

## SUMMARY

The purpose of this paper was to update the financial values presented in Driml (1997b), and also further discuss methods by which resource values for the Great Barrier Reef Marine Park may be estimated on an ongoing basis. The identification of appropriate models was considered an essential first step for the effective evaluation of resource management strategies as the type and format of the data required for estimating resource values depends highly on the evaluation model.

Our analysis found that the three direct uses of the Great Barrier Reef Marine Park generated average revenues of about \$700 million per annum over the period 1993–94 to 1997–98. We note that the financial year 1995–96 recorded a significantly higher number of tourists than the other years under review, which generated a higher than average level of revenue for the Great Barrier Reef Marine Park.

Great Barrier Reef Marine Park Gross Financial Value of Direct Uses (\$'000) *					
	1993–94	1994–95	1995–96	1996–97	1997–98
Commercial Tourism	411 149	436 513	507 392	430 627	454 836
Commercial Fishing	141 722	120 630	149 429	141 458	136 180
Recreational Fishing and Boating	112 038	120 194	117 953	113 258	107 572
Total	664 910	677 337	774 774	685 342	698 588

\* = nominal dollars. Source: KPMG Consulting

In preparing the estimates of financial values, KPMG refined the approach adopted by Driml (1997b), and in this respect, the outcomes of the two studies are not necessarily comparable. We note that the methodology utilised by KPMG is open to further refinement as secondary data sources evolve over time.

The estimates of the financial values of the direct uses of the Great Barrier Reef Marine Park do not include consideration of the flow-on impact, or the effect of linkages of these activities, with other industries in the state economy. We have extended this direct contribution analysis and considered the indirect or flow-on effects of those activities, in terms of output and employment, on the economy of the State of Queensland through the use of input-output analysis. The following table summarises the initial, flow-on and total impacts for output and employment associated with the nominated economic activities that utilise the Great Barrier Reef Marine Park, for the year 1994–95.

Summary of Output Effects GBRMP-based Activities, Queensland, 1994–95						
Activity	Output Effects			Employment Effects		
	Initial Output (\$m)	Flow-on (\$m)	Total Impact (\$m)	Initial Employ. (no.)	Flow-on (no.)	Total Impact
Commercial Tourism	436.5	407.9	844.4	7 421	5 467	12 888
Commercial Fishing	120.6	73.3	193.9	1 568	1 152	2 720
Recreational Fishing and Boating	120.2	134.7	254.9	N/A	2 008	2 008
Total	677.3	615.9	1 293.2	8 989	8 627	17 616

Source: KPMG Consulting

At the outset of this discussion, it must be acknowledged that decision making with respect to natural resource management is complex and commonly involves multiple objectives which are competing and conflicting. As a result, therefore, appropriate tools or techniques to organise data to assist in decision making will necessarily be limited to those which have the capacity to facilitate the incorporation of information from a number of disciplines which can identify an outcome that offers a compromise solution.

Traditional techniques to organise information to evaluate alternative projects or programs to assist decision making, specifically, Cost Benefit Analysis, require the quantification, in dollar terms, of the full opportunity cost of all of the proposed alternatives to doing nothing. A number of possible problems arise in relation to using Cost Benefit Analysis as the exclusive or main decision-making tool in natural resource management.

We have suggested that it would be advisable for the Great Barrier Reef Marine Park Authority to consider the use of complementary decision-making models such as Multiple Objective Decision Support Systems or Multiple Criteria Analysis which allow the analyst to incorporate both pecuniary and non-pecuniary values in the decision-making process. Multiple Criteria Analysis provides a formal process which is sufficiently flexible to facilitate the incorporation of information from a number of disciplines. It is an appropriate tool to assist decision making when the problem to be addressed is complex and poorly defined; when there are multiple and competing objectives; and, in situations where there are multiple stakeholders with conflicting points of view about the appropriate decision.

It needs to be emphasised that the compilation of an economic data set for use in decision making requires the same long-term investment in appropriate research as is the case for scientific data. To this end the Marine Park Authority needs to give serious consideration to both ad hoc data collection exercises, possibly on a consultancy arrangement as is the existing practice, and to long-term research projects in collaboration with appropriate research institutions, for instance, under ARC SPIRT\* grants with Universities.

\* Australian Research Council *Strategic Partnerships with Industry – Research and Training Scheme*