

## Article

# Between Global Expectations for Sustainability and Local Feasibility—A Comparative Analysis of Three Biosphere Reserves in Germany and France

Julia Dittel  and Florian Weber \* 

Department of European Social Research, Saarland University, 66123 Saarbruecken, Germany; julia.dittel@uni-saarland.de

\* Correspondence: florian.weber@uni-saarland.de

**Abstract:** As “learning places for sustainable development”, UNESCO biosphere reserves are specifically dedicated to sustainability. The Lima Action Plan of 2016 resolved to position the biosphere reserves more prominently as model regions in order to fulfill UN Sustainable Development Goals (SDGs). However, the question remains how and to what extent this resolution has been implemented and the ideal of sustainability filled with life at the local level. Based on surveys of municipal actors and fifteen in-depth interviews with political decision-makers, this article compares three adjacent Western European biosphere reserves, the Palatinate Forest, Northern Vosges, and Bliesgau, with regard to local initiatives aimed at fulfilling the overall task of sustainable development. The results show—besides generalized statements on the relevance of sustainability—that municipal politics is only, to a limited extent, guided by the requirements of concrete SDGs. Nevertheless, many of the measures implemented do ultimately reflect these goals. Along with specific ecological and climatic projects, these comprise future-oriented settlement policies and educational activities undertaken by the biosphere reserves and their municipalities. In this context, improved communication with local councils and residents might well lead to more effectively structured implementation of SDGs.

**Keywords:** biosphere reserves (Bliesgau; Northern Vosges; and Palatinate Forest); lima action plan; SDGs; sustainable development; Western Europe



**Citation:** Dittel, J.; Weber, F. Between Global Expectations for Sustainability and Local Feasibility—A Comparative Analysis of Three Biosphere Reserves in Germany and France. *Sustainability* **2024**, *16*, 2997. <https://doi.org/10.3390/su16072997>

Academic Editor: Richard Ross Shaker

Received: 23 February 2024

Revised: 30 March 2024

Accepted: 1 April 2024

Published: 3 April 2024



**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction: Biosphere Reserves and the Implementation of Goals for Sustainable Development

Protected areas can be regarded not only as a key instrument of socioeconomic development but also, in view of the global crisis facing nature, as a powerful means for counteracting the threatening loss of biodiversity ([1–3]). According to the Protected Planet Report, by 2020, over 22.5 million sq km, or 16.6% of land and inland water ecosystems, and around 28.1 million sq km, or 7.7% of coastal waters and ocean, had been given special status as protected or conserved areas [2] (see also Section 3). However, protected status alone does not automatically lead to desired results. Its effectiveness varies according to the specific status and objectives, as well as to potential conflicts of interest that may arise in this respect [3–5]. Against this background, there is a need for in-depth research into the design of concrete sustainable development tasks and the approaches taken to implement them.

Biosphere reserves form a global sustainability network that aims to represent all of Earth’s biomes. Protected under international environmental and nature conservation policies, they were established under the auspices of UNESCO’s 1971 Man and the Biosphere (MAB) program in the wake of an intergovernmental conference convened in Paris in 1968 to collect scientific expertise on the impact of humans on the biosphere [6]. In 1974, the first 24 reserves were designated in five countries [7] (p. 6); by 2023, the number of UNESCO-recognized reserves had grown to 738 in 134 countries [8,9] (p. 34). This growth

was accompanied by an expansion in the program's objectives. The initially segregative focus on the protection of biological diversity was gradually informed by concerns for socioeconomic development and the participation of regional actors, combined with the demand for a balance of different interests [10,11] (p. 63), [12] (p. 572). These latter approaches began to emerge in the 1990s in the wake of the United Nations 1992 Conference on Environment and Development in Rio, where discussion was increasingly concerned with sustainability [13] (pp. 99–100), [14].

The Lima Action Plan of 2016 duly set out to concretize the “empty signifier” (conceptualized in accordance with Laclau and Mouffe [15]) of sustainability and fill it with life by taking up the objectives of the United Nations' 2030 Agenda for Sustainable Development (adopted in 2015) with its 17 Sustainable Development Goals (SDGs) and their 169 sub-goals [16,17]. The Action Plan included the following declaration:

“To understand and address the key challenges facing our world—poverty, climate change, water and food security, loss of biological and cultural diversity, rapid urbanization and desertification—the MAB Programme, through its World Network of Biosphere Reserves (WNBR) and its regional and thematic networks, will strategically address the Sustainable Development Goals (SDGs) through sustainable development actions in biosphere reserves, carried out in partnership with all sectors of society, to ensure the wellbeing of people and their environment” [16] (p. 11).

The biosphere reserves, with their stakeholder networks, are thus tasked with the fulfillment of the globally conceived SDGs in a system of shared governance [18] (p. 12), [19], actively following the UNESCO ideal that reserves should provide “local solutions to global challenges” [8]. Municipal actors, in particular, play a central role here as independent players [11] (p. 74), [19] (p. 11). However, the extent to which they act in favor of sustainable development in line with SDGs and in interaction with decision-makers in the biosphere reserves has not yet been empirically investigated in depth.

Against this background, the present article asks how municipal actors in three neighboring biosphere reserves in Germany and France approach global sustainability goals, what concrete measures they take, and what limitations they have to face. Although biosphere reserves are designated within the framework of UNESCO's intergovernmental MAB program, the actual work takes place within specific “national and subnational legislative frameworks” [7] (p. 7) and parameters of action. Hence, differentiated analysis at the local level is required—here, exemplified by a comparison of two of a total of 18 reserves in Germany (Palatinate Forest and Bliesgau) and one of 16 in France (the Northern Vosges). The Palatinate Forest and the Northern Vosges have formed a single cross-border biosphere reserve since 1998, albeit with two separate administrations. Although the Bliesgau borders on the Northern Vosges, there has been no institutionalized cooperation between these two areas. The contiguity of the three reserves assures a valid spatial framework of comparison, while their embedment in two different countries (Germany and France) and two different German federal states (Rhineland-Palatinate and Saarland) allows for variance in administrative and legal frameworks and parameters of action (see Section 3). Empirically, the comparison is based on comprehensive online surveys conducted in 2022 with mayors in all three protected areas, supplemented by five in-depth interviews with municipal decision-makers in each area.

After a brief account of the MAB program over the years and an outline of our methodological approach, our presentation of results will show that despite very high (Palatinate Forest and Bliesgau) or at least high (Northern Vosges) overall emphasis on the importance of sustainable development, the 17 SDGs have so far only guided the activities of the municipal actors in all three reserves to a very limited extent; these have tended rather to follow municipal or regional objectives. Among other things, a lack of financial resources and associated HR shortages are cited as hindering factors. Nevertheless, projects that are implemented actually tend ultimately to assimilate to SDGs, even if they are not systematically linked to them by decision-makers. The biosphere reserve administrations

could provide greater support here: awareness of their precise objectives and, in general, contact between them and the municipalities leave room for improvement.

## 2. Background: The MAB Program and Sustainability

As outlined in the Introduction, the development of biosphere reserves on a global scale is based historically on UNESCO's Man and the Biosphere program of 1970, which focused on the conservation of biodiversity and the improvement of human relations with the environment [4] (p. 391). The starting point of this process was that "the conservation of environmental resources could and should be achieved alongside of their utilization for human benefit" [20] (p. 101), which initially infused the idea of conservation with that of using resources as a scientific laboratory or testing ground [21]. In the half-century since then, the MAB program has continued to evolve [4] (p. 392): The report of the World Commission on Environment and Development (Brundtland Commission, 1987) [22] and accompanying international discussions [4] (pp. 392, 398) led to greater concern for the population of protected areas, which was reflected in modifications to the program's aims and objectives. Developments from the 1990s, in particular the UN conference in Rio in 1992, then increasingly brought our main theme in this article, sustainability, within the remit of biosphere reserves, setting it in the context of "the relationship between the human economy, the social foundations of a society, and the natural foundations of life on a global level" (Original German: „Verhältnis von menschlicher Wirtschaftsweise, den sozialen Grundlagen einer Gesellschaft und den natürlichen Lebensgrundlagen auf globaler Ebene") [23] (p. 15). UNESCO's International Coordinating Council in Paris took up the results of Rio in 1993, highlighting the development of sustainable use strategies and the establishment of a global environmental monitoring system. Biosphere reserves were regarded here as particularly suitable for the implementation of Rio's Agenda 21 at the local level [24] (paragraph 3), [25] (pp. 3–4). The role of biosphere reserves was redefined by the Seville Strategy of 1995, which again emphasized that the protection of biodiversity could not succeed without allowing for human needs [26,27] (pp. 29–30). In line with the requirements of socio-economic development and regional participation [11] (p. 63), [12] (p. 572), biosphere reserves should serve as "hubs of action in the context of regional development" that enable "local communities to become fully involved in the conservation and sustainable use of resources" [26] (p. 2). This amounted to a paradigmatic change [28] (p. 107), giving sustainable development a new "defining function" [4] (p. 398). The Madrid Action Plan of 2008 reinforced this approach, encouraging biosphere reserves to take global change more decisively into account, strengthen local opportunities for participation, and see themselves as "forums for social learning" [4] (p. 394) [29–31]. Finally, the United Nations' 2030 Agenda for Sustainable Development, adopted by all 193 member states in 2015, remains decisive for the ongoing development of biosphere reserves. Its introduction lists 17 Sustainable Development Goals (SDGs, see Figure 1), which are "integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental. The Goals and targets will stimulate action over the next 15 years in areas of critical importance for humanity and the planet" [17] (p. 1). The SDGs range (each with detailed sub-targets) from poverty reduction through health, education, the reduction of inequalities, and climate protection to the development of global partnerships [17] (pp. 14–27) (for a critique, see [32]).

With its MAB Strategy 2015–2025 [16] (pp. 7–29), UNESCO explicitly included the 2030 Agenda while also incorporating the SDGs as "policy imperatives" [27] (p. 32) in the specified Lima Action Plan of 2016 [16] (pp. 30–47). Thus, the global network of biosphere reserves should, "through the global dissemination of the models of sustainability developed" there [16] (p. 34), represent "effectively functioning models for sustainable development" [16] (p. 35) and be promoted as "sites that actively contribute to achieving the SDGs" [16] (p. 35).



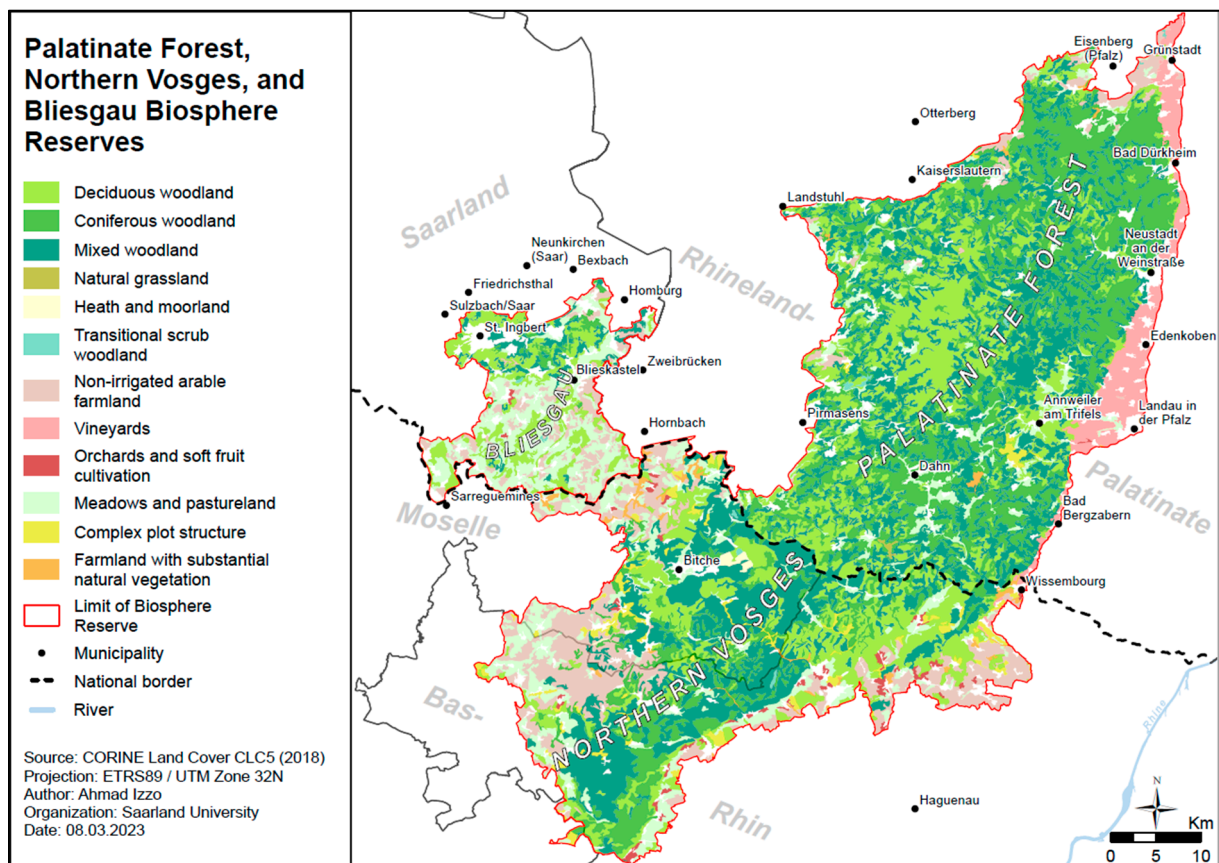
**Figure 1.** The 17 Sustainable Development Goals (source and further information on the different goals: United Nations [33]).

The further development of biosphere reserves is, therefore, planned in close correspondence with the SDGs [34,35], of which they are to be the exemplary—and also *mandatory* (under threat of losing the UNESCO label)—fulfillment [36] (p. 58). Global requirements are reflected and further concretized here in national contexts. Thus, as model regions, the German reserves should make “significant and measurable contributions to achieving the SDGs” („wesentliche und messbare Beiträge zur Erreichung der SDGs“) [37] (p. 5) in the areas of education and research, sustainable management, nature conservation, and action within the global network [37] (pp. 5–6). MAB France uses a similar formulation: their two main objectives are “on the one hand, to implement all the United Nations Sustainable Development Goals (SDGs) to support an ecological and social transition; and, on the other, to find the means (science, technology, education, collective action, governmental action, economic sectors, etc.) to work for nature and future generations in the context of global change” [38] (p. 115). Dated 2017, the German MAB National Committee’s multi-level governance proposal allocates primary responsibility for the fulfillment of these goals to the state governments and executive authorities, along with the administrative bodies of the biosphere reserves, and at the local level, the municipal councils [37] (pp. 3–8). These play an important role in coordination with the biosphere administrations, as they make “their own contribution to sustainable development” („eigene Beiträge zur nachhaltigen Entwicklung“) [37] (p. 7). Here, where people live, work, move, and consume, effective measures should be taken to promote sustainable development in everyday life. In France, too, there is an emphasis on local solutions [39]; at the same time, acting in the “mille-feuille” of multiple responsibilities [38] (p. 121) can be challenging [40] (p. 91). While the duties of local authorities are to some extent laid down, in view of the diversity of topics, divergent prerequisites and requirements, and possible conflicts of objectives [41–44], the municipal implementation of sustainability goals is no trivial matter. As stated in the Introduction, our empirical investigation is concerned with the interpretation and feasibility of internationally defined and nationally specified sustainability goals in everyday life. Before we present the results of that investigation, we will provide a brief explanation of our case studies and methodological approach.

### 3. Materials and Methods

#### 3.1. Study Area: The Three Adjacent Biosphere Reserves Palatinate Forest, Northern Vosges, and Bliesgau

The empirical focus of the present investigation is on the three adjacent biosphere reserves, Palatinate Forest, Northern Vosges, and Bliesgau (Figure 2), and their municipal authorities: The Palatinate Forest (Germany), with an area of around 1800 sq km, emerged from the Palatinate Forest Nature Park founded in 1958 and received the status of a biosphere reserve in 1992. The heavily wooded area (75% of the reserve, largely consisting of beech and pine trees), which also harbors vineyards (almost 6% of the total area) as it passes into the Rhine plain, includes larger centers such as Bad Dürkheim and Neustadt on the Weinstrasse, as well as small rural communities such as Rumbach or Frankenstein. To this day, active forest management, especially by Rhineland-Palatinate State Forests (Landesforsten Rheinland-Pfalz), plays an important role, which brings with it land-use conflicts between protection and use. In addition, there are regular discussions regarding the compatibility or incompatibility with wind turbines in the forest area. In view of other existing conflicts, a major federal highway runs through the Palatinate Forest, whose expansion for faster accessibility is the subject of controversy with reference to animal and noise protection (e.g., for the reintroduction of the lynx), among other things [36] (p. 67), [45] (p. 5), [46] (paragraph 1).



**Figure 2.** The Palatinate Forest, Northern Vosges, and Bliesgau biosphere reserves (source: illustration by Ahmad Izzo 2023).

Bordering the Palatinate Forest to the south, the Northern Vosges Nature Park (France) covers an area of around 1200 sq km. Founded in 1975, it was recognized as a biosphere reserve in 1988 but is still also designated (as is common in France) a nature park. Dense forest covers some 66 percent of the entire area [47]. Different ecosystems come into play here, including heaths and peat bogs, acidic soils, and traditional orchards with high-

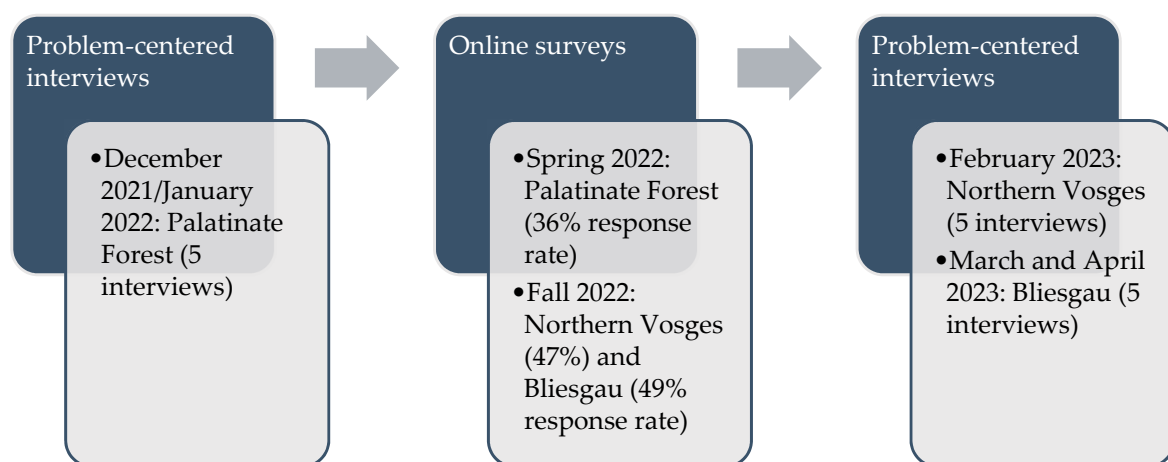
trunk trees. Much of the biosphere reserve is rural, with small communities as well as larger centers such as Wissembourg in the north and Bitche in the west. In this protected area, forest management is also of great importance. A motorway crossing in a west-east direction has a fragmenting effect. The balancing act between protection and use is also evident here, including the question of how hiking and climbing can be facilitated without causing too much damage to the environment in the reserve [48].

Due to their location, the special feature of these two reserves is their cross-border status: since 1998, they have together formed the cross-border Palatinate Forest-Northern Vosges Biosphere Reserve, creating the largest contiguous forest area in Western Europe under joint protection. However, even if there is cooperation in projects, these are run from separate offices in Germany and France, each with its own country-specific regulations [38] (p. 114), [49–51].

The Bliesgau (Germany), with 360 sq km, borders the French Northern Vosges biosphere reserve without directly cooperating with it. In contrast to the two areas outlined above, which present a high level of forest diversity, the Bliesgau is known for its meadow orchards, species-rich orchid meadows, and old beech woods. A special feature is the town of St. Ingbert, the area around which was recognized by UNESCO in 2009 as of special rural-urban interest [52,53]. Conflicts arose particularly in the context of the planned construction of the reserve due to a rather top-down procedure. Land users feared severe restrictions, which were only gradually allayed [54]. Limited availability of public transport—just as in the two aforementioned reserves—in combination with major workplaces outside the core of the reserve leads to a high volume of individual traffic, which is disadvantageous for biodiversity. Attracting more tourists is regarded as an economic benefit on the one hand, but on the other hand, it harbors the risk of overuse and the need for visitor guidance.

### 3.2. Quantitative-Qualitative Research Mix

In order to provide intensive immersion in the specific environments, a quantitative-qualitative research mix [4] (p. 392) was used to analyze the communities in the three biosphere reserves (see Figure 3). Throughout the surveys, the anonymity of the information provided was consistently assured and implemented. This makes application to other reserves difficult, but individual surveys still offer a window for comparison.



**Figure 3.** Flowchart of the research process (source: own illustration 2024).

The project started with the Palatinate Forest, where five problem-centered, topic-specific interviews with mayors and councilors lasted from approximately half to one-and-a-quarter hours and were conducted in late 2021 and early 2022. Open questions allowed interviewees to speak freely about the field of sustainability. In order to take into account the specifics of municipal work for sustainable development, interviewees were selected to represent the different types of local administration in the State of Rhineland-Palatinate:

individual municipalities, municipal associations, and independent cities. The geographical distribution of these places was also taken into account, with municipalities selected from the middle as well as the edge of the biosphere reserve: two local municipalities, two municipal associations, and one independent city (see Table 1).

**Table 1.** Overview of interview partners (source: own compilation 2023).

Biosphere Reserve	Regional Authority	Date	Interview Length (h)	Abbreviation
Palatinate Forest	Municipal council (central)	9 December 2021	1:00	PF-IP1
	Municipal council (eastern edge)	13 December 2021	0:39	PF-IP2
	Independent city (eastern edge)	21 December 2021	0:48	PF-IP3
	Association of municipalities (south)	5 January 2022	1:14	PF-IP4
	Association of municipalities (west)	17 January 2022	1:01	PF-IP5
Northern Vosges	Small municipality (central)	23 February 2023	0:45	NV-IP1
	City (north)	7 February 2023	0:35	NV-IP2
	Small municipality (eastern edge)	1 February 2023	0:58	NV-IP3
	Small municipality (south)	27 February 2023	0:36	NV-IP4
	Small municipality (south-east)	21 February 2023	0:51	NV-IP5
Bliesgau	Municipality (southeast)	21 April 2023	0:51	BG-IP1
	Municipal district (south-east)	21 March 2023	0:50	BG-IP2
	Large municipality (north)	3 March 2023	1:25	BG-IP3
	District level	9 March 2023	0:53	BG-IP4
	City (west)	9 March 2023	0:55	BG-IP5

For the Northern Vosges and the Bliesgau, a similar approach was taken with regard to the size and location of the local administrations, with interviews covering both cities and smaller municipalities and a mix of central and peripheral locations (see Table 1). Again, five interviews of between half and one-and-a-half hours were conducted.

For the sake of comparability, the questions and approach from the Palatinate Forest were reused. These took into account the person's introduction, including their tasks and functions, interviewees' personal understanding of sustainable development, their contact points with sustainability, and its implementation in the municipal context. Questions also covered actors involved and projects implemented, the commitment of the local population and how their attitude and behavior changed over time, challenges and opportunities concerning the implementation of sustainable development, the relevance of overarching sustainability strategies, cooperation with biosphere reserve offices (points of contact, common fields of action, relevance of the offices, future projects), and future needs for action. The 15 interviews were transcribed and evaluated with MaxQDA software (version 22.8.0), using qualitative content analysis in a combination of deductive and inductive approaches, sorting, reducing, and categorizing data in accordance with Philipp Mayring [55].

A comprehensive survey of the municipal decision-makers from the three reserves provided the empirical basis of the investigation: A quantitative online survey of the 162 mayors of all local municipalities, municipal associations, and towns in the Palatinate Forest reserve was conducted in spring 2022 using the online tool SoSci-Survey, with postal contact and reminders by email. With 59 valid responses, an acceptable response rate of 36% was achieved. In fall 2022, mayors and community leaders in the Northern Vosges and Bliesgau were also surveyed, with similar contact and reminders. Of the 111 municipalities in the Northern Vosges, 52 took part, achieving a response rate of 47%; in the Bliesgau, 28 of the 57 municipalities responded, a rate of 49%. A mix of closed and open questions provided general assessments of sustainable development and responsibilities for follow-up action, as well as information about the implementation of topics addressed by the SDGs, connections between the councils and reserves, and perspectives and obstacles for

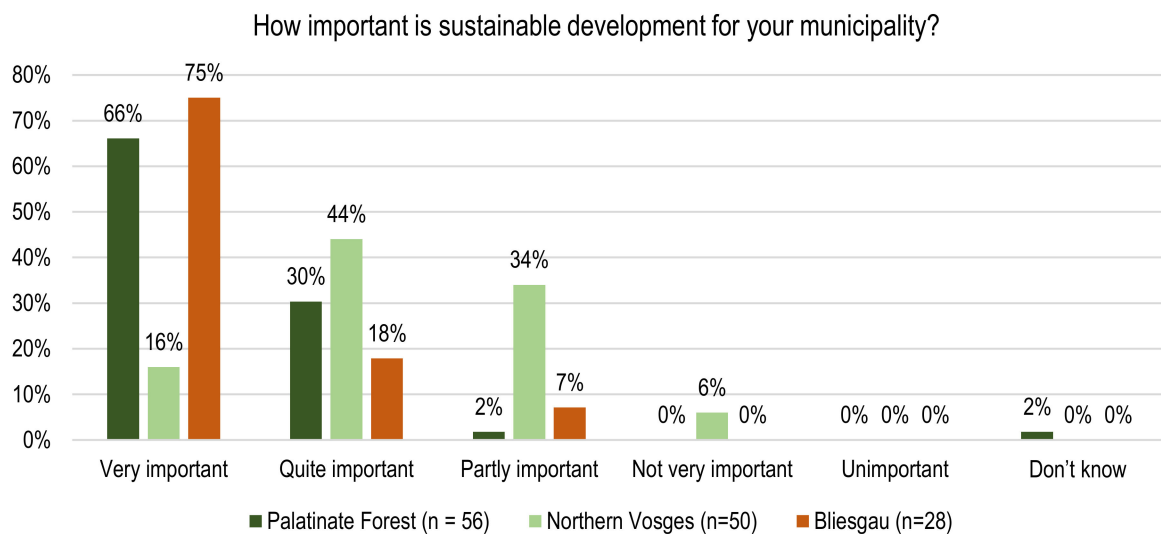
future action. The evaluation of quantifiable or coded survey elements was carried out using Microsoft Excel (<https://www.microsoft.com/en-us/microsoft-365/excel>, accessed on 31 March 2024).

#### 4. Results

In presenting our results, we combine the quantitative online surveys mentioned above with the qualitative interviews conducted with municipal decision-makers. The quantification serves as a database that is deepened and differentiated with interview excerpts. Thematically, we first examine the importance that local actors in the three biosphere reserves—Palatinate Forest, Northern Vosges, and Bliesgau—attach to the topic of sustainability and, even more basically, how they understand sustainability at all. Building on this, we focus on the extent to which they are already implementing concrete sustainability-related measures and what their guiding principles are in this respect—i.e., to what extent the SDGs are reflected in their work and how they assess their contribution to fulfilling them. At this point, we must also consider whether they perceive any restrictions in the fulfillment of these tasks. Finally, we look at the role of the biosphere reserve offices, which function as a link between global goals and municipal councils [27].

##### 4.1. Evaluation and Interpretation of Sustainable Development

Sustainable development has arrived in all three biosphere reserves, although its importance at municipal levels varies considerably. While two-thirds of the participating mayors in the Palatinate Forest and three-quarters in the Bliesgau (the two German reserves) rate it as ‘very important’, only 16% in the Northern Vosges do so (see Figure 4). There, the relevance is considered ‘quite’ (44%) or ‘partly’ important (34%).

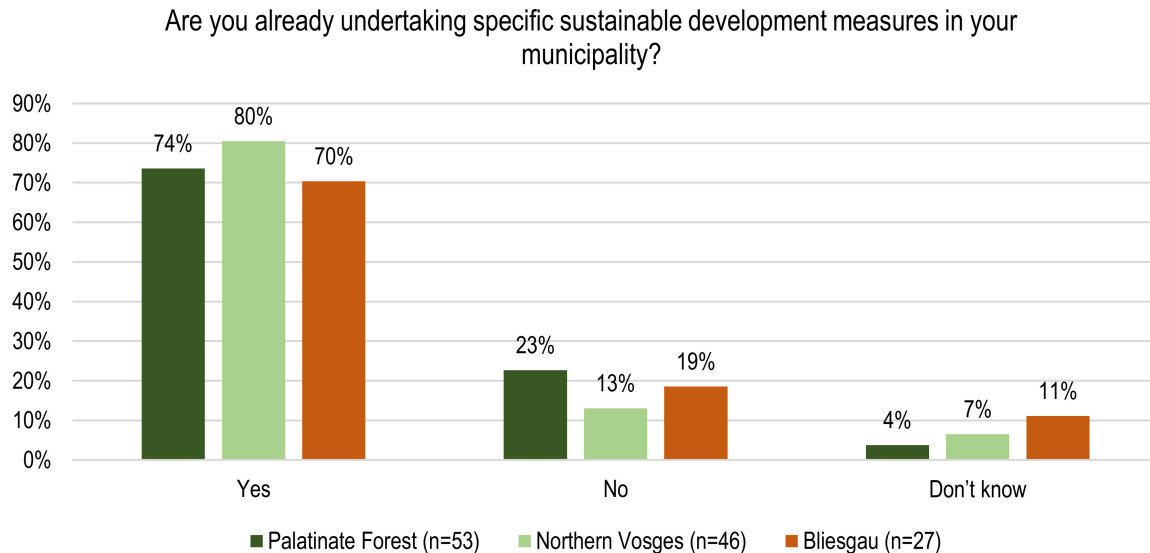


**Figure 4.** Importance of sustainable development in biosphere reserve municipalities (question in questionnaire: *Wie wichtig ist Ihnen nachhaltige Entwicklung für Ihre Kommune?/Quelle importance le développement durable a-t-il dans votre commune?*) (source: own surveys and diagram 2022).

In a ranking of responsibilities at different administrative levels, municipal responsibility received the top ranking in the responses of 6 out of 54 decision-makers in the Palatinate Forest and 7 out of 27 in the Bliesgau (see also PF-IP5), but in only 1 out of 50 in the Northern Vosges. There, however, two of the municipal actors interviewed saw this responsibility as decidedly local: “For me, sustainable development really belongs at the municipal level, or at the level [...] of the park as a whole” (Original French: «Le développement durable pour moi, il faut le situer vraiment au niveau communal ou au niveau [...] sur l’ensemble du parc.») (NV-IP1, similar statement by NV-IP3). Concrete sustainable development measures in all three reserves are implemented largely from the



perspective of municipal decision-makers and are, in fact, ranked most highly as such in the Northern Vosges, where 80% of decision-makers who took part in the survey claim to act specifically in this sense; the figures for the Palatinate Forest and Bliesgau are 74% and 70% respectively (Figure 5).

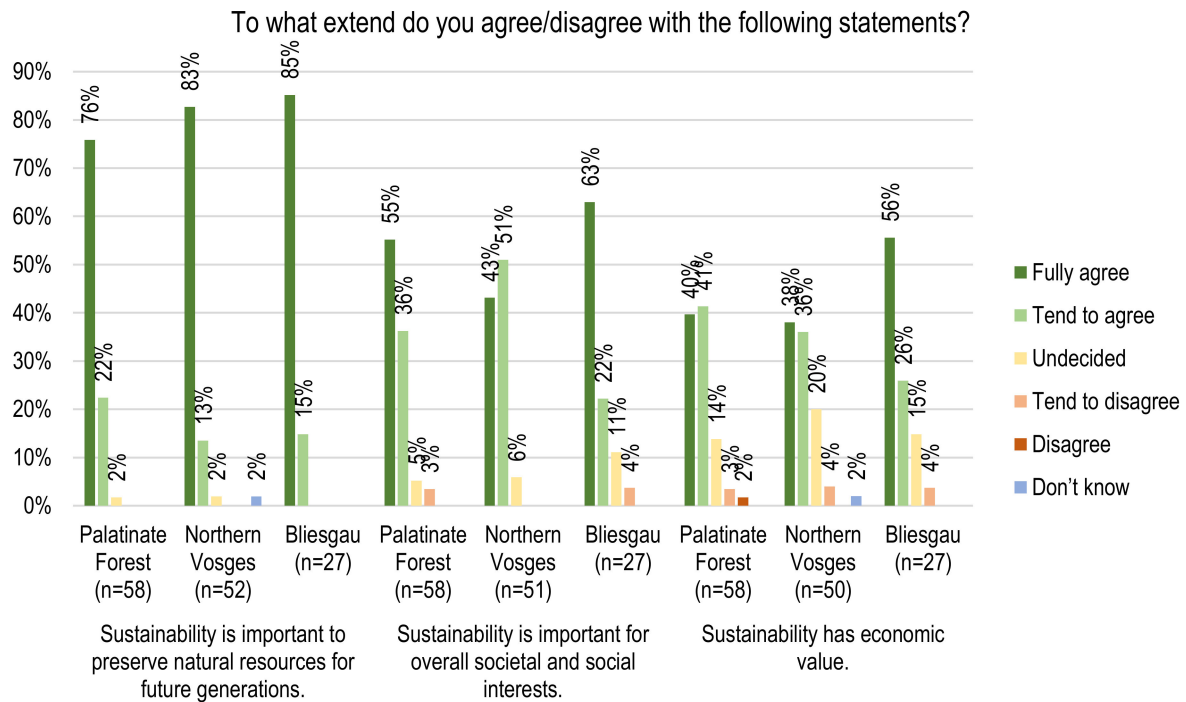


**Figure 5.** Sustainable development measures undertaken in biosphere reserve municipalities (question in questionnaire: Verfolgen Sie in Ihrer Gemeinde bereits konkrete Maßnahmen im Sinne einer nachhaltigen Entwicklung? / Poursuivez-vous des mesures concrètes dans votre commune dans le cadre du développement durable?) (source: own surveys and diagram 2022).

To what extent, then, do municipalities actually refer to SDGs in their activities, and how should their contribution to fulfilling them be classified? Before coming to this, however, we should ask how the concept of sustainability (*Nachhaltigkeit / durabilité*) is understood because, despite its buzz-word status, it often eludes clear definition [56] (p. 2), [57] (p. 39), [58] (p. 6), [59,60] (pp. 371–372). An open question inviting three associations with sustainability showed the extent to which the concept—as already observed above in the Introduction—is an empty signifier [15]. Mayors associated with online surveys a whole range of terms, concepts, and measures, sometimes more and sometimes less specific. There is, however, a recurrent pattern. Thus, in the Palatinate Forest, responsibility for the future environment and action for the benefit of future generations, as well as the conservation of resources, nature conservation, and nature compatibility, are of central importance. In the Northern Vosges, *l’environnement* is particularly frequently mentioned, as are the conservation of resources and the ideas of protection and preservation in general—interests already suggested by the term *transition écologique*. Responses from the Bliesgau follow suit: intergenerational equity and conservation of resources are cited as the most frequent associations, followed by environmental friendliness and the expansion of renewable energies. As well as a strong focus on the human future, it is, above all, the ‘green’ or environmental side of sustainability that is reflected in these answers: i.e., climate protection, biodiversity, ecology, care for nature, and recycling. It becomes clear, then, that “each [biosphere] context embodies in its own way similar concerns, ideals and premises” („im jeweils eigenen Kontext ähnliche Sorgen, Ideale und Prämissen“) [61] (p. 17).

Even if, from a scientific perspective, sustainability should—given the inseparability of its different dimensions [62] (p. 128), [63]—be understood in a more deeply integrative way, we have taken over this broad weighting of issues into our three quantitative surveys, which for pragmatic reasons (good answerability by the respondents) reproduce the “three dimensions of sustainable development: the economic, social and environmental” [17] (p. 1), that play a central role for the United Nations until today (for the evolution of the three dimensions see [64]). Sustainable development is primarily associated by biosphere mayors with

the protection and conservation of natural resources: more than three-quarters “fully agree” with this. Its importance for overall societal and social interests is rated slightly lower (55% in the Palatinate Forest and 63% in the Bliesgau fully agree), while its economic relevance is rated lowest of all. The proportion of ‘undecided’ respondents is also highest for this last question (14%/20%/15%), suggesting that sustainability and economic development are not immediately seen as compatible (see Figure 6).



**Figure 6.** Weighting of sustainability dimensions by biosphere mayors (question in questionnaire: *Wie sehr stimmen Sie folgenden Aussagen zu? / Approuvez-vous les déclarations suivantes?*) (source: own surveys and diagram 2022).

The shown prioritization is reflected in the interviews, which also refer to the unwieldiness and complexity of the concept of sustainability (e.g., PF-IP3, PF-IP4, PF-IP5, BG-IP4). Municipal policy decisions should be planned with “foresight” („Weitblick”) (PF-IP5), designed with “responsibility for the future” („Zukunftsverantwortung”) (BG-IP3, see also PF-IP3), and checked for their medium to long-term effects (PF-IP1)—an imperative rooted in the finite nature of natural resources as already reflected in the concept of sustainable forestry (e.g., PF-IP3, PF-IP4, NV-IP3; for a discussion of the direct link between sustainability and forestry see [65]). Natural resources should be used “decently” („anständig”) and “as sparingly as possible” („so sparsam wie möglich”) (BG-IP3, see also BG-IP4). This is a short step from the wider ecological and social emphasis of a response from the Northern Vosges, for which sustainable development “concerns people as well as the environment. It’s hard to imagine transforming our environment, our living conditions, unless people adapt to such a change” („doit se faire sur l’environnement, mais aussi sur la personne. C’est à dire qu’on ne peut pas imaginer transformer notre environnement, notre cadre de vie sans que l’Homme s’adapte aussi à ce changement.») (NV-IP3). Another French local authority member refers specifically to “the conservation of the forest” and “secondly the conservation of water resources and the use of drinking water” („la protection de la forêt” et «la deuxième partie la plus importante, c’est la protection de l’eau et l’utilisation de l’eau potable.») (NV-IP1). In this perspective, sustainable development aims primarily at the responsible and sparing use of nature and its finite resources, which ties in with the introductory remarks to this section on intergenerational equity and foresight.

In all three biosphere reserves, the interviews illustrate this in terms of nature conservation projects. Measures to preserve and maintain the forest ecosystem as a characteristic landscape form of the Palatinate Forest and the Northern Vosges, for example, are seen as crucial. On the German side of the cross-border reserve, landscape conservation—e.g., by keeping non-wooded areas open for pasture (PF-IP1 to PF-IP4), and through watercourse maintenance (PF-IP4)—are also mentioned specifically. In the Northern Vosges, interviewees likewise refer to renaturation measures aiming to “restore the original function of this area” («redonner à cette zone sa fonction d’origine.») (NV-IP5), with “restoration of ecological corridors by planting hedges and copses, or setting hedges along municipal roads” («la restauration des corridors écologiques, plantations de haies et des bosquets, enfin des haies le long des chemins communaux.») (NV-IP3). Another reference is to the “creation of a green waste site” («mis en place d’une aire de déchets verts.») (NV-IP1). Landscape conservation is also a central concern in the Bliesgau, where the orchid meadows are vitally important (BG-IP1, BG-IP2, BP-IP3). The individual environment of each region represents a unique heritage and a crucial reason for careful and sustainable use as an “asset that will pay dividends for its inhabitants” („Pfund mit dem wir wuchern können“) (PF-IP4).

At the same time, projects that address other areas are also included under the heading of sustainability. These include ecological and economic initiatives to reduce energy consumption, e.g., by converting street lighting to LED, switching off lighting at night, and refurbishing properties not only for energy efficiency (PF-IP1, PF-IP2, PF-IP4, PF-IP5, VN-IP4, VN-IP5, BG-IP1, BG-IP3, BG-IP5) but also for the clean generation of electricity through photovoltaic systems (especially PF-IP3 and PF-IP4). Wind energy is consistently considered less relevant, or feasible, but the potential of solar energy is referred to in a similar way in all three reserves. One Bliesgau municipal actor explicitly refers to “achieving [...] energy self-sufficiency: So, our goal is to produce as much energy in the municipality as we consume ourselves, and we have founded an energy company to achieve this” („diese Energie-Autarkie zu erreichen. Also unser Ziel ist, dass wir genauso viel Energie in der Gemeinde produzieren, wie wir auch selbst verbrauchen und haben dafür auch eine Energiegesellschaft als Gemeinde gegründet“) (BG-IP1). Infrastructure upgrades—particularly in the areas of mobility (including electromobility, local public transport, sometimes on demand), local services, and digitalization—also play an important role here (PF-IP1, PF-IP3, PF-IP4, PF-IP5, NV-IP3, BG-IP1, BG-IP5), although efforts to promote the mobility transition could still be expanded (PF-IP3, BG-IP5). In the Northern Vosges, explicit reference is made to the problem of limited accessibility by public transport, where small municipalities see no serious alternatives on offer (VN-IP1, VN-IP3). Meanwhile, German biosphere reserves have implemented measures for both urban and village development on the basis of district energy supply concepts (BG-IP3) and plan to make these more sustainable and attractive in the future (PF-IP1, PF-IP3, BG-IP3).

Interviewees consistently see ecological projects as compatible with economic development; sustainability measures must allow room for this: “Economic development is also important. Without an economy, without employment, the area cannot attract a population” («Développement économique aussi, [...] c’est important, s’il n’y a pas d’économie, s’il n’y a pas d’emplois [...], il y a aussi en termes de population pas d’attrait du territoire.») (VN-IP4). In the Palatinate Forest, appropriately “gentle economic development” („sanfte wirtschaftliche Weiterentwicklung“) entails the establishment of small businesses and the availability of skilled workers (PF-IP4), while interviewees from the Bliesgau refer explicitly to the revitalization of local jobs:

“Looking back now, we have these conversion projects on industrial wastelands and that’s a big step forward toward sustainability. Industry (as it was) was not really sustainable. And now we’re moving toward a modern service industry, IT security, which is also economically and socially sustainable. So, job security, value creation in the region, things like that.” („Wir haben, auch jetzt rückblickend, diese Konversionsprojekte auf diesen Industriebrachen und das ist ja ein großer Schritt nach vorne in Richtung Nachhaltigkeit. Die Industrie, vor allem so, wie sie früher war, war ja jetzt nicht wirklich nachhaltig. Und

das jetzt hin zu einem modernen Dienstleistungsgewerbe, IT-Sicherheit, das ist dann auch ökonomisch und sozial. Also Arbeitsplatzsicherung, Wertschöpfung in der Region, solche Sachen“ (BG-IP5).

Local decision-makers also see development opportunities in the marketing of the region and its products and raw materials (PF-IP1, PF-IP3, PF-IP4, BG-IP3), albeit with some reservations: “In principle we always try to work in a short cycle with products from local producers—so it’s truly regional. And, there too, it’s a system. Paradoxically, it seems to work in some regions, but it works less well here” («Le principe, c’était de travailler de toute façon en circuit court, avec des produits des producteurs locaux, donc vraiment travailler sur le territoire, quoi. Et là aussi c’est des systèmes qui marchent. C’est assez paradoxal, parce que ça marche dans certaines régions, ça marche moins bien ici.») (VN-IP5). Especially in the Palatinate Forest, the promotion of local recreation and soft tourism with high-quality (PF-IP4) nature-oriented offers (PF-IP2) is seen as a meaningful way of combining economic interests with ecological compatibility. A certain dilemma remains, however, for while tourism is wanted, it may clash with the conservation goals of biosphere reserves (PF-IP5).

Education for sustainable development (ESD) is seen as very important, both as an instrument for raising awareness and sensitizing citizens and local decision-makers and for communicating sustainability at an early age (PF-IP3). In the Palatinate Forest, interviewees consider linking tourism with educational offers a promising field of action (PF-IP2, PF-IP3), and in both the Northern Vosges and the Bliesgau the value of early school education is underlined: “outings exploring biodiversity, bats, endangered species—that’s another line” («sorties basées aussi sur la biodiversité, les chauve-souris, les espèces en danger, donc ça aussi c’est un vecteur.») (NV-IP1), or “it’s a label, and we have two schools that have already gained this label through various activities: creating school gardens, nature protection projects, collecting up waste-paper and things like that” («un label et donc on a deux écoles qui ont déjà été labélisées, donc par plusieurs actions: donc l’installation de jardinières dans les écoles ou de protection de la nature, ramassage des papiers ou des choses comme ça.») (NV-IP2). The message from a mayor of Bliesgau is similar: “We have geared our kindergartens and primary schools very strongly toward education for sustainable development. Our kindergarten also has a nature group that aims to learn about and explore the biosphere a little. We will soon be setting up a woodland group there too. Our schools have also obtained certificates. They have created gardens [. . .] and are learning a lot about nature and the biosphere.” („Also wir haben unsere Kitas und Grundschulen sehr stark auf die Bildung für nachhaltige Entwicklung eingestellt. Unsere Kita hat auch eine Naturgruppe, die also versucht, auch die Biosphäre ein bisschen kennenzulernen und zu entdecken. Wir werden dort jetzt demnächst auch eine Waldgruppe einrichten. Unsere Schulen haben auch Zertifikate gemacht. Haben sozusagen Gärten auch eingerichtet, lernen auch viel über die Natur und die Biosphäre.“) (BG-IP1).

These and other (in themselves routine) educational measures also contribute to the idea of sustainability (BG-IP2). Similar aims are pursued by the *Volkshochschule* (adult education institute) (BG-IP5).

At the same time, it should be noted that many interviewees in the three biosphere reserves consider the concept of sustainability to be imprecise, vague, or unclearly framed. The term is “rather unwieldy” („etwas sperrig“) (PF-IP3) and subject to “inflationary use” („inflationär“) (PF-IP4). An interviewee from the Bliesgau makes this abundantly clear: “So, it’s [i.e., *sustainability*] sometimes also a synonym for nature and environmental conservation, but it’s much, much more. Yes, for me it has this massive component of responsibility [. . .]. There’s so much music in the theme of sustainability. It’s an inexhaustible potpourri, if you look at what can be subsumed under sustainability, if you just look at the 17 goals, the sustainable development goals. Sustainability per se is a real buzzword, an all-rounder, from sustainable toothbrushes to sustainable cat food. You really have to make sure that it’s not used in an inflationary way. Of course, there’s always a danger when the term is used in every text and in every news bulletin that its explosive potential

becomes dimmed and eroded" („Also das ist ja gelegentlich dann auch ein Synonym für Natur und Umweltschutz, aber es ist sehr viel, viel mehr. Ja. Also hat für mich diese ganz große Verantwortungskomponente [. . .]. Da steckt ja, was die Themen, was Nachhaltigkeit angeht, so viel Musik drin. Es ist ja auch ein nicht abschließendes Potpourri, was man unter dieser Nachhaltigkeit subsumieren kann, also alleine, wenn man sich die 17 Ziele heranzieht. Also Nachhaltigkeit per se ist ja absoluter Modebegriff. Allrounder also von der nachhaltigen Zahnbürste übers nachhaltige Katzenfutter. Da muss man ja echt gucken, dass das nicht inflationär auch verwendet wird. Es ist natürlich immer die Gefahr, wenn den Begriff in jedem Text und in jeder Nachricht steht, dass der halt auch abstumpft und geschliffen wird, was eigentlich seine Brisanz angeht.") (BG-IP5).

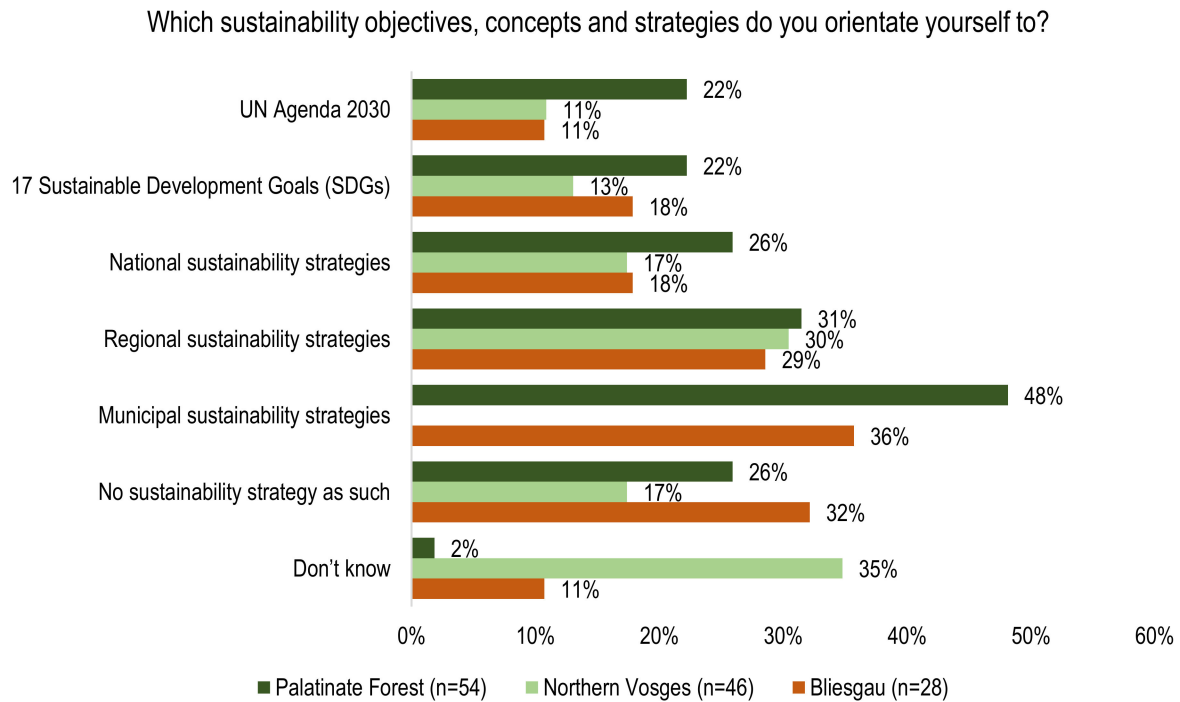
Misuse or appropriation of the concept of sustainability cannot, then, be ruled out (BG-IP4). For the municipalities in the biosphere reserves, this raises the question as to what they should take as guidelines or points of reference in order to meaningfully grasp sustainability and put it into practice.

#### 4.2. The Municipal Contribution to Fulfilling the SDGs

The first section of the presentation of results has shown that at the municipal level in the three biosphere reserves, a variety of approaches and measures subsumed under the concept of sustainability can be differentiated. The question that now arises is: Along what lines do municipal decision-makers approach the implementation of tasks, and what role do the SDGs themselves play in this context? Do the SDGs have the importance intended at the global level by the Lima Action Plan?

The quantitative surveys show that 17% (Northern Vosges), 26% (Palatinate Forest), and 32% (Bliesgau) of municipal decision-makers claim not to be guided by specific SDGs or associated concepts or strategies. This proportion is certainly worth noting, as it means that sustainability activities in these municipalities are not necessarily aligned with specific overarching guidelines. Survey responses (Palatinate Forest 48%, Bliesgau 36%) indicate that strategic orientation is instead provided by municipal mission statements and sustainability strategies—but these may, in turn, incorporate SDGs (Figure 7). On the French side, the small size of many municipalities means that no corresponding strategies are available at the municipal level, so no Franco-German comparison is possible here. In all three reserves, sustainability strategies at the state or regional level are considered of great importance (Rhineland-Palatinate 31%, Saarland 29%, Grand Est region 30%). In second place come the 17 SDGs and, more generally, the United Nations 2030 Agenda, which less than a quarter of mayors cite as an important guideline (Figure 7). Active alignment with SDGs for the fulfillment of the Lima Action Plan is thus rather thin on the ground, but this does not mean that municipalities do not nevertheless—without classifying their activities as such—do justice to the Lima goals in order to position and further establish the biosphere reserves as model regions for sustainable development.

The interviews, then, allow considerable differentiation with regard to guiding principles. Municipal councils provide an initial framework—e.g., in the form of development concepts, as in Saarland—in which objectives are formulated, although, in the Bliesgau, these are seen only as a “rough strategy” („grobe Strategie“) (BG-IP3) precluding in-depth orientation and even evoking skepticism, as in the following response: “This is our rough strategy. But I can tell you, as a municipality in Germany, the strategies and goals you set yourself today can be thrown into the trash can tomorrow. This is a problem that’s unfortunately not to be underestimated. We walk in here in the morning and sometimes in the evening we don’t know what has happened to us. That’s just how it is.” („Das ist unsere grobe Strategie. Aber ich kann Ihnen sagen, als Kommune in Deutschland, können Sie Strategien und Ziele, die Sie sich heute machen, morgen in die Tonne treten. Das ist leider ein nicht zu unterschätzendes Problem. Wir gehen hier morgens rein und wissen abends nicht, manchmal, wie uns geschieht. Also das ist einfach so“) (BG-IP3).

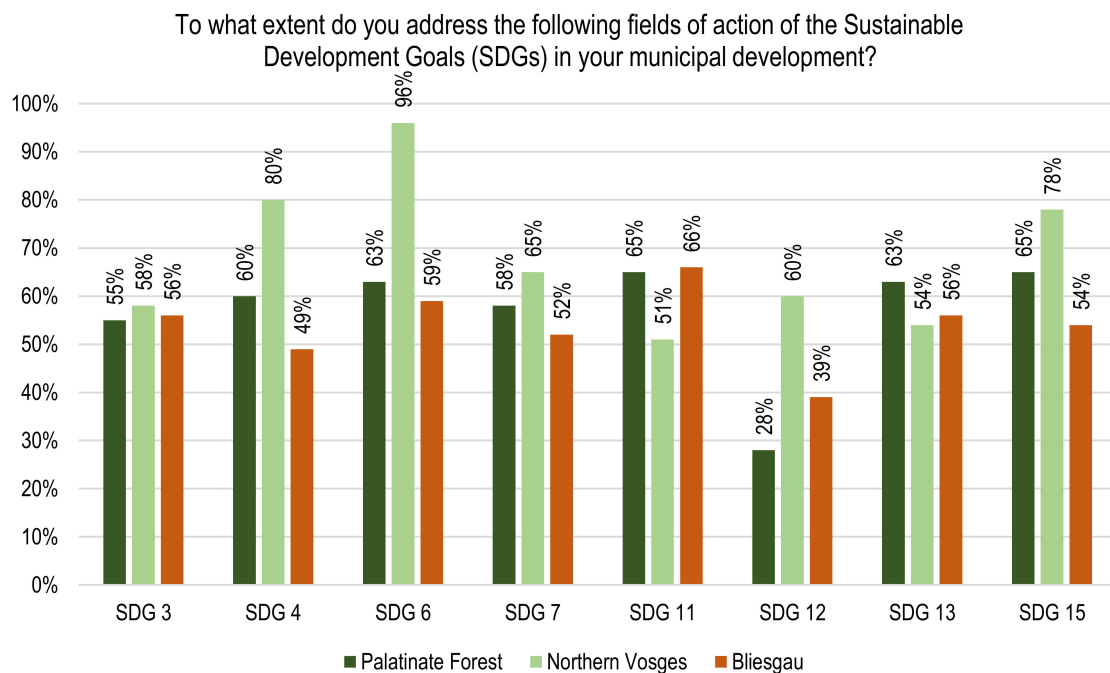


**Figure 7.** Strategic guidelines as seen by biosphere reserve mayors (question in questionnaire: An welchen Zielsetzungen, Konzepten und Strategien zur Nachhaltigkeit orientieren Sie sich?/ A quels objectifs, concepts et stratégies concernant le développement durable vous orientez-vous?) (source: own surveys and diagram 2022).

Nevertheless, one can still say that sustainability is both considered and implemented (BG-IP3). Four out of the five municipal decision-makers in the Palatinate Forest covered by the interviews would agree. Without setting complex objectives, they incorporate the concept of sustainability into their day-to-day operations, taking it into account in decisions and development measures (PF-IP1, PF-IP2, PF-IP4, PF-IP5). With regard to guiding principles, interviewees in the Northern Vosges refer to the levels of the departments and regions, as well as the Northern Vosges Nature Park, which have developed strategies to provide a supportive framework. They also cite an overarching concern for territorial coherence (NV-IP4) or sector-specific principles like the “territorial Climate, Air, and Energy Plan” («plan ‘climat, air, énergie’ territorial») (NV-IP3). In relation to the biosphere, the parc’s Charta is named as a possible source for structuring municipal action (NV-IP1)—although this dates back to 2014 and does not yet contain the 17 SDGs [66]. As a next step, it would then depend on how the municipalities dealt with this: “there is the way in which the local authorities adopt these projects” («il y a la façon dont les communes s’approprient ces projets») (NV-IP3, see also NV-IP1). The SDGs are not specifically mentioned by respondents in the Northern Vosges anyway. This is at least to some extent different in the German reserves, where one of the municipalities in the Palatinate Forest took part in a model project in cooperation with the biosphere reserve, in which strategies and measures along explicit SDG lines were developed (PF-IP3, see also [67]). However, in the other four municipalities, the SDGs were not mentioned explicitly. Mayors from the Bliesgau tend to consider SDGs as “building blocks” („Bausteine”) that could, however, also provide guidance for small municipalities (BG-IP1). At the same time, this is “not so simple, because not all building blocks are relevant for us and we don’t have the competencies for every building block” („nicht so einfach, weil nicht alle Bausteine sind auch für uns relevant und nicht für jeden Baustein haben wir auch die entsprechenden Kompetenzen auch was zu tun”) (BG-IP1). Nevertheless, municipal “activities, projects and concepts” („Aktivitäten, Projekte und Konzepte”) can also be seen here as fulfilling the SDGs (BG-IP5). The overall picture that emerges is familiar from earlier statements: actors might not always have the

SDGs explicitly in mind, even though the goals they formulate are in the end implemented (BG-IP4); or in the realistic words of another interviewee: “I’d say the goals have little influence on day-to-day business at this meta level” („Also ich würde behaupten, dass die Ziele auf dieser Metaebene wenig Einfluss haben auf das Tagesgeschäft“) (BG-IP5).

This raises the question of the extent to which biosphere municipalities do actually contribute, however unconsciously, to the fulfillment of SDGs. Participants in the quantitative surveys were asked to assess this for their respective areas. As expected, not all SDGs were considered of equal relevance [68] (p. 321): poverty reduction (SDG 1), for example, was only indicated by 4% of respondents (Palatinate Forest and Bliesgau) or 7% (Northern Vosges) as being intensely addressed—a predictable enough result for France and Germany. Similarly, the elimination of inequality within or between states (SDG 10) was only rated as intensely addressed by 7% (Northern Vosges and Bliesgau) and 9% (Palatinate Forest). On the other hand, there were striking overlaps in the fields of action regarded as most intensely addressed (Figure 8): SDG 6 (Clean water and sanitation) and SDG 15 (Life on land) were among the top 5 in all three reserves. Apart from these two, the five most frequently mentioned SDGs included numbers 3 (Good health and well-being), 4 (Quality education), 7 (Affordable and clean energy), 11 (Sustainable cities and communities), 12 (Responsible consumption and production) and 13 (Climate action). Goals 4, 6, and 15, i.e., education, water, and sustainable land management, stood out in the Northern Vosges, where more than three-quarters of survey participants named them as fields of action; in the Palatinate Forest and Bliesgau, the figure for these goals was about half the total participants; only with SDG 12 (Responsible consumption and production) did this mark drop to around a third.



**Figure 8.** Municipal activities fulfilling SDGs (For ease of response, questionnaires gave brief descriptions as well as code-numbers of SDGs.) (question in questionnaire: An welchen Zielsetzungen, Konzepten und Strategien zur Nachhaltigkeit orientieren Sie sich?/A quels objectifs, concepts et stratégies concernant le développement durable vous orientez-vous?) (Limited for clarity to top 5 rankings of each reserve; cumulative assessment of ‘intense’ and ‘quite intense’ task fulfillment; Palatinate Forest  $n = 53$ – $55$ , Northern Vosges  $n = 45$ – $46$ , Bliesgau  $n = 26$ – $28$ ) (source: own surveys and diagram 2022).

This demonstrates overlaps in the fields of municipal concern described above—sustainable water management, land use and settlement development, energy and climate change,

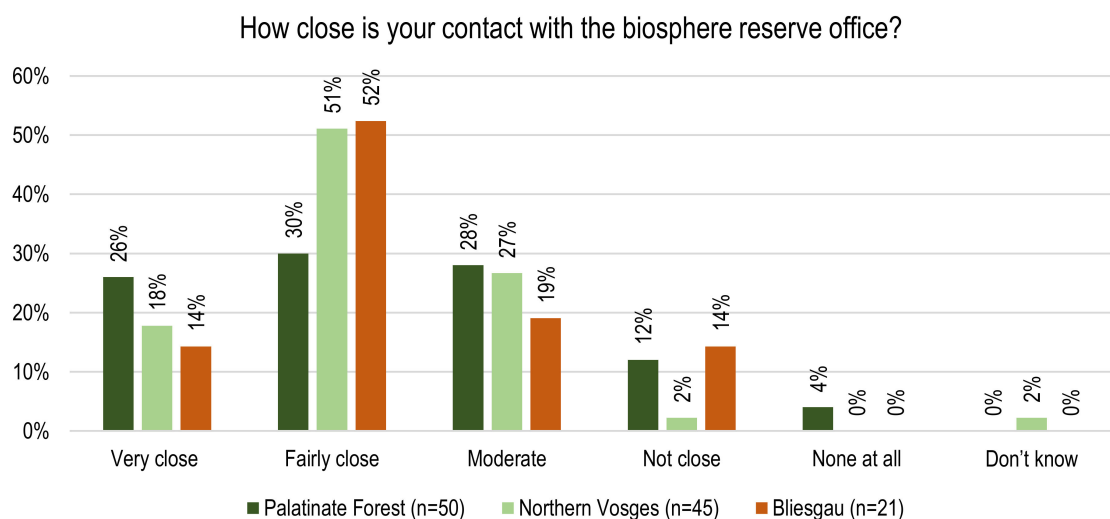
education, and health—and thus also with many of the goals set explicitly by UNESCO for biosphere reserves, namely SDGs 6 (Clean water and sanitation), 11 (Sustainable cities and communities), 13 (Climate action) and 15 (Life on land) [16] (p. 3). An exception is SDG 17 (Partnerships for the goals), a goal also named as desirable by UNESCO [16] (p. 22), but only intensely addressed to a very limited extent: 6% in the Palatinate Forest, 9% in the Northern Vosges, and 11% in the Bliesgau.

The overall tenor of these responses is that the guideline function of SDGs in the municipalities is less than would have been expected. At the same time, actions and measures *de facto* fulfill many of the goals envisaged for biosphere reserves. Municipal actors in all three reserves also emphasize their ultimate responsibility for mobilizing and promoting sustainable development, with high rates of ‘full’ and ‘tendency to’ agreement: Palatinate Forest 77%, Northern Vosges 84%, Bliesgau 86%.

#### 4.3. The Role of Biosphere Reserves Offices and the Need for Further Municipal Empowerment

As outlined in the Introduction, the biosphere reserve offices serve as an interface between municipal actors and global SDGs. The final question to be asked, then, is about the nature of the support they provide. At the same time, it is important to identify any restrictions that stand in the way of task fulfillment at the municipal level.

For UNESCO, active cooperation with the biosphere reserve offices is crucial for municipal implementation of the SDGs [7] (p. 7), [37] (p. 7), [69] (p. 43). However, our quantitative surveys paint an ambivalent picture of the connections between local decision-makers and reserves (Figure 9). Thus in the Palatinate Forest only a quarter of all mayors—in the Bliesgau and Northern Vosges even fewer—see ‘very close’ points of contact; for between a third (Palatinate Forest) and half (Northern Vosges and Bliesgau) contact is only ‘fairly close’; for around a quarter (Palatinate Forest and Northern Vosges) and slightly less than a fifth (Bliesgau) of respondents it is only ‘moderate’; and for some Palatinate Forest (12%) and Bliesgau (14%) respondents contact is ‘not close’ at all. One may conclude that in all three reserves, around a quarter of local decision-makers are unaware of the objectives pursued by the biosphere reserves. At the same time, 55% of respondents in the Palatinate Forest and Northern Vosges, and as many as 68% in the Bliesgau, ‘agree very strongly’ or ‘tend to agree’ with the statement that the reserves support municipal sustainability work as model regions for sustainable development; hardly any disagree.



**Figure 9.** Contact between municipal decision-makers and biosphere reserve offices (question in questionnaire: Wie stark sind Ihre Berührungspunkte mit dem Biosphärenreservat Pfälzerwald/Bliesgau?/Quel est le degré de votre contact avec le Parc naturel régional des Vosges du Nord (PNR)?) (source: own surveys and diagram 2022).



The interviews add detail to the results of the quantitative surveys. Thus, in the municipalities of the Palatinate Forest, the reserve office is a central institution. While federal and state governments are considered responsible for establishing the framework conditions for sustainable municipal development, the biosphere reserve is seen as possessing the necessary expertise: “[W]hen you want to implement a project of some kind, you can make [...] good use of the know-how” („[W]enn man das eine oder andere Projekt umsetzen will, kann man auch auf das Know-how [...] gut zurückgreifen“) and obtain advice (PF-IP1). In this respect, the biosphere reserve plays a key role in local sustainability work (PF-IP1, PF-IP3, PF-IP4)—e.g., in landscape conservation, but in particular in visitor guidance, and the development and maintenance of an outdoor infrastructure (PF-IP1 to PF-IP4)—for, by definition, biosphere reserves are not only concerned with “classical nature conservation in the narrow sense” („klassische Naturschutz im engeren Sinne“) but also with “man as a component of the biosphere” („Mensch als Bestandteil der Biosphäre“). Overall, then, they play a “decisive role in sustainable regional development” („maßgebliche Rolle bei der nachhaltigen regionalen Entwicklung“) (PF-IP3; see also PF-IP4).

Interviewees on the French side respond in similar terms, attesting “very regular contact with nature parc” («en contact avec le Parc Naturel des Vosges du Nord très régulièrement.») (NV-IP2), which, as “actor of reference” («acteur de référence»), “has automatic competencies, especially vis-à-vis the municipalities: [...] on that level they generate ideas, provide a framework” («a des compétences automatiques en tant que tels, vis-à-vis notamment des communes, mais c’est un acteur qui doit donner des idées, qui donne un cadre.») (NV-IP2). The reserve office acts in general as a motor (NV-IP4), providing ideas and offering suggestions for solutions or alternatives (NV-IP1, NV-IP2, NV-IP4). It has the facilities to promote initiatives (NV-IP3), and specialists (chargés de mission) are always available to offer assistance with specific projects (NV-IP5)—a know-how from which municipalities benefit (NV-IP4). In this context interviewees primarily mention fauna and flora, ecological corridors, and wetland management (NV-IP2, NV-IP3, NV-IP4)—i.e., projects in the classical ‘green’ area of sustainability.

The picture from the Bliesgau is one of qualified affirmation. Here, too, the reserve office is seen as the “most important actor, advisor, and consultant” („wichtigster Akteur, Berater, Begleiter“), without which “many things would not have happened since recognition” („viele hier nicht passiert wäre seit der Anerkennung“) as a biosphere reserve (BG-IP1, also BG-IP4). Small municipalities do not have the necessary know-how in all areas, so they benefit greatly from the biosphere network as a source of ideas (BG-IP1, BG-IP3). Moreover, given that there is not just one way toward sustainable development, each municipality must select the measures and approaches that meet its individual situation and needs (PF-IP5, see also [41]). In such a context, the advisory function and expertise of the biosphere reserves are of inestimable value. However, respondents also noted the limited resources of the biosphere office and, more generally, of the reserve and its municipalities, which restrict the scope for action (BG-IP2).

In all three biosphere reserves, this complaint runs through the responses. Municipal actors criticize restrictions that prevent more effective sustainable development. The online surveys show that insufficient financial and human resources at the municipal level are a particular obstacle to the fulfillment of tasks. Over 80% of respondents in all three reserves agree (either strongly or in tendency) that further resources are necessary to carry out the task effectively (Table 2). Sustainable development projects, in particular, are often associated with high financial and HR costs and hence limited in scope—an aspect exemplified by the Palatinate Forest (PF-IP1) and reflected in interviews from the Bliesgau. The financial side of projects is a sore point (e.g., BG-IP1), a view confirmed in an interview from the Northern Vosges, where this is seen as the crux of the whole matter (NV-IP4). Bureaucratic hurdles (Palatinate Forest) and lack of expertise at the municipal level (Bliesgau) are additional problems (see Table 2).

**Table 2.** Challenges to sustainable development are seen by municipal decision-makers in biosphere reserves (combined figures for ‘strongly agree’ and ‘tend to agree’) (source: own surveys and diagram 2022).

Challenge	Palatinate Forest	Northern Vosges	Bliesgau
Lack of financial resources	86% ( <i>n</i> = 51)	93% ( <i>n</i> = 45)	91% ( <i>n</i> = 21)
Lack of human resources	82% ( <i>n</i> = 50)	85% ( <i>n</i> = 46)	95% ( <i>n</i> = 21)
Bureaucratic hurdles	78% ( <i>n</i> = 4)	53% ( <i>n</i> = 45)	52% ( <i>n</i> = 21)
Lack of expertise	37% ( <i>n</i> = 49)	59% ( <i>n</i> = 44)	71% ( <i>n</i> = 21)

Against this backdrop, the mayors and councilors who completed the online surveys (Palatinate Forest *n* = 51, Northern Vosges *n* = 46, Bliesgau *n* = 22) call for greater support from the states of Rhineland-Palatinate (76%) and Saarland (68%), and the *Grand Est* region and the *Bas-Rhin* department (80%). They seek better information on projects and funding opportunities (67%/78%/91%), more effective support in the implementation of measures (59%/43%/64%), and more regular exchange with the biosphere reserves (43%/65%/68%) and among the municipalities themselves (33%/20%/59%). The monitoring and management of funding alone represents a major challenge. All local authorities depend on funding, but it is a problem to find the right funding in the jumble of programs, and the effort involved in processing applications sometimes exceeds the sums involved or the available HR capacities (e.g., PF-IP1, BG-IP1, BG-IP3).

Local municipal actors see the biosphere reserves as, in principle, offering a stable framework within which sustainability strategies and measures can be developed, tested, and communicated, but they want the three reserve offices to approach and support them more actively in defining and prioritizing local goals so that they can see their way more clearly. The offices should also promote interest and knowledge among local citizens in order to involve them more intensely (PF-IP3, NV-IP2); after all, sustainability affects everyone, and municipal action can only work if the public is involved (BG-IP4, PF-IP5, NV-IP1). Thus, it is not enough for municipal decision-makers to internalize sustainability goals and implement them more effectively—they must reach the population and each individual, for example, through an “awareness-raising policy” («politique de sensibilisation»), starting with the youngest (NV-IP2, also BG-IP3; for “early participation” see BG-IP4). The German biosphere reserve offices, at least, are currently under-equipped for these tasks (PF-IP1, PF-IP4, BG-IP1, BG-IP4); “continuous coordination” („kontinuierliche Koordinierung”) (BG-IP1) involving municipalities and local populations can only occur if funding and HR are upgraded. Nevertheless, local mayors and councilors consider location within the reserves to be a major advantage (‘strongly agree’ and ‘tend to agree’: Palatinate Forest (*n* = 51) 74%, Vosges du Nord (*n* = 45) 91%, Bliesgau (*n* = 22) 95%), an asset that could be built on in future.

## 5. Discussion

Launched in the 1970s, UNESCO biosphere reserves were initially inspired by segregative principles of nature conservation, but in later decades, they became increasingly open to broader notions of regional socioeconomic development. At the same time, sustainability—a central concept ever since the 1992 UN Conference in Rio de Janeiro—has been made more tangible by global, national, and regional strategies [62] (pp. 126–127) and has today become normative in politics, society, and science. In these terms, biosphere reserves are model regions of sustainable development, demonstrating regionally and locally—as indicated in the present article—how different dimensions of sustainability can be combined and implemented in line with UNESCO’s Man and the Biosphere (MAB) program, with the 17 SDGs and their sub-goals. Biosphere reserves thus inscribe themselves in a *regional* context but are co-determined by *global* framework conditions, whereby the implementation of concrete measures should take place *locally* [11] (p. 74), [19] (p. 11). Hence, they are situated “at the interface between international policies and regional problems, im-

plementation structures, and solutions” („an der Schnittstelle zwischen internationalen Politiken und regionalen Problemen, Umsetzungsmechanismen und Lösungen”) [70] (p. 21).

How the municipalities of the biosphere reserves actually implement sustainability goals, to what extent they follow formal SDG guidelines, and how they interact in their activities with biosphere reserve administrations has not until now been subject to rigorous empirical investigation. Our research involves a Western European comparison of three adjacent biosphere reserves in Germany and France and a methodological mix of online surveys and in-depth interviews with municipal decision-makers. In this way, we have established that sustainable development is rated “very important” by two-thirds of the mayors who took part in our surveys in the Palatinate Forest and three-quarters in the Bliesgau. In the Northern Vosges, only 16% agreed with this, but 44% still considered it “important”. However, this does not necessarily mean that actions in favor of sustainability are not also being taken at the municipal level in the Northern Vosges. The divergence may initially be due to the different terminology used in French. While *Nachhaltigkeit* (‘sustainability’) and *nachhaltige Entwicklung* (‘sustainable development’) are key concepts in politics, society, and science in Germany, *durabilité* and *développement durable* do not have a directly comparable status in France. There, *transition écologique* resonates more powerfully. Although *développement durable* is also used in France, this is largely in association with political institutions or government programs [61] (pp. 16–17). A second reason for divergent assessment of sustainable development is the different roles and responsibilities of French and German municipal decision-makers in its implementation.

One can conclude, then, that although they were intended to concretize sustainability, the SDGs do not, on the whole, serve as a central guideline in the three biosphere reserves of our survey. Given the complexity of day-to-day tasks, many decision-makers have not yet taken on board the formally defined SDGs, although these were intended to provide practical guidance. At the same time, some three-quarters of the municipalities in each of the three reserves already implement sustainability measures from their point of view, implying that sustainable development is undoubtedly viewed as highly relevant. The understanding of sustainability derived from the online surveys and interviews can be linked to the vision of the MAB program 2015–2025 [16] (p. 16), which strives to implant a twofold awareness: on the one hand of responsibility for future generations, and on the other of the need for actions and economic activities to be aligned with the biosphere. Pride of place in the municipal understanding of sustainability is often taken by the protection, conservation, and sustainable use of nature and its resources, which results in a certain preponderance of ‘green’ sustainability over both social and economic concerns. The results, therefore, reveal a correspondingly hierarchical ordering of the ecological, social, and economic dimensions, which indicates an underlying priority model [56] (pp. 18–19): only if society has an intact habitat—i.e., the ecological dimension—can social and economic concerns be safeguarded in the long term. It should be pointed out that the ecology/society/economy triad that runs through this article (and is found in UNESCO formulations [17] (p. 1)) represents a practical simplification of more complex structures for ease of intelligibility.

Municipalities face a variety of problems in addressing overarching sustainability goals—in particular, financial and HR restrictions, bureaucratic hurdles, and a lack of specialist knowledge. Nevertheless, sustainability is by no means perceived as an obstacle or a chore; on the contrary, within the three biosphere reserves investigated here, there is general agreement that it provides an opportunity to harmonize human life and economic activity with the environment and to ensure the wellbeing of future generations—goals also underwritten in current MAB strategy [16]. Each local authority selects the measures and approaches that meet its own requirements—there is no single ideal approach. And although everyday council work is only, to a limited extent, guided by concretely formulated strategies and objectives, sustainable development is, in practice, often taken into account and realized.

## 6. Conclusions

The findings are comparable for all three reserves and show that there is a basic understanding of ‘sustainable development’ throughout the municipalities, although in many cases, this does not correspond to the depth of the UN and UNESCO definitions. The communities tend to act more on instinct—partly because action is taken where there are quick and easy opportunities for action. Conflicts between conservation and use, however, are less of a problem for the communities than is the case in some areas at the higher level of reserve policy. It is the identified fields of problems that become a hurdle. This means that political stakeholders need to lobby to the best of their ability to obtain better resources from the state and federal state, as sustainability is regarded as a key task for the future.

The biosphere reserve offices play an important role in the interface between global and local structures. Particularly in specialist matters, their role as partners, consultants, and driving forces for local authorities calls for further clarification and extension. In this respect, an overall positive level of support can be seen, though this does not necessarily mean that mayors work closely with the biosphere offices. There is a need for action with regard to the lobbying by those offices. At the same time, better personnel and financial resources are required. If UNESCO continues to pursue its aim of global sustainability on the basis of the 17 SDGs and their sub-goals, these objectives will have to be conveyed much more effectively at the municipal level. The online surveys in the Palatinate Forest, Northern Vosges, and Bliesgau clearly show that the 2030 Agenda and SDGs currently provide little concrete guidance. Less than a quarter of the council members who took part in the surveys stated that they were actively guided by these objectives (Palatinate Forest 22%, Northern Vosges 13%, Bliesgau 18%). Although many projects follow SDG principles, the SDGs themselves provide significantly less systematic guidance than UNESCO intended; in practice, municipal and regional mission statements are a good deal more relevant, which in turn raises the question of how far these take the SDGs as such into account. The 2014 *Charte du Parc* of the Northern Vosges predates the SDGs altogether; here, the designation as a *Parc naturel régional* rather than a biosphere reserve is a determining factor. The offices of the three reserves should make even greater efforts, especially on the French side, to familiarize their communities with the SDGs in a comprehensible way. A clearer guideline is needed so that sustainable development can be promoted more systematically than before. Using a quantitative-qualitative methodological mix, this article has examined three areas in detail: the Palatinate Forest–Northern Vosges Biosphere Reserve, with its independently administered German and French sections, and the Bliesgau Biosphere Reserve. Future research might profitably extend this to a multi-level interweave of interviews with state representatives and biosphere reserve employees (beyond informal discussions already conducted), as well as NGOs. Furthermore, there is a need for a comparative in-depth analysis of biosphere reserves at the global level in order to determine the interplay between supranational guidelines and local implementation and to expand the basis of comparison. This would shed further light on “how practical lessons learned about conservation and sustainability can be shared and taken up across sites and scales” [7] (p. 2).

**Author Contributions:** Writing—original draft, J.D. and F.W. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The online surveys allow conclusions to be drawn about the participating municipal actors through open answer sets so that complete anonymity would not be guaranteed if the surveys were made freely accessible online. This also applies to the interviews. Extracts from the surveys can be requested by email from the authors of the article.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

1. Ma, B.; Zhang, Y.; Hou, Y.; Wen, Y. Do Protected Areas Matter? A Systematic Review of the Social and Ecological Impacts of the Establishment of Protected Areas. *Int. J. Environ. Res. Public Health* **2020**, *17*, 7259. [CrossRef]
2. UNEP-WCMC; UNEP; IUCN. Protected Planet Report 2020. Available online: <https://livereport.protectedplanet.net/> (accessed on 3 November 2023).
3. Oldekop, J.A.; Holmes, G.; Harris, W.E.; Evans, K.L. A global assessment of the social and conservation outcomes of protected areas. *Conserv. Biol.* **2016**, *30*, 133–141. [CrossRef]
4. Reed, M.G.; Massie, M.M. Embracing Ecological Learning and Social Learning: UNESCO Biosphere Reserves as Exemplars of Changing Conservation Practices. *Conserv. Soc.* **2013**, *11*, 391–405. [CrossRef]
5. Dusseldorp, M. *Zielkonflikte der Nachhaltigkeit: Zur Methodologie Wissenschaftlicher Nachhaltigkeitsbewertungen*; J. B. Metzler: Wiesbaden, Germany, 2017; ISBN 3658172460.
6. UNESCO. Use and Conservation of the Biosphere. Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000067785> (accessed on 6 November 2023).
7. Reed, M.G.; Price, M.F. Introducing UNESCO biosphere reserves. In *UNESCO Biosphere Reserves: Supporting Biocultural Diversity, Sustainability and Society*; Reed, M.G., Price, M.F., Eds.; Routledge: London, UK; New York, NY, USA, 2020; pp. 1–10. ISBN 9780429428746.
8. UNESCO. What Are Biosphere Reserves? Available online: <https://www.unesco.org/en/mab/wnbr/about> (accessed on 2 November 2023).
9. Braun, V.; Humer-Gruber, A.; Heinrich, K.; Job, H. Synopsis der *Biosphere Reserves* in Deutschland, Österreich und der Schweiz. In *Biosphäre 4.0: UNESCO Biosphere Reserves als Modellregionen Einer Nachhaltigen Entwicklung*; Borsdorf, A., Jungmeier, M., Braun, V., Heinrich, K., Eds.; Springer Spektrum: Berlin, Germany, 2020; pp. 33–60. ISBN 3662607069.
10. Onaindia, M.; Ballesteros, F.; Alonso, G.; Monge-Ganuzas, M.; Peña, L. Participatory process to prioritize actions for a sustainable management in a biosphere reserve. *Environ. Sci. Policy* **2013**, *33*, 283–294. [CrossRef]
11. Köck, G.; Arnberger, A.; Möller, L. Agenda 2030 und Lima-Aktionsplan—Anpassung der Biosphere Reserves für die Zukunft. In *Biosphäre 4.0: UNESCO Biosphere Reserves als Modellregionen Einer Nachhaltigen Entwicklung*; Borsdorf, A., Jungmeier, M., Braun, V., Heinrich, K., Eds.; Springer Spektrum: Berlin, Germany, 2020; pp. 61–83. ISBN 3662607069.
12. Pütz, M.; Job, H. Governance and Regionalentwicklung in Großschutzgebieten der Schweiz und Österreichs. *Raumforsch. und Raumordn.* **2016**, *74*, 569–583. [CrossRef]
13. Ruoss, E. Biosphere Reserves as Model Sites for Sustainable Development. In *Protected Areas in Focus: Analysis and Evaluation*; Getzner, M., Jungmeier, M., Eds.; Verlag Johannes Heyn: Klagenfurt, Austria, 2013; pp. 99–114. ISBN 9783708405056.
14. Bürgermeier, B. La science économique après Rio. In *Nachhaltigkeitsforschung—Perspektiven der Sozial- und Geisteswissenschaften: Recherche dans le Domaine du Développement Durable—Perspectives des Sciences Sociales et Humaines*; Kaufmann, R., Burger, P., Stoffel, M., Eds.; Schweizerische Akademie der Geistes- und Sozialwissenschaften: Bern, Switzerland, 2007; pp. 61–77. ISBN 3907835611.
15. Laclau, E.; Mouffe, C. *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics*; Verso: London, UK, 1985; ISBN 0860910679.
16. UNESCO. A New Roadmap for the Man and the Biosphere (MAB) Programme and Its World Network of Biosphere Reserves: MAB Strategy (2015–2025), Lima Action Plan (2016–2025), Lima Declaration. Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000247418> (accessed on 2 November 2023).
17. United Nations. Transforming Our World: The 2030 Agenda for Sustainable Development: Resolution Adopted by the General Assembly on 25 September 2015. Available online: <https://undocs.org/en/A/RES/70/1> (accessed on 13 November 2023).
18. Borrini-Feyerabend, G.; Dudley, N.; Jaeger, T.; Lassen, B.; Pathak Broome, N.; Phillips, A.; Sandwith, T. *Governance of Protected Areas: From Understanding to Action*; IUCN International Union for Conservation of Nature: Gland, Switzerland, 2013.
19. Sacchetti, S.; Campbell, C. Biosphere Reserves: An “Enabling Space” for Communities. *JEOD—J. Entrep. Organ. Divers.* **2017**, *6*, 10–32. [CrossRef]
20. Batisse, M. The Biosphere Reserve: A Tool for Environmental Conservation and Management. *Environ. Conserv.* **1982**, *9*, 101–111. [CrossRef]
21. Goodier, R.; Jeffers, J. Biosphere reserves. *Adv. Appl. Biol.* **1981**, *6*, 279–317.
22. WCED. Report of the World Commission on Environment and Development: Our Common Future. Available online: <http://www.un-documents.net/our-common-future.pdf> (accessed on 27 February 2022).
23. Grunwald, A.; Kopfmüller, J. *Nachhaltigkeit: Eine Einführung*; 2., aktualisierte Auflage; Campus: Frankfurt, Germany; New York, NY, USA, 2012.
24. Deutsche UNESCO-Kommission. Das UNESCO-Programm “Der Mensch und die Biosphäre” in Deutschland: Resolution der 67. Hauptversammlung der Deutschen UNESCO-Kommission, Dessau, 28 June 2007. Available online: <https://www.unesco.de/kultur-und-natur/biosphaerenreservate/das-unesco-programm-der-mensch-und-die-biosphaere-deutschland> (accessed on 8 November 2023).
25. Ständige Arbeitsgruppe der Biosphärenreservate in Deutschland. *Biosphärenreservate in Deutschland: Leitlinien für Schutz, Pflege und Entwicklung*; Springer: Berlin/Heidelberg, Germany, 1995; ISBN 9783642578243.
26. UNESCO. Biosphere Reserves. The Seville Strategy and the Statutory Framework of the World Network. Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000103849> (accessed on 2 November 2023).

27. Bouamrane, M.; Dogsé, P.; Price, M.F. Biosphere reserves from Seville, 1995, to building a new world for 2030. In *UNESCO Biosphere Reserves: Supporting Biocultural Diversity, Sustainability and Society*; Reed, M.G., Price, M.F., Eds.; Routledge: London, UK; New York, NY, USA, 2020; pp. 29–44. ISBN 9780429428746.
28. Weixlbaumer, N.; Hammer, T.; Mose, I.; Siegrist, D. Das *Biosphere Reserve*-Konzept in Deutschland, Österreich und der Schweiz—Paradigmatische Entwicklung und zukünftige Herausforderungen im Spannungsfeld von Regionalentwicklung und globaler Nachhaltigkeit. In *Biosphäre 4.0: UNESCO Biosphere Reserves als Modellregionen Einer nachhaltigen Entwicklung*; Borsdorf, A., Jungmeier, M., Braun, V., Heinrich, K., Eds.; Springer Spektrum: Berlin, Germany, 2020; pp. 99–119. ISBN 3662607069.
29. Schultz, L.; Lundholm, C. Learning for resilience? Exploring learning opportunities in biosphere reserves. *Environ. Educ. Res.* **2010**, *16*, 645–663. [CrossRef]
30. Stoll-Kleemann, S.; de La Vega-Leinert, A.C.; Schultz, L. The role of community participation in the effectiveness of UNESCO Biosphere Reserve management: Evidence and reflections from two parallel global surveys. *Environ. Conserv.* **2010**, *37*, 227–238. [CrossRef]
31. UNESCO. Madrid Action Plan for Biosphere Reserves (2008–2013). Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000163301> (accessed on 2 November 2023).
32. Kothari, A.; Demaria, F.; Acosta, A.B. Degrowth and Ecological Swaraj: Alternatives to sustainable development and the Green Economy. *Development* **2014**, *57*, 362–375. [CrossRef]
33. United Nations. Communications Materials. Available online: <https://www.un.org/sustainabledevelopment/news/communications-material/> (accessed on 13 November 2023).
34. Roth, A. #ProudToShare—Bonnes pratiques dans les Réserves de biosphère françaises. Available online: [http://ct90.espaces-naturels.fr/sites/default/files/documents/CT90/MABFrance-Publication\\_A5-80p-MAQUETTE-EN-relecture-05\\_03.pdf](http://ct90.espaces-naturels.fr/sites/default/files/documents/CT90/MABFrance-Publication_A5-80p-MAQUETTE-EN-relecture-05_03.pdf) (accessed on 1 March 2022).
35. Stoll-Kleemann, S.; O’Riordan, T. Biosphere Reserves in the Anthropocene. In *The Encyclopedia of the Anthropocene*; DellaSala, D.A., Goldstein, M.I., Eds.; Elsevier: Oxford, UK, 2018; pp. 347–353. ISBN 9780128135761.
36. Job, H.; Engelbauer, M.; Engels, B. Das Portfolio deutscher Biosphärenreservate im Lichte der Sustainable Development Goals. *Raumforsch. und Raumordn. | Spat. Res. Plan.* **2019**, *77*, 57–79. [CrossRef]
37. MAB-Nationalkomitee. Positionspapier vom 14.09.2017 zum Aktionsplan von Lima des UNESCO-Programms “Der Mensch und Die Biosphäre”: Umsetzung in Deutschland. Available online: [https://www.bfn.de/fileadmin/BfN/internationalernaturschutz/Dokumente/MAB/Positionspapier\\_Umsetzung\\_Lima\\_Action\\_Plan\\_bf.pdf](https://www.bfn.de/fileadmin/BfN/internationalernaturschutz/Dokumente/MAB/Positionspapier_Umsetzung_Lima_Action_Plan_bf.pdf) (accessed on 13 November 2023).
38. Mathevet, R.; Cibien, C. The French biosphere reserves: Looking for ecological solidarity and stewardship. In *UNESCO Biosphere Reserves: Supporting Biocultural Diversity, Sustainability and Society*; Reed, M.G., Price, M.F., Eds.; Routledge: London, UK; New York, NY, USA, 2020; pp. 114–124. ISBN 9780429428746.
39. MAB France. Les Objectifs de Développement Durable. Available online: <https://www.mab-france.org/fr/cohabiter-la-terre/les-objectifs-de-developpement-durable/> (accessed on 13 November 2023).
40. Stoll-Kleemann, S.; O’Riordan, T. The Challenges of the Anthropocene for Biosphere Reserves. *PARKS* **2017**, *23*, 89–100. [CrossRef]
41. Dähner, S.; Slupina, M.; Klingholz, R. Viele Ziele, Wenig Plan: Warum Kommunen und Die Deutsche Nachhaltigkeitsstrategie Nicht Zusammenfinden. Eine Streitschrift. Available online: [https://www.berlin-institut.org/fileadmin/Redaktion/Publikationen/PDF/BL\\_VieleZieleWenigPlan\\_2017.pdf](https://www.berlin-institut.org/fileadmin/Redaktion/Publikationen/PDF/BL_VieleZieleWenigPlan_2017.pdf) (accessed on 23 February 2022).
42. Koch, F.; Krellenberg, K. *Nachhaltige Stadtentwicklung: Die Umsetzung der Sustainable Development Goals auf kommunaler Ebene*; Springer VS: Wiesbaden, Germany, 2021; ISBN 978-3-658-33926-5.
43. Mose, I.; Siegrist, D.; Weixlbaumer, N.; Hammer, T. Großschutzgebiete in Europa im Wandel—Herausforderungen und Perspektiven für die Schutzgebietsentwicklung. *Nat. und Landsch.* **2018**, *93*, 224–231. [CrossRef]
44. Kühne, O. Postmodernisierung und Großschutzgebiete—Überlegungen zu Natur, Raum und Planung aus sozialkonstruktivistischer Perspektive. In *Wohin des Weges? Regionalentwicklung in Großschutzgebieten*; Weber, F., Weber, F., Jenal, C., Eds.; Selbstverlag: Hannover, Germany, 2018; pp. 44–55.
45. Weber, F.; Weber, F.; Jenal, C. Wohin des Weges? Regionalentwicklung in Großschutzgebieten. In *Wohin des Weges? Regionalentwicklung in Großschutzgebieten*; Weber, F., Weber, F., Jenal, C., Eds.; Selbstverlag: Hannover, Germany, 2018; pp. 3–24.
46. Justizportal Rheinland-Pfalz. Landesverordnung über das Biosphärenreservat Palatinate Forest als Deutscher Teil des Grenzüberschreitenden Biosphärenreservats Palatinate Forest-Northern Vosges: Vom, 23 July 2020. Available online: <http://landesrecht.rlp.de/jportal/portal/t/16b2/page/bsrlprod.psm1;jsessionid=97BED506D1544DF549339A4F2F01E612.jp16?doc.hl=1&doc.id=jlr-BRPF%C3%A4lzerwaldVRPrahmen&documentnumber=1&numberofresults=4&doctype=Norm&showdoccase=1&doc.part=X&paramfromHL=true#jlr-BRPF%C3%A4lzerwaldVRPpP6> (accessed on 22 August 2021).
47. Parc Naturel Régional des Vosges du Nord. Chiffres-Clés. Available online: <https://www.parc-vosges-nord.fr/le-parc/presentation> (accessed on 14 November 2023).
48. Parc Naturel Régional des Vosges du Nord. Une Charte Pour Escalader Sans Abîmer L’environnement. Available online: <https://www.parc-vosges-nord.fr/article/escalade> (accessed on 30 March 2024).
49. Deutsche UNESCO-Kommission. UNESCO-Biosphärenreservat Palatinate Forest und Northern Vosges: Wälder, Weinbau und Deutsch-Französische Freundschaft. Available online: <https://www.unesco.de/kultur-und-natur/biosphaerenreservate/biosphaerenreservate-deutschland/pfaelzerwald-und-NorthernVosges> (accessed on 14 November 2023).

50. UNESCO. Vosges du Nord/Pfälzerwald Transboundary Biosphere Reserve, France/Germany. Available online: <https://en.unesco.org/biosphere/eu-na/vosges-pfalzerwald> (accessed on 14 November 2023).
51. Weber, F.; Weber, F. Grenzen überwinden—Herausforderungen und Potenziale bei der Weiterentwicklung des Biosphärenreservates Palatinate Forest-Northern Vosges. In *Biosphäre 4.0: UNESCO Biosphere Reserves als Modellregionen einer nachhaltigen Entwicklung*; Borsdorf, A., Jungmeier, M., Braun, V., Heinrich, K., Eds.; Springer Spektrum: Berlin, Germany, 2020; pp. 227–238. ISBN 3662607069.
52. Deutsche UNESCO-Kommission. UNESCO-Biosphärenreservat Bliesgau: Orchideenland, Null-Emissions-Region und Bildung für Nachhaltigkeit. Available online: <https://www.unesco.de/kultur-und-natur/biosphaerenreservate/biosphaerenreservate-deutschland/bliesgau> (accessed on 14 November 2023).
53. Frys, W.; Nienaber, B. Protected areas and regional development: Conflicts and opportunities—Presented on the example of the UNESCO biosphere reserve Bliesgau. *Eur. Countrys.* **2011**, *4*, 208–226. [CrossRef]
54. Kühne, O. Das UNESCO-Biosphärenreservat Bliesgau. Entwicklungen, Beteiligungen und Verfahren in einer Modellregion. *Standort* **2010**, *34*, 27–33. [CrossRef]
55. Mayring, P. *Qualitative Content Analysis: A Step-by-Step Guide*; SAGE: Los Angeles, CA, USA; London, UK; New Delhi, India; Singapore; Washington, DC, USA, 2022; ISBN 9781529701975.
56. Zimmermann, F.M. Was ist Nachhaltigkeit—Eine Perspektivfrage? In *Nachhaltigkeit Wofür?: Von Chancen und Herausforderungen für eine Nachhaltige Zukunft*; Zimmermann, F.M., Ed.; Springer Spektrum: Berlin/Heidelberg, Germany, 2016; pp. 1–24. ISBN 978-3-662-48190-5.
57. Kropp, A. *Grundlagen der Nachhaltigen Entwicklung: Handlungsmöglichkeiten und Strategien zur Umsetzung*; Springer Gabler: Wiesbaden, Germany, 2019.
58. Burger, P.; Kaufmann-Hayoz, R. Einführung/Introduction. In *Nachhaltigkeitsforschung—Perspektiven der Sozial- und Geisteswissenschaften: Recherche dans le Domaine du Développement Durable—Perspectives des Sciences Sociales et Humaines*; Kaufmann, R., Burger, P., Stoffel, M., Eds.; Schweizerische Akademie der Geistes- und Sozialwissenschaften: Bern, Switzerland, 2007; pp. 5–11. ISBN 3907835611.
59. Ramsey, J.L. On Not Defining Sustainability. *J. Agric. Environ. Ethics* **2015**, *28*, 1075–1087. [CrossRef]
60. Butler Harrington, L.M. Sustainability Theory and Conceptual Considerations: A Review of Key Ideas for Sustainability, and the Rural Context. *Pap. Appl. Geogr.* **2016**, *2*, 365–382. [CrossRef]
61. Sierra, R.; Grisoni, A. Einleitung/Introduction. In *Nachhaltigkeit und Transition: Konzepte | Transition écologique et Durabilité: Concepts: Sozio-ökonomische Transformation aus Deutsch-Französischer Perspektive | Regards Franco-Allemands sur le changement socio-écologique*; Sierra, R., Grisoni, A., Eds.; Campus Verlag: Frankfurt am Main, Germany, 2017; pp. 15–33.
62. Wiesmann, U.; Messerli, P. Wege aus den konzeptionellen Fallen der Nachhaltigkeit—Beiträge der Geographie. In *Nachhaltigkeitsforschung—Perspektiven der Sozial- und Geisteswissenschaften: Recherche dans le Domaine du développement Durable—Perspectives des Sciences Sociales et Humaines*; Kaufmann, R., Burger, P., Stoffel, M., Eds.; Schweizerische Akademie der Geistes- und Sozialwissenschaften: Bern, Switzerland, 2007; pp. 123–142. ISBN 3907835611.
63. Fisher, J.; Arora, P.; Chen, S.; Rhee, S.; Blaine, T.; Simangan, D. Four propositions on integrated sustainability: Toward a theoretical framework to understand the environment, peace, and sustainability nexus. *Sustain. Sci.* **2021**, *16*, 1125–1145. [CrossRef] [PubMed]
64. Purvis, B.; Mao, Y.; Robinson, D. Three pillars of sustainability: In search of conceptual origins. *Sustain. Sci.* **2019**, *14*, 681–695. [CrossRef]
65. Gottschlich, D.; Friedrich, B. Das Erbe der Sylvicultura oeconomica. Eine kritische Reflexion des Nachhaltigkeitsbegriffs. *GAIA—Ecol. Perspect. Sci. Soc.* **2014**, *23*, 23–29. [CrossRef]
66. Parc Naturel Régional des Vosges du Nord. Charte du Parc Naturel Régional des Vosges du Nord: Horizon 2025. Projet de Territoire. Available online: [https://www.parc-vosges-nord.fr/wp-content/themes/adipso/\\_images/charte.pdf](https://www.parc-vosges-nord.fr/wp-content/themes/adipso/_images/charte.pdf) (accessed on 12 December 2023).
67. Biosphärenreservat Palatinate Forest-Northern Vosges. Palatinate Forest: SDG-Modellregion für ein nachhaltiges Rheinland-Pfalz: Acht Kommunen auf dem Weg in eine nachhaltigere Zukunft—Podiumsdiskussion mit Ministerien, Engagement Global und dem Bezirksverband Pfalz. *Biosphären-J.* **2019**, *3*, 4–6.
68. Nilsson, M.; Griggs, D.; Visbeck, M. Map the interactions between Sustainable Development Goals. *Nature* **2016**, *534*, 320–322. [CrossRef]
69. Cibien, C.; Amzil, L.; Barakat, J.; Bontempi, A.; Doumet, P.; Romera-Puga, M.C. Les réserves de biosphère dans les législations nationales et les politiques publiques. In *Réserves de Biosphère et Objectifs de Développement Durable 2: Enjeux, Tensions, Processus et Gouvernance en Méditerranée*; Romagny, B., Cibien, C., Barthes, A., Eds.; ISTE Editions Ltd.: London, UK, 2023; pp. 23–48.
70. Borsdorf, A.; Jungmeier, M. Das Weltnetz der Biosphere Reserves (UNESCO WNBR) im Spiegel des Nachhaltigkeitskonzeptes: Stand und Perspektiven. In *Biosphäre 4.0: UNESCO Biosphere Reserves als Modellregionen Einer Nachhaltigen Entwicklung*; Borsdorf, A., Jungmeier, M., Braun, V., Heinrich, K., Eds.; Springer Spektrum: Berlin, Germany, 2020; pp. 3–30. ISBN 3662607069.

**Disclaimer/Publisher’s Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.