1.1. Limitations of Stakeholder and Public Engagement in Bioeconomy Strategy Development Processes

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Introduction

There has been an increasing interest among policy makers in the promotion of stakeholder and public engagement in the bioeconomy in recent years. The reasons underlying this interest are diverse. On the one hand, a number of political bioeconomy strategies have been framed around understanding the bioeconomy as a societal transition towards a more sustainable future and, as such, society has a major role to play here; on the other hand, the bioeconomy and the increased demand for biomass in particular is associated with trade-offs which requires an informed, transparent, and democratic dialogue. In this article, we draw together key findings[1] in terms of stakeholder and public engagement in the development and implementation of bioeconomy strategies throughout Europe and beyond. These findings were acquired through a project that was funded by Germany's Federal Environment Agency[2] and the EU-funded project BioSTEP.[3] We specifically address the degree of participation, the role played by individual actors, and the limitations of public and stakeholder participation.

A considerable volume of literature has emerged around the theme of governance and the bioeconomy. Much of the current literature investigates the political strategies adopted at the EU and global levels, comparing them in terms of objectives, sustainability aspects, and participatory aspects, albeit only in very few cases (Kiresiewa et al. 2019; Zeug et al. 2019; Backhouse et al. 2017; Dubois/San Juan 2016; Davies et al. 2016; Charles et al. 2016). Most of the research concludes that the objectives outlined in the

1 This article is based on the results derived from the project »Sustainable Resource Use – Requirements for a Sustainable Bioeconomy from Agenda 2030/SDG Implementation« (October 2017-March 2020) to a large extent. The results of the analysis of bioeconomy strategies are published in Kiresiewa et al. 2019.

2 Sustainable Resource Use – Requirements for a Sustainable Bioeconomy from Agenda 2030/SDG Implementation, October 2017-March 2020. More information can be found here: https://www.ecologic.eu/15455[Accessed 11.06.2022].

3 Promoting Stakeholder Engagement and Public Awareness for a Participative Governance of the European Bioeconomy (BioSTEP), 2015-2018.

strategies raise questions about potential trade-offs, such as increasing demand for biomass (expansion and intensification of agricultural use), leading to biodiversity loss and greater competition for land. The literature predominantly deals with the question of which stakeholder groups have been involved in the development, implementation, and monitoring of bioeconomy strategies with regard to participatory governance. Some scholars (Kiresiewa et al. 2019; Gerdes et al. 2018; Backhouse et al. 2017) have found that the development of bioeconomy strategies in Europe and beyond has been dominated by stakeholders from policy, industry, and science (the so-called »triple-helix cooperation«), whereas actors from civil society are barely involved.

Several studies (Wolff 2020; Eversberg/Holz 2020; Peltomaa 2018; Kleinschmit et al. 2017; Pülzl et al. 2014) have analysed the bioeconomy discourse, highlighting the interests of different stakeholder groups and the narratives promoted in policy, media, and research. Increased attention has recently been paid to the public bioeconomy discourse in both Europe and Germany (Backhouse et al. 2018), as well as to the perception of the bioeconomy among the population (Hempel et al. 2019). Hempel et al. 2019, for example, have found that the public discourse in Germany is shaped by distinct, partly gridlocked perspectives. These perspectives concern the concomitant potentials and risks of bio-based products and processes required to transition to a more sustainable economy and society.

However, much of the research conducted to date has only marginally discussed the question of why stakeholder and public engagement in the bioeconomy is important. This article seeks to address this question and to discuss the role played by stakeholder and public engagement in policy and science in a more general context and in the field of the bioeconomy. This article closes by providing recommendations for more inclusive stakeholder and public engagement in the bioeconomy.

Public and Stakeholder Engagement in Policy and Science

The topic of stakeholder and public engagement in policy, research, and innovation has a long history, even though it only emerged as a buzzword in recent years. Principle 10 of the Rio Declaration (1992), for example, sets out public participation as one of the three fundamental rights. It discusses participation in the context of addressing environmental problems, contributes to sustainable development, and encourages governments to consider citizens' needs when developing policies.[4] In order to support actions taken in this direction, UNEP published guidelines for the Development of National Legislation on Access to Information, Public Participation, and Access to Justice in Environmental Matters (2011)[5] followed by implementation guidelines (2015). These

4 https://www.unep.org/civil-society-engagement/partnerships/principle-10[Accessed 14.05.2021].

5 https://wedocs.unep.org/bitstream/handle/20.500.11822/11182/Guidelines%20for%20the%20Development%20of%20National%20Legislation%20on%20Access%20to%20information%2c%20Public%20Participation%20and%20Access%20to%20Justice%20in%20Environmental%20Matters.pdf?sequence=1&isAllowed=y[Accessed 14.05.2021].

guidelines contain concrete examples about how to put ideas into practice.[6] The implementation guidelines stress the importance of public participation in the creation of a feeling of: »ownership over outcomes, to enhance the legitimacy of decision-making, and lead to greater social cohesion.« (UNEP 2015) It proceeds by outlining nine »major groups« of stakeholders: business and industry, children and youth, farmers, indigenous peoples and their communities, local authorities, non-governmental organizations, the scientific and technological community, women, and workers and trade unions (ibid).

In Europe, the Aarhus Convention established a number of the public's rights (individuals and their associations) with regard to the participation in environmental decision-making back in 1998. According to the convention, public authorities (at national, regional, or local levels) are required to provide access to environmental information and justice and to provide opportunities for participation in policy decision-making.[7]

In addition, stakeholder and public engagement has been promoted through the European Commission's Responsible Research and Innovation (RRI) agenda, which is more explicitly set out in the Rome Declaration on Responsible Research and Innovation in Europe from 2014 (Gerdes et al. 2018). The RRI is defined by the European Commission as: »an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation«[8]. As part of the RRI, approaches such as the multi-actor approach, co-creation, and citizen science have also become an important part of Horizon 2020 funding programmes for research and innovation. These approaches will continue to play a role in the upcoming Horizon Europe programme.

What role do these principles of stakeholder and public engagement play in practice? Focusing on the development of Sustainable Development Strategies at the national level, an early review by the OECD found that: »several countries have implemented *ad hoc* participation processes, where stakeholders were consulted in the development of national strategies, but less so regarding implementation and further development« (OECD 2006: 26). In Europe, the Czech Republic, Portugal, and Slovakia are highlighted as good practice examples regarding the design and implementation of targeted stakeholder engagement activities in the context of the strategy development and implementation processes. More recently, examples for direct citizen participation, in the design of local climate mitigation strategies for instance, can be observed throughout Europe. On this basis, one could argue that the groundwork for broad public and stakeholder participation in the development of bioeconomy strategies has already partly been laid.

Participation in the bioeconomy is particularly important from two perspectives: First, the concept of the bioeconomy touches upon the classic conflict between protec-

6 https://wedocs.unep.org/bitstream/handle/20.500.11822/11201/UNEP%20MGSB-SGBS%20BALI%20GUIDELINES-Interactive.pdf?sequence=1&isAllowed=y[Accessed 14.05.2021].

7 https://ec.europa.eu/environment/aarhus/ [Accessed 14.05.2021].

8 https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation[Accessed 14.05.2021].

ting the climate and nature and economic growth. Policy makers and business actors view the bioeconomy as an opportunity to contribute to green growth and, at the same time, to protect the climate and nature. Environmental organisations and scientists point to the potential risks involved in the bioeconomy, such as biodiversity loss, intensification of agriculture etc. These conflicts become particularly visible when looking at the objectives outlined in the bioeconomy strategies. The bioeconomy is supposed to create new jobs, strengthen competitiveness, and generate economic growth and, simultaneously, protect biodiversity, reduce the pressure on the ecosystems, and contribute to climate change mitigation and adaptation. The potential conflicts appear to be a logical consequence of this tension and are often addressed in the strategies, but concrete solutions for how to overcome them are largely absent. A democratic and transparent dialogue with the public and a broad spectrum of stakeholders is crucial here. Second, a number of bioeconomy strategies advance the promotion of societal change (key word: »societal transformation«) as an objective, and public engagement is the only way to achieve this objective.

Public and Stakeholder Engagement in Political Bioeconomy Strategies

The bioeconomy covers many sectors, as well as diverse groups of stakeholders with distinct views on what role bio-based solutions should play in the future. Accordingly, the concept of the bioeconomy comes with a high degree of political complexity, corresponding interests, goals, and claims to use and different ministries are at least partially responsible for its development (Kiresiewa et al. 2019). There is generally a stark contrast between technology-based and ecology-based visions, even though it can often prove difficult to draw a clear line between those that either wholly support or reject the bioeconomy (ibid.).

In 2012, the European Commission published its first Bioeconomy Strategy called »Innovating for Sustainable Growth: A Bioeconomy for Europe« and an accompanying Action Plan. Although it was reliant on a top-down approach, the Action Plan included numerous participatory elements (ibid.) and aimed to: »foster participation of researchers, end-users, policy-makers, and civil society in an open and informed dialogue throughout the research and innovation process of the bioeconomy«, as part of the second main action »Reinforced policy interaction and stakeholder engagement« (European Commission 2012).

Around the same time, the European Commission started to shift the focus of its research and innovation programme with regard to the bioeconomy component; while the Seventh Framework Programme (FP7, 2007-2013) promoted the »knowledge-based bioeconomy«, the subsequent Horizon 2020 Programme (H2020, 2014-2020) focused more strongly on communication projects and on the necessity to involve organised civil society and the general public in the discourse (Kiresiewa et al. 2019). During the H2020 programming period, the Bio-based Industries Joint Undertaking (BBI JU) also financed projects in the bioeconomy field, with the goal of fostering stakeholder and public engagement, raising awareness, and more recently, to co-create knowledge. Similar initiatives have been deployed on a national level, such as the German initiative

»Bioökonomie als gesellschaftlicher Wandel«, funded by the Federal Ministry of Education and Research (BMBF).

In line with this shift in priorities, the number of national and regional bioeconomy strategies that include participatory approaches and that recognise the role played by society has grown over the years. However, different research projects, such as the EU-funded BioSTEP project (2015-2018) and a project funded by Germany's Federal Environment Agency project,[9] have found that such participatory approaches are often limited to the provision of information. This poses a hurdle to more inclusive and effective stakeholder and public engagement (ibid.). In this light, the BBI JU – a €3.7 billion public-private partnership between the EU and the Bio-based Industries Consortium (BBI JU n.d.) – was criticised for being dominated by industry, rather than serving the public interest, in 2020 (Pigeon/Tansey 2020). One might counter that the strong industrial focus is a logical consequence of the BBI JU's funding structure. This is woven into the fact that the private sector accounted for approximately three-quarters of the funding (€2.7 billion), whereas the EU's H2020 programme only contributed the remaining amount (€975 million (BBI JU n. d.).

The European Commission updated the EU's Bioeconomy Strategy in 2018 – now called »A sustainable bioeconomy for Europe: strengthening the connection between economy, society and the environment« – and proposed a new, three-tiered Action Plan with fourteen concrete actions. The action that explicitly mentions public and stakeholder engagement has the aim to: »mobilise public and private stakeholders, in research, demonstration and deployment of sustainable, inclusive and circular bio-based solutions« (European Commission 2018). With the topic already defined as fostering circular bio-based solutions, the idea of having an »open« dialogue seems less pronounced now compared to 2012.

Limitations to stakeholder and public engagement

The 2012, EU Action Plan for Bioeconomy already acknowledged the importance of an »open dialogue« between different groups of stakeholders and many political strategies point out the need for a »democratic dialogue« for the transition to a bioeconomy (Kiresiewa et al. 2019). In practice, however, the effectiveness of these processes in relation to bioeconomy strategies remains limited. One challenge relates to the general lack of knowledge; many actors remain largely unfamiliar with the bioeconomy, which includes both key stakeholders and the general public. The latter often do not know that they are affected by issues concerning the bioeconomy (ibid.). Other challenges relate to how consultations are designed and carried out.

Governmental and public actors are mainly responsible for the development and implementation of bioeconomy strategies; accordingly, these parties have the greatest influence on the outcome. Even though many strategies contain participatory elements, they often do not lead to balanced consultations. Different factors are at the root of this

9 Sustainable Resource Use – Requirements for a Sustainable Bioeconomy from Agenda 2030/SDG Implementation, October 2017-March 2020. More information to be found here: https://www.ecologic.eu/15455[Accessed 11.06.2022].

imbalance, such as a stark selection procedure about which stakeholders to include, the involvement of a small number of stakeholders, or stakeholders' limited influence on strategy development. It is mainly representatives from government, industry, and science (the »triple helix«) who are part of this process. Interest groups from industry and science have a large influence when they speak with a common voice through associations. These associations which are especially effective when they include representatives from both industry and science, and this was the case with the former Bioeconomy Council in Germany. However, the current Bioeconomy Council, appointed in 2020, also includes a representative from an environmental NGO. Lobbyists, industry associations, and scientific institutions who take part in working groups, committees, or panels also have a strong impact on political decision-making (ibid.)

CSOs, and environmental and society-oriented NGOs in particular, are only integrated into consultations to a limited extent. Political actors frequently invite them to participate at a relatively late stage in the process, which only allows for commentary after the fact, as opposed to co-developing a strategy. Due to limited financial and personnel capacities, CSOs cannot make use of the available tools for participation, such as reviewing documents or participating in consultations, which they also view to be lacking in real credibility. Accordingly, strategies have a top-down dynamic, whereas the bottom-up approach is only utilised through surveys and information campaigns. In addition, they find it difficult to speak with a unified voice. Associations and CSOs based in Brussels estimate their influence too be higher compared to their national counterparts; this could be due to their improved access to the policy process, through their participation in events, committees, and panels at the EU level (ibid.). Textbox 1 provides insight into some of the challenges civil society actors face – both on the national and regional levels – when seeking to participate in the development of bioeconomy strategies.

National strategies: Germany and Finland

Interviews conducted within the BioSTEP project provided insight into challenges for the participation of CSOs/NGOs in developing national bioeconomy strategies. The interviews represented different types of stakeholders from fields such as policy, business, research, and civil society.[10] In the case of Germany, these challenges included: the difficulty to have certain views be heard and the possible exclusion of critical voices; policy actors engaging with business/research stakeholders more strongly; a lack of CSO/NGO representation on the German Bioeconomy Council[11]; limited human and financial resources to participate; and the inability of CSOs/NGOs to speak with one voice. With regard to Finland, this included: the fact that the strategy was mainly shaped by national ministries; a lack of a mechanism to ensure a balanced influence of social, environmental, and economic stakeholders; and the concern that policy actors considered CSO/NGO involvement to be a »tick-box exercise« primarily (Davies et al. 2016).

In July 2019, a group of German NGOs published a position paper on the draft of the new German Bioeconomy Strategy which pointed out several flaws relating to the participation processes up to that point.[12] The responsible ministries had granted the NGOs

two weeks during the summer holiday season to provide feedback on the draft version of the document. The document, according to their view, lacked concrete instruments and measures to fulfil the legal obligation to involve civil society. They requested to postpone the decision-making process to allow for an actual consultation with both the public and civil society.[13]

Regional strategies: Scotland, South-West Netherlands, Saxony-Anhalt and Veneto
The analysis of four of the BioSTEP project's regional bioeconomy strategies showed that NGOs were only involved on one occasion (and citizens did not participate at all); however, regional governments, businesses, and universities were represented in all regional strategies without exception. Generally, the main rationale for engaging the public was »instrumental« (providing information to increase the trust levels in the process) as opposed to »normative« (accommodating the ethical right of the public to be involved in decision-making). No real attempt was made to involve civil society or the wider public, merely those with an economic stake in developing the bioeconomy took part in the process (Davies et al. 2016).

Textbox 1. In practice: involvement of civil society in the development of national and regional bioeconomy strategies

In summary, the inclusion of participatory elements in bioeconomy strategies does not, in itself, guarantee inclusive and effective stakeholder and public engagement. How balanced and credible consultations are, according to the different stakeholder groups, depends on how these elements are implemented in practice. Environmental and social organisations, in particular, perceive of current efforts as unambitious and as leaving much room for improvement (ibid). The following section provides recommendations for how to achieve the full potential of stakeholder and public engagement in the bioeconomy.

Recommendations

The need for a discussion on issues of sustainability regarding the bioeconomy and its role in sustainable development is recognised by both national governments and by the European Commission. The questions that remain, however, concern how to ensure

10 The German policy documents examined by the BioSTEP project were the 2010 National Bioeconomy Research Strategy and the 2014 National Bioeconomy Policy Strategy. For Finland, the analysis focused on the 2014 National Bioeconomy Strategy.

11 It should be noted that the current Bioeconomy Council, appointed in 2020, also includes a representative from an environmental NGO.

12 The German federal government published the final National Bioeconomy Strategy in January 2020.

13 https://www.forumue.de/wp-content/uploads/2019/07/Stellungnahme-Bio%C3%B6konomie.pdf [Accessed 11.06.2022].

an open and informed dialogue, how to involve a broad spectrum of stakeholders and, especially, how to engage with the wider public given the topic's level of complexity and abstraction. Our findings suggest several courses of action.

First, there is a need for appropriate tools by which to involve people beyond classic instruments, like consultations, interviews, participation in workshops, and conferences. National governments and the European Commission should ensure the continuous and credible involvement of civil society actors in the development, implementation, and monitoring of bioeconomy strategies (Möller et al. 2020). Engagement with civil society actors in working and steering groups, supporting the process of strategy development, implementation, and evaluation should take place at an early stage, starting with problem definition and agenda setting through the implementation and monitoring of the strategy (Gerdes et al. 2017).

Second, outlining stakeholder and public engagement as an objective in bioeconomy strategies is not sufficient. There is a need for concrete actions. Possible participation formats and resources for participation, for example, should be part of the action plans that accompany national and European bioeconomy strategies. Financial support for civil society actors could help to ensure this level of effective participation. This could mitigate existing imbalances in the distribution of capacities and resources between civil society actors and other stakeholders (Möller et al. 2020).

Third, the involvement of civil society actors in the agenda-setting of policies and research agendas is crucial in the field of the bioeconomy. An important requirement to achieve this goal is the availability of unbiased, evidence-based information regarding the potentials and challenges of future bioeconomy pathways. This information is something that citizens and stakeholders can base their opinions on and would allow them to make informed decisions. Education about sustainable development plays a major role here. Sustainability issues relating to the bioeconomy should, therefore, be included in the curricula of schools, universities, and other relevant education institutions. In addition, the bioeconomy as a largely unknown concept should be narrowed down to sub-topics, such as health, waste, biomass management, recycling, and locally made bio-based goods (Gerdes et al. 2018).

There is also a need for a more precise use of the term CSOs when addressing the involvement of civil actors in the bioeconomy, considering that certain types of CSOs and their interests are more closely integrated into policy agendas than others. Martinuzzi et al. 2017, for example, showed that CSOs represent a heterogeneous group of different types of organisations, that all differ in size, strategic orientation, business model, funding sources, target groups etc. For the purposes of their study, Martinuzzi et al. developed an approach that distinguishes four types of CSOs: citizen-oriented (»core«) CSOs; society-oriented/public-funded CSOs; society-oriented/corporate-funded CSOs; and corporate-funded CSOs. The latter represents a more business-oriented view on the bioeconomy compared to the other three types. Looking at the results of consultations (e.g., the review of the European Bioeconomy Strategy), they are overrepresented when compared to CSOs with a strong societal focus and environmental NGOs.

Conclusion

We have shown that, while principles of stakeholder and public participation are embedded in the relevant international frameworks that govern sustainable development and Responsible Research and Innovation, their application in the development and implementation of political bioeconomy strategies been limited thus far – particularly where the involvement of civil society actors is concerned. The majority of the strategies analysed were shaped by governmental actors only, with limited or no input from stakeholders. Where stakeholders have been involved in strategy development processes, these stakeholders usually represented business and research and innovation interests. The dedicated involvement of civil society representatives, particularly of environmental groups, was limited to a few examples only. The impact these groups were able to exert on the respective processes was rather limited in these cases, according to our findings.

There appears to be a gap that might be explained by the fact that the bioeconomy is widely understood as a concept that focusses on technological innovations and related benefits, such as job creation, economic added value, and the international competitiveness of national bio-based industries. Climate-change mitigation through replacement of fossil resources in industrial processes represents the foundation of the concept. This notwithstanding, the link to bioeconomy's broader notion of sustainable development is often less evident when looking at the political bioeconomy strategies that have been developed around the world. Embedding the concept of the bioeconomy in overarching sustainability frameworks, by linking bioeconomy strategies closely to National Sustainable Development Strategies for example, would be a way to ensure that the potential environmental, social, and economy trade-offs triggered by bioeconomy developments are adequately analysed and addressed. This, in turn, would allow for a more structured and effective involvement of those stakeholder groups, who have often been excluded from these processes to date.

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