



Periodic review of the Pfälzerwald Biosphere Reserve (2014-2020)



Biosphärenreservat
Pfälzerwald-
Nordvogesen



Publisher:

UNESCO Pfälzerwald Biosphere Reserve

Franz Hartmann-Str. 9

67466 Lambrecht

Nationale
Naturlandschaften



The Pfälzerwald Biosphere Reserve belongs to the National Natural Landscapes – Nationale Naturlandschaften (NNL e. V.), the umbrella brand of German national parks, biosphere reserves and nature parks carried by EUROPARC Germany e.V.: www.europarc-deutschland.de

List of abbreviations

ALKIS	Official Real Estate Cadastre Information System
BAT	Strategy for the management of biotope trees, old growth and deadwood by the state forestry Rhineland-Palatinate
DLR	Rhineland-Palatinate State Service Centre for Rural Areas
ECOSERV	Cross-border improvement in the quality of ecosystem services in protected areas and adjacent regions: review, instruments, strategies
ESD	Education for sustainable development
FAWF	Research Institute for Forest Ecology and Forestry
FSC	Forest Stewardship Council
Interreg	European territorial cooperation (support programme by the European Union)
LEADER	Linkage between rural economy development actions (Liaison entre les actions de développement de l'économie rurale), action programme of the European Union
LfU	Rhineland-Palatinate State Office for the Environment
LIFE	EU Programme for Environment and Climate Action
LRT	Habitat type
MAB	Man and the Biosphere (Programm der UNESCO)
MTB-Park	Mountainbike-Park
NNL e. V.	Working group of the National Natural Landscapes Association
PEPL	Maintenance and development plan
SDG	Sustainable Development Goals of the United Nations
SYCOPARC	Syndicat mixte de coopération pour le parc (management body of the Northern Vosges Regional Nature Park)
TBR	Transboundary Biosphere Reserve
UNESCO	United Nation Educational, Scientific and Cultural Organization
ZENAPA	Zero Emission Nature Protection Areas
ZNL	Certified nature and landscape guide

Table of contents

Part I: SUMMARY	5
Part II: PERIODIC REVIEW REPORT	8
1. BIOSPHERE RESERVE	8
2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST 10 YEARS	11
3. ECOSYSTEM SERVICES	33
4. THE CONSERVATION FUNCTION.....	35
5. THE DEVELOPMENT FUNCTION	48
6. THE LOGISTIC FUNCTION.....	71
7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION	81
8. CRITERIA AND PROGRESS MADE.....	89
9. FURTHER DOCUMENTS	91
10. ADRESSES	93
11. SUMMARY AND OUTLOOK.....	95
DIRECTORIES	97

Introduction

The Pfälzerwald Biosphere Reserve was established in 1992 and is the only biosphere reserve in the German state of Rhineland-Palatinate. Together with the Northern Vosges Regional Nature Park and Biosphere Reserve, it forms the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve (TBR), designated by UNESCO in 1998. There are close physiographic, historical and socio-cultural links between the sites and cooperation takes place on a continuous basis. In 2020/2021, both sites were reviewed in two reports:

- the report for the periodic review of the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve (TBR) covers the years 2010 to 2020 and focuses on transboundary activities;
- the report for the periodic review of the Pfälzerwald (national) as part of the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve covers the years 2014 to 2020 and focuses on national activities. The present report relates to the Pfälzerwald (Palatinate Forest).

We are biosphere: this is the principle which guides the expansion of the model region for sustainable development in the Pfälzerwald Biosphere Reserve and increases identification with the site. Since the last periodic review in 2013, many established activities have continued, new and innovative ideas have been developed and projects implemented.

All the recommendations from the last periodic review were followed up with action. Many of the recommendations led to protracted political discussions which produced various successful outcomes: the transfer of management responsibility to the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), the ban on wind energy generation across the entire site, the expansion of the core areas to 3 %, the adoption of the new State Ordinance on the Biosphere Reserve, and the substantial improvement of the budget and staff support are the main examples of the significant progress achieved in response to the recommendations, along with many others. The improved resourcing made it possible to continue the Biosphere Reserve's highly dynamic development and raise its profile, giving it a more tangible presence in the region. Many networks of relevance to the functions of a UNESCO Biosphere Reserve were strengthened, generating more ideas and opportunities for the model region for sustainable development. Cooperation with a large number of effective partners is essential for initiating and establishing nature-friendly, sustainable lifestyles and economic models in the Pfälzerwald Biosphere Reserve. Three overarching objectives, which are embedded in the mission statement (*Leitbild*) developed in 2018/2019, form the framework for our work:

- further development of the cultural landscape,
- further development of the model region for sustainable living,
- further development of transboundary cooperation.

In addition, the mission statement appeals specifically to stakeholders to assume responsibility and play an active role in shaping the Biosphere Reserve. The Biosphere Reserve Administration sees itself as part of an open network,

because the model region for sustainable development can only become a reality through cooperation. Under the new Action Programme for the period 2019-2028, which was developed in a participatory process as a framework concept and management plan for the Biosphere Reserve, the aim is to initiate numerous new projects and activities in accordance with the MAB functional criteria and the Lima Action Plan. During the reporting period, many new, large-scale and good practice projects were addressed with regional stakeholders over a short time, such as the chance.natur project *New Shepherds' Routes in the Pfälzerwald* (development of a biotope network in the open landscape), the *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project* (development of sustainability strategies for municipalities) and the *Pfälzerwald Dark-Sky Park project* (protection of the night sky). Education for sustainable development (ESD) was substantially expanded, e.g. with the Junior Ranger Programme, the German-French *Gardens for Biodiversity* project (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*) and public relations activities. Established activities/initiatives such as the *Partners of the Biosphere Reserve* (*Partnerbetriebe*) project and the *German-French biosphere farmers' markets* were successfully continued and intensified. In sum, in recent years, a very good basis has been established for the Biosphere Reserve's further development, through collaboration, as a sustainable region and a best-practice example of a future laboratory in years to come.

Part I: SUMMARY

a) Name of the biosphere reserve:

Pfälzerwald UNESCO Biosphere Reserve (part of Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve)

b) Country:

Federal Republic of Germany (transboundary: Germany/France)

c) Year of designation:

1992 (transboundary: 1998)

d) Year(s) of periodic review(s):

2003 and 2013

e) Previous recommendation(s) made by the International Co-ordinating Council (MAB-ICC):

Section 1.3.

f) Follow-up actions completed :

All recommendations were followed up (Section 1.3).

g) Update on the implementation of measures to achieve the objectives of the biosphere reserve

The overarching objective, namely to promote Man and the Biosphere, is fulfilled by the measures set out in the Action Programme for the Biosphere Reserve (Section 7.7).

The following objectives of the Lima Action Plan (BfN 2017) are addressed: *A1.1, A3.1 A3.2, A5.1, A5.3, A6.2, C3.2, C4.2, C5.1, C6.2* (Chapters 2, 7): The federal state of Rhineland-Palatinate (*Land Rheinland-Pfalz – RLP*) provides funding for staff, the operation of the Administration and many of the measures implemented by the Biosphere Reserve.

A4.1, A4.2, A4.3 (Chapters 2-4, 6): The federal state of Rhineland-Palatinate funds activities undertaken by the Biosphere Reserve in the fields of education for sustainable development (ESD), research and monitoring.

A1.4, A1.5, A4.4, A4.5 (Chapters 4, 5): Sustainable development is promoted and supported.

A1.4, A7.1, A7.2 (Chapter 3): The University of Koblenz-Landau's *ECOSERV* Interreg project addresses the topic of ecosystem services from a transboundary perspective.

A1.2, A7.3 (Chapters 2, 4): Nature conservation is promoted through zonation, the State Ordinance (supporting document 3.1) and designation of protected areas.

B2.1, B6.1 (Chapter 6): The aim is to establish an international partnership.

h) Brief description of the process by which the current periodic review has been conducted

Data requests were sent out to experts, internal and external online workshops were held with stakeholders, and an online survey of local authorities (*Verbandsgemeinden*) and autonomous municipalities was carried out, which identified trends in the development of the Biosphere Reserve (16 local authorities participated). The process was moderated by an external service provider.

i) Area and spatial configuration

Table 1: Zoning

Area size	2013	2013 ¹	%	2020	%
Core area(s)	3,866 ha	3,870.95 ha	2.2 %	5,359.62 ha	3 %
Buffer zone(s)	49,261 ha	48,787.94 ha	27.3 %	47,845.30 ha	26.8 %
Transition area(s))	127,842 ha	125,838.67 ha	70.5 %	125,292.70 ha	70.2 %
Total	180,969 ha	178,497.56 ha	100 %	178,497.62 ha	100 %

Source: Own representation based on ALKIS Data 2020

j) Human population of the biosphere reserve

The population figures provided in the 2013 periodic review report are based on rough estimates. The figures stated in the present report were calculated using a combination of ALKIS data and data from Rhineland-Palatinate's Land Statistical Office. The population figures are not comparable (Table 2).

Table 2: No. of inhabitants

Zone:	Estimated value 2013:	As at 2020 ² :
Core area(s)	0	0
Buffer zone(s)	500	0
Transition area(s)	159,500	253,390

Source: Own representation based on ALKIS Data 2020, Data from the Land Statistical Office

k) Budget

Table 3: Budget

Budget 2013	Budget 2020
982,050 €	2,974,070 €

Source: Own representation

¹ According to new data collection methods with ALKIS Data from the Rhineland-Palatinate State Office for the Environment (Landesamt für Umweltschutz - LFU) 2020. By adjustment of the measurements of the ALKIS Data sets, it is possible to give exact area data for 2020.

² In the core areas and buffer zones, the starting point is taken as 0 inhabitants. This is based on map sifting (settlement areas from ALKIS combined with zoning data from the LFU). The calculation is based on 134 municipalities and autonomous municipalities, which lie either completely or partly in the Pfälzerwald Biosphere Reserve (precondition of at least 10% of the residential area in the Biosphere Reserve area). The number of inhabitants is calculated with the settlement areas lying in the Biosphere Reserve. This is based on the sifting of ALKIS data sets.

1) Regional, national, bilateral, international and global frameworks of cooperation

A varied framework of cooperation exists, as shown in Table 4.

Table 4: Cooperation framework

Regional	<p>Working group of Rheinland-Palatinate Nature Parks</p> <p>Biodiversity strategy of the Land Rheinland-Palatinate</p> <p>Coalition agreement of Rheinland-Palatinate 2016-2021</p> <p>Sustainability strategy of the Land Rheinland-Palatinate: update 2015</p> <p>Strategy 'Forest restructuring, game and hunting under climate change'</p> <p>Climate protection concept of Rheinland-Palatinate</p> <p>Land Action Plan ESD</p>
National	<p>Working party of the Biosphere Reserve (AGBR) and networking with other biosphere reserves</p> <p>National strategy for biological diversity</p> <p>Working group of the National Natural Landscapes Association (NNL e. V.)</p> <p>Forest strategy 2020</p>
Bilateral (German-French)	<p>Transboundary Biosphere Reserve with the Parc naturel régional des Vosges du Nord, cooperation agreement with the management body SYCOPARC (syndicat de coopération pour le Parc)</p>
International	<p>Support projects via specific European support programmes like Interreg, LEADER, EU LIFE</p> <p>International (above all European network) Dark-sky parks</p>
Global	<p>World Network of Biosphere Reserves</p>

Source: Own representation

Part II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE

1.1. **Year designated:** 1992 (part of the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve, designated by UNESCO, since 1998)

1.2. **Years of periodic review(s):** 2003, 2013

1.3. **Follow-up actions taken in response to each recommendation from the previous periodic review in 2013**

(1) Transfer of management responsibility: As of 1 January 2014, the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) has become the management body for the Biosphere Reserve, responsibility for which falls within the purview of the federal state (*Land*). Following this transfer of management responsibility, the Pfälzerwald Nature Park Association (*Verein Naturpark Pfälzerwald e. V.*) was dissolved (Sections 2.2.7, 2.3, 7.2).

(2) The Biosphere Reserve under state (Land) law and the expansion of the core areas to 3 %: The core areas were expanded to 3 % and are legally protected under the State Ordinance for the Pfälzerwald Biosphere Reserve as the German part of the Vosges du Nord/Pfälzerwald Transboundary Biosphere Reserve (*Landesverordnung über das Biosphärenreservat Pfälzerwald als deutscher Teil des grenzüberschreitenden Biosphärenreservats Pfälzerwald-Nordvogesen*), which came into effect on 20 August 2020 (supporting document 3.1).

(3) Increase in staff support and budget: The position of Director and ESD posts were filled. The funding provided by the federal state (*Land*) of Rhineland-Palatinate for management staff has increased continuously since 2018 (Section 2.3.2); in 2020, seven permanent posts were part-funded by the state (*Land*). The state (*Land*) also provides co-financing for externally funded projects. The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) has improved the budget and staff support: in addition to securing external funding and increasing the budget, the management body has created a further 3.5 posts since 2014 (in public relations, event management, administration and ESD) (Sections 2.3.1, 2.3.2, Chapter 7).

(4) Preservation of important open habitats, establishment of a large-scale grazing strategy: The chance.natur project *New Shepherds' Routes in the Pfälzerwald* began in late 2017 and supports open habitats through grazing, mainly by sheep (Chapters 4, 5). In addition, approximately 1,000 hectares are maintained as open landscape through grazing; other grazing projects are also being implemented.

(5) Fragmentation of the Pfälzerwald: A ban on wind energy generation in the Biosphere Reserve was included in Rhineland-Palatinate's State Development Programme IV (third update) (MDI, LEP IV 21.07.2021) and is stipulated in the State Ordinance for the Biosphere Reserve (MUEEF 20.08.2020). As a public agency whose opinion must be sought, the Biosphere Reserve is working to ensure that the expansion of the B10 federal highway has minimal impact on the landscape (Section 7.4).

(6) Enhancing regional marketing and the Partners initiative: In 2016, opportunities to develop a regional brand were discussed with colleagues from the Rhön and Bliesgau Biosphere Reserves. Two development studies which assessed the potential for a regional brand for farm produce concluded that it was not feasible to launch a brand in the proposed format (BR Pfälzerwald 2018; Wittmann 2018). Scalable strategies and measures are available for the marketing of regional products (Section 5.7).

(7) Lack of a cohesive tourism brand: Several Biosphere Reserve projects address this topic. New joint activities are needed in order to foster cooperation among tourism industry professionals and promote sustainable tourism (Sections 5.1, 5.2).

(8) Enhancing ESD: In January 2016, a part-time employee (0.62 of a full-time post) was appointed to deal with ESD; two further ESD appointments (0.5 of a full-time post in both cases) were made in September 2018 and January 2020. Numerous ESD activities were undertaken, such as the development of an ESD strategy, organisation of *Junior Ranger* camps, provision of training for *Biosphere Guides* (Biosphären-Guides), and education programmes (Section 6.4).

(9) Expansion of research and monitoring: Through the inclusion of the Biosphere Reserve in national integrated monitoring, measures planned under the Action Programme for 2019-2028 (supporting document 4.1) and through other project activities there is a focus on research and monitoring (Sections 6.1-6.2). A vacant post relating to this area of work was filled in January 2020.

(10) Recognition value of the Biosphere Reserve within the region: Following the appointment to a post in public relations/communications (December 2017) and the development of the communications strategy (2018/2019) (supporting document 7.1), communication is well-designed and efficiently managed (Sections 2.3.3, 6.5.1).

1.4. Other observations or comments on the above: None.














































1.5. Process by which the current periodic review has been conducted

1.5.1. Stakeholders involved

The Biosphere Reserve team and various stakeholders and partners were involved (Table 5).

Table 5: Involvement of interest groups

Interest group	Stakeholders	Type of involvement  = Data request  = Workshop
Tourism	Pfalz.Touristik e.V.	 
	Süd Westpfalz Touristik	 
	Lambrecht Tourism Association	 
	Mountain Bike Park Pfälzerwald	
Catering	Partner companies	

Interest group	Stakeholders	Type of involvement  = Data request  = Workshop
Science and research	University of Kaiserslautern	 
	University of Koblenz-Landau	 
	Research Institute for Forest Ecology and Forestry (FAWF)	 
Education	Biosphere-Guides	
	Information Centres in the biosphere reserve (3) (3)	 
	Wappenschmiede discovery centre	
	PfalzAkademie	
Forestry	Central Forest Administration Office	 
	Head of Forestry Office	 
Agriculture	Service Centre for Rural Areas in the Southern and Western Palatinate	
	Weincampus Neustadt	
	Sheep and Goat Farmers Association	 
Nature conservation	Society for Nature Conservation and Ornithology in Rhineland-Palatinate (GNOR)	
	Nature Research and Conservation Association (POLLICHIA)	 
	Friends of the Earth Germany (BUND)	 
	Nature And Biodiversity Conservation Union (NABU)	
	Nature and Environment Foundation for Rhineland-Palatinate	
Culture	General Directorate for Cultural Heritage in Rhineland-Palatinate (GDKE)	
	Institute of Palatinate History and Folklore	
Authorities	Structure and Approval Directorate	 
	Environmental Office for the State of Rhineland-Palatinate	 
	Ministry of the Environment, Energy, Food and Forestry in Rhineland-Palatinate	 
	State Statistical Office of Rhineland-Palatinate	
Economy	Chamber of Industry and Commerce	
	Ministry of the Economy for Rhineland-Palatinate	
Energy	Energy Agency for Rhineland-Palatinate	 
	ZENAPA Project	
Planning Consortium	West Palatinate	
	Rhine-Neckar Metropolitan Region	 

Source: Own representation

1.5.2. Methodology used in the process of conducting the review

The process was moderated by an external consultancy. Data were requested from the relevant authorities, and an online survey of the local authorities (*Verbandsgemeinden*) and autonomous municipalities was carried out. Due to the COVID-19 pandemic, not all the data requested were made available.

1.5.3. Meetings and workshops throughout the process of conducting this review

Due to COVID-19, the planned meetings and workshops were held online. As a result of the measures taken to protect health during lockdown, there was much less participation than planned. Six workshops took place, both internally with members of the Biosphere Reserve team and with external persons, focusing on the conservation, development and logistic support functions, and discussions were held with representatives of public authorities, etc. The Biosphere Reserve's own committees and working groups were also involved as far as possible.

1.5.4. Attendance at workshops during the process of conducting the review, representation of stakeholders

All staff from the Biosphere Reserve Administration attended the internal workshops. The workshops on the Biosphere Reserve's functions were attended by an average of 15 persons from various sectors, such as tourism, *Partners of the Biosphere Reserve* (*Partnerbetriebe*), research, education, forestry and agriculture (Table 5).

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST 10 YEARS

2.1. Brief summary overview

Changes in the management of the Biosphere Reserve (Sections 2.2.7, 7.2, 7.6.3): As of 2014, the Palatinate Association of Local Authorities (Bezirksverband Pfalz) is the management body for the Pfälzerwald Biosphere Reserve. Notable developments include the rise in staff numbers since 2016, the increase in external funding secured, and the active and substantive progress made in transforming the site from its former status as a nature park into a Biosphere Reserve.

Zonation and the State Ordinance for the Pfälzerwald Biosphere Reserve: The zonation has changed: core areas now cover 3 % (previously 2.1 %), buffer zones 26.8 % (previously 27.3 %) and the transition area 70.2 % (previously 70.5 %). The new zonation is laid down in the State Ordinance on the Biosphere Reserve. The Pfälzerwald site is protected as a biosphere reserve under state (Land) law (supporting document 3.1).

Certifications, awards and accolades: The state-owned forest in the Biosphere Reserve is fully FSC-certified. The Biosphere Reserve has held National Natural Landscapes – *Nationale Naturlandschaften* (NNL e. V.) accreditation for delivering the nationwide *Partners initiative* and *Junior Ranger Programme* since 2017. Two projects – *Gardens for Biodiversity* (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*) (2018) and the *Biosphere Guides* (*Biosphären-Guides*) (2020) – were recognised as “Projects of the UN Decade on Biodiversity”. The *Trifterlebnis*

Legelbachtal watercourse project (2016) and the forest grazing project at St. Martin (2014) received the Landscape in Motion (*Landschaft in Bewegung*) award (Lichtenberger and Peinemann 2018).

Figure 1: Recognition of the Gardens for Biodiversity project as a project of the UN Decade for Biodiversity



Source: Biosphere Reserve Pfälzerwald

2.2. Updated background information about the biosphere reserve

2.2.1. Updated coordinates

Table 6: Coordinates

Cardinal points:	Latitude	Longitude
Centre:	49°17'11,865"N	7°52'31,527"O
Northernmost point:	49°36'40,303"N	8°10'50,678"O
Southernmost point:	49°1'58,879"N	7°52'0,619"O
Westernmost point:	49°7'21,378"N	7°30'21,15"O
Easternmost point:	49°24'48,505"N	8°11'31,375"O

Source: Own representation based on ALKIS Data 2020

2.2.2. Updated maps: (supporting documents 1, 2 and 2.1)

2.2.3. Changes in the human population of the biosphere reserve

Despite a deficit of births, population figures increased by an average of 1.4 % in the rural districts³ and by an average of 3.8 % in the autonomous municipalities⁴ from 2011 to 2017; this was due to a rise in the number of incomers (mainly immigrants from abroad). Overall, however, there is negative natural population growth due to the excess of deaths over births (Böckmann et al. 2019, p. 18), along with out-migration from Rhineland-Palatinate to other federal states (43,000 persons between 2012 and 2017) (ibid., p. 9).

³ Bad Dürkheim, Donnersbergkreis, Kaiserlautern, Südliche Weinstraße, Südwestpfalz

⁴ Kaiserslautern, Landau in der Pfalz, Neustadt an der Weinstraße, Pirmasens

In Rhineland-Palatinate, the population increased by 83,600 to 4.07 million (+2.1 %) from 2012 to 2017 (ibid., p. 13). As it pertains to demographic trends approaching 2040, population decreases are predicted, with the exception of Landau and the Southern Wine Route (*Südliche Weinstraße*) (ibid., pp. 62-63).

2.2.4. Update on conservation function (Section 2.4.5, Chapter 4)

The new State Ordinance for the Biosphere Reserve came into effect on the 20th of August 2020. To that end, the State Ordinance of 22 January 2007 on the Pfälzerwald Nature Park was revised and later repealed when the new Ordinance came into effect (for a comparison of the Ordinances, see supporting document 7.2).

The general conservation objectives are defined in Article 4 of the State Ordinance; alongside references to the cohesive development of the site and to the preservation of “diversity” and “sustainable use”, a new insert states that “ecological and social aspects” must be considered. Other amended provisions include Article 4, paragraph 1 (2) “low-impact (...) land use” and paragraph 1 (3) “the establishment and conservation” of the “biotope network” and the development of the “central upland landscape”, also for “sustainable tourism” (Article 4, paragraph 1 (4)). Provisions on the “favourable conservation status” of Habitats Directive sites were introduced in Article 4, paragraph 2.

In Article 4, paragraph 5, the specific conservation objectives defined for the transition area have been rephrased: as well as “model projects ... in accordance with the MAB Programme”, this paragraph now includes a new reference to regional economic cycles, energy and resource efficiency, regional products and tourism development in order to “permanently establish sustainable development which meets human needs across generations while protecting nature and the environment” (Article 4, paragraph 5). Other amendments relating to the core areas and buffer zones are described in Section 2.4.5 of this report. The implementation of the State Ordinance makes an important contribution to SDG 15 (see supporting document 7.3 for this and other references to the SDGs in this report).

2.2.5. Update on the development function (Chapter 5)

The *Partners network* increased from 41 companies in 2015 to 59 in 2020 (Section 5.4) and the *German-French biosphere farmers’ markets*, which have existed for more than 20 years, are well-established; 41 markets have taken place since 2013. Tourist numbers and the proportion of farming businesses operating on an organic basis also increased.

Figure 2: View from above of a German-French Biosphere Farmers' Market in Neustadt



Source: Biosphere Reserve Pfälzerwald/Venus

Figure 3: Presentation of a Partner sign to Waldritter Südwest, a new Partner of the biosphere reserve



Source: Biosphere Reserve Pfälzerwald

2.2.6. Update on the logistic support function (Chapters 3, 6)

A communications strategy was developed in 2019; resources for ESD have increased since 2016. Several research projects and monitoring measures were or are being implemented.

2.2.7. Update on governance management and coordination (Sections 2.3, 7.6.3)

As of 2014, the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is the management body for the Pfälzerwald Biosphere Reserve. It is a „local authority and association of municipalities“⁵ (BezO, vom 13.10.1994, § 1). In terms of area, the Association covers eight autonomous municipalities and eight rural districts, which means

⁵ eine Gebietskörperschaft und ein Gemeindeverband

that it is larger than the area covered by the Biosphere Reserve. The Biosphere Reserve Administration is integrated into the management body's decision-making structures (Figure 4). Fundamental decisions concerning policy and aspects of governance are taken by the Biosphere Committee⁶ (*Biosphären-Ausschuss*), which meets three or four times a year and consists of policy-makers and representatives of civil society, nature conservation organisations and outdoor sports associations. Guests from the Rhineland-Palatinate's Environment Ministry and relevant specialised agencies also attend the public meetings. This ensures that a range of stakeholders and interests of relevance to the work of the Biosphere Reserve are represented. The Committee is responsible for all strategic and policy decisions relating to the development of the Biosphere Reserve. Members of staff from the Biosphere Reserve Administration attend the meetings, which they help to prepare, and produce draft resolutions and information as a basis for decision-making. Other consultative bodies established by the management body (the Palatinate Association of Local Authorities) provide support to the Administration, such as the Steering Group (*Steuerungsgruppe*), the Biosphere Advisory Board (*Biosphären-Beirat*) and the German-French Steering Committee (supporting document 7.4) and thus contribute to SDG 16. The Biosphere Reserve's work with regional stakeholders is developed in additional working groups and networks, in some cases on a project-specific basis (supporting document 7.5). The Biosphere Reserve is subject to the technical and legal supervision of Rhineland-Palatinate's Environment Ministry and cooperates with the relevant specialised agencies of the state (*Land*), the rural districts (e.g. lower nature conservation authorities) and local authorities. The governance of the Biosphere Reserve is shown in Figure 4 and is described in more detail in supporting document 7.6.

Figure 4: Organigram for the Administration (grey=Referate; yellow=post extended indefinitely (deficit); red=post extended indefinitely (sufficient); blue=project post (cease after end of project);

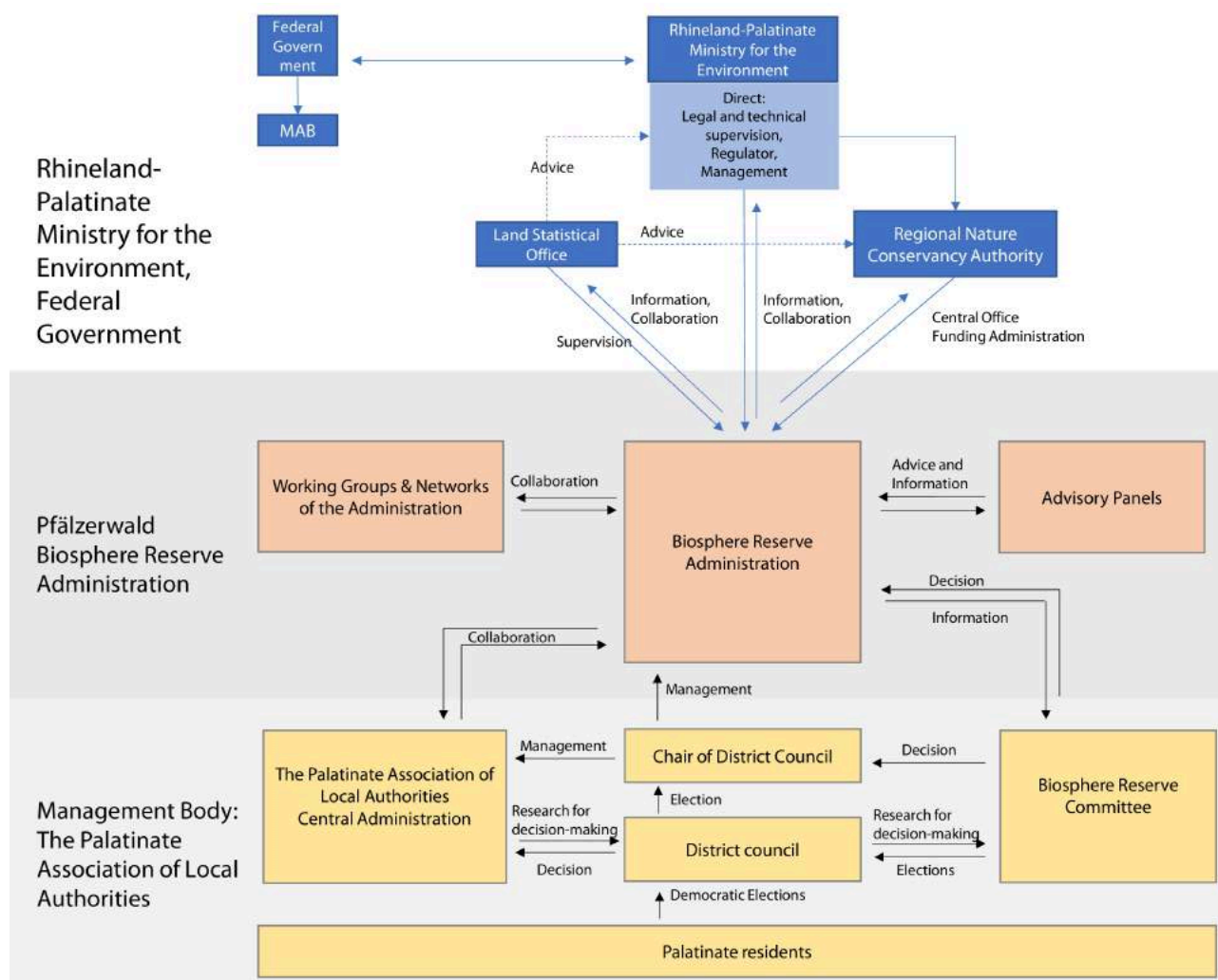
		Director filled 1.0		1.0									
		Deputy Director (concurrently working in sustainable tourism, infrastructure) filled		1.0									
				1.0									
Administration		International Public Relations		Research/ Monitoring Nature Conservation/ Biodiversity		Regional development landscape management		Sustainable tourism infrastructure		Education for sustainable development		Project New Shepherds' Routes in the Pfälzerwald	
Administration assistant filled	0.5 0.5	Staff member filled	1.0 0.9	Staff member filled	1.0 1.0	Staff member filled	1.0 1.0	Staff member (concurrently Deputy Director) filled	1.0 1.0	Staff member filled	2.0 1.6	Staff member filled	1.8 1.8
Secretary filled	1.0 0.5			Pfälzerwald Dark-Sky Park project		Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project						Administration assistant filled	0.5 0.5
				Staff member filled	1.0 1.0			Staff member filled	1.0 1.0				
						Staff member filled	1.0 1.0						
						Administration assistant filled	0.5 0.5						

Source: Own representation

⁶ The committee comprises 23 members, of which 12 must be members of the District Council (Bezirkstag). The allocation of seats is according to the latest election results (5 members of the Socialist Democrat Party (SPD), 4 members of the Christian Democrat Union (CDU), 3 members of the Green Party (Die Grünen), and 2 members each from the Alternative for Germany (AfD) and the FWG (independent voters' association), and one member each from the Free Democratic Party (FDP) and the Left Party (die LINKEN)).

Figure 5: Organigram for the Management of the Biosphere Reserve

blue=Land Rheinland-Palatinate, Federal Government; red=Pfälzerwald Biosphere Reserve Administration, Management Body = The Palatinate Association of Local Authorities



Source: Own representation

As a result of the transfer of management responsibility and the resulting improvement in staffing levels, the Biosphere Reserve Administration was restructured. In addition to the senior management level (Director, Deputy Director), six administrative units were set up, based on the MAB functional criteria, and one further unit was established for the chance.natur project *New Shepherds' Routes in the Pfälzerwald*. The new structure adequately reflects the functions of a biosphere reserve, despite staff shortages in some teams (Section 2.3.9); management, nature conservation/biodiversity, research/monitoring, landscape management and regional development are areas where an increase in the number of working hours and posts would be beneficial in order to ensure adequate future capacity. Additional human resources would also be expedient in strengthening German-French cooperation.

2.3. The authority/authorities in charge of coordinating/managing the biosphere reserve

2.3.1. Updates to cooperation/management policy/plan

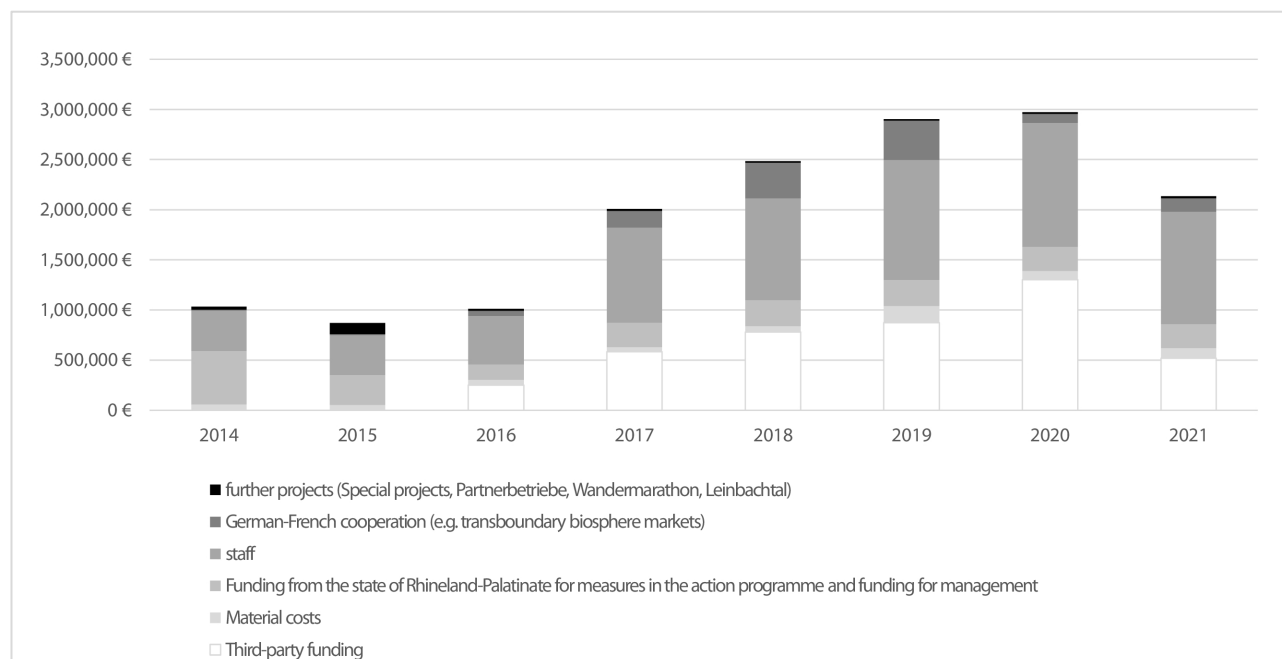
The Action Programme serves as the Biosphere Reserve's management plan. It provides the framework and is the instrument steering the site's development in accordance with the MAB Programme. The Action Programme defines the Biosphere Reserve's specific objectives, is backed by funding from the state of Rhineland-Palatinate for the implementation of measures, and includes a timetable for action. For the decade from 2019 to 2028, a new Action Programme was developed with input from the public (supporting document 4.1 and Sections 7.7.1-7.7.5). The Action Programme is framed around the mission statement (*Leitbild*) with its three overarching objectives (supporting document 7.7), focusing on the further development of (1) the cultural landscape, (2) the model region for sustainable living, and (3) transboundary cooperation. These three objectives are realised through projects described in the Action Programme (supporting document 7.8).

In its principles, the mission statement appeals specifically to stakeholders to assume responsibility and play an active role in shaping the Biosphere Reserve. As a network partner, the Administration aims to provide impetus informed by ideas from within the region: it sees itself as "part of an open network" in the shared endeavour to make the model region for sustainable development a reality. Against this background, partnerships are actively practised.

2.3.2. Budget and staff support

The financial situation has improved (Figure 6): in 2013, approximately € 932,050 was available under the budget plan of the Pfälzerwald Nature Park Association (*Verein Naturpark Pfälzerwald e. V.*), while funding amounting to € 492,900 was provided by Rhineland-Palatinate's Environment Ministry for project implementation under the Action Programme. In 2021, the financial resources available under the budget plan amount to € 2,133,749; this includes approximately € 300,000 per annum in project funding to implement the Action Programme. External funding of approximately € 520,000 is available in 2021, while funding for transboundary cooperation totals around € 134,000. Staff support has increased since 2014 (Table 7), from five employees in 2014 to 17 in 2020.

Figure 6: Development of Budget 2014-2021



Source: Own representation based on budget plans of the Palatinate Association of Local Authorities 2014-2021

Table 7: Human Resources Development in the Biosphere Reserve 2014-2020

	2014	2015	2016	2017	2018	2019	2020
Full-time posts	3	3	4	6	6	9	10
Of which project posts			1	1	2	3	3
Part-time posts	2	2	3	4	5	8	7
Of which project posts			1	1	3	3	3
Voluntary unpaid	0	0	0	0	0	0	1
Commerzbank interns (since 2018)					1	2	1
Other interns	1		1	3	6	4	1
Voluntary ecological year placement (FÖJ) (since 2020)							1
HR costs (in €thousands)	401.3	396.1	488.45	949.7	1016.2	1197.2	1238.5

Source: Own representation based on data from the HR Dept of the Palatinate Association of Local Authorities

2.3.3. Communications strategy for the biosphere reserve

In 2019, a communication strategy was developed in collaboration with an agency and with input from various stakeholders and interest groups; implementation of the strategy commenced the same year (supporting document 7.1, Infobox 1). In the coming years, more intensive efforts will be made to expand the Biosphere Reserve's digital communications, e.g. with the development of social media channels, which is planned for 2021, and measures to strengthen the public's and the local authorities' identification with the Biosphere Reserve. New signage was produced for companies participating in the *Partners initiative*, along with new print media, including a sticker postcard and cartoon strips by one of the region's well-known artists (supporting document 7.9). In order to further increase awareness of the Biosphere Reserve within the region, it would be helpful to put up additional signage below the place-name signs displayed at the boundaries of villages and towns, as has been done in the Rhön Biosphere Reserve; to date, however, this has not been possible due to legal obstacles.

Figure 7: Carrying out workshops as part of the creation of the Communications Strategy 2019



Source: Pfälzerwald Biosphere Reserve

Infobox 1: Communications Strategy

The SWOT analysis of the Communications Strategy (Table 8) shows there is a good starting point for comm. There is potential for building on this by increasing people's identification with the nature conservation area and promoting the feeling of 'Us' among the local population.

In the communications strategy three overarching objectives were defined:

- ♦ Creating positive identification with the goals of the Biosphere Reserve
- ♦ Inspiring enthusiasm and engagement in stakeholders
- ♦ Establishing sustainability as a benchmark for all actions

The goals should be achieved by targeted and incremental communications from in-house (the Administration) to outside (the wider public) by gaining multipliers. Since 2019, the slogan 'We are the Biosphere' has been integrated into the Biosphere reserve's media, to increase identification and the feeling of unity.

Table 8: SWOT analysis of the Communications Strategy

SWOT analysis		
Pfälzerwald Biosphere Reserve	Strenghts <ul style="list-style-type: none"> • Biosphere Reserve, administration and communications well established and widely known • areas of conflict or controversies are rare • extremely good offerings in the region • many exciting products which are produced in the region • USPs: 'Wald & Wein' ('Woods and Wine'), extensive forest/woodland and transboundary Biosphere Reserve • many projects and events are well-known and valued • existing functioning PR work and good general information stand • Biosphere Reserve already has positive image in terms of sus 	Weaknesses <ul style="list-style-type: none"> • many good communications initiatives and measures, but little used • needs of the pop with regard to communication are not recorded in surveys or other work, and there is therefore a risk of communicating without taking these needs into account • Communication of what the Biosphere Reserve means for stakeholders is sketchy, the Biosphere Reserve concept is frequently misunderstood • existing public image in part too serious, not engaging enough • economic heterogeneity of the region and outdated structures • transboundary Biosphere Reserve is classed as important, but lack of media in both languages
	Opportunities <ul style="list-style-type: none"> • many stakeholders show a readiness to cooperate and an interest in participating • event format 'What's new in the Biosphere' ('Neues aus der Biosphäre') is a good platform for future networking • Informational elements, FAQ, etc. could enable stakeholders to act as multipliers • there are many learning places and educational offerings in the Biosphere Reserve, so conversations with young people can take place and they can be inspired by the region and the goals of the Biosphere Reserve • the proximity of the administration to the Pfalzakademie offers the opportunity to grow central educational and event venues as multipliers 	Risks <ul style="list-style-type: none"> • lack of clarity at times regarding stakeholders' expectations creates a risk of misunderstandings and disappointment • economic heterogeneity of the region could lead to stockpiling • the risk that communication does not speak to the target groups, if the concept of the Biosphere Reserve is not defined simply and clearly • there may be less willingness to carry the messages of the Biosphere Reserve if no 'Us' feeling is created • the subject of 'core areas' is one of the few areas of conflict; here there is some apprehension, which must be taken into account when communicating

Source: Own representation based on the SWOT analysis of the Communication Concept (BR Pfälzerwald 2019), drawn up by the fairkehr Agency in 2019

2.3.4. Strategies for fostering networks of cooperation

Since the transfer of management responsibility, the Biosphere Reserve Administration has actively promoted networks of cooperation at various levels (Figure 4 and supporting document 7.4):

- well-established, institutionalised networks, e.g. the Biosphere Committee and Steering Group,
- working groups and project-based networks involving stakeholder representatives, e.g. the *Partners network* and the ESD network.

A network-based approach is embedded in the Biosphere Reserve's mission statement (supporting document 7.7, Section 7.7.5). The local authorities also promote the network of cooperation: the survey of municipalities conducted for the periodic review shows that Nature Park/local authority cooperation was already under way and was continuously expanding before 2013 but could be strengthened further. There is particularly active cooperation in the tourism sector, visitor management and the chance.natur project *New Shepherds' Routes in the Pfälzerwald*. The local authorities wish to be kept more informed about the Biosphere Reserve, and this has been addressed in the communications strategy; it is essential to reach the local authorities in their capacity as multipliers and to develop a municipal biosphere network (Infobox 1). Events such as *What's new in the Biosphere* (*Neues aus der Biosphäre*) also have a role to play here.

Figure 8: Presentation about the chance.natur project New Shepherds' Routes in the Pfälzerwald at the 'What's New in the Biosphere' event for local government decision-makers in Frankenstein in 2019



Source: Pfälzerwald Biosphere Reserve

2.3.5. Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve

Numerous socio-cultural aspects are addressed (Table 9). This includes disseminating historical knowledge through exhibitions and fostering traditional building skills through the restoration of watercourses formerly used for timber floating (*Triftbäche*) (Figure 10). Traditional crafts, such as broom- and brush-making, and knowledge of landscape management techniques that preserve species diversity are also promoted. The survey of local authorities showed (in 15 responses) that 60 % promote awareness of the region's history and 33 % foster traditional production practices.

Two digital inventories – WestpfalzWiki (www.westpfalz.wiki) (since 2017) and KuLaDig (Kultur. Landschaft. Digital) (LVR 2020) – locate and describe sites of cultural significance and landscape features. KuLaDig is an online information system that focuses on the history of the cultural landscape and the cultural heritage of the landscape.

The General Directorate for Cultural Heritage Rhineland-Palatinate (*Generaldirektion Kulturelles Erbe Rheinland-Pfalz*) is responsible for more than 100 medieval castles and ruins across the site. A number of significant historic monuments, including Trifels Imperial Castle (*Reichsburg Trifels*) and Hambach Castle (*Hambacher Schloss*), are located in the Biosphere Reserve. Visitor guides and *Biosphere Guides* offer guided tours at some of these properties

(supporting document 7.10). The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is one of four trustees of the Hambach Castle Foundation (*Stiftung Hambacher Schloss*) and manages various other cultural institutions in the area. The Biosphere Reserve Administration collaborates with these organisations on a project-specific or ad hoc basis.

Figure 9: The Hambacher Schloss above Neustadt an der Weinstraße



Source: Pfälzerwald Biosphere Reserve

Table 9: Social and cultural embedding

Topic	Activities
Promoting history Chap. 2.3.5	<ul style="list-style-type: none"> Dissemination of cultural history through exhibitions in information centres (eg. on 'Log Driving, Artificial Ponds and Timber-floating Streams in the Pfälzerwald' held in the Sustainability Centre in 2016) Educational partners and establishments of the Palatinate Association of Local Authorities disseminate history, as in the case of the Palatinate Museum of Natural History (Pfalzmuseum für Naturkunde) – the POLLICHIA Museum, the Institute for Palatine History and Folk Life Studies (Institut für Pfaelzische Geschichte und Volkskunde) Biosphere Reserve convention in 2018 jointly with the Institute for Palatine History and Folk Life Studies and the Sustainability Centre on the subject of 'The Pfälzerwald: Past, Present and Future' ('Der Pfälzerwald in Vergangenheit, Gegenwart und Zukunft') Seminar of the RegioAkademie (Regional Academy) (incl. reading old inscriptions, eg. on boundary stones) Visitor guides and nature guides consider archaeological findings (eg. dinosaur tracks or Celtic finds) in tours and <i>Biosphere Guides</i> incorporate cultural monuments such as castles, 'Ritter Stones' and boundary stones in their field trips
Traditional Construction Chap. 2.3.5	<ul style="list-style-type: none"> Preserving and bringing old artificial ponds and timber floating systems to life through the installation of adventure paths, eg. the educational trail at Spießwoogtal (2018) and the timber-floating adventure trail at Legelbachtal (2020), the timber-floating festival Interregional project (2011-2014) 'Ecological plumbing in existing buildings in the Pfälzerwald/North Vosges Biosphere Reserve' ('Ökologische Sanierung von regionaltypischen Bestandsgebäuden im Biosphärenreservat Pfälzerwald / Vosges du Nord') Restoration of dry stone walls in the chance.natur project <i>New Shepherds' Routes in the Pfälzerwald</i>

Topic	Activities
Traditional crafts Chap. 2.3.5	<ul style="list-style-type: none"> • Promoting (migratory) shepherding through the Pfälzerwald lamb initiative and the <i>New Shepherds' Routes in the Pfälzerwald</i> • Promoting the <i>German-French biosphere farmers' markets</i> via the <i>Partner network</i>: broom- and brushmaking incl. brushmaking museum in Ramberg, shoe industry (the German Shoe Museum in Hauenstein, et al), fish farms, blacksmithing of blades made from Damascus steel, cooperage, cheesemaking in Germany and France, flour mills
For 'traditional/old knowledge' Chap. 2.3.5	<ul style="list-style-type: none"> • Preservation of the cultural landscape and biodiversity through grazing and maintenance, eg. through migratory sheep-droving which is important culturally and historically • ZNL and <i>Biosphere Guides</i> (incl. tours to gather and make use of wild herbs, and on 'traditional forest trades and occupations') • Seminars (dyeing with natural dyes, et al) about the <i>Gardens for Biodiversity project / Jardiner pour la biodiversité</i> project
Traditional Forms of Use Chap. 2.3.6	<ul style="list-style-type: none"> • Initiating and execution of grazing projects (in St. Martin, Gräfenhausen, Frankenstein et al) and support of further grazers with approx. 1,000 ha of land • Pilot project for conservation of humpback meadows through the chance.natur project <i>New Shepherds' Routes in the Pfälzerwald</i> • Support of traditional fisheries through the <i>German-French biosphere farmers' markets</i> and <i>Partners</i> of the Biosphere Reserve • Promotion of viticulture as a traditional economic activity (in particular organic wine through the <i>Partners</i> of the Biosphere Reserve) • Timber floating (in Leinbachthal, et al) • Coppice management in the chestnut forest in Haardtrand
Traditional livestock breeds Chap. 2.3.6	<ul style="list-style-type: none"> • Promotion of (migratory) sheep-droving through the shepherding festival (sheep-shearing, breed shows, sheep dog trials) and Pfälzerwald lamb initiative • Promotion of Palatinate Glan beef: Grazing in Karlstal and actions to build awareness (Food Weeks programme, et al) • Promotion of Heck cattle as a re-breeding of the aurochs on grazing areas (woodland pastures in Frankenstein and St Martin)
Heritage Varieties Chap. 2.3.6	<ul style="list-style-type: none"> • Museum for Forest and Woodland History in the 'Alten Samenklänge' (seed drying facility) in Elmstein (with a focus on timber floating, traditional seed-saving, et al) • Meadow orchards (e.g., orchard planting/care, pruning courses/raising awareness among public of fruit processing as part of the <i>LIFE Biocorridors</i> project) • Forest Genetic Resources Centre of the FAWF (experimental planting garden at Antonihof, et al)

Source: Own representation

Figure 10: Valorisation of Leinbachtal, where timber floating was carried out in the past



Source: Pfälzerwald Biosphere Reserve/Baumann

2.3.6. Use of traditional and local knowledge in the management of the biosphere reserve

Traditional and local knowledge is used in existing and newly initiated grazing projects, inter alia in Gräfenhausen (since 2016) and Frankenstein (since 2019) (Infobox 5). Local breeds such as the Palatinate's Glan cattle (Figure 11) are used for grazing. Since 2002, the Biosphere Reserve Administration has supported the preservation of Glan cattle, an endangered traditional breed of livestock, through "food weeks" showcasing Glan beef (*kulinarische Glanrindertage*) (since 2010), a promotional video and grazing in the Karlstal valley. A study conducted in 2015 identifies options for the successful promotion of the breed and points out potential obstacles (Naturpark Pfälzerwald 2015). Grazing supports agricultural enterprises; the same applies to the *Pfälzerwald lamb initiative* and the chance.natur project *New Shepherds' Routes in the Pfälzerwald* (Infobox 4), which commenced in 2017.

Infobox 2: Pfälzerwald Lamb Initiative

The *Pfälzerwald Lamb Initiative* is executed jointly with a network comprising nature conservation associations, the sheep- and goat farming association, and others. The aim of the Pfälzerwald Lamb Initiative (started in 2010) is to create awareness of the work of shepherds (care of biodiverse green areas and cultural landscapes, linking of biotopes through migrating flocks). Through annual events (lamb week, shepherding festival (up to 8,000 visitors), Advent in a Sheep Stall, field visits to sheep and goats), as well as ongoing media and public relations work, there is increased recognition of the work of shepherds. These need support, because they are often working at subsistence level (Schuler und Weber 2018).

The marketing of meat at the "food weeks" (Section 5.4), launched in 2015, and at the *German-French biosphere farmers' markets* encourages farming of these animals and thus helps to safeguard their survival. The reactivation of *Buckelwiesen* (humpback meadows), a historic form of meadow irrigation and management, is planned as part of the chance.natur project *New Shepherds' Routes in the Pfälzerwald* (Figure 13). Several tourism projects in the Pfälzerwald have developed around the traditional system of waterborne transportation of timber, known as timber floating (*Trift*) (Table 9).

Figure 11: Group of Glan cattle in the Pfälzerwald Biosphere Reserve



Source: Pfälzerwald Biosphere Reserve

Figure 12: In the past, water was dammed up in the artificial ponds (historical, artificially constructed bodies of stagnant water)



Source: Pfälzerwald Biosphere Reserve/Baumann

Figure 13: Humpback meadows as an old irrigation method in meadows



Source: Pfälzerwald Biosphere Reserve/Baumann

From medieval times, many of the flood plains were irrigated by means of 'humpback meadows'. The raised up humps in the meadows and the lower-lying ditches for watering and drainage are characteristic. The watering to improve specific yields was/is controlled by floodgates. In spring, the earth, which was still cold, was warmed and the growing season thus extended. The flooding was used in summer for watering, and in autumn for manuring. Through this, several mowings a year were achieved. The patchwork of plants created by this benefit some rare butterflies (lepidoptera), dragonflies (odonata) and amphibians (amphibia).

Traditional forms of forestry have been incorporated into the management regime through the coppice system in chestnut forests along the Haardtrand and oak forestry in the Pfälzerwald. Palatinate oak (*Pfalzeiche*) is held in high regard across Europe, dating back to ancient woodland from pre-Napoleonic times. The Rhineland-Palatinate Forest Genetic Resources Centre (*Forstliches Genressourcenzentrum Rheinland-Pfalz*) at the Research Institute for Forest Ecology and Forestry (*Forschungsanstalt für Waldökologie und Forstwirtschaft – FA WF*) contributes to seed collection and the preservation and utilisation of genetic resources.

2.3.7. Community cultural development initiatives

Transhumance, i.e. the seasonal droving of sheep – a form of pastoralism with a long tradition in Southern Germany – was recognised by UNESCO as Intangible Cultural Heritage in 2020 and is supported by the chance.natur project *New Shepherds' Routes in the Pfälzerwald*. The Pfälzerwald also has valuable cultural assets which deserve to be protected, notably the hiking lodges which are typical of the Palatinate (*pfälzische Wander- und Hüttenkultur*). The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) makes a contribution here: for the past 30 years,

and increasingly since 2018, the Association has operated a funding programme for the hiking lodges managed by the Pfälzerwald Association (Pfälzerwald-Verein) and the “Friends of Nature” in the Pfälzerwald. Since 2018, the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) has supported building and infrastructural works at 16 lodges, with € 363,230 available for this purpose. The hiking lodges were nominated for selection as Intangible Cultural Heritage in May 2020 (MWWK – Kulturland Rheinland-Pfalz 2020).

Traditional festivals such as the *Salztripplerfest* (a festival in Rumbach dedicated to its historic pinewood market), and the auctioning of billy-goats (*Geißbockversteigerung*) are very important to local people in the Pfälzerwald. This is evidenced by an online survey of local authorities shows: traditional festivals play a major role for 87 % of local communities, while markets with a regional connection are important to 69 %

Figure 14: The team of the chance.natur project New Shepherds' Routes in the Pfälzerwald with a flock of sheep



Source: Pfälzerwald Biosphere Reserve/Baumann

2.3.8. Number of languages and their promotion

German (official language), regional dialect: Palatine (*Pfälzisch*).

As part of an Interreg project (2020/2021), the RegioAkademie⁷ is collaborating with various partners, including the Biosphere Reserve Administration as a strategic partner, on the development of a *German-French digital glossary* for the nature guides who work in French/Alsatian-Palatine/German. This glossary of the natural sciences is intended to be used as a tool to facilitate dialogue and overcome language barriers in the environmental sphere. It also promotes regional dialects and transboundary language exchange.

2.3.9. Management effectiveness: Obstacles encountered in the management of the biosphere reserve

Fragmented structure of the site: Due to the granular structure of the site, with 19 associations of municipalities (*Verbandsgemeinden*), 142 associated municipalities and nine rural districts/autonomous municipalities and their political bodies, contact persons and diverse responsibilities and interests, a great deal of time and communication

⁷ The RegioAkademie is an institution of the Palatinate Association of Local Authorities. Activities come under the areas of continuing education to improve the quality of services in tourism, initial and continuing training of visitor guides and nature guides. The director of the RegioAkademie is concurrently employed by the Biosphere Reserve.

input is required. Furthermore, it is not possible to engage with all the local authorities with an equal level of intensity. In order to address this issue, existing networks, including those involving the local authorities, are being strengthened in order to create more cohesion across the site.

Funding effort: Most of the activities and measures undertaken in the Biosphere Reserve require external funding from the state (*Land*), the federal level or the EU (Section 2.3.2). While these financial resources support the implementation of a large number of projects, safeguarding compliance with the various funding programme criteria requires additional investment of time and administrative resources. Communicating with the various funding providers is also time-consuming. In order to ensure that interventions are sustainable and continue to be managed effectively once projects have ended, the core staff at the Biosphere Reserve Administration are increasingly tied up with these tasks, which in some instances then become part of the regular workload, greatly limiting the team's capacities to take on new projects and functions.

Staff support: Despite an increase in staffing levels (Section 2.3.2, Chapter 7), understaffing continues to affect some areas of the Biosphere Reserve's work (Figure 5). Some roles are combined; for example, one full-time post covers not only nature conservation and biodiversity but also research and monitoring. As a result, there are inevitably gaps in the performance of some tasks; an increase in the number of posts would ensure adequate future capacity. *Biosphere Guides* (Section 6.4, Infobox 9) are available to take visitors and locals around the site; however, site management by rangers, as in Hunsrück-Hochwald National Park in Rhineland-Palatinate, is not covered due to financial constraints faced by the Palatinate Association of Local Authorities

Funding from the State (Land) of Rhineland-Palatinate: The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is in negotiations with the federal state of Rhineland-Palatinate (*Land Rheinland-Pfalz*) with a view to improving the financial position. Although there have been continuous improvements since the transfer of management responsibility and intensive negotiations, an adequate level of funding has not yet been achieved.

Consultation in planning procedures: As a public agency, the Biosphere Reserve has the opportunity to submit opinions on nature conservation and planning matters arising in connection with planned schemes at the site. Around 50 opinions were submitted during the reporting period, e.g. on planning proposals in the surrounding area and tourism initiatives. However, the scope to bring influence to bear in these public processes is limited, as the examples of the annual granting of approval for car rallying along the Haardtrand (Section 7.4.1) and the failure to consider proposals put forward in local development planning show.

2.4. Comments on other matters of special interest in regard to the biosphere reserve

2.4.1. Local, regional or/and national development plans which specifically address the Biosphere Reserve

National/international development plans: Large areas of the Biosphere Reserve are Natura 2000 sites (Pfälzerwald, Haardtrand). An up-to-date draft management plan is available for the "Biosphärenreservat Pfälzerwald" (Pfälzerwald Biosphere Reserve) Natura 2000 site; produced in 2018, it also includes a forestry component (SGD

Süd 2019; Landesforsten RLP 2018). In Rhineland-Palatinate, management plans for wolf (*Canis lupus*) (MULEWF 2015) and lynx (*Lynx lynx*) have existed since 2015 and 2016, respectively (MUEEF 2016).

Regional development plans: The regional development plans for the Rhine-Neckar Metropolitan Region (MWKEL 15.12.2014) and the Westpfalz (Western Palatinate) Region (MDI, ROP 18.05.2020 (third update)) recognise the Biosphere Reserve with its core areas as part of the biotope network and, due to its landscape diversity, describe it as a suitable region for tourism. Rhineland-Palatinate's State Development Programme IV (third update, 2017) prohibits wind energy generation throughout the Pfälzerwald Nature Park, now the Biosphere Reserve. The Biodiversity Strategy for the federal state of Rhineland-Palatinate has existed since 2015 (revised 2020/2021); for the Biosphere Reserve, it defines an overarching objective and various priority measures in the context of the MAB Programme, such as more intensive cooperation with the French partner (MUEEF 2018, p. 14). The management and development plan for the chance.natur project *New Shepherds' Routes in the Pfälzerwald* will be finalised in 2022 (Infobox 4).

Local development plans: The local authorities' land use plans make reference to the Biosphere Reserve. The forest management plans show whether the planning unit concerned (forest plot – *Waldort*) is located in the Biosphere Reserve and whether other protection categories under nature conservation law must be considered, where relevant.

2.4.2. Outcomes of plans of government agencies and other organisations

In 2020, a partial revision of the State Development Programme IV (Section 2.4.1) and the State Ordinance on the Biosphere Reserve implemented the MAB Committee's request that wind power generation be prohibited in the forested area of the Biosphere Reserve.

2.4.3. Involvement of local people in the work of the biosphere reserve

See Sections 2.3.4 (Networks) and 7.5 (Participation of local communities).

2.4.4. Women's roles in the biosphere reserve

Equal opportunities plans, covering the period 2017-2022, are in place for the institutional structures of the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*); the aim is to further increase the proportion of women. The Association also offers continuing education courses for women (SDG 5). Through the RegioAkademie, the Biosphere Reserve collaborates in the steering group of the Upper Rhine Women's Network, set up by the Upper Rhine Conference. In 2016, the *Beteiligt?! – Impliquées?!* project took place under the auspices of the Franco-German-Swiss Conference of the Upper Rhine, with the RegioAkademie as project agency. The project focused on Germany, France and Switzerland and addressed two questions: what access do women have to political institutions, and how are women involved in decision-making processes? (RegioAkademie et al. 2016). A third of the local authorities that took part in the survey for the present periodic review offer special programmes to promote gender equality; however, the proportion of women in institutions such as municipal or parish councils is below 50 % on average. Continued efforts are therefore needed to improve equality.

2.4.5. Changes in the main protection regime of the core area(s) and of the buffer zone(s)

In the new State Ordinance on the Biosphere Reserve (supporting document 3.1), the conservation objectives are defined for the core areas in Article 4, paragraph 3 and for the buffer zones in paragraph 4. Amendments of a textual nature (supporting document 7.2) relating to the buffer zones appear in the final sentence: in order to preserve the typical character of the cultural landscapes with their species and biological communities, a “nature-friendly economic model”, focused on “biological diversity and landscape”, should be considered.

The following amendments relate to the core areas: the safeguard provisions set out in Article 7 now refer to research and education for sustainable development, replacing the previous reference to science and environmental education. New provisions in Article 8, paragraph 3 state that due to the specific conservation objectives, no hunting may take place in the core areas; instead, wildlife management should be carried out, subject to stringent conditions. Measures to control stocks of animal species governed by hunting law are permissible in order to achieve conservation objectives (Article 4, paragraph 3) and to regulate populations, as well as to prevent excessive damage, as determined by expert appraisal, by game animals at sites adjacent to the core areas. The details are regulated in the Ordinance on the Exercise of Hunting Rights for Wildlife Regulation in the Core Areas of the Pfälzerwald Biosphere Reserve as the German part of the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve (*Rechtsverordnung über die Wahrnehmung des Jagdrechts zur Wildtierregulierung in den Kernzonen des Biosphärenreservats Pfälzerwald als deutschem Teil des grenzüberschreitenden Biosphärenreservats Pfälzerwald-Nordvogesen*) (Obere Jagdbehörde 15.09.2020). Wildlife management measures must be documented and agreed in advance with the highest nature conservation authority.

Figure 15: Insight into the core area Quellgebiet der Wieslauter



Source: Pfälzerwald Biosphere Reserve

2.4.6. Research and monitoring activities

Existing research projects continued during the reporting period (Section 6.2, supporting document 7.11) and several new research and monitoring activities were initiated:

Artificial ponds and timber-floating streams (Wooge und Triftbäche) (2014-2019): This project looks at the significance and potential of artificial ponds (Wooge) and timber-floating infrastructure (LfU 2020b).

Lynx monitoring (2015-2021): Monitoring using GPS transmitter collars and camera traps and lynx monitoring by volunteers are carried out as part of the LIFE Lynx project (Sections 4.2, 4.4).

Bat mapping (2015-2018): Mapping of Geoffroy's bat (*Myotis emarginatus*), Western barbastelle (*Barbastella barbastellus*) and Bechstein's bat (*Myotis bechsteinii*) was carried out (Section 4.2).

LIFE Biocorridors project (2016-2021): Mapping of islands of old growth forest, surveys of watercourses, and studies on project-specific ecosystem services and socio-economic aspects were conducted (Sections 3.3, 4.4)

chance.natur project New Shepherds' Routes in the Pfälzerwald (2017-2022): Various studies are being conducted and permanent monitoring sites are being established (Infobox 4).

Ecosystem services (ESS) (2018-2021): In the ECOSERV Interreg project, the University of Koblenz-Landau and other partners are researching strategies for the preservation and enhancement of selected ecosystem services (Chapter 3).

National Integrated Monitoring (2018): Collection of data for documenting area development.

Wildcat mortality monitoring (2018-2020): This involves the collection of wildcats (*Felis silvestris*) that have been found dead, with scientific analysis of the carcasses (e.g. genotyping). The aim is to collect baseline data on the threats to this species and draw conclusions about its distribution (BUND 2020). The project will continue in 2021-2023 and will additionally include studies using lure sticks.

Figure 16: Release of the lynx, Brano, with his tracking collar, into the Pfälzerwald Biosphere Reserve



Source: Pfälzerwald Biosphere Reserve

Figure 17: Mapping of the Bechstein bat in the Pfälzerwald Biosphere Reserve



Source: Dr. Guido Pfalzer

Figure 18: Mapping of old growth islands by two interns of the Pfälzerwald Biosphere Reserve as part of the LIFE Biocorridors project



Source: Pfälzerwald Biosphere Reserve

Figure 19: Mapping of an orchid meadow in the chance.natur project New Shepherds' Routes in the Pfälzerwald



Source: Pfälzerwald Biosphere Reserve /Baumann

2.4.7. Strengthening of collective capacities for the overall governance of the biosphere reserve

The transfer of management responsibility for the Biosphere Reserve to the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), with its political significance and area coverage beyond the Biosphere Reserve's local boundaries, has given considerable impetus to the Biosphere Reserve's overall development since 2014. Due to the efforts of the management body and with support from the state (*Land*), staffing levels and the financial position have improved (Sections 1.3, 2.3.2). The Biosphere Reserve's legal establishment in the 2020 Ordinance is crucial for stakeholder awareness and recognition (Sections 2.3.4, 7.2).

2.4.8. Additional information about the interaction between the three zones

In the old and new core areas (Infobox 3), areas dedicated to the protection of natural processes cover approximately 5,400 ha. The specific conservation function of the buffer zones (supporting document 7.12) is to enhance, buffer and connect the core areas (MUEEF 20.08.2020, Article 4, paragraph 4). The buffer zones contribute to "the conservation, development or restoration of the use- or management-dependent parts of the landscape, their species and biological communities, also in order to preserve the typical character of the cultural landscape"⁸. In the buffer zones and transition areas, hunting for the purpose of regulating wildlife populations takes place in order to support natural regeneration.

Due to the potential of the historic cultural landscape and in order to protect it, some designated buffer zones along the Haardtrand do not surround core areas. Grazing and other landscape management measures, along with nature-friendly farming practices, are carried out in open landscape areas of the buffer zones. In 2012, the Rhineland-Palatinate's Environment Ministry issued regulations prohibiting the planting of Douglas Fir (*Pseudotsuga menziesii*)

⁸ „Erhaltung, Entwicklung oder Wiederherstellung der nutzungs- oder pflegeabhängigen Teile der Landschaft, ihrer Arten und Lebensgemeinschaften, auch zur Bewahrung des typischen Charakters der Kulturlandschaft“

close to the core areas in order to avoid any risk to their natural development with indigenous tree species. In most cases, the core areas are surrounded by buffer zones. At a small number of sites – i.e. the “Quellgebiet der Wieslauter” and “Erlenbachtal” core areas – complete 200-metre-wide buffering by the adjacent buffer zones could not be achieved due to the proximity to roads. The 200-metre width requirement is based on specialist conventions for comparable sites, such wilderness or largely undisturbed areas in national parks, and has been consistently applied to all other designated buffer zones that surround core areas.

Infobox 3: Process of enlarging the core areas

To meet the requirements of the German MAB Committee for 3% core area, approx. 1,488.67 ha of new core areas have been identified to become biosphere reserves by legal decree. The buffer zones were adjusted to the core areas.

The Palatinate Association of Local Authorities, together with the authorities responsible for forest- and nature conservation, carried out a facilitation process in 2016-2017 regarding the enlargement of the core areas. Firstly, rough areas for initial searches were drawn up: the new core areas needed to be in transboundary biotope associations, in wildlife corridors, or in areas that were not dissected. Furthermore, the size of each area had to be at least 50 ha, and, if possible, border an existing core area. Other aspects such as FFH habitat type, nature conservation areas, forest refuges and natural woodland reserves were taken into account in the planning process.

To achieve acceptance for the enlargement of the core areas, the communities affected, recognised nature conservation associations and the Pfälzerwald Association were all involved. The aim of the facilitation process was to have the opportunity, via information events and on-site visits, to identify consensus in comments and discussion groups. The land cover of the core areas was predominantly forest. The underlying, primary aim of the core areas is to follow natural, dynamic evolution without human interference. Whether natural rejuvenation occurs in a core area, for example, is not a benchmark, nor is it a goal for measuring wildlife management. The preconditions for natural rejuvenation arise solely from the ecosystem's own dynamic.

2.4.9. Participation of young people

Since 2017, the *Junior Ranger* Programme has enabled children between 7 and 12 years of age to make an active contribution to the work of the Biosphere Reserve through vacation camps (Figure 21), Discovery Days (*Entdeckertage*) and regular group meetings. The number of *Junior Ranger* events and participants increased from 2017 to 2020. In 2017, four camps were held for 60 children; in 2019, nine camps were attended by 200 children. In total, 337 children attended the camps until 2019. Nine camps were planned for 2020. In 2019, the members of the first regular *Junior Ranger* group took their test and took part in eight Discovery Days. The Junior Rangers also attend *Junior Ranger* camps across Germany.

In partnership with the Kaufland supermarket chain, Experience Nature Days (*Naturerlebnistage*) in 2018, 2019 and 2020 gave pupils from schools with a high proportion of children and young people from disadvantaged families the opportunity to spend a day in the Biosphere Reserve (Figure 21).

Other ESD activities also involve young people, such as a 2019 school competition on the *Pfälzerwald Dark-Sky Park* project (Projekt *Sternenpark Pfälzerwald*). Children's climate protection conferences were held within the framework of the Zero Emission Nature Protection Areas (ZENAPA) project. The Biosphere Reserve Administration also

involves young people by providing internships, e.g. under the environmental internship scheme funded by Commerzbank AG (since 2018), and a post for a Voluntary Year of Ecological Service (since 2020), thus contributing to SDG 4.

Figure 20: Action: Felt-making with the Junior Rangers at the Shepherding Festival



Source: Pfälzerwald Biosphere Reserve

Figure 21: Execution of Kaufland Experience Nature Days by the ESD staff of the Biosphere Reserve Administration



Source: Pfälzerwald Biosphere Reserve

3. ECOSYSTEM SERVICES

3.1. Update on ecosystem services

In August 2018, the University of Koblenz-Landau began researching ecosystem services as part of the Interreg V-A Upper Rhine project entitled *Cross-border improvement in the quality of ecosystem services in protected areas and adjacent regions: review, instruments, strategies* (*Grenzüberschreitende Verbesserung der Qualität von Ökosystemdienstleistungen in Schutzgebieten und angrenzenden Regionen: Erfassung, Instrumente, Strategien*) (*ECOSERV*) with reference inter alia to the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve (TBR). The project will run for three years and is due to end in 2021; the results are likely to be available in autumn 2021. *ECOSERV* sub-projects focus on the following categories of ecosystem services: biodiversity, nutrient cycling, water and climate regulation, and environmental education (educational values, knowledge systems).

The forest ecosystem is especially significant for the delivery of ecosystem services (supporting document 7.13). The main provisioning services from forests include the production of wood as a building material and energy feedstock, as well as food in the form of game. Supporting services from forests include soil formation and nutrient cycling. Regulating services that should be mentioned are climate regulation and water retention, storage and purification, while cultural services include recreation and aesthetic quality, which is enhanced by the interplay between forest, open landscape and rocky outcrops.

3.2. Indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic)

No direct indicators are currently available. However, as part of the *ECOSERV* project, strategies and recommendations for decision-makers are being developed in order to preserve or improve selected ecosystem services.

3.3. Description of biodiversity involved in the provision of ecosystem services

Forests in particular cover 77 % of the area of the Biosphere Reserve and contribute to all four types of ecosystem service (provisioning, regulating, supporting and cultural). This has positive effects on specialised species such as the Eurasian Lynx (*Lynx lynx*) and the European Wildcat (*Felis silvestris*) which are dependent on extensive woodland. Biological diversity benefits from the ecosystem services provided by the Biosphere Reserve in other respects as well. In the *LIFE Biocorridors* project, the maintenance of good water quality through improvements to the structure of watercourses has a positive effect on populations of the European Bullhead (*Cottus gobio*) and others. The planting of fruit trees not only provides food and space for recreation but also supports species such as the Eurasian Wryneck (*Jynx torquilla*). A study conducted within the framework of the *LIFE Biocorridors* project is developing proposals for further scientific research on the relationship between biological diversity and the provision of ecosystem services. *ECOSERV*'s Biodiversity sub-project investigates the effects of renaturation measures on benthos organisms (in the Northern Vosges) and on the genetic variability of Brown Trout (*Salmo trutta*) and European Bullhead (*Cottus gobio*).

Figure 22: Fishing in the Biosphere Reserve to research the genetic diversity of fish species in the *ECOSERV* project



Source: University Koblenz-Landau (*ECOSERV* project group)

Figure 23: A meadow orchard at Schindhard, which was planted as part of the *LIFE Biocorridors* project



Source: Pfälzerwald Biosphere Reserve

3.4. Ecosystem services assessment since last report

The *ECOSERV* Interreg project is conducting an initial study of selected ecosystem services and their potential for enhancement in the Transboundary Biosphere Reserve.

4. THE CONSERVATION FUNCTION

4.1. Significant changes in the main habitat types, ecosystems, species or varieties

There have been no significant changes to the biotic communities which are characteristic of the landscape since 2013. Habitat types and ecosystems have remained unchanged (Verein Naturpark Pfälzerwald e.V. 2013, 10 f.).

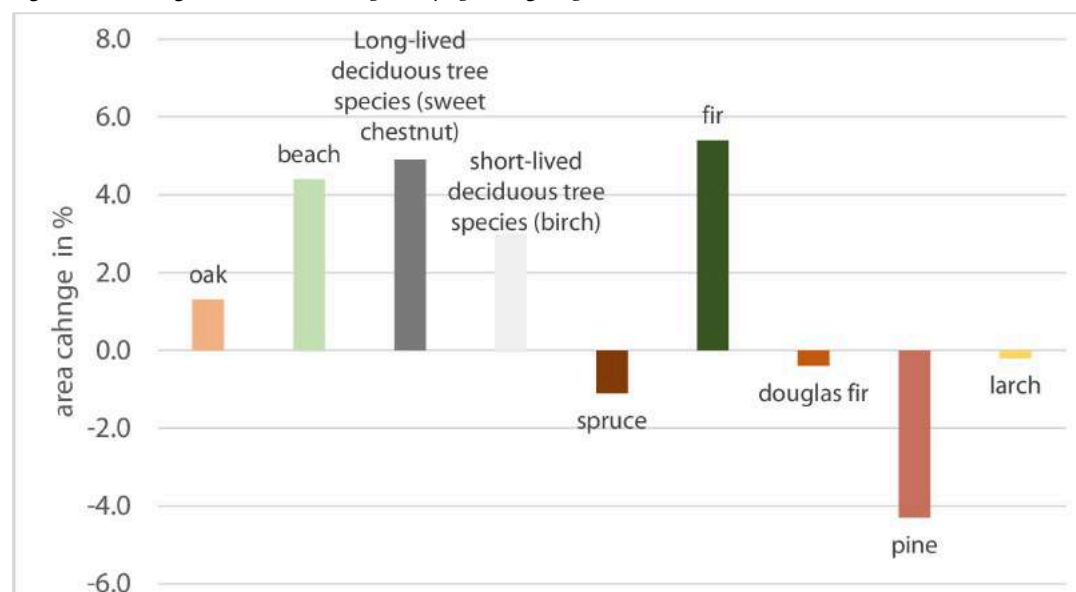
Forest change is generally slow: in the small number of pure coniferous forest complexes – the result of reforestation with pine and Douglas fir in the 1960s to 1980s – beech, European silver fir and lime are being introduced for the purpose of advance regeneration as part of “close to nature” forest management, creating ecologically diverse forest structures. Compared with 2013, area coverage has increased by 4.4 % for beech, 4.9 % for long-lived deciduous species such as sweet chestnut, and 5.2 % for fir (Figure 24). Decreases in area coverage were recorded for pine (-4.3 %) and spruce (-1.1 %). The increases in area coverage for deciduous species and the associated conversion to more mixed stands are attributed not only to management measures such as the removal of conifer species, but also to natural forest development. Contributory factors include the high assertive power of beech over pine, but also increased spruce mortality caused by bark beetle infestations.

Figure 24: view of mixed forests within the Pfälzerwald Biosphere Reserve



Source: Pfälzerwald Biosphere Reserve/Baumann

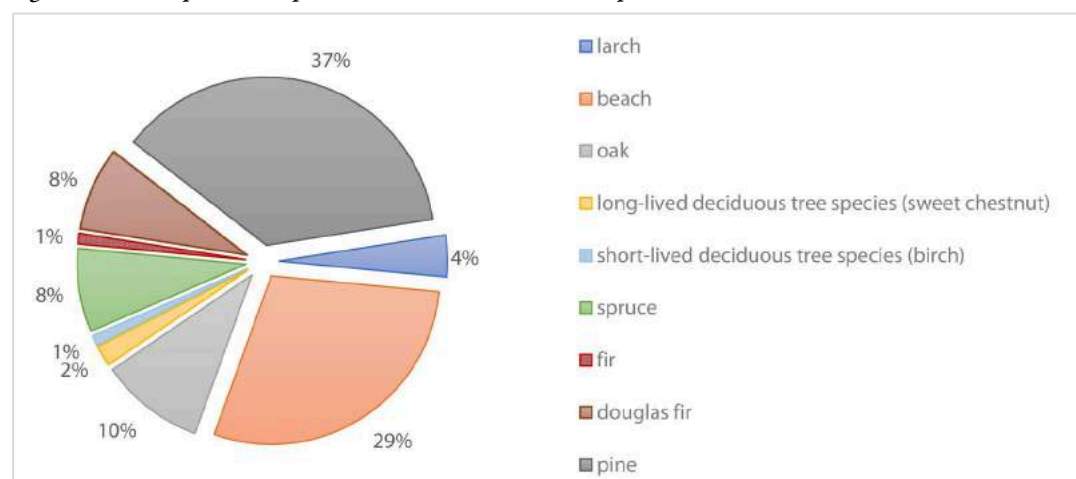
Figure 25: Changes in the area occupied by species groups of trees 2013-2019



Source: Own representation based on forest institution data from 2019, issued by the Central Office for Forest Administration (Zentralstelle der Forstverwaltung)

Currently, most of the Biosphere Reserve consists of mixed forest, with deciduous woodland accounting for 42 % (Figure 26). Beech was the most common species in 2019, with a 29 % share, followed by oak (10 %). Pine is the predominant coniferous species, with a 37 % share.

Figure 26: Tree species composition in the Pfälzerwald Biosphere Reserve 2019



Source: Own representation based on Forsteinrichtung (forest institution) data from 2019 for the Pfälzerwald Biosphere Reserve, issued by the Central Office for Forest Administration

In addition to the increasing proportion of deciduous woodland, the forests in the Biosphere Reserve have aged and become more ecologically valuable, with a noticeable increase in old deciduous stands (over 180 years of age) due to extensive use or non-use. For trees older than 180 years, there was an increase in area coverage, from 1,670 ha for beech and 2,804 ha for oak in 2013 to 2,459 ha for beech (+ 47 %) and 3,276 ha for oak (+17 %) in 2019. The share

of young forest aged 20 years or less has declined⁹, with a one-third decrease in trees in this age category since 2013. With regard to oak, an ecologically significant species but poorly competitive during the juvenile stage, a strong decrease in the proportion of young trees, amounting to 61 %, can be observed since 2013. In order to counter this trend, natural regeneration of oak is encouraged through thinning, along with seeding at appropriate sites.

An assessment of the largest Habitats Directive site (*FFH-Gebiete*) in Rhineland-Palatinate, known as “*Biosphären-reservat Pfälzerwald*” (36,000 ha), offers an informative insight into the status of habitat types (Table 10). A total of 25 habitat types across an area of 11,751 ha were surveyed. However, the data gathered for this Habitats Directive status survey do not provide an adequate basis for a statistically representative assessment of the Pfälzerwald Biosphere Reserve as a whole (approx. 180,000 ha). Of the 25 habitat types surveyed in 2018 in accordance with national standards, the status of nine is good, while six are in poor condition.¹⁰

Table 10: Status Assessment for the FFH ‘Biosphere Reserve Pfalz’ area

LRT Code	Description	Area surveyed in ha	Status Assessment A good, B poor, C bad
3130	Nutrient-poor to moderately nutrient-rich standing water with shore weed or pygmy rush communities	4.2	B
3150	Natural and near-natural nutrient-rich standing water with pondweed or frogbit communities	17.3	B
3160	Dystrophic standing water	40.3	A
3260	Flowing water with flowing aquatic vegetation	131.0	A
4030	Dry heathland	39.8	B
6110	Base-rich or limestone pioneer species	ns	C
6210	Chalk/limestone-(half-) dry grassland and shrub encroachment (orchid-rich populations)	57.0	C
6230	Biodiverse <i>Nardus</i> grasslands	31.3	B
6240	Turf steppe	8.3	A
6410	Moor grass meadows	146.0	B
6430	Hydrophilous tall herb fringe communities	4.9	B
6510	Lowland hay meadows	1583.7	B
7140	Transition mires and quaking bogs	84.7	B
7150	Schlenken peat bog with beak rush communities	ns	B
8150	Siliceous scree of the colline to montane zones	1.1	A
8160	Limestone scree of the colline to montane zones	ns	C
8210	Limestone rocks with crevice vegetation	ns	C

⁹ There was only an increase in trees under 20 years old in long-lived deciduous tree species (+ 24%) and larches (+ 7%).

¹⁰ Comparison data from other years is not available.

LRT Code	Description	Area surveyed in ha	Status Assessment A good, B poor, C bad
8220	Siliceous rocks with crevice vegetation	493.6	A
8230	Siliceous rocks with pioneer species	1.3	A
8310	Caves undeveloped for tourism	0.1	A
9110	Wood rush/beech forests	8916.6	A
9160	Stitchwort/oak/hornbeam forests	8.2	C
9170	Cleaver/oak/hornbeam forests	6.1	B
9180	Canyon- and hillside mixed forests	18.9	C
91E0	Alder- and ash forest and alluvial softwood forests	156.5	A

Source: Own representation based on data from LfU 2018

In the open landscape, there are tendencies towards succession processes and forest development at some sites previously used for agricultural purposes, as well as signs of a decline of traditional orchards, potentially leading to a change in cultural landscape ecosystems and the species that inhabit them. Surveys of traditional orchards based on mapping conducted in 2005 and 2020 in the chance.natur *New Shepherds' Routes in the Pfälzerwald* project area revealed a deterioration in their physical condition: in 2004, the maintenance status of 40 % of the mapped trees was good, compared with only 16 % of trees in 2020¹¹. This is compounded by the ageing of the traditional orchards.

4.2. Description of the main conservation programmes

A wide range of programmes and activities carried out in the Biosphere Reserve by various stakeholders focus on the conservation of nature and the environment and the implementation of SDG 15.

Biotope network and open landscape projects: With its planning of networked biotope systems and with target maps, which were updated and digitised in 2018, the state (*Land*) of Rhineland-Palatinate provides comprehensive information on area-wide connectivity (LfU 2020a). The cross-border EU *LIFE Biocorridors* project, which the Biosphere Reserve Administration is implementing in cooperation with the Northern Vosges Regional Nature Park during the period 2016-2021, creates transboundary ecological connectivity in the Pfälzerwald-Northern Vosges biotope network (Section 4.4, Table 12). The maintenance of an open landscape has been addressed as a topic in the chance.natur project *New Shepherds' Routes in the Pfälzerwald* since 2017 (Infobox 4, Section 2.3.5). The measures implemented within both projects benefit various species with diverse habitat requirements (supporting document 5.1).

¹¹ In the mapping carried out in 2020, 38,443 fruit trees over an area of 956 ha were recorded.

Infobox 4: chance.natur project *New Shepherds' Routes in the Pfälzerwald*

The chance.natur project *New Shepherds' Routes in the Pfälzerwald* supported by the Federal Government (BfN/BMU) and the Rheinland-Palatinate (Green Action) pursues several goals: (a) conservation of the biological diversity of the Pfälzerwald, (b) development of a workable model for the conservation and development of open land, as well as the outlook for migratory shepherding, (c) creation of a lively biotope network in collaboration with migratory shepherds, (d) development of a stepping stone solution (half open grazing system through mixed grazing), (e) establishment of meadow orchards, and (f) initiation of individual model projects (e.g. dry stone walls, revitalisation of humpback meadows).

The project is in the planning phase (2017-2022, funding approx. €2 million), while a maintenance and development plan for an area of approx. 8,200 ha is being prepared, which contains mapping results, suggestions for specific measures, a socio-economic analysis, and a hydrological/hydraulic report. An accompanying analysis of situation and acceptance, and a communications concept work towards its implementation. The planned measures should be implemented from 2022/2023 in a 10-year implementation phase (Project 2 implementation phase).

The project unites numerous stakeholders, such as nature conservation associations/-administrative bodies, forestry- and agricultural administrations, local authorities, and livestock owners and grazers, within their project support working group (PAG). In this, the measures of the PEPL are discussed.

The projects mentioned above are a response to open landscape decline and create spaces for rare species which depend on an open landscape. Furthermore, the Biosphere Reserve Administration, with financial support from the state (*Land*) of Rhineland-Palatinate, provides approximately € 90,000 in funding annually for grazing and the maintenance of open meadow valleys on an area of roughly 1,000 ha (Infobox 5); these sites comprise approximately 4.5 % of the farmland in the Biosphere Reserve (Table 11).

Figure 27: Maintaining the landscape in Gräfenhausen with Heck cattle



Source: Pfälzerwald Biosphere Reserve

Table 11: Composition of the agricultural land in the Biosphere Reserve 2020

agriculture areas	ha	%
Tree nurseries and gardening land	23.24	0.1
Fruit cultivation (plantations and orchard land)	187.50	0.9
Meadow orchards	311.60	1.4
Fallow land	1,001.00	4.6
Arable land	5,370.81	24.4
Grassland	7,117.52	32.4
Vineyards	7,970.73	36.3
Total	21,982.40	100

Source: Own representation based on the evaluation of ALKIS data sets 2020 (issued by the LfU)

Infobox 5: Grazing

Woodland pasturing project in Frankenstein (since 2019): On the land for the woodland pasturing project, which measures approx. 25 ha, bush-encroached pockets of land, precursory woodland stadia and coniferous forests are being transformed into semi-open pasture landscapes. Together with grazing by 'Auer cattle', the habitat quality should be improved for indicator species of a semi-open landscape. The 'Auer cattle' come from a herd at the Lauresham open air museum in Hessen, in which the genetic similarity of the breeding stock to aurochs was accelerated. By crossing different breeds of cattle which are genetically very similar to the auroch, the 'Auer' cattle breed was re-bred.

Extensive grazing by goats: Since 2009, approximately 3 ha of the Burgberg in Frankenstein has been grazed all year round by goats, with the aim of creating a semi-open pasture landscape. The thinning achieves the co-existence of different biotopes and encourages biodiversity. The area was used intensively for lynchets as long ago as the 19th century, and then became overgrown again in the 20th century.

Gräfenhausen am Wingertsberg grazing project (since 2015): The aim of the mixed grazing by goats, donkeys and Heck cattle on this area covering 13 ha is to promote a tessellated biotope structure (open land, shrubs, pioneer forest, meadow orchards) as well as biodiversity.

Species conservation project: The Interreg *Endangered Species* project (*Gefährdete Tierarten – Espèces animales en danger*) (2020-2023) aims to promote the following species: Stone Crayfish (*Austropotamobius torrentium*), the Dusky Large Blue and Scarce Large Blue butterflies (*Phengaris nausithous* and *Phengaris teleius*) and several bat species which prefer cultivated habitats (Microchiroptera). The German and French project partners are keen to share their expertise, conservation goals, resources and monitoring methods in order to develop and implement practical protection measures. The LIFE Lynx project, coordinated by the Foundation for Nature and Environment Rhineland-Palatinate (*Stiftung Natur und Umwelt Rheinland-Pfalz*) (2015-2021), focuses on lynx: the aim is to establish the Pfälzerwald as a sub-habitat for a lynx metapopulation. To that end, intensive cooperation is under way in a multi-stakeholder network, which includes the forestry sector, the hunting community and animal welfare organisations, in order to ensure that a range of interests are considered. Activities are discussed and agreed in the German-

French “Lynx Parliament”. Since 2016, a total of 20 lynx, captured in the wild in Switzerland and Slovakia, have been released in the Pfälzerwald (Figure 28).

Figure 28: Sighting of a lynx in the Pfälzerwald



Source: Dr. Mathias Herrmann

Other species conservation projects focus on the Eurasian Beaver (*Castor fiber*) and the European Wildcat (*Felis silvestris*) (Section 2.4.6). As part of its *Aktion Grün* (*Green Action*) programme, the state (*Land*) of Rhineland-Palatinate provides municipal and private forest owners with funding to implement forest conservation measures, e.g. for indicator species (*Leitarten*) such as the European Nightjar (*Caprimulgus europaeus*) along the Haardtrand. Projects which focus specifically on bats (Microchiroptera) are also being implemented. A 2019 bat study documented measures to protect and optimise habitat structures that safeguard populations of endangered bat species; in addition, grids were installed over disused mining tunnels. A feasibility study by Rhineland-Palatinate’s Environment Ministry on the reintroduction of the European Bison, also known as the wisent (*Bison bonasus*), is being considered.

Figure 29: Bat count to document the species occurrence in the Pfälzerwald Biosphere Reserve



Source: Pfälzerwald Biosphere Reserve

Nature conservation measures in the private sphere: A German-French Interreg project entitled *Gardens for Biodiversity* (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*) (2017-2021), which is implemented by the Biosphere Reserve together with the Northern Vosges Regional Nature Park, raises awareness of organic gardening and

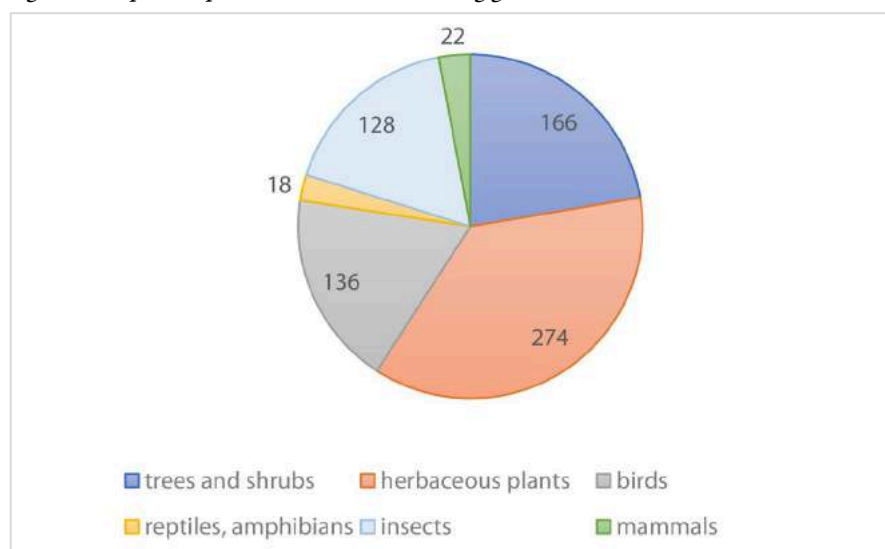
thus contributes to species conservation. A key element is an annual gardening competition for amateur gardeners, whose gardens are judged against criteria such as species occurrence and species conservation measures. In 2020, a wide variety of species were recorded in the gardens (Figure 31). A German-French events programme and classroom encounters complete the project portfolio.

Figure 30: Garden competition as part of the Gardens for Biodiversity project in 2020



Source: Pfälzerwald Biosphere Reserve

Figure 31: Species spectrum in the five winning gardens in 2020



Source: Own representation based on evaluation by experts of the winning gardens for different animal families within the context of a moment in time

Forest conservation measures: For the protection of old growth and forested areas which are valuable from a nature conservation perspective, the strategy for the management of biotope trees, old growth and deadwood (*Konzept zum Umgang mit Biotopbäumen, Altbäumen und Totholz – BAT-Konzept*) has been adopted on a state-wide basis (BAT MULEWF 2011). Based on the precautionary principle, this habitat and species conservation strategy has been implemented in the Biosphere Reserve, other than in small privately owned tracts of woodland, and makes an important contribution to the formation of old and ecologically valuable stands. The strategy contributes to the biotope network

and enhances sites dedicated to the protection of natural processes in the core areas and natural forest reserves. Since 2011, biotope trees, both individual and in groups, and forest refuge areas have been withdrawn from the management regime. In total, approximately 2,500 groups of biotope trees with around 32,000 trees and 250 forest refuges have been created on more than 600 ha of additional area. The biotope trees in question are trees which have been withdrawn from use. The strategy (*BAT-Konzept*) is also implemented in municipal forest: 43 municipalities in the Pfälzerwald have adopted council decisions to that effect.

In the state-owned forest, the *Land* Forest Administration (*Landesforsten*) in Rhineland-Palatinate invests approximately € 3/ha per annum in specific forest conservation measures such as structuring of forest edges and maintenance of forest meadows. In addition, organisational and staff support is provided for nature conservation projects.

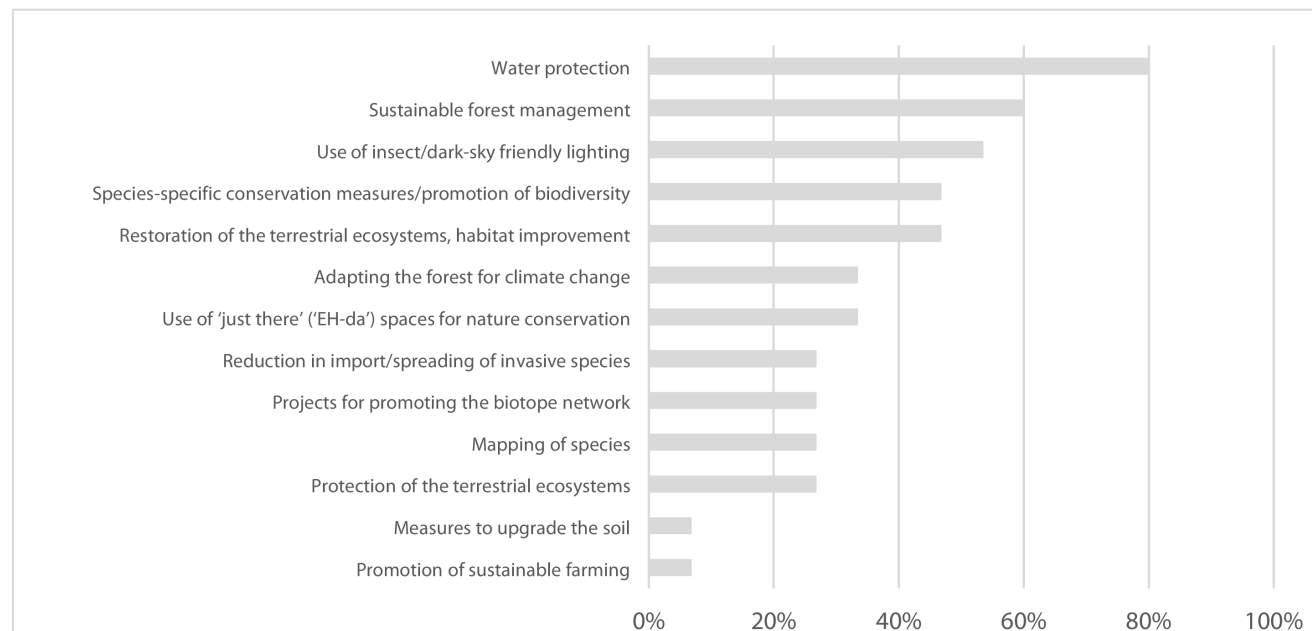
Nature conservation activities by the state (Land) Rhineland-Palatinate: The state applies management practices across a wide area under the Natura 2000 management plans for the Haardttrand and Pfälzerwald and the management plans for water bodies under the EU Water Framework Directive (Wasserrahmenrichtlinie). The *Aktion Blau Plus* (Blue Plus) Action Programme (since 2011; previously Aktion Blau from 1995) initiated by Rhineland-Palatinate's Environment Ministry supports the restoration of near-natural water status. Improvement of structures and renaturalisation are priority areas of action in the protection of water resources. In total, € 13.4 million has been provided to fund Aktion Blau Plus measures (2013-2020) in the Biosphere Reserve. The Ministry also operates the Aktion Grün (Action Green) programme, which has existed since 2017 and provides funding for nature conservation measures, including in the Biosphere Reserve. Project funding to 2020 totalled € 2.07 million (supporting document 7.14).

In addition, species conservation and biotope maintenance measures were carried out by the state (Land) on a total area of 2,677 ha between 2013 and 2020¹². On average, 335 ha annually were maintained, mainly through grazing, mowing and mulching. Under the contractual nature conservation programme developed by the federal state of Rhineland-Palatinate (*Land Rheinland-Pfalz*), financial support is provided for farms which engage in environmentally compatible agriculture. For example, the maintenance of hay meadows and pastures may be eligible for support, amounting to € 170/ha/year over a five-year contractual term, under the Agriculture-Environment-Landscape funding programme (*Programm Agrar-Umwelt-Landschaft – PAULa*) (LUWG 2011). Under the Nature Conservation Partnership (*Partnerbetrieb Naturschutz*), advisory services are provided to agricultural enterprises. Ten farms in the Biosphere Reserve were recognised as “Nature Conservation Partners” in 2020; the label is awarded by the Rhineland-Palatinate State Service Centre for Rural Areas (DLR Rheinland-Pfalz). The label includes advisory services for farmers and viticulturalists who undertake to provide nature conservation services.

¹² Author's assessment based on LANIS, the geoportal of the Naturschutzverwaltung Rheinland-Pfalz (Rhineland-Palatinate nature conservation authority) on 04.02.2021 under the object class Sustainable Nature Conservation Measures' 'MAS'.

Nature conservation activities by the municipalities: The online survey reveals the diversity of nature conservation measures undertaken in the municipalities: in particular, the protection of water resources plays a major role, alongside sustainable management of forests (Figure 32).

Figure 32: Measures taken of the local authorities surveyed to support the conservation function



Source: Own representation based on the survey of local authorities in 2020 (n=15)

4.3. Linkage of conservation activities to sustainable development issues

In the chance.natur project *New Shepherds' Routes in the Pfälzerwald* (Infobox 4), the aim is to create new opportunities for sheep droving through the securing of land, thus indirectly enhancing shepherds' economic position. The cultural landscape management measures carried out as part of this project, but also the *LIFE Biocorridors* project and other grazing activities benefit the public as well (Infobox 5). Attractive landscapes are developed or maintained for local communities and tourism through low-impact measures, thus promoting agricultural production and regional products. Sales of these products and producer activity are also boosted by the *German-French biosphere farmers' markets* and the *Partners initiative*.

The following projects are other good examples of the linkage between nature conservation and sustainable development:

Gardens for Biodiversity (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*) (Section 4.2): Awareness-raising and public engagement for nature conservation.

Pfälzerwald Dark-Sky Park project (*Projekt Sternepark Pfälzerwald*): Raising the public's awareness of the need for energy-saving lighting and the protection of the night sky (Infobox 7).

Watercourse schemes: Measures carried out as part of the *Aktion Blau Plus* programme preserve watercourses and structures of cultural and historical significance (Figure 10), which are also ecologically valuable and can add value to tourism.

Figure 33: Assessment of a garden as part of the garden competition in the Gardens for Biodiversity project in 2020



Source: Pfälzerwald Biosphere Reserve

4.4. Assessment of the effectiveness of actions or strategies applied

With regard to projects relating to the **biotope network and open landscape**, it is clear that the *LIFE Biocorridors* project (since 2016) and other measures have progressed the expansion of the biotope network, also across the German-French border:

Table 12. Measures taken by the Biotope network

Project	Measures taken by the Biotope network	ha
<i>LIFE Biocorridors</i>	Old-growth islands contractually secured as food resources, havens and habitats for animals and plants	56.3 ha
	Forest converted and the amount of deciduous wood increased by the planting of beech and alder	12.7 ha
	Rough pasture restored as open land	5.5 ha
	Humid meadows restored as open land	13.3 ha
	Meadow orchards established, 1,100 new fruit trees planted (up to a further 150 in 2021)	12.9 ha
	Restructuring of three bodies of water, removal of barriers and obstacles, promotion of accessible hiking	
Grazing project by the Biosphere Reserve Administration	Woodland pasturing project in Frankenstein: habitat for open land species, eg. European nightjar (<i>Caprimulgus europaeus</i>) and the smooth snake (<i>Coronella austriaca</i>)	25 ha
	Goat grazing in Frankenstein: Supporting biodiversity, eg. gossamer-winged butterfly (Lycaenidae) and hoopoe (<i>Upupa epops</i>)	3 ha
	Gräfenhausen: Promotion of tessellated biotope structure and creation of habitats for sand lizards (<i>Lacerta agilis</i>) and grasshoppers (Orthoptera)	13 ha

Source: Own representation

For the biotope network, long-term protection has been achieved for 100 ha in the *LIFE Biocorridors* project, 41 ha through the new grazing projects and 1,488 ha through the new core area sites. The Natura 2000 sites, nature conservation areas (*Naturschutzgebiete* – NSG), wildlife corridors and floodplains are connective elements in the state-wide biotope network. Groups of biotope trees and forest refuges (Section 4.2) enhance these sites.

Figure 34: Planting fruit trees at Erlenbach in the LIFE Biocorridors project



Source: Pfälzerwald Biosphere Reserve

In the chance.natur project *New Shepherds' Routes in the Pfälzerwald*, nature and species conservation measures are scheduled from 2023 onwards on the basis of the management and development plan and will enhance the biotope network in the long term. Mapping activities undertaken in 2019 confirmed the occurrence of rare species such as Alcaholic Bat (*Myotis alcathoe*) and the Beautiful Demoiselle (*Calopteryx virgo*).

In **species conservation**, lynx reintroduction has been a great success. The number of lynxes is increasing continuously; 20 lynxes have been released since 2016. As a result of further releases and reproduction, around 30 lynxes now inhabit the region (2020). This shows that the release strategy is working and that an indigenous lynx population is becoming established. The lynxes have found habitats throughout the Pfälzerwald, even overcoming obstacles such as motorways and highways, as GPS tracking confirms. A further factor behind the success of the re-introduction programme is the high level of public acceptance.

The introduction of the funding guidelines for nature conservation in forests (*Förderrichtlinie Naturschutzmaßnahmen im Wald*) in 2019 offers further potential for success. Measures proposed, for example, under draft Natura 2000 management plans or similar and implemented by forest owners on a voluntary basis are eligible for funding. Financial support is provided for the final achievement of zero usage and for thinning measures, followed by a rest period, for the benefit of photophilous species in woodland, such as the European Nightjar (*Caprimulgus europaeus*). Pilot areas were established around Annweiler and Haardt Forestry Offices three years ago.

Strategies such as the *BAT-Konzept*, which make an important contribution to SDG 15, are also effective in enhancing forest biodiversity, as is evident from the increasing number of old trees (Section 4.1), the high number of

forest refuges and the expansion of the area covered by deciduous woodland in the Biosphere Reserve (Sections 4.1, 4.2).

The role of private individuals in nature conservation has been reinforced by the Interreg Gardens for Biodiversity project (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*) (Section 4.2). This is evident from the number of participants in the gardening competition (more than 200 since the start of the project) and the occurrence of rare species in gardens, including the Yellow-bellied Toad (*Bombina variegata*) and the Southern Hawker dragonfly (*Aeshna cyanea*). Between 2017 and 2020, 41 events¹³ were held within the framework of the Gardens programme, with more than 600 participants. The five award-winning gardens judged to be ecologically valuable covered a total area of 1.8 ha in 2019 and 2020.

4.5. Main factors that influenced (positively or negatively) the successes of conservation efforts

A positive factor that has influenced the success of conservation measures is local acceptance: in most cases, this is fostered through active engagement of regional stakeholders, including volunteers from the start of the project through to implementation. Examples are communal planting of fruit trees, participation in the gardening competition, including a willingness to garden more organically, and community management of grazing projects. This can strengthen identification with the projects and therefore also with the Biosphere Reserve, which has a positive impact on the longevity of nature conservation efforts such as area care. Funding incentives such as the *Aktion Blau Plus* Action Programme and Interreg projects encourage the implementation of conservation measures. Under *Aktion Blau Plus* in particular, local authorities – which have a duty to maintain water resources – have carried out numerous measures. The Biosphere Reserve Administration also depends on funding programmes to enable it to carry out nature conservation initiatives on a larger scale.

Challenges affecting the implementation of nature conservation measures include ownership structures: due to the practice of dividing land among heirs over generations (*Realerbteilung*) under the Napoleonic Code (*Code Napoléon*), land ownership in the Pfälzerwald is highly fragmented. This means that considerable efforts are required in order to safeguard sites. Identifying workable solutions here is one of the greatest challenges facing nature conservation projects (BR Pfälzerwald 2016). In addition, solutions must be found to safeguard the continuity of nature conservation measures once project terms have ended without tying up human resources in the Biosphere Reserve Administration to an excessive extent. One possible solution is to increase volunteer involvement in the Biosphere Reserve's work and to encourage more active engagement by nature conservation networks.

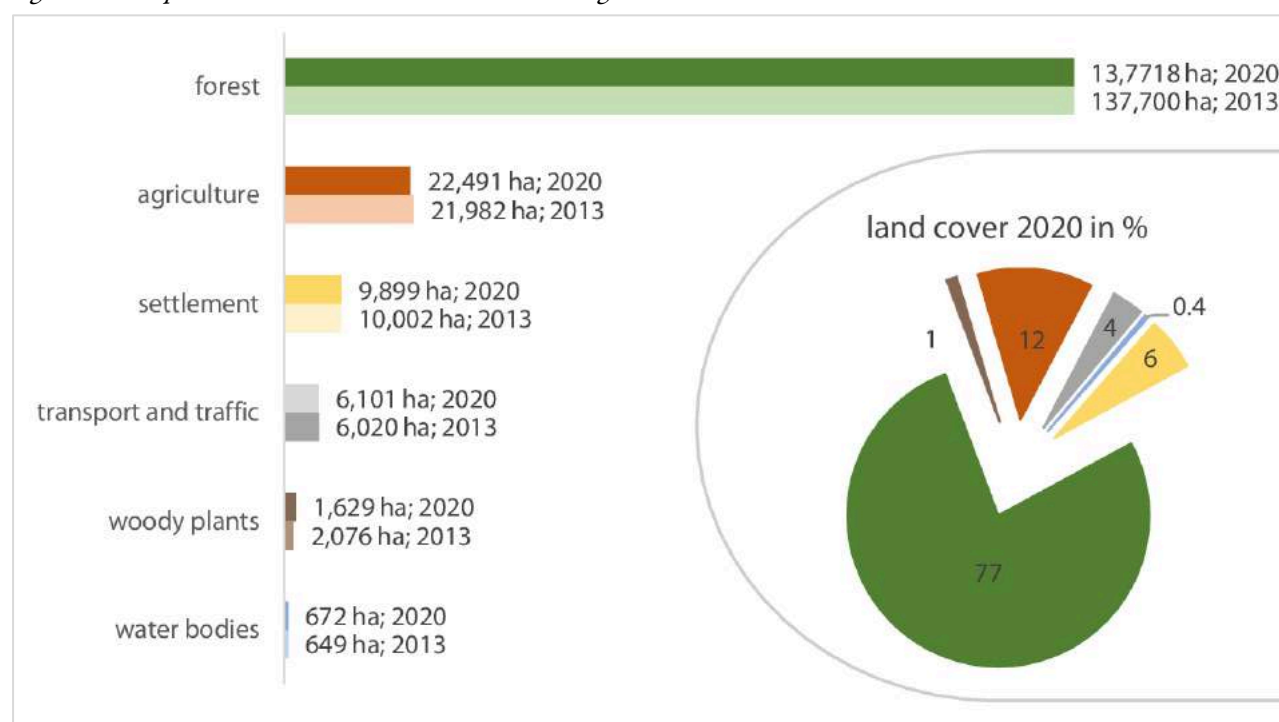
¹³ Events have included workshops, talks and field visits, school actions and an awards presentation for the garden competition

5. THE DEVELOPMENT FUNCTION

5.1. Trends in Prevailing trends in each main sector of the economic base of the biosphere reserve (brief description):

The trends in the main sectors of the economic base of the Biosphere Reserve can be assessed with reference to land cover (Figure 35): forests cover 77 % of the area of the Biosphere Reserve, while agricultural land accounts for approximately 12 %. By comparison, the figures for Rhineland-Palatinate were 40.6 % (forest) and 41.2 % (agricultural land) in 2018. Overall, there were only minor changes in land cover between 2013 and 2020:

Figure 35: Biosphere Reserve land cover in 2020 and changes in the land cover between 2013 and 2020



Source: Own representation based on ALKIS data from 2013 and 2020 (issued by the LFU)

Forestry: The ownership structure of the forest in the Biosphere Reserve has remained unchanged since 2013: 57 % is state-owned, 33 % is municipal forest and 10 % is privately owned. The *Land* Forest Administration (*Landesforsten*) in Rhineland-Palatinate carries out “close to nature” forest management of the state-owned forest in accordance with sustainability principles and takes precautionary action on environmental protection. This safeguards the forests’ ability to perform economic functions, to positively influence nature and biological diversity, to serve as a natural livelihood base for human communities and to provide benefits to society on a sustainable and continuous basis. The alignment of the management regime towards more old growth, more deciduous trees, deadwood, natural regeneration and mixed stands has continued since 2013.

The Guidelines on Forest Regeneration in the Context of Climate Change (*Grundsatzanweisung "Waldverjüngung im Klimawandel"*), adopted in 2020, define criteria for "close to nature" forest management in response to climate change (Section 5.7).

Agriculture: Vines, wheat, barley and vegetables are cultivated ¹⁴. Overall, there was a slight shrinkage of the agricultural area between 2013 and 2020 (Figure 35), which can be attributed to the general decrease in the number of farms in Rhineland-Palatinate (from 20,600 in 2010 to 16,800 farms in 2019) (Kremer 2020). This structural change is driven by economic factors. In addition to farmers for whom agriculture is the main economic activity, some farmers engage in agriculture on a part-time basis or as a hobby; a number of nature conservation organisations are also involved in agricultural activities. In the area covered by the chance.natur project *New Shepherds' Routes in the Pfälzerwald*, there was a decrease in the number of beef cattle farms between 2010 and 2016, as well as a fall in the number of farms of less than 50 ha and an increase in the number of farms of more than 50 ha over the same period (Schramek et al. 2020). The federal state (*Land*) of Rhineland-Palatinate has various funding programmes in place to support agriculture (e.g. agri-environmental schemes, investment aid programmes for individual holdings).

The expansion of organic farming should be mentioned in particular (Table 13). This is mainly driven by the rise in demand for organic produce. Currently, a total area of 5,209.06 ha in the Biosphere Reserve is managed by 155 organic farms, corresponding to an average area of 34 ha per farm. The small size of the farms can be attributed to the large number of vineyards in the Biosphere Reserve.

Currently, 72 farms are in the process of converting to organic agriculture; following successful conversion, the number of organic farms in the Biosphere Reserve will increase to 227 (Table 13). By comparison, there were 1,503 organic farms operating on 69,032 ha in the whole of Rhineland-Palatinate in 2017. This corresponds to an average area of 46 ha per farm and approximately 9 % of all farm enterprises in Rhineland-Palatinate (DLR 2021).

¹⁴ Specific figures for cultivation cannot be determined, as much of the data is subject to the confidentiality obligation in view of the small numbers of businesses.

Table 13: Organic farms in the rural districts and autonomous municipalities in the Biosphere Reserve

District	Companies in conversion	Area in ha	Organic farms	Area in ha	Farms total (organic and conventional)	Proportion of organic farms of the total farms (%)
Landau in der Pfalz	4	54.89	8	99.19	120	10.0
Neustadt an der Weinstraße	4	48.16	11	219.78	149	10.1
Bad Dürkheim	23	468.16	40	1027.22	600	10.5
Kaiserslautern	8	428.76	15	1053.25	387	5.9
Südl. Weinstraße	23	337.02	59	1189.71	936	8.8
Südwestpfalz	10	443.71	22	1619.91	466	6.9
Gesamt	72	1780.70	155	5209.06	2658	10.4

Source: Own representation based on data of the DLR

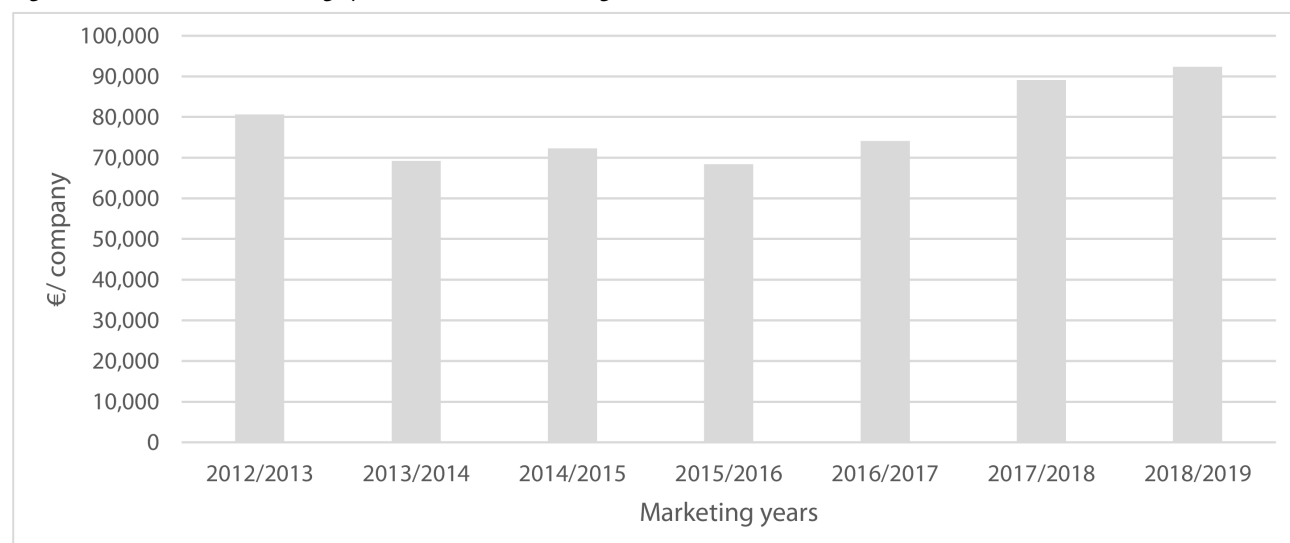
Viticulture: The Pfälzerwald has the largest wine-producing area of any biosphere reserve worldwide. In 2020, vines were grown on 4.5 % of the site, equivalent to 36.3 % of its farmland¹⁵. Between 2013 and 2019, profits from the wine trade in the Palatinate production area increased (Figure 36), averaging € 92,371 per enterprise in the 2018/2019 business year. White grape varieties predominate, covering 15,017 ha, compared with 7,986 ha under red grape cultivation in 2019. This is in line with the ratio in Rhineland-Palatinate as a whole, where the figures for 2019 were 43,000 ha for white and 21,000 ha for red grape cultivation on a vine-growing area of 64,000 ha, managed by 9,717 enterprises.

In the viticulture sector, changes in area rarely occur as parcel sizes are very strictly regulated and the cultivation of permanent crops such as vines requires a long-term commitment if it is to be worthwhile. For that reason, the wine-producing area in the Palatinate increased by just 33.6 ha, to a total of 23,003 ha, between 2010 and 2019¹⁶. As vines are highly susceptible to diseases, research is increasingly focused on the breeding of varieties with improved resistance to fungal diseases, also in order to reduce pesticide use. One challenge arising in this context is establishing these new, more resistant varieties on the market; it is unclear whether they will be accepted by consumers, who tend to prefer traditional varieties. In future, droughts associated with climate change will pose additional challenges for viticulture.

¹⁵ Author's calculations based on an evaluation of geographical data by ALKIS in 2020, agricultural land-use includes: arable land, orchard land, hops, grassland, meadow orchards, garden land, tree nurseries. Vineyards, fruit plantations, fruit tree plantations, fruit bush plantations and fallow land.

¹⁶ Author's evaluation based on data from the Land Statistical Office, 2021.

Figure 36: Growth of the average yield in the viticulture region of the Pfalz



Source: Own representation based on data of the DLR

Figure 37: Viticulture in the Pfälzerwald Biosphere Reserve

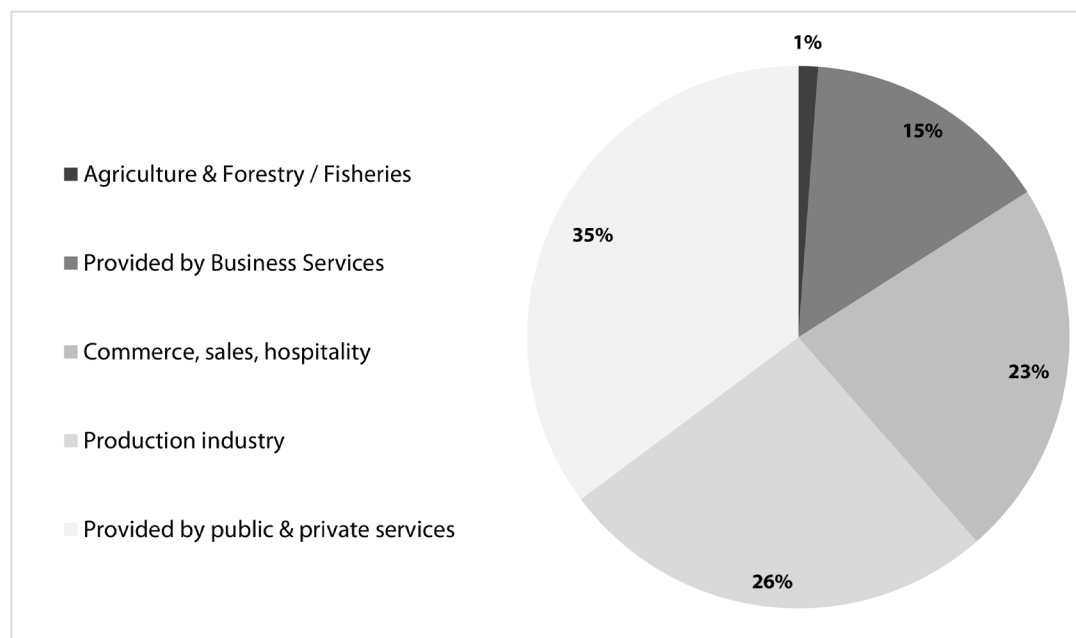


Source: Yvon Meyer

Conclusions about the area's economic development can also be drawn from statistics on employees paying compulsory social insurance contributions and from gross value-added. Here, a key role is played by the tertiary sector in the rural districts and autonomous municipalities with territory in the Biosphere Reserve. The following comments also refer to the area outside the Biosphere Reserve due to the close connections between them.

Employees paying compulsory social insurance contributions: In the rural districts and autonomous municipalities with territory in the Biosphere Reserve¹⁷, 243,344 employees paid compulsory social insurance contributions in 2019, the majority in Kaiserslautern (54,197). Most of these employees work in the public and private service sectors (85,651 persons); agriculture and forestry account for the smallest proportion (2,846 persons) (Figure 38). The number of employees increased by an average of 1.3 % from 2018 to 2019 across all rural districts and autonomous municipalities with territory in the Biosphere Reserve. This was less than the corresponding increase for Rhineland-Palatinate (1.7 %) and Germany (1.6 %). One reason is the relatively high unemployment rate in the autonomous municipalities in the Biosphere Reserve area (when autonomous municipalities and rural districts are considered), particularly in Pirmasens, which has the highest unemployment rate in Rhineland-Palatinate, i.e. 11.2 % in 2020, compared with 5.1 % for Rhineland-Palatinate (Statistik RLP 2021).

Figure 38: Employees in the rural districts and autonomous municipalities of the Biosphere Reserve who are subject to mandatory social insurance contributions



Source: Own evaluation based on data from the Rhineland-Palatinate Land Statistical Office (2021)

Gross value-added: In 2018, the tertiary sector in the autonomous municipalities and rural districts in the Biosphere Reserve contributed almost € 14 billion, i.e. 70 %, of total gross value-added (€ 19.7 billion) within the stated area. The primary sector accounts for 3 % of gross value-added (1.5 % in Rhineland-Palatinate and 0.8 % in Germany) (MWVLW 2019a, p. 58), while manufacturing accounts for 27 %. Overall, value-added increased by an average of

¹⁷ Cities: Kaiserslautern (approx. 6,900 ha in the Biosphere Reserve, nearly 50%), Landau (approx. 5,000 ha in the Biosphere Reserve, 61%), Neustadt an der Weinstraße (approx. 6,200 ha in the Biosphere Reserve, 53%), Pirmasens (approx. 1,700 ha in the Biosphere Reserve, 28%); Rural district: Bad Dürkheim (approx. 37,000 ha in the Biosphere Reserve, 62%), Donnersbergkreis (approx. 5,300 ha in the Biosphere Reserve, 8%), Kaiserslautern (approx. 20,300 ha in the Biosphere Reserve, 32%), Südliche Weinstraße (approx. 35,500 ha in the Biosphere Reserve, 55%), Südwestpfalz (approx. 60,600 ha in the Biosphere Reserve, 64%). When cities and rural districts are referred to below, it is these that are being referred to.

3.1 % from 2017 to 2018. This is in line with the national increase for Germany and exceeds the increase for Rhineland-Palatinate, i.e. 2.9 % (IHK Pfalz 2018).

5.2. The tourism industry in the biosphere reserve

Various tourism offers are available in the Biosphere Reserve area. They tend to be heavily concentrated along the Wine Route in the east and the “Dahner Felsenland” (Dahn Rockland) in the south-west. A general trend seen in the Biosphere Reserve and in Rhineland-Palatinate as a whole is the rise in the number of overnight stays.

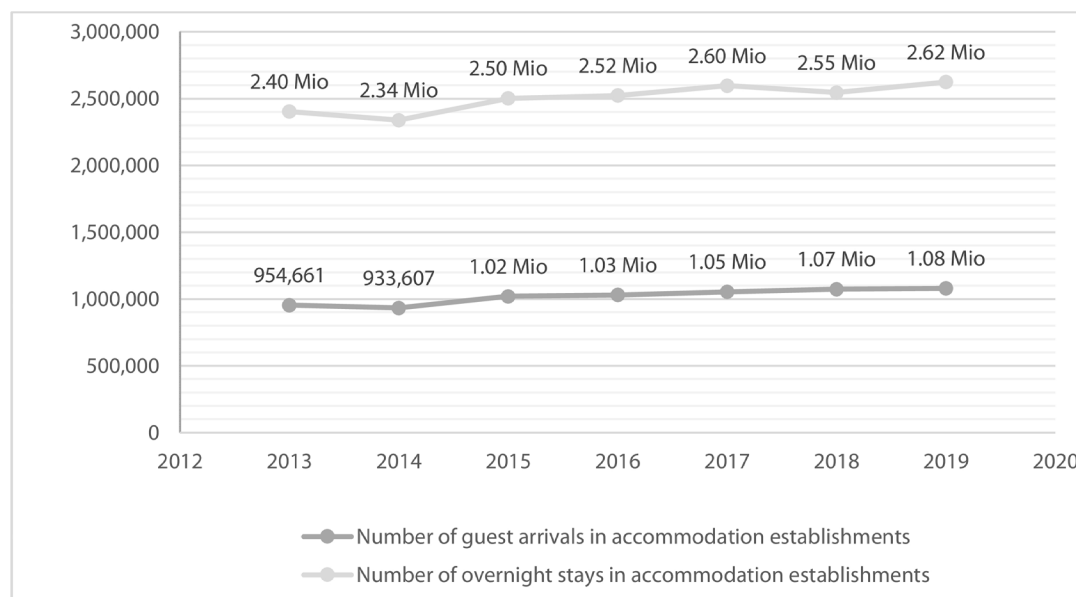
Guest arrivals have also increased, from 954,661 in 2013 to 1.08 million in 2019 (Figure 39). The average stay is 2.5 nights – in line with the nationwide trend for short breaks.

Table 14: Overview of overnight stays 2013-2019 excl. campsites

	2013	2019
Rhineland-Palatinate	22.0 million	23.0 million
Pfalz	4.2 million	4.7 million
Biosphere Reserve	2.4 million	2.6 million

Source: Own representation based on Statistik RLP 2019(online source) and data from Rhineland-Palatinate statistics 2021 (provided via email)

Figure 39: Number of guest arrivals and overnight stays in the association of municipalities and autonomous municipalities in the Biosphere Reserve

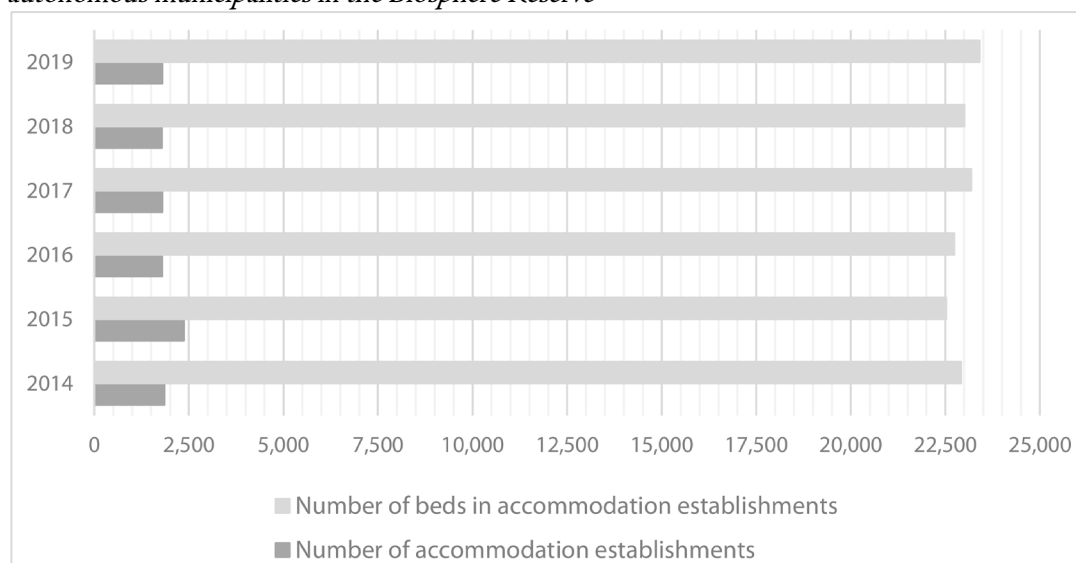


Source: Own representation based on data from the Rhineland-Palatinate Land Statistical Office 2021 (data on campsites is not included as it is generally subject to the confidentiality obligation.)

The number of accommodation establishments in the Biosphere Reserve decreased by 46 between 2014 (1,849) and 2019 (1,803). In the years in between, there were upward and downward fluctuations as businesses started up or closed down, the latter often caused by a lack of succession and deficient staffing. The number of beds increased at the

same time, from 22,913 in 2014 to 23,405 in 2019. It may thus be assumed that some existing establishments underwent expansion and increased their bed numbers.

Figure 40: Number of accommodation providers and beds offered in the association of municipalities and autonomous municipalities in the Biosphere Reserve



Source: Own representation based on data from the Rhineland-Palatinate Land Statistical Office 2021 (data on campsites is not included as it is generally subject to the confidentiality obligation.)

According to tourism industry professionals working in the Biosphere Reserve area, the Palatinate region is seen as a suitable destination not only for wine tourism but also for nature holidays, hiking, food travel and family vacations.

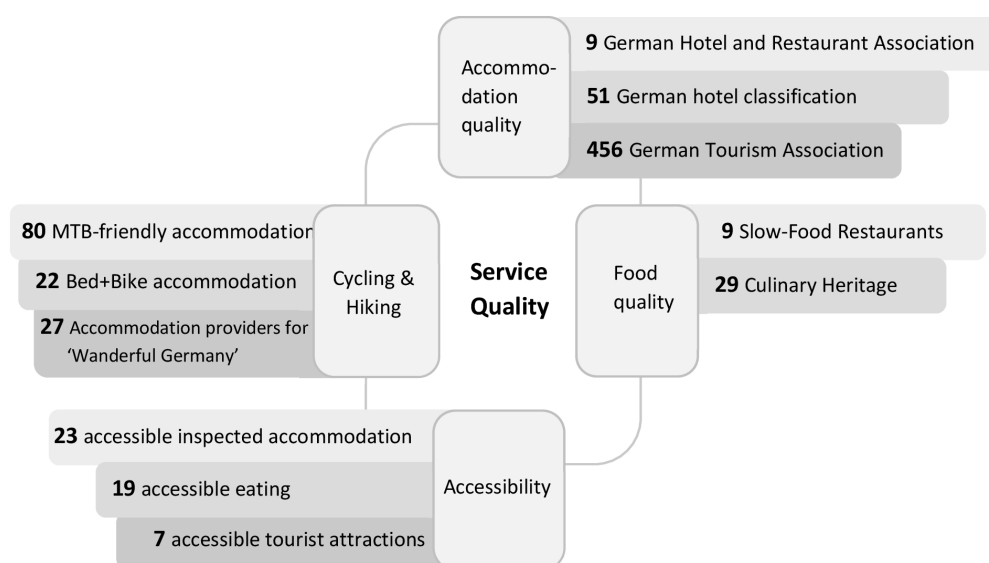
Figure 41: Autumn walks in the Pfälzerwald Biosphere Reserve



Source: Yvon Meyer

A wide range of service quality certification schemes make it easier for visitors to plan their holidays and choose suitable accommodation (Figure 42). The labels provide information about the quality of food and accommodation, accessibility of accommodation and visitor attractions and whether accommodation is suitable for hikers and cyclists.

Figure 42: Selection of existing references for the service quality of companies in the Biosphere Reserve



Source: Own representation based on data from the: ADFC Bett+Bike Service GmbH 2021; Culinary Heritage 2021; German Hotel and Restaurant Association 2021a, 2021b; German Tourism Association 2021; Deutscher Wanderverband Service GmbH 2021; Mountainbikepark Pfälzerwald e. V. 2021; Pfälz. Touristik e. V. 2019; Slow Food Deutschland e. V. 2021

Figure 43: Sustainable tourism offers in tours with Biosphere Guides

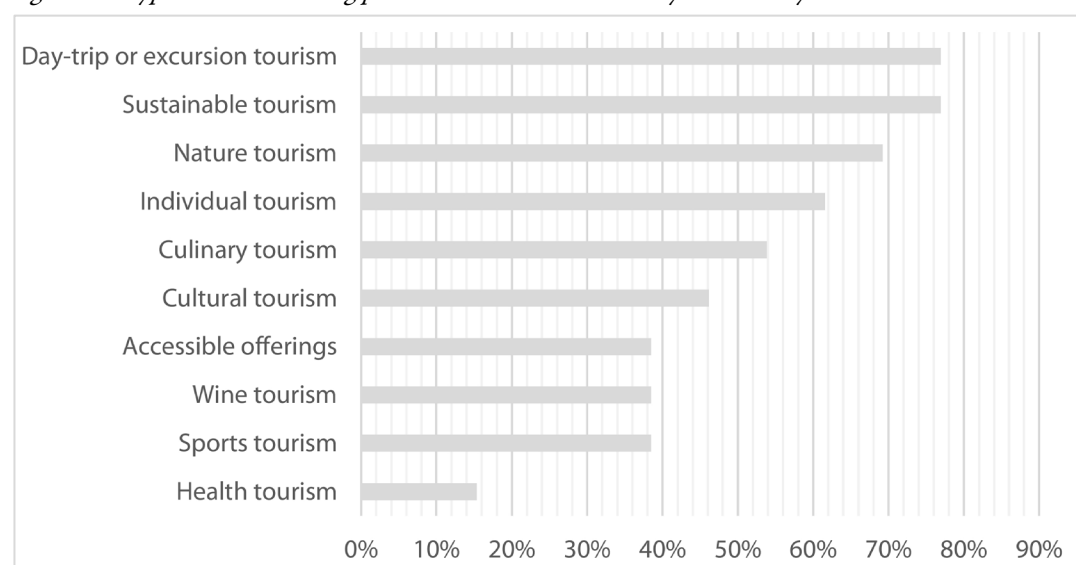


Source: Pfälzerwald Biosphere Reserve

The Biosphere Reserve Administration supports sustainable tourism offers through the German-French biosphere farmers' markets, "food weeks", guided tours by *Biosphere Guides* and the planned waymarking of a "star-gazing trail" and night-sky observation points (Sections 5.4, 5.7, 5.10). Together with tourism stakeholders, projects such as identity-building for tourism and the development and advertising of sustainable tourism offers have been devised in order to promote a shared identity. Eight out of 13 local authorities surveyed make specific reference to the Biosphere

Reserve in their tourism advertising, and five tourism strategies link in with the Biosphere Reserve. The primary emphasis is on promoting sustainable tourism and day visits/excursions (Figure 44).

Figure 44: Types of tourism being promoted in the local authority areas surveyed



Source: Own representation based on the survey of local authorities (n=13)

In order to support tourism development in the Biosphere Reserve, various activities and projects were initiated and implemented during the reporting period:

“Destination Nature” (Fahrtziel Natur): The Biosphere Reserve, Pfalz.Touristik e.V. (Pfalz tourist board) and Rhine-Neckar’s transport provider Verkehrsverbund Rhein-Neckar have participated in the “Destination Nature” (*Fahrtziel Natur*) scheme since 2009 (Periodic Review Report 2013, p. 27 f.). Nationwide advertising encourages visitors to use public transport to travel to the region. In general, more intensive efforts are required to promote the use of public transport and to equip tourism service providers with customer advice skills.

Pfalzcard: The Pfalzcard was launched by Pfalz.Touristik e. V. as the official tourist ticket (*Gästekarte*) in 2018 and receives financial support from tourism service providers, including the *Partners of the Biosphere Reserve* (*Partnerbetriebe*) and education partners. Pfalzcard holders are entitled to travel free of charge on public transport throughout the Palatinate and benefit from enhanced access to special offers in the region. Around 80 companies in the Biosphere Reserve supply the Pfalzcard. In 2019, the Pfalzcard scheme won the Rhineland-Palatinate Tourism Award (*Tourismuspreis Rheinland-Pfalz*).

Hosts under the Stars (Gastgeber unter den Sternen): This award forms part of the *Pfälzerwald Dark-Sky Park* project (Section 5.7) and is presented to accommodation establishments and restaurants that are committed to reducing light pollution, have installed suitable lighting and host events relating to astronomy. Five applications were submitted in early 2021.

Hiking buses and train stations (Wanderbusse/Wanderbahnhöfe): In 2020, there were five “hiking train stations” (*Wanderbahnhöfe*) in the Biosphere Reserve, serving as gateways to the networks of local hiking trails. Hiking and leisure buses such as the *Kalmitexpress* and the *Trifelsbus* supplement local public transport during the summer months.

Visitor management: The Biosphere Reserve Administration is responsible for visitor management and is working on the development of hiking trails in the area as part of the visitor management strategy (*Besucher*innenlenkungskonzept*) (Section 5.5). Since 2013, a further 14 high-quality hiking trails (*Prädikatswanderwege*), extending for approximately 900 km, have been added to the existing 24.

Sustainable destination: In late 2020, the German Wine Route became the first region in Rhineland-Palatinate to achieve certification as a “sustainable destination” under the TourCert (Tour Cert gGmbH) scheme. For the application, a three-year improvement programme comprising 40 individual measures was developed on the basis of a stocktaking exercise in order to optimise sustainability in the region. The measures include developing and expanding a network of sustainable businesses in cooperation with the Biosphere Reserve via the *Partners* initiative.

Accessible tourism: Two out of Rhineland-Palatinate’s 10 model regions for accessible tourism are located in the Biosphere Reserve: Bad Dürkheim/Neustadt and Südliche Weinstraße/Stadt Landau. From 2014 to 2020, financial support was available from the European Regional Development Fund (ERDF) to promote the accessibility of tourism businesses and support marketing of accessible tourism offers (MWVLW 2019b). In 2019, Pfalz.Touristik e.V. published a brochure showcasing accessible tourism offers in the Palatinate (Pfalz.Touristik e.V. 2019), 57 of which, i.e. roughly half, are located within the Pfälzerwald Biosphere Reserve.

Hiking lodges: The hiking lodges managed by the Pfälzerwald Association (*Pfälzerwald-Verein*) and the “Friends of Nature” are a special feature of tourism in the region and form part of the biosphere network (Section 2.3.7).

Figure 45: Picnic at the Hellerhütte in the Pfälzerwald Biosphere Reserve



Source: Pfälzerwald Biosphere Reserve

Figure 46: Hiking marathon in 2019



Source: Pfälzerwald Biosphere Reserve

Hiking Marathon: A hiking marathon and two half-marathons have taken place every year since 2006. They are organised by the Biosphere Reserve Administration in conjunction with Biosphere House (*Biosphären-Haus*), the Sustainability Centre (*Haus der Nachhaltigkeit*) and the Local Action Group for the LEADER region Pfälzerwald plus. Between 2013 and 2019, 4,700 hikers participated.

Network of mountain bike trails and cycle paths: The cycle path strategy (*Radwegkonzept*) (with the exception of the Mountain Bike Park) will be reconceptualised by Pfalz.Touristik e.V. by 2025. The MTB Park was extended in 2016. The route network has thus increased in length from around 300 to 900 km.

Trekking sites: Trekking sites have been available in the Biosphere Reserve since 2009, each offering hikers up to six pitches for overnight camping. The project has expanded from the initial seven sites to 15 in 2020. Bookings have also increased (from 3,803 in 2013 to 6,834 in 2019).

Figure 47: Cosy campfire on a trekking site in the Pfälzerwald Biosphere Reserve



Source: Südliche Weinstraße e.V.

5.3. Description of other key sectors

Wind energy generation is prohibited in the Biosphere Reserve (Section 2.4.2). There are currently only two wind turbines in the Biosphere Reserve, both installed before the ban. Solar power accounts for the major share of renewable energies in the area, followed by biomass¹⁸.

5.4. How economic activities in the biosphere benefit local communities

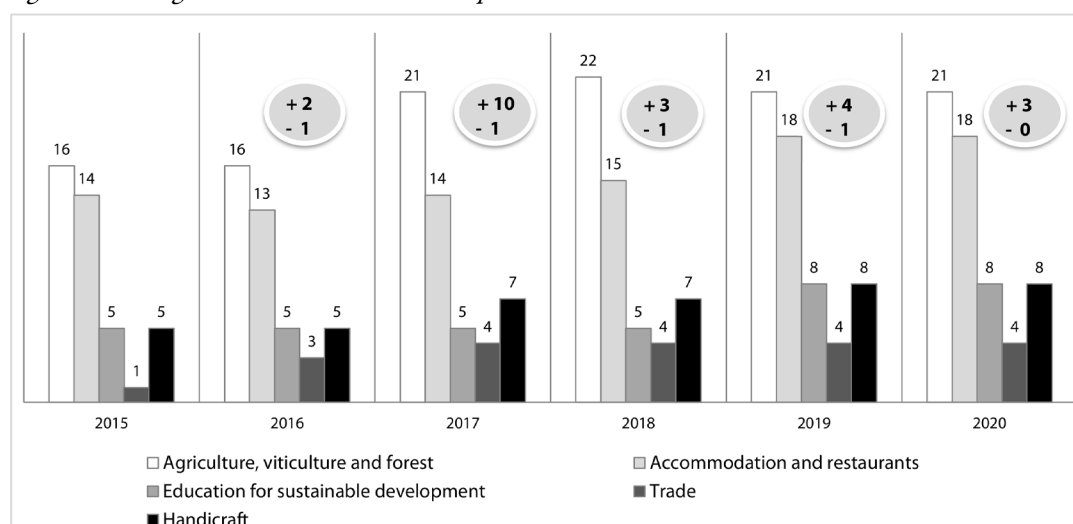
More intensive networking among farmers' market traders and partner companies (*Partnerbetriebe*) enhances economic activity. The *German-French biosphere farmers' markets* have taken place for more than 20 years and are held up to seven times a year at varying locations. They sell regional and sustainably produced goods and thus contribute indirectly to the preservation of the cultural landscape. The farmers' markets also make a contribution to SDG 12. With up to 10,000 visitors per market, these events increase local producers' turnover and attract both

¹⁸ These statements are based on data on the use of renewable energy, collected as part of the national Integrated monitoring. This is available only for the entire area of the five rural districts, some parts of which lie outside the Biosphere Reserve.

tourists and residents of the immediate area. The number of participating traders from the Pfälzerwald and the Northern Vosges is above 50. The markets enhance transboundary product marketing and strengthen cooperation between the Biosphere Reserve Administration and local communities, as local associations, institutions and artists from the region are also involved. A working group has been exploring the development potential of the farmers' markets since 2016.

The network of partner companies (*Partnerbetriebe*) has also been expanded (Figure 48). In 2020, the network consisted of 59 partner companies (2015: 41 partners), mainly from the agriculture, viticulture and forestry sectors, as well as accommodation establishments and restaurants. The membership includes seven restaurants, nine hotels and four holiday apartments. There are plans to admit more partner companies in future in order to make a more substantial contribution to regional product marketing. An awarding body (*Vergaberat*), consisting of staff from the Biosphere Reserve Administration and partner companies, will also be set up in order to consider the admission of new partners. From 2014 to 2020, the Biosphere Reserve invested € 96,000 in the further development of the *Partners initiative*. In 2020, 20 out of 59 partners were reviewed against the award criteria. This recertification process will continue in 2021 and will then take place on a regular rotating basis every three years.

Figure 48: Changes to the Partners of the Biosphere Reserve



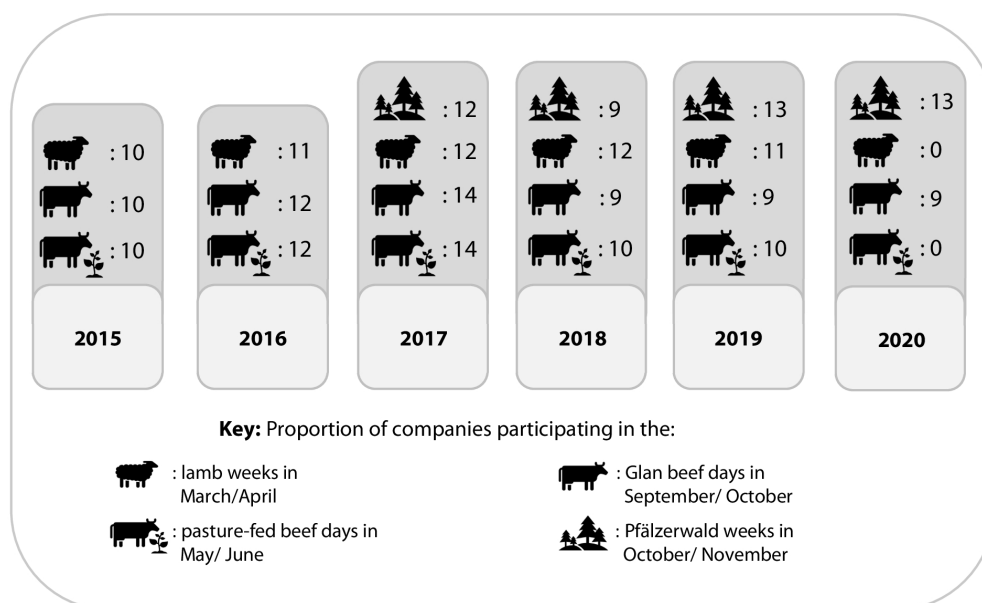
Source: Own representation

Many of the partner companies demonstrate their green business credentials not only through their compliance with the Biosphere Reserve sustainability criteria but also through their membership of other certification schemes, such as the Bioland label (nine companies), Viabono certification (two companies) and German Tourism Association (DTV) or German Hotel and Restaurant Association (DEHOGA) labels (two companies)¹⁹.

¹⁹ The data is based on a questionnaire which the Partners of the Biosphere Reserve fill out as part of the application process. It can be assumed that the number of labels has increased in the interim.

The Biosphere Reserve provides active support for partner companies, e.g. by advertising events and organising regular meetings and training visits. The “food weeks” are now well-established (Figure 49).

Figure 49: Companies participating in the Food Action Days of the Pfälzerwald Biosphere Reserve 2015-2020



Source: Own representation

Figure 50: Shepherding Festival as part of a German-French biosphere farmers' market in Fischbach



Source: Ulrich Diehl

5.5. Effectiveness of actions or strategies applied

The Biosphere Reserve's long-standing projects such as the *German-French biosphere farmers' markets* and the “food weeks” attest to the effectiveness of project continuity, with increasing numbers of partner companies and traders of the farmers' markets. There is considerable interest from the media (Section 6.5.1), which increases the Biosphere Reserve's visibility and shows that long-term projects maintain their relevance and topicality.

The online survey of local authorities confirms the high level of awareness of the offers: 94 % of the local authorities are familiar with the *German-French biosphere farmers' markets* and 63 % know about the “food weeks”. Their impact

on the local economy is regarded as weak, however, although no specific evaluation of this impact has been conducted by the local authorities. In future, the Biosphere Reserve Administration will work to raise awareness of the economic benefits of the markets, which include increased tourism advertising of the locality and a rise in visitor numbers.

In relation to visitor management, effectiveness can be demonstrated by improvements in infrastructure, such as waymarking (removal/upgrading of redundant/outdated signage). Visitor management is a long-term task and is defined in the State Ordinance (19.08.2020, Article 6, paragraph 1, no. 7) as one of the management body's statutory functions. A coordination unit for visitor management in the Biosphere Reserve has existed since 2011 (supporting document 7.4) and is tasked with reviewing and coordinating the trail strategies (*Wegekonzepte*) at municipal level. Resolutions adopted here form the basis for decisions by the higher nature conservation authority on the granting of waymarking rights. The coordination unit has met more than 25 times since 2013 and has issued various opinions. As a result, the hiking trail network across more than three-quarters of the site has been cleared and its quality improved. The visitor management strategy will be implemented across the entire Biosphere Reserve over the coming years.

5.6. Community economic development initiatives

The Biosphere Reserve projects described in Section 5.5 make a contribution to community economic development. In parallel, programmes such as LEADER offer the opportunity to support projects which inter alia generate tourism value-added for local communities. Four LEADER regions (Südpfalz, Rhein-Haardt, Pfälzerwald plus, Donnersberger und Lautrer Land) are partly located in the Biosphere Reserve. The Administration is actively involved in the work of the relevant bodies in three out of four of these regions. Between 2014 and 2020, almost € 3,150,000 in project funding was secured for the Biosphere Reserve area (supporting document 7.15).

5.7. Local business or other economic development initiatives

The Biosphere Reserve plays an important role in promoting sustainable regional development. The *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* project (Infobox 6) is an example: it aims to initiate sustainable economic activity, which currently plays a more subordinate role, at the community level. This will be additionally progressed through planned Action Programme projects on sustainability principles for municipalities and businesses (supporting document 4.1).

Infobox 6: Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project

The aim of the project (2019-2021) is to develop community strategies for sustainability in specific, inclusive SDG Action Plans in selected model municipalities. The strategies serve the implementation of the UN Agenda 2030 and are in the context of the Rhineland-Palatinate sustainability strategy and the German sustainability strategy. The project connects the municipalities to a sustainable model region and contributes to the implementation of the Lima Action Plan.

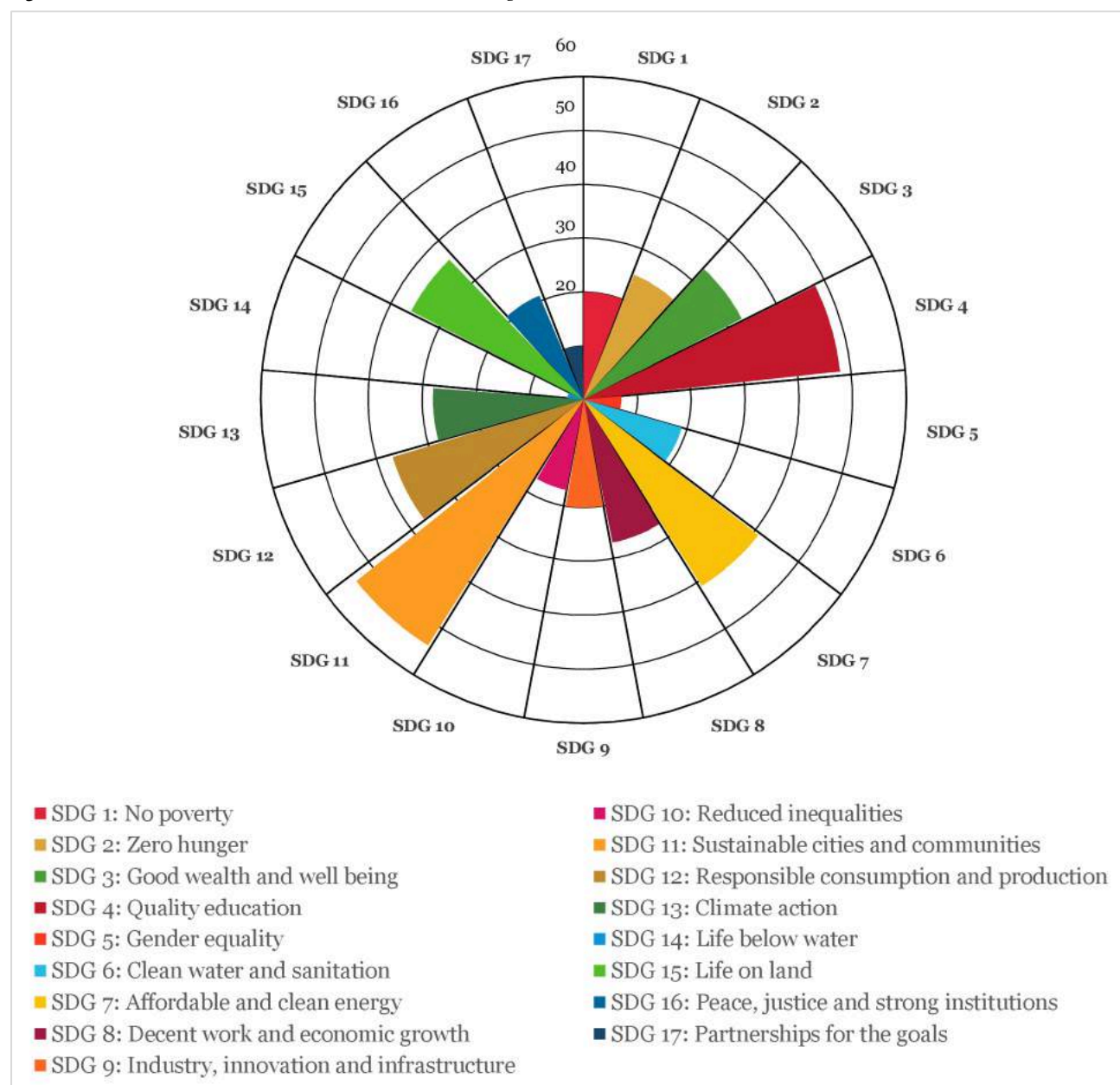
Eight municipalities were found who wanted to promote sustainable development in the context of the SDG. Municipal core teams were formed to develop the content of the sustainable strategy based on the SDG status analysis carried out in 2020 (analysis of existing approaches, potential, actions required) and to involve local residents in workshops for the future. The SDGs have already been implemented in many ways and means by the Biosphere Reserve as well as by the municipalities taking part in the project (Note 7.3).

Figure 51: SDG Launch event in 2019 for the Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project



Source: Pfälzerwald Biosphere Reserve

Figure 52: General overview of activities in model municipalities mentioned in relation to SDG



Source: Preparation by the Institute for Rural Development Research (IfLS) in 2020 as part of the steering group meeting of the Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project

The status analysis of the *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* project (Figure 52) shows that the local authorities are working intensively on SDGs 11 (Sustainable Cities and Communities), 4 (Quality Education) and 7 (Affordable and Clean Energy), whereas SDGs 14 (Life Below Water), 5 (Gender Equality) and 10 (Reduced Inequalities) receive little or no attention.

Building on these analyses, in collaboration with the model municipalities, needs and fields of action were identified, mainly in the areas of social welfare, infrastructure, nature and environment, global responsibility and climate protection (Table 15). These topics will be addressed in more detail in the municipal sustainability strategies and SDG action plans in 2021.

Table 15: Actions required in the SDG model municipalities

Areas	Actions required	Action field
Social/Community	<ul style="list-style-type: none"> • Education/Housing need • Health/Social • Work with children & young people • Local provision of (social) infrastructure 	<ul style="list-style-type: none"> • Sustainable city (social city) • Social participation for all • Quality of life and social living space • Social village • Municipalities worth living in (old & young) living together
Infrastructure, development, industry, economy	<ul style="list-style-type: none"> • Sustainable economy • Sustainable tourism • Broadband provision • Infrastructure 	<ul style="list-style-type: none"> • Village renewal • Infrastructure & sustainable development • Sustainable location and industrial zones • Sustainable development of city and industry • Sustainable tourism • Sustainable economy • Regional products
Environment, nature, climate	<ul style="list-style-type: none"> • Biodiversity/Variety of species • Ecosystems • Green spaces • Nature-/Environmental conservation 	<ul style="list-style-type: none"> • Strengthening the ecosystem • Cultural landscape and biodiversity • Nature and landscape conservation • Green spaces and environment • Nature and environment • Climate- and environmental protection
Global responsibility / sustainable consumption	<ul style="list-style-type: none"> • Education for sustainable development • Waste prevention • Raising awareness • Partnerships (with the Global South) • Fairtrade 	<ul style="list-style-type: none"> • Global responsibility • Global responsibility and One World • Global responsibility & sustainable consumption • Global responsibility / sustainable lifestyle • Global responsibility & sustainable consumption • Sustainable consumption & global responsibility • Sustainability in the private sector • Awareness-raising & communication
Climate protection / mobility	<ul style="list-style-type: none"> • Public transport climate protection • Energy efficiency • Renewable energy • Road safety 	<ul style="list-style-type: none"> • Climate protection and adapting to climate change • Climate and energy • Climate protection & mobility • Mobility & climate protection • Sustainable mobility • Mobility

Source: Own representation based on status analysis carried out by the IfLS in the Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project (Schmidt et al. 2020)

Timber construction is a more sustainable alternative to conventional building and is actively promoted by a range of stakeholders. They include the Digital Timber Construction (DTC) research group at the University of Kaiserslautern (TU Kaiserslautern), which cooperates with local craft enterprises and the Land Forest Administration (*Landesforsten*) via the Rhineland-Palatinate Timber Construction Cluster (*Holzbau-Cluster Rheinland-Pfalz*). In a model project undertaken in the Diemerstein Valley (*Diemersteiner Tal*) in 2019, a pavilion was constructed from recycled timber using specialist “puzzle” technology. There are also plans to expand the timber research campus (TU Kaiserslautern 2021). At the University of Koblenz-Landau’s Ecosystem Research Campus in Eusserthal (*Ökosystemforschung Anlage Eusserthal*), the new laboratories will be timber structures. The Land Forest Administration (Landesforsten) in Rhineland-Palatinate is endeavouring to make changes to regional timber

marketing and boost value-added, and in 2017, the Sustainability Centre (*Haus der Nachhaltigkeit*) organised a conference showcasing examples of (regional) timber construction. In 2020, together with TU Kaiserslautern, future-fit designs were produced for a forester's lodge to show how timber can be used as a building material in renovation projects.

Figure 53: Pavilion made of wood in the Diemerstein Valley



Source: Dr. Christoph Robeller

Figure 54: Grilled venison



Source: Landesforsten.RLP.de/Jonathan Fieber

In the Biosphere Reserve, regional products are promoted in order to generate regional value-added (SDG 12). Examples of agricultural produce from the region are meat (beef and lamb), fish (trout), honey and wine. Much of it is sold via the Pfalzmarkt, a local growers' collective in Mutterstadt, from where it is then distributed to consumer markets. In addition to the activities already mentioned, regional retailers have been accepted as partner companies and the Pfälzer Landmarkt website (Bürgerstiftung Pfalz 2020) has been developed to support plans for online trading. Other planned initiatives include a Biosphere Shelf scheme, modelled on the *Boutiques des Vosges du Nord* (PNRVN 2018), the development of new product lines, e.g. as part of the *Pfälzerwald lamb weeks* (Infobox 2) and the expansion of the Hofgut Neumühle farm shop²⁰. Efforts to create a regional brand for the Biosphere Reserve Administration have been unsuccessful, partly due to the issues of product liability (a new organisation with sufficient liquidity would have to be established to deal with quality and delivery commitments) and availability of marketable quality products in sufficient quantities.

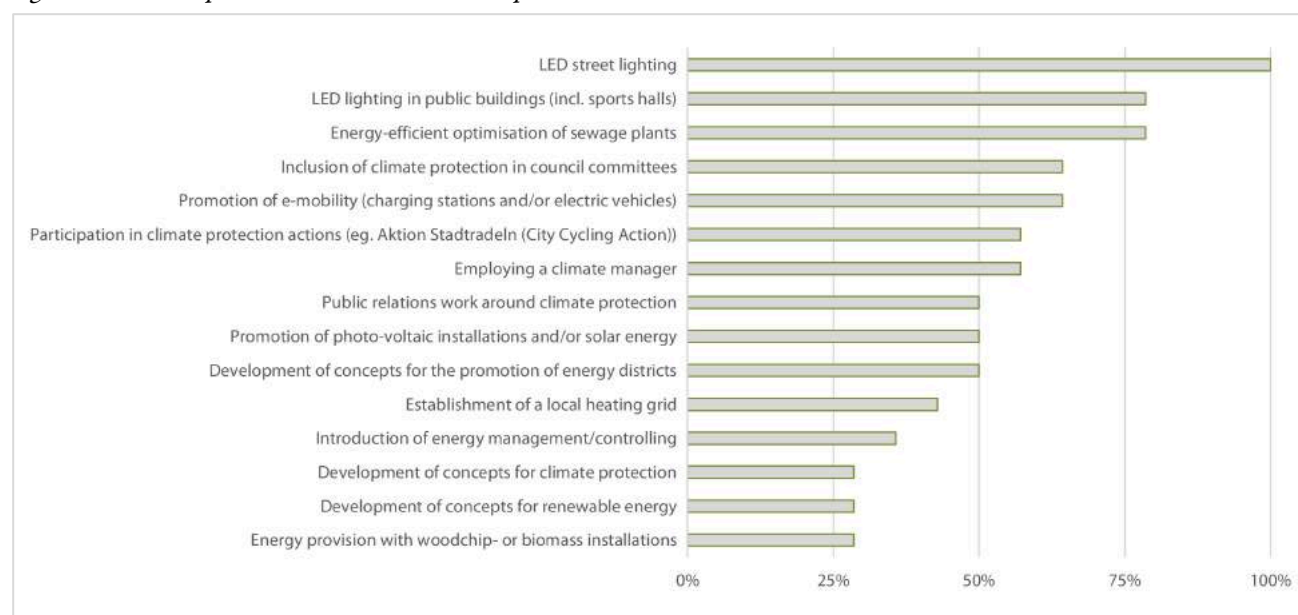
The marketing of game plays an important role in the Pfälzerwald. Game is actively promoted during the Pfälzerwald "food weeks", some of the traders at the *German-French biosphere farmers' markets* offer game as part of their product ranges, and the Sustainability Centre (*Haus der Nachhaltigkeit*) advertises game meat in the autumn. Marketing this type of product is challenging as game is not continuously available and quantities vary. Lack of slaughtering capacity is a further hindrance; for example, game from state-owned hunting grounds is butchered at a slaughterhouse in the Soonwald (a region located in the middle of Rhineland-Palatinate) and is then transported back to the Pfälzerwald.

²⁰ Learning and Research Farm in Münchweiler, an institute of the Palatinate Association of Local Authorities.

As a result, the precise regional origin of the meat is not always clear to consumers: it is simply labelled as game from Rhineland-Palatinate.

Climate action (SDG 13) plays a key role in sustainable economic development, as the survey of local authorities shows (Figure 55). The COACH RLP climate change adaptation project (*Klimawandelanpassungs COACH RLP Project*), launched in Rhineland-Palatinate in 2018, supports local authorities in adapting to climate change and will run until 2021. Model municipalities located in the Biosphere Reserve are Verbandsgemeinde Annweiler am Trifels and Landkreis Südliche Weinstraße (Rheinland-Pfalz Kompetenzzentrum für Klimawandelfolgen 2020).

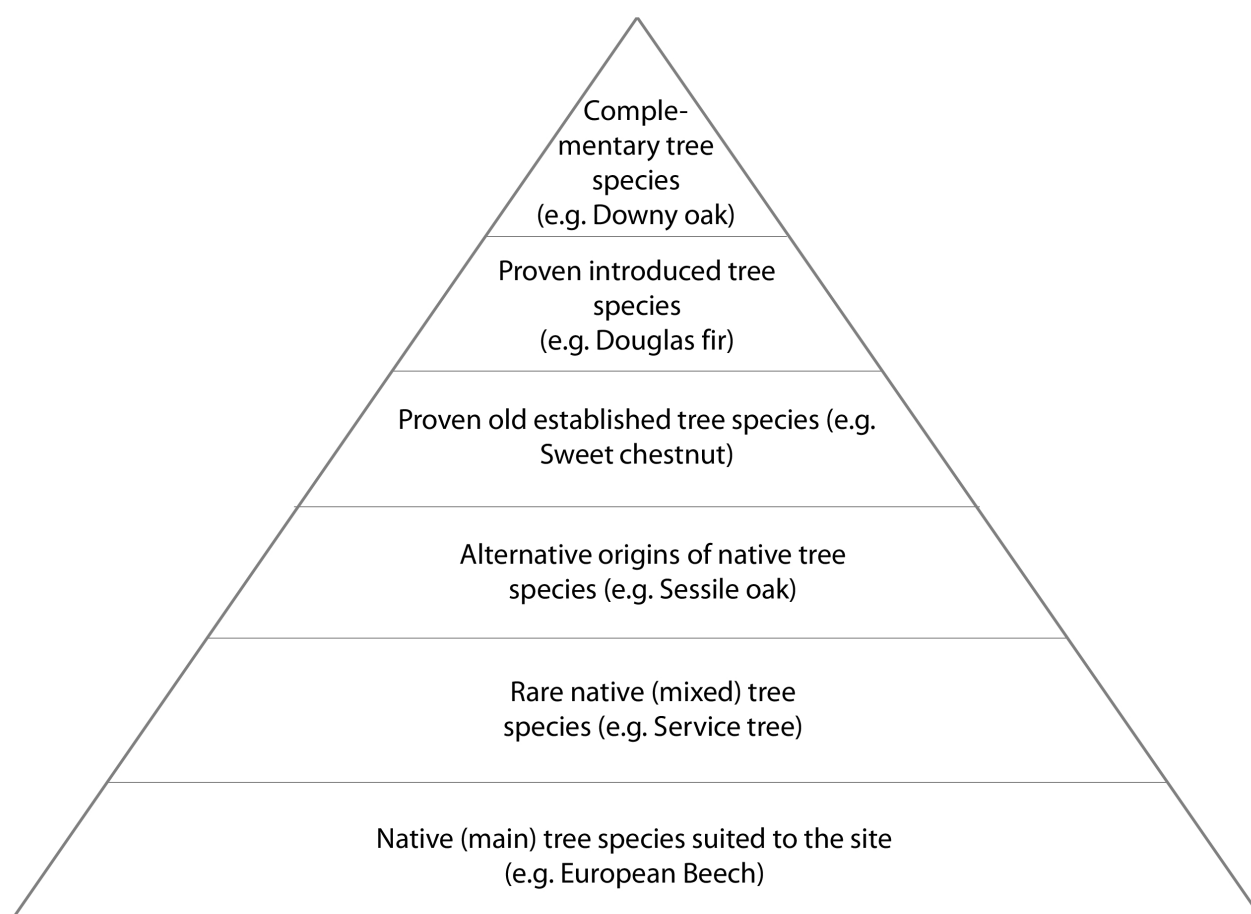
Figure 55: Climate protection measures in municipalities



Source: Own representation based on questionnaire for the associations of municipalities and autonomous municipalities (n=14)

In the forestry sector, the Guidelines on Forest Regeneration in the Context of Climate Change (*Grundsatzanweisung "Waldverjüngung im Klimawandel"*) (Landesforsten RLP 2020) support forests' adaptation to climate change. The Guidelines describe the process for forest regeneration and management based on active development of mixed stands. The prioritisation of tree species composition to achieve forests that have as much climate resilience as possible is illustrated in Figure 56. The Land Forest Administration (*Landesforsten*) in Rhineland-Palatinate makes financial and human resources available for this purpose and has set up systems to facilitate decision-making, including climate suitability maps for tree species.

Figure 56: Different tree species play a part in forest development



Source: Own representation based on the Guidelines on 'Forest Regeneration in the Context of Climate Change' ('Waldverjüngung im Klimawandel') (Landesforsten RLP 2020)

LIFE- Zero Emission Nature Protection Areas (ZENAPA), an EU LIFE-IP project which runs from 2016 to 2024, promotes carbon neutrality in large protected areas and thus contributes to SDGs 7 and 13. The aim is to achieve zero emissions from these areas in the long term and thus increase biodiversity, boost the bioeconomy and, above all, protect the climate. It includes the preparation of neighbourhood energy strategies (*Quartierskonzepte*) with analyses of energy status, potential and needs. Other actions to be implemented include roof insulation, e-bike and photovoltaic schemes, and micro-scale private heat generation. The Biosphere Reserve is a participating partner and pilot region. The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is involved in the project through the Biosphere Reserve.

Figure 57: Raising awareness in schools about the subject of climate change at the children's climate protection conference 2019 organised by the ZENAPA project



Source: Antonia Müller-Ruff

The *Pfälzerwald Dark-Sky Park* project is funded by LEADER and addresses various aspects of sustainability. It promotes energy-saving and sustainable tourism development in combination with protection of the night sky.

Infobox 7: Pfälzerwald Dark-Sky Park project

The aim of the LEADER project *Pfälzerwald Dark-Sky Park project* (2018-2021) is to reduce light pollution, protect animal species, improve human health, save CO₂resources through the use of the 'right' lighting, and to exploit the night for sustainable tourism. A network of astronomers, observatories, astrophotographers, tourism specialists, and staff from the Technischen Universität Kaiserslautern worked together on the project.

Achievement of the aims will lead to the municipal decision-makers and the population being motivated to reduce the light they use and to use the 'right' lighting by raising awareness and targeted PR work, et al. Events such as workshops for municipal decision-makers, tourism experts, nature guides and schools competitions are also being staged. A star path and observation sites were also installed, and accommodation providers who oriented themselves to astro-tourism were given a 'Hosts under the Stars' award. In the first municipalities, a conversion to dark-sky- and insect friendly lighting is taking place (eg. Rumbach und Frankenstein). An award of 'Municipality under the Stars' is also available. The challenge is that a few years ago, converting to LED lighting was an obstacle to the project in many municipalities.

The effectiveness of the project can be judged by the high level of media interest and the resulting increase in publicity for the topic of light pollution. Numerous lectures, radio features (around 6 in 1 ½ years) and TV reports (2 in 1 ½ years) have raised awareness of the need for lighting that protects the night. Other indicators of success are the number of participants at events and workshops, conversion of lighting systems and five applications for "Hosts under the Stars" (*Gastgeber unter den Sternen*) certification.

Figure 58: The Milky Way Arch at Schmalenberg



Source: Christian Mücksch

5.8. Description of the main changes in terms of cultural values (religious, historical, political, social, ethnological) and others

No change in terms of values has occurred.

5.9. Community support facilities and services, job preparation and skills training, social services

In addition to the services provided by the management body, the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), including the provision of training programmes at institutions such as the *Meisterschule für Handwerker* (School for Master Craftspeople) and Hofgut Neumühle (Educational farm), a range of organisations and initiatives within the Biosphere Reserve's education network provide skills training in preparation for working life (SDG 4). The RegioAkademie offers training in tourism, while the Biosphere Reserve itself trains the Biosphere Guides. The University of Kaiserslautern and the University of Koblenz-Landau offer tertiary-level programmes leading to professional qualifications. Social services are provided by *Partners of the Biosphere Reserve* such as *Lebenshilfe* (Life Aid) in Bad Dürkheim. Equality and inclusion are promoted via accessible tourism offers (Kreisverwaltung Südwestpfalz 2015) and the Experience Nature Days (*Naturerlebnistage*) run in partnership with the Kaufland supermarket chain (Section 2.4.9). Of the local authorities that participated in the online survey, 50 % offer accessible education programmes.

5.10. Indicators to assess the effectiveness of activities aiming to foster sustainable regional development

Specific indicators to assess the effectiveness of activities include the number of partner companies (20 % increase since 2013, Section 5.4) and the reduction of waymarked hiking trails in visitor management (Section 5.5). The studies conducted are also helpful for assessing the activities (supporting document 7.11). In 2014, a survey of 225 persons was carried out, focusing on the German-French biosphere farmers' markets (BR Pfälzerwald 2014). Most of the respondents were already familiar with the markets and the absolute majority said they would visit them again. The availability of regional products is very important to visitors. The survey showed that "UNESCO Biosphere

Reserve” status plays a less significant role, particularly among German visitors. The study presents a generally positive picture of the markets and also identifies scope for improvement.

Figure 59: German-French Biosphere Farmers' Market in Lambrecht in 2018



Source: Pfälzerwald Biosphere Reserve

5.11. Positive factors and challenges relating to the development function

Overall, the projects implemented in recent years were very successful (Sections 5.1-10). Many activities are now established on a permanent basis (e.g. the biosphere farmers' markets), and new ideas have emerged on how to improve the marketing of regional produce, for example. Good cooperation with regional stakeholders such as the existing partner companies and traders of the farmers' markets, the expansion of these networks and adequate staff support and project funding are decisive factors for effective implementation of development measures. Within the framework of projects such as *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* and the *Pfälzerwald Dark-Sky Park* project, it is becoming apparent that positive developments are heavily reliant on voluntary engagement by the public. For example, many people are actively involved in developing the municipal sustainability strategies and share their knowledge, thus enhancing the quality of the strategies. At the same time, there is clearly a need to involve young people to a greater extent. Teenagers in particular are often under-represented in local development. The survey of local authorities revealed that only 33 % of participating municipalities offer programmes specifically aimed at involving young people (e.g. youth parliaments); this even applies to decision-making on sustainable local development that directly affects their future. A potential strategy to support the region's sustainable development in future could involve establishing the Biosphere Reserve more strongly as a platform for the pooling of capacities in the region (Section 7.4.3). It establishes new collaborations, brings together diverse partners and topics, and offers advisory services to local authorities, e.g. on the implementation of grazing projects. The mission statement indicates that there is a commitment to continue and strengthen this aspect in future (supporting document 7.7).

6. THE LOGISTIC FUNCTION

6.1. Institutions conducting research or monitoring in the biosphere reserve

The Biosphere Reserve is involved in or conducts its own research and monitoring projects (Table 16, supporting document 7.11).

Table 16: Research establishments and research topics in the Pfälzerwald Biosphere Reserve

Research establishments	Selected research topics
FAWF	Forest ecology issues
Competence Centre for the effects of climate change	Climate change
Koblenz-Landau University	Ecosystem research
Technische Universität Kaiserslautern	Light pollution
Rural Service Centre (Neustadt-Mußbach)	Developments in agriculture
Hofgut Neumühle	Maintenance of Palatinate Glan beef
Research Institute for Forest Ecology and Forestry (FAWF)	Plant cultivation field trials
Institute for Palatine History and Folk Life Studies (Institut für Pfälzische Geschichte und Volkskunde)	Historical issues
Naturschutzverbände	Species survey
LfU	Investigation of hygienic water quality
Julius Kühn-Institut for Grapevine Breeding (JKI)	Breeding of resistant grape varieties

Source: Own representation

6.2. Summary of the main themes of research and monitoring

The main new research and monitoring projects during the reporting period are described in Section 2.4.6. In many areas, activities have continued since the last periodic review (supporting document 7.11).

The state (Land) of Rhineland-Palatinate carries out selective but area-wide biotope mapping ²¹ (last round: 2006-2011). A state-wide survey of species-rich grassland has been under way since 2020. The Rhineland-Palatinate State Office for the Environment (*Landesamt für Umwelt – LfU*) coordinates other species surveys and research studies and conducts monitoring of water resources, with a focus on biological water quality and morphology; it also collects climatological measurements. Monitoring under the Habitats Directive as part of state- and nationwide surveys complements these monitoring activities (Chapters 4, 6).

The Rhineland-Palatinate Research Institute for Forest Ecology and Forestry (*Forschungsanstalt für Waldökologie und Forstwirtschaft – FAWF*) is engaged in a wide range of research and monitoring activities, focusing on forest and

²¹ On the basis of specific criteria, the selection of landscapes to be mapped is delimited or selected. Within these, the biotope is mapped area-wide.

game population ecology, and also carries out species surveys (Periodic Review Report 2013, p. 39, supporting document 7.11). State- and nationwide inventories and monitoring in natural forest reserves are conducted in the Biosphere Reserve. In addition to the collection of baseline data from grid surveys and intensive monitoring sites, various new projects have commenced, such as large carnivore monitoring of lynx (*Lynx lynx*) and wolf (*Canis lupus*) and research on the occurrence of Sessile Oak (*Quercus petraea*). Results of research on the interaction between forest habitats and game populations/management became available for the first time in 2018 after seven years of monitoring (including a three-year suspension of hunting at sub-sites). After that, more efficient, i.e. lower-disturbance hunting will be carried out to reduce browsing and bark peeling. So far, the cessation of hunting of hoofed game, particularly red deer, has had little impact on distribution and density (Hohmann et al. 2018).

Figure 60: Research in the Adelsberg forest nature reserve



Source: FAWF

The Ecosystem Research Campus in Eusserthal (*Ökosystemforschung Anlage Eusserthal*) studies the effects of global change on aquatic biodiversity. The Biosphere Reserve Administration carries out research and monitoring activities in the various projects. In order to support the further development of this field of work, there are plans to produce a research and monitoring strategy, to establish a research network and to conduct various monitoring projects, e.g. on zonation or specific species (Bezirksverband Pfalz 2020b). The following activities are carried out in conjunction with the Northern Vosges Regional Nature Park:

- Wasgau Border Forum (*Wasgauer Gespräche*) for German-French dialogue on scientific matters (Infobox 8),
- organisation of the German-French Working Group on Biodiversity, which performs various monitoring activities,
- publication of German-French scientific journals (*Annales scientifiques*); during the reporting period, three issues of *Annales scientifiques* were published.

Figure 61: View of the ecosystem research facility at Eußerthal



Source: EERES

Infobox 8: Wasgau Border Forum

The Wasgau Border Forum are German-French (scientific) symposia which take place every two years. The aim of the Forum is to facilitate discussions with the German and French speakers and participants about current nature conservation topics, to promote scientific exchange, to further studies and develop project ideas in this area. The Wasgau Border Forum is a collaboration between the Rhineland-Palatinate Landeszentrale für Umweltaufklärung (LZU), the Biosphere House and the transboundary Biosphere Reserve. The event (financed by the LZU) is well-known outside the region: more than 100 experts from all over Germany and the Grand Est region gather together.

Topics in the evaluation period: Wie viel Totholz braucht das Leben? (How much deadwood is needed for life?) (2013); Neophyten: "Vorboten einer Neuartigen Natur"(2015) (Neophytes: signifiers of new species in nature), Luchse und Wölfe kehren zurück in den Pfälzerwald und die Nordvogesen (Lynx and wolves return to the Pfälzerwald and Nordvogesen)(2017) and Biokorridore – Autobahnen oder Sackgassen für die Biodiversität? (Biocorridors - highways or dead-ends for biodiversity?) (2019).

6.3. Description of how traditional knowledge has been collected, synthesised and disseminated

Museums such as the *Alte Samenklänge* (Museum of Forestry) and information centres host events and exhibitions as a contribution to the dissemination of traditional and local knowledge (Section 6.4, supporting document 7.16). In addition, institutions such as the *Pfälzbibliothek* (regional public library), the Institute for Palatine History and Folklore (*Institut für pfälzische Geschichte und Volkskunde*), interest groups and foundations preserve traditional knowledge and make it accessible to the public. Education for sustainable development (ESD) enhances the dissemination of traditional and local knowledge, e.g. through the services provided by the *Biosphere Guides* (Table 9, Infobox 9, supporting document 7.10). There are many other activities and measures by which traditional knowledge is disseminated, including workshops (e.g. courses on fruit tree pruning techniques, exchange of experience among grazers), events and training sessions (e.g. for partner companies).

Figure 62: Tour with a Biosphere Guide



Source: Pfälzerwald Biosphere Reserve

Figure 63: Forest Youth Games in the Pfälzerwald Biosphere Reserve



Source: Landesforsten.RLP.de

6.4. Education for sustainable development

Following the appointments to the ESD posts, the Network was restructured and established on the basis of the ESD Strategy (*BNE-Konzept*) (supporting document 7.17), which was developed on a participatory basis. In 2020, the Pfälzerwald's ESD Network (*BNE-Netzwerk*) – which evolved from the network of local environmental education providers that was in existence for more than 20 years – consisted of around 50 stakeholders. It is coordinated and managed by the Biosphere Reserve Administration. Regular network meetings are held to plan joint events and (since 2019) an annual programme, to agree topics for the year and to coordinate activities. Training on ESD methods and continuing professional education are integrated into the meetings. The number of partners in the Network increased from around 20 in 2017 to approximately 50 in 2020. The Network sees itself as an alliance.

Support is also provided for networks in several other areas (supporting documents 7.4 and 7.5); in some cases, this includes active participation, e.g. in the Rhineland-Palatinate ESD Network. Various events have taken place: in 2016/2017, for example, nature conservation and forestry experts, representatives of the public administration and non-professionals took part in discussions on the ethical dimension of species conservation as part of a series of events on the value of species diversity. In 2019, a sustainable city tour and a sustainability rally were held during Rhineland-Palatinate's annual festival, the *Rheinland-Pfalz-Tag*.

The networks bring together non-school, school and administrative partners. The number of education providers who are *Partners* of the Biosphere Reserve has increased since 2013. There are currently nine recognised education partners in the *Partners network*. In addition, a number of institutions within the purview of the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), such as the RegioAkademie, specialise in non-formal education. Formal education programmes are primarily the responsibility of the University of Kaiserslautern, the University of Koblenz-Landau and the ESD Schools (*BNE-Schulen*) in the area.

The Biosphere Reserve Administration makes efforts to develop special offers in the field of formal ESD; it is a partner in the development of a digital textbook for primary school children and ran continuing education courses for teachers in 2016. A strategy for Biosphere Schools (*Biosphären-Schulen*) was produced in 2020 and will be implemented on a progressive basis (supporting document 7.18). The planned Biosphere Academy, which will be located at the Lambrecht site and at the Pfalzakademie, will help to expand the education offer; construction is scheduled to start in 2021/2022.

The ESD activities mentioned in the 2013 periodic review report – “The forest is for learning” (*Wald macht Schule*), Forest-based Youth Games (*Wald-Jugendspiele*) and guided tours of the forest (*Waldführungen*) – are continuing.

Infobox 9: Pfälzerwald *Biosphere Guides*

To make the Biosphere Reserve more well known and to share its work in a targeted way, in 2018-2019, Pfälzerwald Biosphere Guides were trained by the Biosphere Reserve. Based on a basic qualification (certified nature and landscape guides, forest teachers), 20 individuals were taught, in two courses of 50 teaching hours each, which were directed towards biosphere topics and ESD methodology. To enable the Guides to network and continue their training, a network meeting is arranged twice a year by the Biosphere Reserve Administration, in the course of which tours are evaluated, experiences exchanged and future programmes planned. The Biosphere Guides are also part of the ESD network.

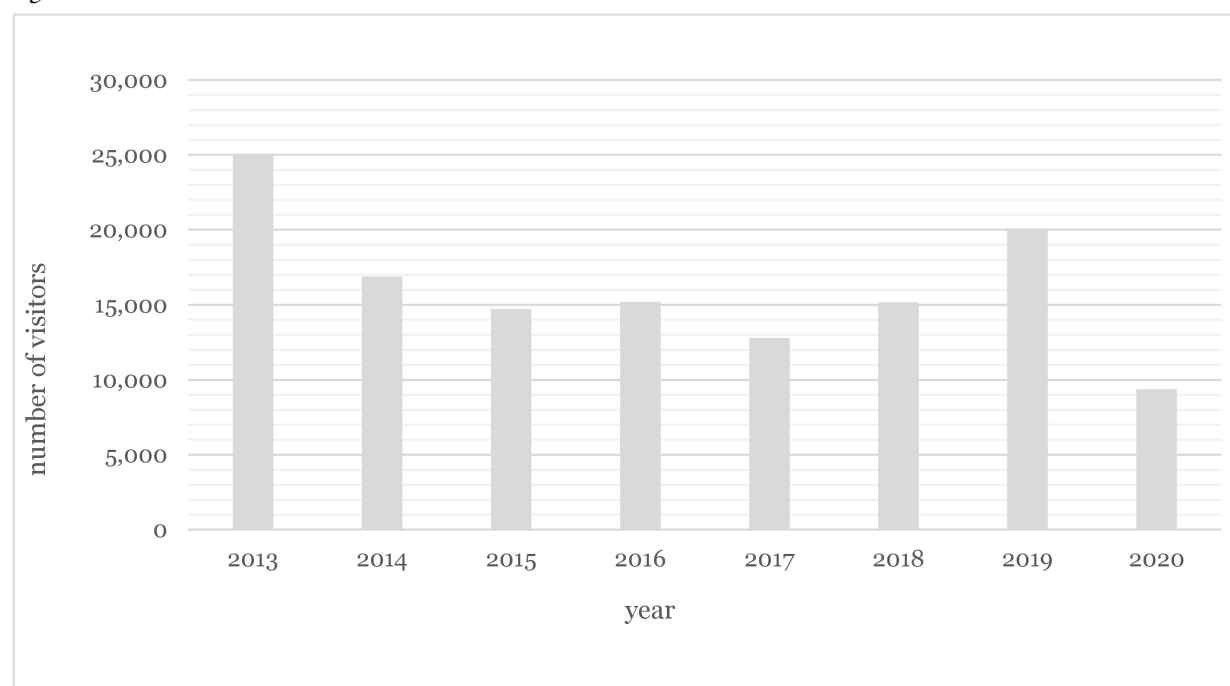
The Pfälzerwald *Biosphere Guides*, like Rangers, contribute to hands-on education offerings for school classes, families and visitors, as well as local residents, to looking after visitors to the conservation area, and to its smooth development for nature tourism. Since 2019, 70 tours with different themes have been offered.

The certified nature and landscape guides and the 20 *Biosphere Guides*, who were trained on a curriculum basis by the Biosphere Reserve Administration for the first time in 2018/2019 (Infobox 9), are responsible for providing guided tours of the site, as rangers are not available to perform this task for structural reasons. The guided tours on offer are suitable for all age groups and cover a broad range of historical, cultural and natural science topics. In 2019, 25 events were held with *Biosphere Guides*. Feedback from the ESD events attests to their effectiveness.

There are three information centres, well-spaced across the site, which specialise in non-formal education and cooperate very closely with the Biosphere Reserve. The further development of these information centres between 2013 and 2020 was as follows:

The Natural History Museum of the Palatinate (POLLICHIA-Museum) (Bad Dürkheim): Together, the Natural History Museum of the Palatinate (*Pfalzmuseum für Naturkunde*) and its subsidiary institution, Urweltmuseum Geoskop, host more than 200 events a year. The permanent exhibition was redesigned and completed and a large number of special exhibitions were put on show. Visitor numbers and their development between 2013 and 2020 are presented in Figure 64. After decreases in visitor numbers between 2013 and 2017 due to renovation works, the special exhibitions which were held each year from 2017 onwards increased visitor numbers until 2020, when they dropped sharply due to the COVID-19 pandemic.

Figure 64: Visitor numbers for the Pfälzmuseum für Naturkunde – POLLICHIA-Museum



Source: Own representation based on information from the Pfälzmuseums für Naturkunde – POLLICHIA-Museum (Bad Dürkheim)

The Sustainability Centre (Trippstadt): The Sustainability Centre (*Haus der Nachhaltigkeit*) works with a variety of partners to promote a sustainable lifestyle. A wide range of events and exhibitions have taken place since 2013 (supporting document 7.16). The information centre is engaged in the Pfälzerwald on a project-specific basis (e.g. through game marketing, planting of lime trees (*Klima-Linden*) to protect the climate). No record is kept of total visitor numbers: the exhibition is free of charge, so no data from admission tickets are available.

Pfälzerwald Biosphere House (Fischbach): During the reporting period, Biosphere House (*Biosphären-Haus*) developed new event formats and created a new exhibition floor, focusing on the theme of “Night”. In addition, an extensive programme of events is available, including wild herb walks and species identification courses. In regular years, Biosphere House attracts around 40,000 visitors. Due to the COVID-19 pandemic, numbers dropped to 30,000 in 2020.

A study conducted by the Biosphere Reserve Administration in 2016 advised against opening a further information centre (Naturpark Pfälzerwald 2016) on the grounds that it would compete with the existing information centres, that information about the Biosphere Reserve is already available elsewhere, and according to visitor surveys, there is limited demand for a further offer of this type. The existing infrastructure (information centres, education partners, partner companies) should therefore be utilised in order to increase awareness of the Biosphere Reserve and promote its objectives.

Figure 65: Tree canopy walkway at the Biosphere House in Fischbach



Source: Pfälzerwald Biosphere Reserve/Baumann

Figure 66: Opening of the special exhibition at the Pfalzmuseum für Naturkunde – POLLICHIA-Museum in 2018



Source: Pfalzmuseum für Naturkunde – POLLICHIA-Museum

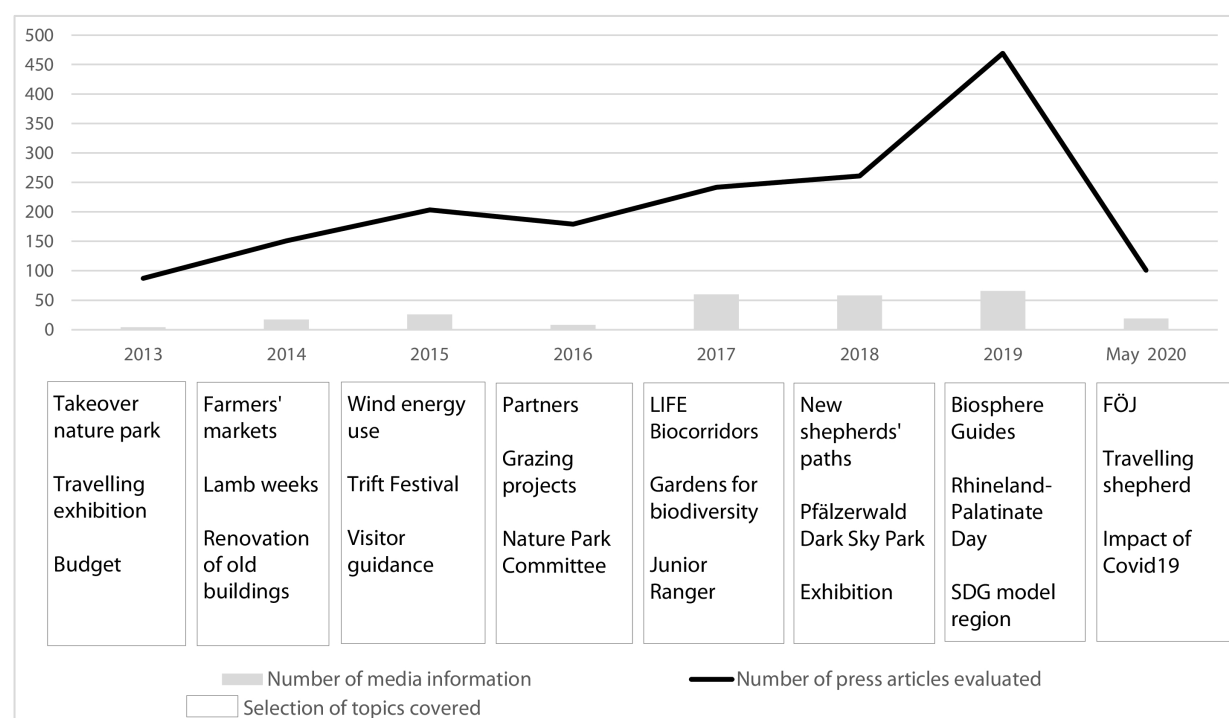
6.5. Assessment of the effectiveness of actions or strategies applied

6.5.1. Main internal and external communication mechanisms/systems

Internal communication: The Biosphere Reserve Administration staff hold weekly team meetings. Team meetings with staff from the Northern Vosges Regional Nature Park take place once or twice a year. There is regular reporting to the various bodies, committees and working groups. Meetings with project partners support internal and external communication.

External communication: The Biosphere Reserve has a strong media presence. In the first six months of 2020, topics relating to the Biosphere Reserve received more press coverage than in the whole of 2013 (Figure 67). The visibility of the Biosphere Reserve is continuously increased on a target group-specific basis, thus creating a stronger sense of identity.

Figure 67: No. of pieces of media information sent by the Biosphere Reserve Administration and the response in terms of press articles

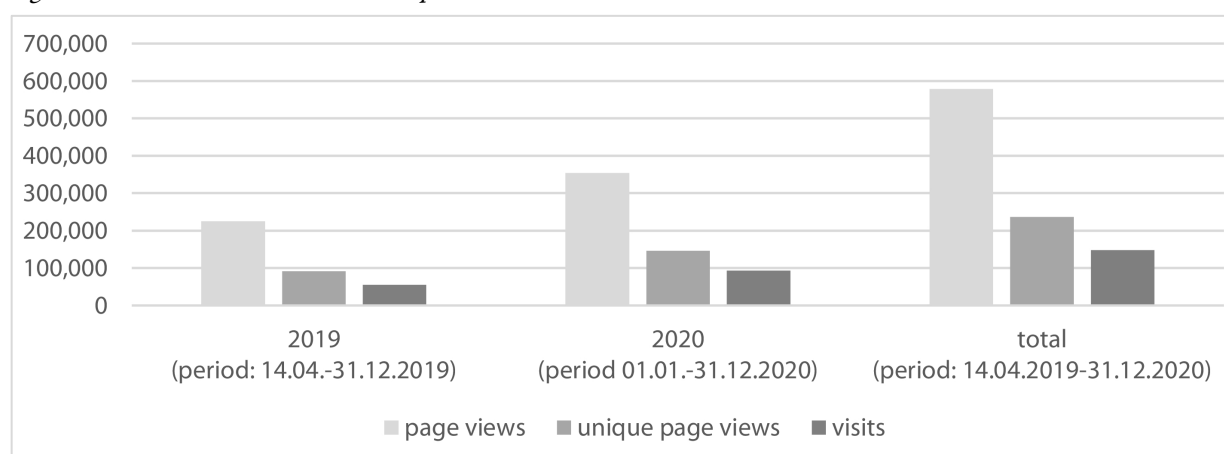


Source: Own Representation

6.5.2. Biosphere reserve website

A relaunch of the Biosphere Reserve's website <https://www.pfaelzerwald.de> is planned for 2022. Visitor traffic on the website has been logged since April 2019 (Figure 68). Page views and visits have increased since 2019. Between April 2019 and the end of 2020, there were 237,014 clearly intentional page views and 148,148 visitors to the website. The "Excursions" (*Ausflugsziele*) and "Calendar of Events" (*Termine*) pages are especially popular.

Figure 68: Visitor behaviour on the Biosphere Reserve website 2019-2020



Source: Own representation

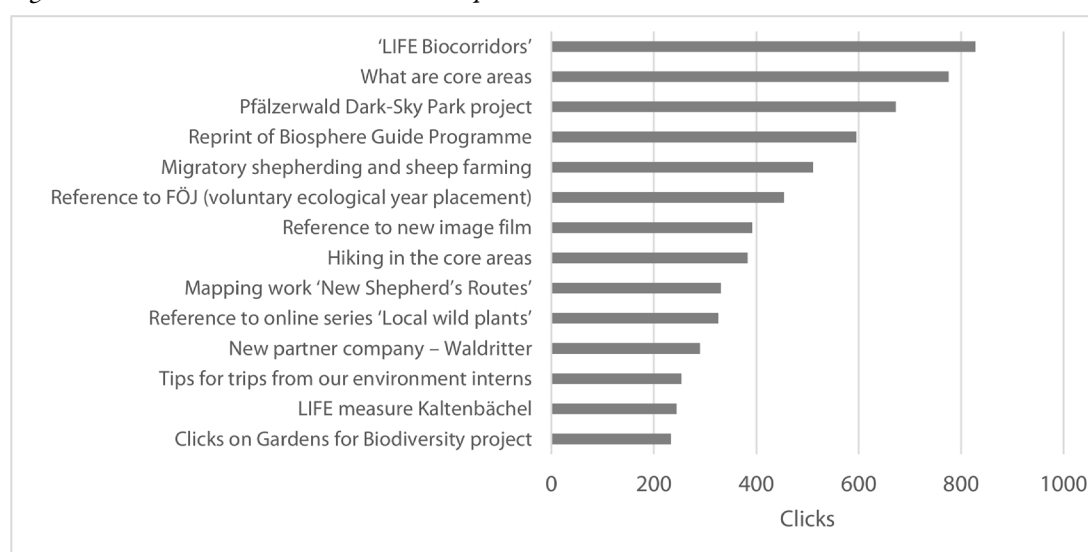
6.5.3. Electronic newsletter

The Biosphere Journal (*Biosphären-Journal*) was published from October 2013 until autumn 2020. Between three and six issues were produced annually and distributed by email. The Journal has evolved in terms of both content and design since it was launched in 2013. Since autumn 2020, it has been developed into a Newsletter, with the option of online subscription, in order to provide information more flexibly and rapidly. At present (February 2021), the Newsletter is distributed to 952 recipients.

6.5.4. Social networks

News items from the Biosphere Reserve Administration are posted on the management body's Facebook page: <https://de-de.facebook.com/BezirksverbandPfalz/>; in 2019, 2020 und 2021 in 2019, 2020 and 2021, at least one post appeared every month. The analysis of a selection of posts (30 in all from 2019, 2020 and 2021) produced a total of 60,157 views. In 2020, *LIFE Biocorridors*, the *Pfälzerwald Dark-Sky Park* project and the topic of core areas attracted the most views. Since February 2020, the Biosphere Reserve has had its own YouTube channel, with 409 views in 2020; Facebook and Instagram pages are planned from 2021.

Figure 69: No. of clicks on selected Facebook posts in 2020



Source: Own representation

6.5.5. Other internal communication systems

The Biosphere Reserve has an Intranet. During the COVID-19 pandemic, meetings were held online.

6.6. Contribution to the World Network of Biosphere Reserves

6.6.1. Collaboration with existing biosphere reserves

The exchange of experience as a national and transboundary biosphere reserve makes an important contribution to the World Network (Table 4). The transboundary German-French exchange of knowledge and experience and project-based cooperation strengthen these links.

The Biosphere Reserve also participated in the following activities and events: International EuroMAB Meeting in France (Vosges du Nord) (2015), EuroMAB Conference in Dublin (2019), meetings of the Permanent Working Group of the German Biosphere Reserves (*Ständige Arbeitsgruppe der Biosphärenreservate in Deutschland – AGRB*) and the MAB National Committee (2018), a visit by a 15-member delegation from Lore Lindu Biosphere Reserve in Sulawesi (2019) and ongoing UNESCO campaigns (e.g. #ProudtoShare). The Administration is endeavouring to develop international partnerships with UNESCO biosphere reserves in the World Network and establish these partnerships on a permanent footing. International partnerships and responsibility towards the Global South featured as topics at events held within the framework of the *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* project. In 2020, initial discussions were held with the Ministry of the Interior, as the state (*Land*) of Rhineland-Palatinate's contact point for links with Rwanda, and in Kigali, on a potential partnership with a biosphere reserve in Rwanda; English-language information material was provided. Discussions were also held with stakeholders that have established a successful partnership in Rwanda, in order to benefit from their experience. A further idea being considered is to make contact with a transboundary biosphere reserve in the Eastern Carpathians; discussions on this theme are planned for 2021.

Figure 70: Tour of a winery with a delegation from the Lore Lindu Biosphere Reserve in Sulawesi in 2019



Source: Pfälzerwald Biosphere Reserve

6.6.2. Current and expected benefits of international cooperation

Current benefits: The expansion of intercultural skills through the cooperation with the French partners enables insights to be gained across a range of areas. The Transboundary Biosphere Reserve has a positive impact in terms of strengthening German-French friendship and helps to build peaceful societies (SDG 16). The recognition that national borders do not form cultural, linguistic or natural boundaries should be viewed positively. The exchange of knowledge and experience on related issues enhances the management of the Biosphere Reserve.

Expected benefits: The expansion of the Biosphere Reserve's own product range and access to sustainable products from other biosphere reserves are expected benefits. The Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve (TBR) was and is active in building a network of producers and thus aims to support the sustainable product

offer. The international exchange of traditional knowledge and practices that is aimed for creates learning opportunities for the Biosphere Reserve's own activities.

6.6.3. Future contributions to the World Network of Biosphere Reserves

The contribution to the World Network is embedded in the Action Programme (Chapter 7). It includes the establishment of a partnership with another biosphere reserve and the exchange of staff, ideas and strategies in the World Network, thus facilitating shared learning.

6.7. Factors that influenced (positively or negatively) the success of activities

A key strategy is the targeted inclusion of local stakeholders in the fields of research, communication and ESD. The filling of vacancies in ESD, communication and research/monitoring has established the basis for managing the large area of the Biosphere Reserve and for the formation of new permanent networks and the development of new networks and strategies. In order to make communication even more effective, new digital strategies should be implemented.

6.8. Other comments: None.

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION

7.1. Technical and logistical resources for the coordination of the biosphere reserve

The Biosphere Reserve Administration in Lambrecht is equipped with technical (PCs, Internet, etc.) and logistical resources (service vehicles, seminar rooms, offices, etc.). The Administration staff coordinate the tasks and implement projects and measures in fulfilment of the MAB objectives.

7.2. Overall framework for governance

The overall framework has changed as a result of the transfer of management responsibility (Figure 5, Section 2.2.7). Due to the overarching functions and structure of the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), this offers major advantages for the overall development of the site. Furthermore, the District Council (*Bezirkstag*) (Figure 4), composed of 29 members of different political parties, is democratically elected every five years by the residents of the Palatinate who are eligible to vote, thus ensuring that citizens' interests are safeguarded and adequately represented in decision-making at political level. In addition, the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) forms part of a broader political network involving the municipal, regional and state levels; decisions relating to the Biosphere Reserve can thus be reached and adopted collaboratively and enjoy broad support. This also helps to ensure that stakeholders are informed and included at an early stage. The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is the management body for various organisations in the fields of culture, education, health, social welfare, nature conservation and consumer affairs (*Bezirksverband Pfalz* 2020a) with which the Biosphere Reserve cooperates.

7.3. Description of social impact assessments

Cultural activities to promote traditions or culture are described in Sections 2.3.5, 2.3.7 and 5.8.

7.4. Main conflicts and solutions

7.4.1. Main conflicts regarding access to, or the use of, resources in the area

Conflicts in the context of resource use exist in the following areas:

a) Recreation: Conflicts occasionally arise between hikers and mountain bikers. The mountain bikers use narrow paths where cycling is prohibited under Article 22, paragraph 3 of the State Forest Act (*Landeswaldgesetz*) or ride off-trail on downhill routes. The COVID-19 pandemic in 2020 has further intensified the already high use-related pressure on the Biosphere Reserve, with increased car traffic and wild camping, for example, particularly in the south-western part of the Biosphere Reserve and along the Haardtrand (Section 7.4.3).

b) Agriculture: There is competition over land for agricultural use, e.g. grassland. Due to a lack of land availability in the area, conflicts arise between grazers and amateur livestock farmers; in the ensuing competition for high-quality land, it is often the cost of the lease that determines the form of use. Furthermore, the small parcels of land created by field splitting (*Realerbteilung*; the practice of dividing land among heirs over generations) (Section 4.5) often belong to different owners and are therefore not available for drovers to use for grazing. Land blocking and fences can also impede land use.

An emerging problem which may affect sheep farmers in future is repopulation with wolves (*Canis lupus*). To date, only isolated evidence of wolves has been found in the Pfälzerwald. The sheep farmers themselves state that the presence of wolves would put them out of business, and there is likely to be opposition to the permanent establishment of packs.

c) Forestry: The intensity of forestry is occasionally criticised, mainly in relation to the removal of timber from buffer zones and transition areas. At workshops held during the review process, nature conservation organisations expressed criticism of the lack of differentiation between these zones in terms of silvicultural management and were also critical of ongoing processes of forest land consolidation.

d) Motorsports event: The Southern Wine Route (Car) Rally” is organised by a motorsports association and takes place along the Haardtrand in February each year.

Conflicts in which the Biosphere Reserve has very little influence but takes action where possible:

e) Upgrading of the B10 federal highway: The planned widening of the B10 federal highway to four lanes will have major direct and indirect impacts on nature and landscape and cause fragmentation effects. The State Government (*Landesregierung*) of Rhineland-Palatinate has approved the 2030 Federal Transport Infrastructure Plan (*Bundesverkehrswegeplan 2030*).

f) *Gas pipeline through the "Quellgebiet der Wieslauter" core area:* There are plans to upgrade the gas pipeline, which was laid in the 1970s; an approval procedure has been under way since 2020.

g) *Fuel dumping:* In emergency situations, aircraft from the US air base at Ramstein and Frankfurt Airport dump fuel (kerosene) over the Pfälzerwald. The problem has been recognised and has been a topic of discussion in the State Parliament (*Landtag*) of Rhineland-Palatinate since 2017.

7.4.2. Conflicts among the different administrative authorities

The various specialised authorities have different remits, and conflicts of interest can therefore arise. Overall, there is still scope to improve information-sharing and mutual support among the various authorities and administrations.

7.4.3. The means used to resolve these conflicts

a) *Recreation:* The coordination unit for visitor management (Section 5.5) devises solutions based on the municipal visitor management strategies. In 2020, the Biosphere Reserve responded through its media engagement; it has also provided targeted visitor information, with signs at parking areas for hikers, pointing out that wild camping is prohibited and that mountain biking is banned on narrow hiking trails and explaining the code of conduct in the Biosphere Reserve. Train stations and buses for hikers, parking spaces for car shares, the Pfalzcard ticket and the "Destination Nature" (*Fahrtziel Natur*) scheme all ease the pressure by reducing the volume of car traffic (Section 5.2). Sports associations are involved in developments via the Biosphere Committee and the Biosphere Advisory Board.

b) *Agriculture:* In order to resolve land use conflicts, the Biosphere Reserve moderates among the various stakeholders and seeks solutions, e.g. via working groups in the chance.natur project *New Shepherds' Routes in the Pfälzerwald*; the topic of "forest and open landscape" is discussed in the Forestry Working Group, for example. Furthermore, for Project 2 (Infobox 4), measures for dealing with wolves, such as wolf-proof fencing, are planned from 2023. In view of the possible reintroduction of wolves, the state (*Land*) of Rhineland-Palatinate has adopted a wolf management plan which includes a package of measures for livestock farmers, such as compensation payments and the designation of prevention areas (MULEWF, 2015). The Biosphere Reserve Administration participated in the *Dahner Wolfstage* (Dahn Wolf Days) in 2018 and, together with the Sheep and Goat Breeders Association and the Foundation for Nature and Environment Rhineland-Palatinate (*Stiftung Natur und Umwelt Rheinland-Pfalz*), provided information on dealing with the presence of wolves.

c) *Forestry:* It is essential to address and discuss criticism from other institutions (e.g. citizens' initiatives, nature conservation associations) at a technical level and on the basis of the facts. In conflicts relating to forest management, efforts are therefore made to involve stakeholders as far as possible, e.g. with proactive media engagement, communication on problem areas, individual visits to sites at issue, and expert opinions. The *Land* Forest Administration (*Landesforsten*) in Rhineland-Palatinate has developed the Waldecho app as a model project and, during the review period, tested it at forestry offices in the Biosphere Reserve. It is intended to support optimised and effective ideas and complaints management in the forest context.

d) Motorsports event: The event is restricted to public roads. Although the Biosphere Reserve's management body has stated its opposition to the rally, the event has, to date, been approved by the competent authorities on the basis of the relevant legislation.

e) Upgrading of the B10 federal highway: In its opinions, the management body has drawn attention to the negative impacts of the road expansion scheme. In response to requests for measures to reduce fragmentation, a green bridge was constructed at Hinterweidenthal; two more are planned.

f) Gas pipeline through the "Quellgebiet der Wieslauter" core area: As the pipeline will form part of a transregional supply network, rerouting is not an option. Nature conservation aspects are currently undergoing intensive assessment as part of the ongoing approval process. The higher nature conservation authority is demanding compensation through the provision and permanent safeguarding of additional areas dedicated to the protection of natural processes. As a public agency, the Biosphere Reserve Administration will submit an opinion within the framework of the planning approval procedure.

g) Fuel dumping: The problem of fuel dumping can only be resolved at the federal level. The Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) drew up a resolution on this issue in 2018 (Bezirksverband Pfalz 2018).

The moderator role performed by the Biosphere Reserve in conflicts is particularly effective. It has performed this role in relation to the ban on wind energy, the expansion of the core areas, recreation, and conflicts between grazers and amateur livestock farmers. The concept of mediation between diverse stakeholders is embedded in the Biosphere Reserve's mission statement. The Biosphere Reserve Administration is often requested to participate in constructive dialogue and to act as moderator when challenges arise.

7.5. Representation and consultation of local communities and their participation in the life of the biosphere reserve

The answers to questions 7.5.1-7.5.6 are discussed in the sections below and are summarised in Table 17, with detailed information in supporting document 7.19.

7.5.1. How local people are represented

Local communities – municipalities and decision-makers, interest groups and associations and the public at large – are represented in the work of the Biosphere Reserve Administration through: a) the involvement of local and political representatives and assembly members in the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) and its Biosphere Committee (*Biosphären-Ausschuss*), the Biosphere Advisory Board (*Biosphären-Beirat*) and the German-French Steering Committee (Chapter 2, Section 7.2), b) the involvement of interest groups, associations and NGOs in the Biosphere Committee and the Biosphere Advisory Board, c) involvement of authorities, administrations and universities in the Steering Group, d) involvement of local stakeholders and the public in projects and initiatives (Table 17 and supporting document 7.4).

Table 17: Type, form and duration of representation of the local population in the Biosphere Reserve

7.5.2 Form of representation		Biosphere Committee	Biosphere Advisory Board (Biosphären-Beirat)	German-French Steering Committee	Steering Group	Projects
7.5.4 Duration		Ongoing and permanent	Ongoing and permanent	Ongoing and permanent	Ongoing and permanent	Event-related, regular
7.5.5 Impact		Decision	Advice	Advisory on decisions	Advisory and Management	Discussion, Establishing of activities...
7.5.6 Involvement of the population		Ongoing	Ongoing	Ongoing	Ongoing	Ongoing or event-related
7.5.1 Form of representation	Municipal and political representatives	Elections	Elections		Appointment	
	Political delegates as representatives of the population	Elections	Elections	Elections		
	Local authority representatives	Elections				
	Involvement of delegates from associations/ societies	Appointment	Appointment			Nomination, invitation, summons
	Involvement of representatives from local authorities, administrations, universities	Appointment	Appointment	Per role	Appointment	Nomination, invitation, summons
	Involvement of local stakeholders or the public	Through the elected representative	Through the elected representative	Through the elected representative		Nomination, invitation, summons

Source: Own representation

7.5.2. Form of representation

A range of stakeholder groups are represented and participate in diverse groupings, bodies, working meetings, etc. Political representatives are responsible for the adoption of policy decisions in the relevant bodies. The Biosphere Committee and the Biosphere Advisory Board facilitate networking among representatives of interest groups and associations. In some cases, the projects directly involve local citizens through their representative bodies. The more practical the project, the more intensive local stakeholder participation will be.

7.5.3. Procedures for integrating the representative body of local communities

In some cases, such integration is directly regulated and is a legal requirement; this applies to the Biosphere Committee and Biosphere Advisory Board.

7.5.4. Longevity of the consultation mechanism

The longevity depends on the specific mechanism, working group and objective. Some of the consultation mechanisms are continuous and permanent, such as the bodies set up by the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*). Some of the mechanisms are ad hoc and initially limited to the project term. However, the aim is to achieve continuity in all cases.

7.5.5. Impact of the consultation on the decision-making process

In some cases, there is direct and practical relevance; this applies to decision-making by the Biosphere Committee, for example. In others, there is considerable scope for negotiation, e.g. in relation to project work. A consensus-based approach plays an important role here.

7.5.6. Involvement of the population

The population is indirectly and continuously involved via the political representatives and is also directly involved on an ad hoc basis. Where possible – as in the *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* project, for example – the population should be continuously involved as far as is feasible in order to contribute to projects' success.

7.6. Management and coordination structure

7.6.1. Changes regarding administrative authorities that have competence for each zone of the biosphere reserve

There were no changes during the reporting period.

7.6.2. Updated information about the manager(s)/coordinator(s) of the biosphere reserve

From 1 January 2014 to 31 August 2016, the former Director of the central administration of the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), Matthias Johann, was the head of the Biosphere Reserve Administration. The present Director, Dr Friedericke Weber, took over on 1 September 2016. In addition, the work of the Biosphere Reserve is supported and guided by the Chair of the District Council (*Bezirkstag*), Theo Wieder. He is also the current Chair of the Biosphere Committee, the Steering Group and the Biosphere Advisory Board and chaired the German-French Steering Committee in 2019/2020.

7.6.3. Changes with regard to the coordination structure

As of 1 January 2014, management responsibility for the Pfälzerwald Nature Park was transferred by legal ordinance from the Pfälzerwald Nature Park Association (*Verein Naturpark Pfälzerwald e. V.*) to the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) (Section 7.2).

7.6.4. Adaptation of the management/coordination to the local situation

The new regional management body is the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) (Chapter 2, Sections 7.2, 7.6.3).

7.6.5. Evaluation of the effectiveness of the management/coordination

Evaluation of the current Action Programme is a good approach to determine the effectiveness of proposed projects and measures.

7.7. Update on the management/cooperation plan/policy

7.7.1. Changes with regard to the management/cooperation plan/policy

As stipulated in Rhineland-Palatinate's State Nature Conservation Act (*Landesnaturschutzgesetz*), the Biosphere Reserve is required to develop and implement an Action Programme. The Action Programme, which is approved by the highest nature conservation authority in accordance with the State Nature Conservation Act (Landesregierung Rheinland-Pfalz, LNatSchG 06.10.2015, § 13), serves as the Biosphere Reserve's management plan. It defines the Biosphere Reserve's main objectives for a 10-year development period, describes the measures to be pursued and is backed by funding from the state (*Land*) of Rhineland-Palatinate under a financial plan. This ensures that the MAB Programme objectives are pursued, that development targets are achieved and that the Biosphere Reserve makes continuous progress.

A new Action Programme was developed in 2018/2019. As one of the main changes in the Action Programme for 2019-2028, the national and international requirements for biosphere reserves were taken into consideration in defining the functions and objectives (Section 7.7.2). In addition, a mission statement was developed for the Administration (Section 7.7.5).

7.7.2. Contents of the management/cooperation plan and whether it is binding

In terms of their content, the projects and measures described in the Action Programme cover all eight functional criteria, are aligned to the Lima Action Plan and address the conservation, development and logistic support functions (supporting document 7.8, Section 7.7.4).

In 2019, the Action Programme was approved by consensus by the elected representatives of the political groupings in the bodies of the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*), the Biosphere Committee and Pfalz District Council (Section 7.2). Through its adoption and approval by the state (*Land*) of Rhineland-Palatinate, the programme has binding force.

7.7.3. The role of the authorities in charge of the implementation of the plan

The Pfälzerwald Biosphere Reserve Administration is in charge of the implementation of the Action Programme. Projects carried out within the framework of the Action Programme are noted in the Biosphere Committee and, depending on the project content, are implemented in conjunction with Biosphere Reserve stakeholders.

7.7.4. How does the management plan address the objectives of the biosphere reserve?

The following measures are examples of how the content of the management plan addresses the functional criteria and the Lima Action Plan: Strategic Action Area A (e.g. development of a research network, establishment of ESD offers in the formal education sector) and Strategic Action Area C of the Lima Action Plan (e.g. development of sustainability principles in model businesses, development of criteria for biosphere municipalities).

7.7.5. Progress with regard to the guidelines of the management/cooperation plan/policy

The Action Programme for 2009-2018 was developed by the Pfälzerwald Nature Park Association (*Verein Naturpark Pfälzerwald e. V.*) in 2009 and its implementation was evaluated by staff from the Biosphere Reserve Administration in 2017 (supporting document 7.20). Two-thirds of the measures described in the Action Programme were carried out. A strong emphasis was placed on education and biological diversity as priority areas of the Biosphere Reserve's work. However, there was less scope to work on other topics, such as participation in the World Network, for a number of reasons, including priorities in project implementation, availability of funds and a lack of personnel. It was noted that the baseline funding from the state created the stability required for forward planning under the Action Programme, and this was viewed very positively. In addition, the work of the Biosphere Reserve Administration has become more transparent and its quality has improved: the 10-year timescale and the opportunity to amend the programme are appropriate for responding to new developments. The evaluation also looked at which projects should continue and defined priorities for the next decade. The main point of criticism expressed in relation to the Action Programme to 2018, namely its limited scope, was addressed through the adoption of broader fields of action and the development of a mission statement.

The Action Programme for 2019-2028 was developed on the basis of the evaluation in a participatory and integrated process with support from an external consultancy. As well as drawing on the expertise of Biosphere Reserve staff, telephone interviews were conducted with experts from the region and across Germany. The process was enhanced by a German-French technical dialogue with colleagues from the Northern Vosges Regional Nature Park, which included a comparison of planned measures. Diverse expert workshops and public events with representatives of various sectors and interest groups were also held. In total, around 200 participants from the region were involved.

7.7.6. Factors that impeded or helped with the implementation of the management/coordination plan/policy

The evaluation of the Action Programme for 2009-2018 (supporting document 7.20) shows that the Biosphere Reserve Administration frequently develops measures in cooperation with local stakeholders. The current Action Programme is ideal for the coordination and governance of the Biosphere Reserve: it provides a clear and well-defined structure with a timeframe for the implementation of measures, backed by funding from the state. The 10-year cycle and the option to amend the Action Programme provide additional flexibility. It thus offers scope to secure long-term funding for permanent measures and to implement a diverse range of activities.

7.7.7. Integration of the biosphere reserve in regional/national strategies

The Biosphere Reserve is integrated in a wide range of plans (Section 2.4.1). Through its participation in various bodies (supporting document 7.5) and contact with the public, the Biosphere Reserve is kept informed about local and municipal initiatives and endeavours to integrate them into its own planning as effectively as possible. As a public agency whose opinion must be sought, the Biosphere Reserve is involved in procedures conducted under public law (Section 2.3.9). The legal provisions pertaining to the Biosphere Reserve (i.e. the State Ordinance) are duly considered by planning bodies and are integrated into planning at the state and regional levels.

8. CRITERIA AND PROGRESS MADE

Brief justification of the way in which the biosphere reserve fulfils each of the criteria of Article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

(1) “Encompass a mosaic of ecological systems representative of major biogeographic region(s) (...)”

The Biosphere Reserve is located in the Atlantic biogeographical province of the *Palearctic biogeographical realm* and has temperate *broad-leaf forests* as its biome type. The site comprises, firstly, the Pfälzerwald (Palatinate Forest), a low mountain range with approximately 77 % forest cover, where coloured (bunter) sandstone is the formative rock, and, secondly, the Haardtrand, where viticulture predominates.

The spectrum of open habitats that form elements of the cultural landscape in the Pfälzerwald is diverse. The Pfälzerwald has a particularly high density and diversity of characteristic species, populations and habitats (Chapters 3 and 4).

(2) “Be of significance for biological diversity conservation”

Existing biotopes and landscape structures are preserved by deploying targeted measures in various projects (Section 4.2). A number of charismatic target species (supporting document 5.1), such as the Eurasian Lynx (*Lynx lynx*), have been reintroduced.

(3) “Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale”

The Biosphere Reserve supports sustainable development on a regional scale through projects (Sections 5.2, 5.4, 5.5, 5.7) and partnerships with a range of stakeholders. The universities and the Biosphere Reserve carry out research projects (Sections 6.1, 6.2). Education for sustainable development (ESD) promotes sustainability in a target group-appropriate manner (Section 6.4).

(4) “Have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3”

With an area of 178,497.62 hectares, the Biosphere Reserve has an appropriate size to fulfil these functions.

(5) “Appropriate zonation to serve the three functions”

The core areas were expanded to 3 % (nearly 5,400 ha) and are almost completely surrounded by buffer zones (supporting document 7.12). The Biosphere Reserve has appropriate zonation to serve the three functions (Sections 2.4.5, 2.4.8).

(6) “Organisational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve”

The Biosphere Reserve has a diverse organisational, administrative and participatory structure (Sections 7.2, 7.5) which enables public authorities, local communities and private interests to be involved in the fulfilment of its functions. Networking (supporting documents 7.4 and 7.5), not least on a transboundary basis, is of key importance for the Biosphere Reserve and is embedded in the mission statement (supporting document 7.7). The Action Programme was developed (Section 7.7.5) and the review was conducted (Sections 1.5.1-1.5.4) in a participatory process. Children, teenagers and young adults are involved in the work of the Biosphere Reserve (Section 2.4.9).

(7) Mechanisms for implementation

a) Mechanisms to manage human use and activities

Mechanisms to manage human activities include: (a) statutory provisions, e.g. ordinances, (b) planning, e.g. local development plans/land use plans, (c) technical planning, e.g. visitor management, management and development plans, (d) project-based approaches, e.g. the *Partners initiative*, grazing projects, (e) awareness-raising, e.g. ESD and public relations.

b) Management policy or plan

The new Action Programme was developed in a participatory process (Section 7.7.5).

c) Authority or mechanism to implement this policy or plan

The Action Programme is binding and is already being implemented (Sections 7.7.2, 7.7.3).

d) Programmes for research, monitoring, education and training

The Biosphere Reserve implements the aforementioned programmes together with its network partners (Sections 5.9, 6.1, 6.2, 6.4).

Pfälzerwald Biosphere Reserve’s cooperative activities with other biosphere reserves

The Biosphere Reserve cooperates with partners at the national, regional, bilateral and international level (Section 6.6.1).

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat

Obstacles (Section 2.3.9), challenges (Section 7.4.1) and solutions (Section 7.4.3) are described elsewhere in this report.

Main objectives of the Biosphere Reserve

In the Pfälzerwald, three interconnected objectives are pursued:

- (1) to preserve and further develop the cultural landscape in one of the largest contiguous forest areas in Western Europe and to shape ecological, economic and socio-cultural change in this region;
- (2) to further develop a model region for sustainable living by providing impetus and testing practical examples;
- (3) to further develop transboundary cooperation with the French partners in order to maximise the potential of a transboundary biosphere reserve in a more focused manner.

9. FURTHER DOCUMENTS

1) Annex 1: MABnet Directory of Biosphere Reserves

2) Annex II: Marketing and communication materials for the Biosphere Reserve

3) Annex III: Further Annexes

0. List of further annexes

1. Zonation and topography Pfälzerwald Biosphere Reserve

2. Land cover map Pfälzerwald Biosphere Reserve

- ✦ 2.1 Zonation and protected areas Pfälzerwald Biosphere Reserve

3. List of relevant legal documents

- ✦ 3.1 State Ordinance on the Pfälzerwald Biosphere Reserve as the German Section of the Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve

4. List of the Action Programme, the Land Use and Management/Cooperation Plans

- ✦ 4.1 Action Programme for the Pfälzerwald Biosphere Reserve as the German Section of the Palatinate Forest-North Vosges Biosphere Reserve 2019 – 2028

5. Updated species list

- ✦ 5.1 Exemplary species relevant to measures in the Pfälzerwald biosphere reserve

6. Updated list of the main bibliographical references

7. Further references

- ✦ 7.1 Communications Strategy for the Pfälzerwald Biosphere Reserve
- ✦ 7.2 Comparison of key extracts from the Nature Park Ordinance (Naturparkverordnung) and the Land ordinance regarding the Biosphere Reserve
- ✦ 7.3 Implementation of SDGs in the Pfälzerwald Biosphere Reserve
- ✦ 7.4 Networks, Committees and Working groups of the Pfälzerwald Biosphere Reserve
- ✦ 7.5 Expert Committees Involving the Pfälzerwald Biosphere Reserve
- ✦ 7.6 Organigram for the Management of the Pfälzerwald Biosphere Reserve
- ✦ 7.7 Mission Statement of the Pfälzerwald Biosphere Reserve within the UNESCO Pfälzerwald/Vosges du Nord Transboundary Biosphere Reserve
- ✦ 7.8 Mapping of extracts from the Action Programme of the Pfälzerwald Biosphere Reserve 2019 - 2028 to the three superordinate goals of the Biosphere Reserve
- ✦ 7.9 Biosphere Reserve media 2013-2020
- ✦ 7.10 Nature tours and educational exhibitions – our 2020 annual programme
- ✦ 7.11 Research and monitoring in the Pfälzerwald Biosphere Reserve area (2014-2020)
- ✦ 7.12 Buffering of the core areas
- ✦ 7.13 Ecosystem services with direct reference to the forest
- ✦ 7.14 Support measures taken during the Blue Plus Action and the Green Action in the Pfälzerwald Biosphere Reserve
- ✦ 7.15 Overview of LEADER regions and their supported projects in the Pfälzerwald Biosphere Reserve
- ✦ 7.16 Events at the Sustainability Centre 2013-2019
- ✦ 7.17 ESD in the Pfälzerwald-North Vosges Biosphere Reserve
- ✦ 7.18 Biosphere Schools project in the Pfälzerwald Biosphere Reserve
- ✦ 7.19 Involving the Population in the Work of the Pfälzerwald Biosphere Reserve
- ✦ 7.20 Evaluation of the Pfälzerwald Biosphere Reserve Action Programme (2009-2018)

10.ADDRESSES

10.1. Contact address of the biosphere reserve

Name: Biosphere reserve Pfälzerwald

Street or P.O. Box: Franz-Hartmann-Straße 9

City with postal code: 67466 Lambrecht

Country: Germany

Telephone: +49 (0) 6325 9552-0

E-Mail: info@pfaelzerwald.bv-pfalz.de

Web site address: www.pfaelzerwald.de

10.2. Administrative authorities for the core area(s):

Land Rhineland-Palatinate, Rhineland-Palatinate's Environment Ministry,
municipalities Neustadt and Kaiserslautern

Name: Ministry for Environment, Energy, Nutrition and forestry Rhineland-Palatinate

Street or P.O. Box: Kaiser-Friedrich-Straße 1

City with postal code: 55116 Mainz

Country: Germany

Telephone: 06131 162676

E-Mail: naturschutz@mkuem.rlp.de

Web site address: www.mkuem.rlp.de

10.2. Administrative authorities for the buffer zone(s)

Land Rhineland-Palatinate and local self-governments

Name: Ministry for Environment, Energy, Nutrition and forestry Rhineland-Palatinate

Street or P.O. Box: Kaiser-Friedrich-Straße 1

City with postal code: 55116 Mainz

Country: Germany

Telephone: 06131 162676

E-Mail: naturschutz@mkuem.rlp.de

Web site address: www.mkuem.rlp.de

10.2. Administrative authorities for the transition area(s): Land Rhineland-Palatinate and local self-governments

Name: Ministry for Environment, Energy, Nutrition and forestry Rhineland-Palatinate

Street or P.O. Box: Kaiser-Friedrich-Straße 1

City with postal code: 55116 Mainz

Country: Germany

Telephone: 06131 162676

E-Mail: naturschutz@mkuem.rlp.de

Web site address: www.mkuem.rlp.de

11. SUMMARY AND OUTLOOK

11.1 Summary: The Pfälzerwald Biosphere Reserve pursues three overarching objectives in the context of the MAB Programme: the further development of (1) a model region for sustainable living, (2) transboundary cooperation, and (3) the cultural landscape. During the 2014-2020 reporting period, numerous positive changes were achieved through projects and initiatives. The recommendations arising from the last periodic review (Chapter 1) were addressed: the Palatinate Association of Local Authorities (*Bezirksverband Pfalz*) is the new management body, the Pfälzerwald is a biosphere reserve under state (*Land*) law, the budget and staff support have increased, the core areas now cover 3 % of the site, a large-scale grazing strategy is being developed, wind energy generation is prohibited, opportunities for product marketing and sustainable tourism have been developed, ESD, research and monitoring have been strengthened, and the recognition value of the Biosphere Reserve has increased. The Biosphere Reserve's continued development resulted in significant changes (Chapter 2), with the additional financial and human resources available leading to an increase in activities. For example, a communications strategy was developed and the network of cooperation was strengthened. An ecosystem services project (Chapter 3) is under way. In the Biosphere Reserve's forests, the proportion of deciduous woodland increased, the forests in the Biosphere Reserve have aged and become more ecologically valuable and the state-owned forest in the Biosphere Reserve is fully FSC-certified. The status of the 25 habitat types in the "Biosphärenreservat Pfälzerwald" (Pfälzerwald Biosphere Reserve) Habitats Directive site was assessed. The development of species such as lynx (*Lynx lynx*) was positive. The biotope network was enhanced by measures such as the *LIFE Biocorridors* project and the expansion of the core areas and will be strengthened in future by the chance.natur project *New Shepherds' Routes in the Pfälzerwald*. Projects such as *Gardens for Biodiversity* (*Gärten für die Artenvielfalt – Jardiner pour la biodiversité*), *Endangered Species* (*Gefährdete Tierarten – Espèces animales en danger*), grazing and other nature conservation projects support the conservation function (Chapter 4). In relation to the development function (Chapter 5), various trends can be identified: in agriculture, the number of farms decreased, with a simultaneous trend towards more organic farming. The forestry sector is increasingly confronted with the problem of climate change and is responding with a forest management strategy. The Biosphere Reserve is promoting a sustainable economy through the expansion of the *Partners initiative*, the continued development of the *German-French biosphere farmers' markets* and the *Pfälzerwald lamb initiative*, but also through the Hiking Marathon, visitor management and the *Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate* project. Measures to protect the climate are implemented in the ZENAPA and *Pfälzerwald Dark-Sky Park* projects. In relation to the logistic function (Chapter 6), the areas of research and monitoring (e.g. research in natural forest reserves), ESD (e.g. improved offer with *Biosphere Guides*, *Junior Rangers*) and public relations underwent expansion. The cooperation with the Northern Vosges Regional Nature Park and Biosphere Reserve was strengthened and activities in the World Network were intensified.

The activities undertaken between 2014 and 2020 are based on altered structures (Chapter 7), mainly as a result of the transfer of management responsibility and the integration into the new management body's institutions. This has

resulted in continuous and enhanced inclusion of stakeholders. The Action Programme for 2019-2028 was developed in a participatory process with due consideration of the MAB objectives and is now being implemented. A mission statement (*Leitbild*) provides the framework for the work of the Biosphere Reserve Administration.

11.2 Outlook

The Biosphere Reserve has continuously addressed the MAB Programme objectives; the Action Programme for 2019-2028 integrates the Lima Action Plan targets and the eight functional criteria and is an ideal and proven framework for focused development and management of the site. For the decade commencing in 2021, the activities initiated must be taken forward and established on a permanent basis by:

- ✦ intensifying transboundary cooperation through the permanent establishment of joint projects and initiating new activities,
- ✦ establishing an international partnership,
- ✦ strengthening the Biosphere Reserve's own research and monitoring,
- ✦ achieving continuity for larger-budget projects such as the chance.natur project *New Shepherds' Routes in the Pfälzerwald*, the protection of the night sky, the SDG project and the German-French biotope network,
- ✦ consolidating the municipal network in order to increase awareness of the Biosphere Reserve and the public's identification with it,
- ✦ continuing and consolidating established activities such as *Biosphere Guides*, *Junior Rangers*, the *ESD programme*, visitor management, the *Partners initiative*, the *Pfälzerwald lamb initiative* and biosphere-appropriate "close to nature" forest management,
- ✦ continuous implementation of public relations activities now and in future with the aim of raising awareness of the Biosphere Reserve's objectives,
- ✦ expanding formal education, e.g. *Biosphere Schools*, *Biosphere Academy*.

In order to achieve continuity and compliance with these objectives, it is essential to work consistently on increasing the budget and staff support and raising public awareness, and also to strengthen and enhance the idea of the Biosphere Reserve as a model region for sustainable development and sustainable living.

DIRECTORIES

Figures

Figure 1: Recognition of the Gardens for Biodiversity project as a project of the UN Decade for Biodiversity	12
Figure 2: View from above of a German-French Biosphere Farmers' Market in Neustadt.....	14
Figure 3: Presentation of a Partner sign to Walddritter Südwest, a new Partner of the biosphere reserve.....	14
Figure 4: Organigram for the Administration (grey=Referate; yellow=post extended indefinitely (deficit); red=post extended indefinitely (sufficient); blue=project post (cease after end of project);.....	15
Figure 5: Organigram for the Management of the Biosphere Reserve	16
Figure 6: Development of Budget 2014-2021	18
Figure 7: Carrying out of workshops as part of the creation of the Communications Strategy 2019	19
Figure 8: Presentation about the chance.natur project New Shepherds' Routes in the Pfälzerwald at the 'What's New in the Biosphere' event' for local government decision-makers in Frankenstein in 2019	21
Figure 9: The Hambacher Schloss above Neustadt an der Weinstraße.....	22
Figure 10: Valorisation of Leinbachtal, where timber floating was carried out in the past.....	24
Figure 11: Group of Glan cattle in the Pfälzerwald Biosphere Reserve.....	25
Figure 12: In the past, water was dammed up in the artificial ponds (historical, artificially constructed bodies of stagnant water)	25
Figure 13: Humpback meadows as an old irrigation method in meadows.....	25
Figure 14: The team of the chance.natur project New Shepherds' Routes in the Pfälzerwald with a flock of sheep	26
Figure 15: Insight into the core area Quellgebiet der Wieslauter	29
Figure 16: Release of the lynx, Brano, with his tracking collar, into the Pfälzerwald Biosphere Reserve	30
Figure 17: Mapping of the Bechstein bat in the Pfälzerwald Biosphere Reserve.....	30
Figure 18: Mapping of old growth islands by two interns of the Pfälzerwald Biosphere Reserve as part of the LIFE Biocorridors project.....	31
Figure 19: Mapping of an orchid meadow in the chance.natur project New Shepherds' Routes in the Pfälzerwald.	31
Figure 20: Action: Felt-making with the Junior Rangers at the Shepherding Festival.....	33
Figure 21: Execution of Kaufland Experience Nature Days by the ESD staff of the Biosphere Reserve Administration	33

Figure 22: Fishing in the Biosphere Reserve to research the genetic diversity of fish species in the ECOSERV project	34
Figure 23: A meadow orchard at Schindhard, which was planted as part of the LIFE Biocorridors project.....	34
Figure 24: view of mixed forests within the Pfälzerwald Biosphere Reserve.....	35
Figure 25: Changes in the area occupied by species groups of trees 2013-2019.....	36
Figure 26: Tree species composition in the Pfälzerwald Biosphere Reserve 2019	36
Figure 27: Maintaining the landscape in Gräfenhausen with Heck cattle.....	39
Figure 28: Sighting of a lynx in the Pfälzerwald.....	41
Figure 29: Bat count to document the species occurrence in the Pfälzerwald Biosphere Reserve	41
Figure 30: Garden competition as part of the Gardens for Biodiversity project in 2020	42
Figure 31: Species spectrum in the five winning gardens in 2020.....	42
Figure 32: Measures taken of the local authorities surveyed to support the conservation function	44
Figure 33: Assessment of a garden as part of the garden competition in the Gardens for Biodiversity project in 2020	45
Figure 34: Planting fruit trees at Erlenbach in the LIFE Biocorridors project	46
Figure 35: Biosphere Reserve land cover in 2020 and changes in the land cover between 2013 and 2020.....	48
Figure 36: Growth of the average yield in the viticulture region of the Pfalz.....	51
Figure 37: Viticulture in the Pfälzerwald Biosphere Reserve.....	51
Figure 38: Employees in the rural districts and autonomous municipalities of the Biosphere Reserve who are subject to mandatory social insurance contributions	52
Figure 39: Number of guest arrivals and overnight stays in the association of municipalities and autonomous municipalities in the Biosphere Reserve	53
Figure 40: Number of accommodation providers and beds offered in the association of municipalities and autonomous municipalities in the Biosphere Reserve	54
Figure 41: Autumn walks in the Pfälzerwald Biosphere Reserve	54
Figure 42: Selection of existing references for the service quality of companies in the Biosphere Reserve	55
Figure 43: Sustainable tourism offers in tours with Biosphere Guides.....	55
Figure 44: Types of tourism being promoted in the local authority areas surveyed.....	56

Figure 45: Picnic at the Hellerhütte in the Pfälzerwald Biosphere Reserve.....	57
Figure 46: Hiking marathon in 2019.....	57
Figure 47: Cosy campfire on a trekking site in the Pfälzerwald Biosphere Reserve.....	58
Figure 48: Changes to the Partners of the Biosphere Reserve.....	59
Figure 49: Companies participating in the Food Action Days of the Pfälzerwald Biosphere Reserve 2015-2020	60
Figure 50: Shepherding Festival as part of a German-French biosphere farmers' market in Fischbach	60
Figure 51: SDG Launch event in 2019 for the Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project	62
Figure 52: General overview of activities in model municipalities mentioned in relation to SDG	63
Figure 53: Pavilion made of wood in the Diemerstein Valley	65
Figure 54: Grilled venison	65
Figure 55: Climate protection measures in municipalities.....	66
Figure 56: Different tree species play a part in forest development.....	67
Figure 57: Raising awareness in schools about the subject of climate change at the children's climate protection conference 2019 organised by the ZENAPA project	68
Figure 58: The Milky Way Arch at Schmalenberg.....	69
Figure 59: German-French Biosphere Farmers' Market in Lambrecht in 2018.....	70
Figure 60: Research in the Adelsberg forest nature reserve.....	72
Figure 61: View of the ecosystem research facility at Eußerthal.....	73
Figure 62: Tour with a Biosphere Guide	74
Figure 63: Forest Youth Games in the Pfälzerwald Biosphere Reserve	74
Figure 64: Visitor numbers for the Pfalzmuseum für Naturkunde – POLLICHIA-Museum.....	76
Figure 65: Tree canopy walkway at the Biosphere House in Fischbach.....	77
Figure 66: Opening of the special exhibition at the Pfalzmuseum für Naturkunde – POLLICHIA-Museum in 2018	77
Figure 67: No. of pieces of media information sent by the Biosphere Reserve Administration and the response in terms of press articles	78
Figure 68: Visitor behaviour on the Biosphere Reserve website 2019-2020	78

Figure 69: No. of clicks on selected Facebook posts in 2020.....	79
Figure 70: Tour of a winery with a delegation from the Lore Lindu Biosphere Reserve in Sulawesi in 2019	80

Tables

Table 1: Zoning.....	6
Table 2: No. of inhabitants	6
Table 3: Budget.....	6
Table 4: Cooperation framework	7
Table 5: Involvement of interest groups.....	9
Table 6: Coordinates.....	12
Table 7: Human Resources Development in the Biosphere Reserve 2014-2020	18
Table 8: SWOT analysis of the Communications Strategy.....	20
Table 9: Social and cultural embedding	22
Table 10: Status Assessment for the FFH 'Biosphere Reserve Pfalz' area	37
Table 11: Composition of the agricultural land in the Biosphere Reserve 2020	40
Table 12. Measures taken by the Biotope network.....	45
Table 13: Organic farms in the rural districts and autonomous municipalities in the Biosphere Reserve	50
Table 14: Overview of overnight stays 2013-2019 excl. campsites.....	53
Table 15: Actions required in the SDG model municipalities.....	64
Table 16: Research establishments and research topics in the Pfälzerwald Biosphere Reserve	71
Table 17: Type, form and duration of representation of the local population in the Biosphere Reserve	85

Infoboxes

Infobox 1: Communications Strategy	19
Infobox 2: Pfälzerwald Lamb Initiative	24
Infobox 3: Process of enlarging the core areas	32
Infobox 4: chance.natur project New Shepherds' Routes in the Pfälzerwald	39

Infobox 5: Grazing.....	40
Infobox 6: Pfälzerwald: SDG Model Region for a Sustainable Rhineland-Palatinate project.....	62
Infobox 7: Pfälzerwald Dark-Sky Park project	68
Infobox 8: Wasgau Border Forum	73
Infobox 9: Pfälzerwald Biosphere Guides	75

Literature

ADFC Bett+Bike Service GmbH (2021): Bett+Bike - Unterkunftssuche - Naturraum Pfalz. Available online at www.bettundbike.de/naturraum/?tx_bettundbikesearch_bubsearch%5Barea%5D=28&cHash=fbf3865a917e35156ec0249074a7e156, checked on 2/17/2021.

Bezirksverband Pfalz (2018): Resolution des Bezirksverbandes Pfalz gegen den Kerosinablass über dem Pfälzerwald und der Region Pfalz. Kaiserslautern. Available online at www.bv-pfalz.de/wp-content/uploads/2018/08/Beschlossene-Resolution.pdf, checked on 8/12/2020.

Bezirksverband Pfalz (2020): Handlungsprogramm des Biosphärenreservats Pfälzerwald - deutscher Teil des grenzüberschreitenden Biosphärenreservats Pfälzerwald-Nordvogesen für die Jahre 2019 bis 2028.

Bezirksverband Pfalz (2020b): Handlungsprogramm des Biosphärenreservats Pfälzerwald - deutscher Teil des grenzüberschreitenden Biosphärenreservats Pfälzerwald-Nordvogesen für die Jahre 2019 bis 2028.

Böckmann, L.; Fückel, S.; Jacobs, M.; Kirschey, T. (2019): Demografischer Wandel in Rheinland-Pfalz. Fünfte regionalisierte Bevölkerungsvorausberechnung (Basisjahr 2017). Statistisches Landesamt Rheinland-Pfalz (Statistik RLP). Bad Ems (Statistische Analysen, 48). Available online at www.statistik.rlp.de/fileadmin/dokumente/stat_analysen/RP_2070/Demografischer_Wandel.pdf, checked on 8/12/2020.

Bund für Umwelt und Naturschutz Deutschland, Landesverband Rheinland-Pfalz e.V. (BUND) (2020): Totfundmonitoring Wildkatze in Rheinland-Pfalz. Available online at www.bund-rlp.de/themen/tiere-pflanzen/wildkatze/totfundmonitoring, checked on 8/12/2020.

Bundesamt für Naturschutz (BfN) (2017): Positionspapier vom 14.09.2017 zum Aktionsplan von Lima des UNESCO-Programms „Der Mensch und die Biosphäre“. Umsetzung in Deutschland. Available online at www.bfn.de/fileadmin/BfN/internationalernaturschutz/Dokumente/MAB/Positionspapier_Umsetzung_Lima_Action_Plan_bf.pdf, checked on 8/18/2020.

Bürgerstiftung Pfalz (2020): Pfälzer Landmarkt. Klingenmünster. Available online at www.pfaelzer-landmarkt.de, checked on 8/17/2020.

Culinary Heritage (2021): Culinary Heritage Pfalz - The Region: Members List. Available online at www.culinary-heritage.com/memberslist.asp?regionid=76&show=All, checked on 2/17/2021.

DEHOGA Deutsche Hotelklassifizierung GmbH (DEHOGA) (2021): Deutsche Klassifizierung für Gastehäuser, Gasthöfe & Pensionen - Reiseempfehlung: die Pfalz. Berlin. Available online at www.g-klassifizierung.de/de/pfalz/, checked on 2/17/2021.

DEHOGA Deutsche Hotelklassifizierung GmbH (DEHOGA) (2021): Hotelstars Hotelsuche. Berlin. Available online at www.hotelstars.eu/de/deutschland/service/hotelsuche/, checked on 2/17/2021.

Deutscher Tourismusverband e.V. (DTV) (2021): Bundesweite Statistik zu Sterne-Unterkünften. Berlin. Available online at www.deutschertourismusverband.de/qualitaet/sterneunterkuenfte/bundesweite-statistik.html, checked on 2/17/2021.

Deutscher Wanderverband Service GmbH (2021): Wanderbares Deutschland - Übersichtskarte. Kassel. Available online at www.wanderbares-deutschland.de/regionen/uebersichtskarte, checked on 2/17/2021.

Dienstleistungszentren Ländlicher Raum Rheinland-Pfalz (DLR) (2021): Ökologischer Landbau in Rheinland-Pfalz. Available online at www.oekolandbau.rlp.de, checked on 2/25/2021.

Hohmann, U.; Hettich, U.; Ebert, C.; Huckschlag, D. (2018): Evaluierungsbericht zu den Auswirkungen einer dreijährigen Jagdruhe in der Kernzone „Quellgebiet der Wieslauter“ im Wildforschungsgebiet „Pfälzerwald“ (Long version). Zentralstelle der Forstverwaltung - Forschungsanstalt für Waldökologie und Forstwirtschaft Rheinland-Pfalz (FAWF). Trippstadt (Mitteilungen aus der Forschungsanstalt für Waldökologie und Forstwirtschaft Rheinland-Pfalz, 84/18). Available online at www.fawf.wald-rlp.de/index.php?eID=dumpFile&t=f&f=71190&token=595d4b29d017989d93bcd56375ad5c43611c3de, checked on 8/17/2020.

Industrie- und Handelskammer für die Pfalz (IHK Pfalz) (2018): Bruttowertschöpfung zu Herstellungspreisen in der Pfalz 2017 (Wirtschaftsdaten der Pfalz, 145). Available online at www.pfalz.ihk24.de/blueprint/servlet/resource/blob/1289494/bf492441335d8e2a515108084f7fa2ab/bruttowertschoepfung-data.pdf, checked on 2/11/2021.

Kreisverwaltung Südwestpfalz (2015): Südwestpfalz Barrierefrei. 3rd ed. Pirmasens. Available online at www.suedwestpfalz-touristik.de/files/downloads/pdf/swp-barrierefrei-web.pdf, checked on 8/12/2020.

Kremer, P. (2020): Zahl landwirtschaftlicher Betriebe hat sich etwa alle 20 Jahre halbiert. Statistisches Landesamt Rheinland-Pfalz (Statistik RLP). Available online at www.statistik.rlp.de/no_cache/de/einzelansicht/news/detail/News/2884, checked on 2/11/2021.

Landesamt für Umwelt Rheinland-Pfalz (LfU) (2020): Planung vernetzter Biotopsysteme. Mainz. Available online at www.lfu.rlp.de/de/naturschutz/planungsgrundlagen/planung-vernetzter-biotopsysteme, checked on 8/12/2020.

Landesamt für Umwelt Rheinland-Pfalz (LfU) (2020): Projekt "Wooge und Triftbäche im Pfälzerwald". Available online at www.aktion-blau-plus.rlp-umwelt.de/servlet/is/8940, checked on 8/12/2020.

Landesamt für Umwelt, Wasserwirtschaft und Gewerbeaufsicht Rheinland-Pfalz (LUWG) (2011): PAULa Vertragsnaturschutz. Grünland. 3rd ed. Mainz. Available online at www.lfu.rlp.de/fileadmin/lfu/Naturschutz/Dokumente/paula-gruenland_monitor.pdf.

Landesforsten Rheinland-Pfalz (Landesforsten RLP) (2018): Forstfachlicher Beitrag zum FFH-Bewirtschaftungsplan "Biosphärenreservat Pfälzerwald". DE-6812-301. Available online at map-final.rlp-umwelt.de/docs_kartendienste/BWP_2013_05_S/BWP_2013_05_S_Beitrags_Forst_FFH.pdf, checked on 2/11/2021.

Landesforsten Rheinland-Pfalz (Landesforsten RLP) (2020): Grundsatzanweisung Waldverjüngung im Klimawandel. Wiederbewaldung, Vorausverjüngung und Jungwaldpflege. Version 1.1. Available online at www.kwis-rlp.de/fileadmin/website/klimakompetenzzentrum/Klimawandelinformationssystem/Handlungsfelder/Wald/Ergaenzende_Baumarten/Grundsatzanweisung_Waldverjuengung_im_Klimawandel_V_1.0_2020-02-17.pdf, checked on 2/25/2021.

Landesregierung Rheinland-Pfalz (10/6/2015): Landesnaturschutzgesetz. LNatSchG. Source: Gesetz- und Verordnungsblatt Rheinland-Pfalz, 2015, S. 283. Available online at www.landesrecht.rlp.de/jportal/?quelle=jlink&query=NatSchG+RP&psml=bsrlpprod.psml, checked on 8/17/2020.

Landschaftsverband Rheinland (Ed.) (2020): KuLaDig. Kultur.Landschaft.Digital. Available online at www.kuladig.de, checked on 8/12/2020.

Lichtenberger, E.; Peinemann, C. (2018): Regionalpark Rhein-Neckar. Landschaft in Bewegung. 4. Wettbewerb, Evaluierung und Umsetzung der Projekte. Metropolregion Rhein-Neckar (MRN). Mannheim. Available online at www.m-r-n.com/projekte/wettbewerb-landschaft-in-bewegung/4_Wettbewerb_Broschuere_web.pdf, checked on 2/11/2021.

Ministerium des Innern und für Sport (MDI) (5/18/2020 (Dritte Teilfortschreibung)): Regionaler Raumordnungsplan Westpfalz IV. Zweite Teilfortschreibung 2016. Dritte Teilfortschreibung 2018. ROP. Source: Staatsanzeiger Rheinland-Pfalz Nr. 17 (Zweite Teilfortschreibung) und 28 (Dritte Teilfortschreibung). Available online at www.pg-westpfalz.de/media/rop-iv-tf2-tf3-2020, checked on 8/18/2020.

Ministerium des Innern und für Sport (MDI) (7/21/2021): Dritte Landesverordnung zur Änderung der Landesverordnung über das Landesentwicklungsprogramm (Dritte Teilfortschreibung LEP IV). LEP IV. Source: Gesetz- und Verordnungsblatt Nr. 11, 2017, S. 162-180. Available online at www.mdi.rlp.de/fileadmin/isim/Unsere_Themen/Landesplanung_Abteilung_7/Landesplanung/GVBl.Nr._11_vom_20.07.2017.pdf, checked on 8/12/2020.

Ministerium für Umwelt, Energie, Ernährung und Forsten Rheinland-Pfalz (Ed.) (2016): Managementplan für den Umgang mit Luchsen in Rheinland-Pfalz. Stiftung für Natur und Umwelt Rheinland-Pfalz (SNU). Mainz. Available online at www.mueef.rlp.de/fileadmin/mulewf/Publikationen/Managementplan_fuer_den_Umgang_mit_Luchsen_in_RLP.pdf, checked on 8/12/2020.

Ministerium für Umwelt, Energie, Ernährung und Forsten Rheinland-Pfalz (MUEEF) (2018): Die Vielfalt der Natur Bewahren. Biodiversitätsstrategie für Rheinland-Pfalz. aktualisierte Neuauflage. Mainz. Available online at www.mueef.rlp.de/fileadmin/mulewf/Publikationen/Die_Vielfalt_der_Natur_bewahren_2018.pdf, checked on 2/11/2021.

Ministerium für Umwelt, Landwirtschaft, Ernährung, Weinbau und Forsten Rheinland-Pfalz (MULEWF) (2011): BAT-Konzept. Konzept zum Umgang mit Biotopbäumen, Altbäumen und Totholz bei Landesforsten Rheinland-Pfalz. Mainz. Available online at www.wald-rlp.de/fileadmin/website/forstamtsseiten/trier/bilder/Infothek/BAT-Konzept_RhLPf_August_2011.pdf, checked on 2/25/2021.

Ministerium für Umwelt, Landwirtschaft, Ernährung, Weinbau und Forsten Rheinland-Pfalz (MULEWF) (Stand 2015): Managementplan für den Umgang mit Wölfen in Rheinland-Pfalz. Mainz. Available online at www.snu.rlp.de/fileadmin/3_Projekte/2_Wolf/PDF/Wolfmanagementplan_Rheinland-Pfalz_Stand_16.03.2015.pdf, checked on 2/25/2021.

Ministerium für Verkehr und Infrastruktur Baden-Württemberg (MVI) im Einvernehmen mit dem Ministerium für Wirtschaft, Klimaschutz, Energie und Landesplanung Rheinland-Pfalz (MWKEL) (12/15/2014): Einheitlicher Regionalplan Rhein-Neckar.

Ministerium für Wirtschaft, Verkehr, Landwirtschaft und Weinbau Rheinland-Pfalz (MWVLW) (2019): Agrarbericht 2019. Mainz. Available online at mwvlw.rlp.de/fileadmin/mwkel/Broschueren/Agrarbericht_2019.pdf, checked on 2/11/2021.

Ministerium für Wirtschaft, Verkehr, Landwirtschaft und Weinbau Rheinland-Pfalz (MWVLW) (2019): 21. Sitzung der Enquete-Kommission 17/1 "Wirtschafts- und Standortfaktor Tourismus in Rheinland-Pfalz" am 30. August 2019. TOP Anhörverfahren zum Thema "Tourismus für alle". Stellungnahme der Landesregierung. Available online at www.mwvlw.rlp.de/fileadmin/mwkel/Abteilung_3/Tourismus/Tourismus_fuer_Alle.pdf, checked on 2/25/2021.

Ministerium für Wissenschaft, Weiterbildung und Kultur - Kulturland Rheinland-Pfalz (MWWK - Kulturland Rheinland-Pfalz) (2020): Immaterielles Kulturerbe: Weinkultur und Hüttenkultur weitergeleitet. Available online at www.kulturland.rlp.de/de/aktuelles/detail/news/detail/News/immaterielles-kulturerbe-weinkultur-und-huettenkultur-weitergeleitet, checked on 8/12/2020.

Mountainbikepark Pfälzerwald e.V. (2021): Mountainbikepark Pfälzerwald. Trippstadt. Available online at www.mountainbikepark-pfaelzerwald.de/gastgeber.html, checked on 2/17/2021.

Naturpark Pfälzerwald (2015): Die Situation des pfälzischen Glanrindes. Auswertung der Befragung und Status Quo Analyse. Final version.

Naturpark Pfälzerwald (2016): Grundlagenstudie zur Errichtung eines Kulturlandschafts- und Infozentrums am Haardtrand (Long version). Not published. With assistance of U. Sassenborn, R. Trimborn.

Obere Jagdbehörde (9/15/2020): Rechtsverordnung über die Wahrnehmung des Jagdrechts zur Wildtierregulierung in den Kernzonen des Biosphärenreservats Pfälzerwald als deutschem Teil des grenzüberschreitenden Biosphärenreservats Pfälzerwald-Nordvogesen. Source: Staatsanzeiger für Rheinland-Pfalz, Nr. 34, S. 603.

Parc naturel régional des Vosges du Nord (PNRVN) (2018): Des produits locaux dans un réseau de boutiques. Available online at www.parc-vosges-nord.fr/article/des-produits-locaux-dans-un-reseau-de-boutiques, checked on 8/17/2020.

Pfalz.Touristik e.V. (2019): Die Pfalz. Komfortabel & barrierefrei. Neustadt a.d. Weistraße. Available online at www.pfalz.de/sites/default/files/media/file/2020-01/pz911351_borschure_web.pdf, checked on 2/17/2021.

RegioAkademie des Bezirksverbandes Pfalz (RegioAkademie); Université Populaire Pamina Volkshochschule; FemmesPaminaFrauen e.V. (2016): Report Projekt Beteiligt?! Projet Impliquées?! Beteiligung von Frauen an gesellschaftlichen und politischen Entscheidungsprozessen am Oberrhein. Lambrecht. Available online at www.oberrheinkonferenz.org/de/wirtschaft/Frauennetzwerk.html, checked on 8/12/2020.

Rheinland-Pfalz Kompetenzzentrum für Klimawandelfolgen bei der Forschungsanstalt für Waldökologie und Forstwirtschaft (Rheinland-Pfalz Kompetenzzentrum für Klimawandelfolgen) (2020): KlimawandelAnpassungsCOACH RLP. Available online at www.kwis-rlp.de/de/anpassungsportal/projekte-kommunen-und-unternehmen/klimawandelanpassungcoach-rlp, checked on 8/17/2020.

Schmidt, M. S.; Weigand, K.; Gehrlein, U. (2020): Kommunenübergreifende Synopse der Bestandsaufnahme. Pfälzerwald: SDG Modellregion für ein nachhaltiges Rheinland-Pfalz. unveröffentlichte Präsentation. Institut für Ländliche Strukturforchung (ifls), 11/10/2020.

Schramek, J.; Gehrlein, U.; Spengler, B.; Behrmann, C. (2020): Sozioökonomische Analyse als Teil der Pflege- und Entwicklungsplanung für das Naturschutzgroßprojekt "Neue Hirtenwege im Pfälzerwald". Not published. UNESCO Biosphärenreservat Pfälzerwald-Nordvogesen (BR Pfälzerwald).

Schuler, H.; Weber, F. (2018): Unterstützung für eine vom Aussterben bedrohte Art. In LandInForm Spezial (8), p. 36.

Slow Food Deutschland e.V. (2021): Slow Food Deutschland - Vor Ort: Pfalz. Berlin. Available online at www.slowfood.de/slow_food_vor_ort/pfalz, checked on 2/17/2021.

Statistisches Landesamt Rheinland-Pfalz (Statistik RLP) (2019): Tourismus im Jahr 2018. Bad Ems (Tourismus Aktuell, 1/2019). Available online at www.statistik.rlp.de/fileadmin/dokumente/nach_themen/tou/tourismus_aktuell/2018_TA_4.Vj.pdf, checked on 8/12/2020.

Statistisches Landesamt Rheinland-Pfalz (Statistik RLP) (2021): Erwerbstätigkeit: Basisdaten regional. Arbeitslose im Januar 2021 nach Verwaltungsbezirken. Available online at www.statistik.rlp.de/de/gesamtwirtschaft-umwelt/erwerbstaetigkeit/basisdaten-regional/tabelle-7, checked on 2/11/2021.

Struktur- und Genehmigungsdirektion Süd (SGD Süd) (2019): NATURA 2000 Bewirtschaftungsplanentwurf (BWP-2013-05-S). Teil A: Grundlagen. Neustadt a.d. Weinstraße. Available online at www.kaiserslautern.de/mb/themen/umwelt/natur/pdf/bwp_2013_05_s_fachplan_grundlagen.pdf, checked on 2/11/2021.

Technische Universität Kaiserslautern (TU Kaiserslautern) (2021): T-Lab Campus Diemerstein. Kaiserslautern. Available online at www.architektur.uni-kl.de/tlab/aktuelles/T-Lab-Campus-Diemerstein, checked on 2/25/2021.

UNESCO Biosphärenreservat Pfälzerwald-Nordvogesen (BR Pfälzerwald) (2014): Marketingstudie über die deutsch-französischen Bauernmärkte des Biosphärenreservates Pfälzerwald-Nordvogesen e.V. not published.

UNESCO Biosphärenreservat Pfälzerwald-Nordvogesen (BR Pfälzerwald) (2016): Projektantrag Naturschutzgroßprojekt chance.natur "Neue Hirtenwege im Pfälzerwald" - revised version -, not published.

UNESCO Biosphärenreservat Pfälzerwald-Nordvogesen (BR Pfälzerwald) (2018): Abschlussbericht zum Projekt "Vermarktung regionaler Qualitätsprodukte aus dem Biosphärenreservat Pfälzerwald". Einzelvorhaben Nr. 25 des Handlungsprogramms.

UNESCO Biosphärenreservat Pfälzerwald-Nordvogesen (BR Pfälzerwald) (2019): Kommunikationsstrategie für das Biosphärenreservat Pfälzerwald-Nordvogesen. not published. With assistance of B. Evers, R. Gwinner, P. Hofferberth. Bonn.

Verein Naturpark Pfälzerwald e.V. (2013): Bericht zur zweiten periodischen Überprüfung des Biosphärenreservats Pfälzerwald als deutscher Teil des Biosphärenreservats Pfälzerwald-Nordvogesen ("Evaluierungsbericht 2013"). Lambrecht. Available online at www.pfaelzerwald.de/wp-content/uploads/2016/05/Evaluierungsbericht_BR_Pf%C3%A4lzerwald-Nordvogesen_Endfassung.pdf, checked on 8/18/2020.

Wittmann, S. (2018): Ergebnisbericht zur Studie "Potenziale regionaler Produkte in der LEADER-Region Pfälzerwald plus und den Städten Pirmasens und Zweibrücken". Edited by Lokale Aktionsgruppe Pfälzerwald plus (LAG Pfälzerwald plus). Pirmasens. Available online at www.pfaelzerwaldplus.de/wp-content/uploads/2018/07/PfwPlusGenuss_Ergebnisbericht_01.pdf, checked on 8/12/2020.

ZukunftsRegion Westpfalz e.V. (2020): WESTPFALZwiki. Available online at www.westpfalz.wiki, checked on 8/10/2020.