

Public policies as institutions for sustainability: potentials of the concept and findings from assessing sustainability in the European forest-based sector

Thomas Vogelpohl · Filip Aggestam

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Abstract It is becoming increasingly apparent that the institutional dimension is of critical importance for achieving sustainable development, which is why the view that it should be considered as a fourth dimension of sustainability is acquiring increased support. It is argued that the institutional dimension represents an important challenge to the full integration of the economic, social and environmental sustainability objectives within the necessary institutional setting. But despite its importance, the latter is often neglected when it comes to scientific assessments of sustainability performance. A fact that holds particularly true for the forestry sector. The aim of the present paper is to describe and discuss how the institutional dimension of sustainability can be incorporated into a Sustainability Impact Assessment of the European

Forest-Wood-Chain (FWC) by using a policy database developed within the context of EFORWOOD. The policy database, covering all policies of key relevance to FWC-sustainability, was employed for the purpose of connecting the EFORWOOD sustainability indicators to its institutional and political background. This connection provides direct and detailed insights into the governance structures prevailing in the European forest-based sector and thereby into the institutional dimension of FWC-sustainability. The results illustrate that FWC-sustainability is governed and regulated rather inconsistently by the many political institutions involved, various types of policies in force, and different modes of governance applied. The connection between the EFORWOOD sustainability indicators and a comprehensive database of sector-related policies thus presents a feasible approach for overcoming the lack of consideration given to the institutional sphere of sustainability.

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T. Vogelpohl
Sustainable Energy and Climate Protection, Institute for Ecological Economy Research, Potsdamer Straße 105, 10785 Berlin, Germany

F. Aggestam (✉)
European Forest Institute Central-East European Regional Office (EFICEEC), Department of Economics and Social Sciences, University of Natural Resources and Applied Life Sciences, Feistmantelstr. 4, Gregor Mendel Straße 33, 1180 Vienna, Wien, Austria
e-mail: filip.agggestam@boku.ac.at

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Introduction

In the light of global climatic and environmental changes, there is nowadays a wide consensus (both in the science and in the policy domains) that the world is continuing to develop in an unsustainable direction. This is a direct consequence of the changing human and environmental circumstances under which we have seen the deterioration of the conditions (social and environmental) that we live under. It is within this context of escalating environmental

and social demands and changes that we have seen an increased international focus on halting (or reversing) these unsustainable tendencies in all areas, which is especially true for the forest-based sector. This development has stimulated the rise of a “sustainability science” that is concerned with the interactions between nature and society.

There is today a wide range of definitions and concepts related to “sustainability”, the simplest and most general of these originating from the report of the Brundtland Commission. This report essentially called for “sustainable” forms of development and has subsequently become one of the most quoted definitions of “sustainable development” as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED World Commission on Environment and Development 1987). However, while many scientific domains nowadays have their own specific definitions of sustainable development (Robinson 2004), it remains a concept that aims towards a holistic view on human and environmental development (Swart et al. 2004). With this in mind, the most widespread approach to sustainability represents a division of sustainable development into three domains, namely: the *economic* (related to the standard of living), *ecological* (related to biophysical carrying capacity) and *social* (related to systems of governance) (Robinson and Tinker 1998). This generates an operational view of sustainability that stimulates, for instance, environmental stewardship, social responsibility and economic viability. Effectively, environmental, economic and social criteria have to be considered with equal importance. But despite this broad definition, increasingly more authors express the need to more appropriately recognise the important role that institutions play in this context; some even argue for making *institutions* the fourth dimension of sustainable development (Dovers 2001; Pfahl 2005; Spangenberg 2007).

Regardless of the number and variations of definitions surrounding “sustainable development”, in recent years, we have seen a rapid increase of models and tools that have been focused on confronting sustainability challenges. Within this field, well-known examples represent model-based approaches focusing on single issues, such as climate change, water and land use. The present paper intends to use an already existing model as a showcase, related to forestry and the forestry-wood chain (FWC). The project that we will use is the EFORWOOD project, which is a project that is financed by the European Union (EU) Sixth Framework Programme (FP6) and charged with the development of a Tool for Sustainability Impact Assessment (ToSIA) as a quantitative decision support tool for the sustainability impact assessment (SIA) of the European FWC. The overall aim of this project has been to define

economic, environmental and social sustainability indicators; develop a tool for the SIA by integrating a set of models; and, apply the tool to assess the sustainability of the present European FWC (for more information related to the EFORWOOD project, go to www.eforwood.com).

Within the framework of EFORWOOD, the sustainability indicators that were developed follow a conventional approach, comprising the *economic, social and environmental* dimension of sustainability (27 in total). However, the process has for the most part omitted the institutional aspects. This lack of consideration of the institutional sphere, as regards the development of sustainability indicators, makes EFORWOOD a typical quantitative SIA project. The EFORWOOD SIA is in fact based on a quantitative modelling approach where the SIA represents a tool to predict, analyse and mitigate the possible negative social, economic and environmental effects. In contrast to qualitative SIA approaches, the EFORWOOD SIA is designed to be a rational model to assist in decision-making (Tamborra 2003). Although the EFORWOOD project takes into account the complexity of the decision-making process (e.g. integrating multi-criteria analysis), the institutional arena was only provided limited attention during the development of the tool. In essence, it predicts the forest-based sectors sustainability performance based on a modelling approach, but it does not take into account the institutional contexts involved. This is a consequence of the project being oriented towards evaluating impacts, and not the implementation and practicability in the institutional setting. The SIA is therefore not strongly contextualised in the political framework.

To make up for this limited consideration of the institutional aspect, a method has been developed within EFORWOOD to incorporate the institutional dimension of sustainability into the SIA via a “public policies as institutions” approach. Our intention will be to use policies to address the institutional aspects of FWC-sustainability. The purpose will be to investigate how public policies can help to interpret the importance of the institutional aspects of sustainability within the European forest-based sectors. It is of particular interest to focus on the forest-based sectors, as it represents an area in which there is no central institution in charge of coordinating forest governance.

The present paper is organised as follows. The next section provides a short overview of the theoretical background behind “[Institutions as the fourth dimension of sustainability](#)”. It will discuss the “public policies as institutions” approach and how the institutional dimension of sustainability can be assessed. The “[Method](#)” section will present our methodological approach, which is followed by our “[Results and analysis](#)”. Finally, we will

discuss these results and draw our conclusions in “Discussion and Conclusions”.

Public policies as institutions for sustainability: clarification of the concept

Institutions as the fourth dimension of sustainability

In order to explicate the institutional dimension of sustainability, the term “institution” needs to be defined. One prominent definition of what institutions are was formulated by Douglas North: “Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws, property rights)” (North 1991, pp. 97). Accordingly, institutions can be perceived as structures and mechanisms of social order and co-operation governing the behaviour of a set of individuals. This means that institutions are more than just organisations. Sociologists operationalise the term “institution” as those temporally, factually and socially generalised expectations of behaviour that form the structure of social systems. Thus, institutions guide individuals through social decision-making processes “[...] by offering orientation when interpreting the actions of others and defining one’s role in a particular societal context” (Pfahl 2005, pp. 82). Gehlen (2004) and Hayek (1994) go as far as to emphasise the role of institutions as a means of unburdening individuals from making permanent decisions. Gehlen describes humans as beings in need of institutions, because institutions replace the animalistic instinct of humans and provide stability and security in modern society. Only through institutions do societal activities become permanent, predictable, effective, normative and quasi-automatic (Gehlen 2004). Similarly, Parsons (1978) stresses the importance of institutions by describing their systemic function as the framework for human actions in different contexts. As such, by carrying and spreading the general ideals of societies, institutions do not only influence individual behaviour but guide the social and political community and elites. Based on these different sociological approaches and for the purpose of the present paper, institutions can be defined as “permanent and internalised patterns of behaviour and orientations that implicitly assume a regulatory function” (Pfahl 2005, pp. 82).

In following this very broad definition of institutions, it also comprises many structures and practices that influence decision-making processes by political actors aiming at sustainable development. Moreover, institutional settings influence the way that these decisions are implemented by political actors and the behaviour of those actors

implementing them. Consequently, institutions that are charged with promoting or implementing sustainable development often come along with specific governance structures, such as non-hierarchical market mechanisms, the open method of co-ordination, or various types of co-operation and collective action (Ostrom 1990; Ostrom et al. 1994). These governance patterns that influence sustainable development are, therefore, multifaceted and manifold as regards their structure (ranging from informal to formal) and their spatial as well as administrative dimensions (varying from local to international) (Hagedorn et al. 2002; Schleyer et al. 2007).

Although these institutional aspects of sustainable development are addressed in all of the key documents that have helped the sustainability concept gain so much attention (including the Brundtland Report, Agenda 21, Rio Declaration, or the Johannesburg plan of implementation), some main components of the concept have been regularly disregarded or even completely ignored in the political debate. This is especially true for the institutional dimension of sustainable development, which has often been denied a considerable role in its own right. As stated by Spangenberg, the institutional dimension of sustainable development “[...] is often doubted or ignored; institutions are considered as an element supporting sustainable development but not part of it (particularly in the governance discourse), or they are subsumed in the social dimension” (2007, pp. 108). As a consequence of this neglect, there is an emerging trend among various scientific fields that advance the view that the institutional sphere should be considered the fourth dimension of sustainability (see Fig. 1), an approach which emphasises the critical importance of the institutional setting in terms of reaching sustainable development. It is argued that the fourth dimension represents an integral part of sustainability and, furthermore, constitutes an important challenge in terms of fully integrating economic, social and environmental sustainability objectives within the necessary institutional structures (Hagedorn et al. 2002; Pfahl 2005).

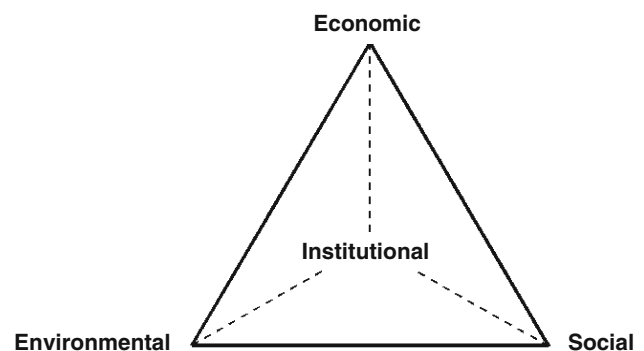


Fig. 1 The four domains of sustainable development (adopted from Spangenberg 2002, pp. 105)

The role of the institution is within this context described by Spangenberg as “the delimitation of responsibilities in space and time and the integration of policy domains for coherent strategies” (2007, pp. 107), making the institution a strategic core for sustainable development. He further argues that this should include *environmental objectives* (e.g. respecting ecological limits), *social standards* (e.g. dignity of life), *economic conditions* (e.g. competitiveness) and *institutional desiderata* (e.g. public participation). Within the context of sustainability for the forest-based sector, this essentially means that influential institutions are not just particular formal organisations of government and public service, but also represent customs and behavioural patterns that are important to society. Moreover, these are often unsustainable behavioural patterns that have emerged over long periods of time and are resistant to change. As this constitutes an obstacle to sustainable development in the sector, the institutional setting is of critical importance to achieving sustainable development. After all, “[...] without institutional change we will not move purposefully towards sustainability” (Dovers 2001).

Assessing the institutional dimension of sustainability

The neglect of the institutional system for sustainable development, as described in the previous section, is often reflected in the efforts of measuring sustainability performance within a sector or region. Measuring sustainable development became a prominent issue shortly after the publication of the Brundtland Report by the World Commission on Environment and Development in 1987 and the accomplishment of the United Nations Conference on Environment and Development (UNCED) in 1992. UNCED recognised the important role that indicators play in helping countries to make informed decisions regarding sustainable development. This recognition is articulated in Chapter 40 of Agenda 21 which calls on countries, as well as governmental and non-governmental organizations, to develop and identify indicators of sustainable development that can provide a solid basis for decision-making at all levels of society (UNCED United Nations Conference on Environment and Development 1992). For instance, in response to this call, the Commission on Sustainable Development (CSD) approved a 5-year Work Programme in 1995 on the Indicators of Sustainable Development. In Europe, efforts to establish ways to measure progress towards sustainable development through indicators were led, for example, by the European Environment Agency (EEA) and EUROSTAT, the statistical office of the European Union (EEA European Environmental Agency 2005; European Commission 2005). In addition, a range of sector administrations at the international, European and national levels developed sector-specific sustainable development

indicators. For instance, the Ministerial Conference on the Protection of Forests in Europe (MCPFE) adopted a set of indicators for sustainable forest management (MCPFE Ministerial Conference on the Protection of Forests in Europe 2002). The idea of sectoral integration has also been pursued for the agricultural and transport sectors with an indicator development process led by the EEA.

Returning to the concept of sustainable development as represented by the three spheres of interest, most sustainability indicators that have been developed in the context of the above-described development are classified as *economic* (e.g. labour costs and production costs), *social* (e.g. provision of public forest services) and *environmental* (e.g. forest biodiversity and soil condition) indicators. However, as denoted previously, most of the efforts to measure the “degree of sustainability” still neglect the institutional dimension.¹ As a result, these types of indicators are rarely integrated sufficiently into SIAs, despite recent efforts in developing and formulating institutional indicators. For that reason, in order to be able to comprehensively analyse the underlying complexities of sustainability, the development of institutional indicators continue to attract attention in sustainability research (Spangenberg and Bonniot 1998; Spangenberg et al. 2002).

On the whole, the use of institutional indicators in the context of assessing the sustainability of a specific region or sector remains not very widely spread in SIAs, particularly in the forest-based sector. This is not necessarily only due to ignorance towards the institutional system, but also to the inherent problems in the field of sustainability research to which conventional approaches of assessment do not apply, as institutions are characterised by complexity and interdependency of many factors that are difficult to measure. As expressed by Spangenberg, “[...] the complex, nonlinear interactions of institutions with each other and with the other dimensions, the impossibility of listing and counting all of them, and the fact that the same effect can be produced by widely varying institutional settings render fruitless any attempt to test the sustainability of the institutional system and to derive indicators based on simplified, causality-based analytical systems or to analyse the institutions one by one regarding their appropriateness for specific purposes” (2007, pp. 116). With this in mind, an analytical method has to be designed that can assess the contribution of the institutional system in reaching sustainable development, which is not dependent on the exact quantitative measurement of its impacts.

¹ For an exception, see the SEAMLESS project (<http://www.seamless-ip.org>), which is an integrated project within the FP6 of the EU, within which the institutional dimension has systematically been integrated into the SIA (Schleyer et al. 2007).

“Public policies as institutions” for sustainable development

“Institutions stand at the heart of much theorising and explanation in the social sciences. In a widely utilised definition, institutions are defined as the rules of the game in a society or, more generally, the humanly devised constraints that shape human interaction. (...) Public policies are not always treated as institutions, but there are good reasons for doing so. Most of the politically generated “rules of the game” that directly help to shape the lives of citizens and organizations in modern societies are, in fact, public policies” (Pierson 2006, pp. 114–115). As argued by Pierson, public policies represent the central rules governing the behaviour of individuals and social organisations that make up civil society. In fact, he proposed that policies (in contrast to formal institutions) have indirect effects on politics and social actors, which in turn influence what they want, who they are, and with whom (and how) they organise their activities..

Similar to the conclusions of Pierson, various scholars have suggested that public policies should be considered as institutions, particularly since they directly influence the lives of citizens and their organisations and companies (Vårheim 2007; Sidney 2007). This also means that they (indirectly) influence policy-making in certain policy areas, like the interaction between politicians, lobbyists and interest groups. For instance, Vårheim (2007) deems public policies as important cases of political institutions. Therefore, insights into institutional effects could be used in studies of policy effects. Sidney (2007) recognises the importance of policies as institutions, as they “[...] shape behaviour and perceptions, so policies can be structured in such a way as to bring about desired changes in problematic conditions, but also the political coalitions to support them” (Sidney 2007, pp. 81). As suggested by Pierson (2004, 2006), it appears as if the analysis of the role of public policies as institutions and their effects on politics should, therefore, be taken more seriously. However, this is a perspective that has been widely disregarded in political science so far, predominantly since formal institutions of a political system are analysed within the strand of political institutionalism, and not public policies.

This perspective can furthermore be useful in the context of analysing the institutional dimension of sustainability in a particular sector. However, so far, the main efforts regarding the incorporation of the institutional dimension of sustainability into the measurement of sustainability have been made at the country level. In effect, institutional indicators have been developed primarily for the national level in scale and scope, measuring the sustainability of institutions in a particular country. The indicators of good governance in the framework of the EU

sustainable development indicators (European Commission 2007), the World Bank Governance Indicators (Kaufmann et al. 2008), or the institutional indicators in the UN CSD system (UNDESA United Nations Department of Economic, Social Affairs 2007) are indicative of this trend.

As a consequence, the institutional indicators, mentioned hereinabove, are not necessarily useful for analysing the institutional dimension of sustainability in all the given sectors of society. For reaching this goal, our intention will instead be to apply a “public-policies-as-institutions” approach. As public policies affect the sustainability performance within a given sector, this can be regarded as the main component of the institutional dimension of sustainability within that given sector. Pioneer work in this context has been carried out in the context of the MCPFE. In this process, qualitative indicators on policies, institutions and instruments for sustainable forest management have been developed and gathered in order to provide insights into the institutional dimension of sustainability in the forest-based sector (MCPFE Ministerial Conference on the Protection of Forests in Europe 2007). Building on the approach applied within the MCPFE, the approach applied here allows for the analysis of the institutional dimension of sustainability not only on the geographical or administrative levels but also on a sectoral level. It could thus help to study policies as institutions that govern the sustainability performance within the forest-based sector.

Method

The findings presented in the present paper draw on data collected in 2008 and 2009 for the EFORWOOD project at the University of Natural Resources and Applied Life Sciences (Vienna, Austria). The research comprised three segments:

- (1) Review and collection of the relevant policy documents related to the FWC: the intention was to cover all the policy areas (biodiversity, trade, forest, climate and environment) and sector-specific policies that are of key relevance to the sustainability performance of the FWC;
- (2) Creation of a policy database in line with the EFORWOOD FWC-sustainability indicators (SI): the database thus contains the relevant legislation and policy documents that relate to all of the EFORWOOD FWC-SI;
- (3) Analysis of the policy database regarding institutional sustainability: the database will be employed to explore how public policies can represent the institutional dimension of sustainability. More importantly, it will be used to investigate how this can

contribute to the assessment of the sustainability performance in the forest-based sector.

Data collection

All policy documents relevant to the FWC in Europe have been identified and analysed with a view to determine the (quantitative and qualitative) targets and thresholds that relate to the EFORWOOD FWC-SI. The following sources were used during the data collection:

- Official EU websites, especially the *EUR-Lex* (<http://eur-lex.europa.eu>) and *SCADPLUS* (<http://europa.eu/scadplus>). Directorates-Generals (DGs) were also screened to identify all the policy documents relevant to FWC-sustainability and the EFORWOOD FWC-SI;
- Relevant policy documents applicable to the European context (e.g. Ministerial Conference on the Protection of Forests in Europe) and international context (e.g. United Nations Forum on Forests) were analysed and included in the policy database;
- Overviews of the policies and institutions in international and European forest policy were analysed in order to extract legislation and policy documents relevant to European FWC-sustainability and the EFORWOOD FWC-SI.

Policy database

As mentioned hereinabove, the documents were identified based on the institutional background structuring of the policy area and were analysed to determine the targets and thresholds related to the EFORWOOD FWC-SI. The criteria for a policy document to be relevant in this context were:

- Applicable to the European context. Meaning that the policy documents were only taken into account if a clear thematic relevance to the EU Member States could be detected;
- National or sub-national legislation and policies were not taken into consideration, as this would exceed the scope and purpose of the database;
- Only those policies issued by organisations and institutions capable of adopting legally binding legislation and policies were taken into account (e.g. the EU, UN or international conventions).

Given the broad definition of “sustainability”, some restrictions were imposed when integrating policies into the EFORWOOD policy database:

- Policies and/or legislation had to refer to (or define) the targets or thresholds for the FWC-SI (and their

sub-indicators) developed within EFORWOOD. Very general policies (for example, on the precautionary principle or environmental liability) were left out.

- If applicable, only those policies currently in force were included (e.g. in the case of legislation). In the case of communications and/or recommendations, this restriction would not make sense provided that policies simply cannot be “in force” or “not in force”.
- Binding legislations (regulations, directives and decisions) were prioritised, whereas recommendations and/or communications were only included if they were valued important for further legislation in the respective policy area. This was the case when recommendations and/or communications clearly referred to FWC-SI, but where no legislation had been adopted so far. For example, there is no binding legislation that prescribes how corporate social responsibility has to be fostered or encouraged by EU Member States, but communications and/or recommendations shed light on the targets that are formulated in the international arena concerning this issue.

The content of the policy alone will not reveal a great deal about the institutional dimension of sustainability. The FWC-related policies were, as a result, also classified in order to tell something about the (1) *structure of the policy area*, e.g. which institutions are issuing policies and legislation in this policy area in Europe? (2) *Types of policies regulating FWC-sustainability-related issues in Europe*, e.g. is this policy predominantly governed through regulations, directives and international treaties, or rather through recommendations, communications and soft laws (legally binding vs. non-legally binding policies)?; and (3) *mode of governance* related to the policies, e.g. legal instruments used. The purpose of this classification is to reveal how FWC-sustainability is governed in Europe, rather than just to show the mere content of the policy documents.

Mode of governance

The notion of the mode of governance refers to how governance is supposed to be exercised by state actors (in our case, the legislator and governmental actors). According to Treib et al. (2007), the mode of governance can be classified according to two criteria: (1) *Legal instruments used* (binding legislation or non-binding policies); and (2) *Mode of implementation stipulated by the policy* that is either flexible (leaving leeway to the addressees as regards its implementation) or rigid (prescribing detailed and fixed standards regarding the implementation of the policy). In accordance with these criteria, four different modes of governance referring to the policy dimension can be determined (see Table 1):

Enforcement

Binding legal instruments prescribing the detailed and fixed standards, leaving little leeway during implementation (fully binding and highly prescriptive pieces of legislation);

Voluntarism

Non-binding instruments that only define broad goals that the addressees may specify in the implementation;

Targeting

Non-binding recommendations that are more detailed and leave less room to manoeuvre for specification at the implementation stage than in the case of voluntarism;

Framework regulation

Binding legislation that, unlike enforcement, offers addressees more leeway in the implementation (e.g. by defining only broad goals or by presenting a range of policy options to choose from).

According to this basic determination of governance, European and international FWC-related policies can be further classified. The aim is to derive some institutional insight as regards how this policy area is structured and which mode of governance is prevailing. These institutional aspects provide a more comprehensive basis for assessing the sustainability performance in a given sector.

Furthermore, since many indicator references were found in the European and international policies (up to 73 per indicator), a system of classifying these connections concerning the relevance of the policy to the indicator is useful. Since this classification would have to be performed for more than 500 “indicator uses”, this system could not be overly elaborate. This is why a simplified approach had to be developed. Two questions are at the centre of this classification:

- Are the issues of forests and/or wood occupying a central position within the policy document?

- Is the topic of the indicator occupying a central position within the policy document?

Using these questions, the connection between a policy and an indicator was classified as follows:

Table 2 illustrates that the connection between a policy and an indicator can reach a “relevance score” ranging from 0 to 2. These scores signify the relevance of the linkage between a policy and an indicator, which will be classified as 1 (Low), 2 (Medium) and 3 (High). However, a low score does not mean irrelevance, as all the connections (between the policy documents in the database and the EFORWOOD FWC-SI) have been judged to be relevant.

As a last step, the indicator references found in the policies were screened for targets and thresholds (as defined for the particular indicator). The targets and thresholds were then classified according to the following criteria:

- *Type of Target/Threshold* Legally binding or non-legally binding
- *Form of Target/Threshold* Quantitative (exact targets or thresholds), *quantifiable* (increases and/or decreases) or *qualitative* (non-quantifiable)

Results and analysis

The policy database includes 235 policy documents, out of which roughly three quarters are laws and policies issued by the European Union. The remaining quarter of documents consists mostly of international treaties from international conventions or organisations (see Table 3). As regards the EU policy documents, the number of documents issued by the various EU institutions are somewhat balanced. The number of FWC-SI-related policy documents issued by EU institutions are as follows: Council of the European Council (68), European Commission (63) and the European Parliament and the Council (44).

Out of the organisations that have published more than two policy documents included in the database, the MCPFE occupies the top position, having issued 14 FWC-SI-related policy documents. This was followed by the

Table 1 A typology of the four modes of governance (adopted from Treib et al. 2007, pp. 14)

	Legal Instruments	
	Binding	Non-binding
Implementation		
Rigid	Enforcement	Targeting
Flexible	Framework regulation	Voluntarism

Table 2 Ranking the connection between a policy and an indicator

	Forests and/or wood central to the policy?	
	Yes (=1)	No (=0)
Indicator topic central to the policy?		
Yes (=1)	2	1
No (=0)	1	0

Convention on Long-Range Transboundary Air Pollution (CLRTAP) with 7 policy documents and the Council of Europe, Barcelona Convention and the Convention on Biological Diversity (CBD) all with 3 policy documents each. Among the other organisations having issued up to two FWC-SI-related policy documents, there are several influential organisations and institutions, such as the United Nations Forum on Forests, the United Nations Framework Convention on Climate Change, the Vienna Convention for the Protection of the Ozone Layer and the International Tropical Timber Organisation.

Out of the 235 policy documents in the database, all were connected to the EFORWOOD FWC-SI. It was not uncommon to find one policy document that was connected to two or even more FWC-SI. In total, there were consequently a total of 518 indicator uses. However, as can be seen in Fig. 2, the various dimensions of FWC-sustainability are unevenly regulated in Europe. Out of the 10 EFORWOOD FWC-SI referred to more than 20 times in the policy documents, no less than seven belong to the

environmental FWC-SI. Water and air pollution is by far the most regulated of the 27 EFORWOOD FWC-SI with 73 indicator uses. Regarding the *economic* and *social* dimension of FWC-sustainability, it is only “investments, research and development” that is referred to more than 30 times.

Concerning the relevance of the policies for the FWC-SI, most of the indicator uses have been judged to be of medium strength. This is predominantly due to the lack of forest specificity within many of the policies. For example, there are 73 European and international policies in the database dealing somewhat directly with “water and air pollution”, but only four of these are directly related to forests and/or forest-based industries. Two prominent exceptions to this are the indicators of “investments and R&D” and “forest biodiversity”, where more than half of the indicator references have been evaluated to be of high relevance (see Fig. 2). This unbalance between indicators and policy relevance, coupled with the wide range of influential institutions, clearly indicates that forest-related policymaking in Europe is not only uncoordinated but fractured.

With regards to the “mode of governance” applied to the FWC-SI-related policy documents, framework regulation and voluntarism occupy the largest share (see Figs. 3 and 4). However, as illustrated in Fig. 3, the balance between the three dimensions of sustainability varies significantly (each consecutive triangle representing 10%). The economic and social dimensions are governed mainly by the mode of voluntarism, while the environmental sphere is characterised by the modes of framework

Table 3 Types of policies in the EFORWOOD policy database

Types of policies	No.	Types of policies	No.
Directives (EU)	66	Decisions (EU)	24
Communications (EU)	46	Regulations (EU)	21
International treaties	38	Other	14
Soft Laws	25	Recommendations (EU)	1

“Soft Law” and “Other” consist of EU, other European and international policy documents

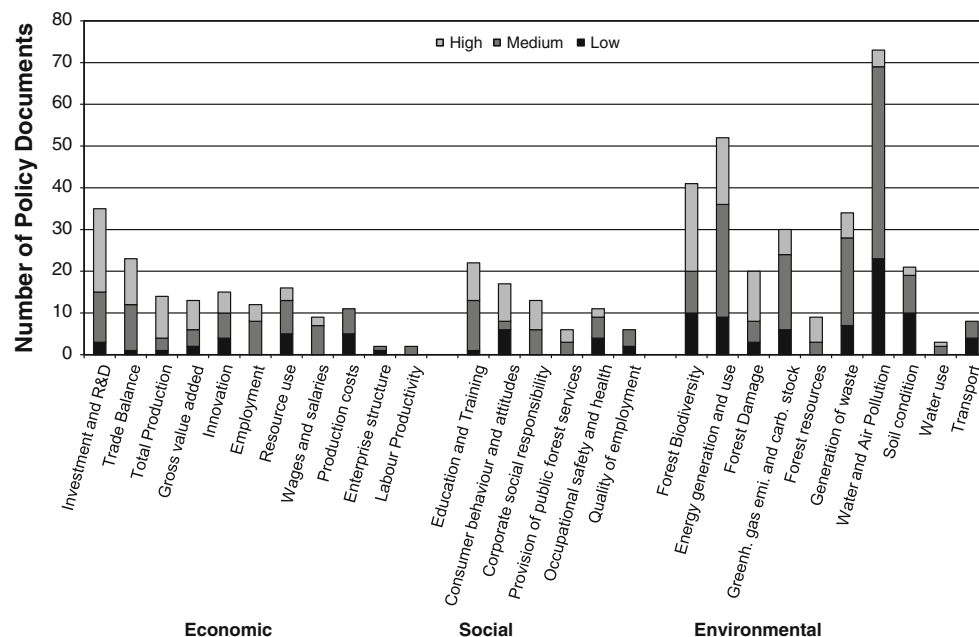


Fig. 2 Relevance of policies to the EFORWOOD FWC-SI

regulation and enforcement. The overall domination in this case of framework regulation and voluntarism may be due to the fact that we concentrated on European and international policy documents that leave more leeway as regards their implementation. Enforcement and targeting are applied a bit less often, but in both cases, the legally binding policy documents outnumber the non-legally binding ones. This may be due to our focus on legally binding legislation when developing the policy database. But regardless of the potential influence from our methodological approach, it clearly illustrates that the various domains of sustainability (excluding the institutional) are governed significantly differently.

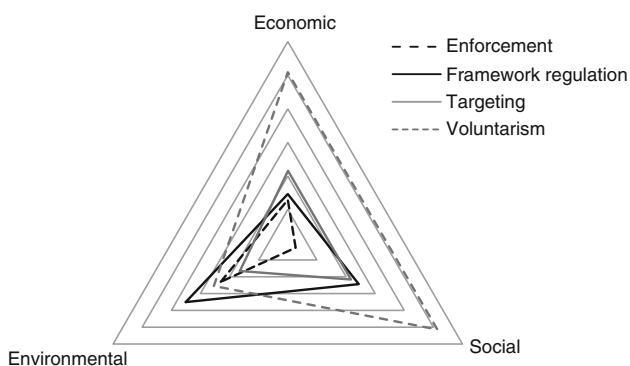


Fig. 3 “Modes of Governance” applied in the FWC-SI-related policy documents

In fact, the indicator-specific analysis related to the modes of governance provides a clearer picture of these results. Again, there is a major difference observed between the various dimensions of FWC-sustainability. As shown in Fig. 4, very few legally binding policies refer to the economic and social sphere of sustainability. These two dimensions are in fact dominated by targeting and voluntarism (i.e., the non-legally binding policy instruments). While being much more balanced, these modes of governance are also visible when looking at the environmental dimension of sustainability. It is only with indicators such as “water and air pollution” and “generation of waste” and “waste management” where the legally binding modes of governance enforcement and framework regulation undoubtedly outnumber the non-legally binding. Nonetheless, the prevalence of enforcement and targeting is significantly higher in the environmental sphere (including trade balance and production costs in the economic sphere).

Another result that can be derived from Fig. 4 is that the policies based on the non-legally binding modes of governance address more issues than the legally binding policies. Out of the 518 indicator references in the policy database, 190 are based on policies applying voluntarism in contrast to 145 on framework regulations. The same holds true for policies that do not leave much leeway when it comes to their implementation. In this case, 98 indicator references are based on policies applying the mode of targeting, whereas 85 are based on enforcing policies. Thus, even though there are fewer non-legally binding

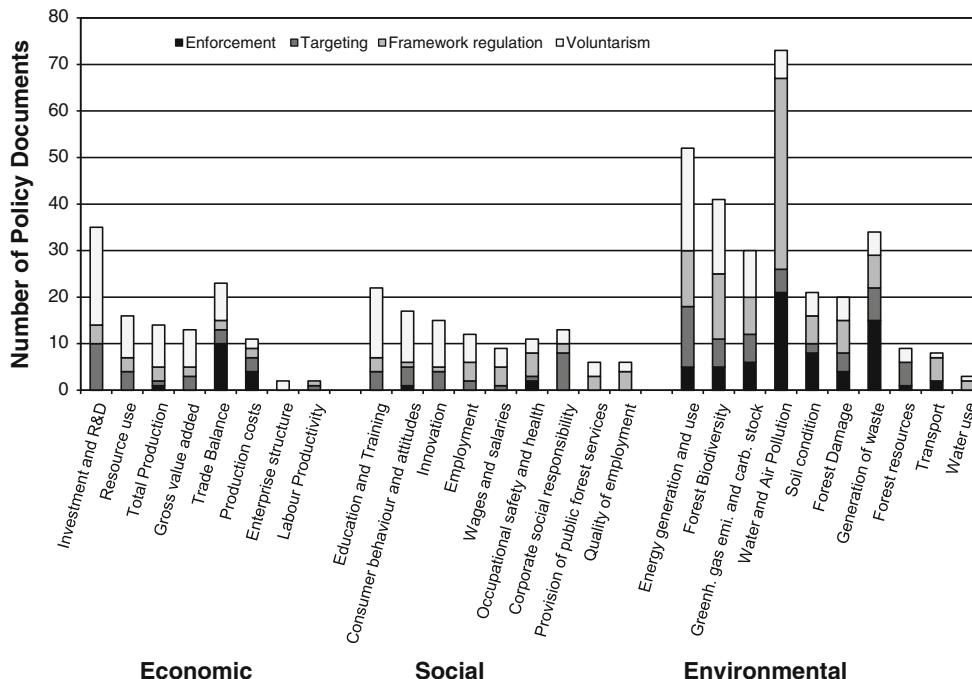


Fig. 4 “Modes of Governance” related to indicator references

policies in the database (104 vs. 131), they refer to the FWC-SI more often than the legally binding policies (288 compared to 230 indicator references).

Regarding the sample of 518 indicator references, another revealing area to explore has been the targets and/or thresholds identified within nearly all the policy documents. In some cases, more than one target and/or threshold has been found within one document. Consequently, a list of 534 targets and thresholds was identified and included. These targets and thresholds are defined as *quantitative*, *quantifiable* and *qualitative* indicators. On the whole, 95 quantitative targets or thresholds were identified for the 27 EFORWOOD FWC-SI. For some indicator classes, multiple thresholds/targets have been identified. 306 quantifiable targets were identified for all of the FWC-SI. No quantitative targets or thresholds are given here, but the direction of change is specified as “maintain”, “increase” or “decrease”. 128 targets or thresholds for the FWC-SI are non-quantifiable.

When segmenting the 518 indicator references in accordance with the three dimensions of sustainability (economic, social and environmental), a clear difference can also be found concerning the defined targets and the thresholds. Figure 5 visualises, for each of the three dimensions, the extent to which the indicators are qualitative, quantifiable or quantitative (each consecutive triangle representing 10%). As can be seen, the defined targets and thresholds for each of the three dimensions are more or less quantifiable to the same extent (approximately 60%), while there are significant differences concerning the qualitative and quantitative aspect of the targets and thresholds. Quantitative targets and thresholds only exist for the environmental and economic dimensions when compared to the social dimension that is predominantly governed through qualitative targets and thresholds. This result is in line with the modes of governance applied. As shown in Fig. 3, policy documents concerned with social indicators are much more dominated by voluntarism compared to the environmental and economic indicators. This may reflect a higher degree of importance attached to the environmental and economic indicators, but it also reflects that social indicators are much more intangible and difficult to define. Accordingly, the social sphere of sustainability in the forest-based sector is not only defined by voluntarism but by qualitative targets and thresholds.

Figure 6 provides an overview regarding the targets and thresholds that were identified for the EFORWOOD FWC-SI. The figure shows which forms of targets and thresholds were found for which indicators (quantitative, quantifiable and qualitative). Similar to previous findings, the results show a remarkable (and significant) difference between the economic and social dimension, on the one hand, and the environmental dimension of FWC-sustainability, on the

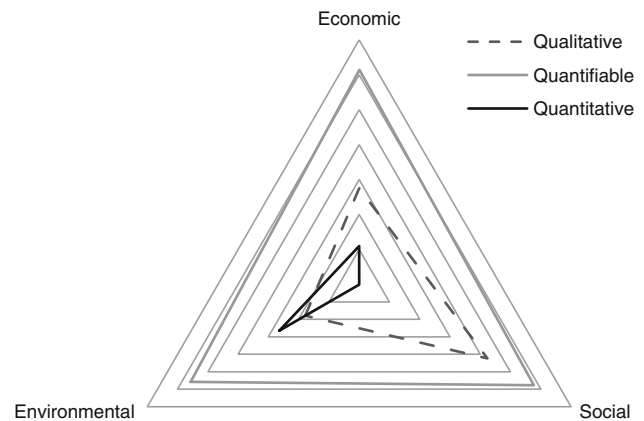


Fig. 5 Targets and thresholds for each dimension of sustainability

other hand. While there are virtually no quantitative targets and thresholds set-up for the economic and social FWC-SI, they occupy a considerable share of the targets and thresholds that were set-up for the environmental FWC-SI. This may be due to the extended competencies of the EU for environmental legislation and policy in comparison to economic and social issues. As a result, the EU rather sets up general frameworks and guidelines for the latter, instead of stipulating exact targets and thresholds in these respective policy areas. It is further interesting to note that it is predominantly climate change related indicators that are defined by quantitative targets and thresholds. Provided the global attention on climate change, this demonstrates current prioritisation in European policymaking, but it moreover exemplifies the extent to which varied and distinct interests can influence policymaking in the forest policy arena. It is plausible that a central EU institution (similar to that concerned with agriculture) dealing exclusively with the European forests (and policymaking) could have governed this sector more consistently.

Provided that the social and economic dimensions of sustainability within the European forest policy arena have been defined not only by targeting and voluntarism but also by qualitative and quantifiable targets and thresholds, we would expect to find a majority of these policies to be non-legally binding. In fact, as expected, when reviewing the patterns concerned with whether the targets and thresholds are legally, or non-legally, binding, a similar pattern emerges. As illustrated in Fig. 7, the economic and social dimensions of FWC-sustainability are clearly dominated by non-legally binding targets. There are, however, no non-legally binding thresholds. Out of the 220 targets and thresholds for the EFORWOOD FWC-SI, 174 are non-legally binding. This is not applicable to the environmental indicators of FWC-sustainability, however, where the non-legally binding targets and thresholds are just as many as the legally binding (157 vs. 157).

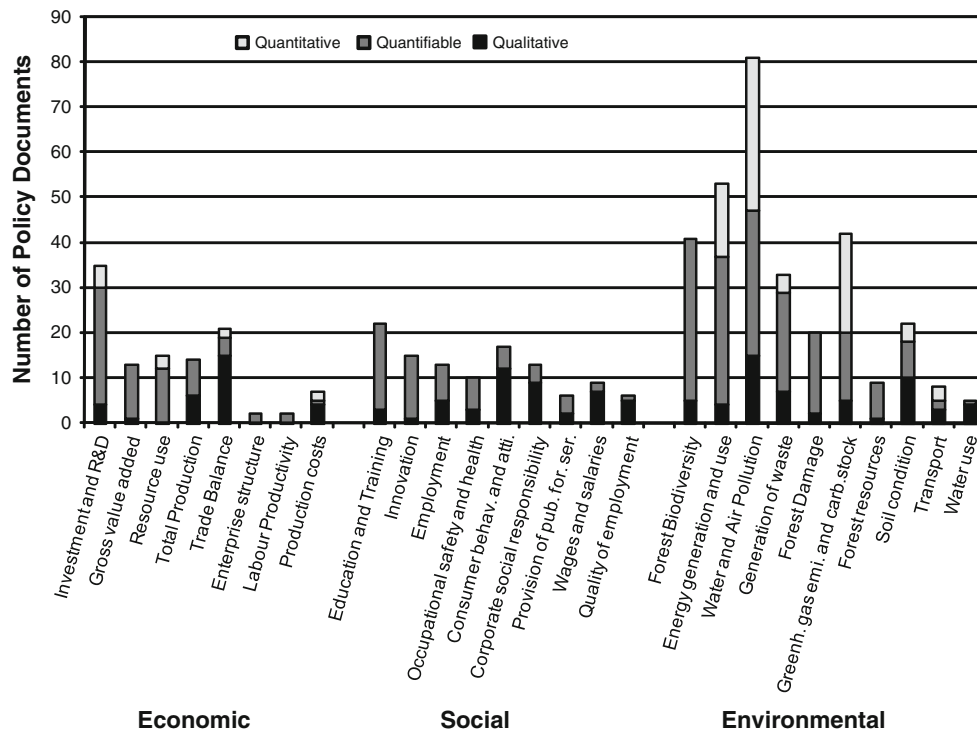


Fig. 6 Forms of targets and thresholds identified for the FWC-SI

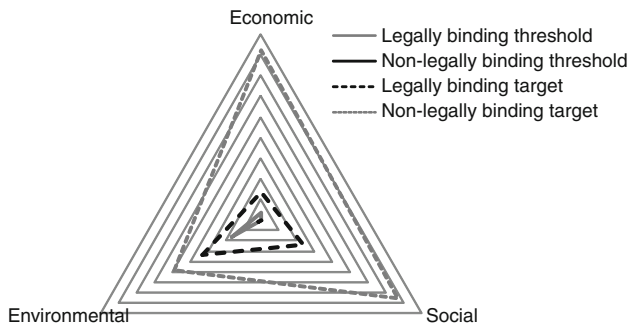


Fig. 7 Legally and non-legally binding targets and thresholds for each dimension of sustainability

When reviewing these differences more in-depth at the indicator level (see Fig. 8), it appears as if “water and air pollution” is highly regulated through legally binding targets and thresholds (68 of the 81 targets and thresholds are legally binding). This resembles the prevailing modes of governance in the various dimensions of FWC-sustainability (see Figs. 3 and 4), where the non-legally binding modes of governance dominate the economic and social dimension, whereas the legally binding policies are much more visible within the environmental dimension of FWC-sustainability. While this reflects some of on-the-ground differences between these “sustainability” fields (e.g. the need to quantify environmental targets), it also echoes the

absence of an institution that regulates and controls European forest governance.

While it is perhaps surprising that a majority of all the targets and thresholds are non-legally binding, it is not surprising that the environmental dimension of FWC-sustainability is regulated more through thresholds (in contrast to the economic and social dimensions). In fact, as can be found in Fig. 8, there are no thresholds set-up for the social indicators of FWC-sustainability, and only four of them for the economic indicators (resource use, trade balance, total production and production costs). Moreover, the prevalence of legally binding targets and thresholds is substantially higher for greenhouse gas emissions, water and air pollution, the generation of waste and soil condition. The remaining environmental FWC-SI are also dominated by non-legally binding targets and thresholds.

It is clear from the preceding analysis that the features of the policy database (as developed in the context of the EFORWOOD project) can be differentiated in terms of organisations and institutions issuing policy documents that are relevant for FWC-sustainability; types of policies; modes of governance applied; relevance to the FWC-SI; and the types and forms of the targets and thresholds set-up for the FWC-SI provide detailed insight into the governance structures prevailing in the European forest-based sector. In effect, it provides us with some insight into the institutional dimension of FWC-sustainability.

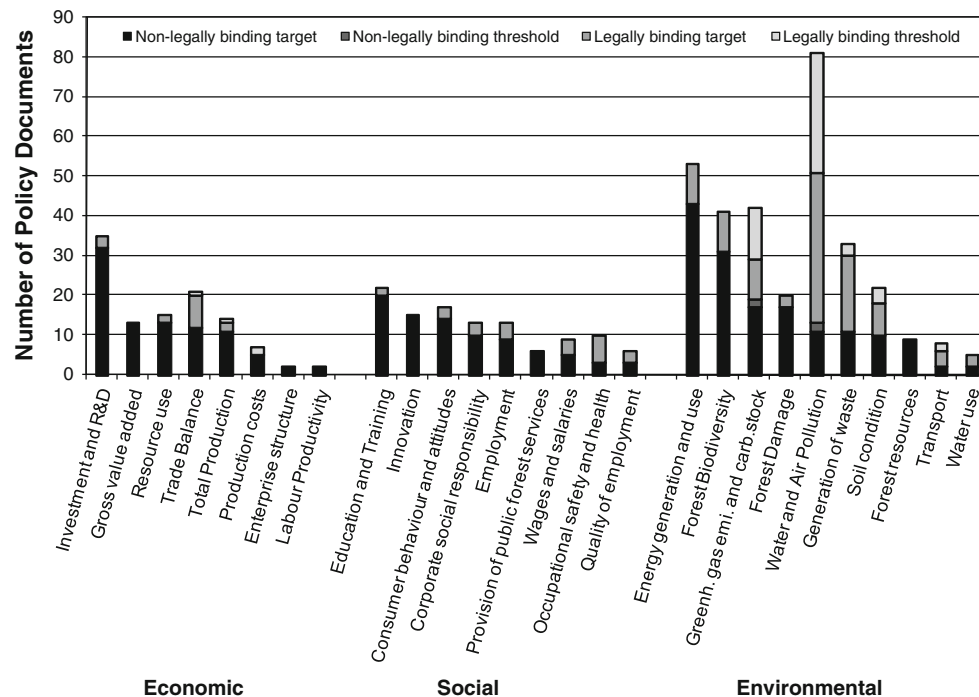


Fig. 8 Legally binding targets and thresholds identified for the FWC-SI

Discussion and conclusions

It can be concluded from the preceding section that FWC-sustainability in Europe is governed and regulated rather inconsistently by the many institutions and organisations involved. Taking factors, such as the apparent variation and range of policies in force, the varied modes of governance and defined targets and thresholds effecting the European forest-based sector, suggest that a more co-ordinated and centrally managed policymaking process would be conducive to sustainable FWC governance at the European level. With this in mind, there are several conclusions that can be drawn from the development of the EFORWOOD policy database, by analysing the FWC-related policy documents, and by determining the targets and thresholds that relate to the EFORWOOD FWC-SI.

It is apparent that the vast majority of international and European policies in the EFORWOOD policy database do not explicitly deal with forests or forestry-related issues in Europe, but they still influence the processes related to the FWC and its sustainability. This is not surprising, as forestry and forest policy do not represent a common European policy area as defined by the European treaties, as such, it remains an explicit EU Member State competence. The national forest programmes therefore remain the principal instruments in this regard. But regardless of this background, the policies in the database are important to FWC-sustainability. There is additionally a huge difference between forest policies and FWC-related policies, primarily because

the properties of a FWC are much more complex and multifaceted than those that are only focused on forest and/or wood products and processes. With this in mind, it is possible to think of the EFORWOOD policy database as largely overlapping with a general sustainability policy database for Europe, and not merely as a FWC-sustainability policy database. Even though the database was shaped by FWC-specific features, it is plausible that a general sustainability policy database for Europe as a whole would show similar patterns and results.

Provided that the origins of FWC-related policies are predominantly from an international and European level, the FWC (in Europe as a whole) is overwhelmingly determined by EU legislation. As can be seen in Table 3, 173 of 235 policies in the database stem from EU legislation or policies. This trend is in line with the recognition of an increasing density of regulation in Europe (as affected by EU legislation) and carries significant implications for the forest-based sector. For obvious reasons, the EU is the major player in this realm, whereas other international institutions, such as the MCPFE, have a tendency to draw up general frameworks instead of setting precise guidelines. In addition, traditional forestry institutions highlight sustainable forest management as an all-encompassing approach in order to reconcile the economic benefits of forestry for society with social and environmental values of society (Bauer and Guarin Corredor 2006). At the same time, environmental benefits provided by forests (e.g. carbon sequestration, biodiversity and landscape

protection) are frequently addressed by other policy areas, such as agriculture, environment and energy. This, coupled with the results from the present study, indicates that forestry actions within the EU appear to be fragmented not only into a range of policy areas but also into several institutions.

Another dimension of this problem relates to the density of regulation in the EU. It can be derived from the results that environmental policy is one of the most densely regulated policy areas in the forest-based sector (and the EU). It is possible to trace a continuous expansion of environmental activities and policies at the European level since the beginning of the 1970s (McCormick 1995). Environmental policy, at first seen as an insignificant appendage to economic integration, has today become a central policy area within the EU. Its increased importance is obvious in terms of the far-reaching influence that EU legislation has on the environmental policies of its Member States. Thus, due to the high density of schemes and the wide range of EU environmental policy, EU Member States are often forced to adapt national regulations, policy instruments and management structures to reach European standards (Knill 2003). This development of regulation in EU environmental policy can also be found in the EFORWOOD policy database. It was found that the FWC-related policies referring to the environmental dimension of FWC-sustainability represent the vast majority of the policies included in the database. Out of the 518 indicator references that were identified in the policy documents, 291 relate to environmental FWC-SI. It is, therefore, safe to conclude that at least on the international and European policy levels, the environmental field is by far the most heavily regulated of the FWC-sustainability dimensions. This is most likely due to the unequal division of competencies between the European Union and its Member States regarding the three dimensions of sustainability. Whereas environmental policy belongs to the main competencies of the EU, economic and social policy belongs largely to the competencies of the Member States (Pülzl 2005). As a result, it is possible that the economic and social dimensions of FWC-sustainability is not less regulated, but it rather may be that local, regional and national policies would make up for this lack of regulation at the international and European levels.

The distinction of the competencies between the EU and its Member States concerning the differences between, on the one hand, the economic and social dimension, and the environmental dimension of sustainability, on the other hand, is not only reflected in the sheer amount of policies and indicator references, but also in the content of the latter. Due to the distinction of competencies, the EU cannot simply issue legally binding policies or targets and thresholds on many social and/or

economic issues in most cases. There are, in addition, many more international organisations and institutions dealing with environmental policy than there are for social or economic concerns. These represent some of the differences between the dimensions of sustainability that contribute to the mode of governance, particularly for the economic and social dimensions of FWC-sustainability, being overwhelmingly dominated by non-legally binding policies and targets and thresholds. In comparison, within the realm of environmental policymaking, the EU not only has the capacity but the right to issue legally binding policies, targets and thresholds, and is today making wide use of this situation. Consequently, the distinction of competencies represents one factor influencing the comparatively higher degree of legally binding stipulations from the EU related to the environmental indicators of FWC-sustainability.

Related to this issue, the political instruments of non-EU forestry institutions are primarily based on non-legally binding commitments. For instance, the MCPFE, currently the major non-EU forest policy institution at the European level, is focused on policy implications at the national level based on non-legally binding resolutions. At the same time, other policy areas have developed legally binding commitments, for example, in the form of European or global conventions (e.g. the biodiversity convention), dealing with issues related to forestry. This is especially true for the EU, which accounts for nearly all the binding legislation and binding targets or thresholds in the EFORWOOD policy database. These differences between the policy areas, such as agriculture or environment, highlight the significant impact of having only one key institution at the European level dealing with policymaking in contrast to several, as is the case of the forest-based sector. It is assumed that the forest sector could benefit greatly by having only one institution coordinating its policymaking.

It has to be stated, however, that our analysis delivers a detailed overview of only international and European legislation and policies that have an impact on FWC-sustainability at the European level. This does not mean that the results that we have found can explain FWC-sustainability. This is not only because of the limitations imposed by the database itself, but also because FWC-sustainability is dependent on many factors outside of the policy sphere. Moreover, as afore-mentioned, many policies that influence FWC-sustainability in Europe are primarily formulated at the national level.

The results clearly illustrate the extent to which policymaking in the forest-based arena in Europe is fragmented and uncoordinated, particularly compared to other policy arenas, such as agriculture or environment. This is principally due to issues such as the distinctions of competencies

between the EU and its Members States and the wide range of political organisations and institutions involved in European forest-based policymaking (e.g. MCPFE). It is therefore suggested that future attempts at developing indicators regarding any forest-based SIA should take the institutional dimension (and its impact) into account. It has to be borne in mind that assessing the institutional dimension of sustainable development (even if specific indicators are available) is a difficult task. For instance, it is still unclear as to whether the goals, targets and timetables of specific institutions are sufficient to understand its influence on sustainable development, and what it would mean for the institutional setting as a whole (Pfahl 2005). In addition, question marks still remain as to whether the goals and criteria that we define today are sufficient to achieve sustainability in the long-term. This, as the conditions for human development change over time, along with technological development, may enable us to assess the impact of current practices more efficiently, and better, in the future. The current indicators may be insufficient in order to truly evaluate the impact of institutions in terms of sustainable development, but given the institutions apparent impact on a given policy field, it is crucial to take it into account.

To conclude, it is clear that the sustainability of the institutional setting depends on the national context and the actors involved in determining the sustainability targets and that the specific goals for similar institutions, such as national environmental agencies or sustainability policies, might be very different. However, the connection between the sustainability indicators and a comprehensive sector-dependent policy database is a feasible approach for overcoming the lack of consideration given to the institutional sphere of sustainability. Therefore, the field of institutional sustainability, and the use of public policies as an institutional approach, deserve closer attention and further study.

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