



# Economics and ethics : approaches to sustainable forest management

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## ABSTRACT

Anomalies of neo-classical economics which stem from market imperfections and the fact that ordinary people do not behave like economists, increasingly affect the ways in which problems of environment and development (and, in particular, sustainable forest management) may be addressed. The need for new approaches to escape the constraints of short-term time horizons has led to the development of "Safe Minimum Standards" analysis, the new field of "ecological economics", sustainable development paradigms (e.g. Jacobs) and the holistic approach which views ecology, economics and ethics as part of a whole – an inter-connected circle – which at the present time appears to be broken. The inclusion of an ethical dimension, even if only humanistic, may be important. This paper examines some implications for sustainable forest management with particular reference to land tenure and the nature of the political economy ("command or guidance"). Recent developments in China are outlined and the conclusion offered that the political, economic, and ethical setting in which sustainability is pursued will determine success or otherwise.

## INTRODUCTION

John Maynard Keynes was, arguably, the most notable of all economic gurus. His observation that "in the long run, we are all dead" encapsulates the essence of neo-classical economics and the constraints of short-term horizons. It is the preoccupation of economists with the short-term that creates problems in discussing economic issues in sustainable forest management and, in particular, the community management of natural forests. Within their parameters, sustainability is economic nonsense! It will be argued in this paper that there is a prime need for policy makers to accept an ethical (political) commitment to sustainability, in which case economic evaluation driven by short-term rates of return becomes irrelevant. There are no opportunity costs of land; for example, incentives are not restricted to "maximum mean annual increment", and the "least cost" approach to forest management (as has been practised in Europe for centuries) overrides the "rate of return" requirement.

## SOME ECONOMIC ANOMALIES

Attempts to address the needs of environment and development through standard market-based trade-offs fail to accommodate the fact that environmental degradation may be irreversible (e.g.

species extinction) and that many environmental goods and services cannot be traded off (e.g. access to pure water). Inevitable market failures have to be acknowledged and, if necessary, substituted by non-market mechanisms. Goodland and Ledec (1987) of the World Bank's Environment Department argue that economic values attaching to environmental features are real, but are systemically underestimated in cost-benefit analysis because of measurement and valuation difficulties. Moreover, intangible environmental benefits (e.g. the preservation of biodiversity) are recognised even less. They conclude that at the project level "Safe Minimum Standards" (SMS) are an important environmental supplement to cost benefit analysis and that, at national policy level, steady-state economics can be used to reconcile economic planning with the limits to growth in natural resource consumption. They do not argue that cost-benefit analysis is inappropriate in the appraisal of investment projects or even in advancing environmental objectives. "Even reasonably low or highly inaccurate estimates of environmental benefits and costs are better than none, because the alternative is to assume implicitly that these benefits and costs are zero." Similarly, ethical values of environmental protection, whether they can be measured by cost-benefit analysis or not, should (and can) be accommodated.

An implicit value judgement in classical cost-benefit analysis is that irreversible consequences of action are no more important than if reversible. In other words, the retention of options has no quantifiable value. Discounting future benefits (and costs) to nett present values can equally undervalue environmental functions and services, simply because it expresses a time-frame preference. An Asian Development Bank-supported fuelwood project in Southern Nepal was (partly) justified by a firewood demand for curing tobacco; and the highest yielding species were presumed to be *Eucalyptus*. But there was always the possibility that during the life of the project the tobacco factory might close down; in that event, lower yielding but more versatile multiple-purpose species such as teak and rosewood would be the better choice. Despite the obvious advantage of keeping the option open, the analysts were unable to quantify that advantage. They mumbled darkly about risk analysis and opportunity costs, but they had no techniques for judging the value of simply having an option – until it was exercised and ceased to exist!

In another project in Socialist Burma, the Asian Development Bank analysts met problems quite outside their experience in the depreciation of elephants – especially females which, had there been a free market, would have commanded higher prices than males in the prime of life.

Market imperfections lie behind current arguments over bans (or high tariffs) on the export of tropical logs. The neo-classical argument is that tropical countries are inefficient at timber milling compared with the importing countries, and that therefore the export of raw logs wastes less of the resource. Banning the export of logs would, it is argued, destroy more forest to produce the

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same amount of finished product. This implies that the gains from efficient milling exceed the gains from improving standards (through technology transfer, training, etc.) and, moreover, that the realisable gains will accrue to the producing countries and will be applied productively and efficiently. But malpractice is widespread in the tropical timber trade; misnaming of species, under-measurement and under-invoicing are easier in the case of logs than with sawn timber (the square edges of which make accurate measurement and identification simpler). Transfer pricing is widespread and more easily hidden. And the distribution of costs and benefits invariably favours the importers rather than the producers.

Other economic anomalies are revealed if it is conceded that "environmental dumping" (selling below the full costs of production, including environmental costs) is an illegal subsidy to the traded product. Goodland (pers. comm.) points out that "an environmental subsidy is even more economically inefficient than the tax-financed subsidy because taxes, since they are paid in money, can be shifted to the margin while environmental costs must be borne where they fall, usually infra-marginally". Environmental taxation and its relation with the sustainable management of forest concessions is a controversial aspect of the public debate on supposed economic causes of forest depletion and corresponding policies. (See, for example, Paris and Ruzicka, 1991.) The two sides are both championed by academic economists, one arguing that natural forest depletion is attributable mainly to under-pricing of the harvest and the existence of "economic rents" which act as incentives to exploitative logging. This "rent school" concludes that many environmental problems could be reduced if the resources were "correctly priced" and that appropriate taxation might achieve this. The counter argument questions the application of economic rent concepts in the context and, rather, explains depletion in terms of security of long-term concession tenure and management. A possible solution is to provide long-term security together with a performance bond to reinforce market incentives to sustainability.

Foresters' inability to quantify economic, as distinct from financial, costs and benefits distorts many comparisons between natural forest and plantations (and between species within plantations). As a result, the highest rate of return will always attach to the highest volume production (in the short term), irrespective of possible future values and non-market characteristics (e.g. soil improvement, ability to coppice, multiple purposes, etc.). Similar distortions arise from the treatment of value. Where there is no pressure on forest land for agriculture, for example, the natural forest is regarded as a "free good" of no value until it is exploited. As with a body of mineral ore in the ground, the value placed upon it is the cost of mining it. (Interestingly, this Ricardian capitalist concept is very close to the Marxist notion that natural resources have no economic value until there is a labour input: neither view has much appeal to foresters). A recent paper by Knetsch (1993) is entitled, provocatively, "Environmental Valuation: Some Practical Problems of Wrong Questions and Misleading Answers". The paper demonstrates that people frequently do not behave as economists assume that they will. Knetsch illustrates his argument with reference to three areas – time preference and discounting; the disparity between valuations of gains and of losses; and the use of contingent valuation methods. Thus, a basic tenet of valuation procedures is the assumption that costs and benefits are worth more now than later – hence the importance attached to discounting and the sanctity of the discount rate. Recent studies, however, demonstrate that people typically discount the short-term future at much higher rates than the long-term – behaviour which is clearly inconsistent with the standard assumption of constant rates. Individuals may choose to postpone desirable happenings in order to get undesirable ones over quickly – a sequence inconsistent with the usual "present

value calculus". Similarly, Knetsch marshals evidence to demonstrate that "willingness to pay" for a gain and "willingness to accept" a loss provide very different measures of economic value – despite economists' assumptions to the contrary. (In fact, people are more reluctant to accept a loss than to pay for a gain.) And that contingent valuation methods may provide numbers (but unlikely measures) has been extensively demonstrated but they none-the-less continue to be used. A recent exercise by the economic boffins of the New Zealand Treasury valued several million hectares of National Parks at \$NZ315 million, which compared with the National Archives (all of which could have been photocopied for a few thousand dollars) assessed at \$NZ826 million! Our recent exercise in forest valuation for privatisation yielded estimates ranging from one to nine billion dollars!

## AGENDA FOR RESEARCH

The above considerations fall within what Goodland and Ledec call an "agenda for research in the ecology-economics interface". A case has been made for the adoption of "Safe Minimum Standards" analysis to address ecological concerns which may be ignored in conventional cost-benefit analysis. They are non-economic criteria which projects must meet to be approved. The concept has been criticised because it involves subjectivity and disregard of economic efficiency. As Goodland and Ledec point out, however, reliance on the market to measure social well-being is no more objective than SMS analysis. The World Bank is committed to following SMS principles in projects with ecological implications: the research which will enable it to fulfil that commitment will have to come from economists as well as ecologists and will provide continuing examples of the importance of extra-professional involvement in forestry. The lack of dialogue at present between economists and environmentalists is reminiscent of the rift between "the two cultures" (the literacy of the arts and the numeracy of science) articulated by C.P. Snow in the 1950s.

The ultimate departure from traditional ways in which economists view environmental issues may be represented by a so-called "new paradigm" – ecological economics. Bengtson (1993) lists six major themes which, he claims, distinguish ecological economics from conventional (neo-classical) economic approaches to natural resources and the environment: sustainability; multiple values and broader notions of value (including social, aesthetic, life support, intrinsic, and energy values); inter-generational equity; uncertainty; methodological pluralism; and land ethics. Inevitably, ecological economics is academic and the philosophical underpinning of some components (e.g. inter-generational and inter-species equity; animal and plant rights) far removed from the traditions of either ecology or economics.

## PRACTICAL POLITICS

The time is not yet right for the introduction of radical change based on controversial philosophies and assumptions. A pragmatic approach is represented by SMS and by a method proposed by Jacobs (1993). In a paper entitled "Environmental Economics, Sustainable Development and Successful Economies", he presents a typology of dominant streams in environmental economics. The first is "traditional" in which government sets policy, using legal regulation to implement it. At the other extreme are the so-called "free market environmentalists" who argue that the only role for government is to get out of the way by privatising environmental assets: levels of protection and management will then be determined by the market. (Not even Lady Thatcher went this far in eschewing government intervention in long-term environmental protection.) Between these extremes are three categories within the neo-classical school, but they belong to quite different groups. Basically, one group is concerned with

setting objectives for environmental policies and the other with its implementation. Jacobs notes the importance of realising that the two groups are quite separate and that neither is particularly concerned about the other. Thus economists working on market-based mechanisms of implementation – such as green taxes – are not interested in how the desired level of protection is set: they simply say “give us whatever level of environmental protection you want and we will find the most efficient way to achieve it”. The other group asks: “How do we arrive at the optimal level of environmental protection?” They argue that society should try to calculate the costs and benefits of different levels of protection and then maximise the nett benefit: they spend their time trying to find “shadow prices” for environmental costs and benefits by giving them monetary values.

Jacobs argues that there is danger in environmental economics in that its acknowledgement enables most economists to move within traditional channels and avoid the greater challenge presented by concepts of sustainability. Until such time as research enables the development of more sophisticated techniques, Jacobs offers some immediate ad hoc solutions. He postulates two sustainable development paradigms: the weak and the strong. The weak paradigm envisages a system of trade-offs, using cost-benefit analysis; it has a sectoral focus, post-hoc environmental impact assessment when projects have been designed and selected; and market-driven economic outcomes. The strong paradigm, on the other hand, assesses options within a constraint. Operating within a constraint is a normal process; for example, most of our activities are constrained by budgets; and those of structural engineers are constrained by basic safety requirements enshrined in law. Jacobs views environmental constraints in the same way as SMS, which cannot be traded off and which must be enforced by law. The strong paradigm focuses on the environmental domain or issues (e.g. forests, rather than the timber industry) – which, he claims, enables lateral thinking and “rather than starting with the interests of the sector, which are naturally going to be conservative, you can move away from what currently exists to consider alternative, environmentally constrained scenarios”. This calls for environmental impact assessment of policies and programmes (rather than projects), which accommodates a substantial role for the public sector in generating economic activities, and it focuses on outcomes rather than techniques.

One holistic approach views ecology, economics and ethics as part of a whole, an interconnected circle, which at the present time appears to be broken. (See for example, Bormann and Kellert, 1991.) The inclusion of an ethical dimension is important even if it is restricted to a humanistic one rather than the non-anthropocentric assumptions of conventional environmental ethics. In fact, it is only a short step from the SMS approach now readily accepted. But the implications for Sustainable Forest Management (by whatever agency) are considerable.

### **SOME IMPLICATIONS FOR SUSTAINABLE FOREST MANAGEMENT**

As noted earlier, acceptance of an ethical or political commitment to sustainability eliminates opportunity costs of land (there are no opportunities foregone, since there are no options) and the “least cost” approach to management takes precedence over the “highest rate of return”. Ability to survive with minimal silvicultural intervention then becomes a more important factor in the selection of species than volume productivity. Rotation length reduces in importance and management for quality (and value) rather than quantity is facilitated.

It is this philosophy that has enabled the survival of the great oak forests of France grown on 300-year rotations, attractive and profitable species mixtures in all-aged selection forests, and prac-

tice in what is rapidly becoming the dying art and science of forestry as distinct from “slash and burn” silviculture.

In the present context, land tenure and the nature of the political economy (“command or guidance”) have particular significance in attempts to “mend the broken circle”. At a Regional Expert Consultation on Forestry Policy Development and Research – organised by FAO/RAPA, IFPRI and FORSPA, in October 1992, a country submission from the Philippines included two paragraphs as follows:

“The role of forests in sustainable development is universally recognised. Stability of forest ecosystems is a pre-condition to sustained productivity of agriculture, fisheries and other occupations. Global concerns such as conservation of genetic resources and biodiversity, a reduction in atmospheric pollution and climatic change ... all relate to the sustainable management of the forests.

“But ... none of the above can be addressed in isolation from demographic and socio-economic realities. An estimated eight to ten million desperately poor people live in the forest ecosystems. By actual presence and sheer weight of numbers, these de facto land-use managers will determine the fate of Philippine forests. If sustainable forest management rules and procedures are irrelevant to their daily struggle for survival, sustainability cannot be achieved.”

### **The Chinese Experience**

Security of land tenure and professional integrity within the bureaucracy are *sine qua non*. No country has adopted a more pragmatic approach to land tenure than China. Though land was nationalised in the early days of the communist regime, there has always been a distinction between “ownership” and “rights of use” (*usufruct*). When collectivisation of forest holdings was carried out in the 1950s, communal rights to use forests were recognised and the principle established that whoever planted trees should share in their produce, or be compensated. There were many problems arising from poor management (e.g. failure to acknowledge the distinction between natural forest and planted trees); there was considerable illegal felling; and there was much dissatisfaction with levels of compensation. The more flexible “adjustment and reform” policies of the mid 1970s and 1980s have been more successful. The first step was the identification of industrial forest production bases and the introduction of the “contract responsibility” system which had successfully transformed agricultural productivity in China. (This system, the so-called *BAOGAN DAOHU*, came with the abolition of communes and, in effect, restored to farmers the right to plant whatever crops they wished; the State undertook to purchase an agreed quantity at an agreed price; any surplus could then be sold on the free market or to the State, at a lower price.) Introduced into plantation forestry it is essentially a shareholder and contractor system, characterised by joint management according to the input value of shares: the ownership remains collective but the individual trees are converted into shares and given a money value which is then allocated among the owners of usufruct. Forest operations – including management – may be contracted to a number of households and the income distributed proportionately. Where reforestation was introduced into natural forest areas, the rights of usufruct were divided into two types of share, the basic share or “old” share which was converted from the existing forest, and “new” shares issued in return for the investment of labour or other inputs. The basic share can be inherited or transferred but it cannot be withdrawn; the new share, on the other hand, can be withdrawn, transferred or inherited. There are examples of individuals or households successfully specialising in forestry operations and undertaking contracts covering individual activities (e.g. raising seedlings, thinning, felling) or embracing the overall management of a forest area. There are

households undertaking to control pests and diseases (and paying compensation for losses which exceed agreed limits) and providing other infrastructural facilities such as bookkeeping, secretarial and office services, etc. They may operate small sawmills, contract cutting for the community; they may engage in a host of more traditional activities on the same basis.

There are of course problems; the lack of adequate data bases in forestry – particularly in the remoter and more intractable areas which are earmarked for reforestation – makes it difficult to devise equitable contracts under responsibility systems. In agriculture, it is relatively easy to set a target for production of an annual crop (or a reasonable price) and to allow the contractor to market any surplus. This is not the case in forestry and, as a result, there is a wide spectrum of shareholder and contract systems developing.

A State Council decision (FE, March 14, 1981) is crucial: it called for a five-year plan to be prepared within a year by all provinces relating to afforestation and increased forest protection: what became known as the “three fixes” or “unchangeable things” were formalised. The needs to be “fixed” were: a rapid resolution of forest rights of ownership and usufruct; the demarcation of waste land for household reforestation; and the establishment of contract responsibility systems for collective forestry operations. Reportedly, some two million property rights cases were resolved within the next two-and-a-half years. Even so, Ross (1988) makes the point that “fear of policy instability is the most critical impediment” to sustained forestry in China.

Perhaps China’s greatest achievement is the evident provision of security of tenure without ownership: but it remains to be seen whether the leadership will succumb to pressures to allow the inheritance of land (as distinct from tenancy) and to permit a free market in lease rights. If it does, the door will be open to the accumulation and inheritance of wealth and the “great Socialist dream” will be at an end. At the same time, if sustainable development is to extend to the remoter parts of China and the barren hills and desert fringes are to be brought into production, greater incentives than exist at present will be needed.

According to Hou and Wang (1986), there are 12 requirements for the successful settlement of specialised households in eroding hill country. They are: 1, Housing; 2, the provision of grain; 3, the provision of short-term benefits and an assured income (e.g. from industrial tree crops); 4, road constructions; 5, water supply; 6, schooling; 7, medical services; 8, grain milling facilities; 9, lighting; 10, technical assistance; 11, finance; 12, radio and television. These are all aspects which require outside support if people are to be persuaded to settle and work in isolation. In China’s experience, there have been no major problems in persuading farmers to grow trees where they can see an income within a year or two, and where they have security of tenure. There are references in this paper to rights of usufruct in hill forest fixed for 50 or 80 years, with that right being passed down to the next generation free of certain taxes. The principle is that value added by the specialised household belongs to that family. The household also has priority in distribution of seeds, fertiliser and pesticides, in the provision of low interest loans, technical assistance, etc. Subsidies are payable only on planted seedlings that survive.

As in most of our region, the law has not always been applied consistently and there have been differences in ad hoc interpretation of regulations. If “rights of usufruct” are not respected by authority, it is unlikely that they will be observed by the people. Despite the decentralisation of decision making (more or less complete to the county level) there are still unresolved political and economic problems of adjustment and the lost generation of the Cultural Revolution – uneducated, insecure and resentful, yet now in positions of responsibility – are ill-equipped to communicate economic change, to reawaken enthusiasm, and to impose

discipline. The next generation of managers will no doubt be more attuned to new ideas and technology; even so, their training has of necessity been lacking in breadth. High technology enables – perhaps encourages – them to make mistakes with total confidence: restricted vision is seldom realised by those who suffer from it and, in China, there are as yet inadequate yardsticks against which to measure experience.

Experience in China demonstrates problems of success as well as of failure. Success can breed envy and lead to demands for change from less successful operators; such change may reintroduce uncertainty. Many problems are associated with the switch from command to guidance planning and the newly-exposed enthusiasm for making money (“to get rich is glorious”) which can be counter-productive in so far as the public interest is concerned and disruptive of personal relationships. Enthusiasm for “sideline production”, for example, has led forest nurseries to grow ginseng and cannabis, research institutes to raise rabbits, and State timber yards to produce edible wood-rotting fungi. Inevitably, the stumbling search for the checks and balances needed in a market economy must call into question the durability of the new reforms. Reformed poachers are said to make the best gamekeepers; China stands in danger of demonstrating the converse.

## CONCLUSION

The likely triumph of pragmatism over doctrinaire development theory cannot seriously be questioned and, in Asia, the emphasis has been on what needs to be done, rather than who will do it: the State or private enterprise. In a recent note, which is both lighthearted and profound, Fri (1992) posed three questions: Is sustainable development more likely to thrive under some particular set of political and economic institutions than under others? Should the values that underpin this development become part of mainstream ethical systems? And, if the answer to these questions is yes, are we prepared to live with the results? He concludes that the political, economic, and ethical setting in which sustainability (including sustainable forestry) is pursued will determine success or otherwise. In reading these questions and Fri’s answers, I was reminded of an earlier and much quoted desideratum “that combination of modern science with local inventiveness and local responsibility is at the core of the only effective and sustainable ecological balance”. (Ward and Dubos, 1972)

## References

- Bengston, D. 1993. Ecological Economics: a New Paradigm Trop. For. Update, ITTO, 3(5)11-12.
- Bormann, F.M. and S.R. Kellert. 1991. Ecology, Economics, Ethics: The Broken Circle. pp 233, Yale Univ. Press.
- FE. 1981. B.B.C. World Broadcasts, Far. East, of 21 March.
- Fri, R.W. 1992. Questions that seem Important. Resources, 15-17, Washington.
- Goodland, R.J.A. and G. Ledec. 1987. Neo-classical Economics and Principles of Sustainable Development. Ecol. Modelling 38, 19-46.
- Jacobs, M. 1993. Environmental Economics, Sustainable Development and Successful Economies. Resource Assessment Commission (RAC). Occ. Pub. No. 4, pp 26, Canberra.
- Knetsch, J.L. 1993. Environmental Valuation: Some Practical Problems of Wrong Questions and Misleading Answers. RAC Occ. Pub. No. 5, pp 26. Canberra.
- Paris, R. and I. Ruzicka. 1991. Barking up the Wrong Tree: The Role of Rent Appropriation in Sustainable Tropical Forest Management. ADB Env. Off. Occ. Pap. No. 1, Manila.
- Ross, L. 1988. Environmental Policy in China. Bloomington.
- Ward, B. and R. Dubos. 1972. Only One Earth: The Care and Maintenance of a Small Planet. London.