

5 Forests and sustainability

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Abstract: International forest governance has developed and evolved as concern for sustaining forests grew beyond the local level, culminating thus far in numerous institutions at the global level, each of which claims some mandate over various aspects of forest or forest-related policy. This situation can be understood as a result of the evolution of conceptualisations of what sustaining all forest values entails, which itself is the result, at least in part, of both shifting international interests and the relative dominance of various forest values in the different institutions. This chapter explores conceptualisations of forest sustainability as manifested in some of the key global instruments existing today and proposes reasons why these have not yet succeeded in achieving the overall goal of sustaining the world's forests.

Keywords: Forest, sustainability, sustainable forest management.



5.1 Forest sustainability: an evolution

Forest policymaking at the global level does not take place within an engineered structure or a designed architecture. Global forest governance is, rather, the fragmented product of a disjointed evolution, with increasing numbers of global intergovernmental entities and instruments, both binding and non-binding, having authority over specific aspects of forests. Various, sometimes conflicting, views and interests with regard to forest sustainability, as well as shifts in interests and in the dominance of certain concerns over others, have directly influenced the creation and development of global instruments with a mandate on forest policy. Both the piecemeal nature of international forest governance and the reasons for its evolution in this way have implications for its effectiveness, the issue that implicitly underlies this report.

The relationship between sustainability and international forest governance dates back to the first recognition of forest deterioration and loss of forest goods and services upon which human societies depend, and to recognition of the need to take measures to sustain forests (Mather 1997). From time immemorial, human societies have manipulated the

structure and composition of forests, in response to the same drivers that led to the domestication of livestock and food plants (Rackham 2001). In many forest communities, the effects of the over-harvesting of forest goods and unreliable natural regeneration have long been appreciated, for example when there are noticeable reductions in populations of game animals or in the size or number of tree fruits and nuts (Lamb and Whitmore 2002). Forest degradation and deforestation have been recognised for at least 2500 years in Europe and even longer in Egypt and China. A vast literature from ancient civilisations about denuded hills losing topsoil after forest degradation and deforestation testifies to ancient awareness of basic principles of ecosystem sustainability, even if such awareness may not have prevented ecological problems. Some societies were able to recover their forests, and others were not. The Fertile Crescent was historically just that; today it is mainly desert (Diamond 1999: 410–411; Geist 2005: 5; Meiggs 1982).

Numerous communities in the world are credited historically with having instituted forest management systems, as recorded in oral and written traditions, that recognised and sustained natural forests, woodlands and trees as providers of goods and services. Many traditional systems of forest management, such as shifting agriculture, have depended on being able

to move centres of exploitation periodically to allow forest or particular species to regenerate. For example, researchers in Malawi found that over 90% of the Miombo woodland had been cleared during the previous two centuries by indigenous people engaged in shifting agriculture (Young and Brown 1962). Such ‘shifting’ forest management becomes less feasible as the available space diminishes (Ranjan and Upadhyay 1999).

In some cases, however, awareness of potential shortfalls in supply of forest goods and services led to the development of rules for allocating harvests such that supplies could be sustained (Bray et al. 2003; CBD Secretariat 2009; Clay 2001; Colchester 1994; Rietbergen 1993; Sunderlin et al. 2005). The English Charter of the Forest 1217 of Henry III complemented the Magna Carta of 1215 (Osmaston 1968:310–22). Successive waves of local regulation responded to increased threat of snow avalanches due to forest loss in the Swiss Alpine village of Andermatt in the 14th century (Mather and Fairbairn 2000).

The modern era of concern about forest sustainability beyond a relatively local scale can be traced to a timber supply crisis in Europe 300 years ago. This crisis was caused by factors such as overcutting for fuel (including for smelting mineral ores and glass-making), the use of timber for construction and in mines, livestock grazing which prevented regeneration, and forest loss during the Thirty Years’ War. Forest-dwelling people lost income, suffered from floods, soil erosion and avalanches, and lacked leaf litter for winter bedding, fodder and soil fertility. The crisis led to the pursuit of ‘scientific forestry’, particularly in France, Germany and Switzerland. Although scientific forestry was concerned primarily with timber demand and relied heavily on the quantification of predictable and sustainable timber yields, its principles took into account limitations in the capacity of forests to regenerate, and there was a substantial ecological component (Maryudi 2005; Hardcastle et al. 1998; Lowood 1990; Klose 1985; Knuchel 1953; also see Oosthoek 2000; Vierenkle 1767; and von Carlowitz 1713). The scientific approach was subsequently exported to many countries outside Europe (Barton 2002). However, the much greater ecological complexity of certain forests elsewhere, combined with limited ecological knowledge and, later, pressure to increase the return on capital from the forest resource, meant that in many cases it was much less effective in sustaining forests than it was in Europe.

Return on capital is the focus of ‘maximum yield’ forestry, which came to dominate in influential countries, such as the US, where problems associated with forest loss were not as visible as they were in Europe. Under this approach, timber yield is maximised in the short term for strategic or investment purposes. It is driven by economics, in particular by competition for

investment funds and/or the requirement for a high rate of return on capital (Brown 1999; Hardcastle et al. 1998, 1999; Hardcastle and Davenport 2010). Maximising financial returns from forests leads to a predominance of intensive, short-rotation crops based on high-yielding monocultures grown as cheaply as possible (Perley 2003). Maximum yield forestry, in both plantations and natural forests, came to dominate in aid and development plans in some parts of the world after the Second World War. It lies at the root of many recent criticisms of forest management generally, particularly in tropical countries (Banuri and Marglin 1993; Innes 1993; Lansky 1992).

The first global intergovernmental body to address forest sustainability was the Food and Agriculture Organization of the United Nations (FAO), which was formed in 1945 (Kone et al. 2004). The FAO Forestry Department had a specifically technical focus on sustaining and replenishing the world’s supply of timber in the aftermath of the Second World War. Despite good intentions, however, FAO was unable to halt the increasing loss of forest at the global level. There were many reasons for this but two were particularly significant. First, FAO’s early efforts neglected the ecological requirements of the forests. This was due at least in part to its focus at the time on plantations of exotic timber species, given the dominance of the maximum yield paradigm in many influential countries and FAO’s role as a technical organisation under the direction of its member countries (FAO 1945). Indeed, FAO’s focus on plantations can still be seen in the highly influential FAO definition of forest, which includes monoculture tree plantations (Lange 2004; also see Sasaki and Putz 2007). Second, FAO was given no mandate to address the causes of deforestation arising outside the timber sector, such as the conversion of forestland for agriculture (*ibid.*).

In the US, however, in the 1950s and 1960s, competition for land increased, particularly in areas of population growth, causing the ‘maximum yield’ paradigm to be superseded by a ‘multiple use’ approach aimed at the sustained provision of an optimal mix of dynamically varying products and services for humans (McArdle 1960; US Government 1960; Wiersum 1995).

With continuing forest loss in other parts of the world, particularly the loss of primary forest values, new concepts of forest sustainability such as ‘ecosystem-based forest management’, ‘new forestry’, and ‘close-to-nature forestry’ emerged in the 1980s and 1990s. These based pursuit of sustainability of the forest resource on sound ecological models which included consideration of ecosystem complexity, the adaptability and accountability of management practices, the human role in achieving ecosystem sustainability, and human needs within the constraints of ecological objectives (Christensen et al. 1996).

Most of the international and global institutions that address forest-related issues today were influenced, however, by the report of the Brundtland Commission (WCED 1987), which interpreted sustainability through the lens of development, expressed in the concept of ‘sustainable development’: meeting the needs of the present without compromising the ability of future generations to meet their own needs. This definition rests on what has come to be called the three pillars of sustainability – social, economic and environmental needs and values.

Sustainable development became the theme of the 1992 United Nations Conference on Environment and Development (UNCED) and a catchphrase in multitudes of processes that stemmed from it. The term clearly implies that the environment is subordinate to human needs, as does ‘conservation’, a term used in earlier environment-related negotiations. Reference to sustainable development was intended, however, to help build a perception that environmental concerns are part and parcel of human welfare and of improving human welfare through development and thus to increase global acceptance of the need for environmental sustainability.

The goal of sustainable forest management (SFM), which became the guiding principle of forestry today, builds on the three pillars of sustainable development. Probably the most often-cited definition of SFM is that formulated by the Ministerial Conference for the Protection of Forests in Europe in 1993 and later adopted by FAO. It is:

The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems (MCPFE 1993).

While this definition itself leaves open many questions of how SFM should be achieved, the much more recent Non-legally Binding Instrument on All Types of Forests, negotiated by the United Nations Forum on Forests in 2007, merely calls SFM “a dynamic and evolving concept aim[ing] to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations”, a much weaker text. Given the ambiguity built into this definition of SFM, it is unsurprising that Global Witness (2009: 4) observes that “many operations claiming to practice SFM fail to achieve even sustained timber yields, let alone sustainability with regard to other non-timber values such as biodiversity”.

Ultimately, SFM must be put into practice on the ground by forest users and managers, depending on their own priorities in different contexts. Various

conflicting interests underlie differences in the interpretation of SFM (Schanz 2004) and it is possible that very influential sub-state actors have an interest in paying lip-service to the ideal of practising SFM without actually halting unsustainable practices on the ground. Indeed, debates over SFM during the negotiation of the NLBI indicated that some states were interested in omitting definitions of SFM altogether, in order to allow more leeway for their own interpretations that perhaps have little to do with sustaining forests (Davenport et al. 2007).

5.2 Contrasting intergovernmental approaches to sustaining forests

Given existing definitional weaknesses of SFM, it is little wonder that different conceptualisations of sustainability have been formulated within two significant binding regime frameworks of relevance to forests: the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Global policy-making on biodiversity conservation has centred on an ‘ecosystem approach’, not as a scientific term but as negotiated politically, to address sustainability in all ecosystems, including forests.

Forests are not mentioned specifically in the text of the CBD. There are, however, forest-relevant sections in the text and a CBD Forest Programme of Work; the latter was adopted in 1998 and expanded in 2002 to include both research and practical action (CBD Secretariat 2010).

Both the CBD Conference of the Parties (COP) and FAO have addressed the relationship between SFM and the ecosystem approach by generating knowledge on it through research (e.g. Wilkie et al. 2003) and, in the case of the CBD COP, formally recognising that:

SFM, as developed within the framework established by the Rio Forest Principles, can be considered as a means of applying the ecosystem approach to forests.

Decision VII/11, paragraph 7, 2004.

An international coalition of NGOs also recognised that:

There has been a widespread movement in Canada towards adopting sustainable forest management in the broad sense, bringing consideration of other values besides timber yields into forest management planning. For example, emulation of natural disturbances has been incorporated into public policy in most jurisdictions as an approach intended to fos-

ter ecosystem-based management. This approach is compatible with the Ecosystem Approach enshrined in the CBD/POW.

(Global Forest Coalition 2008: 17)

Forest management practices have been addressed in a slightly different way within the global climate change governance structure. Specifically, negotiations stemming from the 2007 Bali Action Plan have taken up consideration of “[p]olicy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries [(REDD)]; and the role of conservation, sustainable management of forests [(SMF)] and enhancement of forest carbon stocks in developing countries” (UNFCCC 2008: 3). The potential inclusion in REDD of the role of conservation, SMF and the enhancement of forest carbon stocks in developing countries has been termed ‘REDD+’.

Braatz (2009) notes that SMF refers only to “the application of forest management practices primarily for sustaining carbon stocks over time”. Blaser and Thompson (2010) favour including the wider concept of SFM, as applied in production forests, in REDD+ because unsustainable forest management degrades living biomass and reduces the carbon stocks in forests, while natural forest that is managed sustainably for timber and non-wood products maintains all major functions related to the production of goods and services, including the maintenance of carbon stocks, over time.

These battles over labels have almost no resonance outside convention halls or practical significance with regard to sustaining forests themselves. Politically, however, it matters which of these instruments – with their various conceptualisations of sustainability – guides forest-related activities and projects because it affects the distribution of donor funds. Far more money is being pledged to support forest-related activities that address climate change than to support any other forest values – although, as of mid 2010, only a few of these pledges have been converted into money flows (Broder and Rosenthal 2010; CFA 2010; Zwick 2010). Nonetheless, although climate-related funding for forest activities may enhance the sustainability of other forest values, these are considered only ‘co-benefits’, or side benefits, of activities to mitigate or adapt to climate change (Angelsen et al. 2009). Conflict between maximising the carbon sequestration potential of forests and other forest values is becoming increasingly heated (Humphreys 2008; White 2010). Within the UNFCCC, REDD will hinge on resolving these conflicts. Meanwhile the funding mechanisms for afforestation and reforestation in developing countries that already exist under the UNFCCC’s Kyoto Protocol have distributed very few funds for forest-related endeavours (Davenport et al. 2009).

The potential effects of REDD funding on the economic and social pillars of sustainability are of particular concern. Noting cases of violations of the human rights of indigenous individuals who refuse to leave territories proposed as carbon sinks, the United Nations Permanent Forum on Indigenous Issues has argued that proposed REDD mechanisms will lead to the further exclusion of indigenous people from their forests and to the criminalisation of their traditional livelihoods (UNPFII 2008). ‘Land grabs’ for carbon are already occurring in many countries without consultation with local forest users (Vidal 2008). If traditional, legal activities are curtailed by measures to maintain or enhance carbon stocks, it can be argued that there is a moral obligation to provide options for other livelihoods of at least equivalent value.

While free prior and informed consent (FPIC) is now advocated by a number of entities promoting REDD, there can be no FPIC without an explanation of REDD in terms that are meaningful to stakeholders. REDD deals may not be explicit about the time periods over which they will run and the beneficiaries/sellers of carbon credits may not understand the notion of permanence associated with temporary payments and time-limited contracts (Wittman and Caron 2009). Insurance companies involved in carbon trading need to better explain the legal and financial consequences of such trading in cases where there are either accidental or deliberate losses of carbon stocks; those explanations that exist are often not available in wording suitable for local communities and therefore FPIC should not be claimed (although some countries do assert that FPIC has been obtained) (de Chavez and Tauli-Corpuz 2008; Griffiths 2007).

Even putting aside the questions that potential REDD funding raises about power, influence and the prioritisation of some forest values over others, forest sustainability – whether denoted as SFM or the ecosystem approach – has not been well served by any of the fully established international policy instruments relevant to forests. This is evident from the poor forest practices that still dominate in many regions. Indeed, forest practices in some former colonial territories are actually worse today than they were before independence, due to unfortunate combinations of factors (see, for example, Kowero et al. 2001).

5.2.1 Differing interests and forest sustainability

The inability to sustain forest or to restore it when it is lost is related to causes of deforestation and forest degradation themselves. Forests are vulnerable to the effects of numerous drivers, usually arising from competition for forest resources or for other resources associated with the land on which the forest sits. The Intergovernmental Panel on Forests (which existed from 1995 to 1997) distinguished between direct causes (i.e. forest conversion or deliberate modification) and underlying causes (i.e. a series of causal events that result in an observed effect), stressing that the links are complex and vary greatly from country to country. Most of these drivers result from human actions and interactions that embody differing interests in forest lands, combined in many cases with significant differences in power.

The desire to sustain a forest depends on whether other interests exist, such as in converting forestland for cultivation or another purpose or in obtaining a short-term benefit from the unsustainable harvesting of forest products in the context of high discount rates, as might be associated with imminent threats to survival. Wear et al. (1998: 350) point out that “in most cases it is not the value of forests that determines whether land becomes forested [or deforested]; rather, it is the relative value of non-forest uses of land”. Even a common interest in maintaining a forest does not obviate tensions, as there are numerous, frequently incompatible, reasons for such interest and no guarantee that they can all be met. Tensions thus exist across a broad spectrum of forest issues, between various interest groups. Indeed, in some areas, links between forests and open, violent conflict are increasingly recognised (e.g. IUCN 2008; Wallace and Conca forthcoming).

In some cases, poverty at its most fundamental level may necessitate the conversion of forest lands for food production, leading to a broader question of what must be sustained and what that requires. Given widening gaps between rich and poor and increasingly restrictive border controls that hinder emigration from desperate conditions, it is unrealistic to expect that all extant forests will be sustained. Without significant effort to counter it, many forests will inevitably be converted to agricultural land, regardless of the sustainability of such action and regardless of whether such conversion will ultimately lead to global ecological disaster.

The sustainability of forests depends not only on awareness of the need for forests or the myriad goods and services they provide but also on how forest values can be safeguarded in a world where private actors try to maximise their self-interests. Pursuit of self-interest conflicts with the pursuit of

common goals, as has been demonstrated formally (Rapoport and Channah 1965). The pursuit of private gains rather than the common good may detrimentally affect maintenance of collective goods. This is true with regard to true public goods such as free trade, but even more so with regard to common goods that are depletable (Davenport 2006), as is the case with all environmental goods and services and those provided by forests. There are abundant empirical examples of this phenomenon associated with forests: over-exploitation for timber or other forest products; clearance for industrial development, urbanisation or other land uses such as palm, soy and cattle production (Barraclough and Ghimire 2000; Grainger 2009); and destruction by mining. Applied to forest management, then, sustainability might be defined as maximising the yield of the private goods and services that forests provide only insofar as this does not lead to the degradation of the collective goods and services provided by those forests (Humphreys 2006).

Forests have been called the “common heritage of mankind” (Kottary 1992, quoted in Davenport 2006:138) because of the global values they encompass. Yet unlike true global commons, forests lie within territory claimed by sovereign states. This means that states themselves traditionally have the power to determine, within their borders, what forest practices are legal and whether they will be enforced.

Superficially, sustainability and legality may seem congruent, but this may not always be the case. Sustainability is a normative concept that must be defined and concretised by the legislator, a process that may not adequately capture its full meaning. Given inherent conflicts around the concept, such as those between conservation and preservation, sustainability between generations and equity within one generation, and the common good versus private interests, policies and legal frameworks that do not foster sustainability should not be dismissed simply as demonstrating a lack of awareness or an arrogant lack of concern for the multiple values of forests.

Even where there is ostensible agreement on the need for sustainable forest practices, as well as on what these are and the need to enforce them, legal frameworks may have the effect of marginalising or criminalising the activities of local communities. For example, forest sustainability may be addressed through the demarcation of legally protected areas with restrictions on human access, thus making the activities of locals communities ‘illegal’ (for examples in India and Nepal see Blaikie et al. 2007; for examples in Africa see Brockington 2002 and Davies and Brown 2007). As already noted, this problem may resurface if forests are put aside as carbon sinks under the guise of climate change mitigation.

Legal frameworks that define acceptable and sus-

tainable practices based on industrial forest management models also sometimes criminalise traditional communities. In Brazil, the industrial model, with its many legal requirements and heavy regulations governing large-scale forest industry, has also been used as the basis for promoting community forestry, even though its technical and organisational requirements are often beyond the capacity of communities (Benatti et al. 2003). Hajjar et al. (forthcoming) report cases in which traditional communities are hindered from practising family or community forestry by a restricted interpretation of legality – if they are unable to obtain legal management plans, selling wood from lands that they manage using traditional practices and low-impact manual labour is considered illegal. Complicated bureaucracy and the high costs involved in obtaining management permits dampen the motivation to take the necessary steps for legality; this is exacerbated by mistrust and misunderstanding between the government and traditional communities and a lack of knowledge within government of the extractivist lifestyle necessary for survival in the forest. Traditional communities and the legal authorities have diverging definitions of good forest management, resulting, in a few cases, in the criminalisation of what may be highly sustainable activities.

Problems arising from domestic legal interpretations of sustainability are often exacerbated by other issues related to governance. In many countries, for example, forest management systems have become outdated with respect to demographic trends and changes in the understanding of forest values. In some developing countries, rural populations have quadrupled in the last 50 years, yet forest management systems still seek (at least on paper) to maximise timber production. There may be a lack of capacity or political will to revise and adapt forest management systems to changing rural demographics and urban demands, or indeed to address the need to sustain forests. This mismatch leads to ineffective forest management policies and procedures, which often also lead to lower production, with implications for livelihoods and human survival (Westoby 1979).

Forest management concepts and systems depend on a socio-economic environment in which the rule of law is recognised and upheld impartially and equitably. Corruption exists in all parts of the world, its severity dependent on the extent to which private interests are privileged or are able to capture particularistic benefits for themselves at the expense of the public interest (see, for example, Howlett and Rayner 1995 on clientelistic forest policy networks). Corruption is particularly problematic where feudal patron-client relations prevail, as in some developing countries. Bribery, in which business relations include gift-giving to induce favourable decisions

or permission, may be the norm, possibly based on long-standing cultural rituals (Robbins 2000). In many countries “[i]t is common – indeed it is often necessary in order to stay in business – to bribe enforcement officers and customs officials” (Clapp and Dauvergne 2005:170). National and sub-national forest policies, forest product processing strategies, laws and regulations, forest management manuals, communications systems and training guides (often developed by non-national technical experts hired by donor agencies) may sit unused, in part because feudal patron-client relationships stultify objective technical approaches to forest management (Bryant and Bailey 1997; Ross 2001).

It is common that natural forests in public ownership have complex arrays of resource access taxes which are irrationally low, set arbitrarily, rarely indexed to inflation or currency movements, applied according to political criteria, minimised through bribery or improperly negotiated foreign investment arrangements, under-invoiced, rarely collected in full, or not penalised if paid late or under-paid (Grut et al. 1991). In practice, such tax arrangements may be intended to open under-the-table negotiations between politicians, government agencies and potential harvesters about who will pay how much to whom (Bulkan and Palmer 2008a, 2008b). This is far removed from recommendations for tax regimes that would help sustain forest resources and which would 1) cover the full cost of administration and field management of resources, including protection against incorrect and illegal activities (Troup 1939) and 2) compensate for the ‘nature’s bounty’ gained from felling a natural forest with a standing volume accumulated over a very long period which cannot be recovered economically in subsequent rotations or felling cycles. In other words, nature’s bounty should be taxed as a wasting asset like minable minerals, rather than as a renewable resource, while the products from subsequent managed rotations are taxed according to the costs of management (Penna 1999).

Current incompatibilities between government policies and legal frameworks and forest sustainability might be addressed by involving all stakeholders in decisions affecting forest sustainability. Transparent debate can lead to effective consensus, at least at the local level, particularly when actions beneficial to sustainability are supported by cost-benefit analyses that include the internalisation of historically externalised costs and show that benefits accrue to all (or at least the most powerful) actors. For example, a calculation that it is cheaper to constrain land uses in New York State water catchments than to build water-filtration facilities makes stakeholder consensus less difficult (Bulkan 2009).

Problems arise when there is a lack of win-win options. In such cases, one or more stakeholders may dominate, imposing decisions that are not mutually

acceptable and that favour their own interests over the interests of others or the common good. This may lead disgruntled marginalised stakeholders to seek gain, such as by harvesting timber, when and where they can. The alienation experienced by forest stakeholders is often a key reason for high deforestation and forest degradation rates. Although deforestation would not necessarily cease if all stakeholders had equal decision-making power, it is frequently an outcome of power disparity.

5.2.2 Power, money and sustainability

The effects of competing interests in forests depend on the relative power of the actors: that is, the imbalance of resources between the various actors who vie for use of forests. Asymmetries in wealth, economic status or other forms of power influence how forest lands are used and affect perceptions of sustainability and the prospects for its achievement. Historically, material benefits from forest lands have mainly been limited to profits from timber production or the conversion of forest land to other uses (such as agriculture, industrial development or urbanisation). Those who stand to benefit from deforestation, such as the mining industry, also frequently hold more economic, and thus political, power than those who have more interest in forest sustainability. To the extent that realising private gains may conflict with the achievement of a common good, the greater power of actors seeking private gains may detrimentally affect the maintenance of collective goods.

The consent of government is necessary before forest businesses can legally operate, and in the world system of state sovereignty it is the government of a state that is ultimately responsible for protecting and upholding the common good within its territory. However, the economic power that business can bring to bear in its dealings with government may provide an opportunity to wield political influence, particularly in situations of poverty or great economic disparity. Businesses, of course, seek private gain, in the form of profit. The corporate drive for expansion and profit and the resistance of many businesses to regulation have combined to drive logging-led deforestation in many countries in the Asia-Pacific (Dauvergne 1997, 1998, 2001). In most cases, businesses have more power than local community groups whose interests are often more aligned with preservation of the multitude of forest values.

Sears et al. (2001) argue that although the timber industry has been targeted by the international forest regime, it has proved adept at avoiding pressure to balance the quest for short-term profits with the long-term requirements of SFM. Businesses whose profit-making activities depend less on sustaining

forests than on actively destroying them in order to release land for the production of soya, cattle or oil palm or for the extraction of minerals face even fewer controls, especially when their activities are viewed favourably by national political elites (Humphreys 2006).

The power of the market has stirred the creation of certification schemes with the purpose of using the timber market as a source of funding for sustaining non-timber values in timber-producing forests. This has several limitations, however. For example, there is only limited consumer willingness to pay a premium in order to preserve wider forest values, and even then only in certain, primarily developed, countries. Attempts to reform forest management practices in forests used for timber production through market-related instruments such as the voluntary, independent, third-party certification of forest management (see below) promise some success if market access is sustained or enhanced. Schemes for the verification of legal origin and law compliance, such as the recent amendment to the Lacey Act in the US and new illegal timber regulations in the EU (Black 2010; Brack 2007, 2010) are also having an effect on reducing the amount of illegally harvested timber in the international market (Lawson and MacFaul 2010). However, timber-related market instruments have little role in sustaining forests that contain no commercially valuable timber because they cannot address the primary source of degradation and forest loss in many tropical countries – the use of wood for fuel – nor the most significant causes of deforestation elsewhere which come from outside the forest sector, such as the more economically powerful mining sector.

Funding for sustaining forests can also come in the form of direct payments for forest goods and services other than timber. Environmental economists have attempted to develop methodologies to value the externalised costs and benefits of forest goods and services and instruments to internalise them in market mechanisms. It should be noted, however, that the forest value of overwhelmingly greatest interest is of course carbon absorption. The international community's sense of urgency about climate change contrasts with its relative lack of interest in other forest values, such as in providing habitat. This explains, in part, the huge interest in funding the maintenance or enhancement of climate-associated forest values. Interest in forest carbon is also linked to market power, as it is expected that a mandatory market for carbon credits produced through REDD will be created and economically powerful investors are interested in profiting from this. Such a market, however, risks skewing REDD funding towards forest systems that absorb more carbon than those that are valuable for other reasons, to the possible detriment, for example, of high-biodiversity habitats.

Box 5.1 The three pillars of SFM

Balancing the economic, social and environmental functions of forests is difficult. Using financial return as the sole guiding principle of management leads to short-rotation monocultures established at minimum cost. Yet poor outcomes can also result from the neglect of economic and environmental issues. For instance, excessive focus on social aspects may lead to sub-optimal yields and insignificant benefits from collaborative forest management.

Many nations and sub-national jurisdictions are adopting a zoning approach to managing their forest landscapes (e.g. Hunter and Calhoun 1996) that involves protected areas and extensively and intensively managed forests, including planted forests.

Such an approach may not achieve the full sustainability of all forest goods and services (including biodiversity) at all locations, but at the landscape level sustainability may be achieved. A landscape approach requires planning and management at large spatial and long temporal scales (Blaser and Thompson 2010).

In Central Africa, for example, distinctions are being made between the economic, social and ecological functions of forests in most forest legislation and regulations, and forest lands are being allocated for specific purposes. The key task is to develop models of SFM that balance the three sustainability pillars at the national level.

Efforts to protect and enhance non-commodified values of forests can come in the form of non-market-driven aid or subventions from multiple sources at both the national and international levels (FAO 2008). Such assistance always depends, at least partly, on the priorities of funders, whether they are governmental, intergovernmental or private. For instance, non-market-based, forest-related funding is available for carbon sequestration and storage (for example, Wittman and Caron 2009 report that an electricity company in a developed country is paying farmers in the tropics for planting and maintaining additional trees); biodiversity protection (for example, conservation donors are paying landowners to set aside or restore areas to create biological corridors; see Dudley et al. 2005); watershed protection (for example, Ortega-Pacheco et al. 2009 report that downstream water users are paying upstream farmers to adopt land uses that limit deforestation, soil erosion and flooding risks); or landscape beauty (for example, tourism operators are paying local communities not to hunt in forest used for tourist wildlife viewing; see Nasi et al. 2002).

In general, however, aid has not been associated with decreased forest loss or degradation. Attempts to reform the socio-economic context through technical aid projects have been largely unsuccessful or of short duration; attempts to redress this by focusing on forest policy have neglected technical aspects (see, for example, Fruhling and Persson 2001; Hardcastle 2005; LTS 2003).

5.3 Enhancing the effectiveness of international forest governance

All of the factors considered above have had some influence on the lack of effectiveness of international forest governance in actually sustaining forests. The

challenge is how to balance the three pillars of SFM, given that the pursuit of any one pillar may conflict with the pursuit of one or both of the others. In some areas, such a balance has been pursued at the national scale (Box 5.1).

The operationalisation of SFM has also been attempted through numerous regional initiatives to develop criteria and indicators (C&I) for assessing forest practices on the ground. Attempts to define C&I originated with the ITTO process to develop C&I for the sustainable management of natural tropical forests, which began in 1989. The momentum of sub-global C&I initiatives* accelerated in the acrimonious aftermath of UNCED (see, for example, Box 5.2), when uncertainty existed on whether forest policy would ever again be discussed at the global level (Davenport 2006). These international C&I initiatives have served as models for national or sub-national standards, adapted to varying circumstances and priorities, in many countries (Prabhu et al. 1999), but few have actually been applied systematically or addressed in legal reforms or codes of practice (Lindstadt and Solberg 2010).

Many C&I schemes share similar principles, but there are differences in thematic emphasis reflecting different balances between the social/cultural, economic and environmental pillars of sustainable development. They also exhibit diversity in their content and structure (Pokorny and Adams 2003), development and implementation (Mrosek et al. 2006), and monitoring and reporting requirements (Gough et al. forthcoming; Hickey and Innes 2006).

The various C&I processes were intended to provide a common understanding of SFM for specific

* Prominent processes include the Helsinki (MCPFE) Process for development of pan-European C&I, the Montreal Process on C&I for temperate and boreal forests, the Tarapoto Process for Amazonian forests, and the Lepaterique Process for Central America.

Box 5.2 The ATO/ITTO principles, criteria and indicators

In 1995, the African Timber Organization (ATO) started a process to develop regional principles, criteria and indicators (PCI), based on the ITTO C&I. Supported by the international community, in particular the European Union, France and the Center for International Forestry Research (CIFOR), the ATO produced a set of PCI applicable to African natural tropical forest in 2000. In 2001 the ATO and ITTO engaged in an initiative to harmonise their respective PCIs. The harmonised set was published in 2003.

The ATO/ITTO PCI for the Sustainable Management of African Natural Tropical Forests consists of four principles. Principle 1 provides a framework

for evaluating and monitoring the forest policy adopted by each ATO/ITTO member state. It focuses on measures taken by governments within their legal and institutional mandates to favour SFM.

Principles 2–4 allow for the monitoring, evaluation and planning of forest management at the forest management unit (FMU) level. They address the sustainable supply of required goods and services (Principle 2), the maintenance of the main ecological forest functions (Principle 3), and the contribution of forest management to the economic and social well-being of concession workers and local populations (Principle 4).

forest types and to provide a common framework for describing, assessing and evaluating the progress of countries towards SFM (Grayson and Maynard 1997). Efforts have been made to apply indicators developed at the regional and national scales to the smaller scale of the forest management unit (FMU) (Prabhu et al. 1999). Many analysts argue that C&I processes have been a success because they have led to the re-evaluation of forest management and to progress in assessing and communicating successes and failures in management (Prabhu et al. 2001).

There has also been criticism, however, of ‘SFM as C&I’, part of which comes from those who believe that C&I have been created by top-down approaches of questionable relevance to local or decentralised forest management (e.g. Hajjar et al. 2009; Karjala and Dewhurst 2003; and see Box 5.3). Others contend that indicators have been selected on the basis of political expediency, data availability and ease of measurement rather than informational content (Brang et al. 2002) or need, and that forest practitioners have avoided using indicators that are expensive to monitor (Gough et al. forthcoming). Due to the complexities confronting efforts to define SFM (Gough et al. 2008), C&I processes can quickly become mired in enormous ‘laundry lists’ of possible indicators for a broad spectrum of values (Gustavson et al. 1999). They do not give guidance on balancing conflicting objectives in forest management, nor on the “causal link between international policy recommendations and national situation” (Lindstad and Solberg 2010:188).

5.3.1 SFM through certification

Forest certification systems have developed alongside the more general C&I processes for operationalising SFM at the FMU level. Most certification is done under one of two global schemes, the Forest

Stewardship Council (FSC) and the Programme for Endorsement of Forest Certification (PEFC). The PEFC functions as a way of directly putting the various intergovernmental C&I into effect at the FMU level, while the FSC principles, criteria and indicators (PCI) move even further from the maximum-yield timber production paradigm, particularly in terms of stakeholder participation (FSC 2010).

These certification schemes differ from C&I processes in being mostly private or non-state-driven and have increasing influence in the validation of SFM on the ground. A number of government-led certification schemes have also been put in place. Interestingly, rather than these usurping or watering down the certification requirements of private schemes, in several countries the opposite has been true. For example, the United Kingdom Forest Standard is fully compatible with FSC standards (see Box 5.4).

Nevertheless, certification schemes share some of the problematic aspects of C&I processes. What is measured is an issue: should indicators measure the appropriateness of ‘processes’, or the degree of achievement of appropriate ‘outcomes’, or both? For example, since 1994 Cameroon has made improvements in its forestry laws, one measure of this being the increasing number of approved management plans in effect. However, a study by Cerutti et al. (2008) finds that the government has not succeeded in implementing effective minimum sustainability safeguards and that, through a combination of a legal loophole and poor oversight, almost 70 percent of timber production in 2006 was conducted as if no improved management rules were in place.

A deeper issue is the possibility that the processes of developing arrangements for monitoring may undermine the trust relationships that must exist in order for the practices being monitored to function appropriately (McDermott forthcoming). Demand for legalistic approaches is frequently driven by distrust based on perceptions of value differences and

Box 5.3 C&I processes vs. community forest management

Difficulties can arise in applying national or international-level C&I to forest operations of different scales, tenure systems and management intensities, even within the same country or region. This is especially so for the increasing area of forest land coming under indigenous and other community control (White and Martin 2002). C&I created through top-down approaches tend to favour industrial forestry; most were created as part of a push for more sustainable industrial practices and reflect more concern over the impacts of forest operations on local communities than the needs of community-run forestry operations (Hajjar et al. 2009). Their usefulness to communities may therefore be questioned.

Internationally, consideration is being given to small and low intensity managed forests (SLIMFs) through the Forest Stewardship Council, but this is mostly limited to calls for less monitoring to reduce the costs of certification (see below) and for the adaptation of national standards to low management intensity situations. The unique characteristics of community-managed forest operations and traditional and indigenous management practices are often not reflected in national and regional C&I, while such top-down templates are themselves criticised for not generating information specific enough to address local issues (Karjala and Dewhurst 2003).

The Canadian approach to participation of

Aboriginal peoples in C&I has been criticised on the grounds that Aboriginal issues are unique and require their own criterion (National Aboriginal Forestry Association 1995). Hajjar et al. (2009), however, demonstrate that C&I cannot adequately address the unique worldview of traditional and Aboriginal forest operations. The high regard that traditional and Aboriginal people have for local, historical and qualitative knowledge and for relationships among people and between humans and nature, and their spatial integration of land, water and forest management, make it difficult to silo and categorise their values as they are presented in existing C&I.

Some work has been done to develop C&I for local-level or joint forest management initiatives (Pokharel and Suvedi 2007; Sherry et al. 2005); less has been done to allow for the unique management structure of community-owned or -managed forest operations (Pokharel and Suvedi 2007). Hajjar et al. (2009) conclude that while C&I are useful for defining and monitoring management practices, they must be updated to reflect growing global recognition of the importance of community-based forest management. Gough et al. (forthcoming), meanwhile, caution that the highly contextualised nature of communitarian discourses makes it difficult to find commonalities between local definitions of sustainability in order to build SFM policy up to the national or sub-national level.

Box 5.4 LEI–FSC harmonisation

When the Indonesian Ecolabelling Institute (LEI) was created as early as 1995 it was criticised by NGOs who feared that FSC standards would be watered down in order to pay lip-service to certification for marketing purposes. The LEI and the FSC were indeed different initially (Elliott 2000), the former having been established with strong support from the Indonesian government and business groups, who set visibly more flexible standards than those of the FSC. However, facilitated by changes in the Indonesian polity which enabled the separation of LEI from government influence (Maryudi 2005), the two schemes signed an agreement in 2001 to launch a unique programme with jointly agreed standards for certifying Indonesia's natural forests (van Assen 2005). Through this joint programme the LEI attained exposure to international timber markets, while the FSC attained wider adoption of its certification standards by Indonesian forest companies. The collaboration facilitated the harmonisation of the certification standards of the two bodies (Maryudi 2005).

Although it successfully certified an Indonesian forest company (van Assen 2005), the joint programme was terminated in 2005 (Maryudi 2009). While LEI had started to gain international recognition in core markets (e.g. the United Kingdom – Stringer 2006), its subordination to the FSC in the partnership was the subject of concern (MPA-LEI 2009). Meanwhile, the fact that the jointly certified company continued to receive complaints against its certification dampened the interest of other forest companies in engaging in the programme (Maryudi 2005; Valentinus and Counsell 2002), which did not benefit the FSC.

Despite the ending of the collaboration, LEI has maintained the improved standards brought about by its partnership with the FSC. In fact, several independent assessments (e.g. Hinrichs and Prasetyo 2007; Maryudi 2009) have noted that the LEI is still on par with the FSC in terms of meeting requirements for credible forest management and chain of custody. As of mid 2010, discussions between FSC and LEI are continuing.

a resultant desire to control distrusted actors. Such approaches are likely to be counter-productive by decreasing opportunities for the voluntary cooperation and trust-building which are necessary if actors with perceived value differences are to “create new arenas of shared meaning” (Sitkin and Roth 1993, cited in McDermott forthcoming: 5). Ultimately, this process “leads to the desire for control and coercion among all conflicting parties” (McDermott forthcoming:7) and is reduced to a question of power – whose judgments carry more weight?

Finally, in the absence of broader enforceable land-use policies, no scheme or process that focuses on forest management – and even less those that focus only on forests producing for the international timber market – can address the causes of deforestation that originate outside the forest sector, particularly forest conversion for agriculture or industrial or urban development, or forest destruction caused by mining.

5.3.2 Achieving SFM

Ascertaining achievement of SFM depends on the ability to measure progress on all three pillars of sustainability. There are obstacles to creating viable SFM measurement efforts, however, not least because of the problems that exist in attempting to define SFM at a global level.

The robustness of the environmental pillar of SFM is determined by the question of what practices are necessary to ensure the survival of a particular ecosystem. The problem is that ‘one size’ does not ‘fit all’; the appropriateness of specific approaches to achieving SFM depends on forest type. Tropical forests are much more complex and fragile than European temperate forests and also vary in their vulnerability to loss or degradation due human activity (Sands 2005; Whitmore 1998).

Forests differ widely in their capacity to produce desirable products and services, their accessibility to humans, and, from an environmental standpoint, the natural resilience to disturbance of the ecosystem of which they form a part. Forests are dynamic and have evolved in response to environmental factors such as climate fluctuations, fire, earthquakes, floods and pests; in broad terms, the natural resilience of a forest ecosystem correlates with the level of natural disturbance to which it is subject. A high frequency of disturbances caused by fire, floods, hurricanes or earthquakes leads to highly resilient forests – such as the savannas of East Africa (Robertson 1984) and the forests of the Yucatan Peninsula. A low frequency of disturbance can produce stable ecosystems, such as the wet forests of Central and West Africa, but these may be less resilient to abrupt change (Whit-

more 1998).

Variation in forest resilience also implies differences in their vulnerability to the effects of climate change. Definitions of SFM need to be adjusted according to forest type but also to accommodate environmental changes. Managers of some types of forest will have to adapt their practices according to changes caused by climate-induced shifts in ecosystem dynamics (Innes et al. 2009).

With regard to the economic and social pillars (the ‘human’ pillars) of sustainability, it has been amply shown that where the sustainability of forests conflicts with, or is perceived to conflict with, other human needs, forest sustainability will not be prioritised.

Just as there are differences in forest types that are currently not addressed in attempts to define and operationalise SFM, there are also differences in human social and economic needs (see Box 5.5). ‘Forested land’ and ‘forest’ are frequently regarded as separate resources: in cases of hunger for land, forest is seen simply as an obstacle to cultivation. Especially in densely populated countries, forests will not be sustained unless they provide for human needs to a greater extent than would alternative uses of the land (Schenk et al. 2007).

Frequently, however, the economic and social pillars of sustainability are pursued through measures that may have unintended or even perverse effects, or are neglected altogether. For instance, human survival requires technical understanding of forest systems as well as what is required for human survival. Many efforts and projects to implement SFM have wasted time and resources, and many attempts to regenerate or restore forests have failed, due to a lack of technical knowledge (Davenport 2009).

For example, global forest governance entities such as the UNFF and the ITTO encourage the harvesting of NTFPs as a livelihood alternative to timber harvesting (or forest destruction for agriculture or mining). However, NTFPs have not generally proven to be sufficiently remunerative to obviate the need to exploit timber resources as well (Whitmore 1998). Nor does the harvesting of NTFPs rather than timber ensure forest sustainability; NTFPs can also be overharvested, although little attention has been paid to this phenomenon to date (Ninon 2007; Wong et al. 2001).

‘Full stakeholder participation’ in resource management decisions (see Costanza et al. 1997) is also linked to addressing the survival needs of forest-dwelling people. Yet participation does not *necessarily* imply forest sustainability because it cannot be assumed that those who value standing forests most will hold sway in a truly participatory decision-making process. In addition, participation carries heavy time costs for individuals and communities who must work to survive, especially as

Box 5.5 SFM in Rwanda and Gabon

Rwanda, the most densely settled country in Africa (384/km²) has less than 10% of its land area under natural forest. Forest produce for the highly rural (80%) population comes mainly from exotic trees planted in and around farms. *Gross domestic product* (GDP) per capita (PPP) is USD 738. Following severe forest loss, the situation has now stabilised with an active tree planting programme and a system setting aside the remaining natural forest in protected areas.

Gabon is one of the least heavily settled (5/km²), has only 16% rural population and a GDP per capita (PPP) of USD 14 208. Forest cover is 84% and the

loss rate is negligible and has been so for more than 20 years.

Both countries aim to secure SFM but the differences in forest type, dependency and use mean that while the principles may be similar, the application will be very different. The balance of interests, the relative importance of production and service values and the whole system of management will all be at opposite ends of the spectrum of what constitutes sustainability; SFM must be interpreted to take account of these differences while maintaining its wider aims (FAO 2009; Hardcastle forthcoming).

rewards for participating may be neither immediate nor material. There are also costs in providing information at an appropriate level to ensure that FPIC requirements are actually met (LTS 2003). This is not to say that some interests should not have a voice on resource management decisions – although building democratic institutions requires building trust in government to represent and be accountable to the interests of communities (Jordan 2001). Efforts to rely on direct participation as a ‘default’ in all cases may have the perverse effect of undermining efforts toward political development more generally (Dahl 1989; Hardcastle et al. 2010a).

The most significant potential influence on forest sustainability is the expected infusion of resources at the intergovernmental level in relation to the REDD mechanism currently under discussion within the UNFCCC framework. If REDD monies increase the likelihood that leaving forests standing will be favoured over alternative land uses then they have the potential to increase forest sustainability. Yet safeguards remain to be agreed and enforced for ensuring that other forest benefits and values, including social values, are not swept aside in the pursuit of greenhouse gas reductions. Given that some key REDD negotiators are climate scientists rather than foresters or land-use planners, there is a risk that forest values other than carbon sequestration will be shortchanged.*

Achieving truly sustainable forest management requires recognition of different forest contexts. Yet context is rarely noted in discussions and proposals within international governance bodies. Global forest governance entities can improve their effectiveness on the ground if the huge diversity of forest ecosystems is acknowledged and addressed at the highest

levels, with appreciation of specific requirements for sustaining forests of different types in various ecological and human contexts. For example, the environmental pillar of sustainability suggests that forests of most value for biodiversity should be conserved to secure these biodiversity values. This would also meet the requirements of the economic pillar if the economic value of not logging biodiversity-rich, intact natural forest exceeded the value obtained from logging them (Davenport 2009). Giving biodiversity the highest priority in natural forests might also meet the requirements of the social pillar if it is politically more acceptable to a wide cross-section of society than alternatives.

There have been recent initiatives to develop context-specific C&I such as ITTO’s C&I, noted earlier. Perusal of such C&I processes shows, however, that they have not fully tackled all context-specific issues, such as the relative level of subsistence use, the regeneration ecology of the forest type, the proportion of species producing timber, or the relative importance of NTFPs. Meanwhile, reporting burdens related to forests are increasing. The international forest governance processes related to forests encompasses numerous schemes for assessing not only progress toward SFM, as discussed above, but also other more specific aspects of sustainability such as the legality of harvested and traded timber and the state of biodiversity and carbon sources and sinks. Assessments are required at both national and sub-national levels. However, the increasing burden of reporting is inadequately addressed in capacity-building and technical and financial assistance at the intergovernmental level.

On the other hand, it should be noted that while the burden of reporting related to the forest sector is huge, products that originate from mining (for example) carry no such reporting obligations, nor is there evidence at the intergovernmental level of pressure for them to do so. Yet, in some contexts, mining is a major cause of forest loss. It is well

* Interview with a national head of delegation to the UN Climate Conference, Bonn, 9 June 2010.

known that international attention on forest practices contrasts sharply with a relative lack of concern over the environmental and social impacts of mining (see, for example, ITTO 2003). The lack of international oversight or control of mining and the relative ineffectiveness of NGOs and indigenous peoples in exposing the impacts of mining have been linked to the fact that, in many countries, the economic power of the mining industry is far greater than that of the forest sector (Hardcastle et al. 2010b).

Given limitations on resources, there is new interest among some governments in ideas for reducing the reporting burden with regard to forests for those with least capacity and resources, most commonly countries where progress towards SFM has been least and which often have the most ecologically complex forests. Ideas being considered include:

- The identification of a minimum number of outcome-based indicators, such as a set of key biodiversity indicators or locally relevant indicators of human well-being.
- Risk-based assessments using a minimum number of critical indicators – failure to meet standards would trigger a more detailed assessment of subsidiary indicators to identify where deficiencies lie.

5.4 Conclusions

Global forest governance has not managed to halt forest loss or degradation. It is not even clear that international forest institutions can claim any credit for the fact that rates of deforestation, although “still alarmingly high” (FAO 2010), have slowed. Continuing controversies over what it means to ‘sustain’ forests make it even more difficult to assess the effectiveness of international forest governance arrangements. Nevertheless, international efforts continue to be needed to preserve the multiple forest benefits that accrue at the global level.

Some key facts about forest users are rarely acknowledged in discussions of governance arrangements: Zero-sum competition between users with very different interests creates winners and losers whenever power shifts. Zero-sum competition characterised by power imbalances makes it very difficult, if not impossible, for stakeholder-led processes and decentralised governance arrangements to achieve sustainable outcomes that provide equitable benefits to all participants. Moreover, since so many of the drivers of forest loss and degradation come from outside the forest sector, governance that fails to account for these drivers and the interests that create them seem especially likely to be ineffective.

Concepts of forest sustainability differ widely,

often reflecting conflicts of interests and power asymmetries amongst forest users. Since everyone wants to appear to be acting ‘sustainably’, concepts of sustainability are developed accordingly. However, the intergovernmental instruments whose focus is forests themselves overwhelmingly support the concept of SFM as a key tool for sustaining forests. Specific ideas for improving the utility of SFM as a tool for sustaining forests are currently under consideration in some national and intergovernmental contexts, including the refinement of indicators of progress in varying contexts and measures to support those who are responsible for both SFM and its assessment on the ground.

Perhaps the greatest challenge that SFM currently faces is the development of forest-related programmes with potentially competing goals. With burgeoning global interest in sustaining forests in relation to climate-change mitigation and adaptation, there is an increased need to refine SFM at the intergovernmental level into a more effective tool for sustaining forests and all forest values.

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