ECONOMICS, ECOLOGY AND THE ENVIRONMENT

Working Paper No. 57

Analysis of Property Values, Local Government
Finances and Reservation of Land for
National Parks and Similar Purposes

by

Clem Tisdell and Leonie Pearson

March 2001

THE UNIVERSITY OF QUEENSLAND

Working Paper No. 57

**Analysis of Property Values, Local Government Finances
and Reservation of Land for
National Parks and Similar Purposes**

by

Clem Tisdell† and Leonie Pearson‡

March 2001

† School of Economics, The University of Queensland, St.Lucia Campus, Brisbane, 4072, Australia. Email: c.tisdell@economics.uq.edu.au

‡ Formerly School of Natural and Rural Systems Management, The University of Queensland, Gatton Campus, 4072, Australia. Present address C/- Sinclair Knight Mertz, 590 Orrong Road, Armadale, Victoria, 3143, Australia. Email: LPearson@skm.com.au

For more information write to Professor Clem Tisdell, School of Economics, University of Queensland, Brisbane 4072, Australia. Email
 c.tisdell@economics.uq.edu.au

Abstract

ANALYSIS OF PROPERTY VALUES, LOCAL GOVERNMENT FINANCES AND RESERVATION OF LAND FOR NATIONAL PARKS AND SIMILAR PURPOSES

Clem Tisdell and Leonie Pearson

The impact on local government finances of the reservation of land for national parks in local government areas has been a bone of contention. This article analyses the situation. It identifies conditions in which the reservation of land for national parks increases total rateable unimproved property values in a local government area. The level of a local government's receipts from rates tend to move in the same direction as the total value of rateable property in its local government area. Thus, even though national parks and similar natural areas are not rateable, it is possible that the reservation of some local government areas for such protection, can increase the receipts from rates of the local council concerned. However this is not always so and conditions for an increase in local government revenue are specified. Local governments may wish to maximise their income for discretionary expenditures rather than total receipts. Conditions are specified in which the reservation of local areas for national parks fosters this objective, and other circumstances in which such reservation is in conflict with this objective. Depending upon the nature of the relevant functions, local government finances may benefit from the existence of national parks in a local government area or be adversely affected by their presence. As far as we are aware, the conditions for this have not been previously specified.

ANALYSIS OF PROPERTY VALUES, LOCAL GOVERNMENT FINANCES AND RESERVATION OF LAND FOR NATIONAL PARKS AND SIMILAR PURPOSES

1. Introduction

There has been considerable controversy in Australia (LGAQ, 2000; Ryan and Schwartz, 2000) about whether the presence of national parks (or similar natural areas) in a local government area creates an economic burden for local government. Some local governments hold the view that the creation of national parks (or similar protected areas such as some state forests) lowers their taxable property base and hence their total revenue from rates levied on the unimproved value of property. In addition, many councils believe that their costs of council operations do not fall commensurably with their loss of tax revenue in such cases. National parks in Australia do not pay council rates.

While the above view may often be correct, it need not always so be. It seems that in some local government areas the presence of national parks or similar areas may increase the unimproved value of land, the main tax-base for local government in Australia. For example, Pearson (forthcoming) reports that properties in Noosa (on the Sunshine Coast of Queensland) which have a view of Noosa National Park (headland section) have a higher unimproved value then those which do not, all other variables being equal. It may also be true generally that the presence of Noosa National Park keeps property values higher in the Noosa local government area than would be so in its absence.

While the unimproved value of land is difficult to estimate, it is generally based on the market value of sales of comparable land without the value of buildings and other improvements on this

land. In Queensland, land valuations are determined by the state Department of Natural Resources and reviewed annually.

Although reserving some land for a national park can raise remaining property values in a local area, which is probably the case at Noosa, this is a necessary but not a sufficient condition for increasing the rateable property base in a local government area. Let us consider this matter theoretically. To do so, the rateable property-base available to a local government council will be first considered as a function of the regional land area reserved for national parks. It is assumed that the larger this base the higher the total amount of rates available to a council. Secondly, the expenditure side of a council's budget will be considered so the net impact on the council's budget of withdrawing land to reserve it for national parks can be taken into account.

2. Impact of National Park Reservation on Local Government Total Rateable Property Values and Total Level of Rates

Take any particular local government area and assume that its land area is K, that X represents the area of land subject to council rates and $K - X$ is the amount of land allocated to national parks or similar uses. The land area $K - X$ is not rateable. The total unimproved value of rateable properties, V, in the local area can then be specified by

$$V = f(X) \qquad \text{where } X \leq K \text{ and } V = 0 \text{ for } X = 0 \qquad (1)$$

Of relevance for considering the impact on total unimproved rateable property value of national parks is the amount of land reserved for protection compared to rateable area. Increasing the quantity of rateable land and thereby reducing the quantity reserved for national parks, is the

nature of dV/dX, the marginal change in the total unimproved value of rateable land. V/X represents the average unimproved value of land per unit area of rateable land.

It will also be supposed that the total level of rates collected by a council, R, is a positive function of the total value of its rateable property, that is

$$R = g(V) \quad \text{where} \quad g' > 0 \tag{2}$$

In these circumstances whether or not a council would benefit in terms of its total rates depends upon the allocation of land in its local government area to national parks, and whether

$$V' = 0 \quad \text{for a value of } X < K \tag{3}$$

or

$$V' \geq 0 \quad \text{for } X = K \tag{4}$$

In the former case, that is if expression (3) holds, an interior mathematical solution occurs and the council can maximise its rateable property values by ensuring that a suitable quantity of land is reserved for national parks or natural areas. If equation (3) is satisfied for $X = X_2$, rateable property values are maximised when the area allocated to national parks or similar natural areas is $K - X_2$.

If the situation depicted in expression (4) applies, a corner-point mathematical solution occurs. It implies in this case none of the local area should be allocated to national parks or similar natural areas if the council wants to maximise its rateable property-base and its receipts from rates.

This matter can be illustrated by means of Figure 1. Two cases are illustrated there, namely an interior solution and a corner-point one. In the former case, rateable value of land is shown to

rise at first as more land is reserved for national parks, then falls as indicated by the curve for

V/X, average rateable property values, OCE. The corresponding marginal curve for total

rateable property value V', is as indicated by curve ABCD. This latter curve equals zero when

X_2 of the local area is available as rateable property and $K - X_2$ is reserved for national parks.
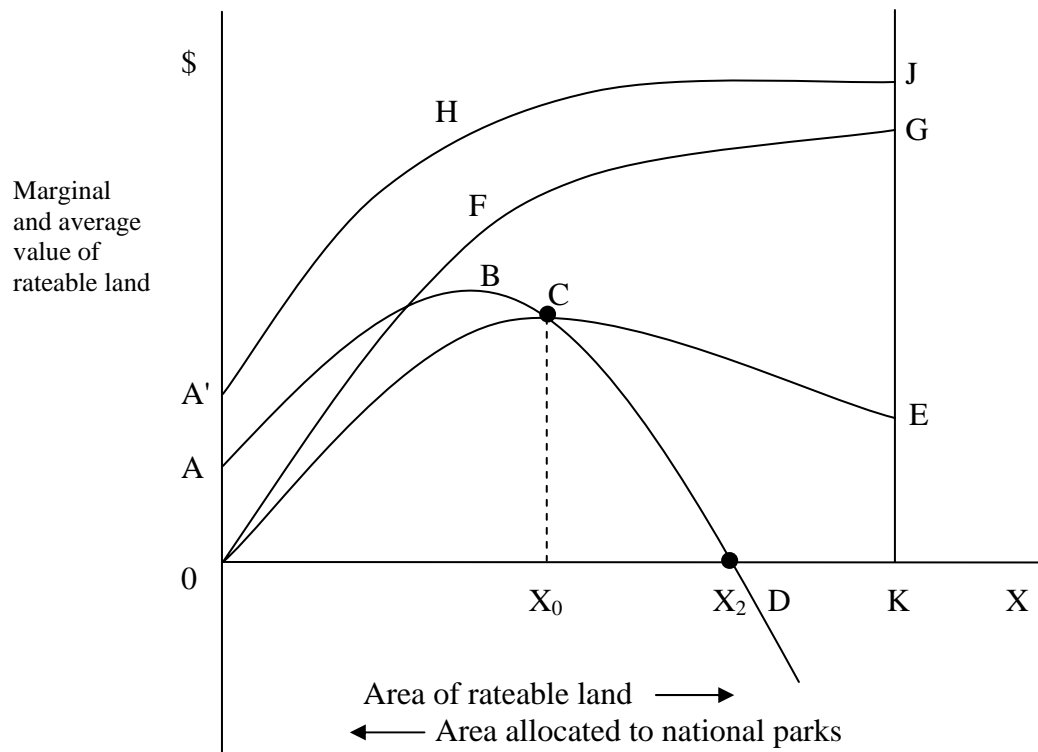
Figure 1. Illustrations of allocations required for a local government area in order to maximise
its total rateable unimproved property value.

Such a combination (involving $K - X_2$ of the local area allocated to national parks and X_2 of it

subject to rates) maximises total rateable property values because $dV/dX = 0$ ensures that the

second order condition for a maximum is satisfied, namely $V'' < 0$. Also, the total amount of

revenue available to the council from land rates is at a maximum because $R = g(V)$ and $g' > 0$,

as set out in expression (2).

To illustrate the corner-point case, property values per unit of property are assumed (in Figure 1) to fall as indicated by curve OFG as a greater area of the local region is allocated to national parks. In this case, the marginal cost curve, A'HJ is above the average cost curve and is of positive value throughout. Thus, if any of the local government area is allocated to national parks, the total value of the rateable property-base of the local council declines. Consequently, the total value of rates collected by the council falls. In such cases, councils may have a negative attitude to the presence of national parks in their local region.

Little is known empirically about the shape and positions of the type of functions shown in Figure 1. However, the relevant functions are likely to vary with local areas. They may also be flat over some ranges. Empirical evidence is needed to throw more light on this matter.

Note also that inverted U-shape functions do not necessarily imply that an interior solution is optimal. In some cases, it is possible for V' to be positive for all values at $X < K$ and to be positive or zero at $X = K$. Furthermore, as can be seen from Figure 1, maximising the value of rateable property <u>per unit area</u> does not maximise total rateable property value. In the inverted U-shaped case, the former result occurs for X_0 (that is $K - X_0$ reserved for national parks) whereas the latter occurs for $X = X_2$ which implies less land reserved for national parks. It is possible that individual landholders might prefer the former situation but the council may prefer the latter. So some conflict between interest groups can arise.

3. Net Budget Consequences for Local Government of Reservation of Land for National Parks or Similar Natural Areas

Ultimately, local government bodies are more likely to be interested in the net impact on their budgets of the allocation of local land to national parks rather than its impact solely on their receipts. Infrastructure within national parks is usually provided and maintained by the relevant state parks and wildlife service organizations. In Queensland, this is the Queensland Parks and Wildlife Service, now a part of the Environmental Protection Agency. Thus local councils are likely to escape some of the costs associated with land allocated to national parks compared to a situation in which this land is rateable property. Nevertheless, local councils are usually responsible for public roads which intersect national parks and general access roads to the perimeters of national parks, and often for parking areas just outside national park boundaries.

Suppose that local council outlays can be divided into two components (a) obligatory outlays for infrastructure and (b) discretionary outlays. Furthermore, suppose that obligatory outlays are a function of the total area of its rateable property and can be indicated by the function, $C(X)$. The aim of the council is assumed to be to maximise its discretionary income, Y.

This can be expressed as a desire to maximise

$$Y = g(V) - C(X) \tag{5}$$

$$= g[V(X) - C(X)] \tag{6}$$

where $g' = 0$. This can be simplified to

$$Y = h(X) - C(X) \tag{7}$$

and will be at a maximum when

$$Y' = h'(X) - C'(X) = 0 \tag{8}$$

and the relevant second order condition is met. This is assuming an interior solution occurs.

In the interior case, the optimal area of rateable land for maximising the discretionary income of council is that for which marginal value of rates obtained equals the marginal cost of obligatory council servicing of this land. Given that the marginal costs of council servicing of land can be expected to be positive for all possible values of X, this implies that the council may maximise its discretionary income by having a larger proportion of its land allocated to national parks than if council was only concerned to maximise its total receipts from rates. A series of diagrams can be used to illustrate several pertinent points.

First, when rateable property values and rates would be maximised by allocating some of the local area to national parks, avoidance of some obligatory marginal servicing costs by council as a result of altered land status from rateable to national park will tend to increase the optimal proportion of the local area to allocate to national parks.

This is illustrated in Figure 2. The curve ABCD represents the marginal value of the council's total land available for rateable purposes. This reaches a maximum for $X = X_2$ and corresponds to the situation illustrated in Figure 1. Curve OCE represents average rates per unit of rateable land.
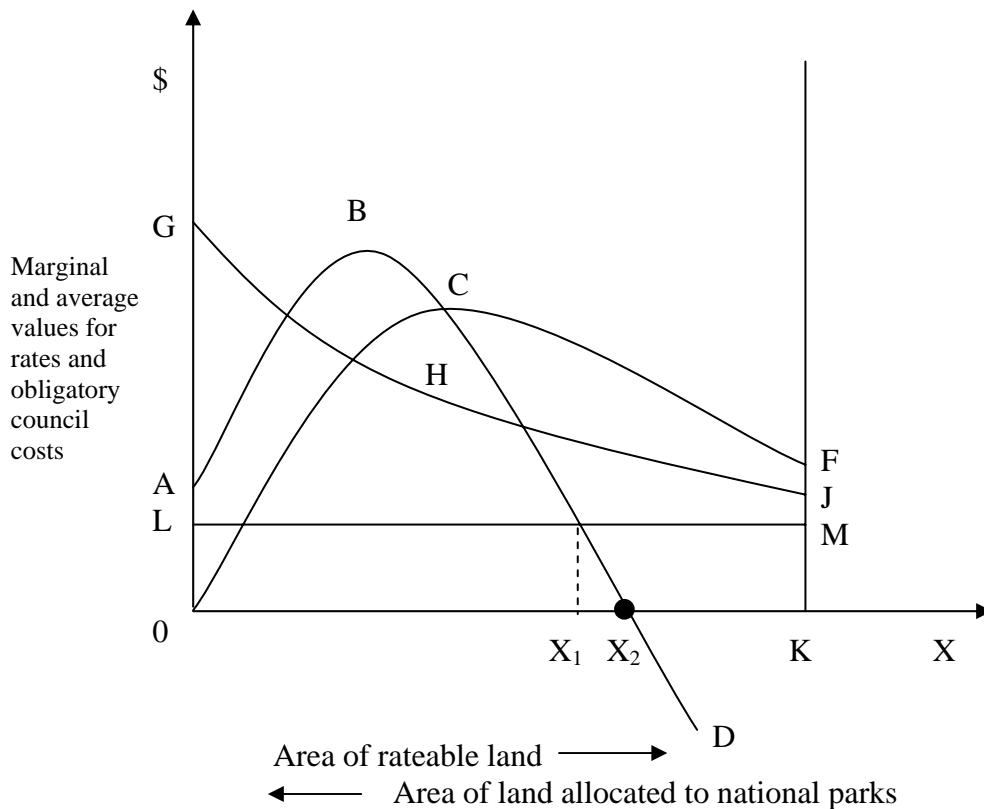
Figure 2. A case in which a local council's discretionary income is maximised by a greater allocation of its local government area to national parks than the positive allocation needed to maximise its total receipts from rates.

Council's total per rateable land unit obligatory costs are represented by curve GHJ. For simplicity, council's average variable costs as a function of the rateable land area it services is assumed to be constant and is indicated by the line LM in Figure 2. The difference between this line and curve GHJ represents council's overhead costs on account of its provision of obligatory services. Given that average variable obligatory costs are constant, corresponding marginal costs, $C'(X)$ are also constant and equal to average variable costs. Hence, the line LM is also the marginal obligatory cost curves of council.

It follows in this case that the local council's discretionary income is maximised when $K - X_1$ of

its area is allocated to national parks. At X_1 marginal contribution to council rates from rateable

property just equals council's marginal obligatory servicing costs. Thus, equation (8) is satisfied.

Taking into account council's avoided cost, it is optimal to allocate an additional area, $X_2 - X_1$,

to national parks to maximise the local council's discretionary income, compared to the situation

in which the council's obligatory costs are ignored.

Secondly, the avoidance of obligatory costs by a local council, as a result of local land being

allocated to national parks, may convert what would otherwise be, in the absence of

consideration of such costs, a corner-point solution into an interior one. In other words, the

situation is altered from one in which no allocation to national parks is optimal from the point of

view of local council to one in which some such allocation is optimal.

Figure 3 can illustrate this. The curve ABCD represents the marginal contribution to the receipts

of local council from land rates of retaining rateable property. In the absence of obligatory

council costs, council maximises its discretionary income by having none of its local area in

national parks. However, if the local council has marginal obligatory servicing costs indicated by

line LM, its discretionary income will rise if $K - \overline{X}$ of its local area is allocated to national

parks. But if the local council's obligatory service costs are as low as those shown by line $L'M'$,

the level of the discretionary income of the local council is reduced if any of its local government

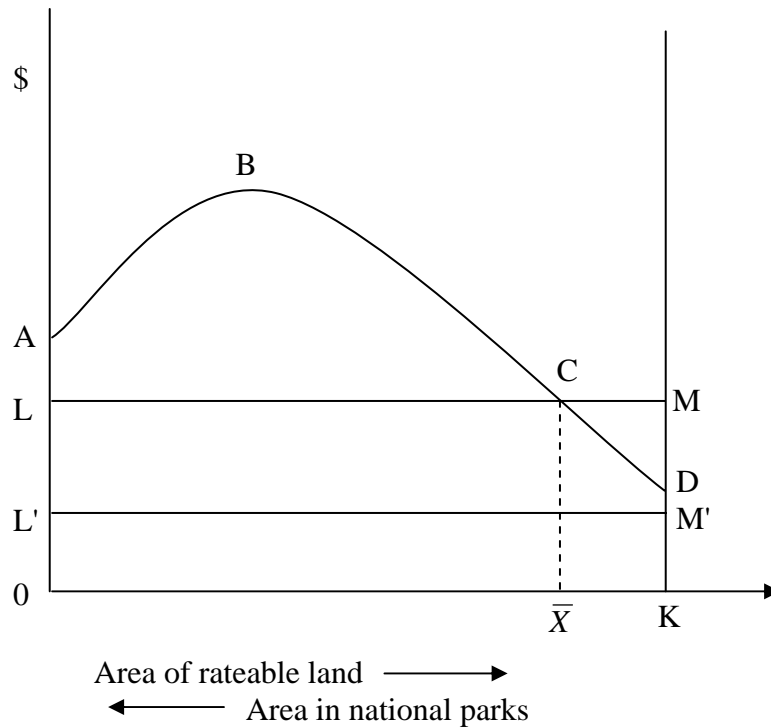area is allocated to national parks or similar areas.

Figure 3 A case in which avoidance of obligatory costs increases the discretionary income of a local council from having part of its local area in natural parks even though it reduces its total rateable property value, as well as a case in which this does not happen.

Lastly Figure 4 illustrates another case where a local council loses discretionary income if any of its local area is allocated to national parks. In this case, curve OFG represents council rates on average per unit of rateable land and curve AHJ is the corresponding marginal curve. If LM represents marginal obligatory costs of council for servicing its rateable land, any allocation of its local land area to national parks will reduce the level of total discretionary income available to the local council. A corner-point solution exists in which the council maximises its discretionary income by having all land of its area rateable, and none of it in national parks.
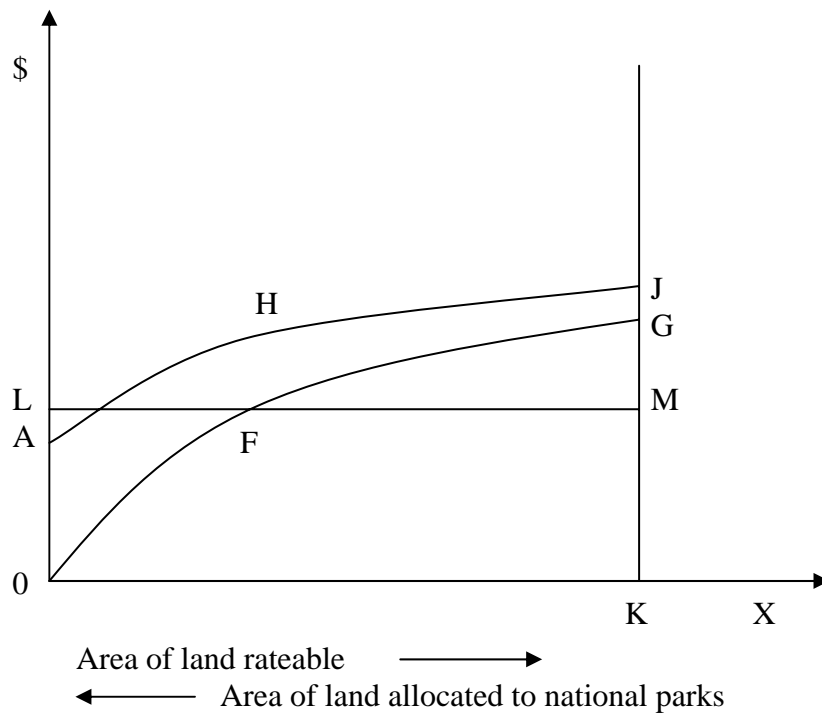
Figure 4. A case in which local council has valued discretionary income if land is allocated to national parks.

4. Discussion and Conclusions

It is evident that whether or not local government gains economic advantage from the presence of national parks in its local area depends on varied conditions. As this analysis demonstrates, economic gains or losses for local government are possible depending upon the type of circumstances specified.

Note that when a local council's expenses do not fall proportionately with the loss in its income from land rates due to land being locked up in national parks, it need not be financially disadvantaged by the presence of national parks in its area. Consider, for example, the situation

illustrated in Figure 2. Compared with a situation where no national parks exist in a local area, the relevant local government can gain revenue in this case if some of its area, $K - X_1$, is allocated to national parks. But its costs in proportion to its rateable land rises in this case because of overhead costs. Other favourable cases are possible even if council's variable costs per unit of rateable area rise somewhat due to establishment of national parks.

Naturally, the above analysis requires some simplifying assumptions. For example, land is assumed to be homogeneous in nature, or if heterogeneous, mixed in its qualities in fixed proportions. However, such an assumption can be relaxed in principle but is likely to make the problem analytically difficult.

Furthermore, the question arises about how one exactly differentiates between obligatory council servicing and discretionary expenditure by council. Possibly the division is indistinct at the margin and it is partly determined by social perceptions. Nevertheless, it may be a useful distinction. It parallels a similar concept for managerial behaviour introduced by Williamson (1964). Also, the assumption that local governments aim to minimise discretionary income may be subject to criticism. Nevertheless, it has some parallels with Niskanen's (1981) view that bureaucracies try to maximise the size of their budget. If this were literally true for local government, local councils would try to maximise their rateable property values – the case considered in the second section of this note. But there is also no *a priori* reason to rule out the modified hypothesis that local government bodies may wish to maximise their discretionary income. In the latter case, they will be somewhat more favourably disposed towards the presence of national parks or similar natural areas in their local area than in the former case.

While this simplified analysis does help in clarifying many of the important local public finance issues involved in reservation of local areas for national parks, it is also clear that this type of analysis is in its infancy and that little or no in-depth empirical work has been done on the type of relationship which underlie it.

It might be noted that an additional contentious issue is whether or not national parks increase incomes in their local area or reduce them. Clearly, once again the situation varies with circumstances. However, the loss of local income particularly in developing countries, as the result of the establishment of national parks can be considerable, as a study of Khao Yai National Park in Thailand indicates (Kaosa-ard *et al.*, 1995; Kaosa-ard, 1995). On the other hand, positive local income benefits can also emerge from increased tourism, as seems to be the case for Noosa National Park (Pearson, forthcoming; Pearson *et al*., 2000) and as observed elsewhere in Australia, for example in Budderoo National Park, Southern NSW (Gillespie, 1997). Nevertheless, the situation has to be carefully assessed to ensure that all local social costs and benefits are taken into account in the overall social evaluation of the provision of protected areas.

In conclusion, it might be emphasized that this analysis can be applied to local government land areas assigned to uses apart from their allocation to national parks if the areas so allocated are not subject to local rates[1]. This can include unassigned crown land, municipal parks, and in some cases, state forest areas. The actual impacts on property values in such cases can be complicated just as they are in the case of the assignment of areas for national parks; much more complicated

---

[1] This statement holds for reserved areas for Aboriginal and Torres Strait Islanders (ATSI). ATSI areas are not subject to local government land rates.

than is apparent from the above analysis. The above analysis concentrates on general features and thus ignores factors such as the spatial distribution of the assignment of non-rateable land in local government areas.

References

Gillespie, R. (1997), *Economic Value and Regional Economic Impact: Minnamurra Rainforest Centre, Budderoo National Park*, Economics and Regulatory Reform Policy Unit, Environmental Policy Division, NSW National Parks and Wildlife Service, Sydney.

Kaosa-ard, Mingsarn (1995) "Sharing the Benefits and Cost of Forest Conservation", Conference held in Ottawa 8-9 September, 1995. Mimeo. Thailand Development Institute, Bangkok.

Kaosa-ard, M. *et al*. (1995) *Green Finance: A Case Study of Khao Yai*, Thailand Development Research Institute, Bangkok.

LGAQ (Local Government Association of Queensland) (2000) *Discussion Paper: Public Inquiry Management of National Parks in Queensland*. Local Government Association of Queensland, Brisbane.

Niskanen, W. (1981) *Bureaucracy and Representative Government*, Aldine, Chicago.

Pearson, L.J. (forthcoming) *The Economic Impact of Noosa National Park upon its Local and Regional Economies*, PhD Thesis, University of Queensland, School of Natural and Rural Systems Management.

Pearson, L., Russell I. and Woodford K. (2000) *Economic Impact of Noosa National Park on the Sunshine Coast and Noosa Economies*. Monograph 1-2000, University of Queensland, School of Natural and Rural Systems Management, Monograph Series pp.35.

Ryan, S. and Schwartz, S. (2000) "Battle Looms Over Parks", in *The Courier-Mail*. Wednesday, 19 January (p.1).

Williamson, O.E. (1964) *The Economics of Discretionary Behaviour: Managerial Objectives in a Theory of the Firm*, Prentice-Hall, Englewood Cliffs, N.J.

PREVIOUS WORKING PAPERS IN THE SERIES

ECONOMICS, ECOLOGY AND THE ENVIRONMENT

1. Governance, Property Rights and Sustainable Resource Use: Analysis with Indian Ocean Rim Examples by Clem Tisdell and Kartik Roy, November 1996.
2. Protection of the Environment in Transitional Economies: Strategies and Practices by Clem Tisdell, November 1996.
3. Good Governance in Sustainable Development: The Impact of Institutions by K.C.Roy and C.A.Tisdell, November 1996.
4. Sustainability Issues and Socio-Economic Change in the Jingpo Communities of China: Governance, Culture and Land Rights by Ren Zhuge and Clem Tisdell, November 1996.
5. Sustainable Development and Environmental Conservation: Major Regional Issues with Asian Illustrations by Clem Tisdell, November 1996.
6. Integrated Regional Environmental Studies: The Role of Environmental Economics by Clem Tisdell, December 1996.
7. Poverty and Its Alleviation in Yunnan Province China: Sources, Policies and Solutions by Ren Zhuge and Clem Tisdell, December 1996.
8. Deforestation and Capital Accumulation: Lessons from the Upper Kerinci Region, Indonesia by Dradjad H. Wibowo, Clement a. Tisdell and R. Neil Byron, January 1997.
9. Sectoral Change, Urbanisation and South Asia's Environment in Global Context by Clem Tisdell, April 1997.
10. China's Environmental Problems with Particular Attention to its Energy Supply and Air Quality by Clem Tisdell, April 1997.
11. Weak and Strong Conditions for Sustainable Development: Clarification of concepts and their Policy Application by Clem Tisdell, April 1997.
12. Economic Policy Instruments and Environmental Sustainability: A Second Look at Marketable or Tradeable Pollution or Environmental-Use Permits by Clem Tisdell, April 1997.
13. Agricultural Sustainability in Marginal Areas: Principles, Policies and Examples form Asia by Clem Tisdell, April 1997.
14. Impact on the Poor of Changing Rural Environments and Technologies: Evidence from India and Bangladesh by Clem Tisdell, May 1997.
15. Tourism Economics and its Application to Regional Development by Clem Tisdell, May 1997.
16. Brunei's Quest for Sustainable Development: Diversification and Other Strategies by Clem Tisdell, August 1997.
17. A Review of Reports on Optimal Australian Dugong Populations and Proposed Action/Conservation Plans: An Economic Perspective by Clem Tisdell, October 1997.
18. Compensation for the taking of Resources Interests: Practices in Relations to the Wet Tropics and Fraser Island, General Principles and their Relevance to the Extension of Dugong Protected Areas by Clem Tisdell, October 1997.
19. Deforestation Mechanisms: A Survey by D.H. Wibowo and R.N. Byron, November 1997.
20. Ecotourism: Aspects of its Sustainability and Compatibility by Clem Tisdell, November 1997.

21. A Report Prepared for the Queensland Commercial Fisherman's Organisation by Gavin Ramsay, Clem Tisdell and Steve Harrison (Dept of Economics); David Pullar and Samantha Sun (Dept of Geographical Sciences and Planning) in conjunction with Ian Tibbetts (The School of Marine Science), January 1998.
22. Co-Evolutions in Asia, Markets and Globalization by Clem Tisdell, January 1998.
23. Asia's Livestock Industries: Changes and Environmental Consequences by Clem Tisdell, January 1998.
24. Socio-Economics of Pearl Culture: Industry Changes and Comparisons Focussing on Australia and French Polynesia by Clem Tisdell and Bernard Poirine, August 1998.
25. Asia's (Especially China's) Livestock Industries: Changes and Environmental Consequences by Clem Tisdell, August 1998.
26. Ecotourism: Aspects of its Sustainability and Compatibility with Conservation, Social and Other Objectives, September 1998.
27. Wider Dimensions of Tourism Economics: A Review of Impact Analyses, International Aspects, Development Issues, Sustainability and Environmental Aspects of Tourism, October 1998.
28. Basic Economics of Tourism: An Overview, November 1998.
29. Protecting the Environment in Transitional Situations, November 1998.
30. Australian Environmental Issues: An Overview by Clem Tisdell, December 1998.
31. Trends and Developments in India's Livestock Industries by Clem Tisdell and Jyothi Gali, February 1999.
32. Sea Turtles as a Non-Consumptive Tourism Resource in Australia by Clevo Wilson and Clem Tisdell, August 1999.
33. Transitional Economics and Economics Globalization: Social and Environmental Consequences by Clem Tisdell, August 1999.
34. Co-evolution, Agricultural Practices and Sustainability: Some Major Social and Ecological Issues by Clem Tisdell, August, 1999.
35. Technology Transfer from Publicly Funded Research for improved Water Management: Analysis and Australian Examples by Clem Tisdell, August 1999.
36. Safety and Socio-Economic Issues Raised by Modern Biotechnology by Dayuan Xue and Clem Tisdell, August 1999.
37. Valuing Ecological Functions of Biodiversity in Changbaishan Mountain Biosphere Reserve in Northeast China by Dayuan Xue and Clem Tisdell, March 2000.
38. Neglected Features of the Safe Minimum Standard: Socio-economics and Institutional Dimension by Irmi Seidl and Clem Tisdell, March 2000.
39. Free Trade, Globalisation, the Environment and Sustainability: Major Issues and the Position of WTO by Clem Tisdell, March 2000.
40. Globalisation and the WTO: Attitudes Expressed by Pressure Groups and by Less Developed Countries by Clem Tisdell, May 2000.
41. Sustainability: The Economic Bottom Line by Clem Tisdell, May 2000.
42. Trade and Environment: Evidence from China's Manufacturing Sector by Joseph C. H. Chai, June 2000.
43. Trends and Development in India's Livestock Industry by Clem Tisdell and Jyothi Gali, August 2000.
44. Tourism and Conservation of Sea Turtles by Clem Tisdell and Clevo Wilson, August 2000.

45. Developing Ecotourism for the Survival of Sea Turtles by Clem Tisdell and Clevo Wilson, August 2000.
46. Globalisation, WTO and Sustainable Development by Clem Tisdell, August 2000.
47. Environmental Impact of China's Accession to WTO in the Manufacturing Sector by Joseph Chai, August 2000.
48. Effects of Cartagena Biosafety Protocol on Trade in GMOs, WTO Implications, and Consequences for China (English version) by Dayuan Xue and Clem Tisdell, August 2000.
49. Effects of Cartagena Biosafety Protocol on Trade in GMOs, WTO Implications, and Consequences for China (Chinese version) by Dayuan Xue and Clem Tisdell, August 2000.
50. The Winnipeg Principles, WTO and Sustainable Development: Proposed Policies for Reconciling Trade and the Environment by Clem Tisdell, September 2000.
51. Resources Management within Nature Reserves in China by Dayuan Xue, October 2000.
52. Economics, Educational and Conservation Benefits of Sea Turtle Based Ecotourism: A Study Focused on Mon Repos by Clem Tisdell and Clevo Wilson, October 2000.
53. Why Farmers Continue to use Pesticides despite Environmental, Health and Sustainability Costs by Clevo Wilson and Clem Tisdell, November 2000.
54. Wildlife-based Tourism and Increased Tourist Support for Nature Conservation Financially and Otherwise: Evidence from Sea Turtle Ecotourism at Mon Repos by Clem Tisdell and Clevo Wilson, November 2000.
55. A Study of the Impact of Ecotourism on Environmental Education and Conservation: The Case of Turtle Watching at an Australian Site by Clem Tisdell and Clevo Wilson, December 2000.
56. Environmental Regulations of Land-use and Public Compensation: Principles with Swiss and Australian Examples by Irmi Seidl, Clem Tisdell and Steve Harrison.