.e. environmental quality, community perceptions, visitor satisfaction and attitude, and political structures).

It is impossible to achieve a single unqualified number that can determine an 'optimal solution' because each situation is unique in its response to visitor impacts. As a result, there is no inherent carrying capacity or sustainability of a destination but instead a range of factors that are reliant on management objectives. It is necessary therefore to take account of many issues, as a means to an end and not, as it has been, as an end in itself.

Because of these issues, it is proposed that the nature of tourism in an area may be investigated using the structure of the 'capacity web diagram' (see Figure 1.1), with a view to identifying the multiplicity of relationships outlined therein. This allows the impacts of tourism to be depicted as a 'web' or network of elements split between quantifiable dimensions and qualitative perspectives.

The quantifiable dimensions of the carrying capacity web concern ecology, economics, physical space and infrastructure. For the purpose of this research, the quantifiable and qualitative perspectives formed two strands. The qualitative perspectives concern the real and perceived influence of tourism activity on the interrelationship between hosts and guests (visitor satisfaction and community tolerance) and managers' willingness to control the same (political administration).

The key difficulty remains one of incorporating value judgements of capacity attributes into the decision-making process. This research addressed this issue within the ACHIEV model and the training programme and, in that process, linked the qualitative and quantitative elements, which were ultimate outputs of this research.

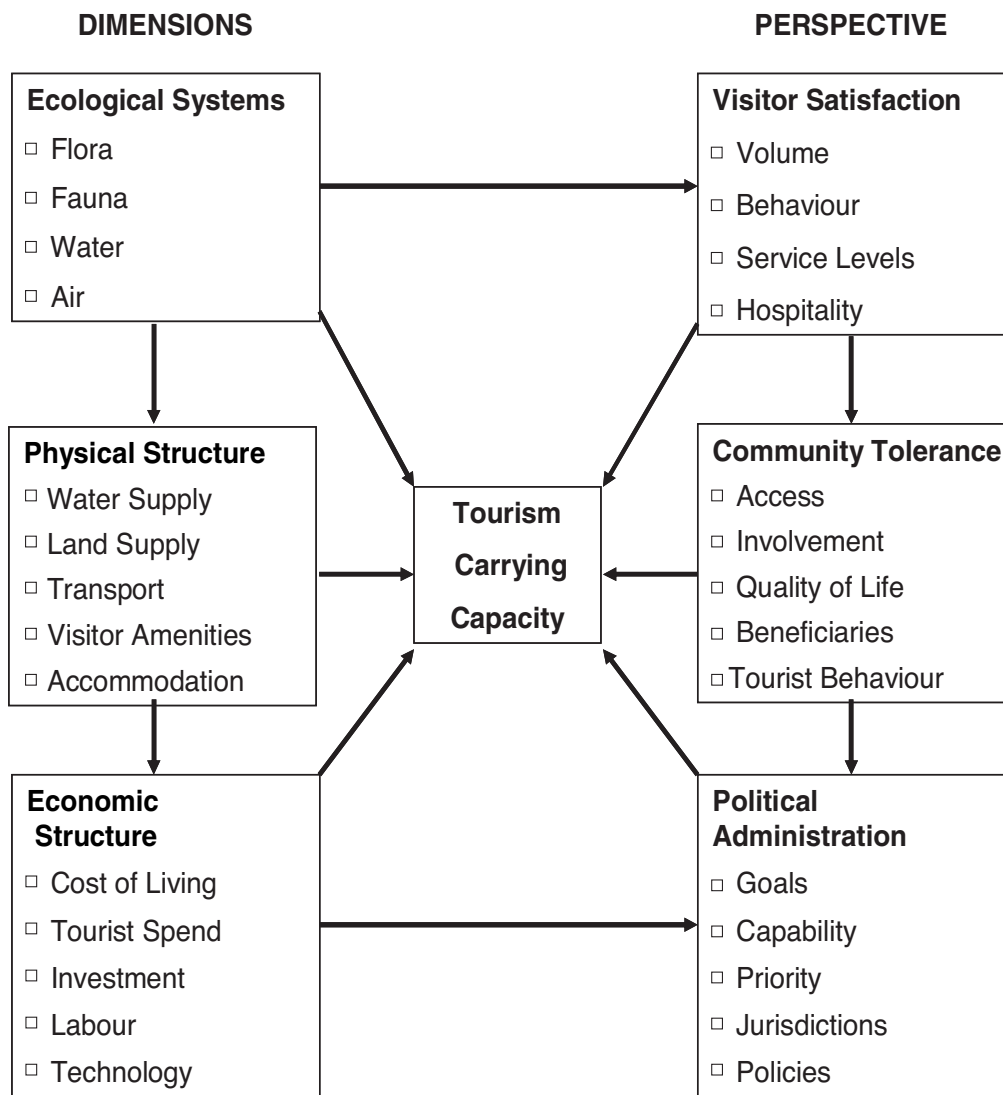


Figure 1.1: Carrying Capacity Web

(Source: Glasson et al., 1995)

1.3 Objective

The overall objective of the research project was to devise and improve methods for the implementation of sustainable tourism management through the use of carrying capacity indicators at a destination level and thereby to facilitate government and tourism business managers in making more informed decisions. The research comprises three strands, each of which generates a range of outputs:

- 1 Inventory and analysis of quantifiable dimensions – ecology, economic structure and physical structure.

- 2 Analysis of qualitative perspectives – local community, visitors and political structures.
- 3 The development of a carrying capacity model.

1.4 Research Approach

The overall research approach provided for three broad stages of research:

- 1 Establishing the conceptual framework.
- 2 Undertaking work plans.
- 3 Development of conclusions, including a training programme.

1.5 Establishing a Conceptual Framework

As noted above, the project contained three strands, each of which generated a range of outputs:

- **Strand 1:** Characterisation of quantifiable dimensions – Inventory and analysis of ecological, economic and physical space.
- **Strand 2:** Qualitative perspectives – Analysis of influences on host/guest interrelationships with special reference to visitor satisfaction, community tolerance and political administration.
- **Strand 3:** Toward the development of an integrated management model for the mitigation of tourism impacts.

Strands 1 and 2 related to the quantitative and qualitative dimensions of the Carrying Capacity Web (Figure 1.1) respectively. Strand 3 linked the research findings to European best practice, developed a sustainable tourism-management model and devised a training programme for stakeholders which could be used to aid the mitigation of negative impacts of tourism.

The dissemination of research findings to national stakeholders through the facilitation of an international conference will inform key stakeholders of international best practices. The integrated management training programme will facilitate the transfer of knowledge to local authorities and tourism stakeholders in Ireland. The research is underpinned by sound economic, environmental and socio-cultural principles.

1.6 Undertaking Work Plans

An expert steering committee worked with the team to ensure the stated objectives were met and the outputs delivered within the deadlines, within budget and to the highest standards. The steering committee met bi-annually during the research project. Each strand had an advisory committee who also provided their expertise to the project. The individual members of the committees provided their expertise to the strand leaders and project managers on a more regular and informal basis between steering committee and strand advisory meetings.

The overall research project was led by the principal investigator (PI) who also acted as strand leader for Strand 2 of the project. The other two strands also had strand leaders. The strand leaders were responsible for directing the research and maintaining high research standards.

Additionally, each strand had a project manager who supervised the practical day-to-day administration of the project. The project managers ensured an integrative approach was taken in terms of considering the achievement of the overall objective.

The Strand 3 element was managed jointly by the project managers from Strands 1 and 2 as this strand incorporated the findings of both strands. An economist was recruited to provide strategic direction in relation to the economic element of the project.

Work undertaken in all strands of the research was informed through the collection of secondary research drawn from three components – (i) academic, (ii) industry and (iii) policy-specific information. This gave the research study academic integrity and also provided relevance for the tourism industry (public and private). The academic material focused on economic socio-cultural and environmental impacts of tourism, while industry material concentrated on destination planning and management and policy-specific information looks at local, national, European and international level policies in relation to these issues.

1.7 Research Methodology

As noted above, the project was composed of three strands. The first two comprised the primary research of the project where inventories of data were developed, based on the carrying capacity web. Each of the elements of the 'carrying capacity web' may not have the same magnitude in every destination but each must be considered in establishing the overall carrying capacity in a potential destination. Tourism carrying capacity (TCC) can therefore be defined as *a function of these dimensions and perspectives of the capacity web, with:*

$TCC = f(\text{quantifiable dimensions}) * (\text{qualitative perspectives})$

i.e.:

$TCC = f(\text{Ecol, Phys, Econ}) * (\text{TC, RA, Pol})$
(Glasson et al., 1995)

The following sections outline the methodologies used in each strand of the research.

1.7.1 Strand 1 – Analysis of Quantitative Dimensions

The purpose of Strand 1 of the research was the characterisation of quantifiable dimensions of tourism – with a focus on inventory and analysis.

The key tourism elements in the area were analysed to identify the quantifiable dimensions of the carrying capacity web under the following headings:

- Ecological Systems.
- Economic Structure.
- Physical Structure.
- Comparative Analysis.

Strand 1 deliverables were detailed inventories of the principal attributes and activities outlined in the carrying capacity web as they apply to the study area (see Section 1.8. for comments on study area). These inventories give an assessment of the present state of the landscape and current strategies for its protection and management.

The following steps were taken to develop and analyse inventories that characterise the quantifiable dimensions of sustainable tourism for Strand 1:

- Desk-based exploration and consultation with external agencies/organisations and experts in the various dimensions.
- Fieldwork undertaken in tandem with the desk-based investigation.

The data from the investigations was input into a set of inventories which assisted in identifying the principal attributes of tourism in the area under investigation. Where possible, this is presented here in graphic and map form, to allow ease of manipulation and comparative analysis.

1.7.2 Strand 2 – Analysis of Qualitative Perspectives

The purpose of Strand 2 of the research was the characterisation of qualitative dimensions of tourism.

The key tourism elements in the area were analysed to identify the quantifiable dimensions of the carrying capacity web under the following headings:

- Analysis of Community/Social Tolerance.
- Analysis of Visitor Satisfaction.
- Analysis of Political Structures.
- Comparative Analysis.

Strand 2 deliverables involved the identification of changes in the qualitative perspectives. The real and perceived influence of tourism activity on the interrelationship between hosts and guests and managers' willingness to control the same (political administration) were examined.

The following research approaches were undertaken to identify the qualitative perspectives of sustainable tourism for Strand 2:

- A postal residential survey used to investigate community tolerance of tourism in the research area.
- Face-to-face visitor satisfaction surveys conducted on a monthly basis with visitors to the research area.
- Focus groups undertaken with resident groups and local authority groups to ascertain opinion on sustainable tourism and to extrapolate issues.
- Strategic conversations held with key stakeholders at local, national and regional level to examine the practices of each.

The results of Strand 1 and Strand 2 provided a framework for consideration of the various elements in a coordinated manner not hitherto achieved. The outputs from Strand 1 and Strand 2 fed into Strand 3.

1.7.3 Strand 3 – Integrated Management for the Mitigation of Tourism Impacts and Dissemination of Results

The objectives of Strand 3 were the development of an integrated management approach toward the mitigation of tourism impacts and also the dissemination of the project results.

The deliverables of Strand 3 focused on the creation of a carrying capacity framework, leading to the evolution of an environmentally integrated tourism destination management model. The results were disseminated through papers presented at conferences, peer-reviewed journal papers, website development and the formulation of an executive training programme and a national workshop.

This strand combined the findings of the preceding two strands and incorporated best-practice policies and procedures in the development of the carrying capacity model. The completion of the project incorporated the development of a management training programme and the facilitation of a national workshop and an international conference.

Key strand outputs include:

- Analysis of policies and approaches used within the EU to mitigate tourism destination impacts were incorporated into the development of the carrying capacity model.
- An executive development training programme for the mitigation of tourism impacts was developed. This was undertaken in consultation with the relevant stakeholders, including tourism and local authority management groups.

In assessing the likely impact of an activity on a destination, the degree of change that will be tolerated and the monitoring of tourism in a systematic manner is the basis of Limits of Acceptable Change (LAC). This LAC approach identifies resource and social conditions in a given setting and defines management techniques which will maintain these conditions over time.

Having conducted interviews and consultations with academic and industry experts in the area of sustainable tourism management it became evident that the LAC and carrying capacity methodologies were not wholly appropriate for a rural destination such as Tipperary Lakeside Lough Derg which experiences low levels of tourism, spread geographically and temporally. The research did not abandon the frameworks entirely. However, they were considered as methods of informing the indicator model development process. However, these processes would become more useful if the model was employed in a location with a higher density of tourism impacts.

The outcomes of Strand 3 included:

- Integration of Strands 1 and 2.
- Development of a sustainable tourism model (incorporating carrying capacity principles) incorporating European practices.
- Facilitation of a national workshop.
- Facilitation of an international conference to transfer international best practice.
- Development of an executive training programme.
- Facilitation of academic research with possible progression to MPhil/PhD.
- Development of a multidisciplinary synergistic research team within DIT.
- Creation of long-term networks of expertise with national and international partners.
- Creation of a network of practitioners in various fields.
- Raising the significance of sustainable tourism at national policy level.

1.7.4 Project Outcome

The final outcome of the overall project was the development of an environmentally integrated tourism destination management model and the development of an integrated management training module.

1.8 Study Area – Tipperary Lakeside Lough Derg

North Tipperary is an inland county² located in the Mid-West region of Ireland within two hours driving distance of Ireland's principal cities: Dublin, Limerick, Cork and Galway (North Tipperary County Development Board, 2002b: 7). It is a predominantly rural county dominated by low-lying agricultural grasslands in the central plains, the Silvermines and Devil's Bit Mountains to the north and the Arra Mountains to the west. The principal industries in the county are agriculture, forestry and tourism. The administrative capital is Nenagh. Other principal towns are Thurles and Roscrea.

The specific focus of this study is the Tipperary Lakeside Lough Derg area which closely correlates with the region contained in the *Western Area Local Area Plan* – a document on local planning policies in the Tipperary Lakeside Lough Derg area. The population of the Western area is 7,449, which is a growth of 17.5 per cent since 1991, compared to a 5.3 per cent increase in North Tipperary as a whole.

Water-based activities on Lough Derg appear to encourage more visitors to the area. From the primary research conducted by Dublin Institute of Technology DIT, it appears that the most important activities for 40 per cent of visitors between March and November 2005 were water-based activities, including cruising, angling and other water-based activities.

1.8.1 Identification of Study Area

For practical reasons, when considering a study area, a relatively compact area has to be chosen, one which capitalises upon its tourism assets by creating its own identity based on its particular tourism product (Flanagan, 1992). In this investigation, the Tipperary Lakeside portion of Lough Derg on the River Shannon was chosen to fulfil these requirements. According to The Tourism Development Strategy for North Tipperary (CHL, 2004) Tipperary Lakeside Lough Derg is:

an established, but not highly developed, tourism zone which has its own tourism promotion

organisation, Tipperary Lakeside Tourism Cooperative Society. Lough Derg is the principal attraction and platform for tourism development in this zone. Numerous water-based activities are available for tourists, and there are several very picturesque villages located along, and close to, the lake shore. There is a good selection of restaurants, country pubs and tourist accommodation available. The main gateways are Nenagh, Birr and Portumna, and these are significant locations for visitor services and attractions.

1.8.2 Tourism Development in Study Area

Tourism has been important to Tipperary Lakeside Lough Derg for a number of years; the following section describes some reasons for this.

The River Shannon was designated a 'Major Resort' area as early as 1963 (Brady Shipman Martin) and since then has played an important part in Irish tourism. At a more localised level Lough Derg (which is the largest lake on the river) has been identified by a number of studies as having major tourism potential. At regional level, studies have included the lake as an integral part of the Mid-West tourism development plan (Bord Fáilte, 1976); a tourism strategy area (Shannon Development, 1987); a regional action area (Shannon Development, 1988); and a regional tourism core (Reddan, 1993).

At national level Lough Derg has been identified in numerous reports, among them the study of the River Shannon as a location for tourism and recreation by Brady Shipman and Martin (n.d.); the 1989–1993 Irish Tourism Development Plan (Government of Ireland, 1989); and the 1992 Bord Fáilte plan for sustainable tourism (Bord Fáilte, 1992 [b]). Lough Derg and its environs were mentioned within the North Tipperary Tourism Strategy (2004) as one of three tourism clusters of North Tipperary. The Heritage Council also commissioned a Waterway Corridor Study from Meelick to Limerick City, incorporating Lough Derg (2007). Reddan (1993) notes that 'The location of Lough Derg in the heart of the Shannon Region is one of the most important tourism assets which the [Mid-West] region possesses.'

² Throughout this document, unless specified otherwise 'county' refers to the administrative district of Tipperary North

1.8.3 Difficulties in Defining Study Area

From the outset the identification of strict study area boundaries was problematic. In developing ecological dimension indicators, for instance, the entire catchment of rivers flowing into the study area had to be considered, while the analysis of services in the Ballina area inevitably encompasses features in Killaloe. Thus, where it was deemed to not compromise the integrity or balance of the data under investigation the study area boundary was allowed a certain degree of freedom. In other cases,

however, the delineation of the research area remained rigid. An example of this is the analysis of community tolerance for Strand 2. It was felt that including the more densely urbanised District Electoral Divisions (DEDs) proximate to Nenagh would skew the predominantly rural and low density population character of the remaining sample. For the visitor attitude/satisfaction survey the chosen survey points were in proximity to Lough Derg, all within the study area. However, this may have biased the research towards visitors specifically taking part in water-based activities on Lough Derg.

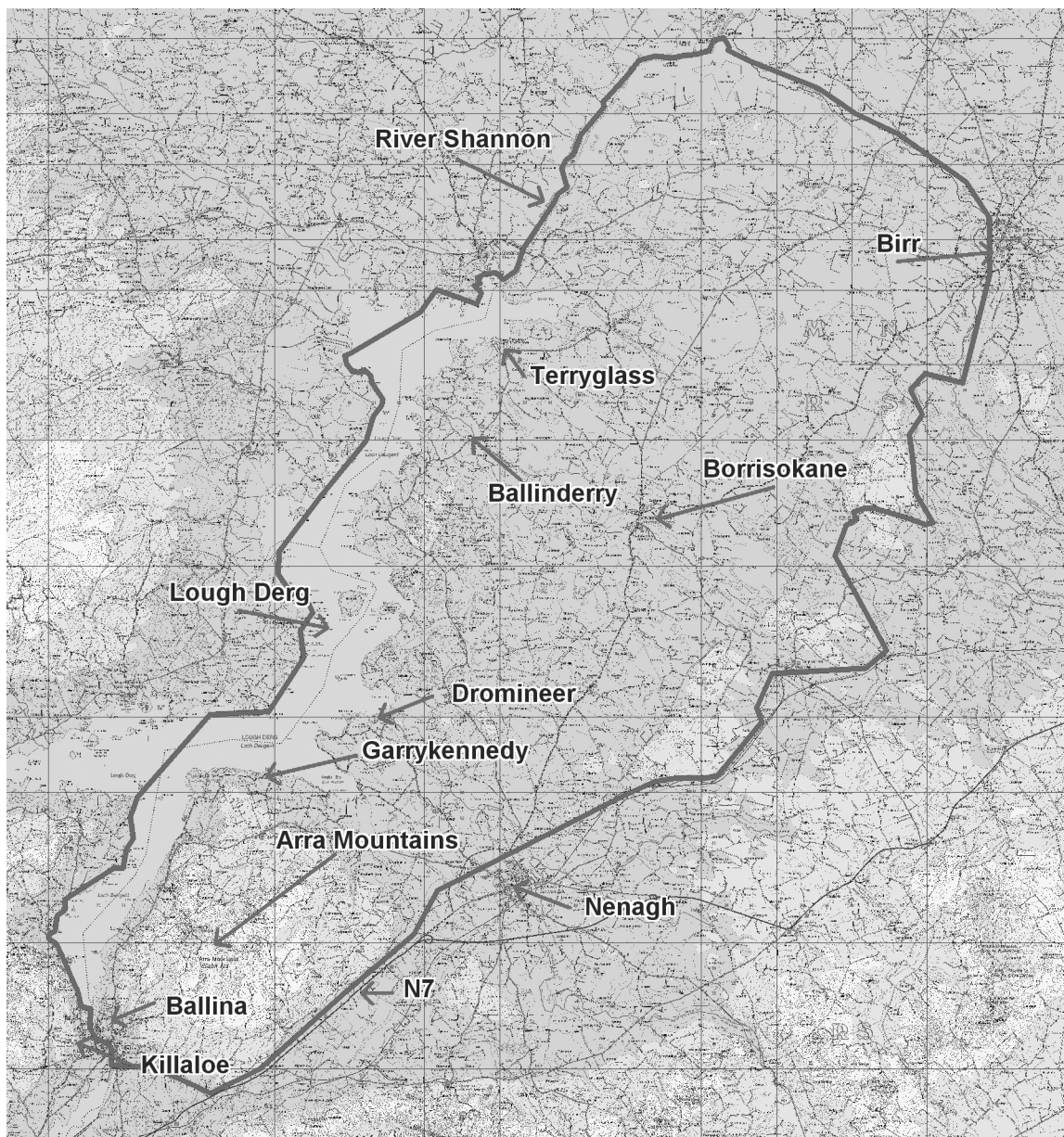


Figure 1.2: Outline Map of Study Area in North Tipperary

2 Research Approach

2.1 Sustainability

Since the late 1990s the concept of sustainability has become a prominent concern in development literature and has been applied to all economic activity. In tourism terms, sustainability was first established as a concept to account for the interrelationship between tourism and the environment suggesting that there should be some form of compromise between the two elements and this should be accounted for in the planning process. Recent years have seen that elements of economic, social and cultural sustainability have also been added to the initial environmental sense of the term.

According to the United Nations World Tourism Organization (UNWTO):

Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability. (UNWTO, 2004)

Thus, sustainable tourism should (UNWTO, 2004):

- Make optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to intercultural understanding and tolerance.

- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contribute to poverty alleviation.

Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary (UNWTO, 2004).

Sustainable tourism should also maintain a high level of visitor satisfaction and ensure a meaningful experience for the visitor, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them (UNWTO, 2004).

Over the past decade, there has been a growing recognition within the tourism industry that each tourism destination has a number of tangible assets that are unique. These assets which may be historic, cultural, linguistic or scenic represent the essential appeal of that destination for the tourist. As such, these resources are part of an area's tourism 'capital'. For example, Lough Derg could be considered the tourism 'capital' in the research area. Managing tourism to sustain local economies in ways that do not result in damage to the very environment, on which successful tourism depends, has become the accepted definition of 'sustainable tourism'.

While it is generally agreed that sustainability is the only long-term path for tourism, there remains an issue as to how it should be measured and it is precisely this issue which the development of indicators in this project attempted to address.

2.2 Sustainable Tourism – The European Policy Position

The European Commission has been increasingly involved in tourism since the early 1980s, in cooperation with the European Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions. A Tourism Advisory Committee was established in 1986 to facilitate the exchange of information, consultation and cooperation on tourism across Europe. During the 1990s, the potential of tourism to generate employment and growth was recognised at EU levels on several occasions, with the establishment of The High Level Group on Tourism and Employment (1997). The group was tasked with examining conditions in which tourism could make a greater contribution to growth and stability in employment in European tourism overall. In 1999, the Internal Market Council adopted conclusions which recommended further work on specific topics between the European Commission, member states and the tourism industry. This resulted in the development of four working groups, which dealt with one of the four following objectives specified in the Council conclusions to:

- 1 Facilitate the exchange and dissemination of information, particularly through new technologies.
- 2 Improve training in order to upgrade skills in the tourism industry.
- 3 Improve the quality of tourist products.
- 4 Promote environmental protection and sustainable development in tourism.

All working groups presented reports which influenced the European Commission communication 'Working together for the future of European Tourism' (2001).

In 2005 the United Nations World Tourism Organization (UNWTO) and the United Nations Environment Programme (UNEP) identified a set of 12 aims, which should be included within the scope of sustainable tourism development/management:

- 1 Economic viability.
- 2 Local prosperity.
- 3 Employment quality.

- 4 Social equity.
- 5 Visitor fulfilment.
- 6 Local control.
- 7 Community wellbeing.
- 8 Cultural richness.
- 9 Physical integrity.
- 10 Biological diversity.
- 11 Resource efficiency.
- 12 Environmental purity.

These 12 aims are incorporated into the three 'pillars of sustainability' in Figure 2.1.

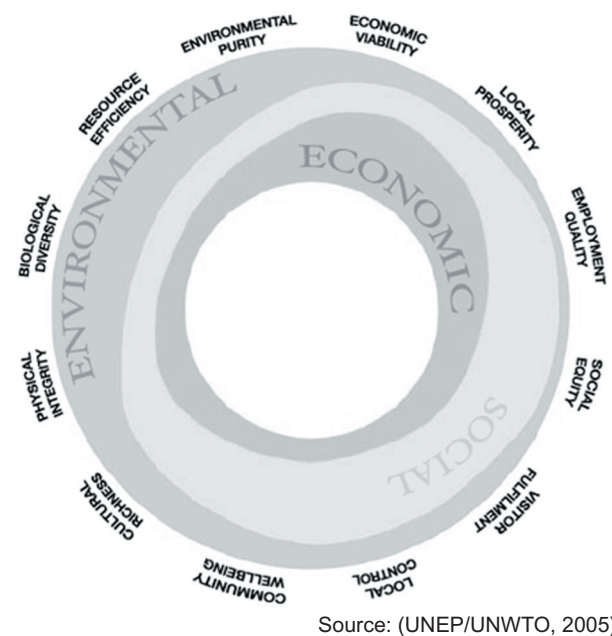


Figure 2.1: Relationship Between 12 Aims of Sustainable Tourism and the 3 Pillars of Sustainability

Movement towards these 12 aims of sustainable tourism is a well-established objective in Europe. As a subject, sustainable tourism has been considered by the European Commission, the European Parliament, and the Economic and Social Committee (TSG, 2007). This commitment is reflected in the establishment of the Tourism Sustainability Group, in 2004, by the Tourism Unit of the European Commission (located within the Directorate General for Enterprise and Industry). This group is tasked with:

- Developing a detailed sustainable tourism framework for action which allocates specific activities to the individual stakeholder groups, which will inevitably lead to the long-term process of a proposal for a European Agenda 21 for tourism.
- Evaluating regularly the implementation of the measures developed within the framework for action.
- Encouraging stakeholder synergies to provide input into the Agenda 21 process for the sustainability of European tourism.

In March 2006, the European Commission produced 'A Renewed EU Tourism Policy: towards a Stronger Partnership for European Tourism'. This document called for a renewed European tourism policy to:

improve the competitiveness of the European tourism industry and create more and better jobs through the sustainable growth of tourism in Europe and globally through coordination within the Commission and within national authorities, cooperation between different stakeholders, and the establishment of specific supporting actions.

The main areas on which the policy will focus are:

- Mainstreaming measures affecting tourism (better regulation, policy coordination, improved use of available European financial instruments).
- Promoting tourism sustainability (a European Agenda 21 for Tourism and specific supporting actions for the sustainability of European tourism).
- Enhancing the understanding and visibility of tourism (*Improving the understanding of European tourism, supporting the promotion of European destinations and Improving the Visibility of Tourism: A Common Goal*).

2.3 Sustainable Tourism – the Irish Policy Position

Prior to the application of EU Structural Funds, the Irish government's role in tourism was considered to be interventionist (Gorokhovskiy, 2003: 97). This was perhaps in recognition of the organisational and promotional needs of a disparate industry composed almost entirely of small enterprises (Williams and Shaw, 1998). The Irish Tourist

Industry Confederation (ITIC) report on Tourism and the Environment in 1986 was the first document that recognised the role of the environment as a product in tourism. It also highlighted the role the environment had to play in creating a sustainable tourism brand for Ireland.

This change of thought is also reflected in the 1995 response of the Irish government to the principles established at the 'Earth Summit' held in Rio de Janeiro in 1992, when *Local Authorities and Sustainable Development – Guidelines on Local Agenda 21* was published. These guidelines suggested that each local authority revisit its own policies and practices to assess their sustainability. The commitment was further strengthened by the adoption of a National Sustainable Development Strategy in 1997, which had the aim of ensuring that economy and society in Ireland develop to their full potential within a well-protected environment (EPA, 2000). With regard to tourism, the development strategy sought to promote the image of a destination which is uncrowded, relaxed, of great scenic beauty, with a distinctive heritage and culture, a friendly welcoming people, high-quality facilities and a superb, unspoilt environment for outdoor activity. It suggested Ireland must avoid the drift to uniformity, evident in many countries, and concentrate on enhancing its competitive image and target the high-yield tourist seeking environmentally based holidays. Sustainable tourism development was identified as the way to achieve this goal (Department of the Environment, 1997).

The Horizons (2003) document, *Strategy for Irish Tourism 2003–2012*, outlines its vision for Irish tourism as 'a dynamic, innovative, sustainable and highly regarded sector, offering overseas and domestic visitors a positive and memorable experience beyond their expectations'. According to this report, Irish tourism must 'respect the natural and built environments and support their conservation and enhancement'.

The National Development Plan (NDP) 2007–2013 acknowledges the importance of Irish tourism as an indigenous growth industry with high employment intensity. In 2006, revenue from the industry rose to €5.9 billion, paralleled by a 9 per cent increase in overseas visitors.

This was the fifth consecutive year of growth in terms of total visitors and earnings. Tourism is now Ireland's most important indigenous industry, accounting for 3.1 per cent of GNP annually (Government of Ireland; 2007, Fáilte Ireland, 2007).

While these rising tourism numbers may adversely affect biodiversity and the environment in general, biodiversity and environment are important assets for tourism. The quantifiable dimensions and qualitative perspectives outlined in the objectives of this project therefore recognise the fundamentals of sustainable development as outlined in the Irish NDP. Firstly, development must not deplete the resource base. This is particularly crucial in Ireland because international tourism depends on our 'green image' and both tourism and the food industries are subject to a quality environment (Layde, 1998). Secondly, economic growth must find a balance and harmony with environmental protection. This involves using resources more efficiently, and with less impact on the environment.

Increasing tourist numbers could threaten to exceed the carrying capacity of the natural environment. This risk of over-use of the tourism resource could potentially continue in the foreseeable future as the NDP has outlined a tourism investment programme, which includes:

- An international marketing sub-programme to promote the island of Ireland in key international markets.
- A product development and infrastructure sub-programme to upgrade and supplement tourism attractions and activities and to deliver a National Conference Centre in Dublin.
- A training and human resource development sub-programme to support the upgrading of the capability of firms in the sector and the provision and training of staff to meet growing demand.

By proposing to develop the concept of tourism carrying capacity and to develop a range of sustainable tourism indicators, this project aimed to meet the immediate objectives of the various Irish policy documents on sustainability:

- *Irish National Sustainable Development Strategy* (Department of the Environment, 1997).
- *Making Ireland's Development Sustainable* (Department of the Environment and Local Government, 2002).

Adopting sustainable development principles in the tourism industry will not only enhance the environmental quality of tourism destinations, but may also lead to sustainable competitive advantage where a green image can enhance job creation. It is hoped that the project outcomes will contribute to the development of management plans for areas such as National Parks, Special Areas of Conservation (SACs), Special Protected Areas (SPAs) and Areas of Scientific Interest (ASIs). Finally, under the NDP the Irish National Spatial Strategy is committed to protecting landscape, water resources and habitats while developing the tourism sector through quality market responsive products, enhanced access and coordinated promotion of a tourism product, which offers a range of complementary visitor experiences. The tools developed in this project should assist in attaining these goals.

Numerous national and sub-national organisations involved in tourism, including Fáilte Ireland, have endorsed the principles of sustainable tourism. These principles are compelling and eminently sensible. Their translation into practical policies, however, is much more challenging and difficult. This is especially the case when trying to obtain a consensus view as to the parameters, or limits, of sustainability in tourism (Bord Fáilte, 1998). With better information, visitor and area management can be more proactive and capacity issues can be better anticipated and responded to. The alternative – a 'crisis-management' approach – could lead to the alienation of visitors and residents alike.

3 Strand 1 and 2 Findings

3.1 Strand 1

The principal objective of Strand 1 of the research was to establish a detailed inventory of the principal attributes and activities of the study area. This inventory covers the ecological, physical and economic dimensions of the carrying capacity web as outlined in Figure 1.1. These dimensions are 'ecological systems' (or the natural environment), 'physical structure' and 'economic structure'. The purpose of the inventory was to present a clear picture of the current state of the natural, physical and economic environment of the study area in the context of tourism and to identify current strategies for maintaining its sustainability.

3.1.1 Findings

The initial research undertaken as part of Strand 1 of the project identified a myriad of agencies involved in the collection of data on the natural and physical environment of the study area. Because of the time-consuming and often technical nature of primary-data collection, it was decided to favour the exploitation of existing data over primary research. Adopting this approach rather than collecting primary data was considered to be the most effective and resource-efficient means of achieving the strand objectives.

During the course of Strand 1, the initial observations were proven correct and ultimately Strand 1 became largely a desk-based exercise, data for the inventory being mainly acquired from secondary sources. Nonetheless, some limitations associated with the chosen methodology did become apparent. These were mainly associated with the nature of the existing data and also with accessing the data. The limitations are summarised below:

- Data tended to be very specific and detailed. Thus, a large quantity of data was available for particular focused aspects of the environment.
- Data tended to be recorded at particular spatial scales.

- Difficulties communicating with holders of data.
- Difficulties establishing rights to use data.
- Difficulties obtaining data even where it was technically available to the public.
- Issues concerning confidentiality and conflict of interest regarding data.

It was anticipated from the outset that the available secondary data was unlikely to provide all of the data necessary for the completion of Strand 1. The obvious solution to this problem was to supplement secondary research with the collection of appropriate primary data as and when identified. In many cases this was done, but for practical reasons, where possible the inventories relied on already existing data.

A more significant issue regarding the use of existing data concerned their suitability with respect to the overall objectives of the project. These objectives can be summarised as follows:

- To develop practical methods for the implementation of sustainable tourism policy aspirations.
- To devise and improve methods for the implementation of carrying capacity indicators at a destination level.
- To facilitate government and tourism business managers in making more informed decisions.

In the context of these project aims, two particular problems were identified which were associated with the data which was acquired for the Strand 1 inventory. These were:

- Often it was not possible to link data with the effects of tourism.
- Much of the data, though useful in the context of Strand 1, had limited use in the context of the overall project aims (as explained below).

The overall aim of the project was to develop practical techniques to implement the carrying capacity concept in tourism management. The principal technique was the identification and use of indicators to assess tourism carrying capacity. In Strand 3 of the research this technique formed the basis of an environmentally integrated, tourism destination management model which will be used to identify and monitor trends that occur as a direct or indirect consequence of tourism in an area.

Thus, in spite of the large quantity of information available, analysis of the data showed extensive gaps in the database when considering the applicability of the data to the carrying capacity indicator concept and the ultimate aims of the project. That is, the data may be relevant to tourism in one sense, but as a potential indicator for the effects of tourism it has little value.

In light of the above, the subsequent work of the project (Strand 3) needed to focus on data that could be used for the development of tourism-focused environmental indicators and that could ultimately be applied to a carrying capacity based tourism management model. While this data must be relevant and applicable, it is imperative that the data is also practical, relatively inexpensive and easy to obtain.

This would obviously minimise the resource implications of such a model. A major finding of Strand 1 therefore concerned the applicability of available data to the project aims and the identification of gaps in the existing database.

Tables 3.1, 3.2 and 3.3 summarise the data that were acquired for the Strand 1 inventory and indicate additional data which could assist in Strand 3 and ultimately achieve the aims of the project.

3.1.2 Recommendations

Based on the complexity of data in this strand of the research it is envisaged that the focus of indicator selection should be on a small number of focused and straightforward indicators. Thus, a key task of Strand 3 was to classify and distil the data down to a small number of useful and practical indicators.

It is recognised that much of the data presented in the report provides only a snapshot of the current situation regarding the natural, physical, tourism and economic environment. However, they fulfil the aims of Strand 1 in so far as they allow assessment of the present state of the landscape and current strategies for its protection.

Table 3.1: Ecological Systems – Summary of Strand 1 Data Collected

Strand 1 Dimensions	Data Acquired for Inventory	Data used for Interim Report	Potential as Carrying Capacity Indicator	Possible Additional Information to be Acquired (identified data gaps)
Flora and Fauna (incl. Habitats)	- Qualitative descriptions of protected habitats and associated flora and fauna (Site Synopses for Conservation Areas – NHAs, SACs and SPAs). - Number, extent and status of protected habitats. - Annual counts for wetland bird species (IWeBs Summary Data 1999–2004). - Fisheries status of key rivers. - Electrofishing (fish count) data for key rivers (2004). - Census of returning adult salmon (1960–2000).	Yes (summarised) - Yes - Yes Yes (summarised) Yes (summarised) Yes (summarised)	✓ ✓ ? ✓ ✓ ?	- Length of degraded lake shoreline habitat. - Counts for summer bird species. - Number of endangered species. - Counts for sensitive mammal and flora species.
Water Quality	- Lough Derg trophic status (1998– 2005). - Biological pollution status (Quality Rating) of key rivers (1971–2002). - Physical and chemical water quality parameters of lakes and rivers in the study area (2001– 2005). - Groundwater quality parameters at monitoring boreholes (2001–2003).	Yes (2005 status) Yes (2002 data only) Yes (2005, key parameters) Yes (partial)	? ? ? ?	- Shoreline inspection record. - Number of recorded algal blooms. - Hydrocarbon contamination from pleasure boats.
Air Quality	- No data for study area.	No	X	- Ambient noise records at critical locations.
Landscape	- General field appraisal of landscape character. - List of protected views.	Yes Yes	X ✓	- Photographic record of key landscapes and protected views. - Landscape character assessment data.
Geology	- Basic bedrock and quaternary geology.	Yes	X	
Archaeology and History	- Review of existing legislation. - Archaeological Inventory of North Tipperary.	Yes Yes	X ✓	- Strategic conversations with local groups. - Fieldwork to locate and map key archaeological sites in the study area.
Culture	- Analysis of Small Area Population Statistics (SAPS). - Data re. Irish language. - Review of existing legislation. - Review of North Tipperary (Draft) Arts Plan (2003–2007). - Review of North Tipperary (Draft) Heritage Plan (2004–2008). - Comprehensive listing of local festivals.	Yes Yes Yes Yes Yes	✓ X ✓ ✓ ✓	- Strategic conversations with arts officer and voluntary groups. - Analysis of placenames.

Table 3.2: Physical Structure – Summary of Strand 1 Data Collected

Strand 1 Dimensions	Data Acquired for Inventory	Data used for Interim Report	Potential as Carrying Capacity Indicator	Possible Additional Information to be Acquired (identified data gaps)
Water Supply and Treatment	- Water supply and number of connections. - Water supply, current status and requirements. - Wastewater treatment – current status / requirements.	Yes Yes Yes	✓ ✓ ✓	- Water demand in study area. - Tourism water demand. - Tourism wastewater production.
Land Use	- Land-use categories (CORINE data) (land-use mapping). - Percentage land use by category. - Local area village land zoning.	No (Technical Problems) No (Technical Problems) Yes	✓ ✓ ✓	- Forestry Inventory Planning Data.
Transport	- Description of availability and access (road, rail, air and water). - Basic study conducted assessing public transport. - Planning restrictions applicable to local road. - Preliminary studies conducted in traffic congestion. - Preliminary investigation of car-parking facilities and signage.	Yes Yes Yes Yes Yes	✓ ✓ ✓ ✓ ✓	- Study of amenity routes e.g. cycle paths, walkways. - Counts of parking allocations. - Access to foreshore of lake.
Visitor Amenities	- Preliminary listing of visitor attractions and service facilities.	Yes	✓	- Need to assess amenities: availability, quality and access. - Seasonality of usage. - Signage to facilities.
Accommodation	- Preliminary listing of accommodation supply.	Yes	✓	- Need for in-depth analysis: type available, variety, distribution, choice location, pricing. - Issue of seasonality to be investigated. - Prevalence of agri-tourism businesses.

3.2 Strand 2 – Identification of Qualitative Perspectives, Community, Visitors and Political Administration

3.2.1 Introduction

Strand 2 involved identifying the processes of change through qualitative perspectives. Qualitative perspectives concern the real and perceived influence of tourism activity on the interrelationship between hosts and guests and managers' willingness to control the same (political administration). This research was undertaken by staff of the Tourism Research Centre, DIT under the supervision of the Strand 2 leader.

3.2.2 Analysis of Community Tolerance

The community or social aspect of tourism carrying capacity concerns a destination's ability to absorb tourism without negative effects being perceived by local residents. This can change seasonally and spatially. Community consultation was conducted through a postal survey of residents. A descriptive postal survey was chosen to investigate residents' attitudes towards tourism in the study area.

3.2.2.1 Findings

The residents of Tipperary Lakeside Lough Derg appear generally satisfied with tourism in their area; however, some issues currently exist and should be monitored carefully in the future.

Table 3.3: Economic Structure – Summary of Strand 1 Data Collected

Strand 1 Dimensions	Data Acquired for Inventory	Data used for Interim Report	Potential as Carrying Capacity Indicator	Possible Additional Information to be Acquired (identified data gaps)
Cost of Living	- Population analysis at national, county, study area level using SAPS data. - Consumer Price Index/ Disposable Income/ Social Deprivation/ House prices analysed.	Yes	✓	- How much data is appropriate to use as SAPS data is highly detailed?
Tourist Spend	- Tourism performance (overseas/ domestic). - Provenance of overseas tourists. - Revenue generated by overseas tourists. - Revenue generated by domestic tourists. - Seasonality issue.	Yes Yes Yes Yes Yes	✓ ✓ ✓ ✓ ✓	- How to measure tourist spend in study area as not contained in national/regional surveys? - Requirement to break down visitor spend per sector. - Access to visitor surveys conducted in the study area. - Leakage of revenue from local area.
Investment/ Technology	- Information available but confidential in nature.	No	✓	- Level of investment in tourism product versus other sectors.
Labour	- Detailed SAPS data used to document employment figures in the study area. - Education and professional development.	Yes Yes	✓ ✓	- Calculation of numbers employed specifically in tourism in study area. - Effect of seasonality on labour. - Labour stability. - Gender balance.

The profile of residents identified within the research indicated a high-earning, family-oriented, middle-aged population.

Main Findings

For tourism within a destination to be sustainable, it requires satisfaction of visitor, industry, community and the protection of the environment. Good communication between all parties is critical for a successful sustainable destination.

The general attitude of respondents appeared positive with 90 per cent of respondents stating tourism is good for the economy, followed by 76 per cent stating that it is good for job creation.

The majority of residents in Tipperary Lakeside Lough Derg felt they had never been consulted about any inconvenience caused by tourism.

A high percentage of respondents stated that Tipperary Lakeside Lough Derg was able to manage the number of visitors it receives, and the area has potential for more visitors. The main reasons cited for this included sufficient accommodation and facilities. On the other side, some residents considered the research area could not manage the number of visitors it receives due to congestion issues.

Residents of Tipperary Lakeside Lough Derg identified local friendliness, attracting visitors to the area, job creation and local enterprise development as positive aspects of tourism. In contrast to this, residents appear to have issues with the quality of roads in the area and the local tourism and planning authorities.

Respondents did not appear to have any issues with the area during peak tourist periods. Likewise, tourist attitude was not identified as a negative aspect of tourism in the area.

The main concerns for residents during peak times were traffic problems, overcrowding and a general negative feeling towards tourists. Traffic congestion was raised by the residents on a number of occasions during this phase of the research. It could be considered a candidate indicator for sustainable tourism within a destination.

When discussing conflicts generated in the area as a result of tourism, traffic congestion and the Ballina Bridge together were considered by respondents.

Negative aspects identified include the increase in the pace of life, the increase in property prices, the lack of protection of the natural environment and the lack of recreational facilities.

3.2.2.2 *Candidate Indicators*

Many aspects of the community tolerance analysis were initially identified as candidate indicators. The following aspects of the community tolerance analysis were incorporated into the final indicator model:

- Resident attitudes to issues.
- Resident awareness and attitude regarding tourism.
- Resident attitude to quality of tourism and how it affects them.
- Tourism impact on local customs.

'Resident attitude to issues' could be regarded as a generic indicator as it can be utilised for any destination. Resident tolerance of tourism is an essential aspect of sustainable tourism, which should respect a local community's built and living cultural heritage and traditional values. In the case of Tipperary Lakeside Lough Derg the issues appear to be around access and congestion. Any issues arising from or influenced by tourism should be monitored closely and counteracted if possible.

Resident awareness and attitude regarding tourism examines the level of local awareness of tourism and attitudes (positive and negative) towards tourism. These can be used to indicate tourist pressures and the level of satisfaction (or dissatisfaction) with the management of tourism. The capacity of the area and the amount of consultation taking place can also be measured under this heading.

Resident attitude to quality of tourism and how it affects residents covers three indicators from the community tolerance analysis: (i) resident attitudes to employment; (ii) local perceptions of their relationship with visitors; and (iii) issues raised regarding tourist behaviour. These help to indicate growth and long-term sustainability of a destination.

Tourism impact on local customs is concerned with the change in importance of local customs and culture as a consequence of tourism. Specifically related to Tipperary Lakeside Lough Derg, the impact of tourism on the increased pace of life could be considered.

3.2.3 *Analysis of Visitor Satisfaction*

Visitor carrying capacity considers those factors which influence visitor satisfaction with a destination. It describes the ability of a destination to provide a quality visitor experience in relation to increased visitor numbers. Visitor satisfaction in relation to volume, service levels and hospitality expectations was assessed through a detailed attitudinal visitor attitude survey focusing on domestic and overseas visitors within the area.

3.2.3.1 *Findings*

Visitor Profile

There was a good balance of domestic and overseas visitors, with 46 per cent of respondents from Ireland and 54 per cent overseas visitors. People from Dublin and Limerick made up 50 per cent of the domestic visitors, specifically 30 per cent from Dublin and 20 per cent from Limerick. The overseas visitors were mainly from Europe, with 19 per cent from the United Kingdom, 12 per cent from Germany and 8 per cent from the Netherlands.

One-third of respondents were visiting the area with one other person, while 52 per cent of respondents were in a group of between 3 and 6 people. Forty-two per cent of respondents visited the area with a group of friends, 27 per cent with a partner and 25 per cent were with family members.

Over half of respondents (53 per cent) were aged between 35 and 54. Just over one-third of respondents (34 per cent) were managerial/technical workers. This suggests the visitor to Tipperary Lakeside Lough Derg tends to be middle aged, high earning, and travelling with other adults, either a partner or group of friends.

Sixty-five per cent of respondents were on holiday away from home, while 9 per cent were on a day trip out and 9 per cent were on a short break. Sixty-three per cent of respondents spent four nights or less in Tipperary Lakeside Lough Derg. The average length of stay in the area was five nights.

Sources of Information

The biggest single source of knowledge about Tipperary Lakeside Lough Derg was from friends/relatives/word of mouth (57 per cent). In a separate question, 65 per cent of respondents indicated that they had looked at guide books before arrival, while friends and family and cruise hire companies were the main sources of information for 24 per cent of respondents on or after their arrival.

These results underline the importance that local providers and friends and relatives play in providing information to visitors upon arrival. It should be noted that guidebooks and the internet have less impact as sources of information on or after arrival to the area.

Influencing Factors

Advice from friends and relatives influenced 62 per cent of respondents to visit the area, while 50 per cent were influenced by a previous visit.

Visitor Expectations/Preferences

Thirty-four per cent of respondents found the area 'not as crowded as expected', while 55 per cent of respondents felt the area was 'much the same as expected'.

Respondents would like to see more restaurants/coffee shops/pubs (14 per cent), facilities (8 per cent), toilet and shower facilities (7 per cent) and mooring spaces/jetties in the area (7 per cent).

Visitors to Tipperary Lakeside Lough Derg would like to see fewer speed crafts (16 per cent) and developments on shore areas (4 per cent).

The use of speed crafts in the research area is worrying as not only are the visitors concerned but there are environmental issues relating to the use of speed crafts. Hence, speed crafts should be strictly regulated.

Accommodation

Forty-nine per cent of respondents stayed on board their watercraft (either private or hire) while 11 per cent stayed with friends and relatives.

The high percentage of respondents staying on board a watercraft reduces the need for physical structural development in the area, such as hotels and also reduces the level of interaction with locals. Furthermore, it may reduce the overall economic contribution of visitors to the local area.

Satisfaction levels with accommodation were high and consistent across the 4 dimensions with 70 per cent satisfied with cost, 72 per cent with quality of service, 72 per cent with access and 72 per cent satisfied compared to their expectations.

Just under one-third of respondents had booked their accommodation directly with the provider and 16 per cent had booked through a travel agent.

Over one-fifth of respondents booked accommodation more than 12 weeks before arriving while 12 per cent each booked accommodation either on arrival to the area or between 9 and 12 weeks before arriving.

Transport

Respondents mainly travelled within the area either by car (67 per cent), by foot (50 per cent) or by boat (49 per cent). The transport most often used was either the car (42 per cent) or boat (38 per cent). The research indicated that satisfaction levels with transport were lower than with accommodation although still consistent across dimensions, as 57 per cent of respondents were satisfied with cost, 57 per cent with speed of access, 57 per cent with quality of service and 56 per cent with frequency of service.

In terms of transport, there was high use of private transport, both car and boat, around Tipperary Lakeside Lough Derg. High use of motorised private transport has environmental implications. Poor use of public transport in part reflects the lack of public transport in the area, with respondents identifying the development of public transport facilities in the area as important.

Access

Respondents indicated that access to Tipperary Lakeside Lough Derg could be improved in a number of ways – mainly by widening the roads (22 per cent), improving signposting (17 per cent) and increasing public transport, especially bus service (13 per cent).

Access within Tipperary Lakeside Lough Derg could be improved in the form of increased bus services (4 per cent) and signposting (3 per cent).

Activities

The main activities undertaken by respondents while in Tipperary Lakeside Lough Derg were going out in the evening to pubs/bars (88 per cent), going to restaurants (80 per cent) and walking in the area (78 per cent). The most important activities when respondents were deciding to visit Tipperary Lakeside Lough Derg were sailing/cruising (27 per cent) and visiting sights/attractions (20 per cent).

Water and outdoor activities appear important to visitors, yet respondents rated water quality poorly. There is a need to address the water quality in the area.

There appears to be some confusion over the issue, which could be alleviated by clear communications from the authorities involved. Also, the importance of water and outdoor activities to visitors provides the potential to exploit the natural resources of the area rather than structural development, as a form of developing tourism in the area.

Rating Questions

Satisfaction levels with local friendliness, natural environment, overall visit and quality of service are reflected within the rating question. However, the water quality and road infrastructure within the area need monitoring as rating for these elements was notably lower.

3.2.3.2 Candidate Indicators

The findings from the visitor satisfaction analysis were examined for the indicator model. All aspects of the visitor satisfaction analysis were initially observed with the following being incorporated into the final model:

- Visitor profile.
- Tourist motivations to visit.
- Tourist expectations regarding crowding.
- Level of repeat business.
- Tourist perceptions of local management.
- Tourist perception of local population.
- Tourist satisfaction with transport.
- Tourist spend.

Visitor Profile

Visitor profile incorporates an investigation into the type of visitor an area receives by age, profession, party size and composition. The balance between peak and off-peak visitor numbers and the various accommodation types used by visitors is also included. This indicator highlights the level of sustainability of the various accommodation types in the area, as well as seasonality in a destination.

Tourist Motivation

Tourist motivation to visit utilises factors influencing visitors to the area. This would measure the impact of marketing campaigns, the importance of word of mouth, the possible influence of inexpensive access and indirectly the high level of visitor satisfaction.

Tourist Expectations

Tourist expectations regarding crowding are a good indication of carrying capacity perceptions within a destination. As Ireland is considered an uncrowded destination, it is interesting to note visitor perceptions of crowding in the area on a regular basis.

Level of Repeat Business

The level of repeat business indicates the level of satisfaction with a destination while also indicating the need for (or lack of) formal advertising.

Tourist Perception of Local Management

Tourist perception of local management incorporates perceived management of issues (speed craft, jet skis, boats, pollution and litter in the case of the study area) and perception of congestion. These would indicate the level of tourist satisfaction with the management of a destination.

Tourist Perception of Local Population

Tourist perception of local population includes the perception of local friendliness. This can be tied in with 'Resident attitude to quality of tourism and how it affects them' from the community tolerance analysis. The relationship between hosts and guests is of extreme importance to the long-term sustainability of a destination.

Tourist Satisfaction with Transport

Tourist satisfaction with transport covers perception of transport quality and cost. The majority of visitors to Tipperary Lakeside Lough Derg appear to travel by private car. This could be because of the limited availability of public transport in the research area or it could be personal preference. The use of public transport could reduce the amount of private vehicles on the roads and this could have a positive impact on the sustainability of a tourism destination. Also, the availability of public transport in an area may influence a visitor's decision to visit that destination.

Tourist Spend

Tourist spend relates to the average amount visitors spend on accommodation, meals, snacks and drinks, tourist shopping, entertainment and miscellaneous items. It can

also be used to indicate the difference in spend between overseas and domestic visitors and also the varying spend per month.

3.2.4 Analysis of Political Administration

The political capacity of the destination focuses on the organisational ability of a destination to coordinate and direct local tourism-management policies. Tourism is highly fragmented and multisectoral. The level of effective coordination in decision making can be seen through the implementation of integrated effective management policies of the local tourism industry in certain areas.

3.2.4.1 Findings

Goals/Priorities

Many respondents mentioned development when they discussed goals and priorities. The three strands of sustainable tourism (environment, economic and social) were mentioned:

- Protection and maintenance of the environment.
- Maximum economic benefit for the area.
- Maximum responsible enjoyment of the lake.

The lack of communication among planning authorities and the diverse opinions on planning and development in the area is a concern. However, on the positive side, many respondents recognised the natural environment as the 'pull' factor for visitors to the area.

Capabilities

The capacity of the area appears to depend on a number of varying factors, according to respondents:

- The time of year.
- The number of visitors each specific area receives.
- Accommodation supply in the area.
- The varying number of private cruisers.
- Infrastructure in place for visitors and residents.

The length of the tourism season in the area appears to have shortened dramatically; however, the number of domestic visitors has increased, as perceived by participants.

Jurisdictions

The level of communication arose again under jurisdictions, owing to the large number of organisations within the research area and appears to be an issue to be monitored in the future.

3.2.4.2 Candidate Indicators

The following were incorporated into the sustainable tourism model:

- Assessment of administrative goals (environmental, economic, social and administrative).
- Clear and capable management of tourism.
- Monitoring and maintenance of regulations.

Assessment of administrative goals (environmental, economic, social and administrative) requires the presence and attainment of Specific, Measurable, Achievable, Realistic/Relevant, Targeted/Timely (SMART) objectives. This format provides a transparent method for testing the process.

Clear and capable management of tourism looks at integrated planning, monitoring and evaluation and the measuring of performance.

The Broads Authority, United Kingdom, was identified as an example of an overarching agency with 'legal' responsibility for an area which attempts to practise clear and capable management.

The Norfolk and Suffolk Broads were chosen as a location with an active marine-based tourism product, somewhat comparable to the product around Lough Derg. In addition, management around the Broads is fragmented as is the administration around Lough Derg. The Broads, however, has a dedicated body, which Lough Derg does not (The Broads Authority was established in 1988). Its duties are to manage the Broads for the purpose of:

- Conserving and enhancing the natural beauty of the Broads.
- Promoting the enjoyment of the Broads by the public.
- Protecting the interests of navigation.

Monitoring and maintenance of regulations requires the incorporation of clarity in relation to the role of organisations regarding regulation and clear strategies for enforcement of regulations. This involves monitoring and evaluating regulations to ensure they are being upheld.

4 Sustainable Tourism Indicators

4.1 Development of Sustainable Tourism Indicators

This section outlines the development of a model of indicators for sustainable tourism. This section presents a discussion of best practice in the development of indicators and then outlines the process followed in the development of the DIT-ACHIEV Model of Sustainable Tourism Indicators.

4.2 Best Practice in the Development of Indicators of Economic Sustainability in the Tourism Sector

Some areas have an ability to integrate tourists during the peak season without any apparent sense of stress. Areas that have this capacity tend to perform better in the exploitation of their ecological and physical resources. This strand examined best practice in the development of indicators of economic sustainability in the tourism area. This examination considers economic methodologies and approaches that are used to ensure robustness and reliability of indicator selection.

4.2.1 Economic Exploitation of Tourism Resources

The economic approach to tourism is concerned with the sustainable exploitation of the capital stock of tourism resources. The capital stock of tourism – call it 'T' – is a composite of several component capital stocks or assets:

$$(1) \text{ Tourism Capital Stock } T = E + P + A$$

'E' consists of the ecological assets of an area which in turn comprise the water quality in an area, the area's flora and fauna, the air quality, the landscape, the geology, the archaeology and history and the cultural assets of an area.

'P' refers to the artificial physical assets and amenities of an area. This capital asset is made up of an area's roads

and transport, sewage and water and communication infrastructures, the quality of synthetic visitor attractions and amenities and tourist accommodation.

'A' refers to the general ambience of an area (difficult to define but easy to recognise). It refers to the general feeling of welcome for tourists that some areas exude.

While the composite tourism capital stock is given in additive form in (1) for simplicity, in reality the relationship between the overall capital stock components is more than likely to be multiplicative. For instance, an area of immense natural beauty such as Tipperary Lakeside Lough Derg might be associated with a relatively low tourism capital stock if the area's artificial physical resources were considered to be deficient.

A strategy of sustainable exploitation of the tourism capital stock according to the definition suggested by the UNWTO (2004) would meet 'the needs of present tourists and host regions, while protecting and enhancing opportunity of the future'. This definition is analogous to the well-known Bruntland definition of general sustainability which is about 'meeting the needs of the present without compromising the ability of the future generations to meet their own needs' (WCED, 1987). These definitions are reflected in the fundamental economic rules for the exploitation of renewable resources (see Pearce and Turner, 1990).

The utilisation of the tourism capital stock is effected by the application of resources with the aim of achieving a flow of visitors to the tourist area. These resources involve a combination of public and private investment and recurrent expenditure. An excessive application of resources will, however, threaten the sustainability of the tourism capital stock. Hence, the requirement for indicators of carrying capacity can be to obviate this possibility.

4.2.2 Definition of an Indicator

According to the European Commission (1999), an indicator can be defined as: 'the measurement of an objective to be met, a resource mobilised, an effect obtained, a gauge of quality or a context variable'. The UNWTO (2004) defines indicators as: 'measures of the existence or severity of current issues, signals of upcoming situations or problems, measures of risk and potential need for action, and means to identify the results of our actions'.

The key point that differentiates indicators from the raw data is their capacity to carry a meaning which exceeds their pure quantitative value, for example a temperature of 39° does not just indicate the temperature of the body of a person but also the fact that they are ill (Rechatin et al., 1997).

Indicators may be either quantitative (where comparable numbers can be obtained over time) or qualitative/normative measurements. While qualitative measurements are required for a full assessment of a destination, care must be taken to ensure that indicators should not contain value judgements and should be based on a scientific basis, i.e. the agreement of experts on the ability of a variable to reflect a given phenomenon.

4.2.3 The Functions of Indicators

A properly functioning system of indicators should provide information in order to help interested parties to communicate, negotiate or make decisions in a manner which is conducive to the efficient achievement of objectives. In tourism terms, the overall objective will be the sustainable development of a destination. In order to be useful, tourism development indicators must therefore achieve a variety of important functions. These are summarised in Figure 4.1.

4.2.4 Desirable Features of Indicators

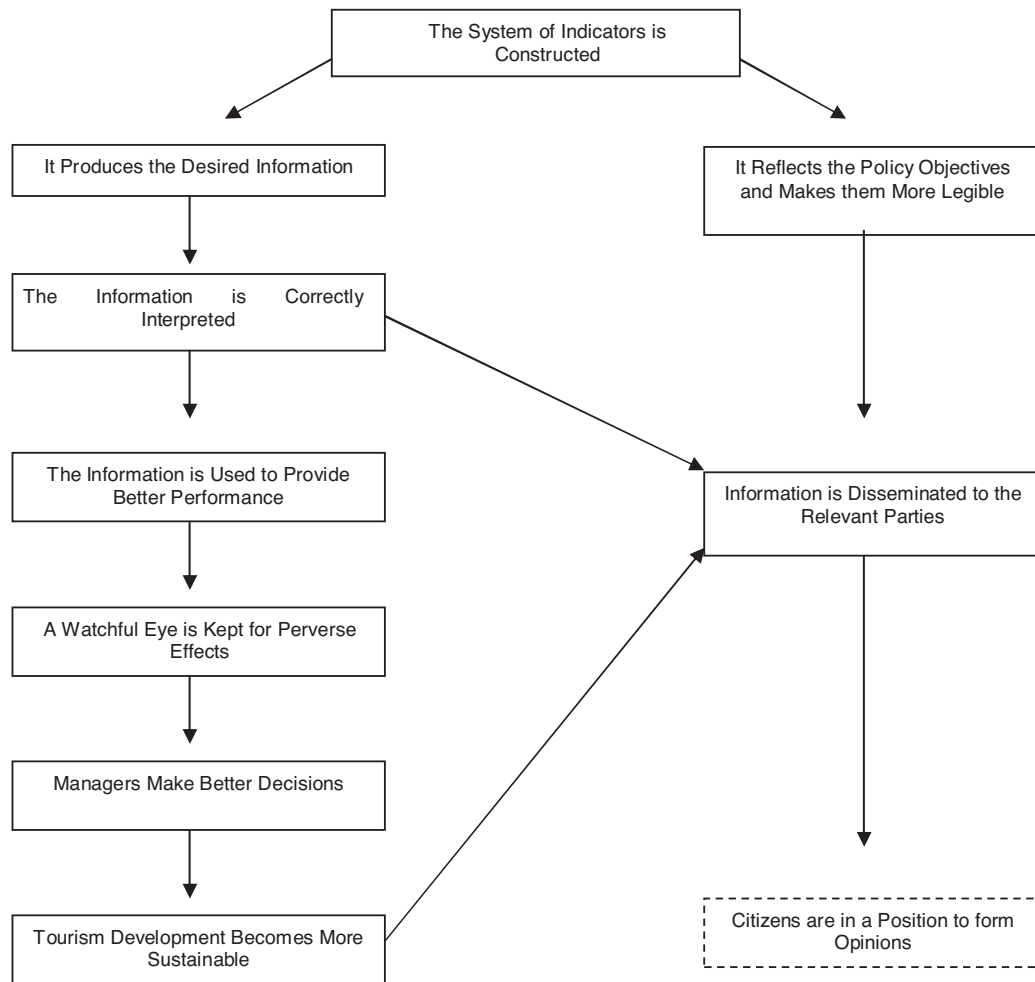
In addition to fulfilling the criteria above, each indicator, and consequently the entire indicator system, should ideally possess a number of desirable features that all 'good' indicators should display. The MEANS programme, which reflects the findings of research by the European Commission (1999) into evaluating socio-economic programmes, identifies eight criteria of indicators:

- **Relevance:** The indicator should cover themes and issues which have a significant impact on the development of sustainable tourism.
- **Availability:** Crucial for an indicator is its actual existence, i.e. it must be quantified at regular intervals and the cost of collecting measurements should not outweigh the usefulness of the indicator.
- **Meaning:** A good indicator must be defined clearly and understood without ambiguity by everyone who uses it. The indicator should accurately reflect the concept to be measured, i.e. what is termed the 'validity of construction'.
- **Freshness:** The relevant information should be reasonably regularly available and it should be available at the time it is required.
- **Sensitivity:** The quantity in question should be directly responsive to the activity whose performance is being measured, and ideally changes in the quantity should be directly attributable to the activity in question.
- **Reliability:** The same measure undertaken by two different people should produce the same indicator.
- **Comparability:** Ideally an indicator would allow for comparison across a range of different areas, particularly when used for resource and location decisions.
- **Normativity:** Any value given to an indicator should be comparable to a norm, i.e. it should be amenable to setting of benchmarks against which outcomes can be compared.

A valid and reliable indicator should fulfil as many of these criteria as possible.

4.2.5 Indicators in the Tourism Context

Since the 1990s the concept of sustainability has become a prominent concern in development literature and has been applied to all economic activity. In tourism terms, sustainability was first established as a concept to account for the interrelationships between tourism and environment in that there should be some form of compromise between the two elements and this should be accounted for in the planning process. Recent years have seen that the elements of social and cultural sustainability have also been added to the initial environmental sense of the word.



Source: European Commission (1999)

Figure 4.1: Functions of a System of Tourism Development Indicators

While it is generally agreed that sustainability is the only long-term path for tourism there remains an issue as to how it should be measured and it is precisely this issue which indicators attempt to address.

4.2.6 Procedures in the Development of Indicators

Within the context of sustainable development for tourism, indicators are: 'time series information which is strategic to the sustainability of a destination, its assets and ultimately the fortunes of the tourism sector (UNWTO, 2004). A number of attempts have been made to develop indicator systems. One of the best known is based on the OECD's 'Pressure-State-Response' framework and was initially developed for environmental reporting, reflecting the emphasis on the environmental

aspect of sustainability. This system proposes three kinds of indicators:

- Pressure indicators: refers to the impact which activities have on the environment.
- State indicators: describes the current situation of the impact (pressure) to be measured.
- Response indicators: measures policies and actions taken to changes in the state of sustainable development.

While this categorisation does provide a framework for indicators (as does the DPSIR Framework [Driving forces–Pressures–State–Impacts–Responses] which is used widely in Ireland) it does not capture the totality of the tourism experience, i.e. the sum of the tourism product including people, culture and customs and not merely the interaction of tourism with the environment.

In response to the need for indicators which are applicable to a wide spectrum of destination type, from virgin through emerging to mass tourism destinations, the UNWTO have developed a 12-step framework for the development of indicators at the destination level (see Table 4.1). The framework is divided into three phases, each with four steps contained within each phase. The UNWTO makes clear that the process needs to be informed by the needs of each destination and some steps may not be required by certain destinations. The steps in this framework were considered carefully when developing a model based on Tipperary Lakeside Lough Derg.

Table 4.1: WTO suggested steps for Indicator Development

Research and organisation	
1	Definition / delineation of the destination.
2	Use of participatory processes.
3	Identification of tourism asserts and risks.
4	Long term vision for a destination.
Indicators development	
5	Selection of priority issues.
6	Identification of desired indicators.
7	Inventory of data sources.
8	Selection procedure.
Implementation	
9	Evaluation of feasibility / implementation.
10	Data collection and analysis.
11	Accountability, communication and reporting.
12	Monitoring and evaluation of indicators application.

4.2.7 Outputs of the UNWTO Process

The UNWTO identified a number of baseline issues and indicators which they feel are common to most destinations when they are developing a set of sustainable tourism indicators. While these are common to most destinations the UNWTO underlines that these are merely a smorgasbord of options and that each destination should derive their own indicators using the issues and objectives applicable to its specificities. The baseline issues and potential indicators suggested by the UNWTO are in the main, in agreement with the indicators developed in this work.

4.2.8 Key Messages on the Use of Indicators

A number of key messages arises from the work of the UNWTO in indicator development:

- Indicators are tools to aid decision making as opposed to being an end in themselves. They are not a substitute for the political action required to address the trends measured through the indicators.
- Indicators must be integrated into the decision-making process – each indicator must justify its existence in terms of what it (either individually or taken collectively) can add to the decision-making process. This information must then become an integral part of the planning and monitoring process of destinations.
- Indicator information must be shared between organisations and stakeholders. Increasing their accessibility leads to improved decision making.
- Indicators require constant refinement in line with the issues and objectives of a destination. When used correctly and measured over time they provide a context for the understanding of change in a destination.

4.2.9 Development of DIT-ACHIEV Model of Indicators

While the objective of this project was to identify indicators which would apply to Tipperary Lakeside Lough Derg, it was ensured where possible that indicators would have the broadest possible applicability.

The tourism stock of Tipperary Lakeside Lough Derg can be exploited through several forms of tourism activity, for instance boating, fishing and general recreational activity. 'General recreational activity' involves activities such as swimming and water sports, walking, trekking and sightseeing. The development of sustainability indicators required consideration for this spread of activities. Table 4.2 lists the key areas of candidate indicators that developed from the in-depth desk and fieldwork of Strand 1 and Strand 2.

This identification of indicators began with a list of 211 candidate indicators (having eliminated parameters which were deemed to be entirely unfeasible or impractical). As can be seen in Table 4.2, these categories of indicators were based strongly on the carrying capacity web, which

informed the overall methodologies employed in Strands 1 and 2. This extensive list of 211 indicators was developed into a more manageable set of indicators, designed to capture the pressures on the sustainability of the tourism sector in the study area.

The candidate indicators range from indicators specific to the particular tourism product in the study area to indicators of a more generic nature and that purport to capture non-specific usage of the composite tourism asset.

Table 4.2: Key Categories of Indicators Identified in Strands 1 and 2 of Research

Key Area of Investigation	Sub-Category
Ecological Systems	- Flora and Fauna. - Water. - Air. - Archaeology and History. - Culture. - Landscape. - Noise Environment.
Physical Structure	- Water Supply and Treatment. - Land Supply/Use. - Transport. - Visitor Amenities. - Accommodation (location/quality/performance/seasonality).
Economic Structure	- Cost of Living. - Tourist Spend. - Investment. - Labour. - Technology.
Visitor Satisfaction	- Volume. - Behaviour. - Service Levels. - Hospitality.
Community Tolerance	- Access. - Involvement. - Quality of Life. - Beneficiaries.
Political Administration	- Goals. - Capability. - Priorities. - Jurisdiction. - Policy.

A number of procedures were followed in prioritising and narrowing the candidate list down to a manageable and robust group of indicators. This iterative process eventually reduced the 211 candidate indicators to the 33 indicators demonstrated in the DIT-ACHIEV Model of Sustainable Tourism Indicators (Figure 4.2). This refining process involved consultations with a broad range of experts

including: tourism and environmental managers at all levels, planners, enterprise development professionals, heritage and arts professionals, community-based practitioners, tourism industry personnel, scientific experts and expert academics, in addition to consideration of academic and professional literature. The following guidelines for indicator development and best practice were consulted:

- UNWTO indicator development guidelines (steps for indicator development) were used to refine the development process (UNWTO, 2004).
- UNEP guide *Making Tourism More Sustainable: a Guide for Policy Makers* (2005).
- The VICE Model (TMI, 2003) was examined as it has been adopted as a tool for sustainable tourism development in the UK.
- *Getting it Right: Monitoring Progress Towards Sustainable Tourism in England* (DCMS, 2001).
- EU MEANS criteria were used in assessing the overall usefulness of the proposed indicators (European Commission, 1999).
- OECD's 'Pressure-State-Response' framework (OECD, 1993) as was the DPSIR framework.

4.2.10 Characteristics of Selected Indicators

A number of characteristics of indicators were central to the development of this model. For example, consideration was given to a broad range of indicator types. Putnam (2002) suggests that consideration be given to four types of indicators:

- Environmental condition indicators.
- Environmental performance indicators (which includes the following two classifications).
- Management performance indicators.
- Operational performance indicators.

Indicators were chosen which would assess **conditions**, **trends** and **performance**. In order to make the model as accessible as possible, consideration was given to the assertion by Morrissey et al. (2006: 49) that 'a degree of **simplification** is a prerequisite to provide information in a form of practical use to decision-makers and

understandable to the community'. Where possible, the selected indicators also consider: accuracy, bias, age, verifiability and completeness (Putnam, 2002).

Finally, the following characteristics of indicators were taken into account:

- Valuable indicators must consider long-term collecting of data.
- Indicators do not have to be specifically tourism related once they can be used to indicate a healthy state of tourism.
- Indicators must assist in indicating data which is useful and consistent.
- Indicators must indicate change over time.
- Indicators must assist in demonstrating movement ('to' or 'from') relative to specified targets (Butler, 2006).

4.2.11 Development of New Indicator Model

Initially it was expected that the indicators would be derived directly from the carrying capacity web and build a related model of sustainable tourism indicators. However, as discussed throughout Strands 1 and 2, the elements of the carrying capacity web were found to be restrictive in the identification of robust indicators. Because of this, a new model of sustainable tourism indicators was developed. This model (the DIT-ACHIEV Model of Sustainable Tourism) was initially designed around seven and subsequently six key fields of interest: (i) heritage; (ii) infrastructure; (iii) enterprise; (iv) community; (v) visitor; and (vi) administration. (Economics was initially considered but as discussed in the following section was later omitted.)

4.2.12 Problems with Development of Indicators

As is apparent from an examination of the matrix of indicator attributes, the major issue confronting the selection of indicators in the area is the relative lack of availability of many of the candidate indicators. Across various tourist activities the range of suitable indicators is often limited by scarcity of data.

At the generic/national level there is a much greater availability of information. Moreover, many of the indicators for which data is available address the sustainability of the tourist asset as a result of pressure arising from the local population rather than from any pressures that might be generated from a visitor population. Housing or general income indicators for instance may capture the phenomenon of 'second-home' residents or income from tourism, but in general their robustness as indicators of tourism is limited.

As an example, the only readily available sustainability indicators that are pertinent to an economic field of interest of the carrying capacity web are provided by the five-yearly Census SAPS data. The lack of timeliness or 'freshness' of these variables is an obvious deficiency. Moreover, while a Census-based population variable may be considered to be 'sensitive' as defined by the EU MEANS criteria, the data provides information on the overall level of services employment. Therefore, such a variable will not give an additional independent assessment of its sustainability impact because there will be a high correlation between this variable and the level of population.

Because of the lack of robust economic indicators identified in this analysis, the economic field of interest was removed as a separate category for the final model, and appropriate economic indicators were reallocated throughout the other fields.

4.2.13 Availability of Indicators

While several desirable indicators are not readily available at present, all are potentially available at a resource cost – which may be significant in some cases. The benefits of collecting information will have to be balanced against the costs involved, and thus the indicators included in the model that have a resource implication were considered very carefully, and only included where this cost was deemed necessary.

With regard to data collection, there are a number of methods by which the local authority could do much to provide 'relevant', 'fresh' and 'sensitive' data without an excessive outlay of costs. For instance, it should be feasible to provide information on planning permissions, car registrations and Live Register updates on a DED basis. This is the smallest area for which Census data is available and thus an important spatial scale at which data is gathered. These variables could then provide important information to gauge inter-censal demographic changes.

It should also be possible to capture information from the returns of commercial rates on tourist accommodation and amenities in the area. This would merely require the administrative records to include DED codes as part of their current information systems.

More frequent use of traffic-count technology at key tourist 'hot spots' would appear to be a relatively inexpensive means of capturing rough trends in visitor throughput and would develop both a spatial and temporal profile of tourism flows.

A more costly step in assembling the information needed to fill the indicator deficit involves the use of questionnaire-based surveys to examine both the tourist and the local population. Such data is central to the management of sustainable tourism in an area. Apart from the expense involved, however, the wisdom of pursuing this route is questionable for an individual tourist area acting on its own. Issues of 'freshness', 'reliability' but especially 'comparability' immediately arise with the use of this methodology. The value of this approach will be severely diminished in providing useful information on sustainability if the survey tool is not rigorously comparable across tourist areas and regions.

Occasional surveys – such as those carried out in the Strand 2 research – do provide useful benchmarking but their value will only be optimised when they can be used in conjunction with a battery of good-quality indicators and compared with similar work in comparable and contrasting areas.

4.2.14 Introduction to DIT-ACHIEV Model of Sustainable Tourism

Following the extensive iterative process of indicator evaluation, the 211 indicators from Strands 1 and 2 were distilled down to 33 key indicators which were seen to be:

- Relevant.
- Available.
- Meaningful.
- Fresh.
- Sensitive.
- Reliable.
- Comparable.
- Normative.

Thus, the DIT-ACHIEV³ Model of Sustainable Tourism Indicators was developed (see Figure 4.2). This model is divided into the six 'fields of interest' outlined above (numbered 1 to 6).

Each field of interest is composed of between three and five sub-fields which are identified by letters *a* to *f*. Where required, some of these sub-fields are sub-divided into one or two indicators. There are 33 indicators which are numbered using square brackets.

³ ACHIEV stands for Administration, Community, Heritage, Infrastructure, Enterprise and Visitor in the six 'Fields of Interest' presented in the model.

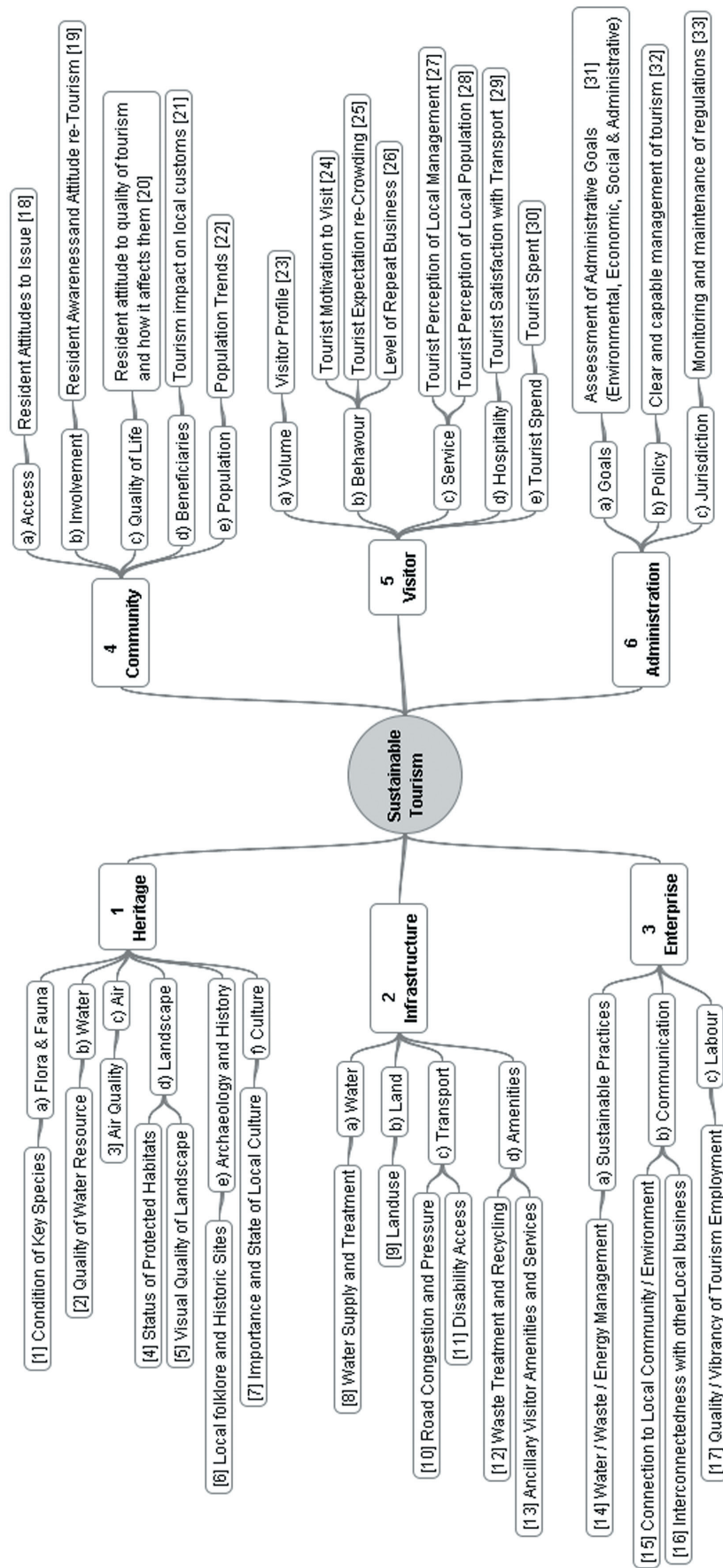


Figure 4.2: DIT-ACHIEV Model of Sustainable Tourism Indicators

4.3 Assessable Parameters

From one to four assessable parameters are used to evaluate each indicator. The parameters are outlined in Table 4.3 to Table 4.41 below.

These tables present more detail on the assessable parameters by providing information on their availability, the agency responsible for the assessable parameter and also comments in general.

Table 4.3: [1] Condition of key species

Assessable Parameter(s)	(i) Wetland bird species	(ii) Electrofishing (fish count) data
Availability	IWeBs Summary Data 1999–2004 – Easily acquired for a fee.	Readily available – available for key rivers (2004) – also for earlier years.
Responsibility	Birdwatch Ireland.	Fisheries Conservation Section of ESB, Ardnacrusha.
Comments	Wintering Birds least affected by tourism but indicative of wholesale changes over time – habitat etc. It shows healthy/desired state of affairs (used by OECD).	Healthy fish populations essential for angling tourism – Numbers affected mainly by external factors.

Table 4.4: [2] Quality of Water Resource

Assessable Parameter(s)	(i) Trophic status of lake	(ii) Biological pollution status
Availability	Readily available.	Q. Rating readily available for key rivers in the study area since 1971.
Responsibility	Environmental Protection Agency.	Environmental Protection Agency.
Comments	This is significant for tourism (i.e. angling, watersports, swimming and aesthetic). However, concerns exist regarding algae blooms. It is important to compare tourist perception of water quality with reality. The water quality issue is mainly linked to agricultural run-off, domestic waste water (and pleasure craft).	

Table 4.5: [2] Quality of Water Resource

Assessable Parameter(s)	(iii) Physical and chemical water quality	(iv) Hydrocarbon contamination from pleasure boats
Availability	Lake and river data readily available but requires interpretation and summarising.	Potentially available from EPA water quality data (volatile organic compounds – link requires further investigation).
Responsibility	Environmental Protection Agency.	Environmental Protection Agency.
Comments	This is significant for tourism (i.e. angling, watersports, swimming and aesthetic). However, concerns exist regarding algae blooms. It is important to compare tourist perception of water quality with reality. The water quality issue is mainly linked to agricultural run-off, domestic waste water (and pleasure craft).	

Table 4.6: [3] Air Quality

Assessable Parameter(s)	Overall air quality
Availability	Data for the study area – particulate matter, nitrogen dioxide etc levels not currently available in enough detail.
Responsibility	North Tipperary County Council and Environmental Protection Agency.
Comments	This is considered important by most measures of sustainability and local level data difficult in Ireland. Focus on emissions from transport.

Table 4.7: [4] Status of Protected Habitats

Assessable Parameter(s)	Existence, maintenance and management of protected sites.
Availability	Yes, available.
Responsibility	National Parks and Wildlife Service and Department of Environment, Heritage and Local Government.
Comments	Easy to keep updated. Good to have, especially as long-term indicator.

Table 4.8: [5] Visual Quality of Landscape

Assessable Parameter(s)	Photographic record of key landscapes and protected views.
Availability	Not currently available in systematic format – but relatively easy to produce.
Responsibility	Potentially North Tipperary County Council, Ordnance Survey and Geological Survey.
Comments	Very useful to have for recording visual and density change. Aerial photography for 1971 and 1991 available, but selected ground-level 'views' need to be documented.

Table 4.9: [6] Local Folklore and Historic Sites

Assessable Parameter(s)	State of local folklore, local monuments and places of interests
Availability	Yes but fragmented – Sites and Monuments Record and Local Studies section of Library.
Responsibility	Office of Public Works, Heritage Council, Heritage Officer and North Tipperary County Council.
Comments	Heritage is important for local identity and vital as attraction for many tourists.

Table 4.10: [7] Importance and State of Local Culture

Assessable Parameter(s)	(i) Local (Irish) language	(ii) Local festivals
Availability	Yes, Fragmented – Central Statistics Office (CSO).	Yes, local and regional tourism organisations.
Responsibility	Central Statistics Office, Heritage Council, Heritage Officer, North Tipperary County Council and Local Irish Organisation (Tiobraid Arann ag Labhairt Teo).	Fáilte Ireland and Shannon Development.
Comments	Good – Indicative of strength of local tradition and culture.	Festivals easy to track and they demonstrate local participation in organisations.

Table 4.11: [8] Water Supply and Treatment

Assessable Parameter(s)	(i) Village wastewater treatment – current status and requirements	(ii) Water demand in study area
Availability	Yes, Available.	Not Readily Available.
Responsibility	North Tipperary County Council.	
Comments	Need to distinguish demand from visitors – monthly consumption should show seasonality.	

Table 4.12: [9] Land Use

Assessable Parameter(s)	Land use breakdown by category
Availability	Yes, Available.
Responsibility	CORINE Data (land use)
Comments	Land use by category – forestry, agriculture, residential, commercial and recreational.

Table 4.13: [10] Road Congestion and Pressure

Assessable Parameter(s)	(i) Congestion	(ii) Number of vehicles on various types of roads
Availability	'Ballina/Killaloe bridge crossing data but generally not available.	Some 'counts' but generally unavailable.
Responsibility	North Tipperary County Council Development Plan, 2004–2010.	
Comments	Good indications of pressure, measures of seasonality and congestion, need data to be seasonal and represent different days and seasons. This is an issue for both tourist and locals. Congestion evidence in some harbours on busy weekends.	

Table 4.14: [10] Road Congestion and Pressure

Assessable Parameter(s)	(iii) Parking	(iv) Accident Data
Availability	Number and distribution of parking spaces available and the cost of parking.	Unavailable at present.
Responsibility	National Roads Authority, North Tipperary County Council.	Gardaí and Road Safety Authority.
Comments	Preliminary investigation conducted – presence of parking less important than use.	Privacy issue – need to relate to tourism.

Table 4.15: [11] Disability Access

Assessable Parameter(s)	Buildings and Facilities with dedicated access for people with disability
Availability	Lacking.
Responsibility	Enable Ireland, Disability Federation Ireland and local authority.
Comments	Capacity limitation for only a small number of tourists but may have serious impacts. Not just tourism issue but also important for local population.

Table 4.16: [12] Waste Treatment and Recycling

Assessable Parameter(s)	Adequate waste disposal both public and contract.
Availability	Preliminary listings compiled – in association with county council.
Responsibility	Fieldwork, Fáilte Ireland, Shannon Development, Tipperary Lakeside Tourism Co-operative and North Tipperary County Council.
Comments	Visual/environmental and economically important – also recycling indicates overall sustainable practice.

Table 4.17: [13] Ancillary Visitor Amenities and Services

Assessable Parameter(s)	(i) Visitor facilities – Availability of public services (toilets/ showers/ picnic areas)	(ii) Ancillary services – ATMs, medical, repairs, groceries etc.
Availability	Some information from County Council – easily tracked.	Some through County Council supplemented by survey
Responsibility	Fáilte Ireland, Shannon Development, Tipperary Lakeside Tourism Co-operative and North Tipperary County Council – combined with survey/ fieldwork to gather information	
Comments	Look at absence/presence issues – nowadays taken for granted – but indicative of preparedness for tourism.	

Table 4.18: [14] Adoption of Sustainable Practices

Assessable Parameter(s)	(i) Adoption of Eco-labels	(ii) Water/Waste/Power Management
Availability	Yes, but Fragmented – Blue Flag beaches/industry buy-in to eco-labelling/green schools etc.	Yes, but Fragmented – Requires survey, but some data through Sustainable Energy Ireland
Responsibility	Department of Environment, Heritage and Local Government, Department of Education, ENFO, lobby and Industry groups.	
Comments	Good measure of grass-roots recognition of sustainability – Industry/community/administration.	

Table 4.19: [15] Connection to Local Community/Environment

Assessable Parameter(s)	(i) Participation of enterprise in local environmental management
Availability	No – would require survey work.
Responsibility	Fáilte Ireland, Shannon Development, North Tipperary County Council and Department of Environment.
Comments	Reflected through participation in tidy towns and similar activities.

Table 4.20: [16] Interconnectedness with Other Local Business

Assessable Parameter(s)	(i) Participation in cooperatives and partnerships
Availability	Not collected by any agency – availability would require survey
Responsibility	Fáilte Ireland, Shannon Development and County Tourism Network
Comments	Indicates commitment to cooperative and partnership.

Table 4.21: [17] Quality/Vibrancy of Employment

Assessable Parameter(s)	(i) Number of tourism jobs relative to total labour force (part time or full time)	(ii) Wages/Average tourism wage relative to work force
Availability	Yes – need to compare figures/trends in different sectors to investigate how tourism is represented and recent trends/Information received from CSO SAPS data/CERT data – Extrapolate from national statistics.	
Responsibility	Shannon Development, CSO, Irish Social Science Data Archive (ISSDA/SAPS) and Fáilte Ireland	
Comments	Employment linked indicators relate to development of industry, for example, ratio of 'Irish' workers, indicating sustainability of selling 'Irishness'. Local interest in tourism jobs indicates health of tourism industry and how it becomes more/less attractive.	

Table 4.22: [17] Quality/Vibrancy of Employment

Assessable Parameter(s)	(iii) Creation of new tourism jobs relative to labour force	(iv) Unemployment figures for tourism industry relative to labour force
Availability	Yes – need to compare figures and trends in different sectors to investigate how tourism is represented and recent trends, Information received from CSO SAPS data, CERT data – Extrapolate from national statistics.	
Responsibility	Shannon Development, CSO, Irish Social Science Data Archive (ISSDA/SAPS) and Fáilte Ireland	
Comments	Employment linked indicators relate to development of industry, for example, ratio of 'Irish' workers, indicating sustainability of selling 'Irishness'. Local interest in tourism jobs indicates health of tourism industry and how it becomes more/less attractive	

Table 4.23: [18] Resident Attitudes to Issues

Assessable Parameter(s)	(i) Resident attitudes to issues with access	(ii) Resident attitudes to traffic and congestion management in area
Availability	DIT Residential Survey 2005.	
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland.	
Comments	Need to test awareness and feelings to see if actual problems exist. Disturbance by tourism could mean residents curtail activities/feel problems.	

Table 4.24: [19] Resident Awareness and Attitude re-Tourism

Assessable Parameter(s)	(i) Resident awareness of tourism	(ii) Resident attitude to tourism related conflicts
Availability	DIT Residential Survey 2005.	
Responsibility	Local Businesses, Strategic Bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland	
Comments	These indicators can be used as warning flags for tourist pressures, local people getting more involved in tourism or local dissatisfaction with management of tourism, this is particularly important for general measurement	

Table 4.25: [19] Resident Awareness and Attitude re-Tourism

Assessable Parameter(s)	(iii) Resident view of management of area – Is the area able to manage the number of visitors it receives?	(iv) Resident perceived consultation with tourism stakeholders
Availability	DIT Residential Survey 2005.	
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland.	
Comments	These indicators can be used as warning flags for tourist pressures, local people getting more involved in tourism or local dissatisfaction with management of tourism – this is particularly important for general measurement.	

Table 4.26: [20] Resident Attitude to Quality of Tourism and How it Affects Them

Assessable Parameter(s)	(i) Resident attitudes to tourism employment (direct and indirect numbers/quality/locals employed/pay/job creation/sustainability/lifestyle)	(ii) Local perception of their relationship with visitors
Availability	DIT Residential survey 2005.	
Responsibility	Local Businesses, Strategic Bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland.	
Comments	Changes can trace positive aspects of tourism, indicative of more than just changes in tourism industry. May indicate growth and long-term viability.	

Table 4.27: [20] Resident Attitude to Quality of Tourism and How it Affects Them

Assessable Parameter(s)	(iii) Issues raised regarding tourist behaviour (may vary according to tourist type)
Availability	DIT Residential Survey 2005.
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland.
Comments	Changes can trace positive aspects of tourism, indicative of more than just changes in tourism industry. May indicate growth and long-term viability.

Table 4.28: [21] Tourism Impact on Local Customs

Assessable Parameter(s)	Change in importance of local customs and culture – result of tourism.
Availability	DIT Residential Survey 2005.
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Shannon Development, Fáilte Ireland and Waterways Ireland.
Comments	Interesting indicator, qualitative but significant for residents.

Table 4.29: [22] Population Trends

Assessable Parameter(s)	(i) Demographic profile – density etc.	(ii) Population changes
Availability	Yes. Received from CSO/ ISSDA local area statistics (1981–2002).	
Responsibility	CSO, Irish Social Science Data Archive (ISSDA) (small-area statistics – SAPS) and County Development Plan.	
Comments	Not just indicative of tourism but also development over time, for instance, the rise/decline in some DEDs in Tipperary Lakeside Lough Derg.	

Table 4.30: [23] Visitor Profile

Assessable Parameter(s)	(i) Appropriate balance – peak and off-peak re-visitor numbers	(ii) Visitor numbers in various accommodations – land and water
Availability	Yes – CSO, Fáilte Ireland and Waterways Ireland, (Visitor Survey 2005).	
Responsibility	Local businesses, strategic bodies, CSO, Fáilte Ireland and North Tipperary County Council – Detailed local information contingent on information from Fáilte Ireland's Survey of Overseas Travellers (SOT) or dedicated Visitor Survey.	
Comments	Indicative of seasonality, need commitment for gathering this. Important indicators for testing: contribution to local economies, overall impacts, where benefits are occurring, type of visitor etc. – consistency important for change over time.	

Table 4.31: [24] Tourist Motivation to Visit

Assessable Parameter(s)	Factors influencing visitors to the area
Availability	DIT Visitor Survey 2005.
Responsibility	Tourism Research Centre, DIT, Fáilte Ireland and Shannon Development.
Comments	Needs to be monitored over time, also influence of marketing campaigns. Dependent on Fáilte Ireland's Survey of Overseas Travellers or dedicated visitor survey needs to be consistent.

Table 4.32: [25] Tourist Expectation re-Crowding

Assessable Parameter(s)	Expectations regarding level of tourists/locals in the area
Availability	DIT Visitor Survey 2005.
Responsibility	Local businesses, strategic bodies, CSO, Fáilte Ireland, Waterways Ireland and North Tipperary County Council. Cannot be tested without survey.
Comments	Perceived carrying capacity very good indicator of carrying capacity. Ireland marketed as uncrowded, could affect sustainability and capacity issues. Survey needs to be gathered consistently on seasonal basis.

Table 4.33: [26] Level of Repeat Business

Assessable Parameter(s)	Level/proportion of repeat visits
Availability	DIT Visitor Survey 2005.
Responsibility	Local businesses, strategic bodies, CSO, Fáilte Ireland, Waterways Ireland and North Tipperary County Council. Cannot be tested without survey.
Comments	Indicates 'feel-good' factor of experience, survey based – from established businesses – but generally assumed to be highly inaccurate and inconsistent. Survey needs to be gathered consistently.

Table 4.34: [27] Tourist Perception of Local Management

Assessable Parameter(s)	(i) Perceived management of issues (speed craft/jet skis/boats etc.)	(ii) Perceived management of pollution/litter
Availability	Some information available from DIT Survey 2005 – more needed.	
Responsibility	Local businesses, strategic bodies, Waterways Ireland, CSO, Fáilte Ireland, Shannon Development and North Tipperary County Council.	
Comments	Dependent on information from Fáilte Ireland's SOT or dedicated Visitor Survey. Needs to be gathered consistently.	

Table 4.35: [27] Tourist Perception of Local Management

Assessable Parameter(s)	(iii) Perception of congestion
Availability	DIT Visitor Survey 2005.
Responsibility	Local businesses, strategic bodies, CSO, Fáilte Ireland, Waterways Ireland and North Tipperary County Council. Cannot be tested without survey.
Comments	As with other perception parameters, raised in certain areas at certain times – traffic/speeding/parking etc.

Table 4.36: [28] Tourist Perception of Local Population

Assessable Parameter(s)	Perception of local friendliness
Availability	DIT Visitor Survey 2005.
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Fáilte Ireland, Shannon Development and Waterways Ireland.
Comments	Dependent on information from Fáilte Ireland's SOT or dedicated Visitor Survey – needs to be gathered consistently.

Table 4.37: [29] Tourist Satisfaction with Transport

Assessable Parameter(s)	Perception of transport quality and cost (speed of access, frequency etc.)
Availability	DIT Visitor Survey 2005.
Responsibility	Local businesses, strategic bodies, North Tipperary County Council, Fáilte Ireland, Shannon Development, Waterways Ireland.
Comments	Need overall measure of transport opinion. Dependent on information from Fáilte Ireland's SOT or dedicated Visitor Survey needs to be gathered consistently.

Table 4.38: [30] Tourist Spend

Assessable Parameter(s)	Characteristics of tourist spend (Seasonality, overseas and domestic etc.)
Availability	DIT Visitor Survey 2005 – can be derived (though not very accurately) from national data.
Responsibility	Fáilte Ireland and CSO
Comments	Good if policies exist to alleviate problem of seasonality – highly seasonal in study area. Spend is a good measure of real seasonal fluctuation – would assist policy.

**Table 4.39: [31] Assessment of Administrative goals
(Environmental, Economic, Social and Administrative)**

Assessable Parameter(s)	The presence and attainment of SMART goals.
Availability	Identified in Political Administration research (2006) not specifically SMART.
Responsibility	Policy makers (local authority, regional planning bodies, Fáilte Ireland).
Comments	Indicators are only useful if testable i.e. SMART – Specific Measurable, Achievable, Realistic/Relevant, Targeted/Timely (long term and short term).

Table 4.40: [32] Clear and Capable Management of Tourism Assessable Parameter(s)

Assessable Parameter(s)	(i) Integrated planning	(ii) Monitoring and evaluation measuring performance
Availability	Difficult to 'measure' but evident in some sustainable tourism destinations.	
Responsibility	Policy makers (Local Authority, Regional Planning Bodies, Fáilte Ireland).	
Comments	Overarching (integrating) agency/body which serves as link between public and private sector organisation on ground. (For example, Norfolk Broads, which is a legal structure and would encourage monitoring and evaluation of processes!.)	

Table 4.41: [33] Monitoring and Maintenance of Regulations

Assessable Parameter(s)	(i) Clarity in relation to role/power of organisations regarding regulation	(ii) Clear strategies for enforcement of law/regulations
Availability	Difficult to 'measure' but evident in some sustainable tourism destinations.	
Responsibility	Policy makers (local authority, regional planning bodies, Fáilte Ireland).	
Comments	If serious about sustainability needs enforcing otherwise 'wishful' policies become irrelevant – Needs responsibility and infrastructure	

4.4 MEANS Test

The following table applies an EU MEANS assessment of indicators to the measurable parameters of the DIT-ACHIEV Model of Sustainable Tourism Indicators. The outcome of this assessment suggests that the parameters in the model are valid and reliable indicators for the examination of sustainable tourism.

It is proposed that the model be used to:

- Establish a baseline for the state of tourism in an area in an objective and robust manner.
- Develop a methodology for the identification of when carrying capacity is negatively affected by tourism.
- Assist in the development on an overall policy/plan for the management of sustainable tourism.

The following tables outline the 33 indicators and measurable parameters and the assessment criteria used in the refining process.

Table 4.42: Application of EU – MEANS Assessment of Indicators

Indicator and Parameter	Name of Measurable Parameter	Indicator Assessment Criteria								Comment
		A) Relevance	B) Availability	C) Meaning	D) Freshness	E) Sensitivity	F) Reliability	G) Comparability	H) Normativity	
1(i)	Wetland bird species	Y	Y	Y	Y	Y	Y	Y	Y	Good indicator for state of environment
1(ii)	Electrofishing (fish count) data	Y	Y	Y	Y	?	Y	Y	Y	Good indicator for state of environment – not specific to tourism
2(i)	Trophic status of lake	Y	Y	Y	Y	?	Y	Y	Y	Good indicator for state of environment – not specific to tourism
2(ii)	Biological pollution status	Y	Y	Y	Y	?	Y	Y	Y	Good indicator for state of environment – not specific to tourism
2(iii)	Physical and chemical water quality	Y	Y	Y	Y	?	Y	Y	Y	Good indicator for state of environment – not specific to tourism
2(iv)	Hydrocarbon contamination from pleasure boats	Y	N	Y	–	Y	Y	Y	Y	Good indicator for state of environment – not readily available but worth considering
3	Overall air quality	Y	N	Y	?	N	Y	Y	Y	Not available at regional/local level – also not site specific but important If deteriorates
4	Existence, maintenance and management of protected sites.	Y	Y	Y	Y	Y	Y	Y	Y	Good indication of management and value of environment
5	Photographic record of key landscapes and protected views	Y	?	Y	?	Y	Y	Y	Y	Not collected, but a valuable tool for identifying change over time (useful with indicator 9)
6	State of local folklore, local monuments and places of interests	Y	Y	Y	Y	?	Y	Y	Y	Difficult to identify 'culture' but a vital element of tourism product
7(i)	Local (Irish) language	Y	Y	Y	Y	?	Y	Y	Y	Indicative of local culture
7(ii)	Local festivals	Y	Y	Y	Y	Y	Y	Y	Y	Indicates community participation in cultural activities
8(i)	Village wastewater treatment	Y	Y	Y	Y	Y	Y	Y	Y	Importance for maintenance of physical environment
8(ii)	Water demand in study area	Y	Y	Y	Y	Y	Y	Y	Y	Highly influenced by tourism – would be useful to monitor seasonality
9	Land use breakdown by category	Y	Y	Y	Y	Y	Y	Y	Y	CORINE Data highly useful for monitoring all land use change
10(i)	Congestion	Y	?	Y	?	?	Y	Y	Y	Can be very important for perception of place, but collection very ad-hoc
10(ii)	No of vehicles on various types of roads	Y	?	Y	?	Y	Y	Y	Y	Good indicator of local pressure points
10(iii)	Parking	Y	?	Y	Y	?	Y	Y	Y	Use of spaces more important than supply – little recording
10(iv)	Accident data	Y	N	Y	Y	?	Y	Y	Y	Important for development of local profile – data kept very confidential
11	Buildings/facilities with dedicated access/facilities for people with disability	Y	N	Y	Y	?	Y	Y	Y	Indicative of professional and aware management at all levels
12	Adequate waste disposal (bins/recycling etc.) public and contract	Y	?	Y	?	Y	Y	Y	Y	Environmental/economic/social indicator of sustainable practice
13(i)	Visitor facilities – Availability of public services (toilets/ showers/ picnic areas)	Y	?	Y	Y	Y	Y	Y	Y	As with parking – use more important than absolute numbers
13(ii)	Ancillary services – ATMs, medical, repairs, groceries etc.	Y	Y	Y	Y	Y	Y	Y	Y	Presence of ancillary services reflects demand and change in demand

Table 4.42: Application of EU – MEANS Assessment of Indicators

Indicator and Parameter	Name of Measurable Parameter	Indicator Assessment Criteria								Comment
		A) Relevance	B) Availability	C) Meaning	D) Freshness	E) Sensitivity	F) Reliability	G) Comparability	H) Normativity	
14(i)	Adoption of Eco-labels	Y	?	Y	Y	Y	Y	Y	Y	Indicates adoption of sustainable practices
14(ii)	Water/Waste/Power Management	Y	N	Y	Y	Y	Y	Y	Y	Indicates adoption of sustainable practices
15(i)	Participation of enterprise in local environmental management	Y	N	Y	Y	?	Y	Y	Y	Indicates social responsibility of enterprises
16	Participation in cooperatives and partnerships	Y	?	Y	Y	Y	Y	Y	Y	Seen as an indicator for community-based tourism
17(i)	Number of tourism jobs relative to total labour force (part time or full time)	Y	Y	Y	Y	Y	Y	Y	Y	Indicates relative importance of tourism – good longitudinal indicator
17(ii)	Wages/Average tourism wage relative to work force	Y	Y	Y	Y	Y	Y	Y	Y	Indicates relative importance of tourism – good longitudinal indicator
17(iii)	Creation of new tourism jobs relative to labour force	Y	Y	Y	Y	Y	Y	Y	Y	Indicates relative importance of tourism – good longitudinal indicator
17(iv)	Unemployment figures for tourism industry relative to labour force	Y	Y	Y	Y	Y	Y	Y	Y	Indicates relative importance of tourism – good longitudinal indicator
18(i)	Resident attitudes to/issues with access	Y	Y	Y	Y	?	Y	Y	Y	Valuable indicator – requires survey
18(ii)	Resident attitudes to traffic and congestion management in area	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
19(i)	Resident awareness of tourism	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
19(ii)	Resident attitude to tourism related conflicts	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
19(iii)	Resident view of management of area	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
19(iv)	Resident perceived consultation with tourism stakeholders	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
20(i)	Resident attitudes to tourism employment	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
20(ii)	Local perception of their relationship with visitors	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
20(iii)	Issues raised regarding tourist behaviour	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
21	Change in importance of local customs and culture – result of tourism	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
22(i)	Demographic profile – density etc.	Y	Y	Y	Y	?	Y	Y	Y	Changes could reflect tourism related changes
22(ii)	Population changes	Y	Y	Y	Y	?	Y	Y	Y	Changes could reflect tourism related changes
23(i)	Appropriate balance – peak and off-peak re-visitor numbers	Y	Y	Y	Y	Y	Y	Y	Y	Important to spread seasonality to reduce impact
23(ii)	Visitor numbers in various accommodations– land and water	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
24	Factors influencing visitors to the area	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
25	Expectations regarding level of tourists/locals in the area	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey
26	Level/proportion of repeat visits	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires survey

Table 4.42: Application of EU – MEANS Assessment of Indicators

Indicator and Parameter	Name of Measurable Parameter	Indicator Assessment Criteria								Comment
		A) Relevance	B) Availability	C) Meaning	D) Freshness	E) Sensitivity	F) Reliability	G) Comparability	H) Normativity	
27(i)	Perceived management of issues	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – influences image of area – requires Survey
27(ii)	Perceived management of pollution/litter	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – influences image of area – requires Survey
27(iii)	Perception of congestion	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – requires Survey
28	Perception of local friendliness	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – influences image of area – requires Survey
29	Perception of transport quality and cost	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator – influences image and desirability of area – requires Survey
30	Characteristics of tourist spend	Y	Y	Y	Y	Y	Y	Y	Y	Valuable indicator. CSO or Fáilte Ireland data too general – requires Survey
31	The presence and attainment of SMART goals	Y	Y	Y	Y	?	Y	Y	Y	Easily examined through goals, objectives and management plans
32(i)	Integrated planning	Y	Y	Y	Y	?	Y	Y	Y	Easily examined through goals, objectives and management plans
32(ii)	Monitoring and evaluation measuring performance	Y	Y	Y	Y	?	Y	Y	Y	Not necessarily tourism, but will have an impact on tourism
33(i)	Clarity in relation to role/power of organisations regarding regulation	Y	Y	Y	Y	Y	Y	Y	Y	Important for successful maintenance of regulations
33(ii)	Clear strategies for enforcement of law/regulations	Y	Y	Y	Y	Y	Y	Y	Y	Important for successful maintenance of regulations

- A) Relevance:** The indicator should cover themes and issues which have a significant impact on the development of sustainable tourism.
- B) Availability:** Crucial for an indicator is its actual existence, i.e. it must be quantified at regular intervals and the cost of collecting measurements should not outweigh the usefulness of the indicator.
- C) Meaning:** A good indicator must be clearly defined and understood without ambiguity by everyone who uses it. The indicator should accurately reflect the concept to be measured, i.e. what is called the validity of construction.
- D) Freshness:** The relevant information should be reasonably regularly available and it should be available at the time it is required.
- E) Sensitivity:** The quantity in question should be directly responsive to the activity whose performance is being measured, and ideally changes in the quantity should be directly attributable to the activity in question.
- F) Reliability:** The same measure undertaken by two different people should produce the same indicator.
- G) Comparability:** Ideally an indicator would allow for comparison across a range of different areas, particularly when used for resource and location decisions.
- H) Normativity:** Any value given to an indicator should be comparable to a norm, i.e. it should be amenable to setting of benchmarks against which outcomes can be compared.

4.5 Application of Model

The next challenge for this model would be to identify a case study area where the local administration is willing to apply and test the model. This would require detailed data collection of the measurable parameters outlined in the model to establish the baseline state of the tourism industry. Following from this, the indicators would be used to identify and examine temporal and spatial trends in each parameter. Depending on the situation in which the model is applied, the positive or negative movement of certain indicators can indicate a move towards or away from sustainable tourism goals.

4.6 Weighting of Indicators

While emphasising some indicators over others and prioritising certain criteria is a relatively common practice, in the development of the DIT-ACHIEV Model no attempt has been made to apply weightings to the various indicators.

This was a deliberate decision in the development of a model which can be applied universally. For instance, in the Lough Derg area, lake and river water quality are key indicators of sustainability, whereas in other environments such indicators could be of marginal importance. If weighting or prioritisation of indicators is desirable in a particular setting, a number of selection procedures can be followed:

- Identification of locally significant indicators. This must be undertaken through consultation with local key stakeholders and managers.
- Identification of the most robust indicators. A method such as the MEANS matrix employed above can be used to highlight the indicators which fulfil the greatest number of criteria – again the assessment criteria can vary according to the relative importance of factors such as budget, urgency of investigation or sensitivity of environment/economy/culture.
- Identification of critical indicators. In certain cases some indicators may identify crisis situations. These may be assigned priority status in certain instances.

Ultimately, the model is designed to be employed in a flexible manner, and adapted to the local situation, according to environmental, economic and socio-cultural sound principles.

4.7 Using Indicators

The DIT-ACHIEV model can be utilised to demonstrate different degrees of sustainability, depending on the location/situation in which it is adopted.

Indicators such as those outlined in this document can be used for a number of purposes. Primarily in tourism they can be used to identify the following:

- Stresses on an area (e.g. traffic congestion, water shortages, visitor dissatisfaction).
- The impact of tourism (e.g. seasonality, rate of habitat damage, local community employment quality).
- Management effort (e.g. funding of pollution clean-ups).
- The effect of management actions (e.g. changed water quality, number of returning tourists).

Indicators can also provide an early warning of when a policy change or new action may be needed, as well as providing a basis for the long-term planning and review of tourism (UNEP/UNWTO).

Thus, in its simplest form the model sets benchmarks against which changes in the administration, community, heritage, infrastructure, enterprise and visitor, resulting from changes in tourism, can be assessed. In a location where there is a perceived concern with visitor satisfaction, more resources would initially be spent on this aspect of the model, while this may not be an initial concern for other destinations. In fact, the only aspects of the model to be used may be those within the 'visitor' field of interest. The manner in which the model is adopted will result from the sustainable tourism strategy in which it is placed (see the following section), however, to be seen as a true model of sustainable tourism, all aspects of the model should be applied.

4.8 Implementing the Model

This project follows a structure similar to that proposed in the UNEP/UNWTO document: *Making Tourism More Sustainable: A Guide for Policy Makers*, which is a management guide for governments around the world.

The UNEP document is composed of three main sections which:

- 1 Define sustainable tourism and identify what needs to be addressed.
- 2 Identify a working structure and strategies that are needed to be effective.
- 3 Identify tools that can assist in the management of tourism (Denman, 2006).

The first and last of these themes are clearly treated in this research report; the former, in Sections 1 and 2; the latter in this section. What remains to be developed is a structure whereby the model can be applied in a real situation/scenario, thereby working through the second of these themes: an examination and application of the structures and strategies that are needed to make sustainable tourism successful.

Denman (2006), in presenting the key themes of the aforementioned *Making Tourism More Sustainable*, proposes the following steps for the formulation of a sustainable tourism strategy.

- 1 Create a multi-interest working group.
- 2 Agree on initial issues to investigate.
- 3 Undertake wide consultation.
- 4 Prepare a situation analysis, including destination performance, needs and opportunities.
- 5 Consult and agree on key issues and priorities.
- 6 Determine strategic objectives.
- 7 Develop an action programme.
- 8 Establish or strengthen instruments to facilitate implementation.
- 9 Implement actions.
- 10 Monitor results.

There are two key issues in this strategy formulation. First it is important to establish the correct structures through which organisations can work with others towards more sustainable tourism, and thereby develop and drive policies and actions. Second, a process must be developed which embraces sustainability and identifies some of the strategic choices that need to be made – while considering product, market selection, the operation of tourism enterprises and the behaviour of visitors. The tool that will be used to influence tourism development (in this case the DIT-ACHIEV Model of Sustainable Tourism) always needs to be considered.

5 Conclusions

The following sections describe conclusions to each phase of the research findings and combines to form overall recommendations.

5.1 Strand 1 Conclusions

The following conclusions are the key findings which relate specifically to Strand 1 of the research.

5.1.1 *Analysis of Ecological Systems*

The overall findings of the ecological systems is that while there are observable impacts of tourism in the study area, the relationship between tourism and the local ecology is a difficult one to quantify. The overall status of the ecology would appear to be satisfactory with regard to many of the criteria examined, with some issues such as water quality requiring continuing monitoring. (Because of the plethora of water quality data, and the lakeside location of the research, this was an aspect of the ecology which was examined in some detail.)

While sensitivity to the relationship between tourism development and flora/fauna is important, the major impacts on sensitive habitats, ecosystems and wildlife in the study area would appear to be domestic, industrial and agricultural activity. The identification of a cause and effect relationship with tourism has been difficult to establish, but in general tourism would appear to be relatively benign.

Identifying the relationship of many of the dimensions examined under Strand 1 to tourism is complicated by the influence of outside forces. For example, water quality in the area is influenced to a certain extent by factors such as events up-river, wind direction, sunlight and rainfall. Air quality is an even more difficult aspect to focus upon in a relatively small study area, as the spatial scale at which air quality varies makes this localised form of investigation difficult to monitor. However, such findings

cannot lead to complacency and continued monitoring is important to maintain current levels in some areas, and improve others.

An important aspect of the ecological system in the study area is the interrelationship between diverse aspects such as landscape, architecture, culture and the living environment. It is proposed in the research that while landscapes and vistas are not straightforward to quantify and evaluate, themes such as landscape evaluation, visual landscapes and landscape quality could be explored in an attempt to bring together a number of these ecological dimensions.

5.1.2 *Analysis of Physical Structure*

The examination of physical structure identified a range of services upon which tourism depends strongly. The key finding of this aspect of the study area is that the services and facilities are widely dispersed, and despite the presence of a small number of 'honey-pots', the study area is diffused in nature. Ballina, Dromineer, Garrykennedy and Terryglass are the key tourism sites in the area under investigation, and these contain the highest concentration of visitor amenities, accommodations and services linked to tourism.

It would appear that the key pressures on the physical structure result from increased visitor demand during bank-holiday weekends, particularly if the weather is good. However, other than some littering, a small amount of traffic congestion, some pressure in pubs or at moorings, outside these key periods, the physical structure is rarely pressurised by issues of capacity.

The main issue that arose regarding physical structures was in fact a shortage of supply, perhaps even lack of critical mass of product to remain sustainable. The study area has a small product base, with little hotel accommodation and a poor supply of budget accommodation (hostel/camping); it is also poorly serviced

by public transport. From the perspective of identity development and marketing, the sustainability of such a diffused product causes difficulties for certain types of tourist. Conversely, this low level of service is seen by certain product providers, locals and even tourists as being a desirable, gentle, quiet and sustainable tourism product.

5.1.3 Analysis of Economic Structure

At the outset of this project, 'economic structure' was identified as a separate dimension of the carrying capacity web. However, as the research progressed through Strands 1 and 2, and particularly throughout Strand 3, it became apparent that the economic element should not be treated as a separate area/field of interest. Instead, the economic dimension was used to develop a model which examines the utilisation of tourism capital stock (ecology, physical and social) and to examine the sustainability of its use. Therefore, the economic dimensions were integrated into the rest of the research for the development of an overall model.

One reason why this approach was adopted is related to the overall importance of economic sustainability for the survival of tourism. Linked to this was the difficulty of accessing accurate and usable data at an appropriate scale for themes such as investment and cost of living. As with other dimensions, the absence of suitable data made the cause and effect relationship difficult to ascertain.

5.1.4 Recommendations

It was recognised that much of the data presented in Strand 1 of the research provides only a snapshot of the current natural, physical, tourism and economic environment. However, the research allows assessment of the present state of the landscape (ecological, physical and economic) and current strategies for its protection.

Based on the complexity of data in this strand it was decided that the emphasis of indicator selection should be on a small number of focused and straightforward indicators. Thus, a key task of Strand 3 was to classify and distil the data down to a small number of useful and practical indicators.

5.2 Strand 2 Conclusions

The following briefly describes conclusions drawn from Strand 2 of the research.

5.2.1 Analysis of Community Tolerance

In general, the local community of Tipperary Lakeside Lough Derg appear to be tolerant of tourism. The community recognises the economic benefit of tourism. The issues outlined within the research findings include traffic problems and overcrowding which are mentioned within the DIT-ACHIEV Model of Sustainable Tourism. Respondents mentioned the bridge joining Ballina and Killaloe specifically as an issue. The local community feel however that they are not consulted about any tourism inconveniences.

While the level of satisfaction with tourism is quite high amongst the local community, the following recommendations are made as a result of the community tolerance analysis. Going forward, it will be necessary to monitor the level of communication between tourism stakeholders and the local community. It is also recommended to investigate congestion issues further, with particular reference to the bridge joining Ballina and Killaloe.

With specific reference to the indicators, a number of candidate indicators were extrapolated from the findings of the community tolerance research. As already stated, specific issues outlined within the research, such as traffic congestion, are outlined in the model. However, in terms of community tolerance, the overlying topics that were utilised at the beginning of the community tolerance research are included in the model. The use of these sub-fields, covers community tolerance in its broadest form, in order to anticipate changes in issues.

5.2.2 Analysis of Visitor Satisfaction

Similarly to the analysis of community tolerance, the high percentages of visitors who indicated they would return to visit Tipperary Lakeside Lough Derg in the future signifies a high level of visitor satisfaction with the area. Nonetheless, respondents did identify some issues. It was recommended that both access to and within the area could be improved upon by widening the roads, improving

signposting and increasing public transport. Water quality and road infrastructure within the area need monitoring as visitors rated these two aspects significantly lower than local friendliness, natural environment, overall visit and quality of service.

In terms of the DIT-ACHIEV Sustainable Tourism Model, firstly the importance of visitor satisfaction must be acknowledged. However, as can be seen from this research, visitor satisfaction alone within an area does not make that area sustainable. Again, in order to regard visitor satisfaction in its broadest sense, the sub-fields outlined in the model allow for any anticipated or unanticipated changes in visitor satisfaction.

5.2.3 *Analysis of Political Administration and Comparative Analysis*

Assessment of administrative goals (environmental, economic, social and administrative) requires the presence and attainment of Specific, Measurable, Achievable, Realistic/Relevant, Targeted/Timely (SMART) objectives. This format provides a transparent method for testing the process.

Clear and capable management of tourism looks at integrated planning, monitoring and evaluation and the measuring of performance. The Broads Authority in the UK was identified as an example of an overarching agency with 'legal' responsibility for an area which attempts to practise clear and capable management.

Monitoring and maintenance of regulations requires the presence of clarity in relation to the role of organisations regarding regulation and clear strategies for enforcement of regulations. This involves monitoring and evaluating regulations to ensure they are being upheld.

5.2.4 *Recommendations*

The analysis of visitor satisfaction and community tolerance yielded some similar conclusions and these were included within the indicator model. As with Strand 1, there was a vast amount of information covered within Strand 2. It was decided that the emphasis of indicator selection should be on a small number of straightforward indicators.

5.3 *Synthesis of Strand 1 and Strand 2*

While Sections 3 and 4 examine Tipperary Lakeside Lough Derg under a variety of headings and sub-headings, the sustainability of the area remains to be acknowledged.

One of the limitations of Strand 2 of the research is the lack of data collected over time. This complicates the acceptance of sustainability as it is not possible to measure change in all categories of Strand 2. Hence, although Tipperary Lakeside Lough Derg appears to be sustainable at the time of research, the research in many cases only accounts for the time period in which the research was undertaken.

Strand 1 is also limited because of difficulties encountered collecting and correlating data specific to the research area. Hence, when discussing the sustainability of the research area, it must be acknowledged that some of the data may not be specific to the research area; instead, it has been extrapolated from data which is specific to North Tipperary or indeed the Shannon Region.

Taking into account the limitations already highlighted, in general terms, the findings from Strand 1 and Strand 2 suggest that tourism in Tipperary Lakeside Lough Derg can be considered sustainable. The quantitative data of Strand 1 highlights an environment which is sustainable in nature and also presents a number of issues to be monitored. For instance, the dependence on certain industries, population issues and the lack of public transport all require attention. The qualitative data of Strand 2 indicates high levels of general satisfaction amongst visitors, local communities and stakeholders; however the sustainability of the area is also dependent on issues extrapolated from this data – namely, traffic congestion, the use of power boats and confusion over the issue of water quality.

5.4 *Strand 3 Conclusions*

The purpose of Strand 3 of the research was to bring together the data produced in Strands 1 and 2 and to thereby develop a means of dealing with issues of carrying capacity. The outcome of these deliberations was a model of sustainable tourism indicators.

5.4.1 *Best Practice in the Development of Indicators of Economic Sustainability in the Tourism Sector*

Where possible, the development of an indicator model for the identification and management for sustainable tourism development followed a rigorous and robust procedure. International guidelines such as those outlined by the UNWTO, the EU and the UK-adopted VICE (Visitors, Industry, Community and Environment) model were examined. From these and a detailed series of expert consultations, the DIT-ACHIEV Model of Sustainable Tourism Development was produced.

5.4.2 *Executive Development Programme*

Without direction, the DIT-ACHIEV model will simply remain an academic piece of work. In order to deal with this, a series of modules were identified which would lead participants towards a more developed understanding of sustainable tourism development and facilitate the practical implementation of the model. This can be viewed within the main report which is available for download.

5.4.3 *International Conference*

To facilitate dissemination of the research and to engage in peer evaluation of the outputs, an international conference will be held in October 2007. The main output from the conference, which focuses on sustainable tourism development, will be the publication of the conference papers, thereby facilitating wider consultation of the pioneering academic and practitioner papers presented. In order to attain the highest possible standards for the conference, the steering committee is made up of international experts in the area of sustainable tourism.

5.5 Overall Observations and Recommendations

Arising from the research a number of observations are made and recommendations are proposed. The first of these focus on data and research limitations, the others are more generic issues.

5.5.1 *The Need for Coordinated Data Management*

A main finding of the research relates to the gathering and analysis of data. There is a myriad of agencies involved in the collection of data which applies to the various themes of this research. For example, numerous organisations collect information on the natural and physical environment; data related to employment and enterprise; visitor numbers and income generated. In each of these examples, data is collected in a disjointed fashion and access to an individual data bank is often difficult and time consuming. This difficulty is magnified when a researcher is attempting to work across disciplinary boundaries and undertake broad-ranging research, as required in a holistic investigation of sustainability.

In addition, interaction between the numerous public, private and voluntary organisations that gather data is required in order that agreement can be achieved regarding standardised formats, availability and quality of data. This would facilitate more accessible and more accurate investigation of many of the indicators.

5.5.2 *Scale and Range of Data*

Data tends to be very specific and detailed. Thus a large quantity of data is available for particular focused aspects of the research (i.e. environmental data). In addition, these data tend to be recorded at particular spatial scales which can be difficult to interpolate for a study area (i.e. national economic multipliers and cost of living formulae).

Linked to the scale of data is the need for local authorities, state agencies and voluntary groups to do more to provide data which is spatially coded. The availability of such data would facilitate accurate analysis of environmental, economic and social conditions at a local level.

Further data-related issues, that somewhat hampered the research, include:

- Difficulties establishing rights to use data.
- Difficulties in obtaining data even where it is technically available to the public.
- Issues concerning confidentiality and conflict of interest regarding data.

5.5.3 *Need for Up-to-Date and Focused Research*

While highly useful (particularly when available at DED level), a number of datasets such as CSO population statistics are limited to periodical examination and release. As such, they only provide snapshots of the local situation. Regularly updated data is often only collected at national level and thus only provides high-level generic context indicators.

To move beyond national level data, a number of aspects of this research required primary investigation to be undertaken in the form of surveys. These surveys need to be comparable with data collected in other areas, and should be comparable over a number of years. This research cannot be static; therefore, the data must consider change over time, once spatial and temporal benchmarks are set.

Particular attention is required for the collection of locally specific data, focusing for example on the visitor, the local community and the local administration.

5.5.4 *Local Managers Need to Identify Hot-Spots and Set Objectives*

Local authorities and destination managers need to identify 'hot spots' and begin to identify area-specific pressures of importance in these locations.

Once this is undertaken, weighting of indicators may be desirable in order to prioritise actions. However, weighting will vary from place to place, and must be based on local needs and demands.

5.5.5 *Indicator Issues*

In the context of this project, two particular issues have been highlighted regarding the identification of indicators:

- Often it is not possible to link indicators directly to the effects of tourism.
- Much of the data, though useful in the context of specific themes, has limited use in the context of overall indicators (as explained below).

In spite of the large quantity of information available on some topics, analysis of the data showed that while data may be relevant to tourism, it may have little value as a potential indicator for the effects of tourism. Because of this, Strand 3 of the project focused on data that could be used for the development of sustainable tourism indicators.

5.5.6 *Gaps in the Available Datasets*

A major finding of the research concerns the identification of gaps in the existing databases. It became clear throughout the research that data must be relevant and applicable to sustainable tourism development and it is also imperative that the data is practical, relatively inexpensive and easy to obtain.

Therefore, a key finding of Strands 1 and 2 of the research concerns the dependency on survey work undertaken by the research team. Focused surveys of facilities and services, investigations of employment data, landscape evaluations, visitor surveys, local resident surveys and surveys of the political administration would all require resources and commitment, but are essential to the development of reliable and usable indicators.

5.6 *Future Direction*

It is proposed here that the DIT-ACHIEV Model of Sustainable Tourism Development is a suitable tool for the management of sustainable tourism. Thus, an appropriate method of applying the model would be to follow the 10 steps outlined in Section 4.9 for the development of a sustainable tourism management structure.

In order to test the model, the research needs a champion who is willing to adopt the model and test its applicability both spatially and temporally. This will ideally be a local authority or tourism development agency which is interested in pursuing sustainable tourism, and is prepared to commit resources and time to the implementation of the project outcomes.

Field-testing of the model in a variety of contrasting locations would provide an even more robust test of its applicability.

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