



LIFE15 CCM/DE/000138

LIFE project «Reduction of CO₂ emissions by restoring degraded peatlands in
Northern European Lowland»

LIFE Peat Restore

Socio-economic impact assessment

GERMANY



1. Biesenthaler Becken Nature Reserve

Local social-economy:

Biesenthaler Becken was declared a nature reserve in 1999, as well as a Natura 2000 site. The nature reserve is located within the Barnim Nature Park, in northern Berlin, and covers a surface of 1,000ha. Use of the grasslands was partly given up in the last decades, because the wet soils could not be profitably cultivated. Presently, it is still possible to observe rare species as well as the impacts of century old, extensive land use.

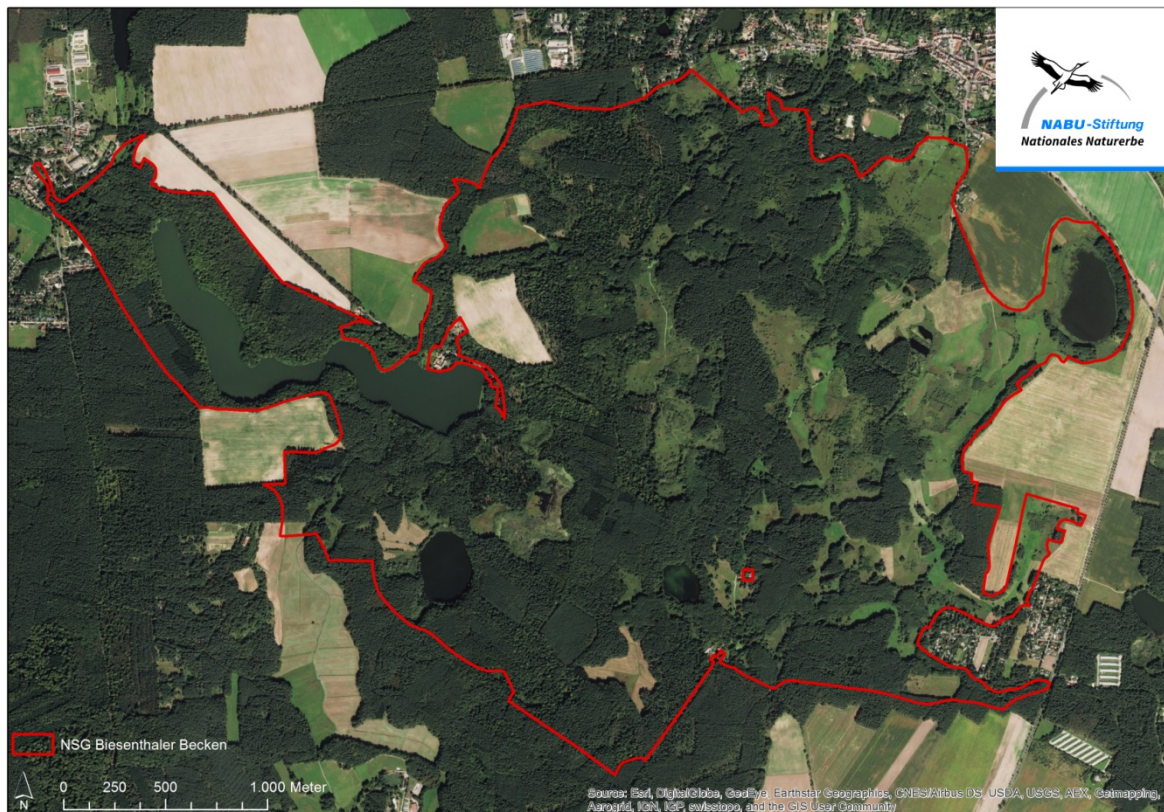
An executive order regulates the economic and social activities within the nature reserve and sets nature protection targets to guarantee a sustainable and extensive cultivation, in order to keep the pressure low. Restrictions to cultivation, ploughing, drainage, infrastructure and trespass rights limit human activities in the area. Nonetheless, several actions are still allowed: hunting, fishing and agricultural and forestry operations can be performed. Forestry plays an especially important role, as the area not only contains near natural forests but also commercial forest sections where reforestation with domestic tree species is carried out after felling. Farming activities bordering protected areas are restricted. Also, the area is valuable for scientific research purposes – geological and ecosystem. The landscape of the basin, formed as glacier tip, is unique in Brandenburg and provides geological evidence of an ice-age landscape development and documents the vegetation history of the actively growing peat.

The NABU Foundation owns parts of the nature reserve. Its management seeks the conservation and improvement of the habitat quality. Grasslands and pastures are only leased with environmental safeguards, so an environmentally friendly cultivation is guaranteed. The agreement to lease fishing rights is also accompanied by strong restrictions; in fact, fishing in waterside areas is forbidden.

Moreover, Biesenthaler Becken is known and enjoyed for trekking, cycling and horseback riding, especially by day trippers from Berlin. Stated aims of the Private Nature Reserve do not include tourism aspirations. Visitor entrance is restricted.

NABU properties land use distribution: Agriculture: 70,76 ha; Forest conversion: 136,62 ha; Wilderness: 229,19 ha; Fishing: 9,31 ha; Others: 3,83 ha.

The project sites: are located within the Biesenthaler Becken nature reserve. The 15.5 hectares of bog forests are drained by ditches, which lead to peat degradation and gradual conversion of pines and beech tree species, which are not typical for peatland habitats.



Satellite image of the NABU owned area (1.000 ha). The project sites consist of 3 small areas within the nature reserve, covering a total of 15,5 ha.

Local stakeholders:

- Neighbours – 2 private owners
- Residents of neighbouring communities – Biesenthal, Rüdnitz, Lanke und Ladeburg
- Local associations (e.g. Biesenthaler Fishing Association, Nature Friends Biesenthal, Citizens forum Local Agenda 21 Biesenthal, etc.),
- Restoration and Planning companies
- Peat consumers – gardening, horticulture
- Local decision-makers – the municipalities of Biesenthal, Rüdnitz, Lanke and Ladeburg, department of Biesenthal-Barnim
- Tourists

Impacts of project actions: Local socio-economic impacts are expected to be generally low, due to the isolated nature of the project sites, whereby visitor entrance is restricted.

Communication activities within the project – material dissemination, instalment of information panel and signs on site, project website, and a documentary film – are expected to reach local audiences and raise awareness of the existing peatland in the local area and its importance for climate and other ecosystem services. Assuming at least some of local residents are also peat consumers, communication activities may impact their awareness level of the importance of peatlands and of purchasing gardening products without peat.



Locally, the instalment of information panels near the project areas is the most direct and likely most effective method to reach local residents and is intended to inform them of the restoration efforts and benefits of restored peatlands. Indirectly, access to the project website (electronic address provided in the panel) and documentary film are further useful methods to reach local audiences.

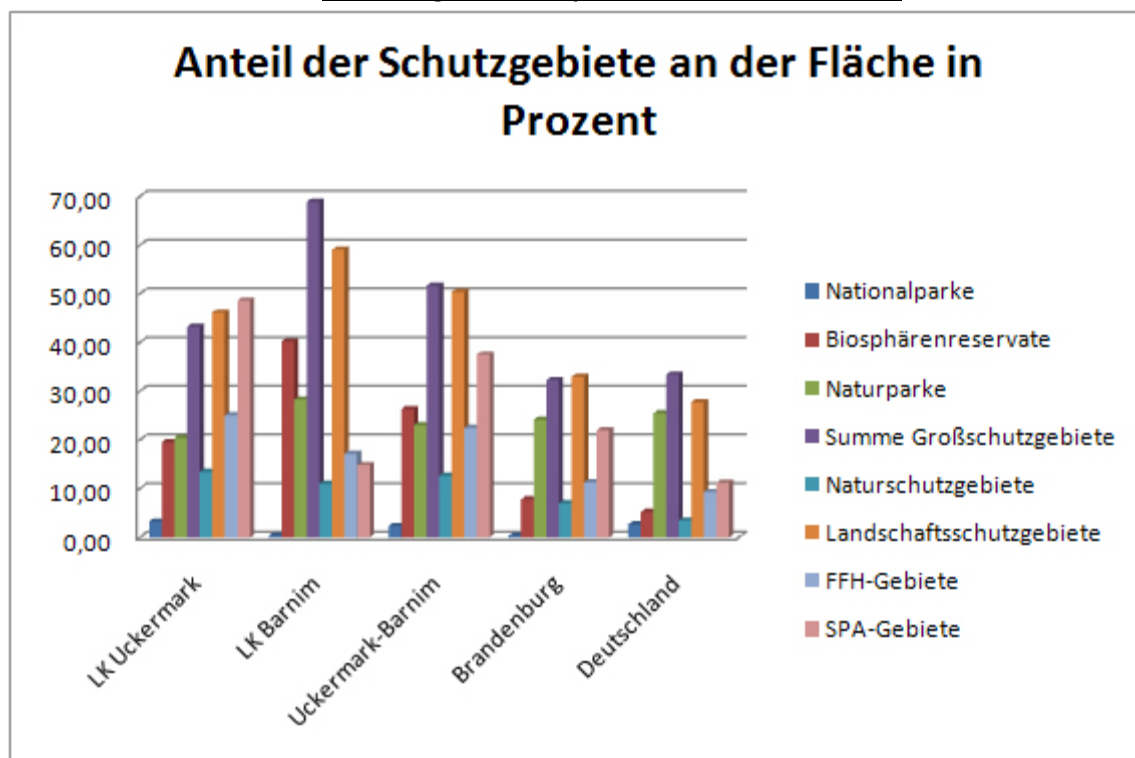
Restoration measures will have direct economic impact through a variety of service contracts: to collect data (e.g. vegetation surveys, mapping, etc.), creation of technical designs for restoration plans, filling ditches and dam building, direct GHG measurements (in collaboration with Humboldt University and self-employed professional), instalment of signs, etc.

2. District of Barnim

Regional social-economy:

Barnim contains 25 municipalities, extending over 1.495 km², of which 45,7% is covered by forests and 5,1% by water. Large sections of the county are under conservation protection status, most famous the biosphere reserve Schorfheide-Chorin.

Percentage share of protected areas in the area



1. National park, 2. Biosphere Reserve, 3. Nature park, 4. Total large conservation areas, 5. Landscape protected areas, 6. Fauna Flora Habitat areas, 7. Special Protection Areas

The number of residents increased in the last 30 years by 177.411 people (Effective 2017), but forecasts show that a trend of decline will start by around 5% until 2025. Compared to other counties, Barnim is scarcely populated (118 residents/km²) and poorly developed, regional added value is low and there are few manufacturing business. The number of employments increased between 2000 and 2013, but this was not achieved by own efforts. Data show that residents benefited from the advancing offers outside the county, e.g. Berlin. A growing number of people



commute to their work places. Nevertheless, this shows that the area is attractive as residential area, considering many commuters decide to stay. Unemployment has continued to drop since 2000 (15,7%) to just 8,8% (2013). Due to demographic trends, younger generations find jobs easier (12,7% to 9,4%), while older groups tend to be unemployed now more often (8% to 10,9%).

Low unemployment combined with high investments point to a growing economy in the region, thanks to municipalities as well as efforts from citizens and business associations. The economic structure of the Barnim County is shaped by small and medium-sized companies. Innovative and technology-oriented companies, including eco-technologies, are a growing component of the regional growth in Eberswalde.

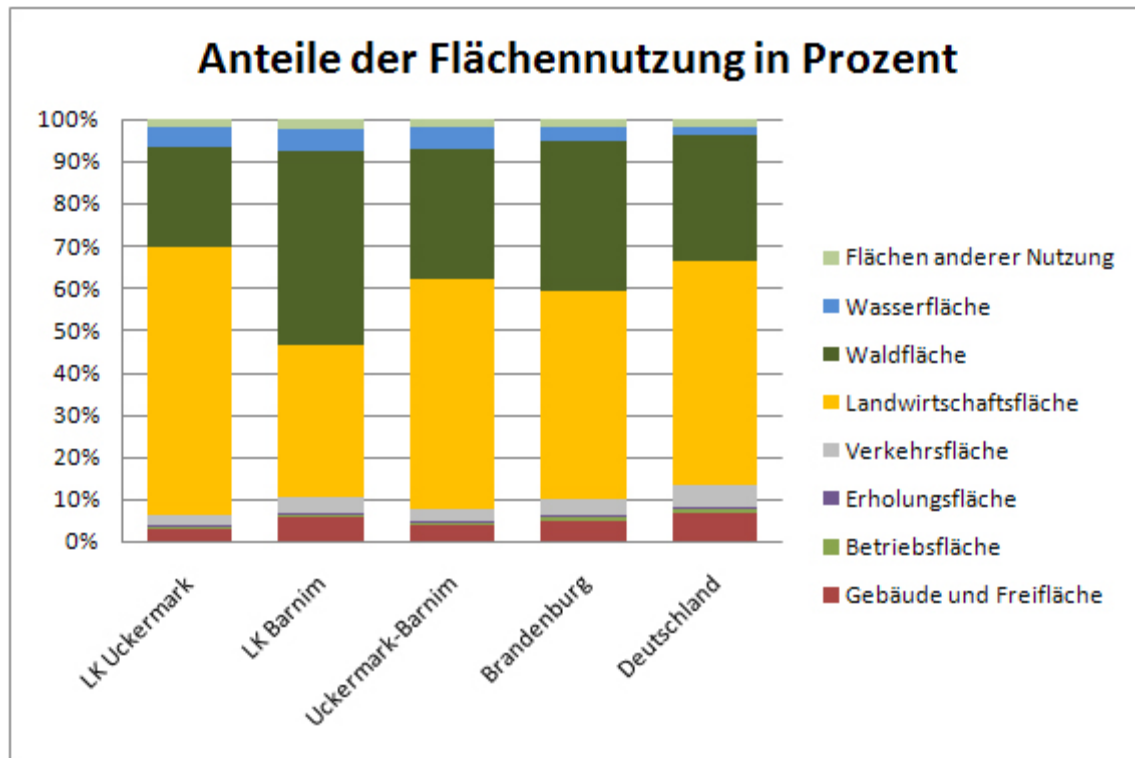
For Brandenburg, food industry and tourism are important components of the regional economy, contributing to added value and employment. The economic output is low compared to the rest of the state; the GDP p.p. of 46.700 Euro per employed person (2011) is ranked 6th (state Brandenburg: 52.715 Euro). The sectors of metal processing, wood and furniture industry as well as construction industry are strongly represented, due to a long commercial tradition. However, while the production sector represents 19% of the gross added value, much lower than in the state (27%), the service sector is more significant than in Brandenburg (71%) with 80%. Moreover, eco-tourism and wellness sectors are growing, although agriculture and forestry is still important in rural areas.

The primary industries – agriculture, forestry and fishing – became clearly less important since 1990, mainly due to decreasing employment provision. Nevertheless, forestry is still today one of the traditional strengths of Barnim District; such activity is based on the extensive woodlands belonging to the Schorfheide-Chorin Biosphere Reserve and the Barnim Nature Park. In many villages stable agricultural businesses are an important factor for rural development. More than 17% of the agricultural surfaces are cultivated organically (state Brandenburg 10,7%). One of the drivers for this progress is the certification label of the biosphere reserve Schorfheide-Chorin, which promotes marketing and networking in line with nature conservation. Currently, 80 producers are registered at the label, 35 of whom are located in Barnim. The link between regional products and services – including culture, nature, gastronomy and tourism – offers opportunities which exceed the biospheres borders.

The region provides high potential in several business sectors, such as renewable energies, wood industry, tourism and health. In fact, tourism in Barnim is a growing sector. Many lakes and vast forests provide high recreational value, which is enjoyed especially by Berlin residents. Since 1993 the number of overnight stays has doubled, around 10m daily visitors and 1,6m overnight guests arrive in the region every year. Accordingly, the number of employees in this sector increased in the last years, currently about 9,500 people work here.



Share of land use in percent



1.Areas of other use, 2.Water surfaces, 3.Woodlands, 4.Farm land, 5.Traffic area, 6.Recreational area, 7.Operating area, 8.Buildings and open spaces

The regional economy explores its nature potential, based on nature tourism: water related activities, as well as trekking and cycling. Additionally, the range of studies offered by the University Eberswalde further explores the nature potential of the region, shown clearly by its most relevant faculties: of forestry and wood techniques, landscape conservation and economics as well as organic farming and sustainable tourism.

In 2007 the local action group LAG Barnim collaborated to create a new strategy for regional development as part of the LEADER-contest of the state Brandenburg. The region was approved as official LEADER-region by the EU for 2007-2013 as well as for 2014-2020. Projects supporting goals of the programme will be funded, e.g.: creation of regional added value and jobs, nature and culture, tourism and visitors, as well as conservation and maintenance of culturally formed landscapes.

To conserve its landscape and thereby its attractiveness as living and working areas, the County incorporated a Zero-Emissions-Plan in the policy strategy in 2008. Central focus points of policy implementation are energy generation, energy efficiency, education and research, as well know-how-growth and stimulating of innovations. The County is exploring the region's potential and resources to find ways to use recycling and waste material as energy sources.



Regional stakeholders:

- Barnim Nature Park: 750 m2 in Berlin and Brandenburg, including Administration, Visitor Centre and the Barnim Nature Park Tourism Association
- Other relevant nature reserves and protected areas (e.g. Biosphere Reserve Schorfheide-Chorin, National Park Unteres Odertal)
- Regional associations (e.g. Nature Friends, Barnim Farmers Association, Barnim action group (regional development - LEADER)
- Tourists
- Local projects: Bernau.Pro.Klima (climate adaption project in the county)
- Regional environmental authority: Barnim nature conservation authority
- Science and Research Institutions: Eberswalde University for Sustainable Development, Centre for Economics and Ecosystem Management
- Regional companies: Barnim metal network, Economic and Tourism Development Company Ltd., Barnim Entrepreneurs association
- Tourist information centres: Wandlitz, Biesenthal
- Peat consumers – gardening, horticulture

Impacts of project actions: Regional audiences will be reached through various channels. Communication activities within the project – material dissemination, transportable exhibition, project website and a documentary film – are expected to reach regional audiences and raise awareness of peatland's importance for the climate and other ecosystem services.

The number of electronic publications downloaded from the project website (e.g. project brochures with key scientific data about peatlands and their contributions, Legal Analysis of peatland protection, etc.) will be measured. Although the geographical location of downloads cannot be determined, it is expected that a certain proportion of the audience reached will come from the region where the project sites are. Moreover, the number of views of the documentary film (which will be freely accessible on different platforms at the end of the project) will be measured. The film will address project activities and importance of peatland restoration, among other related themes.

Promotional material will be disseminated in scientific conferences and regional events, including the transportable exhibition. Assuming at least some regional residents are also peat consumers, communication activities may impact their awareness level of the importance of peatlands and of purchasing gardening products without peat. The number of regional events and conferences, as well as the number of their participants will be measured.

Restoration measures will have indirect economic impact to the Barnim region through a variety of service contracts: to collect data (e.g. vegetation surveys, mapping, etc.), to create technical designs for restoration plans, filling ditches and dam building, direct GHG measurements (in collaboration with Humboldt University and self-employed professional), instalment of signs, etc. The number of companies and/or professionals hired, as well as the amount spend will be calculated at the end of the project.



The objectives of LIFE Peat Restore are in line with the socio-economic goals of the Barnim district and will contribute to their Zero Emissions Plan and the region's added value. The GHG emissions data collected through GEST estimates as well as direct measurements may be added to the regional GHG inventory. On the long-term, the GHG sequestered by the restored peatland area will also contribute to the emission's performance of Barnim District. Additionally, the project will have some impact – proportionate to its small project areas – through emissions avoided, as without the restoration of the project areas, significant GHG from the degraded peatland would continue to be emitted.



3. Germany national economy

National social-economy:

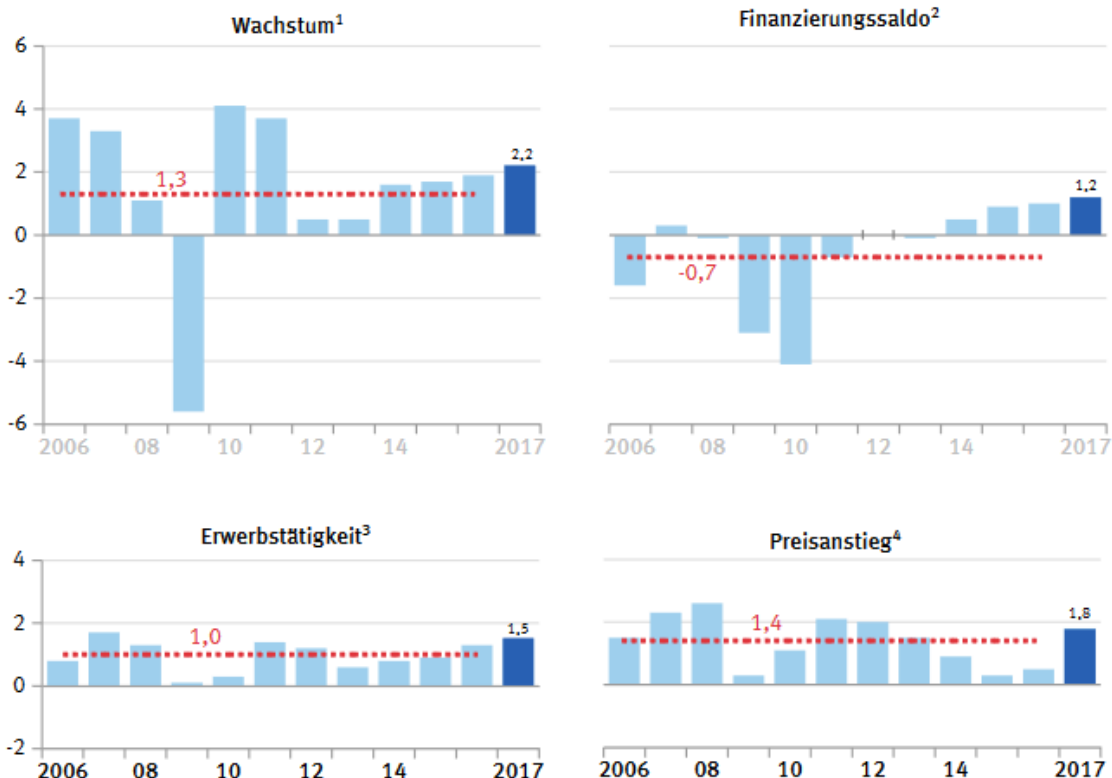
Forecasts on the development of the German economy estimate an increase between 1.5% and 2.5% for 2018 and 2019.

Macroeconomic data for Germany

Gesamtwirtschaftliche Konjunkturdaten für Deutschland

In %

..... Durchschnitt 2006–2016



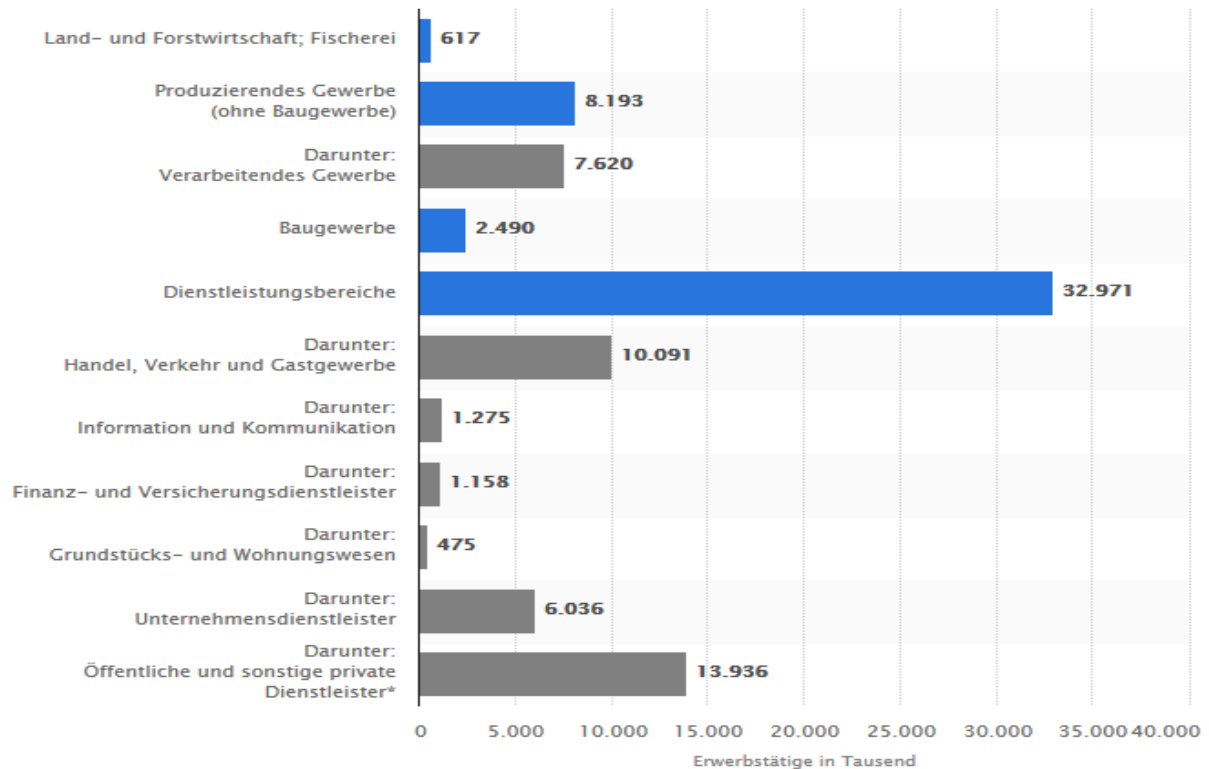
Clockwise: Growth¹, Fiscal balance², Gainful activity³, Rise in prices⁴

An overview of German national economy shows that in 2017 nearly 70% of the German GDP (2363,4 bio. EUR) was the output of service industries, like public services, business and financial services, housing as well as trade, traffic and hospitality. Production contributes with 25,6%, construction with 4,9% and agriculture and forestry with 0,7%. In 2016, 3,266,429 companies were registered, most of them in the region of Nordrhein-Westfalen (668,241), and the trade industry (631,131).

The unemployment rate has declined in the last ten years, to 5,7% in 2017. Most of the 44,27m employed people worked in the service sector (74,5%), followed by production industries (18,5%), construction (5,6%) and agriculture and forestry (1,4%).

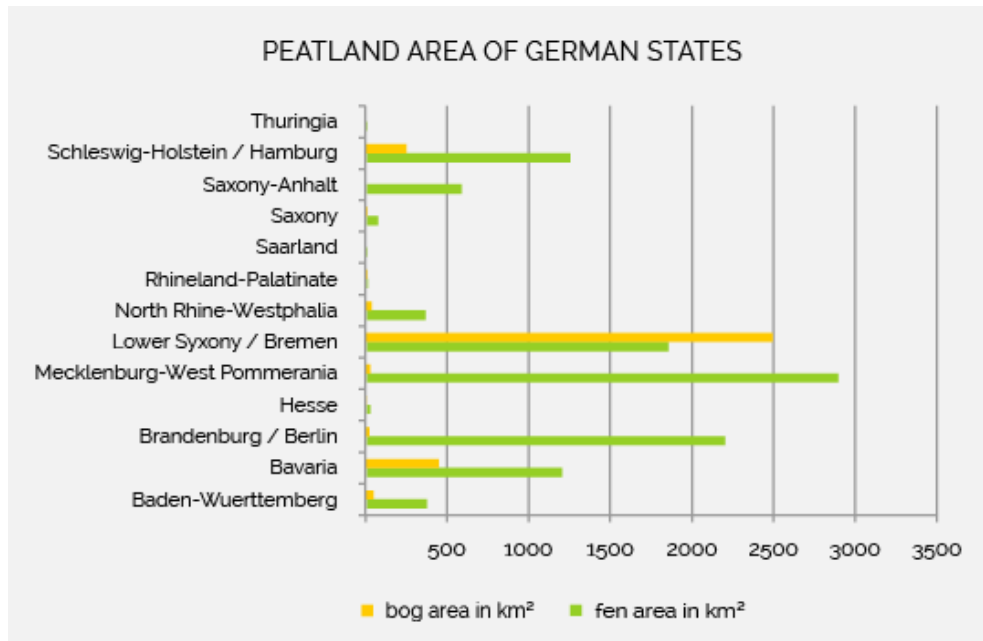


Employment (in thousands)



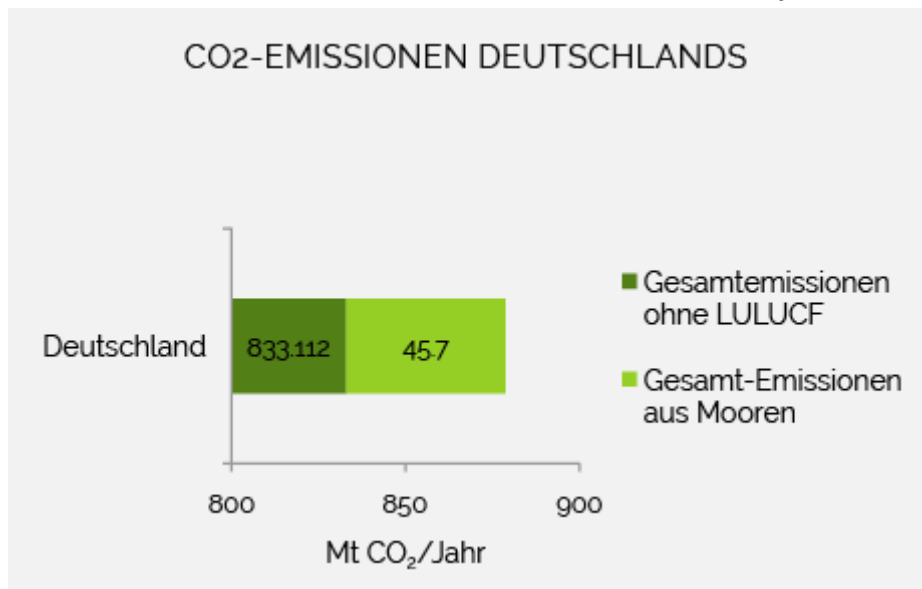
1.Agriculture and Forestry, 2.Manufacturing industry (excl. Construction), 3.Including manufacturing industry, 4.Construction, 5.Service sectors, 6.Trade, transport, hotel and restaurant industry, 7.Information and communication, 8.Financial and insurance service provider, 9.Real estate and housing, 10.Enterprise service provider, 11.Public and other service providers

Germany covers a surface of approximately 360,000 km², of which more than half (51,1%[2016]) is used for agriculture, forests cover 29,7% and water 2,3%. Settlement and traffic areas claim 13,8%, consisting besides others of 1,7% (of total German surfaces) industry, 0,4% mining and 1,4% for leisure and recreation. The rest of the area is covered by wasteland, extraction land as well as 811 km² peat and 609 km² heath. The agricultural ground decreased in the last years on a small scale, mainly due to growing settlement and traffic activities.



The north and south-east regions of Germany still have relatively significant peatland areas. The majority of German peatlands are fens, although bogs can be found in the foothills of the Alps and in the north-western part of Germany. Today these are safeguarded as conservation areas. More than 95 % of Germany's former peatlands have been drained, which means that only 5% of peatland in Germany are in a near-natural or re-natured status.

CO₂ emissions from Germany



Total emissions without LULUCF and Total emissions from bogs

From a climate perspective, degraded peatlands are very relevant, as they are a continuous source of GHG emissions, releasing around 41 Mt CO₂e per year and accounting for approximately 39 % of emissions from German agriculture and 4.3 % of Germany's gross total annual GHG emissions.



In 2017, Germany emitted 904,7m tons of greenhouse gases – 4,7m tons less than the year before. Germany is still one of the world's largest CO₂ emitters. Although emissions in the energy sector declined, transport and industry emissions have increased. This indicates that Germany needs new measures to reach its climate goals, in addition to existing European laws. There have been movements in Germany's Federal states in this direction. For example, Germany's National Biodiversity Strategy (NBS) includes targets and measures for the restoration of degraded ecosystems.

National stakeholders:

- Peat extracting companies
- Peat consumers – agriculture, growing media companies and forestry
- Peat consumers – gardening, horticulture
- Experts
- Politicians involved in Land Use, Land Use Change and Forestry (LULUCF)
- Decision-makers – EU and National level.

Impacts of project actions: Communication activities within the project – material dissemination, conferences, negotiation with the peat industry, project website and a documentary film – are expected to reach national audiences and raise awareness of peatland's importance for the climate and other ecosystem services.

The number of electronic publications downloaded from the project website (e.g. project brochures with key scientific data about peatlands and their contributions, Legal Analysis of peatland protection, etc.) will be measured. Although the geographical location of downloads cannot be determined, conclusions can be drawn from the number of visits to the German and English versions of the project website, as well as the documents downloaded in German and English – reaching national and international audiences. Moreover, the number of views of the documentary film (which will be freely accessible on different platforms at the end of the project) will be measured. The film will address project activities and importance of peatland restoration, among other related themes.

Promotional material will be disseminated in scientific conferences and national events. Assuming at least a portion of the national audiences are also peat consumers, communication activities may impact their awareness level of the importance of peatlands and of purchasing gardening products without peat. The number of events and conferences, as well as the number of their participants will be measured. Furthermore, the impact of negotiations with the peat industry will be measured by the number of meetings conducted and companies contacted, as well as any written outputs from the negotiation with peat companies.

Restoration measures will have minor indirect impact to the national economy through a variety of service contracts: to collect data (e.g. vegetation surveys, mapping, etc.), to create technical designs for restoration plans, filling ditches and dam building, direct GHG measurements (in collaboration with Humboldt University and self-employed professional), instalment of signs, etc. The number of companies and/or professionals hired, as well as the amount spent will be calculated at the end of the project.



The objectives of LIFE Peat Restore are in line with the goals of the German government to reduce GHG emissions. Variations to the Global warming potential (GWP) will be measured. Impacts will be calculated by implementation of the GEST-approach, as well as direct chamber measurements. The GHG emissions data collected may contribute to strengthen the techniques to measure and estimate GHG emissions and add to the national GHG inventory.



GERMANY									
	INDICATORS								
	DIRECT					INDIRECT			
Units	Economic contribution	Ecosystem regulating services (GHG emissions, water quality, biodiversity)	Awareness raising	Scientific knowledge	Social capital	Ecosystem supporting services	Ecosystem provisioning services	Fire/flood prevention	Ecosystem cultural services
Stakeholder and Duty holder involvement			10		10				
Information boards/panels	1		1	1	1				
Employment (Individuals/companies hired by the project)	16								
Amount spent (€)	€244,219.26								
Number of jobs (FTE and PTE)	3								
Number of events and conferences organised / participated	7		7	7	7				
Number of participants in Events / Conferences			540	540	540				
Number of hectares restored		0 ha				0 ha	0 ha	0 ha	0 ha
GWP (tons of GWP equiv CO ₂ -eq/yr)		58.75t							
Website - downloads			389	389	389				
Website - visits (to website in German)			3.550	3.550					
Website - visits (to website in English)			8.660	8.660					
Number of views of			0	0	0				

Documentary film									
Number of peat related industries contacted			3		3				
Number of Print media			7	7	7				
Number of Publications / Reports, promotional material produced			57	57	57				