Chapter 17

Sustainable Forest Management as a potential integrative approach in international public policy

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Abstract

Deforestation negatively affects the provision of environmental services, and consequently affects local populations' livelihoods that depend on the use of forest resources. Sustainable Forest Management (SFM) aims to use forest resources in such a way as to provide environmental services while at the same time achieving economic and social goals. Even though there is currently no forest convention in an international public policy context, the SFM concept is included in several international public policy forums. The present chapter analyses SFM in three United Nations Conventions (CBD – on Biological Diversity, UNFCCC – on Climate Change, and UNCCD – to Combat Desertification). The chapter concludes that SFM is a broad concept, and its implementation specificities are addressed at a national policy scale, which is mainly influenced by the sovereignty principle. Finally, we concluded that the SFM concept still hardly touches upon the social dimension, compared to the economic and environmental dimensions.

List of abbreviations

CBD – United Nations Convention on Biological Diversity
DLDD – Desertification, Land Degradation and Drought
ECOSOC – Economic and Social Council
FAO – United Nations Food and Agricultural Organisation
SFM – Sustainable Forest Management
IFF – Intergovernmental Forum on Forests
IPF – Intergovernmental Panel on Forests
UN – United Nations
UNCCD – United Nations Convention to Combat Desertification
UNCED – United Nations Conference on Environment and Development
UNFCCC – United Nations Framework Convention on Climate Change
UNFF – United Nations Forum on Forests

17.1 Introduction

Deforestation has negative consequences for the provision of environmental services such as water, fertile soil, biodiversity, and climate regulation (FAO, 2010, p. 112), and affects local populations whose livelihoods depend heavily on the use of forest resources (like wood, oils, fruits, and fibres) (Paupitz, 2010, p. 59). Together with land degradation and climate change, deforestation is among the main causes of increased vulnerability to desertification. In arid and semi-arid regions, deforestation also increases the risk of droughts and biodiversity loss (FAO, 2010, p.112; Dudley, MacKinnon & Stolton, 2014, p. 178), contributing to poverty and migration of local populations (UN, 2014, p. 9).

The relation between deforestation, climate change, biodiversity loss, and desertification is discussed in several international public policy forums, which aim to develop common approaches in order to use environmental resources more sustainably. In this context, Sustainable Forest Management (SFM) is an internationally discussed concept that may have the potential to contribute to the sustainable use of forest resources. Although various definitions have been given, SFM generally aims to balance environmental, social, and economic benefits related to forest resources and their use (Arts & Buizer, 2009, p.345; Hickey, 2008, p. 109). What we observe in the current literature, however, is the need for a more precise understanding of the meaning of SFM, and more specifically, how it can be applied in an integrated manner in different forests or socio-economic circumstances (Haberl *et al.*, 2013, p.1; Quine, Bailey & Watts, 2013, p. 867; Hahn & Knoke, 2010, p. 797; Hickey, 2008, p. 109; Sayer & Maginnis, 2005, p. 15).

This chapter discusses how the concept of SFM has been developed at the international level, and whether it can be considered an integrated strategy to simultaneously tackle economic, social, and environmental challenges related to the use of forest resources, climate change, biodiversity loss, and desertification. The research results from the project entitled "Sustainable forest management to avoid deforestation and desertification vulnerability through an integrated strategy in the Caatinga biome, Brazil" funded by CAPES/Brazil.

17.2 SFM from an international environmental policy perspective

Particularly since the United Nations Conference on Environment and Development (UNCED) in 1992, sustainable development has become central to international governance strategies and discussions (Drexhage & Murphy, 2010, p.9; Hahn & Knoke, 2010, pp. 787-788). Within this context, SFM has emerged as one of the strategies which may contribute to sustainable development. By balancing economic, social, and environmental values of all types of forests, Sustainable Forest Management aims to benefit present and future generations by contributing to poverty eradication, providing

livelihood resources and employment to local populations, and ensuring essential environmental services (FAO, 2015).

Although SFM initially focused on timber trade, it gradually also came to cover forest resources and services like fruits, fibres, wood for energy, biodiversity, and soil and water quality (Hahn & Knoke, 2010, p.790; Sayer & Maginnis, 2005, pp. 13-14). it is through this extended scope that the relation between sustainable forest management and livelihoods became part of the concept. Currently, criteria and indicators (C&Is) for the evaluation of SFM cover seven thematic areas: (i) extent of forest resources; (ii) forest health and vitality; (iii) productive functions of forests; (iv) biological diversity; (v) rotational functions of forests; (vi) socio-economic benefits and needs; and (vii) legal, policy, and institutional framework[16]. Although a general interpretation of these criteria exists, it is very hard to find a clear operationalisation (Rist & Moen, 2013, pp. 416-417). An equally broad approach can be found in the internationally defined non-legally binding instrument known as "Forest Principles"[17], adopted in 1992 during the United Nations Conference on Environment and Development (UNCED). Preamble (c) of these Forest Principles attests that forestry should balance environmental and developmental goals, acknowledging the economic and social stress that can be caused by constrained or restricted use of forests[18]. The document also emphasises in Principle 2(b) that "Forest resources and forest lands should be sustainably managed to meet social, economic, ecological, cultural and spiritual needs of present and future generations"[19]. This broad diversity of needs that are supposed to be met through SFM illustrates that an integrated approach – balancing all these needs – must be a challenging ambition. The concept's broad scope, and the different ways in which social, economic, and environmental needs can be interpreted and defined, are not the only challenging aspects of the concept and its implementation.

The "Forest Principles" mention that "States have the sovereign and inalienable right to utilize, manage, and develop their forests in accordance with their development needs and level of socio-economic development" (Principle 2(a)) and have the "sovereign right to exploit their own resources pursuant to their own environmental policies" (Principle 1(a)) (UN, 1992a). The principle of sovereignty means that states have jurisdiction over their territory, including their natural resources, which is a core principle in international law (Sands & Peel, 2012, pp. 11-12). In view of this, states may feel reluctant to sign up to international binding commitments which may limit their national discretion, including how to manage their natural resources. This limits the possibility to define and enforce an internationally agreed commitment to manage forests sustainably.

[16] See Resolution 4/3 in the 'Report on of the Fourth Session of the United Nations Forum on Forests', reference UN, 2004, p. 7.
[17] It is officially called the '*Non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests*', see the Report of the United Nations Conference on Environment and Development – Annex III, reference UN, 1992a.
[18] See reference above.
[19] See reference above.

Alternatively, international environmental treaties on forests issues may set general aims or principles that establish the preconditions under which sovereign nation states can develop their own forest-related policies. These treaties often require national policy development as a part of the adoption of substantive, binding commitments at the international level. This strategy for national policy planning is prescribed, for example, in the United Nations Convention on Biological Diversity (CBD) (Article 6a)[20]; the United Nations Framework Convention on Climate Change (UNFCCC) (Article 4(1b))[21]; and the Convention to Combat Desertification (UNCCD) (Article 10)[22]. Following this strategy, states might maintain their national sovereignty regarding the way in which they define and regulate the use of environmental resources related to biodiversity, climate change, and desertification (Eikermann, 2015, p. 106, p. 183).

Nevertheless, this may imply that national policies developed under the guidance of such treaties differ greatly in their ambition and content regarding the concept of SFM, depending on each state's individual circumstances and interpretations. The issue of national sovereignty and the resulting diversity of approaches to forest use may contribute to a fragmented picture of what exactly is meant and implied by SFM in the international and national contexts. The fragmented character of SFM in international conventions can be further exemplified by the fact that, so far, international negotiations among states have failed to produce a forest convention. Nevertheless, existing international conventions may, although not specifically targeting forests, have an impact on forests (Eikermann, 2015, p.184). This is true for the United Nations Convention on Biological Diversity, the United Nations Framework on Climate Change and the United Nations Convention to Combat Desertification (see section 3).

According to the literature, the development of a forest convention is particularly hampered by: (1) the principle of sovereignty, as states insist on their right to exploit their own forest resources under their own national legislation (Eikermann, 2015, p. 183; Kunzmann, 2008, p. 986); (2) the absence of agreements on principles and definitions needed for a forest convention, like disagreement on the specific meaning of SFM and the various ways in which it can be applied in different contexts, the division of responsibilities for funding, and the formulation of time-bounded objectives for its implementation (Eikermann, 2015, p.186; Kunzmann, 2008, p. 985; Schneider, 2006, p. 7); and finally, (3) the current fragmentation of international environmental law, which makes synergies between existing treaties a prerequisite for creating a new international binding agreement on forests (Eikermann, 2015, p.184; Ruis, 2001, p.2).

Notwithstanding the difficulties encountered in defining a forest convention, there has been an attempt to establish a unified legal framework for forests: the United Nations Forum on Forests (UNFF). The UNFF was established in 2000 with the aim of developing a common international understanding about forest management, in order

[20] See United Nations Convention on Biological Diversity, reference UN, 1992b.
[21] See United Nations Framework on Climate Change, reference UN, 1992c.
[22] See United Nations Convention to Combat Desertification, reference UN, 1994.

to develop a "legally binding instrument on forests"[23]. Although its members initially failed to agree on such an instrument, the "Non-legally Binding Instrument on Sustainable Forest Management for all Types of Forests" was eventually adopted in 2007[24]. Even though this is a non-legally binding instrument, it can be considered the most authoritative document so far, and defines SFM as:

> "(…) a dynamic and evolving concept, [aiming] to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations" *[Chapter III, paragraph 4] (UN, 2007a).*

Still, this definition, in particular the vague definition of "all types of forests" as "forests and trees outside forests" (First Preamble Paragraph)[25] may simply imply enhancing the economic, social, and environmental value of all trees in the world. It neither specifies nor prioritises types of forests, services, or resources provided by these forests. This vagueness may raise the expectation of a more specific definition at nation-state level. However, as mentioned above, national sovereignty in using natural resources may result in very different definitions and goals for SFM in national policies. Although becoming more specific at national level, the concept may become even more diverse at international level.

17.3 International treaties with a focus, and possible impact, on SFM

The United Nations Convention on Biological Diversity (CBD) (adopted in 1992) does not focus solely on forests, but may have an impact on forest management or forest policies. The CBD Conference of the Parties Decision V/6, A.1 defines an Ecosystem Approach, which embodies a fundamental concept within the CBD, as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way"[26]. In the context of the Ecosystem Approach, SFM can be understood as a tool to promote forest conservation. In its Conference of the Parties IX/5, CBD recognises the promotion of SFM and the Ecosystem Approach as the best

[23] An "open-ended ad hoc Intergovernmental Panel on Forests" (IPF) was established in 1995, and an "ad hoc open-ended Intergovernmental Forum on Forests" (IFF) in 1997. The United Nations Forum on Forests (UNFF) was established in the year 2000 as a subsidiary body of the Economic and Social Council (ECOSOC), through its Resolution 2000/35; it is composed of all United Nations Member States, to promote and facilitate dialogue and policy development, evolving governments, international institutions and major groups, for "*the management, conservation and sustainable development of the world's forests, and to strengthen long-term political commitment to this end*". See Resolutions and Decisions of the Economic and Social Council, in reference UN, 2001.

[24] See the Non-legally binding instrument on sustainable forest management for all types of forests, reference UN, 2007a.

[25] See reference above.

[26] See Report of the Fifth Meeting of the Conference of the Parties to the Conventional on Biological Diversity, reference UN, 2000.

strategies to maintain forest biodiversity (Paragraph 1, Item k)[27], simultaneously alleviating the poverty of local populations who depend on forest resources, and recognising the importance of non-wood products for their livelihoods (Paragraph 2, Item d)[28].

Under the 1992 Framework Convention on Climate Change and its 1997 Kyoto Protocol, SFM is used in the context of greenhouse gas emissions reduction. In the Kyoto Protocol, for instance, SFM is mentioned together with afforestation and reforestation as strategies to maintain, recover, or "develop" forest carbon reservoirs (Article 2, Paragraph 1a(ii))[29]. The Clean Development Mechanism (CDM) allows Kyoto Protocol parties with reduction commitments to implement afforestation and reforestation activities as part of their efforts to reduce emissions (Eikermann, 2015, p.108; Article 12, Paragraph 3 (a) and (b))[30]. Although SFM is explicitly mentioned as one of the possible strategies to develop or maintain carbon sinks, the CDM does not include SFM initiatives. A major reason for this is that it is difficult to quantify the exact contribution of SFM initiatives to reducing the emissions of greenhouse gases (Eikermann, 2015, p. 114).

In addition to this, and also under the UNFCCC flag, the "Reducing Emissions from Deforestation and Forest Degradation" (REDD+) programme has been established through its Conference of the Parties Decision 2/CP.13[31]. The REDD+ Program – which has not yet been codified into a legally binding agreement – includes SFM as a possible strategy to reduce greenhouse gas emissions, more specifically carbon dioxide (Paragraph 70, The Cancun Agreements)[32]. The REDD+ programme is based on a system of payments to local initiatives to avoid deforestation; it provides monetary incentives to maintain forests instead of using them for other, more environmentally harmful activities. The REDD+ programme is rather controversial because of the lack of methodologies to quantify its contribution to greenhouse gas reduction, and because of its focus on the economic value of forest resources, which may contribute to a neglect of the ecological and social functions of forests in debates (Wiersema, 2014, p. 2).

Finally, the United Nations Convention to Combat Desertification (UNCCD), concluded in 1994, includes deforestation and loss of biodiversity in the definition of "land degradation" in its Article 1, Item (f)[33]. This treaty seems of particular interest for arid and semiarid ecosystems, touching upon the importance of forests in these ecosystems, like the Caatinga biome in Brazil discussed in Box 17.1 below.

[27] See Decisions Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Ninth Meeting, reference UN, 2008.
[28] See reference above.
[29] See Kyoto Protocol to the United Nations Framework Convention on Climate Change, reference UN, 1998.
[30] See reference above.
[31] See Report of the Conference of the Parties at its Thirteenth Session – Addendum – Part two: Action taken by the Conference of the Parties at its eighth session, reference UN, 2007b.
[32] See Report of the Conference of the Parties on its sixteenth session, held in Cancun, reference UN, 2011.
[33] See Elaboration of an International Convention to Combat Desertification in countries experiencing serious drought and/or desertification, particularly in Africa, reference UN, 1994.

Box 17.1 - Caatinga biome, a dry forest which Sustainable Forest Management can connect climate change, biodiversity, and desertification issues

The Caatinga biome is one of the six biomes officially recognised by the Brazilian government (Brasil, 2004a, p. 1) and classified as "Tropical Dry Forests" in the international literature. Similar forests can be found in Africa (Miombo, Sudanese woodlands, and savannah biomes); in South America (Cerrado and Chaco biomes); and Asia (Dipterocarp forest and woodland biomes) (FAO, 2001, p. 18; USDA-NRCS, 2000, p. 1). Caatinga biome is located in the north-east of Brazil in a semiarid region, which has an average annual rainfall of less than 800 mm and an "aridity index" between 0.21 and 0.5, resulting in a drought risk exceeding 60% (Brasil, 2004b, p. 3). Caatinga biome covers 844,000 km² distributed over 10 federal states; primary forests cover around 49% of its area, while degraded land and urban areas cover around 50%, and 1% is covered by water (lakes and rivers) (Brasil, 2013, p. 56; Brasil, 2011a, p. 18) Caatinga biome is also known as the most biodiverse as well as densely populated semiarid regions in the world, with a population of more than 27 million people (Brasil, 2011b, p. 7).

Deforestation plays a major role in Caatinga and is related to human activities, like livestock farming, agriculture, and the use of wood for energy (charcoal and firewood) (Sampaio, 2010, p. 35, p. 42; Riegelhaupt & Pareyn, 2010, p. 71; Bakke et al., 2010, p. 160; Queiroz, 2011, p. 1142). Deforestation, land degradation, and climate change have been identified as the main causes of increasing desertification vulnerability, risks of drought and biodiversity loss in semiarid regions around the world (FAO, 2010, p. 112; Dudley, MacKinnon & Stolton, 2014, p. 178), including Caatinga biome (Brasil, 2007, p. 18; Brasil, 2011c, p. 119; Martins & Barreto de Melo, 2012, p. 93). Desertification can contribute directly to poverty and migration of local populations as they lose their livelihood, which was based on environmental resource use (UN, 2014, p. 9; Martins & Barreto de Melo, 2012, p. 93).

Caatinga biome has the potential to aggregate policies related to forest issues, climate change, biodiversity, and desertification. In this context, Caatinga is an interesting case study where Sustainable Forest Management can be analysed in such a way as to integrate actions to achieve environmental, economic, and social goals, and at the same time improve the livelihoods of local populations and combating poverty and migration (Paupitz, 2010, p. 59, Riegelhaupt, Pareyn & Gariglio, 2010, p. 364).

The UNCCD "Strategy" (Decision 3 of the Eight Session of its Conference of the Parties)[34], defines SFM as a component of a sustainable land management strategy to

[34] See 'Report of the Eight Session of the United Nations Convention to Combat Desertification', reference, UN, 2007c.

combat Desertification, Land Degradation and Drought (DLDD), which contributes to the conservation and sustainable use of biodiversity. Under the UNCCD, SFM can be interpreted as a proactive and preventive action to build or increase the resilience capacity of ecosystems, either in response to drought events or to desertification vulnerability (Wilhite, Sivakumar & Pulwarty, 2014, p. 4; Sivakumar et al., 2014, p. 131).

A preliminary evaluation shows that the way in which the United Nations CBD defines SFM has the theoretical potential to integrate environmental (e.g. biodiversity conservation), social (interpreted as social development and the acknowledgement of tacit knowledge), and economic values (related to sustaining livelihoods). The UNFCCC, and more specifically the REDD+ programme, moves the SFM concept into a more economic perspective, as the REDD+ programme is based on economic valuations of forest resources such as carbon sinks. In this sense, the UNFCCC approach to SFM mostly relates to economic and environmental values of forests, and seems to place less emphasis on social considerations. Finally, the UNCCD emphasises the environmental value of forests and their contribution to building resilient ecosystems and maintaining environmental services on which local populations' livelihoods depend. The UNCCD can therefore be considered to touch upon social, economic, and environmental values.

Even in the absence of specific international forest treaties, the above-mentioned international treaties may influence national forest policies of participating states. At the same time, there may however be inconsistencies between these international legal instruments (Eikermann, 2015, p. 184; Van Asselt, 2014, p. 253, Van Asselt, 2011, p. 1211). One inconsistency can be found between the role of forests in the United Nations Convention on Biodiversity (CBD) and in the United Nations Framework Convention on Climate Change (UNFCCC): the incentive from the UNFCCC to use forests as carbon sinks may have a positive effect on greenhouse gas reduction, but a negative impact on biodiversity objectives. The use of forests as carbon sinks may imply forest monoculture, focusing on the most effective species to absorb greenhouse gases, which however has a negative influence on biodiversity (Van Asselt, 2014, p. 130; Van Asselt, 2011, p. 1232; Raunikar et al., 2010, p. 56).

17.4 Conclusion

Current international environmental law has a fragmented character. This is certainly also the case for the protection of forests, since there is no single forest convention. SFM, which is assumed to address environmental, economic, and social issues in an integrated way, has mostly emerged in non-legally binding international documents and is also referred to in several international treaties, including decisions from bodies under these treaties, in different ways and aiming at different goals, as shown above. We have also seen that international treaties referring to forests particularly seem to emphasise or concretise the economic and environmental dimensions of SFM. The

social dimension remains neglected or hardly touched upon, mainly because this dimension is hard to measure considering the variety of forests and social contexts where SFM can be implemented. Nations that are party to the treaties have considerable freedom to formulate their own national policies and action plans regarding the use of their forests, including definitions and strategies for SFM. The next step will therefore have to examine whether states are succeeding in developing a coherent SFM strategy for the areas under their jurisdiction, and to what extent individual nation states have adopted an economically, socially, and environmentally integrated approach to SFM.

17.5 Outlook

Notwithstanding the difficulties that result from SFM's inherently fragmented character at an international level, there are some hopeful signs as regards the achievement of an implementable integrated strategy for it. First, although countries have to consider all treaties to which they are party, they have the possibility to develop a coherent approach towards SFM in the areas under their own jurisdiction, and to set an example that other countries may want to follow. This implies that fragmentation, as an inevitable characteristic of international law (International Law Commission, 2006, Article 247)[35] may not necessarily result in a barrier to SFM. In a pluralistic world it may encourage countries to pursue SFM within their own capabilities, possibilities, and preferences.

Another hopeful sign, although the political signs are still weak,[36] relates to the intention expressed in the United Nations Forum on Forests (UNFF) to revalidate and update the "Non-Legally Binding Instrument on Sustainable Forest Management for all Types of Forests", for the period after September 2015.[37] We hope that the acknowledged difficulties encountered in specifying and operationalising economic, social, and environmental needs related to forests will receive ample attention in this intended update by the United Nations Forum on Forests (UNFF). Jumping to a solution too fast, without sufficient consideration of what social, economic, and environmental needs actually imply, bears the risk of ignoring those domains that are relatively hard to measure or define, contributing to selective SFM regimes that only focus on services which can be easily measured (Quine, Bailey & Watts, 2013, p.867).

[35] See Report of the International Law Commission on its Fifty-eighth session, reference UN, 2006.
[36] See 'Draft ministerial declaration of the high-level segment of the eleventh session of the United Nations Forum on Forests - International arrangement on "The forests we want: beyond 2015"', reference UN, 2015b.
[37] See the 'Provisional agenda and annotations' of the United Nations Forum on Forests Eleventh session, reference UN, 2015a.

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