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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 LATVIA

March 2022



Project sites, territorial belonging:

- : **Lake Engure Nature Park** (12,580 ha) – Central Latvia, belongs to four regional counties – Engure (total area 396,000 ha, 7225 inhabitants), Mērsrags (109,000 ha, 1521 inh.), Talsi (1,763,000 ha, 28,425 inh.), and Tukums County (1,194,000 ha, 28,221 inh.);
- : **Baltezers Mire Nature Reserve** (228 ha) – Western Latvia in Brocēni County (496,000 ha, 5558 inh.);
- : **Augstroze Nature Reserve** (4007 ha) – Northeastern Latvia, belongs to two regional counties – Kocēni (499,000 ha, 5980 inh.) and Limbaži County (1,170,000 ha, 16,571 inh.) (Figure 1).

Status: Natura 2000 sites, protected under law.

Land use restrictions: logging is not permitted in old natural forests but allowed in specific cases like sanitation cutting with special permission except from March 1 to July 31; non-commercial hunting, fishing, wild berry and mushroom picking is allowed; mass tourism allowed only with permission from Nature Conservation Agency.

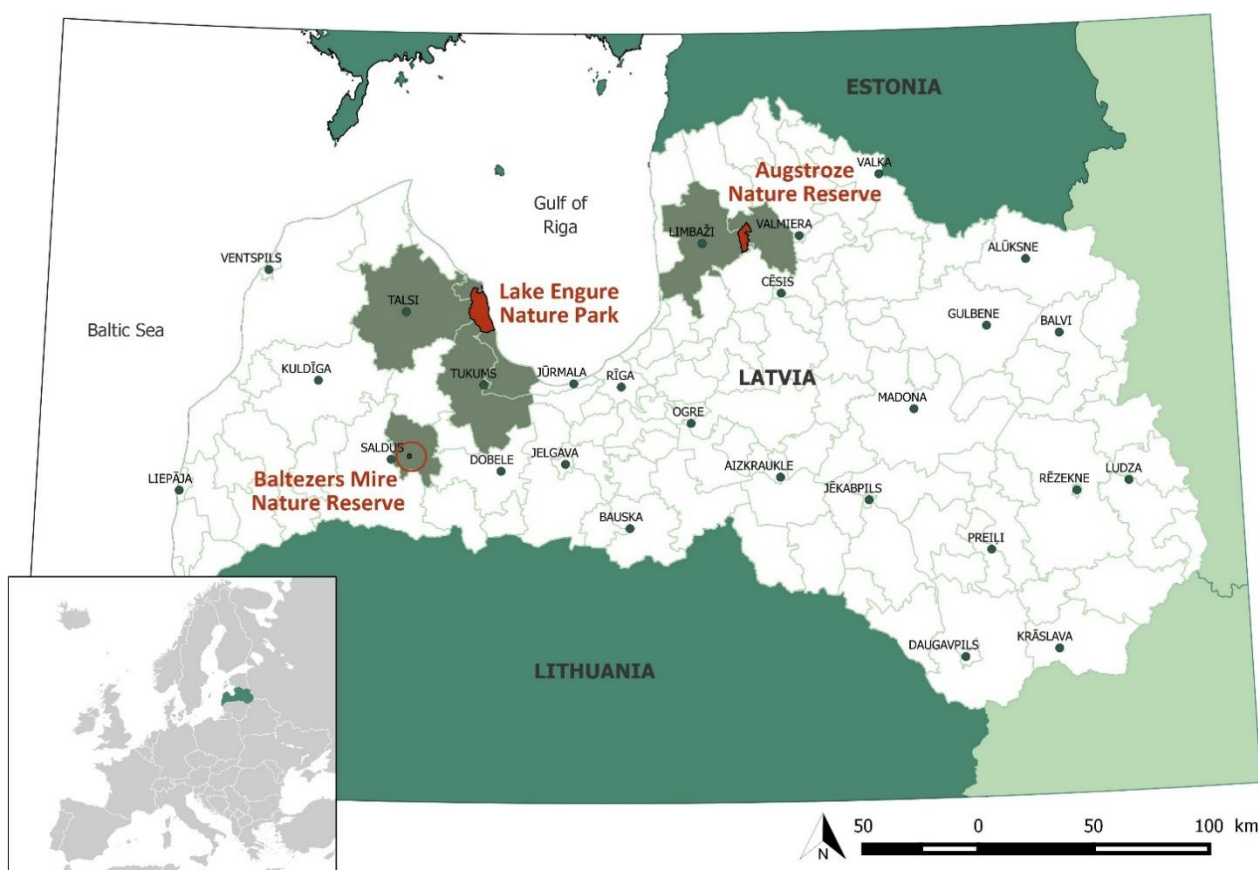


Figure 1. Location of project sites in Latvia. Regional county borders and largest cities are shown.

Socio-economic impact assessment methods: by restoring hydrology and maintaining peatland habitat conditions, the main beneficiaries are not only plant and animal species, but also people, their families, and communities. To measure the socio-economic impact, human needs must become as a priority opposite to species richness and habitat quality. However, it does not diminish the



importance of nature values as the nature protection is focused on sustainable resource usage. Besides, many traditional economic activities such as hunting, fishing, wild berry and mushroom picking are directly interrelated with the environment.

To prepare the socio-economic impact assessment, for Latvian sites, 12 indicators were evaluated. Following components with potential impact to the socio-economic situation in each project site were valued:

- : Direct and indirect impact to the region economy, business opportunities and employment possibilities before and after the project realization;
- : Impact to the regional nature resources, i.e. increasing amount and quality of resources;
- : Impact to the welfare of local inhabitants mainly through better awareness and knowledge;
- : Impact to the quality of ecosystem services.

The project comprises both ► the initial or direct and ► the resultant indirect or flow-on effects, hence the benefits were analyzed in two groups, but not every impact may be significant (Table 1). Only secondary data analysis of existing data sources were used as primary data collection like surveys or focus groups is time consuming and expensive.

Table 1. The total benefits from the changes induced by the LIFE Peat Restore project

DIRECT BENEFITS	
Applicable	Minor or not applicable
D1 Increased access to employment	D5 Ground water
D2 Economic diversification, materials and production output (peat, wood)	D6 Medical resources
D3 Sustainable wildlife harvesting (fishing, hunting, gathering)	D7 Psychological and social well-being
D4 Science, education, skills and training	
INDIRECT BENEFITS	
Applicable	Minor or not applicable
ID1 Habitats, plant and animal species diversity	ID4 Health care
ID2 Climate regulation and air quality	ID5 Aesthetic inspiration, spiritual value
ID3 Recreational and traditional economy, heritage and cultural resources	

Direct benefits caused by the project: in total, 93,501 inhabitants are living in the direct impact zone around the project sites in Latvia, reaching the highest number in those counties with large towns nearby. From all project sites, the largest population was registered around Lake Engure Nature Park (NP) as Talsi and Tukums Counties reside about 30 000 inhabitants in each. Also the area around Augstroze Nature Reserve (NR) in Limbaži County is relatively densely populated, reaching 17,000 inhabitants, whereas territory around Baltezers Mire NR is relatively sparsely populated as in the Brocēni County barely reside 6,000 inhabitants.



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Around 20 people are directly employed in the project's restoration and monitoring activities in Latvia. Even more people are indirectly employed to manage activities once or repeatedly throughout the project time. Local inhabitants are important source to maintain not only the project objectives, but also ensure environmental education and tourism development nearby project sites.

It must be stressed that some of the activities will be made possible thanks to management plans developed within the project. Even if these activities are not funded by the project itself, they might become realized in near future using other resources. Therefore, the project influences to regional municipalities in long-term perspective.

D1 Increased access to employment

In general, the working population in Latvia is slowly increasing from 51% employed inhabitants in 1996 to 63% in 2017 (i.e., by 895,000 people). Consequently, the unemployment rate has dropped from 13% in 1996 to 6% in 2017. In regard to the project, employment rate around the project sites will be impacted only insignificantly. The largest benefit goes to restoration activities which must be repeated every year like tree and bush cutting or reed cutting in lakes. It will be performed by local workers thus providing regular income during the project time. Company responsible for dam building in all project sites also will hire local contractors, favoring regional development. Grassland management in total area of 21 ha by farm household in Augstroze NR will be financially supported by Rural Support Service, whereas sedge and reed grazing in fens in Lake Engure NP will be managed through local cattle farmers.

D2 Economic diversification, materials, and production output (peat, wood)

Economic potential of specialized service providers and business opportunities will increase only insignificantly around the project sites, as due to national laws, intensive management in nature areas in Latvia is strictly forbidden and no direct marketing options are available. Potentially, production output from peat or wood would be highly perspective in raised bogs in bog woodland. Peat cutting has been performed in Baltezers Mire previously in minor volumes, it has, however, much larger potential in Augstroze NR with four vast raised bogs. Fen peat in Lake Engure NP has no value in this aspect. Logging for wood also would give benefits to land owners in all project sites, especially in Augstroze NR where 450 ha are covered by forests.

The most popular work places in the studied counties around the project sites are transportation and vehicle maintenance, building and carpentry, sale, renting and accommodation, food service, agriculture, farming and forestry. Comparing the most represented categories with the most successful ones in counties, sectors like crop growing, renting of estate or vehicle maintenance are widespread but rarely classify as large-scale production. These are economically effective for small business making.

Peat extraction is performed in all studied counties except Mērsrags and Brocēni. Logging has become more popular during the last years, initiating to development of woodworking industry.



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Among the seven studied counties, enterprises in Talsi County have the largest trade turnover, with two reaching almost 60 million euros turnover in wood and peat sale.

D3 Sustainable wildlife harvesting (fishing, hunting, gathering)

Gathering of wild growing berries and mushrooms and their further dissemination to consumers is mostly seasonal work reaching the highest activity during summer and early autumn. In Latvia, it is one of the most popular ways of fast earnings to vulnerable groups like seniors or unemployed persons. These people are directly related to sustainable management of mires and forests. From the project sites, Augstroze NR is the most important in this regard as natural mires with cloudberry, cranberry and bilberry take more than 1700 ha and forests with blueberry and mushrooms take 450 ha.

Commercial fishing is mostly exclusive to coastal areas like Engure and Mērsrags Counties, though non-commercial fishing in mire lakes is also active, especially in Madiešēnu Lake in Augstroze NR and in Baltezers Lake. Comparing to lakes outside nature areas, no restrictions except going by motorboat are applied to the project sites.

Hunting is allowed in nature areas in certain time periods with special permission. In Latvia, group hunting is mostly practiced with elk, deer, roe, wild boar, wolf, lynx, goose and wild duck being among the most popular games. More severe restrictions were developed for strict reserve zone in Madiešēnu Mire in Augstroze NR regarding the goose hunting but were repealed later considering local farmer's rights to protect cornfields from grazing by migrating goose flocks. Beaver hunting is also popular as hunting collectives are responsible for damage after the beaver activities in forests and drainage ditches. Number of beavers, however, has reached so high number in Latvia, that it is hardly possible to regulate their populations, also in nature areas where damming and tree cutting can negatively impact the biodiversity.

D4 Science, education, skills and training

The number of pupils and educational institutions were analyzed, as this field is closely related to environmental awareness in the rural regions. There are 10-20 pre-school education institutions in every district. During the last decades, teaching about importance of nature conservation has been included in school programs, as well as eco-schools were opened in many places in Latvia. Attitude to nature from pupils has changed as education approaches nowadays include more practical teaching elements like workshops and field trips to nature trails together with professional guides. From the other side, pupils in larger towns and cities become more isolated from nature processes due to commercialization. The project's photo exhibition will travel to schools, first of all to those nearby the project sites. Attractive and colorful way of presenting rare and protected habitats and species might raise interest to young generation.

University students of sciences prefer nature areas as study sites for bachelor, master and doctoral thesis. Vegetation and hydrology monitoring data, as well as peat stratigraphy data are used for preparation of scientific papers to evaluate peatland degradation and climate change impact to



biodiversity. From the project sites in Latvia, above all the Lake Engure NP has become important study object for ornithologists and botanists. Currently, the vegetation and GEST types in Augstroze NR are studied by bachelor student of University of Latvia in collaboration with the Institute of Environmental Solutions. Interest from scientists and other students might increase in following years after the habitat management to research the restoration dynamic and processes.

Indirect benefits caused by the project:

ID1 Habitats, plant and animal species diversity

The largest area and highest diversity of habitats of European Union importance are characteristic to Augstroze NR, followed by Baltezers Mire NR (Table 2). There were eight different forest habitats and five mire habitats found in Augstroze NR, also meadows and lakes have the largest importance in this nature area.

Table 2. Taken area and quality of land use in project sites in Latvia

Land use	Lake Engure NP		Baltezers Mire NR		Augstroze NR	
	area, ha	quality	area, ha	quality	area, ha	quality
Lakes	.	.	35,4	excellent	477,6	excellent
Meadows	15,9	moderate
Natural mires	54,5	good	34,48	excellent	1740,03	good
Degraded mires	.	.	40,5	bad	96,3	bad
Forests	.	.	92,18	good	454,7	excellent

Forests, mires and meadows are important for wild plants and animals; lakes maintain habitats for fishes. Referencing to all the given data, it becomes certain, that the largest benefit from habitat restoration goes to nature itself. The total surface of restored area in all project sites in Latvia reaches 941 hectares. More than 50 rare and protected plant species and more than 50 animal species will gain from habitat conservation in these territories.

ID2 Climate regulation and air quality

Peatlands, especially Sphagnum-dominated habitats, play a crucial role in the global carbon budget. Stabilization of water level in degraded raised bogs, transition mires and fens in Latvian project sites will improve the regulation of carbon dioxide and methane cycle.

One of the actual problems in environment politics sector is lack of data and knowledge, which prevents from developing appropriate scenario for adaptation to climate change impact. After the project implementation, new methodology (GEST method) for Latvia will be established for GHG emission evaluation in peatlands. It will support the EU Adaptation Strategy to decrease GHG emissions until year 2050 for 80 % if comparing to emissions in 1990. More precise data from effect to GHG emissions after peatland habitat restoration will also give adequate results to monitor



climate change in national level referring to commitment to Kyoto Protocol and the Paris Agreement.

ID3 Recreational and traditional economy, heritage and cultural resources

Tourism is a significant factor that shows socio-economic importance of the visited site. In Latvia in general, tourism has become more and more popular recreation activity both for local and foreign visitors. From 1993, 18 million foreign tourists have visited hotels or guest houses in Latvia with increasing interest especially during the last 10 years. If there were on average 200,000 foreign visitors per year in the end of 20th century, the number has raised to 1.5 million per year during the last five years. The most represented countries of guests in hotels are Russia, Germany, Lithuania, Estonia and Finland. Also local people travel around Latvia and use hotels and guest houses. The number of Latvian tourists has increased from average 180,000 visitors per year to 700,000 during the last 25 years.

Among the project sites, the most popular tourist destinations both for local and foreign visitors is Engure County. On average 20,000 tourists per year use hotels and guest houses in this coastal area. Within the area of Lake Engure NP, a nature trail (includes the project area) with bird-watching tower is very famous recreation place both for ornithologists, botanists and other specialists and “common” families. Tukums County is also favorite especially among foreigners, probably because of the availability of accommodation in several historical buildings (e.g. Jaunmoku Castle and Šlokenbeka Manor House) and relatively short distance from capital Rīga. Kocēni County, thanks to Dikļi Palace and Augstroze castle-ruins also attracts many visitors (on average, 7,500 guests per year).

Besides the mentioned accommodation places in historical buildings, also other culturally significant places can be found in the studied counties. Different ethnic and traditional home craft activities (like home-made textile, traditional fishing in sea, beekeeping, goat cheese and local wine-tasting, etc.) are offered in smaller villages and guesthouses.

Direct benefit to tourism from project activities is most probable in guest houses, cafeterias and restaurants nearby the project sites in Bērzciems, Engure, Mērsrags, Saldus, Brocēni, Dikļi and Daugulji. Nature guiding also becomes more popular during the last years. Interest to organized bird watching and hiking in mires using specialized footgear will increase after habitat restoration.

Ecosystem services: Theoretical and actual value of the nature territories (project sites) can be shown also through perspective of ecosystem services (ES). For this reason, the three main categories of ecosystem services were evaluated, i.e. ► the cultural, ► regulating and ► supporting services. As expected, the highest importance from all three ES sections is for the regulation and maintenance services. That is characteristic to nature territories in general. Natural mires, lakes and forests support mediation, flow processes, climate regulation, as well as maintain habitats for plants and animals. Degraded mires due to drainage or overgrowth have lower value of these services.



Provisioning services are also with high value in the project sites, like Wild plants and animals, and their outputs; Ground water for non-drinking purposes; Fibers and other materials from plants, algae and animals for direct use or processing (including peat and wood).

Cultural services are with moderate importance, except Lake Engure NP where nature trail, bird watching tower, ornithology research center attracts many visitors – both tourists and scientists. Cultural places like castle ruins, old church and manor house within the area of Augstroze NR also provide ecosystem services.



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	INDICATORS								
	DIRECT					INDIRECT			
	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
Units									
Stakeholder and Duty holder involvement			11	11	11				
Information boards/panels			0	0	0				
Employment (Individuals/companies hired by the project)	23								
Amount spent (€) ¹	€280,948.16								
Number of jobs (FTE and PTE)	23								
Number of events and conferences organised / participated			34	34	34				
Number of participants in Events / Conferences			9,550	9,550	9,550				

¹ The sum of costs from external assistance, consumables, travels, other costs.



Number of hectares restored		274.4 ha				274.4 ha		274.4 ha	20 ha
GWP reduced² (tons of GWP equiv CO ₂ -eq/yr)		669,9 t							
Number of Print media			4	4	4				
Number of Publications/Reports, promotional material produced			84	84	84				
Website – visits³ (to website in Latvian) 01/07/2017-31/12/2021			9,598	9,598	9,598				
Website downloads⁴ (to Website in Latvian) 01/06/2017-28/02/2022			294	294	294				

² Reduction by tons CO₂-eq/ha/yr.

³ Due to the recent EU Data Protection Law (GDPR), which allows visitors the option to block statistical tracking of the website traffic; it is assumed the figures may be higher.

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