Resources

Logging the Southwestern Pacific: Bibliographic Review Essay

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Our purpose in this bibliographic review essay is to provide a guide to the major sources of information on rainforest use in Papua New Guinea, the Solomon Islands, and Vanuatu. The main topics we address are policy and legislation, forest management practices, social impact, and biodiversity. We have categorized sources according to their predominant theme, but some are relevant for more than one topic. For those just beginning to examine these issues, newspaper and magazine articles provide a general introduction (see Croall 1990; Economist 1994; Kansas 1993; Scott 1990; Sheenon 1994a, 1994b; Islands Business; Pacific Islands Monthly). An extensive collection of current articles is available online in the Gaia Forest Conservation Archives compiled by Glen Barry of Ecological Enterprises. Conference proceedings and edited volumes incorporate a variety of perspectives such as those of landowners, academics, international aid donors, provincial and national officials, nongovernmental organizations, and industry representatives (Alcorn 1993; Australian Development Studies Network 1994; Beehler 1993; Crocombe and Tuza 1992; Hughes and Thirlwall 1988; Kapor-Vijay and others 1992; May 1973; Millet 1988; Pearl and others 1991; Schoell 1994; Sekhran and Miller 1995; Swartzendruber 1993; Thistlethwaite and Votaw 1992; Winslow 1977). In addition, each contains a significant bibliography. This essay provides a basis for further research on the topic.

**Policy and Legislation**

Policy issues related to deforestation in Papua New Guinea, the Solomon Islands, and Vanuatu are discussed from different perspectives. International aid agencies have formed policies concerning funding for development projects involving the use of the forests (ADB 1992; AIDAB 1991, 1993, 1994a, 1994b, 1994c, 1994d; Byron 1986; Cernea 1991; Connel 1994; Coopers and Lybrand Consultants 1990; CSIRO 1992; D'Silva and Appanah 1993; Duncan 1995; FAO 1993; McKillop and Simpson 1994; Spears 1988; US GAO 1982; World Bank 1991). The national governments of Papua New Guinea, the Solomon Islands, and Vanuatu have established forest management legislation that determines policy for each of their countries (Carson 1976; PNG DF 1971a, 1971b, 1991; Fernando and Nen 1991; SIFD 1989; PNG DAL 1989; PNG OF 1977; SI MEP 1985; UNCED 1991). Historical overviews of this legislation identify the stakeholders in control of the forest resources (Bell 1982; Bennett 1993; Fraser 1981; Jonas 1985; Knetsch and Trebilcock 1983; Nadarajah 1993a, 1993c; Tisseverasinghe 1985). As national policies have shifted from centralized forest management modeled on colonial administration to policies that allow landowners to determine how they will manage their resources,
greater attention has been given to customary land tenure and to the diversity of land tenure systems in these countries. The information on this subject is vast, but the following authors have addressed land tenure in terms of forest policy (Bennett 1995; Cortez 1988; Eaton 1985, 1986; Fingleton 1993; Larmour, Crocombe, and Taungenga 1981; Larmour 1984; 1986; 1989; 1991; Nolan 1985; Pardo 1984; Weinstock 1984; Yauieb 1988).

Much criticism has been leveled at national policy and the inability of governments to properly monitor aspects of the forestry industry. The foremost critique of national policy in Papua New Guinea is the twenty-five volume “Commission of Inquiry into Aspects of the Timber Industry in Papua New Guinea” (Barnett 1989). This inquiry exposed widespread corruption with respect to the development of the forest industry in Papua New Guinea and raised issues of foreign control of logging companies in Papua New Guinea, environmental destruction, inadequate monitoring, and social dislocation. It also exposed corruption in the forestry industry, such as transfer pricing, undervaluing, misdeclaration of species, and poor logging practices (see also Barnett 1990; Brunton 1994; Marshall 1990). Although changes were attempted after this, efforts to create policy did “not offer a clear guide which could guarantee the continued availability of the resource as well as its environmental integrity” (Nadarajah 1993b, 25). International aid agencies such as the World Bank have been accused of being too concerned with profit at the expense of environmental conservation and of not taking landowners or communities into account (Brunton 1990; Goodland 1984; Winterbottom 1990).

**Forest Management Practices**

Forest management practices refer to how land and its resources are used for industrial logging, plantations, agroforestry, and the production of non-timber forest products. In this section we discuss the relationship of industrial logging to reforestation and development schemes, while outlining alternatives to industrial logging.

Forestry has long been viewed as the extraction of timber resources. Historical accounts of agriculture plantations (see Denoon and Snowden 1981; Bennett 1995) and the timber industry (Jonas 1985) have described postcolonial relations established in such contexts and their impact on the land and people. As a resource, trees become timber, and their value is determined in relation to market demands. Quickly extracted timber provides immediate returns for the company. For example, Hilton and Johns (1984) discussed how quick extraction leads to short-term gains that eliminate the potential for long-term sustainability.

Logging industry representatives argue that their activities have been wrongly depicted as inconsistent with sustainable practices and local needs (see Millet 1988 for discussion of these issues by an industry representative). Other industry sources include the Malaysian Timber Industry Board (1992); Malaysian Timber Council (see Internet Resources), and Forest Industries Council of Papua New Guinea (1982). Aside from the critiques
already mentioned (eg, Barnett 1989), research addressing the industrial perspective is lacking. The relationship between industrial logging and deforestation is very complicated, involving government directives, local needs, and international resource demands. Project prospectuses for timber resources provide some insight into the government’s role in regulating marketing and sales (eg, PNG DF 1970; 1971a; 1971b; 1973). Other authors have discussed international demands with respect to Pacific timber resources (eg, Chow 1991; Eddowes 1990; Flynn 1988; Gosper 1988; Marchak 1995). Following the completion of industrial logging operations, reforestation schemes attempt to maintain the economic and environmental viability of the land. The continuum of research perspectives ranges from silvicultural techniques to traditional practices. Silviculture, the study of the growth and maintenance of forest resources as crops, provides academic support for plantations, community forestry, and reforestation schemes (discussed later). It is not possible to review this literature in detail here, but we provide some suggestions for further research. Bengston, Gregersen, Lundgren, and Hamilton (1988) suggested a model for evaluating the performance of forestry research institutions in the Asia-Pacific region. Lundgren, Hamilton, and Vergara (1986) examined research directives and organizations in the Asia-Pacific region, with particular reference to the Solomon Islands and Vanuatu. Organizational support programs and research activities were reviewed by FORSPA (1993b) for Papua New Guinea and the Solomon Islands; and by Chaplin (1993) for the Solomon Islands. Salleh Mohd Nor (1992) has compiled research priorities, researchers, and their publications in Forestry Research in the Asia-Pacific.

Silvicultural practices differ in relation to ecological conditions and the selected tree species. A number of trial or test plots have been made with respect to particular species (eg, Dalton 1976; PNG DF DS nd; Neil 1987a, 1987b, 1987c, 1987d). Increasingly, researchers are relying on traditional knowledge, emphasizing local tree species over the introduction of those successful elsewhere. Oliver (1992) has provided an overview of South Pacific silviculture practices including country reports for Papua New Guinea, the Solomon Islands, and Vanuatu. Chaplin (1993) provided a detailed account of silviculture in the Solomon Islands. Tiki reviewed some of the constraints and problems for harvesting in Papua New Guinea, concluding that “good and well controlled logging is the only realistic silvicultural tool for sustainable management” (1994, 38).

To better understand changing land use, one must examine how people living in these areas have traditionally dealt with conservation of their land. In addition to ethnographic accounts that typically provide some information on land use, the following are more specific to a discussion of conservation: Clarke (1993); Ingram (1994); Larmour (1989); Wigston (1984); Winslow (1977); Yen and Mummery (1990). In 1980, a conference entitled “Traditional Conservation in Papua New Guinea: Implications for Today”
examined traditional practices and knowledge with respect to the contemporary situation (Morauta, Pernetta, and Heaney 1982). Its objectives were to look at resource management in Papua New Guinea; to see how it could be strengthened and applied creatively in contemporary contexts; to understand the social, political, and economic contexts of all resource systems; to see which traditional conservation practices could be transferred to policy immediately; to look at what areas needed immediate attention; and to see what could be contributed to the educational material. Traditional conservation practices are increasingly used in plantation projects; however, they are more often associated with community forestry.

Conventional plantation forestry practices as the primary means for reforestation following wide-scale harvesting by multinational logging companies have been criticized for ignoring issues of local long-term sustainability. Plantation approaches to forestry have been criticized for lack of local participation (e.g., Bule and Jenks 1988; Louman 1991; Srivastava 1988), destruction of biological diversity in favor of quick monocultural production (e.g., Clarke and Thaman 1993; Thaman 1989), and intrusive extraction methods as the trees grow into timber resources (e.g., Louman 1991, 1992a; Nadarajah 1993b, 1993c, 1994a). Based on a number of case studies, Mitio (1984) concluded that communication and information problems hinder local development schemes. Vatasan (1991) called attention to the failure of the logging industry to pay attention to public relations and proper management in regard to reforestation needs. Millet (1988) presented a number of dialogue pieces, bringing together logging industry representatives, provincial and national government officials, financiers, and academic participants in transcribed discussion and conference papers.

Community or social forestry has been seen as a solution to or reaction against these problems (Gregersen, Draper, and Elz 1987; Louman 1991; Nahuet 1988; Srivastava 1988). Community forestry includes “a broad range of tree or forest related activities undertaken by rural landowners and community groups to provide products for their own use and for generating local income” (Gregersen, Draper, and Elz 1987, 1). Activities often include fuelwood plots, agroforestry, woka-baat somils, and community-run forest plantations. As Louman (1991) has pointed out, the distinguishing characteristic in all of these practices is landowner participation in both development and implementation. Srivastava (1988) provided a regional overview of the need for the implementation of community forestry practices. For Papua New Guinea, Nahuet (1988) outlined constraints to extension program efforts in community forestry, with particular reference to case studies in Morobe and Madang provinces. Louman (1991, 1992a) also discussed social forestry in Papua New Guinea, calling for increased communication between forestry institutions, social scientists, nongovernmental organizations, and, most important, the often-ignored landowners. For Vanuatu, Bule and Jenks (1988) discussed the implementation of commu-
nity forestry research and programs, and Neil (1988) provided information on appropriate timber species for community forestry efforts, listing further references for Vanuatu.

As a recent contribution to community-based forestry practices, *wokabaot somils* have been received with a degree of caution. Unwin (1990) provided a brief history of the *wokabaot somil*, detailing the technology, training, financing, and successful examples of its use. Its potential contribution has been examined in detail by a number of authors (Louman 1992b; Sargent and Burgess 1988; Unwin 1990). Louman (1992b) and Bun (1993) discussed constraints on implementation. Kilkki (1992) emphasized its potential to increase the efficiency of industry harvesting practices by recuperating waste logs. Bun (1993) reported the implementation of government- and nongovernmental-organization–supported training. While recognizing the advantages of increasing local participation and using the timber resources selectively, the potential for detrimental use of *wokabaot somils* if proper training and regulations are not implemented is also acknowledged (Bun 1993; Louman 1992b). Thorpe (1993) elaborated this point for the Solomon Islands, prescribing provisions and licensing requirements that help to guide the *somil's* use.

A great deal of recent work has focused on agroforestry as a solution to the problems of deforestation, agrodeforestation (Thaman 1989), and sustainability. Broadly defined, agroforestry is the incorporation of trees into agricultural practices. A number of authors have seen this multistory intercropping as having the greatest potential for community forestry systems (Barrance 1988; Bule and Jenks 1988). To this end, Clarke and Thaman (1993) reviewed the different ways in which agroforestry has been conceptualized and implemented, distinguishing between institutional and cultural-ecological approaches. Institutional (Clarke and Thaman 1993; Manner in Schirmer 1984) or industrial agroforestry (Tom 1988), is defined as the intercropping of cash crops or cattle with tree crops or plantations. It is seen as a means of providing market opportunities while reforesting clear-cut lands.

As discussed earlier, the suitability of agroforestry for Pacific Island nations is attributable to the cultural-ecological or traditional practices that emphasize polyculture cropping and high interspecies and intraspecies diversity (eg, Afing 1991; Clarke 1976, 1993; Clarke and Thaman 1993; Schirmer 1984). Afing (1991) discussed the increasing importance of agroforestry for government policy in Papua New Guinea, and Kalogo (1990) discussed the Forestry Extension efforts and planning for agroforestry training. Country and case-specific studies have reported the success of agroforestry in Papua New Guinea (Sonoling 1988; Tom 1988), the Solomon Islands (Hite 1988), and Vanuatu (Neil and Jacovelli 1984; 1985). Clarke and Thaman (1993) analyzed practices and species diversity specific to each nation, and Clements’s (1987) edited volume includes country reports for the Solomon Islands and Vanuatu. Contributors to *The Role of*
**Agroforestry in the Pacific** (Schirmer 1984) provided a variety of perspectives on the potential of agroforestry in the Pacific, including country reports for Papua New Guinea and the Solomon Islands.

Another alternative for economic and environmental sustainability has been the development of non-timber forest products (Croft 1987; Hilton 1988; Mercer 1990; Olsson 1991; Saulei and Aruga 1994; Vietmeyer 1988; Saulei and Aruga 1994). Discussions have included traditional uses of non-timber forest products, such as food items, firewood, and medicinal plants. Craft products, such as *bilums* (net bags), tapa (bark cloth), and carvings are also made from non-timber products and can be sold for income. As with the earlier discussion of traditional land use practices, economic and environmental sustainability are achieved through local knowledge. The authors have made suggestions for future development of non-timber forest products, such as copal gum, vatica gum, sandalwood, tannins, massoy bark, and rattan. Animal farming, of crocodiles, and of butterflies and other insects, is another business that uses the forest but not the trees.

**Social Impact**

Logging has had a variety of impacts on people living in different communities. One geographical area that has been extensively studied is the Gogol timber area in Madang, Papua New Guinea. Japan and New Guinea Timber Company began logging this area in 1971, generating environmental and social devastation (Davidson 1983; De’Ath 1980; Lamb 1977, 1980, 1988, 1990; Murphy-Dunning and Moriarty 1991; Seddon 1978; Webb 1977). Bryant, Stewart, and Walter (1982) contrasted a locally owned, small-scale timber project in Manus with the Gogol area. Mitio (1984) looked at case studies of six different areas (including the Gogol timber rights purchase), where people’s attitudes had changed because of misunderstandings in the legal agreements. Other case studies did not look specifically at logging but at the general impact of development in specific areas (eg, Grant 1987 for Kilege, West New Britain).

As logging continues to affect communities, the impact on the health of individuals becomes a greater concern. Gibbons (1993) and Jenkins (in Pearl and others 1991) outlined how environmental change has affected human health. With deforestation, new viral disease patterns have formed, and the viruses are attacking human hosts. For example, the destruction of the forests has increased the incidence of malaria and spawned new types. Another issue, dealt with more extensively in the case of mining, involves migration and change in settlement patterns. Disease increases as people (mostly men) move into temporary settlements where sanitary conditions are poor and bacterial contamination is rampant. With men living in these areas and earning cash, prostitution develops, and sexually transmitted diseases and AIDS become a problem. Further, as people move away from known horticultural practices, nutritional deficiencies develop because of a lack of variation in their diet. Richardson and Richardson (1986), raised health considerations
for agroforestry systems in a study that related the changes in agricultural practices and nutritional values. Jenkins looked at the impact of cultural change on the health of the Hagahai (Jenkins and others 1989).

How can people’s perceptions be understood and how are people responding to the impact of logging on their lives? Mitio pointed out that in order for development to be successful, “people’s perceptions of development should be understood” and taken into account (1984, 41). One method for people to have a role in development is through people-centered sustainable development or participatory grassroots development. The “villager” must be considered in rural development, and bottom-up development must take place (Bopp 1994; PNG NRI 1992; Paeniu 1988). Local nongovernmental organizations are also working to bridge the gap between landowners and government and international donor agencies (Mayers and Peutalo 1995; Peutalo in Pearl and others 1991; Sakulas in Pearl and others 1991).

Conservation and Biodiversity
The extensive and endemic species diversity in Papua New Guinea has been recently examined by the Conservation Needs Assessment, volumes 1 and 2 (Alcorn 1993, and Beehler 1993, respectively). In particular, the second volume (Beehler 1993) has provided a comprehensive assessment of current environmental conservation priorities. Sekhran and Miller (1995) have provided the most recent contribution to conservation research in Papua New Guinea. For the Solomon Islands, Leary (1993) provided similar information. As a contrast to these recent volumes, The Melanesian Environment (Winslow 1977), elaborated early conservation efforts and perceived opportunities. Papers presented in Hughes and Thirlwall (1988), Morauta, Perretta, and Heaney (1982), Pearl, Beehler, Allison, and Taylor (1991) and, for Vanuatu, Tacconi and Bennett (1993b) provide additional perspectives on conservation and diversity in the region. In discussing biodiversity issues, we consider the categorization of resources, environmental impact assessment and case studies, and conservation and management practices.

The literature on the biological diversity of tree species has been particularly focused on categorizing forests as resources, trees as timber. Forest inventories, conducted throughout the years (Lane-Poole 1925; McAdam 1954; Vatasan 1985; White 1972), have contributed to a large body of reference material for forest industry use and marketing (eg, Eddowes 1977, 1979; Forestry Industries Council of Papua New Guinea 1982; PNGDF 1973). In contrast to these discussions of species end uses and processing characteristics, biological descriptions and classifications have been compiled (eg, Clarke and Thaman 1993; Coode 1969; Davidson 1981; Johns 1975–1977).

While the potential for the development of South Pacific timber to replace depleted and restricted Southeast Asian resources has been noted by some analysts (Flynn 1988), others
have cautioned against overzealous extraction (Nadarajah 1993c; Saulei 1987), and noted conservation concerns (AIDAB 1994a; 1994b; Beehler 1993; Pearl, Beehler, Allison, and Taylor 1991; Tacconi and Bennett 1992). Mercer-Miller (1985) contrasted Papua New Guinea and Sabah, Malaysia, highlighting differences in policy and opportunities for sustainability in Papua New Guinea. Hughes and Sullivan (1989) suggested that Papua New Guinea could provide an effective model for environmental impact assessments throughout the Pacific. However, they noted that the implementation of existing legislation had been ineffective with regard to forestry. Vatasan (1994) suggested ways to improve environmental plans and monitoring. Furthermore, Bennett (1993) suggested improvements in benefit-cost analysis that include environmental concerns. Threats to biodiversity also endanger intergenerational equity, and the importance of evaluating either factor is not explicitly recognized in economic assessments (Tacconi and Bennett 1993a).

More specific environmental-impact case studies include climber problems in the Solomon Islands (Neil 1984), the Gogol woodchip project (eg, Davidson 1981; Johns 1992; Webb 1977; see earlier discussion), and soil degradation (IBRAM 1989). A significant amount of comparative work on the environmental impact of development has been done with regard to the failed Wabo hydroelectric scheme (see Petr [1983], who viewed it as a model for the planning process), and mining projects (such as Ok Tedi and Bougainville). Although these projects differ in scope and the specific kind of impact on the environment, similar processes, reactions, and cultural critiques can be explored in relation to logging deforestation.

Forest conservation and management has been conceptualized at two levels (Australian UNESCO Committee for Man and the Biosphere 1976). The first allows for resource use within sustainable and environmentally sound practices (see Nadarajah 1994a). Oa (1990) placed Papua New Guinea in the global context, emphasizing the potential for successful management of biodiversity. Johns (1988), Mori (1993), and Palmer, Gibbs, Gangali, Dutta, Poa, and Chaplin (1989) discussed reforestation problems in regard to post-logging contexts (see earlier discussion of plantation and community forestry). The second level considers alternative forest management and conservation practices (see earlier discussion of non-timber uses). Wildlife Management Areas and Protected Areas can play a significant role in protecting biologically diverse regions (see Alcorn 1993; Beehler 1993). Eaton (1986) reviewed eleven case studies and discussed criteria for their designation throughout Melanesia. Blockhaus and others (1992) placed Papua New Guinea’s Wildlife Management Areas in a global context. Assessment and analysis also exist for the Erromango Kauri Protected Area in Vanuatu (Tacconi and Bennett 1994; Tacconi and Mele 1995).

Where to Go

This bibliography provides a starting point for research on the socioeconomic and environmental impact of
deforestation in Papua New Guinea, the Solomon Islands, and Vanuatu. We have focused on material that is both accessible through major research libraries and specific to this issue. The situation is critical both socially and environmentally, requiring immediate attention. Our research indicates a need to consider the differing perspectives of landowners across gender and generational boundaries. These perspectives have been addressed in various ethnographic accounts of Pacific peoples, but further in-depth case studies with forestry as the focus (compare De’Ath 1980) are necessary for understanding local processes and the potential for problems.

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Films and Videos


Broomhall, Mark, and John Seed, producers. nd. Mama Bilong Olgeta. Lismore, NSW: Rainforest Information Centre. Donated footage, not for broadcast.


Internet Resources

The following internet locations provide access points to current information and archives of articles on forestry and deforestation, as well as other related topics in the region:


