

Book reviews

Human Ecology, Human Economy: Ideas for an Ecologically Sustainable Future, edited by Mark Diesendorf and Clive Hamilton. Published by Allen & Unwin, St Leonards, NSW, 1997, pp. xxi + 378, ISBN 1-86448-288-5.

Human Ecology, Human Economy is offered as a textbook for undergraduate and graduate students in environmental sciences and related fields. The editors hope that it might be attractive also to policy-makers and the general public; and Ian Lowe suggests in the Foreword that it be 'supplied in bulk to senior government officials and managers in the private sector'. The book is an edited volume with twelve chapters, but considerable structure and continuity are imposed by the editors who are themselves involved in writing six of the chapters. The whole effort is a model of modern textbook design and presentation. Each chapter starts with a detailed list of contents; is embellished with figures, tables, boxes, and margin notes with cross-references to relevant sections of other chapters; and ends by listing the basic concepts discussed. The book has exhaustive glossaries of terms and acronyms, a bibliography combining references from all twelve chapters, and a detailed index. Production is high quality, but the book is available as an affordable paperback.

Most of the authors are based in Australia, and an Australian perspective predominates, especially in Part II, Case Studies and Policy Directions, which contains the last six chapters. An Australian focus prevails in Chapters 7 on agriculture, 8 on the energy sector, and 11 on the fate of ecologically sustainable development in the policy arena; while Chapter 10 on urban transportation and urban land forms considers the Australian experience in the context of North American and European models. Of the case study chapters, only Chapter 9 (on impacts of energy use) resists an Australian focus.

The book is wide-ranging in its topical coverage. I found the treatment of uncertainty and ignorance, sustainability concepts, and the precautionary principle to be helpful and often insightful expositions of material that was already familiar to me, while the sections on ecodesign and industrial ecology stimulated my interest in things with which I had been only vaguely familiar.

Ecological economics clearly is intended to be the unifying principle for the book, but I wonder if the authors have not sold ecological economics short. The familiar objections to neoclassical (or conventional) economics

are showcased, and environmental economics is dismissed as the hopeless venture of incorporating environmental concerns into the fundamentally wrong-headed neoclassical paradigm. But ecological economics, as presented here, seems to be mostly a matter of having the right attitudes. Even as these authors ask us to be patient while ecological economics develops the theories, tools, and results that will fulfil its potential, the researchers in the Sustainability Network (for example) are making tangible progress towards models and analysis that capture both economic and ecological reality.

This book is clear about its point of view. Strong sustainability and the precautionary principle are guiding themes, and the scepticism about substitutability inherent in these positions is expressed in the strong orientation towards local sustainability and local political control. The deck is stacked especially when the authors seek to contrast conventional positions with their own. Can you guess how conventional economics comes out in 'philosophical and ethical differences between conventional and ecological economics' (Table 2.1)? Would you want to root for weak sustainability in 'strong and weak sustainability principles and processes' (Table 3.2)? Guess who the bad guys are in 'hierarchical dualisms of western thought: male vs. female' (Box 5.2).

In Chapter 6, the presumption in favour of local sustainability produces a scepticism about trade, which (we are told) should be encouraged only as a last resort. In Chapter 5, we learn that outcome ethics gets it right whereas process ethics gets it wrong; and, in the search to find the proper ethical position, it comes down to a final round between ecofeminism and deep ecology, with ecofeminism the apparent winner.

Box 3.1 presents an imaginary 'dialogue between a biologist and an economist about ecologically sustainable development principles and goals'. The economist Jason (still searching for the Golden Fleece, I presume) is bested by biologist Alice (the only sane person in a world gone mad) who is able not only to expose Jason's foolishness but also to get the last word despite the male hankering for control (Box 5.2).

In Chapter 12, the focus is on solutions. There are discussions of ecodesign, industrial ecology, marketable pollution permits, and ecological taxes, all of which are or should be taken seriously by environmental economists; ethical investment, which is being taken more seriously now that experience has shown that ethical investors have sacrificed little in the way of returns; and local exchange and trading systems, which would strike most economists as rather odd in their resurrection of barter exchange systems in order to encourage local sustainability. If one senses a progression from relatively conventional proposals to more radical ones, wait for the final paragraphs: 'Modern capitalism is inconceivable without the insecurity caused by an addictive striving from more personal power and material

wealth . . . personal transformation is by no means enough . . . In the present scheme of things the actions of a few executives or generals could nullify the efforts of millions of ordinary citizens. Therefore, we need to act at all levels — personal, social and political — to change cultural and institutional systems: in short, to redesign our society.’

After literally millennia of stagnation, living standards have increased dramatically in the last two centuries and an increasing number of the world’s societies are sharing in the bounty. Among people attempting to explain and interpret this phenomenon, the extreme positions offered are cornucopian and cake-eating. Cornucopians attribute this growing prosperity to the wonders of capitalism, harnessing individual initiative and innovation to serve the general good; and they see no good reason why it cannot continue. Cake-eaters, as the name implies, believe that most of this apparent progress has been the discovery merely of ways to accelerate the depletion of the planet’s limited endowments, so that the present prosperity has been attained at the expense of future generations. It is my understanding that the debate between cornucopians and cake-eaters remains unresolved. Cornucopian policies will prove disastrous if the world turns out, after all, to be made of cake; but the legitimate aspirations of billions of people would be thwarted unnecessarily by cake-eating policies if cornucopian possibilities really exist. If the resolutely cake-eating *Human Ecology*, *Human Economy* is adopted for environmental studies courses, one can only hope that it is balanced by a second text offering an articulate statement of the cornucopian position.

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Economics and the Environment: A Signalling and Incentives Approach, by Ian Wills. Published by Allen & Unwin, St Leonards, NSW, 1997, pp. xii and 340, ISBN 1-86448-257-5.

This is intended as a textbook for tertiary environmental economics and environmental studies courses with the claimed merit of introducing ‘an economic way of thinking without assuming a background in economics’. Certainly a student would be well aware of the importance of opportunity costs after reading this text. It is a heroic act to present a text on environmental economics which assumes no prior knowledge of economics. The danger is that without a basic knowledge of economics students are likely to be confused or at best obtain a superficial

knowledge of environmental economics. They are unlikely to be in a position to make much practical use of the subject though they should gain some understanding of basic concepts. Those students who have had some degree of previous exposure to economics are likely to obtain most from this text.

The emphasis of the author on signalling and incentives for co-ordinating systems is presented in a refreshing manner. Furthermore, Wills indicates that he is aware of the limits to market-making and to the establishment of private property rights as a solution to environmental problems. He also places considerable stress on the presence of uncertainty and the complexity of interactions between the economy and the environment, and indicates ways in which environmental policies must be tempered as a result.

Australian students will of course like the fact that Wills includes Australian cases and examples, although he sometimes does not mention Australians who have helped to give prominence to these cases, e.g. conservation of Leadbeater's possum.

In the introduction, Wills draws attention to anthropocentric and eco-centric environmental ethics but without saying specifically that Western welfare economics is anthropocentric. In my view, there is somewhat of a hiatus in this book in that principles (basic ones) of welfare economics are not considered and the author 'gets down to business' quickly in Chapter 2, comparing social co-ordination in market and planned economies. To some extent, his attention to planned economies is now a little dated and no mention is made of transitional economies.

The author's classification of natural resources on pages 51–2 is not all that clearly presented and the definition of economic sustainability which appears on page 53, (as the maximum level of consumption that an economy can sustain forever), is not all that illuminating. How does it relate to economic concept(s) of sustainable development? Is there any connection between economic and ecological concepts of sustainability? The reader is not told. Weak and strong conditions for sustainable development are not mentioned as concepts.

There is a considerable presentation gap between the text's identification of shortcomings in signalling and incentives in resource co-ordination systems and consideration of policies to deal with these. Consequently, some students may have forgotten the problem before they are shown the policy solutions. Externalities, for example, are discussed in Chapter 5 but one must wait until Chapter 14 for policies. There is a similar gap in relation to common property problems — introduced in Chapter 7 with policy follow-up in Chapter 18.

In a textbook, it is useful to have a list of selected readings for each

chapter. This book does not have these. The questions at the end of each chapter are useful, but they are general rather than specific. Consequently, students are not involved in a set of specific structural learning exercises.

Many of the chapters in the last part of this book concentrate on global environmental problems and three are devoted to issues involving the conservation of biodiversity. These chapters will be of widespread interest. I fear, however, that some students will become confused by some of Wills' exposition. For example, he suggests (p. 318) that the strict precautionary principle implies endangered species should be protected regardless of cost, and cites the 1973 Endangered Species Act of the USA as incorporating this principle. In fact, the precautionary principle has not usually been used in environmental economics in this limited way, e.g. by economists of the Resources for the Future, but has been used to argue that it is rational (for example, taking an expected benefit approach) to err in favour of conservation when irreversibility exists, or the costs of irreversibility are very high. Furthermore, after reading the section on the safe minimum standard (SMS), I was at a loss to decide how Wills' interpretation of it would be applied in practice and what solutions it would give. Quoting Randall does not seem to help much. Randall's application of the SMS rule depends on distinguishing between costs that are 'intolerable' and those that are 'substantial'. How do we draw the line between these? Intolerable to whom?

Wills entitles his next section 'Don't expect too much of biodiversity policy'! In that section, he stresses the uncertainty of the impacts of biodiversity loss and the consequence of this for decision-making. Biodiversity policy is seen as being of a similar genre to greenhouse policy with subjective evaluation playing a large role in such decisions. Nevertheless, subjectivism need not be a recipe for being irrational.

While not everyone will find this to be a useful text, most will find it a useful reference for environmental economics, especially as taught at Australian tertiary institutions. It deals at some length with topics, e.g. biodiversity, not given much coverage in standard texts. It portrays a more realistic and complex economic/environmental world than many previous works.

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Foreign Direct Investment and Processed Food Trade: Papers Presented at the Conference of NCR-182 'Organization and Performance of World Food Systems', Arlington, Virginia, March 9–10, 1995, edited by Shida Rastegari Henneberry. Published by Department of Agricultural Economics, Oklahoma State University, Stillwater, OK, 1997, pp. vii + 259, \$US10.

This book, published in March 1997, draws from papers presented to a symposium in March 1995. The symposium examined issues underlying trends in foreign direct investment (FDI) and their relationship with international trade in processed foods. These are important issues, both from the perspective of policy-makers and food companies. The book consists of 10 chapters by various authors and some concluding comments. The chapters cover aspects concerned with the relationships between FDI and processed foods trade from a particular theoretical, methodological (e.g. survey), country/region, product, or component (e.g. quality) perspective. A wide range of theoretical, empirical, descriptive and institutional aspects are covered.

The first two papers address the theme of the book by examining the causal and complementary/substitutability relationships between FDI and processed foods trade, respectively. There are various theories supporting these relationships, for example, that firms export to establish a foothold and then invest if the market looks promising. But, although trade has been growing strongly, FDI has been growing more strongly. Establishing these relationships is important from a policy perspective as some countries such as the United States encourage processed food exports yet firms appear to prefer FDI. There are no firm relationships established, for example, they vary substantially over country groupings. Conditions underlying theories such as neo-classical explanations do not appear to be met. The third paper takes another approach to the same issues by considering the strategic internationalisation process under alternative market environments in terms of an option pricing model.

The next set of papers consider the situation in Europe. The first uses a gravity model to show economic integration has had an impact on FDI in processed foods. The next paper discusses a survey of technological performance in Greek companies and shows the importance of innovation in the decision to form subsidiaries. This was followed by an interesting paper looking at changes in internationalisation modes. The existence of Intra Industry Trade suggests the need for new 'firm specific' models based on profit maximisation, taking into account the main costs and constraints, in relation to the two key decisions of location of production and level of control. The final paper in this set considers factors behind why FDI did

not occur in Central and Eastern European Countries when they opened up.

An interesting paper covered in Chapter 8 considers transaction costs in determining the optimal location for different stages of rice processing. Very informative diagrams of the potential processing systems are used to display the options available. There is some worthwhile discussion of what is considered a continual problem in this trade, market thinness, and how it can be addressed through contracts, alliances and vertical integration.

The last two symposium papers consider the institutional background and implications, such as potential trade barriers, of food quality and safety regulations, and product standards. A key point made in Chapter 9 is that as processed foods can undergo greater differentiation, requiring more standards, this opens greater possibilities for abuse in relation to setting up trade barriers. Chapter 10 looks at the impacts of standards on the choice between trade and FDI.

The concluding remarks try to give context to the papers by critiquing them within a consistent framework, as well as providing recommendations for future research. It is pointed out why conventional trade theory, or more correctly its underlying assumptions, failed in this area. It is shown how orthodox models may be redefined to perform better (an Ownership, Location and Internationalisation framework) and how the research fits into such a framework. It is concluded that the research is eclectic in the topics covered, empirical methodology used and the degree of aggregation. Future research identified covers the impacts of food quality standards, the need for better data so as to narrow the gap between the theory and the empirics, and policy analysis such as the welfare implications of outbound and inbound FDI.

In summary, this is an interesting set of papers on the inter-relationships between trade and FDI in the processed food industries. Comprehensive coverage is given to key issues as well as to a broad spectrum of other relevant issues. One wonders why it took two years to make the papers more broadly available. One frustration with the book is the uncertainty in the early chapters between the theory and the empirics. There is a feel of 'choose your theory or empirics for the result you want'. This can be overcome to some extent by first reading the concluding comments chapter, which tries to overcome this uncertainty by establishing a framework in which the research can be assessed.

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Land Reforms in India: Andhra Pradesh — People's Pressure and Administrative Innovations, edited by B.N. Yungandhar. Published by Sage Publications, New Delhi/Thousand Oaks, London, 1996, pp. 386, ISBN 0-8039-9304-8.

This is the third volume in a series of studies undertaken by the Indian Administrative Service (IAS) Officer Trainees on land reforms in the Andhra Pradesh state of India. The volume presents a collection of papers presented at a Workshop held at the National Institute of Rural Development, Hyderabad, the capital city of Andhra Pradesh, from 15 to 17 May 1992. In this book involving many contributors, the history, progress and current status of land reforms are assessed. The data were obtained using both field survey data and secondary sources such as land records and judicial proceedings. The contributors address the key issues of caste hierarchy and the political economy of agriculture. The book is very easy to understand because it does not use any technical jargon. Therefore, it is readily accessible to the lay person with an interest in land-related issues.

The introductory chapter of this collection of papers provides detailed historical analysis of the policy, legislation and implementation of land reforms in India with special emphasis on land reforms in Andhra Pradesh state. This chapter also provides information on a wide range of measures required for effective implementation of land reforms.

Chapter 1 is about agrarian movements and land reforms. It has been pointed out that land reforms started when peasant associations and organisations affiliated themselves with communist parties. Although the left-wing parties never came to power, they are likely to have had an indirect effect on land reform in states where they were politically influential.

Chapter 2 provides an overview of land reforms. Regional disparity, land reform legislation and evaluation of implementation are described. At the end of this chapter, some measures to minimise disparities across the country are suggested. Chapter 3 deals with the distribution of the population, the share of agriculture and changes in operational holdings. The direction of land reform for the 1990s is described using secondary data and information from peasant organisations. Chapter 4 discusses the first (1961–72) and second (1973) rounds of 'land ceiling' legislation. The 'land ceiling' determines the maximum farm size that a person can legally own. In the case where a particular farmer owns more farm land than the prescribed land ceiling, then excess land is considered to be surplus and is distributed amongst landless and marginal farmers. The aim of this chapter is to examine the basis of land ceiling legislation and the

implementation of the 1973 Ceiling Act. Chapters 5 and 6 analyse the distribution of the land and its impact on employment and income on weaker sections of society. For this purpose, data were collected through field surveys and simple tabular analysis was used to present results. Chapter 6 also focuses on the cropping pattern and yields in allotted land.

Chapters 7 and 8 assess implementation of land reform with the aim of exploring the extent of evasion of the land ceiling laws. The results indicated that there were 4500 land ceiling cases pending in various courts. Nearly one-fifth of the surplus land had not been allotted to beneficiaries because it was uncultivable.

Chapter 9 discusses changes in the tenancy system and policy options influencing feudal and semi-feudal political and economic relations are examined. In the following chapter, an effort has been made to assess the extent and prevalence of 'concealed tenancy' and to analyse the socio-economic profiles of tenants and land owners in various parts of the state. It was found that 'concealed tenancy' was still prevalent and constituted 6 per cent of the total area in coastal Andhra Pradesh, 7 per cent in the Rayalseema region and 8 per cent of the Telangana area. Chapter 11 examines the judicial processes underlying land reforms and the following (last) five chapters deal with case studies conducted at a district level. The aim of these latter chapters is to provide in-depth information on land reforms and to provide comprehensive coverage from a micro-economic perspective.

In this book, each chapter is written by a different contributor and there is some overlap between chapters so that readers may find the book repetitive. However, in our opinion, this makes the book more interesting since a wide spectrum of views is provided on land reform. In summary, this book will be a useful source for people studying land reforms, agrarian change or rural development. It would also be of considerable interest to those involved in policy-making and administration in this area or for researchers dealing with the management of natural resources.

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Potential Impact of a Farm Forestry Industry on the Goulburn Regional Economy, by C.R. Todd, I.T. Loane and I.S. Ferguson. Published by the Trees for Profit Research Centre, School of Forestry and Resource Conservation, University of Melbourne, Parkville, Victoria, 1997 (Bulletin No. 10 of the School of Forestry and Resource Conservation, the University of Melbourne), pp. xvii + 149, ISBN 0-7325-1596-3.

In this monograph, the authors examine the impact of a new industry (farm forestry) on a regional economy (the Goulburn statistical division in Victoria). It is based on a thesis written by the first-named author, and carries with it the characteristics of a good thesis: coherently written and structured; focused on a well-defined issue; and replete (almost to the point of tedium) with detailed descriptions of technique and data collection.

The introduction of a farm forestry industry involves considerable expenditure on planting and maintenance over a large number of years before production is fully established. The authors divide this period into three parts:

1. the establishment phase (when returns are negligible relative to outlays);
2. the transition phase (when returns are coming on stream, with new sites still being planted); and
3. the steady state phase ('when harvesting is equal to replanting, no new sites are being planted, a full range of plantations exist at different stages of formulation and returns from wood sales have trebled since the previous transition year', page v).

The authors use an input/output (IO) methodology. They develop an initial IO table representing the regional economy prior to start-up of the new industry. Then, they project a series of tables, each for a typical year (referred to as snapshot years), in the three phases described above. The snapshot-year tables are generated by examining various aspects of the farm forestry sector using estimates of farm forestry transactions (costs and receipts) from a separate model (the FARMTREE model developed by the Department of Agriculture, Victoria), and then rebalancing via a mathematical algorithm to ensure that costs equal sales for each of the region's industries. Conclusions are drawn about the potential contribution of the farm forestry industry by comparing tables and by conventional multiplier analysis for each snapshot year.

The assumptions made when generating one snapshot-year's IO table from a previous one are the standard IO assumptions: every industry's input structure, as revealed by the previous IO table, is taken as given; there are no constraints on the supplies of primary factors or on the external account (in this context, transactions between the Goulburn statistical division and the

rest of the world); prices are passive; and final local demand is determined, by aggregate primary-factor incomes generated within the region. Under these assumptions the establishment of a new industry will always have expansionary effects on the regional economy as its presence leads to successive rounds of increased demand for primary factors and for inputs supplied by other industries. These are the familiar *type-1 multiplier effects*. There will also be *type-2 multipliers* which incorporate the idea that expansion of primary-factor usage generates additional primary-factor income and hence additional final (household) demand. These assumptions and their implications are well spelt out in the report. The question is, are they appropriate?

The alternative to the IO model is the applied general equilibrium (AGE) approach (see, for example, Dixon and Parmenter 1996). AGE models can incorporate all the IO mechanisms. In addition, they incorporate an active price mechanism, allowing input and output structures to change in response to changes in relative prices, and they allow for the imposition of region-wide constraints on primary-factor supplies, external trade and government budgets. Hence, the AGE model incorporates mechanisms for potential crowding out of some activities (e.g. established industries in the Goulburn region) by others (farm forestry), as well as for IO multiplier effects. Common objections to the AGE approach are that the AGE models are too data demanding and too difficult. However, the data demands are not much more onerous than for an IO model, and AGE techniques and software systems are now routinely available. Models can be formulated at a number of spatial levels: single-country models with only tops-down regional disaggregation such as ORANI or MONASH; stand-alone models of regional economies (in use by most state governments in Australia); and multiregional models like MONASH-MRF (Peter *et al.* 1996).

However, it is not always the case that a particular issue justifies the expense of constructing an AGE model where no suitable model exists. This is the case with the issue being analysed in this monograph. The Goulburn economy is relatively small, and is open to commodity and factor flows, with few constraints. Relative prices can safely be regarded as exogenous to such an economy. In these circumstances, the range of mechanisms encompassed by a AGE model over and above those included in an IO model will not be of much practical importance.

I therefore think that the authors' approach is the right one. They should be congratulated on their thoroughness and the advances they have made: the construction of a detailed input-output picture of the Goulburn economy; and the quantitative, balanced assessment of the costs and benefits of introducing a farm forestry industry into that economy.

References

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Farms, Trees and Farmers: Responses to Agricultural Intensification, edited by J.E. Michael Arnold and Peter A. Dewees. Published by Earthscan Publications, London, 1997, pp xi + 292, ISBN 1-8538-3484-X.

This is a new paperback edition of a book first published by Oxford University Press in 1995. Arnold's opening chapter and conclusions provide a frame for eight studies, each of which focuses on particular regions of Africa or the Indian sub-continent to analyse farmers' changing tree management strategies in response to changing circumstances.

The book is well edited to present a uniformly high quality, consistent structure and coherent argument through the various authors' chapters. Although one of the conclusions is that 'the tree information base is woefully weak', the authors draw on a number of quite thorough surveys and studies. The book brings together a wealth of qualitative and quantitative information about changing farm tree strategies in many different regions, much of it drawn from earlier research assisted by international agencies such as ICRAF, World Bank and FAO and University Institutes. These are generally more in-depth than information available on the Australia situation. Each chapter features case studies and discusses the underlying influences, concluding with an examination of the role of government policy.

There are profound differences between the background environment of the countries studied and Australia. Farm size is typically less than 2 hectares, with little mechanisation, and many farmers remain predominantly in a subsistence economy. Other areas of difference include tenure systems, communal resources and women's role.

The chapter by Don Gilmour on trees in the Middle Hills of Nepal tries to dispel the idea that there has been an inexorable degradation of the Himalayas with reducing tree cover. In fact, surveys showed an increase

from 65 to 298 trees/hectare on private farms in the study area between 1965 and 1989, mainly from planting in areas furthest from available forest resources. Farmers favoured the trees which were easiest to regenerate and contributed to needs such as animal bedding and fodder (and hence manure), fuel and building poles.

Narpat Jodha surveys an arid area in western Rajasthan, India, where farmers had long managed trees and shrubs on common property land in complex ways to provide biomass and protect against the risky environment. Vegetative cover has worsened, however, despite numerous studies and initiatives. Jodha argues that government initiatives were too focused on technology and particular sectoral needs and were insensitive to community processes. The government replaced traditional community management of common property lands with centralised or new cooperative management with the aim of strengthening protection, but ironically this resulted in more rapid degradation as community ethics broke down and were replaced by more exploitative individualism. However, a tradition remains of open community access to fallow lands for grazing, which discourages land owners from tree planting.

In 'The shift of tree cover from forests to farms in Pakistan', Michael Dove argues generally that development plans for farm forestry have tended to focus on the material world and ignored the human dimension, society beyond the village, and the past. Government initiatives such as annual seedling give-aways have had limited success. In one area in the Punjab, farmers are constantly trying to keep *Prosopis juliflora* from invading their fields from surrounding scrub forest. They regard it as a major pest, which jaundiced their attitude towards a forestry planning project's offer of assistance with tree cultivation.

Some schemes began as social forestry but ended up targeting larger landlords for market-oriented plantations. Government foresters, rather than recognising the rationality behind farmers' responses, blame farmers for not being 'tree-minded'. Farmers' considerable efforts with multi-purpose tree management belie this, but it has suited foresters to paint farmers as having a bad attitude to trees as they restrict their access to State forests.

Katherine Warner in Chapter 5 does a systematic analysis of patterns of tree growing by farmers in several different agro-ecological zones in eastern Africa. The zone's natural characteristics are shown to be a major influence on tree management. But cultural attitudes also vary, as some groups for example have beliefs that prohibit cutting fruit trees or indigenous trees and others are reluctant to plant indigenous trees.

One point made here that has echoes of Australia is that government efforts to promote tree planting have been hampered by the division and lack of coordination between forestry and agriculture branches. Other problems

have been excessive focus on fuelwood rather than multi-purpose trees. Government initiatives establishing communal woodlots have often broken down as villagers are unclear on who is to benefit from the inputs. A CARE International agroforestry project in Kenya, however, gets favourable reports.

In Chapter 6 Sara Scherr assesses patterns of agroforestry adoption to meet household needs in western Kenya. She draws on a study of practices among farmers before and after CARE International's Agroforestry Extension Project in the 1980s. Farmers increased their average number of free-standing trees from 227 to 513 over the period. Adoption of alley-cropping was common, often for green manure and soil conservation purposes, but only on a small experimental basis. Planting for building poles and fruit became more common, with fuelwood as a secondary product. Live fencing and boundary markers were also major uses. Scherr points out that agroforestry can contribute to a range of household welfare needs, including food, housing and fuel, land conservation and cash. Nevertheless, it must be kept in perspective with other measures such as water, health and education which will be often be a higher priority.

In Chapter 7 Dewees examines farmer responses to woodfuel scarcity. In the 1970s concern over increasing shortages of woodfuel in the face of increased population and diminishing forests led to some expensive tree-planting projects. Dewees surveys the many ways in which people respond to such scarcity including use of other fuels and argues that there are often cheaper ways of increasing or conserving fuel supplies than planting trees. He recognises the real economic cost these adjustments can involve, but at times seems a little too blithe about the innovative ways by which markets adjust to scarcity, including migration and sharing cooking pots. In tree-planting programs originally aimed at increasing fuel supplies, farmers often preferred to use the product for poles instead.

Dewees and Saxena in Chapter 8 examine wood markets as incentives for farmer tree growing in three regions in the Sudan, Kenya and India. In the Sudan, a thriving market for charcoal based on wood left from clearing *Acacia* savanna has made it uneconomic to grow trees specially for charcoal production. In Kenya *Acacia mearnsii* woodlots were encouraged by the colonial government and have been profitable for many farmers. Government controls since 1986 constrained its marketing for charcoal production.

Northwest India is a notable case where farmers responded to expectations of market profits by planting vast areas of eucalypts around the late 1970s. However, there was inadequate advice to match production with realistic market size and a glut of eucalypt wood resulted in the late 1980s. Their marketing was also handicapped by subsidised sales from State forests and the government permit system for harvesting and transport.

Deweese and Saxena also use case studies from Kenya and India to study tree planting in the context of household land and labour allocation: They find that the households planting the greater number of trees tend to be those with larger farms relative to labour available, and greater assets. These and other major factors could not be influenced by forest policies.

A common theme in the book is that tree planting and other rural practices can only be explained by the whole gamut of environmental and social factors as well as government policies. At times it is reminiscent of the old economic cliché that everything affects everything else. But plenty of interesting insights are provided on the actual responses. Farmers have shown quite a sophisticated ability to manage their trees and adapt their strategies according to changing agro-environmental and socio-economic circumstances.

As pressure on agricultural land intensifies, trees generally become restricted to homesteads, boundaries and niches where they do not compete with crops, but there are exceptions where trees are being used to complement crops or reduce risks and fluctuations.

Governments have tried to help with tree planting programs but the authors are more critical here. Governmental approaches have tended to be too one-dimensional, focused only on limited aims and needs such as replacement of fuelwood or timber resources, or meeting household subsistence needs. Too many encouraged tree planting even where it was inappropriate. Assistance has often been in the form of free seedlings or planting subsidies, yet there is no evidence that this is where the real constraint to farmer planting lies. This form of subsidy also has the unfortunate effect of discouraging private nurseries and distorting food/tree choices.

Arnold concluded that better approaches for government programs would be:

- offering a menu of species and management options, recognising the high variability in needs among farmers;
- removal of barriers in governments' own domain such as subsidisation of state wood sales, subsidies to non-wood fuels, and burdensome regulations on private harvesting and transport;
- provision of information, particularly on markets. Although there has been considerable research, little has been applied research and on-farm testing. Even for alley-farming, a subject on which there has been much research, the extent to which it is appropriate for farmers is still unclear.

It is stressed in particular that local opinions and participatory planning will be more rewarding than top-down planning.

While some common themes are drawn out in the conclusions, they do not substitute for the understanding to be gleaned from the book's individual chapters. Most of the broad conclusions are also widely applicable to Australia, but the diversity of the regional situations militates against too general a transfer of concepts to other countries, or for that matter, too general a transfer of Australian knowledge to those countries studied.

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