BIODIVERSITY CONSERVATION: STUDIES IN ITS ECONOMICS AND MANAGEMENT, MAINLY IN YUNNAN, CHINA

Working Paper No. 25

Criteria for Sustainable Tourism:

Why a Cautious Attitude is Needed

by

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and

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THE UNIVERSITY OF QUEENSLAND

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Rural nature reserves can have negative as well as positive spillovers to the local region and policies need to be implemented to maximise the net economic benefits obtained locally. Thus an 'open' approach to the management and development of nature conservation (biodiversity) programmes is needed. The purpose of this study is to concentrate on these economic interconnections for Xishuangbanna National Nature Reserve and their implications for its management, and for rural economic development in the Xishuangbanna Dai Prefecture but with some comparative analysis for other parts of Yunnan

The Project will involve the following:
1. A relevant review relating to China and developing countries generally.
2. Cost-benefit evaluation of protection of the Reserve and/or assessment by other social evaluation techniques.
3. An examination of the growth and characteristics of tourism in and nearby the Reserve and economic opportunities generated by this will be examined.
4. The economics of pest control involving the Reserve will be considered. This involves the problem of pests straying from and into the Reserve, e.g., elephants.
5. The possibilities for limited commercial or subsistence use of the Reserve will be researched.
6. Financing the management of the Reserve will be examined. This will involve considering current sources of finance and patterns of outlays, by management ·of the Reserve, economic methods for increasing income from the Reserve and financial ·problems and issues such as degree of dependence on central funding.
7. Pressure to use the resources of the Reserve comes from nearby populations, and from villagers settled in the Reserve. Ways of coping with this problem will be considered.
8. The political economy of decision-making affecting the Reserve will be outlined.

Commissioned Organization: University of Queensland

Collaborator: Southwest Forestry College, Kunming, Yunnan, China

Criteria for Sustainable Tourism: Why a Cautious Attitude is Needed

1. Introduction

There has been much discussion of sustainable tourism and there is in fact an international academic journal entitled *Sustainable Tourism*. However, there appear to be few, if any, rigorous definitions of the concept of sustainable tourism. This is unfortunate because without clear concepts scientific analysis is likely to be hampered and policy advice imprecise and confusing. The above problem exists despite the fact that the concept of sustainable tourism is closely linked by many to definitions of ecotourism, for example, consider the definition that ecotourism is tourism careful of the environment (Wen and Tisdell, 1995, Tisdell, 1996a). Furthermore, the National Ecotourism Strategy (Commonwealth Department of Tourism, 1994) for instance makes ecological and cultural sustainability an integral part of its definition of ecotourism but for some unknown reason does not include economic sustainability as p of its definition. This therefore, contrasts with a general view expressed in the literature (Barbier, 1987) that the sustainability of industries or projects requires the simultaneous achievement of (1) economic (2) social and (3) biophysical sustainability. If this view is accepted, then sustainable tourism would require these three characteristics to be satisfied simultaneously. Nevertheless, to make the concept of sustainable tourism operational, it is necessary to specify or define these characteristics more precisely. To specify operational criteria for sustainable tourism is not easy.

An early question which must be asked in relation to sustainability is what is it that one wants to be sustainable. For example, in relation to tourism what attribute should be sustainable? Should it be the number of tourists, tourist days, tourist receipts or some other characteristic? Or is it that one wants to sustain some other features such as certain ecological, cultural or ethnic features and that tourism should be designed to be compatible with conservation of these. Or again it might be argued that in some protected areas the aim should be to conserve total economic value involving benefits from tourism plus other direct economic uses plus non-economic values like those discussed by Pearce et al. (1989), Driml (1994) and Driml and Common (1995). Furthermore, it is pertinent to ask to what extent such concepts are compatible with the most common economic definition of sustainable development, namely that it is development that ensures that the income per head (or more generally standard of living) of future generations is not lower than that of present generations (see, for example,

Tietenberg, 1988, p.33). Let us consider these aspects.

2. Sustaining Tourist Numbers, Tourist Days, Receipts and Financial Benefits

It may be thought that non-declining tourist numbers or tourist days (or nights) as time goes by are a sign of sustainable tourism. While they may be such a sign, they are not sufficient evidence of long-term sustainability of tourism. This may be so for several reasons:

1. Past trends cannot always be confidently extrapolated. In order to better understand whether tourism is likely to be sustained, the growth of tourism may need to be explained in terms of its wider context using analysis and models.

2. Growth in tourist numbers or tourist days in itself sometimes generates a deterioration in the environment due for example to environmental limits or capacities being exceeded and/or environmental damages being caused by the increasing volume of tourism (Tisdell, 1991, Ch. 10). Consequently tourist numbers could decline after initial growth. Thus the initial trend does not reveal the impending decline in the volume of tourism.

3. The tourism-area cycle suggested by Butler (1980) may apply and so a similar situation to that outlined in (2would apply. While there is some overlap between this case and (2), the tourism-area cycle of Butler is not confined to impacts of tourism on the natural environment but extends to include the built environment.

4. It may in addition be that some types of tourism or recreation are subject to the product cycle (Tisdell, 1991 Ch. 10). While tourism expands and subsequently declines in such cases, the basis of the decline is not related to the environment.

It is possible for tourist volume as measured by the above variables to be non-declining and for other tourist variables considered to be of importance not to be sustained. For example, total receipts from tourism or the total economic value of tourism may decline even though the number of tourists is increasing.

The following is an example where total economic receipts from tourism falls and so does the surplus of suppliers of tourism services (producers' surplus) even though the volume of tourist visits increases. In Figure 1, the line marked DD represents the demand for tourist

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services and AS, the supply curve of tourist services initially. The marginal revenue curve corresponding to the tourism demand curve is the line identified by MR. In this situation, the market equilibrium number of tourist visits is OJ and the price per visit is OG. Consequently, total tourist receipts are equal to the area of rectangle OJBG and the surplus of producers is equal to the area of triangle ABG.
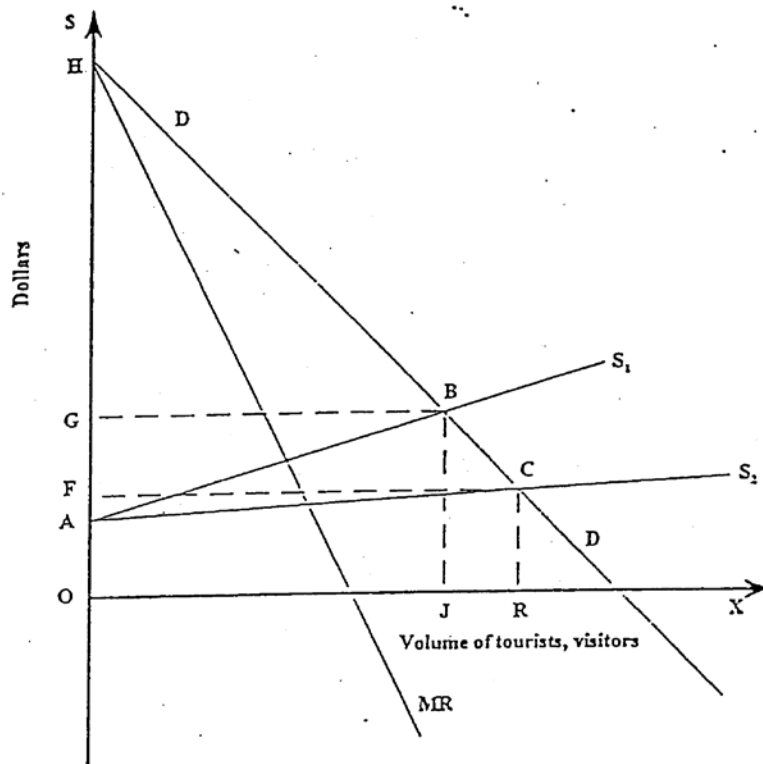

Figure 1: **A case in which an increase in the value of tourists is associated with a decline in tourist receipts and the surplus ('profit') obtained by supplies of tourism services.**

Suppose now that the supply curve of tourism services alters from AS_1 to AS_2 because the cost of supplying these services falls. Market equilibrium then alters from that corresponding to point B to that corresponding to point C. Consequently, total revenue becomes equivalent to the area of a rectangle ORCF. Because the marginal revenue curve is negative in the range of X under consideration, total tourist receipts fall; the area of rectangle ORCF is less than that of rectangle OJBG. Furthermore, as can be perceived visually in this case, the area of triangle ACF is less than that of triangle ABG. Hence producers' surplus also falls. However,

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total economic welfare as measured by the sum of consumers' surplus plus producers' surplus increases by an amount equivalent to the area of triangle ACB.

In the above case, increased tourist volume is associated with declining tourist receipts but increasing economic welfare occurs. However, rising tourism receipts do not necessarily imply rising economic welfare. There are at least two reasons why this may be so: (1) the rise in tourism receipts may be associated with a rise in the cost of supplying tourism services or (2) the increase in receipts may be due to an increasing incidence of monopoly pricing.

Case (1) can be regarded as the reverse of the example discussed above. Of course, the supply curve need not pivot or rotate as above •when it shifts and it is therefore possible for both total economic welfare and producers' surplus to decline even though total tourism receipts are increasing. Such cases are easily illustrated.

Take the example shown in Figure 2. There it is supposed that initially the supply curve of services necessary for tourist visits is as indicated by the line marked AS_1. The demand curve for such visits is indicated by the line marked CD and the corresponding marginal service curve is identified by MR. Initially the tourism market is in equilibrium at point E_1. Assume now that the cost of supplying services to visitors rises so that the supply curve becomes BS_2. Other things unchanged, market equilibrium alters from E_1 to E_2. Because the marginal revenue curve is negative in the relevant range, this variation results in a rise in total receipts from tourists. On the other hand, total economic surplus decreases in the case illustrated from an amount equal to the area of triangle AE_1C to amount equal to the area of triangle BE_2C. In fact, both the surplus of tourists and that of suppliers of tourist services declines.
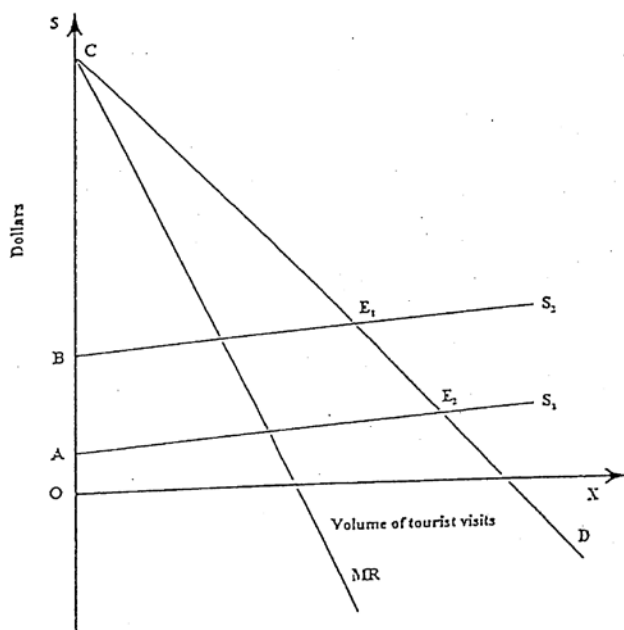
Figure 2: **It is possible for tourist receipts to rise and total economic surplus to fall. It is even possible for the surplus obtained by tourists and by suppliers of tourist services to fall at the same time.**

Given that the traditional economic model applies, .a switch from competitive pricing of the supply of tourism services to monopoly pricing may result in a greater level of tourism receipts. At the same time producers surplus (profit) rises whereas economic welfare as measured by consumers' surplus plus producers' surplus falls. This is illustrated by Figure 3.

In Figure 3, the line marked DD represents the market demand for Tourism services and that indicated by MR is its corresponding marginal revenue curve. The industry supply curve under competitive conditions is represented by OS. The marginal cost curve for the industry is also supposed to correspond to fine marked MC. Under perfect competition, X2 tourist visits are catered for and market equilibrium corresponds to point E. However, monopoly-pricing would see the number of tourist visits reduced to X_1 per period of time and the cost of each visit raised from P_1 to P_2. Taking into account the marginal revenue curve, total receipts from tourists rise due to monopoly-pricing. This is because the total gain in revenue of a change from X_2 to X_1 tourists is equal to the hatched triangle less the dotted triangle. Using the standard economic textbook argument (see, for example, Mansfield, 1994, p.311) total

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economic welfare falls by the equivalent of the area of triangle BEC. Thus in this case, a rise in tourist receipts is incompatible with total economic welfare being sustained.
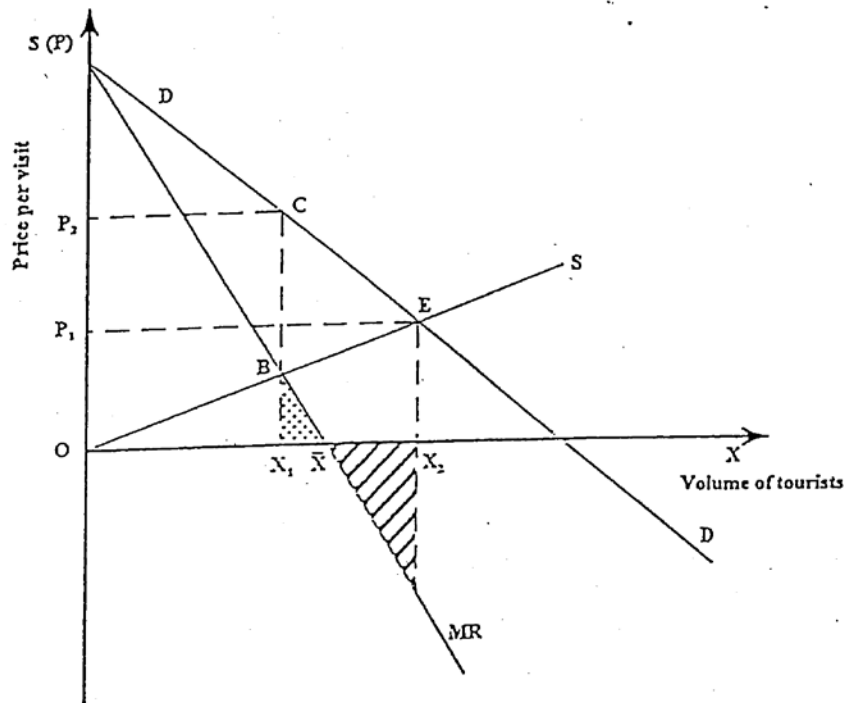

Figure 3: Total receipts from tourists may rise as a result of monopoly-pricing but total economic welfare is not sustained.

There are other cases where rising tourist numbers are incompatible with total economic welfare being sustained. This may occur for instance when tourism is of the type for which tourists are averse to crowds (McConnell, 1985). Or increased tourist numbers may be the source of congestion, e.g. traffic congestion. Furthermore, as indicated earlier, increased tourist numbers may degrade the natural environment and consequently reduce total consumers' surplus and even lower total economic surplus.

It is clear from the above examples that one needs to take a cautious attitude to using rising (or non-declining) tourist indicators such as the number of tourists, tourist days (nights) or receipts from tourism as evidence that tourist development is sustainable or should be seen in a favourable light.

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3. Sustainable Tourism in Terms of Total Economic Evaluation

In assessing the economic benefits of tourism, particularly in protection areas, Driml and Common (1995) appear to favour consideration of total net economic benefit and the aim of maximising net economic benefit. They define net economic benefit as being equal to the stream of net economic surpluses (consumers surplus less producers surplus) that can be obtained from economic activities or industries within an area or region plus passive use value (or value not dependent on using the area) less management costs (see Driml and Common, 1995, equation [1], page 21). In their case, passive economic values include off-site values such as existence, option and b quest values. Frequently economists attempt to elicit those values by means of the use of contingent valuation methods.

While in principle evaluation in terms of total economic values seems appealing, it is much less scientific than may appear to be the case at first sight. There are both practical and philosophical limitations to its use. Total economic valuation of any kind involves a set of primary underlying values but there are other possible sets or systems of values many of which are inconsistent with the economic set. Current economic value systems are for example anthropocentric (such as the system used by Driml and Common) whereas some value systems involve a wider perspective, for example, may include the welfare of animals or include ecocentric elements. Although the normal set of economic values is completely anthropocentric, it nevertheless results in values being placed on living things other than mankind. Nevertheless, the value of such things is entirely dependent on their perceived value to mankind.

Driml and Common (1995) indicate that maximisation of net (total) economic value of an area (which may involve tourism as one of its economic activities) need not result in sustainability in any of its varied senses. In particular such maximisation need not result in conservation of biodiversity or the maintenance of the economic surplus from any industry using the area, such as tourism.

Because Driml and Common's formula takes into account multiple uses of an area and also external (or offsite) effects of economic activities in an area, it is an advance on economic models which incorporate a narrower perspective. Nevertheless, a number of issues remain

unresolved. In this respect the following matters need to be noted:

The incorporation of possible multiple economic uses of an area may increase the risk of political pressures for greater direct economic use to occur at the expense of nature conservation. This could occur for example as a result of 'creeping compromise' (Doeleman, 1980). On the other hand, lack of direct economic use of a protected area could also result in a political backlash which in the long-term might be detrimental to conservation. The relationship between the nature and extent of multiple uses of a protected area and its political sustainability is a complex one but one which cannot be ignored in a holistic approach (Tisdell and Broadus, 1989).

Driml and Common discuss future net economic benefits in their formula using an interest rate. However, as Kula (1992, Ch.7) maintains, this may not be consistent with the maintenance of the economic welfare of future generations, the most commonly proposed criterion of economic sustainability.

The formula proposed by Driml and Common (1995) does not allow for uncertainty of net benefits. This is a. serious oversight since conservation issues in particular involve a long time perspective and the uncertainties involved as a result of the impact of human activities are considerable. This combined with the possibility of learning as time goes by influences optimal decisions (Tisdell, 1996, Ch.4). It may be optimal to keep options open at an apparent economic cost and adopt some of the policy approaches suggested by the precautionary principle.

Those ecocentrists favouring a strong sustainability hypothesis are likely to argue that incorporating environmental externalities or spillovers in an optimising formula is inadequate from an economic sustainability perspective. Another group of strong sustainability advocates argue that it is necessary to retain a minimum core of natural environmental resources and therefore exogeneous constraints must be imposed on their depletion because

the core has already been reached or in certain areas any further natural resources depletion will endanger the core (Pearce, 1993). It is argued that the depletion of natural environmental resources in the core will endanger the welfare of future generations and reduce their welfare below that of current generations.

Taking account of externalities, especially in a partial context, does not prevent the core from being breached. This point of view has important policy implications for tourist development which are mentioned later.

Most estimates of consumers' and producers' economic surplus are based on partial analysis. It could be argued that the concepts are inadequate to capture variations in welfare possibilities in an overall context. For example, these surpluses for a tourist industry in a particular region may be rising but only because all other regions are deteriorating environmentally at a faster rate than it is. Furthermore, it is possible that surpluses are rising in all tourist areas because for example population and incomes are rising and demand for tourism services are increasing. At the same time all tourist areas may be deteriorating environmentally. Improved environmental management policies for all the areas might have resulted in greater welfare being achieved. It even seems possible that in a dynamic context consumers' surplus might rise but the quality of the experiences obtained by tourists may fall

4. Observations on Policy

The above is not intended to belittle the efforts of Driml (1994) and Driml and common (1995) to consider the optimality and tourist development in protected areas and aspects of its sustainability. The issue is an extremely complex one. My main purpose is to introduce a cautious note as far as policy formation based on such prescriptions is concerned. These are also important from a policy point of view because natural resource-managers (such as the Great Barrier Reef Marine Park Authority, GBRMPA) may be tempted to claim that because certain tourism indicators (such as number of tourists, tourist nights or tourist receipts, or even the net economic benefits flowing from the region) are increasing that their approach to

tourism and natural resource management is generating sustainable development. For example visitor rights on the Great Barrier Reef and adjacent mainland have shown an upward trend since 1984-84 with visitor rights increasing by 70 per cent between then and 1991-92 (Driml, 1994, p.9). While this is noteworthy, on the basis of the considerations given above, it does not allow us, in itself, to conclude that sustainable tourism development is occurring on the Great Barrier Reef and nearby.

There has been considerable discussion of conditions required for sustainability of tourism in terms of tourist numbers, receipts, surpluses and so on. However, tourism is just one of many economic activities and it might be argued that tourism deserves no special status. Therefore, policies addressing tourism and sustainability should relate to the sustainability of economic development as a whole rather than to tourism considered on its own. If this view is taken, different policy conclusions are liable to emerge compared to a situation in which tourism is considered as an independent entity.

The type of policies likely to emerge depends upon whether weak or strong conditions are considered necessary for economic sustainability (Pearce, 1993). As indicated earlier, those who propose strong conditions believe that current natural resource stocks have now reached critically low levels and further reductions in these levels will imperil economic sustainability. Consequently, one of the main objectives of economic policy should be to keep natural environmental resource stocks constant, or almost so.

In relation to tourist development, this implies that no tourist development resulting in adverse net effect on the natural environment will be considered favourably. This is not to say that tourist developments with some adverse environmental effects at or near their site will not be permitted. However, they would only be allowed if they are combined with a package resulting in no net change in the natural environmental resource stock.

Policies designed to achieve the above would include offset policies. For example, a tourist development destructive of the natural environment may only be permitted if a compensatory project is undertaken to enhance the natural environment. For instance, where a tourist development is permitted in a protected area, the developer may be required to purchase sufficient land to add to the protected area to compensate for this development (Tisdell, 1995, 1993, Ch.8). Furthermore, on site special measures may have to be taken to minimise the environmental impact of the development.

Not all economists are convinced that strong conditions are required for economic sustainability, although the majority believe that some preconditions are required. At the opposite end of the spectrum to those favouring strong conditions are those supporting weak conditions for economic sustainability. The latter group believe that man-made capital can be an adequate substitute for the natural resource stock. Therefore, economic sustainability will be achieved by sufficient capital accumulation even if natural environmental resources decline. If this view is taken, a more permissive policy towards tourist developments which destroy .the natural environment can be expected.

It is not our purpose here to debate the rights and wrongs of these different approaches but to bring attention to these and their different implications for tourism development. It should be noted that weak and strong conditions for economic sustainability lie at opposite ends of the spectrum of views about conditions which need to be satisfied to ensure economic sustainability.

5. Concluding Comments

Today there is a widespread view that sustainable .economic development is desirable and in many situations, the attainment of sustainable tourism development is considered to be a worthy goal. However, the concepts involved are often quite complex and are interpreted in a variety of ways. For this reason alone, one needs to be cautions when employing these concepts. As shown above, many simple tests for sustainability of tourism are found to be wanting. This is not to deny that measurements and trends of the type discussed above provide valuable information. Nevertheless, none seem to be adequate indicators of the sustainability of tourism. They must, at least, be supplemented by deeper analysis to decide whether a tourist development is going to show long-term sustainability.

6. Notes

1. The expression used for net economic benefit is:

$$NEB = \sum_{t=o}^{T} [(CS_{Rt} + PS_{Rt}) + (CS_{ot} + PS_{ot}) + PUV_t - MC_1] (1|1 + r)^t$$

where the first bracketed term refers to the economic surplus from tourism, the second

bracketed term refers to the economic surplus from other industries, *PUV* is passive use value, *MC* refers to management costs of the protected area and the last bracketed term is the discount factor. The symbol *t* denotes the time period, *T* the length of the planning horizon and r represents the rate of interest.

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