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*Article*

# Sustainability Frames in the Context of the Energy Wood Conflict in Germany

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**Abstract:** Interpretations of the concept of sustainability vary substantially in relation to forests and their management, and they are usually present in conflicts about forest use. In this article, we consider underlying interests relating to conflicts of forest use as a given. Our aim is therefore not to reveal those interests, but rather to explore understandings of sustainability hiding behind them—sustainability frames. To this end, we use frame theory to investigate the following research question: How are different sustainability frames of interest groups reflected in a forest use conflict situation in Germany? The energy wood conflict serves as the example for our research, as it is currently the most prominent forest management conflict in Germany. Using 12 stakeholder interviews within three interest groups as the empirical data basis, it becomes clear that sustainability understandings reflect particular positionings in conflicts, or vice versa. In the energy wood conflict, the classic dichotomy between forestry and conservation groups becomes a trichotomy in which the forestry group splits into an interest group that profits from energy wood production and one that competes with it. We suggest that sustainability understandings do not represent worldviews that guide how actors understand conflicts, but rather that they are shaped according to actors' particular interests in conflicts.

**Keywords:** sustainable forest management; frame theory; framing; forest biomass; bioenergy; nature conservation; wood production; stakeholder group

## 1. Introduction

"There is some truth in the criticism that [sustainable development] has come to mean whatever suits the particular advocacy of the individual concerned. This is not surprising. It is difficult to be against 'sustainable development'. It sounds like something we should all approve of, like 'motherhood and apple pie'" [1].

As put in a nutshell in the introductory quotation, sustainability—"that magic word of consensus" [2]—has many faces and shapes. The popularity of the notion and underlying concept of sustainability as well as sustainable development in politics, media, economy and science is based on the fact that it has positive connotations and radiates moral legitimacy [3]. For this reason, it seems natural that "confusion about sustainable development arises as people use the same words to mean a wide divergence of views on the goals, routes and the methods of moving towards sustainable development" [4]. Sustainability is therefore considered to be a "fuzzy, controversially interpreted principle", with a plurality of connotations that cannot be homogenized [5].

Although it is perceived by the German forestry sector as a traditional notion from within their own ranks, the sustainability concept is also subject to a variety of interpretations in relation to (German) forests and their management [6–11]. As forest management is challenged by various demands—serving as resource base for material and energy use, contributing to climate protection, being available as recreation area, serving as natural habitat, *etc.*—traditional definitions of sustainability from within the forest sector, such as that of Hans-Carl von Carlowitz which suggests a sustainable yield of wood, seem to be stretched to their limits. Critical voices note that the implementation of sustainable forest management can hardly be accomplished due to the high complexity of integrating new demands on forests [12], and that the traditional notion tends to lose relevance due to uncertainties related to future and global change [8]. Such complexity and fuzziness also allow actors to shape the notion according to their interests and political intentions [13]. For instance, actors can easily legitimize their own actions by drawing on the positive connotations of the notion, or use it to criticize the actions of others. This is best shown in a practical example: The German forestry sector presents itself as "foresighted by tradition" [14] and alludes to the tercentenary of the first written evidence of "nachhaltend" (sustained) by von Carlowitz in 1713 with its slogan: "You think sustainability is modern? So we do—and have done so for 300 years" [14]. However, this self-perception is not shared by environmental NGOs like Greenpeace, who counter with the statement "300 years of sustainable forestry—more illusion than reality" [15]. This divergence of perceptions about the sustainability of forest use concurs with an observation of Winkel (2013), who states that all conflicts surrounding forest use and forestry have in common that they encompass different perceptions of sustainability [16].

In this article, we take underlying interests regarding conflicts of forest use as a given. Our aim is therefore not to reveal those interests, but rather to explore understandings of sustainability hiding behind them—the sustainability frames—which we understand as an interpretative lens in conflicts. To this end, we investigate the following research question: How are different sustainability frames of interest groups reflected in a forest use conflict situation in Germany? Our focus is on a snapshot of sustainability frames of interest groups; we do not consider their activities, interactions, or power relationships. Our assumption is that different interest groups hold distinct sustainability frames which

are shared by the respective groups' members and serve to legitimize their demands and actions within a conflict situation.

Based on this assumption, we use the classical dilemma between (timber) production and forest protection as an example, specifically considering the issue of energy wood production, which is currently fueling this classic conflict in a prominent way [17,18]. Globally, wood energy is as important as all other renewable energy sources taken together (hydro, geothermal, wastes, biogas, solar and liquid biofuels) and provides over 9% of the total primary energy supply [19]. In Germany, the demand for bioenergy is being stimulated with different policy instruments in order to reach the 2020 energy and climate targets [20]. These targets are described in the German National Biomass Action Plan, which stipulates that bioenergy should make up 11% of total primary energy use [20,21]. Although there is no target specified for forest-based bioenergy [21,22], incentives for energy wood use do exist, such as financial support for investments in wood-based heating systems in private households [20]. Therefore, wood energy plays an increasingly important role in Germany, especially in the heating sector: the largest proportion of thermal energy from renewable energy sources is biomass (~87%); thereof the main shares are biogenic solid fuels in private households (~43%), in industry (~16%) and in heating plants and combined heat and power stations (5%)—mainly in the form of firewood, wood chips and pellets [23]. However, the abovementioned estimates for bioenergy in the German National Renewable Energy Action Plan for 2020 [22]—taken from the Biomass Action Plan [21]—appear to lack close integration with domestic forest policy. This is despite the fact that intensive utilization of domestic forest potential will be needed to materialize such an increase, and that biomass import could be an alternative [20–22]. In addition to the lack of policy integration, most policies lack outlines of how to deal with potential negative effects of bioenergy production on e.g., saw mills and fiber board industries, biodiversity conservation, or recreational and cultural heritage values, which are likely to emerge through the Plan's implementation [20]. Based on these factors, the up-and-coming, climate-neutral, storable, and re-growing resource wood is fuelling the classic conflict between (timber) production and forest protection [17,18], and accordingly between forestry and conservation groups. Hence, the issue of energy wood production is well suited to serve our investigation of sustainability frames among different interest groups involved, which we mainly base on deliberations of Dewulf *et al.* [24].

## 2. Methodology

We base our analysis on frame theory, which has been applied frequently in recent studies of natural resource management and environmental conflicts [25–29]. In frame theory, conflicts are associated with "disputes in which contending parties hold conflicting frames" [30]. The basic idea of frames suggests that "there is a less visible foundation […] that lies beneath the more visible surface of language or behavior, determining its boundaries and giving it coherence" [31]. In other words, frames can be understood as an "interpretative lens" that defines and determines how an issue is understood, what is perceived to be important about it and what would be desired solutions for a conflict [25] thus influencing the outcomes of conflicts [32].

Dewulf *et al.* [24], who developed an overview of approaches to frames and framing in conflict and negotiation research, make a primary distinction between "frames as cognitive representations", and

"framing as interactional co-construction". In our study, which is based on interviews with stakeholders and has no obvious interactional component, we concentrate on frames as cognitive representations and thus on "the way that people experience, interpret, process or represent issues, relationships and interactions in conflict settings" [24]. While using this rather static idea of frames as knowledge structures that determine how their holders interpret a situation, we do not negate the relevance of framing as interactional co-construction as explained in Dewulf *et al.* [24], or the importance of institutions in frame construction as found in Schön and Rein [30]. However, the aim to provide a snapshot of sustainability frames present in the conflict about energy wood in Germany demands an understanding of frames as "representations stored in memory" and framing as a "process of applying cognitive frames to situations" [24]. As suggested by Dewulf *et al.* [24], we thereby pay attention primarily to variance in frames between—in our case three—groups of stakeholders.

Following Dewulf *et al.* [24], the approach of frames as cognitive representations includes three dimensions: issues, identities and relationships, and processes. Cognitive issue frames concern how parties cognitively represent the substantive issues in a conflict situation; cognitive identity and relationship frames show how parties cognitively represent themselves, others and relationships in a conflict situation; and cognitive process frames relate to how parties cognitively represent the interaction process between them in the conflict [24]. In the following, we will explain how we operationalize this three-dimensional approach of frames as cognitive representations in our study.

In order to answer the research question of how different sustainability frames of interest groups are reflected in a forest use conflict situation in Germany, we collected data on stakeholder perceptions in interviews, as suggested by Dewulf *et al.* [24]. An explanatory approach best served our interest in individual stakeholder perception. Therefore, following Witzel [33], we used a qualitative, problem-centered interview approach, allowing us to uncover what individual interviewees perceived as the most relevant issues. We developed a semi-structured interview guide with open questions to keep the focus on the research issue while also giving interviewees room for placing personal emphases [33]. Using the interview guide, we interviewed 12 stakeholders with diverse professional backgrounds concerned with the energy wood conflict in Germany and used maximum variation sampling to allow for high diversity of perceptions with a rather small purposive sample representing various interests. Interviews were conducted face-to-face between November 2012 and February 2013, recorded, and later transcribed.

Analyzing the interview material with the software MAXQDA (Verbi GmbH) we followed a qualitative content analysis approach based on Mayring [34]. In a first step, we assigned all interviewees to one of three groups, which we defined based on exploratory and inductive insights gained from the interview data. The assignment was based on interviewees' attitudes towards wood use and energy wood use. The resulting groups are illustrated in Section 3.1. In a second step, the coding of the interviews, we inductively derived codes from the conceptual framework based on Dewulf *et al.* [24] by viewing the data, and categorized words, phrases and paragraphs as subjects of these codes and thus of the research question [35] (see Table 1). In a third step, we further analyzed the text sections assigned to the different codes and summarized each code for each of the three groups. These group-specific summaries served as the base for presenting the results.

**Table 1.** Dimensions of frames, codes for data analysis, and typical examples; based on Dewulf *et al.* [24].

| Dimensions of frames | Codes for data analysis | Typical examples |
|---|---|---|
| **Issue frames** How parties cognitively represent the substantive issues in a conflict situation | Perception of sustainability | "*Sustainability means that I use something without destroying the basis.*" |
| | Perception of forest | "*For me, forest is a fascinating habitat […]; it is the basis of all human existence.*" |
| | Perception of forest protection (national parks, land-freeze) | "*We are against segregative protection and further designations of […] national parks.*" |
| **Identity and relationship frames** How parties cognitively represent themselves, others and relationships in a conflict situation | Depiction of self | "*We are at the beginning of a value chain.*" |
| | Negatively depicted adversaries | "*That is the only antagonist to professionally questionable actions of conservationists.*" |
| | Depiction of society | "*The pressure of the society on the forest is relatively high.*" |
| **Process frames** How parties cognitively represent the interaction process between them in the conflict | Definition of conflict | "*One form of use, namely the energy use, is unilaterally subsidized at the charge of the other form of use.*" |
| | Desired handling of conflict | "*It is best to bark the trees; everything except the […] stem remains in the forest.*" |

## 3. Results

In the following subsections, we first assign the interviewees to groups. Afterwards, we present the identified issue frames, identity and relationship frames, and process frames of sustainability that the three interest groups hold in the energy wood conflict in Germany. We give prominence to the main similarities and differences in frames across the three groups. When indicating a group, at least one interviewee from the respective group has argued along the lines illustrated.

### *3.1. Group Assignment*

Based on the interview material, three groups—each including four interviewees—were identified (see Table 2): *"the profiteers*"—stakeholders who advocate forest use in general and energy wood use specifically, as they profit from the increasing demand for energy wood (interviewees P1–P4); "*the competitors*"—stakeholders who advocate forest use in general but oppose energy wood use, as they prioritize material wood uses (interviewees C1–C4); and "*the opponents*"—stakeholders who advocate forest protection and caution against overexploitation of forests (interviewees O1–O4).

### *3.2. Issue Frames*

Cognitive issue frames concern how parties cognitively represent the substantive issues in a conflict situation. We identified three substantive issues in the energy wood conflict in Germany: perceptions of sustainability, perceptions of forest, and perceptions of forest protection. All issue frames are summarized in Table 3.

**Table 2.** Group assignment, group criteria and professional backgrounds of stakeholders.

| Group | *The profiteers* | *The competitors* | *The opponents* |
|---|---|---|---|
| **Attitude** [1] | • Pro use<br>• Pro energy use | • Pro use<br>• Contra energy use | • Contra use<br>• Contra energy use |
| **Background** | • Private forest (P1)<br>• Private forest association (P2)<br>• Forestry association (P3)<br>• Forest administration (P4) | • Wood material industry (C1, C2)<br>• Paper and pulp industry (C3)<br>• Sawmill industry (C4) | • ENGOs (O1, O2)<br>• Science, botany (O3)<br>• Forest ecology consultancy (O4) |

[1] The attitudes towards wood use and energy wood use as well as the group names are bolded and simplified; they only serve as an illustration for group assignment and do not represent in detail the rather complex positions of stakeholders.

Regarding perceptions of sustainability, all three groups use the idea of intergenerational justice as found in the Brundtland report "Our Common Future" [36] when explaining their understanding of sustainability and accordingly sustainable development. However, when taking a closer look at the wording used, it becomes clear that their interpretations of intergenerational justice differ: Whereas *the profiteers* and *the competitors* have an economic understanding and want their descendants to have the same economic capital (profit, ecological benefit), *the opponents* focus on the preservation of the ecosystem and the same natural capital for future generations, especially in terms of soil and genetic resources. *The opponents* additionally explain sustainability as the long-term functioning of the system. Long duration and long-term are used as synonyms for sustainability by *the profiteers*, but in connection with any aspect, such as nutrients, income, wood production, *etc.*—"*each single aspect can be sustainable or not sustainable*" (P2). Another similarity exists between *the profiteers* and *the competitors*, who use the definition of Carlowitz to explain that they understand forest sustainability as sustainable yield of wood. The sustainability of the German forest sector and its characteristic as role model is thereby explicitly highlighted by *the competitors*. In line with their understanding of sustainability drawing on Carlowitz, *the profiteers* and *the competitors* refer to the wake theory ("Kielwassertheorie") when explaining their understanding of sustainable forest management. Wake theory suggests that by using a forest all other forest functions, such as protection and recreation, are automatically fulfilled in the wake. Next to this theory, the three dimensions of sustainability—economy, society, and environment—are mentioned by *the competitors*, however it is highlighted that "*not only ecological, but also social and economic*" (C3) aspects should be considered and that an ecological overload of the concept is currently taking place.

The conservation of the productive capacity of forests is important to *the profiteers* and *the opponents*. *The profiteers* argue against soil degradation and overexploitation given that they understand sustainable management as conservation of the resource on which their management activities take place. However, they also consider that "*it plays a marginal role that the animal and plant species using the forest also get along with it*" (P1). The importance of this second issue is limited: "*I see it as frame condition, whereas it needs to be stated again and again that we do not produce wood grouses*" (P1). In contrast, the conservation of both soil and biodiversity of forests as an end in itself play a crucial role in *the opponents'* understanding of forest sustainability and thinking in closed (nutrient) cycles defines what is sustainable—keeping these cycles closed. *The opponents* understand sustainability as an expression of respect towards nature, which humans have lost, and as

an unselfish, careful interaction with ecosystems: "*If you studied natural sciences and are involved in research, you gain so much respect for nature. It does not need another metaphysical, religious, ethical superstructure. You simply gain respect for life*" (O3). *The opponents* furthermore perceive sustainability as the orientation towards the ecosystem rather than an orientation towards human demands. Efficiency is thus not necessary from their point of view, and a natural, dynamic development of forests is seen as sustainable.

**Table 3.** Issue frames.

| Group | *The Profiteers* | *The Competitors* | *The Opponents* |
|---|---|---|---|
| **Perception of sustainability** | • Intergenerational justice: maximal profit from scarce goods for future generations; give descendants enterprise of same value<br>• Long-term thinking: nutrients, income, *etc.*<br>• No soil degradation, no overexploitation<br>• Von Carlowitz<br>• Wake theory ("Kielwassertheorie")<br>• Management: conserve resource on which management takes place (soil)<br>• Animals, plants: marginal role | • Intergenerational justice: economy proceeding so that descendants can use the same resource material and enjoy ecological benefits<br>• Von Carlowitz, German forestry<br>• Wake theory ("Kielwassertheorie")<br>• Three dimensions of sustainability<br>• Ecological overload | • Intergenerational justice: preserving options of future generations within ecosystem; maintain natural capital: soil, genetic resources<br>• Long-term functioning of system<br>• Conservation of productive capacity: soil, biodiversity<br>• Respect for nature/life; no selfishness<br>• Carefulness; orientation towards ecosystem, not human demands<br>• No efficiency necessary<br>• Natural, dynamic development of ecosystems<br>• Materials cycles: nutrients |
| **Perception of forest** | • Management: in line with owner's interest<br>• Use form most compatible with nature; economic good/wealth<br>• Other functions achieved in the wake; protection through use<br>• Forest law sufficient—no certification necessary | • Fascinating habitat<br>• Management: multifunctional<br>• Should be used: economic value, wealth of society<br>• Germany: role model<br>• Germany: cultural forest<br>• No certification necessary | • Fascinating ecosystem, natural habitat<br>• Management: close to natural vegetation, preservation of productive capacity<br>• Not an endless availability of all nutrients |
| **Perception of protection** | • Protection through use, segregation inefficient<br>• Land-freeze not good for national economy<br>• Cost-benefit calculation: nature protection *vs.* timber production; opportunity cost of protection<br>• Nature protection contract | • Protection through use, no segregation<br>• Germany: proud role model, no segregation<br>• "Ghettoization" of nature<br>• Germany: cultural forest—natural not only beautiful<br>• Limitations on use: disadvantages for forest | • Protection for biodiversity, soil: many more species<br>• Important to see how forest functions without human interventions<br>• Give rise to something that people no longer know: beautiful primeval forest in Germany |

The three groups also differ in their perceptions of forests. For *the opponents*, forest is primarily a fascinating ecosystem and natural habitat. Although *the competitors* also describe forest as a fascinating habitat, they see it primarily as economic value and as a basis for the wealth of the affluent German society—just like *the profiteers*, who furthermore depict forests as the "*use form most*

*compatible with nature*" or as a "*synthesis of economic targets and ecological demands*" (P1). Both groups furthermore advocate the multifunctional use of forests, whereby other forest functions are—in their view—fulfilled in the wake. *The profiteers* consider that forest management should reflect the interests of forest owners. They perceive existing forest law to be sufficient for forest management and thus oppose certification, which is also true for *the competitors*. *The competitors* additionally consider that Germany is a role model in terms of its management of forests, which are, however, cultural forests as opposed to natural forests. The interviewees seem to divide between cultural forests, where human interventions such as forestry activities are taking place; and natural forests, where no human interventions are taking place. In contrast, *the opponents* support a type of forest management which includes close to natural vegetation and puts the preservation of its productive capacity center stage, as not all nutrients have unlimited availability.

With regards to forest protection, *the profiteers* and *the competitors* again have rather similar views. They argue for protection through use and against segregation and land-freeze of areas for nature conservation, as they perceive this to be inefficient and problematic for the national economy and for the forest: "*We pack nature in ghettos. […] We imagine that we establish a national park somewhere; whether it is in the Black Forest or in the Bavarian Forest, in Eifel, in Sauerland—there we establish our national park and then we have peace of mind and can run riot everywhere else. […] We need to pay attention to reasonable criteria for nature conservation throughout Germany*" (C1). *The competitors* furthermore highlight that Germany is a role model for other states in terms of its sustainable, multifunctional management of forests; that German forests are cultural forests, and that natural forests are not necessarily beautiful. *The profiteers* state that a cost-benefit analysis can compare nature protection to timber production and show the high opportunity costs of nature protection. They suggest the use of contracts for nature protection in order to absorb such opportunity costs. In comparison, *the opponents* advocate forest protection for biodiversity: "*There is an amazing capacity in it [the forest] once you let it grow. […] What [biodiversity] we will discover, in that plenty, what will come—we have until now suppressed all of this*" (O2). They find it important to see how forests function without human intervention and want to give rise to something that people in Germany no longer know: beautiful primeval forest.

### *3.3. Identity and Relationship Frames*

Cognitive identity and relationship frames show how parties cognitively represent themselves, others and relationships in a conflict situation. We identified three identity and relationship frames in the energy wood conflict in Germany: depiction of self, negatively depicted adversaries, and depiction of society. All identity and relationship frames are summarized in Table 4.

The depiction of self by *the profiteers* and *the competitors* is quite similar. Both perceive themselves or rather their sector as victims of negative societal perceptions and of political developments. They feel that foresters and forestry have a negative image in society and consider that they deserve a green image and appreciation for the positive things they do for forests. Furthermore, they explain that they are victims of political decisions that lead to deciduous species displacing spruce: "*We are driven out of the market. We will come up with something, but one thing is clear, namely, spruce is our bread and butter tree. Many people live off it; […] one cannot replace it. Spruce*

*is the tree of consumption, we all live off it, […] Germany has the most efficient forests in Europe and now we are questioning it and turning back the clock*" (C4).

**Table 4.** Identity and relationship frames.

| Group | *The Profiteers* | *The Competitors* | *The Opponents* |
|---|---|---|---|
| **Depiction of self** | • Self as victim<br>• Foresters have negative image<br>• Deciduous wood displaces spruce, threatening existence | • Self as victim<br>• Forestry has negative image<br>• Deciduous wood displaces spruce, threatening existence<br>• Important industrial sector, many jobs<br>• Subsidies: unequal conditions, unfair competition | • Self as powerless vis-a-vis nature: need humility, respect |
| **Negatively depicted adversaries** | • ENGOs: not open for dialogue, use time between inventories for campaigns<br>• Politics/societal discussion: political targets that sell well for votes<br>• Certification organizations: opportunistic system, not necessary if forest is managed according to the law | • ENGOs: demand impossible things, skilled in PR<br>• Politics/societal consensus: foster energy transition without seeing consequences, short-sighted incoherent politics<br>• FSC, Greenpeace, WWF: "mafiosi"<br>• Green politics: limitations placed on forest use negatively influence forestry and wealth<br>• Science: interest only in research funds, subsidies | • Forest owners/administration: no open communication<br>• Private forests: interest-led sellers of energy wood<br>• Foresters: victims who are rethinking practices<br>• Politicians: economic calculation, lobbyism<br>• Media/journalism: incompetent, foster extremes<br>• Science: exaggeration of research results in order to secure research funds<br>• Politics: inadequate subsidies |
| **Depiction of society** | • Wants participation but is not well informed<br>• Does not know consequences of land-freeze and opportunity costs<br>• Slaughterhouse principle ("Schlachthausprinzip" [1]): thinks cutting wood is bad, should think forest tending is attractive | • Continues trend of ENGOs regarding national parks<br>• Sustainability: ecological<br>• Does not understand consequences<br>• Slaughterhouse principle ("Schlachthausprinzip")<br>• Wants to do something good for environment<br>• Prosperous society | • Pressure on forest<br>• Does not understand importance of nature protection in the forest<br>• No longer knows that forest functions itself |

[1] In German forestry circles, "Schlachthausprinzip" or "Schlachthausparadox" refers to people opposing the felling of wood while at the same time using wood products.

What distinguishes *the competitors* from *the profiteers* is that they feel discriminated due to the subsidies for energy wood. They feel that the political will is to expand bioenergy "*at all costs, even at the cost of already established and efficient energies in the material sector*" (C3), and that subsidies result in unequal conditions and unfair competition. That is why they consider that the wood material industry suffers most from energy wood use. They highlight that it is an important industrial sector with a long value chain and one which provides many jobs: "*We are an industrial society and we have a*

*long value chain here in Germany. […] And we are at the foundation. […] If this foundation is capped, it eats its way through the whole national economy. You can compare this to a tree: If you chop the roots, the tree will live for some time longer, but at some point it will die. […] We might still be alive in ten or twenty years, but maybe in forty or fifty years our children or grandchildren will no longer find this industrial society*" (C3). Compared to *the profiteers* and *the competitors*, *the opponents* do not depict themselves in much detail. However, they describe themselves and humans in general as powerless vis-a-vis nature, which explains why they highlight the need for humility and respect in human-environment interactions.

While we could not identify positive depictions of adversaries in our interview material, many negative depictions of adversaries were mentioned in all three groups. Again, there are overlaps between *the profiteers* and *the competitors*. They both depicted ENGOs negatively: *The profiteers* state that ENGOs are not open to dialogue and that they have well organized campaigns which do not serve to achieve a specific goal but rather are seen as the end in itself. According to *the profiteers*, ENGOS take advantage of the time between two forest inventories, where current data on felling rates, tree composition *etc.* are not available for campaigning. *The competitors* perceive that ENGOs make demands that are not possible to fulfil, but the fact that they (ENGOS) are skilled in public relations makes it hard for themselves (competitors) with poor public relations skills to make their case.

*The profiteers* describe certification organizations as opportunistic systems, which are not necessary as long as forests are managed according to the law. As an example, it is noted that sections with non-conforming management can be taken out of a certified area for a certain period of time and re-entered afterwards without problems. *The competitors* lump together certification organizations and ENGOs: "*Today these mafiosi sitting in the USA need to be supported, these FSC and Greenpeace people. They get protection racket. The NGOs, especially Greenpeace and WWF, are gigantic organizations, which collect money in America. […] You young, green folk have no idea where the money goes*" (C4). *The profiteers* also criticize policy makers, for setting political targets that appeal to voters. *The competitors* also blame policy makers as well as the societal consensus to foster energy transition in Germany without acknowledging the consequences. They feel that subsidies for biomass have unreasonable consequences for the national economy, and that policies are therefore short-sighted and incoherent. The green party's policies in particular are perceived negatively by *the competitors* because they consider that the limitations on forest use that they support have a negative influence on forestry and the wealth of society: "*In ten years, the Black Forest will no longer exist? Well, excuse me! Nature has always survived humans. […] I am worried that we take mindless steps, which are expensive. […] If they want it all like this, if the young folk votes for it, if they want everything greener, then they have to pay for it. Especially the green, old dates. […] There are also old ones who vote for [the] green [party]. The withered old dates, plums*" (C4). Academia is also depicted negatively by *the competitors*, as it is perceived to conduct subsidized research with interest merely in securing further research funds.

*The opponents* in turn depict forest owners and forest administration negatively, as they feel they do not communicate openly the fact that the use function of forests is most important to them. This group considers that tolerable limits of use are exceeded in private forests, where nutrient conditions are strained and "*where one thinks about afforestation, which is meant to be easy and industrial and even eventually fast-growing […]—it goes in the wrong direction*" (O1). *The opponents* also depict sellers

of energy wood as interest-led regarding the discussion about criteria for sustainable biomass; the sellers oppose such criteria, arguing that they are already managing forests sustainably. Foresters are depicted as victims—challenged by the combination of societal pressures and the demand for energy wood to the point where they have to consider practices they would usually be appalled by, such as whole tree harvesting.

Politicians are also described by *the opponents* as people with goodwill, but they are perceived as listening to lobbyists' half-truths and orienting their decisions towards economic calculations. Additionally, *the opponents* consider that politicians use climate change as justification for their decisions. In *the opponents* view, politicians should not green-wash and subsidize the use of wood given that there is already a limited amount of forest left, but rather support measures to increase efficiency and reduce energy consumption. The media and journalism are not always perceived as competent, but instead as fostering extremes. Moreover, academia is accused of making exaggerations for the sake of securing funding for research.

Society does not come off well in all three groups; it is depicted as naïve and unaware. *The profiteers* and *the competitors* explain that society does not know the consequences of their claims for land-freeze and national parks, e.g., in terms of opportunity costs. They are perceived to follow trends set by ENGOs without understanding their programs in detail. Both groups refer to the slaughterhouse principle ("Schlachthausprinzip"): "*This slaughterhouse principle […] is meanwhile valid for the wood industry: Felling trees, why?—Wood is available in Obi [hardware store]. The people diverge so far from the basics that they no longer have any connection to the basis of existence of industry*" (C3). Thus, both groups would like to see society appreciate what they do for the forest and to perceive forest tending, thinning *etc.* as attractive and necessary. This understanding of necessities is—in their view—necessary if society wants to remain prosperous in the future. *The competitors* furthermore argue that society only focuses on the ecological part of sustainability, and that everyone wants to do something good for the environment and thus wants a wood stove. However, according to arguments of *the competitors*, end-consumers need to understand that although burning wood is not inherently bad it is a question of when to burn it because they prefer material use first. They also state that burning wood is not good per se for the environment. *The opponents* state that society's demand for energy wood puts pressure on forests. Furthermore, they perceive that society does not understand the importance of nature protection in the forest, and no longer knows that a forest functions by itself and how it does this.

### *3.4. Process Frames*

Cognitive process frames show how parties cognitively represent the interaction process between each other in a conflict setting. We identified two process frames in the energy wood conflict in Germany: definition of the conflict and desired handling of the conflict. These process frames are summarized in Table 5.

**Table 5.** Process frames.

| Group | *The profiteers* | *The competitors* | *The opponents* |
|---|---|---|---|
| **Definition of conflict** | • Energy wood cannot cover energy demand<br>• Nature protection: spruce displaced by deciduous wood, import<br>• Limits: sustainability of nutrients<br>• Positive: profitability of forest tending, competition energy *vs.* material | • Biomass alone cannot underpin energy transition<br>• Nature protection: outsourcing of industry<br>• Trend towards deciduous wood, less conifer wood<br>• Unfair competition<br>• Insufficient data on felling rates<br>• Risk of overuse of forests with energy wood use<br>• Inefficient combustion | • Energy wood cannot meet energy demand<br>• Profitability: forest management more intensive, ecologically questionable<br>• Whole tree utilization<br>• Overuse: impacts on biodiversity and forest structure<br>• Materials cycles: not sustainable to remove biomass<br>• Incomplete calculations of secondary cost |
| **Desired means of handling conflict** | • Cascade use<br>• Integration of protection<br>• Habitat tree sponsorship<br>• Political support for $CO_2$-fixation in wood material<br>• Flashlight maps ("Ampelkarten") for nutrient supply<br>• More positive image of wood and forestry<br>• More efficiency<br>• Energy saving<br>• Reach private owners | • Cascade use<br>• No subsidies for energy wood<br>• Appreciation of wood industry's value, awareness of the value of wood<br>• Energy wood as bridge technology<br>• Energy saving building<br>• Reuse of old wood<br>• Support of private owners | • Flashlight maps ("Ampelkarten") for nutrient supply<br>• Orientation of use towards nature, long-term strategy<br>• Use stem, leave nutrient rich material in the forest<br>• Land-freeze of 10% of total forest area<br>• Full calculations of secondary costs<br>• Energy saving, sufficiency<br>• Technologies and energy efficiency |

There are again some overlaps between the three groups in terms of the definition by interviewees of the conflict and accordingly of the problem. All of them mention that energy wood alone cannot meet the entire energy demand in Germany. *The profiteers* and *the competitors* define nature protection as the main problem, especially regarding the trend to replace spruce with deciduous species, which leads to the necessity to increase wood imports: "*The economy demands timber and this does not come from beech, as you know. And disturbances such as Kyrill and other storms often disrupt spruce areas, which means—even if organizations or nature conservation do not like to hear this—we need to think about how to increase the proportion of conifer wood, so that we do not need to import spruce from the deepest Siberia*" (P4). *The competitors* furthermore address the outsourcing of the production to foreign countries and associated job losses as a result of nature conservation claims: "*The question is how much we can allow ourselves to further expand connected protected areas and to limit the use of natural resources, of which we do not have many—with the consequence that the industry moves to foreign countries, to locations where nature conservation does not play a fundamental role*" (C3). Both *the profiteers* and *the competitors* refer to limits regarding wood use and potential conflicts concerning overuse. *The profiteers* question how much material needs to be kept in the forest in order to guarantee the "*sustainability of nutrients*" (P4). They perceive that a conflict between energy wood use and nutrient sustainability would only arise if every little piece was taken out because for the forest it does not matter what the wood is used for. In contrast, *the competitors* feel that forests are over-challenged by the energy wood use and they refer to the Middle Ages, where

forests were already brought to their limits due to e.g., straw utilization. Whereas the economic profitability of forest tending and the competition between energy and material use of wood is perceived positively by *the profiteers*, as they can achieve higher prices for their forest management, *the competitors* feel confronted with an unfair competition due to the subsidies for energy wood use. In their view, this unfair competition with energy wood as a new form of use results in problems relating to competition on international commodities and sales markets. Additionally, they doubt the correctness of official statistics regarding felling rates and suggest that in reality more cutting is taking place. The inefficient use of wood, e.g., in outdated wood stoves is furthermore seen as a problem by *the competitors*.

As energy wood presses into markets, increases prices and makes thinning of young stands more profitable and thus forest management more intensive *the opponents* consider that this is associated with ecologically questionable developments. Although they see that energy wood brings economic benefits, they regard e.g., whole tree utilization as a problem because of the nutrient supply of soil, especially as forests are already mainly cultivated on the nutrient poorer soils. The conflict is described in terms of an overuse of forests based on the demand for energy wood as well as the drive to make money, which has negative impacts on biodiversity and forest structure. *The opponents* assume that energy wood use can have drastic impacts on the ecosystem: "*If I squeeze forests so far that it is no longer about the question 'Is the timber technically usable', but simply about the fuel, then I could use the forest completely. This leads to the potential future use of barren or secondary stands, which have so far not been attractive. I see the main hazard therein: That the ecological system is undermined sneakily from within, without anyone noticing. It is a sneaky process*" (O4). The problem seen by *the opponents* is not just restricted to volume; they also perceive the threat that formerly unused or extensively used areas, which are important for nature protection, could become profitable and be used in the future. *The opponents* think in terms of materials cycles and, in line with this, they consider that it cannot be sustainable to take something such as biomass out of the cycle without knowing what returns to it. It is also considered problematic that calculations regarding energy wood use do not include all components, such as the import of wood for construction if a larger proportion of the available domestic wood were to be used for energy purposes.

There are again some overlaps and differences among the three interest groups in terms of the desired means of handling the energy wood conflict. *The profiteers* and *the competitors* advocate cascade use of wood. *The profiteers* state that there are anyway leftovers for the use of energy wood as a by-product, and *the competitors* argue that burning wood should be conducted at the end of the life time of other wood products. *The competitors* furthermore consider that Germany should be the leading state in relation to cascade use of wood and act as a role model for other countries. Nature protection should—in the opinion of *the profiteers*—be integrated throughout the forest. They also propose tree sponsorship for habitat trees. Both *the profiteers* and *the competitors* are against the segregation of areas for nature conservation aims. They also note that they desire a better image and appreciation of wood and forestry as well as the wood industry, especially within society. In order to mobilize more wood, *the profiteers* and *the competitors* see potential in reaching out to and supporting private owners. *The profiteers* seek political support for the fixation of $CO_2$ in long-living wood products. With much more emphasis, *the competitors* advocate the political strengthening of the competitiveness of the wood and furniture industry and oppose subsidies for energy wood use: "*Maybe you know the*

*initiative […] to make politicians aware that they are currently on the wrong track. There is something happening, […] but it is not enough to even out the competitiveness*" (C2). They see energy wood as a bridging technology which needs to be replaced by other, "real" renewable energies. All three groups agree that energy saving could be promoted more in order to alleviate the problem: *the profiteers* think that e.g., the establishment of bioenergy regions could lead to more efficiency in the use of energy; *the competitors* state that energy saving building results in a decline in energy demand and thus in decreasing pressure on forests; and, according to *the opponents,* the public perception is that burning wood is ecologically friendly given that wood is a renewable resource and, on this basis, they seek greater awareness and more moderate lifestyles in terms of energy consumption. They also argue for new technologies and increased energy efficiency.

*The profiteers* and *the opponents* consider that the use of flashlight maps ("Ampelkarten")—which indicate the nutrient supply and accordingly harvesting capacities for the soils for specific stands—may be a means of addressing the conflict. According to *the profiteers*, these flashlight maps show where more compact wood can be taken out of the forest: "*Based on representative investigations on single stands, it was assessed to what degree biomass can be extracted without irrevocably damaging the whole system. On the basis of this investigation a map was compiled […], which indicates—depending on the stand and seed production—how often and with which intensity a greater use of biomass than the normal use of compact wood can take place*" (P3). Although *the opponents* also mention the value of flashlight maps, they oppose the use of compact wood with less than 7 cm or 10 cm in diameter as the case may be. They furthermore oppose the use of whole trees and suggest instead using only the naked stem, while leaving the nutrient rich material in the forest. In addition to their claim for land-freeze of 10 per cent of the forest area and for back-of-the-envelope calculations regarding the secondary cost of energy wood use, e.g., regarding wood imports, they advocate that forest use be oriented towards nature and not towards human demands: "*With all the euphoria one has to be careful that—[…] with regards to the optimization of energy wood—sight is not lost of this whole forest ecosystem. This is about research, about research funds, for the purpose of a long-term strategy and not short-term optimization. There are no statistics to date, but one needs to be alert and say: 'People, environmentalism is important, climate protection is important. But the stability of the individual system is equally important'*" (O4).

## 4. Discussion

Synthesizing the results it becomes clear that each interest group follows its own line of argumentation which in turn differs from the other groups. This is mirrored in their issue, identity and relationship, and process frames. *The profiteers* and *the competitors*—taken together *the users*—largely share similar issue frames regarding forest sustainability, the necessity of forest use, and the embedding of forest protection in standard forest management. Their perceptions reflect an anthropocentric and economic understanding of sustainability that puts humans and their demands (for wood) center-stage. Long-term economic benefits play the most dominant role for *the users*, while other functions are also backed, but are not the focus. *The users* consider that existing legal regulations are sufficient to ensure sustainable management of forests. Limitations on their own management activities are therefore oriented towards guaranteeing in the long-term the economic benefits that

they obtain from forests. The identified issue frames of *the users* concur with results generated by Winkel *et al.* [37], which show that the "forestry coalition" (to be distinguished from the "conservation coalition") focuses on economic aspects of sustainability and views further legal regulation to be unnecessary.

*The users* also share fundamental identity and relationship frames regarding their depiction of themselves as victims of ENGOs, politics and certification, as well as their depiction of a naïve and unaware society. Their depiction of self as victims and their depiction of others and of society are based on their issue and process frames and related to their understanding of the overall context. ENGOs (*the opponents*), politics and society are to blame for *the users'* negative image and for limitations placed on forest management as well as the replacement of their profit tree, spruce, by deciduous trees. Certification is perceived to be unnecessary, as long as forest management follows the law. What distinguishes *the profiteers* and *the competitors* from each other—and thus what extends previous research that has differentiated only between the forestry coalition and the conservation coalition [17,18,37–39]—is related to their identity and relationship frames. *The competitors* present themselves in a double victim role, where not only *the opponents* are against them, but also the policies which treat them unequally compared to *the profiteers*.

With regards to process frames, the same similarity and the same difference holds true for *the users*. The conflict is detected in nature protection aims and accordingly limitations on forest use and changes towards the use of more deciduous species. As such, desired means of addressing the conflict mainly concern the integration of forest protection in forest use, a better image of forest management, the mobilization of wood from private forests where society and politics have less influence on decisions, and cascade use. Again, the difference between the groups is mainly discernible in the conflict with energy wood use that relates to unfair competition as perceived by *the competitors*. They also highlight a potential overuse of forests due to the use of energy wood. From *the competitors'* view, an alternative solution to the conflict is thus the abolition of subsidies for energy wood. *The profiteers* see no conflict with energy wood use but rather appreciate the increased profitability of their activities. This distinction between *the profiteers* and *the competitors* is another aspect that cannot be found in the above-mentioned literature that differentiates only between the forestry coalition and the conservation coalition. The new formation of interest groups builds on a new component that is emerging within the energy wood conflict that, in addition to the general question of forest use, reflects the importance of how forest wood is used.

*The opponents* hold completely different issue, identity and relationship, and process frames to *the users*. Their perceptions reflect an ecocentric perception of sustainability that gives ecosystems and their parts an intrinsic value. The long-term functioning of the system itself and the conservation of soil and biodiversity as parts of the system play the most important roles for *the opponents.* In line with this, they consider that forest use should be oriented towards the ecosystem instead of human demands. Forest protection has its own, non-economic value to *the opponents*. They do not depict themselves in much detail—based on their ecocentric attitude, their patient "nature" is more in focus than themselves. However, they also criticize the other groups, forest owners, forest administration and foresters, thus mainly *the profiteers,* for their economic approach to the energy wood issue and forest use in general. The identified identity and relationship frames of *the opponents* overlap with results of Winkel *et al.* [37] in 2011, who found that the conservation-oriented coalition "labels the traditional German forest

policy institutions as being too narrowly timber-production-oriented, disregarding conflicts between different 'forest functions', and, thus, *de facto* excluding demands for forests except as timber". In *the opponents* view, society is to blame for the high pressure on forests and is also perceived as being unaware of the complexity of the matter. Overuse and ecologically questionable, more intensive forest management due to energy wood use are perceived as the main problems, and solutions are found in land-freeze and forest use which is more oriented towards a long-term strategy for the conservation of nature. This claim for ecologically oriented standards also supports research conducted by Winkel *et al.* [37].

One main overlap between the three groups relates to the perception of society as being unaware of consequences of their claims. However, all three groups mention societal influences on political decisions and thus on forest management, which shows the importance of societal acceptance of the way in which the conflict is dealt with and the desire of all groups that society is supportive of them. Another overlap is that all groups highlight that energy wood cannot meet the entire energy demand in Germany meaning that its role in the energy transition is limited. Finally, all three groups refer to the importance of energy saving and efficiency and argue that this should be promoted by policy.

Having this short synthesis in mind, it is obvious that there is cohesiveness amongst all perceptions within each group and that these perceptions are oriented towards the respective groups' interests. Although the perception of sustainability is just one part of the analysis, it can be understood as an umbrella for all other issues addressed. However, the chicken-and-egg problem applies: Are the different perceptions of sustainability to be understood as worldviews or overall frames, which are applied to situations such as the energy wood conflict; or is the sustainability perception shaped according to understandings of situations, positionings or institutional affiliations in a given conflict? The latter would imply that sustainability is strategically (mis-) used in order to legitimize political positions or activities on the ground. This problem is also seen by Schön and Rein [30], who view frames as shaping interests as much as being shaped by interests. In this regard, frame theory was helpful in this study for identifying the different lines of argumentation, and for seeing how the different issue, identity and relationship and process frames complement each other within each group. Like Schön and Rein [30], we found that institutional or interest groups affiliations correlated with how frames cluster together. The abovementioned chicken-and-egg problem cannot be resolved with the present study. However, the new formation of interest groups in the specific conflict and the shared understanding of sustainability within the newly formed interest groups, which questions the sustainability of forest activities that compete with their interests, are noteworthy. It suggests that it might be more likely that the sustainability understandings are adapted to positioning in conflicts and thus do not reflect a worldview in which specific contextual issues are made sense of.

With regards to future research, it is also important to discuss the limitations of the present study, which mainly concern its qualitative character and limited sample size. The data basis of 12 interviews—with four individuals in each group—allows for a good overview of sustainability frames within the energy wood conflict in Germany among particular representatives and meets the aim to provide a qualitative snapshot. In terms of further research on the issue, hypotheses could therefore be generated from the results of this study and be tested in a representative study. As the gathered data is comparatively old (2012–2013), an additional question for further research could address how sustainability frames change when the political environment changes, e.g., due to the bioeconomy

debate. In order to clarify the chicken-and-egg problem, future research could furthermore compare how the different frames vary in different (conflict) situations, and investigate whether the overall frame of sustainability is constant, and whether and how it is applied in different circumstances. Another research focus could be interactional co-framing as found in Dewulf *et al.* [24]: (How) do the frames change, when the stakeholders or the groups interact? Additionally, it would be worth investigating how the frames are shaped within certain institutional settings.

## 5. Conclusions

The present study shows that the dichotomy between the forestry coalition and the conservation coalition—which has been a prominent finding of previous research relating to the energy wood conflict—actually appears to be a trichotomy, where the forestry coalition splits into two groups competing for wood. As soon as the conflict is no longer about the general question of whether wood should be used, but also about how it should be used, differences appear between groups profiting from, and competing with, energy wood production. This result illustrates the importance for science and politics to view different conflicts from an open perspective. Such openness allows for a better understanding of specific conflicts and concerned interest groups and hence can have a positive influence on the conflict management.

With regards to the research question of the present article—how different sustainability frames of interest groups are reflected in a forest use conflict situation in Germany—it becomes clear that sustainability understandings reflect the particular positioning in the energy wood conflict, or vice versa. Based on the close connection between the two it can be assumed that sustainability understandings do not present worldviews that guide the understanding of conflicts, but that they are shaped according to actors' particular interests in conflicts. Finally, bringing light to the different perspectives allows for a better political problem solving in the field of forest sustainability.

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## Author Contributions

Dörte Marie Peters and Ulrich Schraml developed the concept and the design of the study. Dörte Marie Peters collected and analysed the data and drafted the manuscript. Ulrich Schraml critically revised it. Both authors read and approved the final manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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