Who Counts Most? Assessing Human Well-Being in Sustainable Forest Management

8 The Criteria & Indicators Toolbox Series

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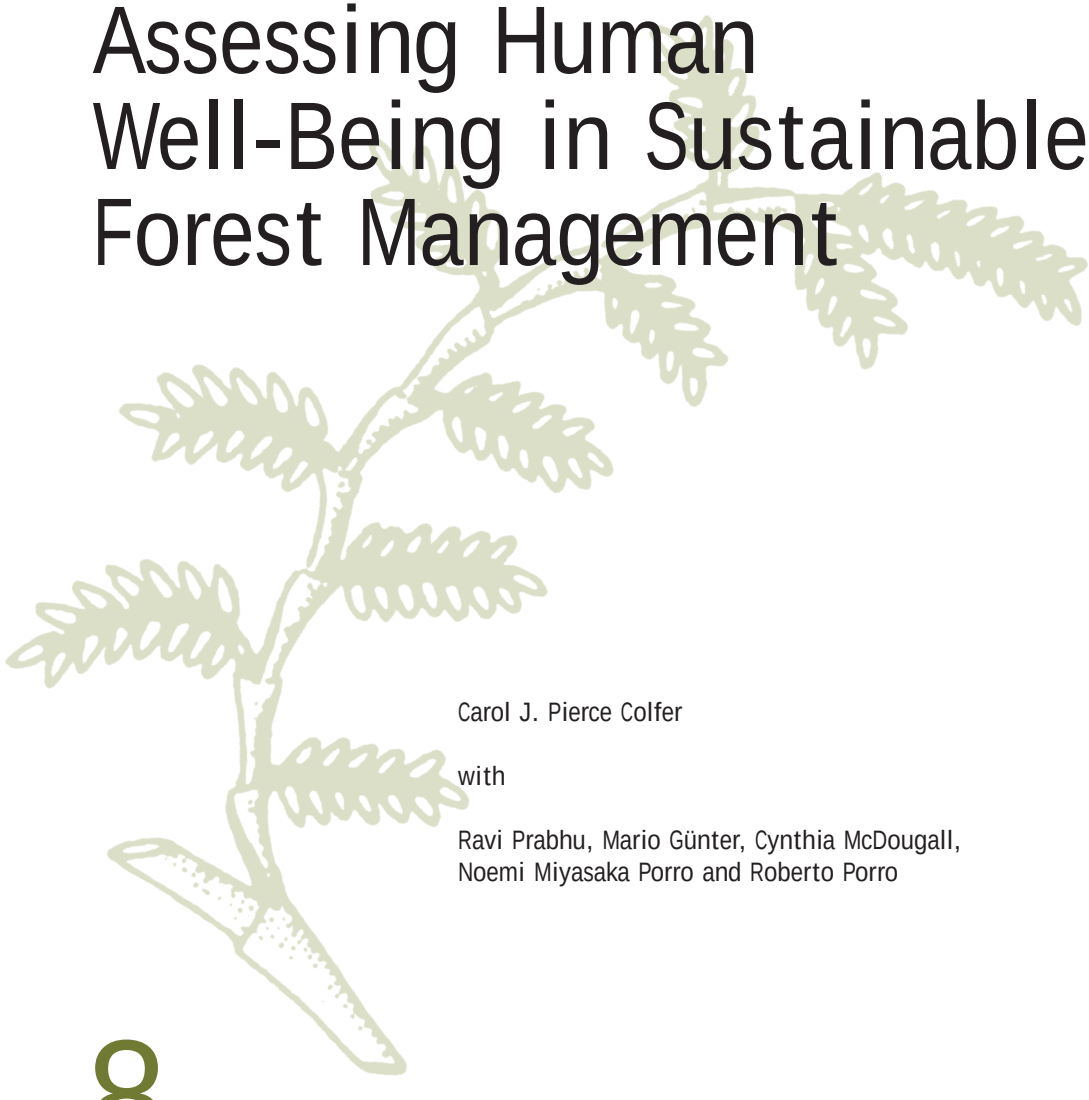

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ABSTRACT

In this paper, we present a tool, the 'Who Counts Matrix', for differentiating 'forest actors', or people whose well-being and forest management are intimately intertwined, from other stakeholders. We argue for focusing formal attention on forest actors in efforts to develop sustainable forest management. We suggest seven dimensions by which forest actors can be differentiated from other stakeholders, and a simple scoring technique for use by formal managers in determining whose well-being must form an integral part of sustainable forest management in a given locale. Building on the work carried out by the Center for International Forestry Research (CIFOR) on criteria and indicators, we present three illustrative sets of stakeholders, from Indonesia, Côte d'Ivoire and the United States, and Who Counts Matrices from seven trials, in an appendix.

1 Why Differentiate Among People?

A global mandate has emerged for scientists and others to develop sustainable systems of forest management. In partial pursuit of this goal, CIFOR has been involved since 1994, in identifying principles, criteria and indicators for judging the sustainability of forest management. We began by selecting and testing five leading sets of criteria and indicators developed for certification.[1] The evaluation process included field tests in six locations (Germany, Indonesia, Côte d'Ivoire, Brazil, Austria and Cameroon). Our focus on sustainability began at the level of the forest management unit, as defined by commercial timber interests, but over time our emphasis has shifted to include community based forest management, conservation areas and plantations as well.

In the process of developing a conceptual framework to organise the many social criteria and indicators in the five certification systems (Colfer *et al*. 1995), we quickly discovered one major shortcoming. There was no mechanism for differentiating among the many people with an interest, or 'stake', in the forests, herein called stakeholders.[2] In our view, the various stakeholders have different interests, rights and responsibilities, which can be placed along a continuum of relevance for day to day forest management.[3] This view was strongly contested in a recent test of criteria and indicators (C&I) in the Boise National Forest (USA), where most members of the team testing C&I felt that all US citizens had an equal right to a voice in the management of national forests. Most of our other collaborators, however, have agreed that different stakeholders

1 The sets of criteria and indicators which were tested include Lembaga Ekolabel Indonesia (LEI), the British Soil Association's Woodmark, Rainforest Alliance's Smart Wood (USA), the German Initiative Tropenwald and a set from the Dutch Working Group of Experts on Sustainable Forest Management.

2 This use, though current in the sustainable forest management literature, is inconsistent with the dictionary definition: 'a person entrusted with the custody of property or money that is the subject of litigation or of contention between rival claimants in which the holder claims *no right or property interest*'. [italics added] (Webster's Third New International Dictionary 1993). Behan's (1988) use of the term 'constituents' is similar to what we mean by 'stakeholders'.

3 This is not to suggest that wealthy and powerful stakeholders like concessionaires or governments do not have important impacts on forests, but rather to identify local stakeholders who have typically been sidelined in forest management, with adverse effects on forests and on their own well-being.

should have different roles in sustainable forest management with some more directly involved than others. There has, however, been no commonly accepted mechanism by which formal managers could differentiate among these groups.

The initial sets of criteria and indicators, or guidelines, tested at CIFOR specify certain conditions for different groups of people who have impacts on, and are affected by, the forest. Most guidelines required, for instance, that people's tenure rights[4] be respected. Various rights of 'local', 'traditional', 'indigenous', 'tribal', 'poor', 'vulnerable' people, 'workers', 'settlers' and 'communities' were addressed in different sets of guidelines. In order to test the applicability of these guidelines properly, we needed a clearer way of identifying the relevant actors. Who, for instance, has or ought to have which rights and benefits? Who has or ought to have what duties and responsibilities? These questions were important for us in conducting our tests, and would also be relevant for someone trying to use the criteria and indicators for making an assessment. The criteria and indicators accepted by the team always included conditions pertaining to human well-being, particularly that of people residing in and around the forest being assessed. The further we got into the process of testing and developing criteria and indicators, the more important identifying these important stakeholders became.

Another issue that emerged as we progressed through our tests was the impossibility of separating human values from the concept of sustainability. When we decide what we want to sustain we are reflecting our value system — so the criteria and indicators that comprise the CIFOR base set reflect the values of the various teams selecting them. Similarly, the tool presented here reflects the particular experience and values of the teams that tested it.

4 Globally, there is a diverse assortment of different (and legitimate) systems of land tenure and usufruct. We suggest, based on our research, that rather than any particular kind of land tenure or usufruct, the important issue for sustainable forest management is *security of intergenerational access to resources* (cf. Colfer *et al.* 1997b, 1998).

The questions above (who has what rights and benefits, what duties and responsibilities?) highlight a duality that characterises forest dwellers and their relations to forests. On the one hand, forest dwellers are often described as victims ('forest dependent', 'poor', 'uncivilised', 'under-served'), emphasising their needs and implying a certain passivity; on the other, they have the same active potential that any human being has as an actor, capable of behaviour with both good and bad effects on their environment. Both aspects have implications for human well-being.

All stakeholders, by our own definition, have an interest in the forest. But, there are both ethical and pragmatic reasons — paralleling the passive and active aspects of human behaviour noted above — for formal forest managers to attend more closely to some stakeholders than to others.[5] We have found both ethical and pragmatic arguments to recur at each phase and in each component of our attempt to determine who counts in sustainable forest management.

From the ethical perspective, there is a growing recognition that many people living in forests have not been treated 'fairly', that their resources have been usurped by more powerful individuals or organisations and that their well-being has been adversely affected in a variety of ways (cf. *Charter of the Indigenous Tribal Peoples of the Tropical Forests* 1992; World Bank 1991; Colchester 1993; and numerous case studies such as those reported in Barber *et al*. 1994; or Richards 1993).

From the pragmatic point of view, some people have greater likelihood of directly affecting the forest than others. These people, we call 'forest actors', to emphasise their capacity to act on the forest, besides receiving, or failing to receive, benefits from it (see Vayda *et al*. 1980 for a

5 In most logging enterprises we visited, we found that local communities were viewed as an unavoidable hindrance to efficient extraction of timber. The greater power and wealth of the timber company typically meant that local people's interests were not considered seriously. Sustainable forest management, as defined by CIFOR's (and others') criteria and indicators, suggests that this view will have to change to one of cooperation among stakeholders — whether that means co-management of a particular forest or parallel management in different locations. The nature of the attention given to other stakeholders by logging enterprises will vary from place to place.

fuller exposition of this perspective). Whereas the term, 'forest-dependent people', emphasises what people receive from the forest, 'forest actor' emphasises their *rights*, *responsibilities* and *potential actions* in relation to it. Both the capacity for action and dependency are important elements in the people-forest relationship as it relates to sustainability.

During a second phase of CIFOR's project, we focused attention on methods for making quick, easy, reliable assessments of human well-being, and fine-tuned the tool described herein. This tool, the 'Who Counts Matrix', is designed to help formal managers who are struggling with questions like: Who else has rights in this forest? For whom do we bear responsibility? To whose well-being need we contribute? From whom can we obtain cooperative assistance in forest management? In subsequent sections, we suggest factors that should be considered in defining the most critically relevant population(s) for attention in managing a forest unit sustainably; and we propose a mechanism for identifying the comparative pertinence of different categories of people in a particular forest. In so doing, it also allows us to define what are often called 'forest-dependent people'.

The 'Who Counts Matrix', originally formulated in June 1995, has shown itself to be useful both practically and theoretically. CIFOR teams and collaborators have used it repeatedly (in Indonesia, Côte d'Ivoire, Brazil, Cameroon, Trinidad and the United States); certifiers have found it appealing because of its simplicity (e.g., SGS Forestry, Rainforest Alliance, FSC); and forest managers at workshops on criteria and indicators have expressed their need for such an instrument. The most obvious use of the matrix is in quick assessments of forest management, such as a certification team or a brief project evaluation visit. But, forest managers have also

expressed their confusion about their responsibilities to different stakeholders. A simple way to identify who counts most at the level of the forest management unit can help local managers manage better.[6] Clarification of the factors that influence people's relations with the forest — also necessary in determining 'who counts' — contributes to our more general understanding of people-forest interactions. The investigation of the present day dilemma in the forest, with regard to conflicts within groups and among groups, will improve our understanding of intragenerational equity aspects, and ultimately on intergenerational equity as well. Our experience with the Who Counts Matrix has shown that it can serve as a valuable reference point for further work in this direction.

Future cooperation among stakeholders will require their accurate identification at this stage, so this first step is a critical one. Subsequent work with these people will require both more sharply focused attention to within-group differences (like gender, age, wealth) and to the interactions between forest actors and other important stakeholders. Examination of the many conflicts within and among groups will increase our understanding of intragenerational equity aspects, which will in turn have major impacts on the realisation of intergenerational equity. Günter found the Who Counts Matrix to be a valuable starting point for investigating these issues.

In the next section (2), we propose and discuss seven dimensions (reflecting ways in which people are linked to forests) which, we believe, facilitate first-round placement of the stakeholders along a continuum of potentially beneficial involvement in day-to-day management of forests. Finally, in Section 3, we suggest a simple, straightforward technique for identifying those stakeholders whose well-being is

6 Although this paper was written for formal managers — in recognition of global political realities — we believe that as local people's involvement in forest management becomes more widely acknowledged and recognised, this stakeholder identification process will concern them directly as well.

most important ethically and pragmatically in sustainable forest management.

In the appendix, we provide general, descriptive sketches of three settings, to give some idea of land use, population, local issues and trends, and the stakeholders themselves. These include the P.T. Kiani Lestari concession in East Kalimantan, Indonesia; the Bossematié forest in Côte d'Ivoire, with which we are much less familiar;[7] and the Olympic National Forest, an American forest that Colfer has known since 1972.

Sample 'Who Counts Matrix'

	Local Community	Forest Workers	Timber Company	Local Government
Proximity				
Pre-Existing Rights				
Dependency				
Poverty				
Local Knowledge				
Culture/Forest Link				
Power Deficit				
Mean Value				

7 We drew on the long-term, West African experience of CIFOR collaborators: Ahui Anvo, Heleen van Haaften, Charles Huttel, Jean Claude Koffi Konan, Patrice Mengin-Lecreulx and Anatole N'Guessan, for the Côte d'Ivoire analysis; and are grateful for their considerable help.

2 Human Dimensions Pertaining to Sustainable Forest Management

Defining which people's well-being is most important for sustainable forest management at the management unit level has required identifying the most important elements or dimensions in people-forest interactions. Without being quite clear about how people and forests are (or can be) related, determining those people most important for forest management unit attention becomes problematic.

In the following discussion, we identify seven continua or dimensions[8] pertaining to people-forest interactions, along which stakeholders can be placed: *proximity to forest*, *pre-existing rights*, *dependency*, *poverty*, *local knowledge*, *forest/culture integration* and *power deficits*. These dimensions, found to be important in selected forests in Indonesia, Côte d'Ivoire, Austria, Cameroon, Trinidad, the United States and Brazil, pertain to human well-being and to people's potential positive and negative contributions to forest management. They all have both a pragmatic and an ethical aspect. Although the dimensions could all use more precise definition, we have found these working definitions, in no particular order, sufficient for use by forest managers and assessors in the field.

8 The dimensions have been the subject of considerable discussion. We initially postulated six (excluding 'poverty'). Most of the tests were conducted without 'poverty'. The Porros note that the exclusion of 'poverty' would not have altered their results. 'Poverty' was included to differentiate local people from a timber concessionaire who was also 'dependent' on the forest. We also considered including a 'conservation ethic' at one point and 'displacement' at another (both to differentiate settlers and indigenous forest people), and combining 'indigenous knowledge' and 'forest-culture link' at still another (since indigenous knowledge of relevance can be considered part of the 'forest-culture link'). Users should feel free to add dimensions that seem particularly relevant in their context.

PROXIMITY TO FOREST

By proximity, we mean simply closeness to the forest. We are acknowledging the potential for people living near the forest to have a significant impact on it. The actual physical distance constituting 'proximity' will vary from one forest to another, given the differences in accessibility of various locales. Bushler Bay, Washington is served by an excellent road and ferry system, linking it to the city of Seattle within a couple of hours. In East Kalimantan, the trip from the small provincial capital of Samarinda to Batu Ampar (the concession's base camp) can take from eight hours to two days. In Trinidad, no one is physically very far from the forest.

People with easy access to the forest can be beneficially involved in formal forest management; indeed, our conclusion from our long-term research on sustainable forest management is that they must have that option. People who perceive themselves to be unjustly excluded from nearby forest also have the ability, directly or indirectly, to degrade it. The extensive literature on the negative ecological impact of roads in forest areas (e.g. Mahar 1989; Moran 1981, 1990) represents another example of the potential of nearby people to damage forests.

Behan (1988) provides cogent arguments for management by 'constituents' ('the people who know and care about a particular… forest'), most of whom he sees as clustered in geographic proximity to that forest. But he raises an important issue. There are people who may know and care about a forest who do not live near it. He argues that such people have a right to be involved in forest management, just as we should respect the rights of others not to be involved if they so choose. One possible way to deal with this dilemma is to include emotional, as well as physical, proximity in this dimension, as Günter has done in his work in Trinidad. The relative potential

impact of physically distant/emotionally close constituents *vis-a-vis* physically close constituents is a topic for further investigation.

PRE-EXISTING RIGHTS

The meaning of this dimension also varies considerably from place to place (see Sayer 1991, for instance; Fortmann and Bruce 1988 or Poffenberger 1990). In many places, endangered forests are subject to conflicting land claims, indeed even to conflicting paradigms of what land ownership and use should mean. Sometimes, communities that have occupied a given area for decades, centuries or even millennia, have had their traditional rights usurped or severely compromised in recent times (cf. Colchester 1993; Colfer with Dudley 1993).

If there are such people in or near a forest, recognition of their rights is important both ethically and pragmatically. Justice, not to mention international conventions, requires that people's rights in the forest be acknowledged and respected. From a purely practical point of view, perceived injustice can lead to a variety of ills from disregard of forest policies to increases in conflict, vandalism and violence (cf. Guha 1993, for examples from India; Barber *et al*. 1994 or Peluso 1992, from Indonesia; Richards 1993, from Amazonia).

Although in our experience (primarily humid tropical), stakeholders with pre-existing rights were typically local communities, pre-existing rights can apply to other stakeholders, like long term timber concessionaires.

DEPENDENCY

In many forested areas, there are communities which are dependent on the forest for a range of goods and services (see FAO's Community Forestry project

papers on forest dependency; the 1993 compendium by Hladik *et al.*; Redford and Padoch's 1992 collection). The people may hunt; fish; gather foods, medicines and fibres; or practice agroforestry. It is also common for such people to have few realistic alternatives to their existing way of life[9] (cf. Peluso 1991, 1993). The needs of people whose livelihoods depend on the forest must be incorporated into sustainable forest management. Ethically, people's access to food is an important consideration. Practically, people whose children are hungry because they are denied access to the forest may not respect forest borders.

POVERTY

Poverty is a relative term that must be re-defined in each locale. Groups or individuals with noticeably lesser access to resources than other stakeholders are 'poor'. In most cases, access to cash will be an important factor in determining poverty. But, where cash is rare locally, one may have to use other aspects of living standards like nutritional status, quality of housing, or ownership of consumer goods to make an assessment.

Whereas dependency can be fairly uninformative about standard of living if forest resources are abundant, poverty clearly indicates shortages. Its location-specificity is important to bear in mind: poverty in the United States is a very different thing from poverty in Africa.

Poverty is an important ethical issue since it flags the comparative inadequacy of people's access to resources, with serious implications for their well-being. Pragmatically, it typically reflects inequities in the distribution system (global, regional and/or local) and thus carries with it dangers of conflicts and other social and environmental problems that accompany poverty.

9 In saying this, it is important not to rule out the possibility that the availability of alternatives may change in the future. The important concern here is that those dependent on the forest not be prematurely and forcibly deprived of their subsistence base, that they have a voice in determining the speed and direction of change.

LOCAL KNOWLEDGE

People who have lived in forested areas often have unique and useful knowledge, based on their long-term, local experience (see, for example, Banuri and Marglin 1993a; Clay 1988; Moran 1993; Posey 1992, 1993). Such knowledge may pertain to animals and their behaviour, plants and their management, uses of various products, techniques for processing forest products, etc. Local knowledge is valuable for its own sake, given our comparative ignorance about the ecology and uses of forests (particularly tropical forests). But, it can also serve an important function in the beneficial integration of local and formal forest management. Recognition of the value of local knowledge and its use are powerful tools for enhancing communication and cooperation between local people and other forest managers and for empowering local people.

FOREST/CULTURE INTEGRATION

Cultures (or ways of life) tend to be intimately linked to their environments,[10] and forest communities are no exception to this rule. There may be sacred sites within the forest, symbolic systems which give meaning to life and are intimately tied to people's sense of self, security functions of forest plants during times of scarcity and myriad other connections.

When we applied our approach to identifying forest actors in the American forests,[11] it became clear that for 'environmentalists', the conservation of forests is intimately tied to their values and world view (cf. Vail 1993, for a discussion of a similar situation in Maine) — though this world view may have been consciously chosen in a way that is unlikely to occur in the other two contexts presented in the appendix.

10 Indeed, there is a whole body of theory called 'environmental determinism' which argues that cultures are *determined* by the environmental conditions in which they arise. Harris (1968) presents a more sophisticated approach rooted in these models, which he calls 'techno-environmental determinism'.

11 The Olympic National Forest in western Washington on the Olympic Peninsula, a temperate rain forest; and the Boise National Forest North of Boise, Idaho, a much drier, fire-prone habitat.

Insofar as a people's way of life is integrated with the forest, the continuation of their culture is jeopardised by forest loss. Such destruction of cultures has demoralising, marginalizing and generally destructive impacts on the people so affected (see for instance, Van Haaften and Van de Vijver 1995; de Bruijn and van Dijk 1995). Practically, this can mean increases in material poverty, mental and physical illness, and various social problems (perhaps characterised as poverty). The human repertoire of cultural diversity is also, thus, impoverished.

POWER DEFICITS

In many areas, the people who live in or near the forest have comparatively little power, *vis-à-vis* other stakeholders (see Salafsky *et al*. 1993, for a discussion of this in West Kalimantan; Smith and Steel 1995 in the US Pacific Northwest).[12] Such power may be based on education, wealth, connections to the government, or locally recognised authority.[13] Local people, for instance, are likely to have less power than officials in logging companies (based on factors like prejudice, connections with the powerful, formal education, shared social characteristics); or the Dayaks of Kalimantan typically have less power than do the transmigrants who share a common religion, language and culture with government officials. Where a local power deficit does exist, it may adversely affect the forest. The people may not have the means with which to protect their resources (cf. Banuri and Marglin 1993b; Barber *et al*. 1994); or their livelihood base may be so severely affected that they are forced into destructive practices. Both environmental degradation and reduced human welfare may result.

12 Dove (1993) has a germane comment: 'The problem for the forest peoples is that they inhabit a resource which is coveted by groups that are more powerful than they are (while the problem for the forest is that it is inhabited by peoples who are too weak to insist on its sustainable use)'.

13 Umans (1998) refers to another, more dynamic and titillating view of power, with significant implications for the co-management of forests. He says 'power is not only perceived as a thing (as an attribute of an actor) but also as an effect generated in the network of actors'.

Another element in the power issue pertains to whose knowledge 'counts' (Ardener 1975; Colfer 1983; Colfer and Wadley 1996; Jordan 1991, 1997) — a different issue from the *existence* of knowledge. Banuri and Marglin (1993b), in discussing India, point out a globally common pattern which in some cases adversely affects sustainable forest management:

> *By labelling the tribals backward and ignorant, by decreeing that their practices destroy the forest, the protagonists of the dominant system of knowledge ensure that the voices which could challenge them will not be heard.*

This common silencing, or muting, of some people's voices, intentionally or otherwise, has a number of potentially dangerous effects, such as reducing their ability and willingness to participate in cooperative forest management or reducing formal managers' access to useful knowledge.

3 Differentiating Forest Actors from Other Stakeholders

Defining the relative importance of various stakeholders (to help formal forest managers manage better) and identifying those people whose dependence on the forest is significant (for use in development and conservation efforts more generally) have already been identified as important, if in some cases controversial, tasks. In this section, we outline a simple method — field tested in at least ten forest contexts[14] — for distinguishing such people. We also describe the various ways we have tested the method. In the subsequent section, we conclude with a discussion of remaining conceptual and methodological puzzles.

We have used the seven dimensions linking forests and people, outlined immediately above, to define which stakeholders may need special attention by more formal managers at the forest management unit level — both because these stakeholders may have un- or under-acknowledged rights to forest benefits and because they may have greater potential for direct impacts on the forest than other stakeholders. The examples shown in the appendix provide a qualitative context for comparison with new and different real world settings.

14 Sites included:
- Indonesia: (1) P.T. Kiani Lestari concession on the Telen River, (2) P.T. Inhutani II concession in Bulungan, East Kalimantan and (3) Danau Sentarum Wildlife Reserve, West Kalimantan;
- Cameroon: (4) Sogenic and Wijma concessions near Kribi on the Atlantic Ocean;
- Côte d'Ivoire: (5) the Bossematié Forest Reserve, near Abengourou;
- Trinidad: (6) focused on Tanteak's forest, but providing insights relevant for the whole country;
- Brazil: (7) Uruará in the Transamazon area and (8) in Porto de Moz along the Xingu River, both in the eastern Amazon area; and
- United States: (9) the Olympic National Forest in Washington State and (10) the Boise National Forest in Idaho.

Tables 1–7 are matrices for selected locations, wherein the left-hand column lists the dimensions; and the top row lists the stakeholders. Three of them correspond to contexts described in the appendix. In these matrices, assessors have scored the relevant stakeholders on the degree to which each dimension generally applied to that stakeholder: 1 = high, 2 = medium, 3 = low, and 'var.' = variable. The mean score for each column (excluding 'variable' scores) is computed across the bottom of each table. The stakeholders have been arranged so that the mean scores increase as we move to the right of the matrices. A reasonable cutoff point for definingforest actors seems to be a score of < 2.

The first version of this tool for differentiating forest actors from other stakeholders, described in Colfer (1995), was developed after participation in month-long, interdisciplinary field tests of C&I in P.T. Kiani Lestari Timber Concession, straddling the Telen River in East Kalimantan, Indonesia and in the Bossematié Forest Reserve near Abengourou in eastern Côte d'Ivoire, in 1995. Experimentation continued in 1995 and 1996, in our field tests in the Cemex timber company along the Tapajos River in the eastern Amazon, Brazil; and in the Wijma and Sogenic timber concessions East of Kribi in southwestern Cameroon. In 1998, a similar, month long, interdisciplinary field test occurred in the Boise National Forest in the western North American State of Idaho.

Additional tests by social scientists alone were made to the Olympic National Forest on the Olympic Peninsula in the State of Washington, U.S.A. (1995, Colfer); the Danau Sentarum Wildlife Reserve surrounded by several concessions in West Kalimantan, Indonesia (1996, Colfer, Reed Wadley and Emily Harwell); the Inhutani II concession in the Bulungan Research Forest in East Kalimantan, Indonesia (1998, Cynthia McDougall); and Uruará near the

Transamazon Highway and Porto de Moz on the Xingu River, both in the eastern Amazon area of Brazil (1998, Noemi Miyasaka Porro and Roberto Porro).

The scoring process initially involved making an estimate based on professional field experience, in the cases of the East Kalimantan forest concession and the Olympic National Forest. In Côte d'Ivoire, we based the scores on brief field observations (perhaps comparable to those of a certification team).[15] These estimates were then discussed with the other team members and revised accordingly. In 1995, 15 participants in the Closing Workshop of CIFOR's C&I test in Belem tried the method. In this data set, 17 stakeholders were identified, reflecting the fact that workshop participants came from all over Brazil, with differing local forest use and user profiles. This method seems applicable from the forest management unit to the national level.

The results, when tallied, supported our inclination to select as forest actors those stakeholders receiving a score of *two* or *lower* (with the slightly odd inclusion of academics in the national Brazilian case). We do, however, recommend this cut-off point as a rough guideline, not a strict requirement.

Günter (1998), McDougall (1998) and the Porros (1998) tested the tool most recently in Trinidad, the Bulungan Research Forest and Brazil, respectively. Günter (1998) asked 'neutral local experts' on forestry and sustainability[16] to fill out the Who Counts Matrix. He then used the results to select the most important groups to focus on in his dissertation research on sustainable forest management (self employed, licensed wood workers and sawmill workers).

15 Seymour *et al.* (1995), for instance describe their (Scientific Certification Systems, SCS) field visits as requiring only 2–12 days.

16 Günter's experts came from the UN Economic Commission for Latin America and the Caribbean, UNDP, the Sustainable Economic Development Unit, the University of the West Indies, the Caribbean Forest Conservation Association, the Eastern Caribbean Institute for Agriculture and Forestry, the Inter-American Institute for Cooperation in Agriculture and the Forestry Division.

McDougall (1998) followed the instructions in CIFOR's methods manual, recently published as *The BAG* (Colfer *et al*. 1999a). She tried constructing the Who Counts Matrix, based on the results of a prior Focus Group method designed to clarify the roles of relevant stakeholders. She found that the members of the Focus Group (local people) had narrowed the relevant stakeholders to such an extent that important forest actors (like forest workers) and more distant stakeholders were removed before they could be evaluated for their relevance.

The Porros (1998), like Colfer, relied primarily on their judgement. They found the method useful, but stressed the importance of the qualifications of the assessor in making the determination. They were also somewhat dissatisfied with the static nature of the assessment and its inability to reflect trends or political activism. They recognised that incorporating such considerations would complicate a tool designed to be simple and easy to use.

Results from these various trials show that the method is hardy and useful, and adaptable to local conditions. It is quick, easy, and has consistently yielded results which seem intuitively to be consistent with the spirit implied in the emerging consensus on criteria and indicators for sustainable forest management.

However, a few caveats remain. The most important is that assessments of sustainable forest management that include attention to human well-being (as CIFOR's have done) are best done in an iterative manner. The Who Counts Matrix is intended as a first step in a progressive process that gradually refines the assessor's understanding of the local conditions. The determination that one local ethnic group or another, for instance, is important in a particular locale, may lead to a more careful examination of the differences in resource

use patterns of men and women within that ethnic group. Variations within groups — like age, gender, caste, source of livelihood — can be as great (and as important) as the gross variations among stakeholders clarified in the Who Counts Matrix. This is particularly true when formal managers move beyond assessment to monitoring or co-management.

Resolution of three persistent dilemmas would improve our confidence in the method: weighting of the dimensions, a scoring method and the cutoff point. The relative *weights* of these seven dimensions present a particularly thorny problem. The method, as used in this paper, assumes equal weights for each dimension. This may very well be an unwarranted assumption.[17] One possibility is that different dimensions will vary in importance with context, so that weighting will have to be determined locally.[18] We are currently working on a multicriteria analysis approach that would help in this context (Mendoza *et al*. 1999).

Scoring represents another. In the certification context, for instance, on a one-month field trip on which numerous other evaluations must be made — probably a generous time estimate for most such assessment teams — the simple 1–3 scoring system makes sense. As initially conceptualised, the scoring technique was a convenience, designed to help evaluators looking at the sustainability of a particular forest to identify the people requiring particular attention, quickly and easily.

17 Although we have asked our collaborators to address this issue, none has — suggesting either that equal weighting is appropriate *or*, perhaps more likely, that the problem is an intractable one.

18 Seymour *et al.* (1995) report that one of the first tasks of a Scientific Certification Systems team is to develop 'case-specific weights for the several evaluation criteria within each of the three program elements [timber resource sustainability, forest ecosystem maintenance and financial and socioeconomic sustainability]…' Perhaps a similar stock taking exercise should precede attempts to determine who counts, as well.

However, for some uses (especially when a longer assessment period is an option), it may be useful and possible to refine the scoring system.[19] Different scales have been considered. Various colleagues have suggested 1–4, 1–5, 0–5, 1–10, and 1–100 scales as ideal. Some prefer granting the respondent the option of selecting a mid-point; others would like to avoid this.

Since the dimensions are conceived as continua (ratio scale), there is in fact no real need to use a nominal scale (other than simplicity). One possibility that seems theoretically attractive involves allocating 100 points to the entire matrix, and allowing the respondents to allocate them among the cells as they see fit. This simultaneously makes the data more amenable to statistical analysis and provides a built-in solution to the weighting problem mentioned above (Maxwell and Bart 1995). The problem is that it makes the task of filling in the matrix considerably more difficult. It may also imply a precision that does not in fact exist.

Finally, the cut-off point, for forest actors vs. other stakeholders, may need further consideration. In all the tests of which we are aware, '2' has seemed an obvious and consistent differentiating value. This may, however, not always be the case, and one may want to determine a locally preferred value. These are topics worthy of further investigation.

Placing stakeholders in their appropriate places along these seven continua is — we would argue — useful in determining their likely relevance for sustainable forest management (including both impacts on the forests and on human well-being). In our methodological trials, we have found it to be comparatively simple, straightforward and generally applicable.

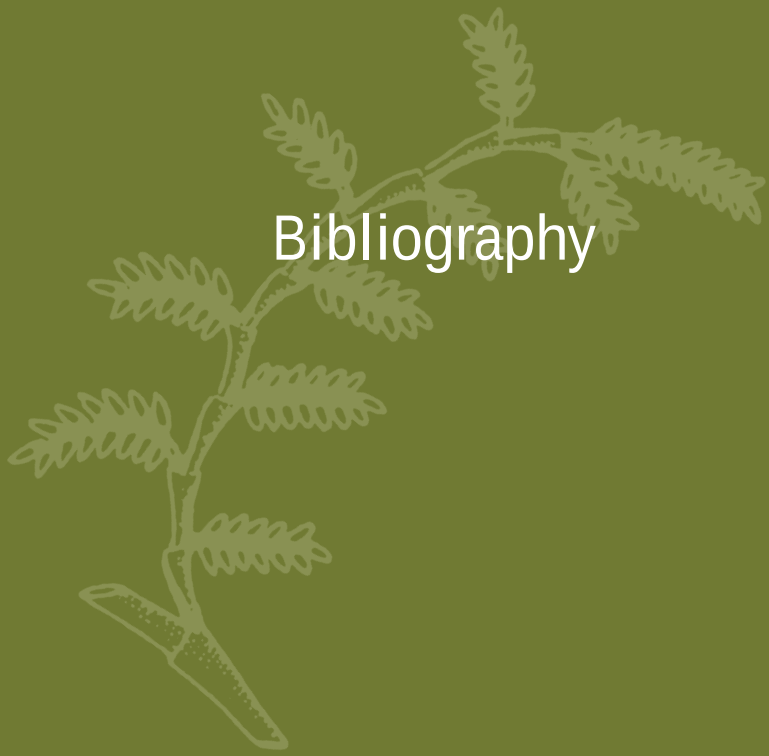
19 Attributing a score of 'variable', for instance, is not statistically legitimate. P. Venkateswarlu (a statistician) has suggested that trying to estimate an average score for the varying stakeholders would be statistically preferable.

4 Conclusion

The development and testing of this 'tool' emerged while conducting field tests of criteria and indicators for sustainable forest management. One premise of our work was that human well-being is a necessary, though not sufficient, pre-condition for sustainable forest management. In our tests, we needed to identify which people, in the primarily humid tropical forests we visited, warranted our attention. We quickly discovered that others (scientists, managers, certifiers, evaluators) also wanted to make similar, quick assessments about human conditions in forested areas.

The Who Counts Matrix served us well. It was simple and quick, and provided an excellent starting point for examining human conditions in the forests we visited. It identified important issues, focused our thoughts about local stakeholders, and allowed us to streamline our work. For more academic purposes, more precise definition of terms (including specific measures or indicators for assessing the dimensions) would be desirable. But, two factors have discouraged us from going this route: (1) Such indicators are likely to vary by location, making the instrument less generally useful, and (2) assessors are unlikely to have time for making such measurements.

When this tool is used as part of an internal monitoring program or for co-management, locally relevant indicators of the dimensions become important and possible, and more precise delineation of stakeholders (into user groups and other sub-categories) will also be needed. Additional tools for making more precise differentiation among 'forest actors' are available in Colfer *et al*. (1999a, b).



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Appendix: Sample Stakeholders from Indonesia, Côte d'Ivoire and the United States

In the three locations selected as examples, there were a number of categories of stakeholders in common and a number of unique categories. National citizens, consumers, forest officials, small-scale entrepreneurs and forest workers — with various sets of characteristics — emerged on all sites. Of these, only consumers were sufficiently comparable in terms of their relations to the forest to be treated here 'generically'.[20]

Consumers — These people make use of forest products. Virtually all are concerned about maintaining affordable access to such products, and some are concerned about the sustainability of forest management.

Each location had both an additional set of stakeholders and different features of the shared stakeholders.

20 This generic quality may, of course, simply reflect the focus that has so far been directed toward people closer to the forest management unit.

A – P.T. KIANI LESTARI TIMBER CONCESSION
in East Kalimantan, Borneo, Indonesia[21]

The Indonesian Ministry of Forestry manages all forested land on behalf of the State. In areas of Kalimantan classified as production forest, the State awards timber concessions to private and parastatal businesses. These concession holders then agree to manage the forest concession according to Indonesian law and forest policy. Scattered throughout P.T. Kiani Lestari's 340 000 ha of lowland dipterocarp concession are villages of Dayaks (Borneo's largely Christian and animist indigenous people) and Kutai (indigenous, Muslim, Melayu people), each with a traditional system of land tenure, forest management and use rights.[22] Most of these people practice a form of swidden cultivation under conditions of low population density (sustainable prior to the last decade). Their agricultural activities are supplemented by forest use (hunting, fishing, gathering of forest products) and male circular migration for wage labour. The people identified as living in the concession in 1989 numbered 20 308 (FAO 1989), a density of roughly 60 people/km^2 – much higher than either the traditional context or the provincial average of 7.7/km^2 (Beukeboom 1989).

Ten thousand hectares of this concession have been developed as a transmigration location for government-sponsored settlers from Java and other densely populated Indonesian islands (Sakuntaladewi and Amblani 1989). One hundred and eight thousand (108 000) hectares in this concession have been categorised as conversion forest, most of

21 Colfer conducted one year of ethnographic research in Long Segar, a village in Kiani Lestari's (then Georgia Pacific's) concession, in 1979–80, as part of the Man and the Biosphere project, 'Interactions Between People and Forests in East Kalimantan'. She made additional, shorter research visits in 1981, 1983, 1991, 1995 and 1997. The context for Indonesian forestry is undergoing rapid change, so these observations may not obtain in the near future.

22 Land ownership in Indonesia, as in most tropical countries, has long been a sticky issue. The Ministry of Forestry has claimed 'forest lands' for State ownership (Basic Forestry Law 1967). The Ministry of Agriculture has a body of law pertaining to 'adat' (or customary) rights of local people and the State's respect for those rights (Agraria 1976). These two bodies of law are in direct conflict. Local land conflicts are resolved on a case by case basis, often to the disadvantage of those residing in the forests. The Basic Forestry Law is currently under revision, due to the political and economic crises confronting Indonesia.

which is going into 'industrial timber estates' (HTI, or Hutan Tanaman Industri) with *Acacia mangium* as the dominant species. There are four communities of HTI transmigrants in the concession who began coming, mainly from Java, in 1990 to supply the labour needed for developing the plantation areas.

The changes that are occurring include a drastic reduction in the area of natural forest (with probable accompanying reduction in biodiversity), rapidly increasing population from in-migration (primarily government-planned), significant reduction in the cultural integrity of East Kalimantan's original inhabitants, and increasing agricultural problems due to environmental degradation.

Dayaks — These people (including a number of sub-groups, such as Kenyah, Kayan, Bahau) practice a riverine lifestyle in the forests. They tend to have occupied a definable area, though not necessarily that particular village site, for decades and sometimes centuries. Most have less power, money and formal education than members of the dominant society.[23] The Dayak systems include useful knowledge about their environment and indigenous forest management practices which are often under-valued and misunderstood by outsiders (see e.g., Brookfield and Padoch 1994; Colfer with Peluso and Chin 1997). They also normally have some, varying, commitment to maintaining their forested environment and way of life. They have been the primary 'losers' within the official approach to forest management.

Kutai — These long-resident, local people of Melayu, Muslim heritage and culture live in riverine communities, interspersed with the Dayaks. Their agroforestry system is similar to that of the Dayaks, with a major difference being the Kutai's somewhat more commercial

23 The 'dominant society' refers to Muslims from Java who represent a majority in the Indonesian population and in the Government and whose interests dominate national policy.

orientation and a greater level of acceptance by members of the dominant society (due to shared religion and greater historical prominence — the Kutai had a Sultanate in Tenggarong).

Transmigrants — They have moved to the forest from more densely populated contexts (e.g., Java, Timor, Flores) characterised by intensive agriculture in most cases. They are poor, with few economic alternatives (cf. Vayda and Sahur 1988 on Bugis pepper farmers; Colfer 1991 or Davis 1988 on transmigrants). They typically come as families, intending to practice settled agriculture, often under national government sponsorship. Their affiliation with the Transmigration program and (often) shared ethnicity with government officials also give them more influence than the original inhabitants of the area. Recent transmigrants are unfamiliar with ways to thrive in and sustain forested environments, tending more toward agricultural lifestyles. Some have come to the area simply to exploit it and leave; others intend to stay. The conservation views of transmigrants are likely to focus on '*soil* management' more than '*forest* management'. Over time, they may take on or adapt some of the knowledge and practices of forest people (Fulcher 1982).

Forest workers — Timber companies hire labourers. Kiani Lestari reported 543 workers in 1989 (FAO 1989). P.T. Alas Helau (a related firm, working in the same concession area) had 725 workers in 1995, with the most common ethnic groups being Javanese (34%), Kutai (23%), Timorese (13%) and Bugis (11%). The men (fewer than 5% of Alas Helau's workers were women) tend to work under hazardous conditions, often with little knowledge of careful logging practices — either for their own safety or environmental protection. Most women work in the informal sector (including prostitution, with all the physical and mental health

hazards that accompany that occupation).[24] Many forest workers are far from their families and other traditional sources of social control or protection, though some may settle after logging operations end.

Small-scale entrepreneurs — They may be in business or government. They have information and capital that allow them to participate in the marketing and processing of forest products. They also may engage in land speculation, hiring others to log (usually illegally)[25] and/or to clear forest areas which they later claim.

Company officials — These are comparatively educated, upper echelon employees of enterprises which harvest timber from the forest. They typically come from some other, more urban area, with little knowledge of local conditions, either human or environmental. They represent a national presence in remote, forested areas, and may have significant power over the lives of forest-dwelling people.

Forestry officials — These are employees of the Indonesian Ministry of Forestry. They are technically responsible for forest management, yet do not have the resources (human or financial) to manage effectively. Their official mandate includes protecting the forest and, to a lesser extent, contributing to the well-being of the people.

24 Enloe's (1989) historical discussion of plantations in colonial Indonesia is relevant here:

> Prostitution became the norm on many plantations by design, not simply chance. There are records revealing that managers debated the advantages and disadvantages of prostitution for their company… [T]he prevailing view was that it would be too difficult to recruit male workers for plantation work if they were not provided with female sexual services. Furthermore, in the eyes of many plantation managers, prostitution was a lesser evil than homosexual relations between male workers deprived of female companionship. Finally, devoting a sizable portion of their wages to prostitution left many male workers further in debt and thus made it harder for them to abandon estate work when their current contracts expired.

The same acceptance of the necessity for prostitution was expressed by company personnel in Kalimantan, perhaps for the same reasons.

25 In West Kalimantan, we know of one case where indigenous Iban leaders are partners in a timber company venture, in which case their logging is legal.

Environmentalists — These are urban-based people, concerned about Indonesia's forests, and often its people. They exert pressure on the government and on companies to enhance the sustainability of their timber operations.

National citizens — These people have a stake in the forest, as beneficiaries of forest-derived revenues, passed on, to some extent, in the form of development programs.

B – BOSSEMATIÉ FOREST RESERVE, CÔTE D'IVOIRE

Bossematié Forest, near Abengourou in eastern Côte d'Ivoire is a 'forest reserve', meaning that it is under the jurisdiction of SODEFOR (a governmental management entity) and legally unavailable for agricultural use by local people (SODEFOR 1994a,b). Governmental perceptions of ownership (extant since French jurisdiction) conflict with indigenous views on tenure and usufruct. The forest is severely degraded, and efforts are underway to rehabilitate it through planting of various commercial tree species. Logging and agriculture are no longer permitted in Bossematié.

Ehui and Hertel (1989) report Côte d'Ivoire as having the highest deforestation rate in the world (300 000 ha or 6.5% per year, from an original 16 million ha of tropical rain forest). They also report a 4.7 million ha 'Permanent Forestry Domain' and a 731 750 ha 'Rural Forestry Domain' in 1978, which had significantly declined by 1987.

In Côte d'Ivoire, forestry problems are related to agricultural problems. In a 1986 study, Wiersum noted a general decrease in the stability and sustainability of indigenous shifting cultivation systems because of 'the availability of less land per cultivator, lower fallow/cultivation ratios, and often also decreased crop and tree diversity'. He also noted that the change from shifting cultivation to permanent cash-crop cultivation had not resulted in stabilisation of land use, but rather in further intrusions of agricultural land into the forest. Van den Breemer (1989) reports the existence, among the Aouan (near Bossematié), of 'a system of conceptions and rules which, at an unconscious level, directs people towards preservation of the ecological balance'. But, he also notes internal processes of social change with 'devastating influence on the

environment'. (See Fairhead and Leach 1998 for a recent and different view.)

In Bossematié, a German-Ivoirean project is working with the communities surrounding the forest trying to develop alternatives to their traditional agroforestry system of food crops supplemented with hunting and planting of cacao and coffee (Aha Badou *et al*. 1992; SODEFOR 1994a). This project is making significant efforts to encourage the participation of local communities in their planning and activities (in contrast to the national historical bias against farmer participation, e.g., Miracle 1970).

There is considerable local population pressure from in-migration (both Ivoirean and from adjacent countries) and from natural increase. SODEFOR (1994a) estimates the 1991 ethnic composition of the Bossematié population as 62% Agni (indigenous), 15% in-migrants from other Ivoirean areas (Baoule), 21% from Burkina Faso and 2% from Mali. Between 1975 and 1988, SODEFOR found the average rate of population increase in the area to be 4.7% (with increases in some areas as high as 11.2%). Population density ranges between 20 and 50 persons/km^2. Planting of food and tree crops in the Bossematié Forest (both legal and illegal) is coming under some control by SODEFOR. Combining local poverty, uncontrolled in-migration and natural population increase with attempts to rehabilitate and protect forest reserves provides daunting management challenges (cf. van den Breemer 1992).

Many of the following stakeholder categories are comparable to the Indonesian case.

Agni (Autochtones), the ethnic group residing in and near the forest. Our sources suggest that although these people have lived in the area longer

than the others, not even they have long-standing rights in Bossematié Forest (Aha Badou *et al*. 1992). The matrilineal Agni do however have a tradition which includes agroforestry uses of the forest (see van den Breemer 1992, on the nearby and similar Aouan system). They also periodically and traditionally incorporate members of other ethnic groups into their system. This system, besides providing the Agni with labour, serves a broader 'social security' function in the region, providing a subsistence option for the hungry.

Allochtones, Ivoireans from other areas residing in or near the forest. These people move to the forests in times of economic or environmental stress in their home areas, to work for *autochtones* (in/near forests). Some come from other previously forested areas; others from the savanna and desert regions to the North — thus, they have varying levels of indigenous knowledge of forest ecosystems and management.

Allogens, foreigners, in most cases refugees (political and economic) in or near forests. Their role in sustainable forest management is similar to that of the Ivoireans from other areas except that they have fewer rights.[26]

Forest workers — These include loggers who work for contractors (*tacherons*), under big companies/SODEFOR and service professions (including prostitution in an area where HIV positives comprise 15% of the population, van Haaften 1995).

Tacherons — Local contractors who run small-scale logging operations or do other forestry-related work for larger companies.

26 De Bruijn and van Dijk (1995) discuss the difficult subsistence problems in Mali which make this kind of social security system so important.

Company officials — People who work for large logging companies, normally at some distance from the forest, but with considerable voice in its management.

Forestry officials — People who work for the government (Dept. of Forestry, SODEFOR, etc.) who may also be physically distant from the forest.

[*National Citizens* — The role of these people was not investigated in Côte d'Ivoire, but that they have some, perhaps increasing, stake in the nation's Forest Reserves is highly probable.]

[*Environmentalists* — Only a few environmentalists were in evidence in Côte d'Ivoire, but their relevance may be growing, supported by increasing international concern about Côte d'Ivoire's forests.]

C – OLYMPIC NATIONAL FOREST, BUSHLER BAY, WASHINGTON, USA[27]

Bushler Bay, Washington is a community of about 2000 people on the Olympic Peninsula. It houses the headquarters for the US Forest Service office which manages the adjacent Olympic National Forest, a temperate rain forest dominated by Douglas Fir and Hemlock (see Kirk with Franklin 1992, for an ecological description). The community is sharply divided between 'locals' (loggers, fisherfolk, oyster farmers and business people) and 'public employees' (employees of the school, US National Park Service, US Forest Service, Washington State Shellfish Laboratory and Washington State Fish Hatchery; Colfer with Colfer 1978).

27 Colfer did ethnographic research in Bushler Bay, Washington (a pseudonym) between 1972 and 1975, with continued involvement in the community until 1980. She made three brief return visits in 1994, 1995 and 1997.

In recent years, there has been a sharp increase in conflict in the area due to changing policies and ideas on forest management (Lien 1991). Environmental issues (symbolised by concern about the spotted owl and the marbled murrelet) are juxtaposed against the livelihood and way of life of logging communities in the area (Dietrich 1992; Barber *et al*. 1994).

By 1995, the U.S. Forest Service had closed the entire Bushler Bay Ranger District of the Olympic National Forest to logging. The number of loggers in the community had dwindled to such a degree that the remaining small-scale entrepreneurs had to find loggers in other communities on the Peninsula.[28] Log truck drivers complained that they had to drive all over the western half of the State. A thriving logging community in the 1970s, the 1990s characterisation was 'a home for welfare recipients and retired folk'.

Important differences from the previous two examples include clearly defined land rights and a national ideology in support of community participation in forest management (even if rendered somewhat academic by the distant locus of ultimate decision-making).[29] As in Indonesia and Côte d'Ivoire, however, there is a widespread malaise about the future, from the perspectives of timber production, the environment and society.

The following stakeholders play important roles there.[30]

Loggers — This term encompasses both the men engaged in cutting and transporting logs and their families. Indeed, it is a shorthand for a

28 At the small scale logging operation observed in 1995 (on private lands), Colfer interviewed five workers, only one of whom was from Bushler Bay (the boss).

29 See Smith and Steel's (1995) analysis of decision-making, participation and power in Pacific Northwest Coast resource-dependent communities (USA).

30 Dietrich's (1992) popular book selects 'cutters', 'biologists, 'truckers', 'environmentalists', 'foresters' and 'candidates', writing a chapter on each, to reflect the controversies enveloping the Pacific Northwest forests.

whole way of life in which logging is closely associated with manhood and independence (Colfer 1977). Formal education is not highly valued and 'paper pushers' are granted little respect.[31] Logger families are more likely to have long-standing roots in the community, close kin ties with other community members, and own land (and forest) than are the other stakeholders. They are also likely to make use of the forest as a supplementary food source (hunting, fishing, gathering mushrooms, berries and other non timber forest products).

Small-scale entrepreneurs — These people run the businesses that support the logging industry and often include ex-loggers who have 'made good'. They may also own small logging companies that bid on logging contracts with private individuals and/or (previously) the US Forest Service.

Environmentalists — In the Bushler Bay context, these people can be described as part of the 'Back to the Earth' movement. Many are well educated from urban backgrounds seeking a more peaceful life, more closely attuned to nature. They, like logger families, are likely to rely heavily on the forest for food supplements. They are often in open conflict with logger families and the US Forest Service over issues of natural resource management (cf. Lien 1991). Distant environmentalists also have an impact in Bushler Bay, through a variety of means (votes, letter-writing, demonstrations, fund-raising).[32]

Government employees — These people are primarily employees of the US Forest Service and US Park Service. Bushler Bay, Washington is sur-

31 In a 1998 visit to nearby Oregon, the log truck driver wearing a T-shirt emblazoned with 'If you ain't a logger, you ain't shit' succinctly summarized this perspective.

32 Dennis Dykstra (personal communication, July 1995) originally pointed out the importance of *distant* environmentalists as stakeholders. He argues that although their *dependency* on the forest is significantly less than that of people living in and around the forest, their impact on management may be greater (see also Smith and Steel 1995).

rounded by government-managed National Forest and National Park. Public employees with these organisations and their families — who made up about half of the population in the 1970s — tend to come from other areas, often having joined the Forest or Park Service in search of an outdoor lifestyle. They find, instead, that their lives are full of the 'paper shuffling' disdained by their neighbours. Most are middle class, upwardly mobile people, who value education, propriety, moderation in all things. They tend to look down on local people as 'lower class', uneducated and promiscuous (Colfer with Colfer 1978; Colfer 1977). Now, they also see loggers as responsible for environmental degradation.

Politicians — These people participate in decision-making at the state and national levels. They represent one avenue by which their constituencies can make their preferences known. They are continually bombarded by environmentalists, on the one hand, and the timber industry on the other, regarding contexts like Bushler Bay.

National citizens — These people have an indirect, but real, voice in forest management. People from all over the United States, by voting or by writing letters to their elected representatives (politicians), can influence the management of any given National Forest or National Park.

Table 1. **Stakeholders-Bushler Bay, Olympic National Forest, Washington, USA**
[Reconstructed from 1970–1997]

Dimensions	Loggers	Sm. Scale Entrepren.	Environmentalists	Gov't Employees	Politicians	Consumers	National Citizens
Proximity	1	1	1	1	3	3	var.
Pre-Existing Rights	2	2	3	2	3	3	3
Dependency	2	2	2	2	3	var.	3
Poverty	2	2	2	2	2	var.	var.
Indigeneous Knowledge	1	2	2	3	3	3	3
Culture/Forest Integration	1	1	1	3	3	var.	3
Power Deficit	1	2	2	3	3	var.	var.
MEAN VALUE	**1.43**	**1.71**	**1.86**	**2.29**	**2.86**	**3.00**	**3.00**

1 = high; 2 = medium; 3 = low
The matrix was compiled by Colfer, based on three years of ethnographic research between 1973 and 1976, with several subsequent visits, the latest in 1997.

Table 2. **Stakeholders-East Kalimantan, Indonesia (Borneo)**
[March 1995]

Dimensions	Dayak	Kutai	Transmigrant	Forest Worker	Sm. Scale Entrepren.	Company Official	Environmentalist	Forestry Official	National Citizen	Consumer
Proximity	1	1	1	1	2	2	3	3	3	3
Pre-Existing Rights	1	1	var.	3	var.	3	3	3	3	3
Dependency	1	1	1	1	1	1	1	2	2	3
Poverty	1	1	1	1	2	2	2	2	var.	var.
Indigeneous Knowledge	1	1	var.	var.	2	3	3	3	3	3
Culture/Forest Integration	1	1	var.	var.	2	3	3	2	3	3
Power Deficit	1	1	1	1	2	3	3	3	var.	var.
MEAN VALUE	**1.00**	**1.00**	**1.00**	**1.40**	**1.83**	**2.43**	**2.57**	**2.57**	**2.80**	**3.00**

1 = high; 2 = medium; 3 = low
The matrix was compiled by Colfer, based on one year of ethnographic research (1979–1980), one interdisciplinary test of C&I (1995), and numerous return visits through 1997.

Table 3. **Stakeholders – Bossematié, Côte d'Ivoire**
[June 1995]

Dimensions	*Agni*	Forest Workers	Allochtones *(Ivoireans)*	*Allogens (Foreigners)*	Tacherons *(Contractors)*	Forestry Officials	[National Citizens]	Company Officials	[Environmentalist]	Consumers
Proximity	1	1	1	1	2	3	3	3	3	3
Pre-Existing Rights	1	var.	2	3	var.	2	2	3	3	3
Dependency	1	1	1	1	2	1	3	1	3	3
Indigeneous Knowledge	1	2	2	2	2	3	3	3	3	3
Culture/Forest Integration	1	2	2	2	var.	3	2	3	2	3
Power Deficit	2	1	1	1	2	3	var.	3	3	var.
MEAN VALUE	**1.17**	**1.40**	**1.50**	**1.67**	**2.00**	**2.50**	**2.60**	**2.67**	**2.83**	**3.00**

1 = high; 2 = medium; 3 = low

The matrix was compiled by Colfer, based on an interdisciplinary test of C&I in June, 1995.
Her estimates were critiqued by Ahui Anvo, Heleen van Haaften, Charles Huttel, Jean Claude Koffi Konan, Patrice Mengin-Lecreulx and Anatole N'Guessan.

Table 4. **Stakeholders – Brazil**
[November 1995]

Dimensions	Rubber tappers	Indians	Brazil nut harvesters	River dwellers	Local folks	Workers	Colonists	Gold miners	Academic institutions	Governments	NGOs	Unions	Logging contractors	Logging companies	Ranchers	International buyers	Citizens/Consumers
Proximity	1.00	1.00	1.00	1.29	1.14	1.58	1.45	1.00	1.83	1.56	1.63	1.85	2.17	1.67	1.50	3.00	2.71
Pre-Existing Rights	1.67	2.00	2.33	1.14	1.86	2.13	2.00	3.00	2.17	2.15	2.56	2.46	2.17	2.10	2.00	3.00	3.00
Dependency	1.00	1.00	1.00	1.57	1.43	1.33	1.82	1.50	1.83	1.90	2.50	2.38	2.00	1.50	2.88	1.50	2.65
Indigeneous Knowledge	1.00	1.00	1.00	1.43	1.86	2.22	2.09	3.00	2.17	1.91	2.20	2.23	2.67	2.90	2.75	3.00	2.88
Culture/Forest Integration	1.00	1.00	1.00	1.29	1.57	2.25	2.73	2.00	1.67	2.29	1.92	2.15	2.67	2.90	2.88	3.00	2.88
Power Deficit	1.17	1.17	1.00	1.57	1.43	1.25	1.36	1.00	1.83	2.74	2.13	2.31	2.17	2.80	2.88	2.50	2.40
MEAN VALUE	**1.14**	**1.19**	**1.22**	**1.38**	**1.55**	**1.79**	**1.91**	**1.92**	**1.92**	**2.09**	**2.16**	**2.23**	**2.31**	**2.31**	**2.48**	**2.67**	**2.75**

1 = high; 2 = medium; 3 = low

This matrix was developed by averaging the responses of a group of experts brought together in Belem, from all over Brazil, to evaluate the work of a CIFOR team testing criteria and indicators, in November 1995

Table 5. **Stakeholders – Trinidad**
[Early 1998]

Dimensions	Private License Holders	Forest Workers	Sawmillers	Squatters	Hunters	Forestry Officials	Tanteak (company)	Conservationists	Ecotourism	Consumers	National Citizens
Proximity	1.33	1.44	1.67	1.22	1.78	1.89	1.67	2.11	1.89	2.56	2.44
Pre-Existing Rights	1.89	2.11	1.67	1.78	1.56	1.89	1.78	2.11	2.89	2.44	2.44
Dependency	1.22	1.33	1.11	1.56	1.89	1.44	1.33	2.33	2.11	2.33	2.56
Indigeneous Knowledge	1.44	1.67	1.78	2.44	1.89	1.56	2.33	2.00	2.22	2.67	2.78
Culture/Forest Integration	1.56	1.89	1.89	2.11	2.00	1.78	2.44	2.22	2.44	2.56	2.89
Power Deficit	1.67	1.67	2.00	1.33	1.67	2.78	2.56	2.22	1.89	2.33	2.44
MEAN VALUE	**1.52**	**1.69**	**1.69**	**1.74**	**1.80**	**1.89**	**2.02**	**2.17**	**2.24**	**2.48**	**2.59**

1 = high; 2 = medium; 3 = low
The matrix was compiled by Mario Günter, based on input from experts, in Trinidad, during 1998.

Table 6. **Stakeholders – Boise National Forest, Boise, Idaho, USA**
[June 1998]

Dimensions	Logging comm.	NTFP Gatherers	Ranching comm.	Hunters/Fishers	Off-Roaders	Conservationists	USFS	Boise-Cascade	Fish/Game Dept.	Idaho D. of Lands
Proximity	1	2	1	2	1	2	2	2	2	2
Pre-Existing Rights	1	1	1	2	2	3	3	3	3	3
Dependency	1	2	2	2	3	2	2	1	2	2
Indigeneous Knowledge	1	1	1	1	2	3	3	3	3	3
Culture/Forest Integration	1	1	2	1	2	1	2	3	3	3
Power Deficit	1	1	2	2	2	2	3	3	3	3
Colfer's	**1.00**	**1.33**	**1.50**	**1.67**	**2.00**	**2.17**	**2.50**	**2.50**	**2.67**	**2.67**
Holt's	**1.00**	**1.33**	**1.17**	**1.67**	**2.17**	**2.33**	**2.50**	**2.50**	**2.50**	**2.67**
Livingston's	**1.00**	**1.20**	**1.33**	**1.60**	**2.00**	**2.17**	**2.50**	**2.50**	**2.67**	**2.40**

1 = high; 2 = medium; 3 = low

Colfer developed this in June 1998. Ladd Livingston added another important stakeholder, the non-industrial, private forest owners (NIPFOs) and assigned them an average score of 1.60. This group was not included in the Boise test of C&I. Livingston works for the Idaho Department of Lands in Coeur d'Alene, Idaho; and Brad Holt works for Boise Cascade Corporation in Boise, Idaho.

Table 7. **Stakeholders – Porto de Moz and Bom Jesus, Brazil**
[August 1998]

Dimensions	Colonist Male	Colonist Female	Cattle Rancher	Logging Co. Owner	Logger Trucker	IBAMA Agents	INCRA Agents
Proximity	1	1	3	3	3	3	3
Pre-Existing Rights	1	1	2	3	3	3	3
Dependency	1	1	2	3	3	3	3
Poverty	2	2	3	3	3	3	3
Indigeneous Knowledge	1	1	2	3	3	3	3
Culture/Forest Integration	2	3	3	3	3	3	3
Power Deficit	2	2	3	3	3	3	3
MEAN VALUE	**1.43**	**1.57**	**2.57**	**3.00**	**3.00**	**3.00**	**3.00**

1 = high; 2 = medium; 3 = low

This matrix was compiled by Noemi Miyasaka Porro and Roberto Porro, based on their own expert judgement, between July and September 1998.

Who Counts Most? Assessing Human Well-Being in Sustainable Forest Management presents a tool, 'the Who Counts Matrix', for differentiating 'forest actors', or people whose well-being and forest management are intimately intertwined, from other stakeholders. The authors argue for focusing formal attention on forest actors in efforts to develop sustainable forest management. They suggest seven dimensions by which forest actors can be differentiated from other stakeholders, and a simple scoring technique for use by formal managers in determining whose well-being must form an integral part of sustainable forest management in a given locale. Building on the work carried out by the Center for International Forestry Research (CIFOR) on criteria and indicators, they present three illustrative sets of stakeholders, from Indonesia, Côte d'Ivoire and the United States, and Who Counts Matrices from seven trials, in an appendix.