

# LIFE Project Number

# LIFE13 BIO/LT/001303

# **FINAL Report**

# Covering the project activities from 01/06/2014 to 31/12/2018

Reporting Date <14/05/2019>

# LIFE+ PROJECT NAME or Acronym

# "Installation of the bird protection measures on the high voltage electricity transmission grid in Lithuania" (acronym: LIFE Birds on Electrogrid)

	Project Data				
Project location	Lithuania, all regions				
Project start date: 01/06/2014					
Project end date:	31/07/2018 Extension date: 31/12/2018				
Total Project duration (in months)	55 months (including Extension of 5 months)				
Total budget	€ 1,565,261				
Total eligible budget	€ 1,565,261				
EU contribution:	€ 782,630				
(%) of total costs 50%					
(%) of eligible costs 50%					
	Beneficiary Data				
Name Beneficiary	Lithuanian Ornithological Society				
Contact person	Mr. Liutauras Raudonikis				
Postal address	Naugarduko st. 47-3, Vilnius LT-03208, Lithuania				
Visit address	Naugarduko st. 47-3, Vilnius LT-03208, Lithuania				
Telephone	+370 5 213 0498				
Fax:	+370 5 213 0498				
E-mail	lod@birdlife.lt, liutauras.raudonikis@birdlife.lt				
Project Website	www.birds-electrogrid.lt				

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# List of key-words and abbreviations

AB	Associated Beneficiary
CB	Coordinating Beneficiary
Commission	European Commission
EC	European Commission
GA	Grant Agreement
LITGRID	AB "LITGRID", Associated Beneficiary
LOD	Lithuanian Ornithological Society, Coordinating Beneficiary
MoE	Ministry of Environment of the Republic of Lithuania
PA	Project assistant
PC	Project coordinator
PM	Project manager
PSC	Project steering committee

# 2. Executive Summary

The project had two main objectives for mitigation/removal of the mentioned threats for birds' species:

- 1. To improve the conservation status of the migratory, wintering and some breeding bird species, through the reduction of the negative impact of the high voltage overhead electricity transmission lines on their populations.
- 2. To support breeding population of the Common Kestrel and other falcon species, through the implementation of the special supportive conservation measures.

The specific objectives of the project were as following:

- To reduce significantly bird mortality rate in the areas of their concentrations because of collision with wires of the high voltage overhead electricity transmission lines by the help of special installations on the wires.
- To reduce significantly White stork mortality rate because of electrocution through the installation of the special protection measures on the pylons of the high voltage overhead electricity transmission lines.
- To stop the deterioration of the breeding conditions of the falcons (namely, Common Kestrel *Falco tinnunculus*) on the pylons of the high voltage electricity transmission grid in Lithuania by erecting 500 nest-boxes there.
- To improve the conservation status of the Common Kestrel breeding population in Lithuania.
- To evaluate the effectiveness of the practical conservation actions on the bird state through the implementation of the adapted detail monitoring programmes.
- To increase public awareness on the bird mortality problem within high voltage electricity transmission grid.



The project had 22 actions, which were implemented by two project partners during the 55 months of the project. The project started in June 2014 and with 5 months extension was finalised in December 2018.

During the project implementation all actions were successfully completed.

The project preparatory actions were devoted for the precise planning of the practical nature conservation actions. During these actions birds' protection measures for wires' marking were selected (action A.1), a national-level scheme of the segments of high voltage overhead electricity transmission lines for installation of the bird protection measures on the utility poles was elaborated (action A.2), as well as installation scheme for the falcons nest-boxes on the high voltage electricity lines in Lithuania and nesting-boxes scheme were prepared (action A.3).

The project successfully implemented practical nature conservation activities: 6464 "spiral" type wire markers were installed to mark segments of 93,9 km high voltage lines; 2890 pendants were installed to mark segments of 31,2 km high voltage lines; 11032 "wishbone" and 7075 "saucer" type bird protection measures were installed on the high voltage utility poles; 580 nesting boxes for falcons were installed by the project' completion. The target indicators, indicated in the Grant agreement (GA) were overachieved, thus the project impact covers larger area, than it was planned.

Due to complicated access to the electricity lines in open water and swampy areas, the special machinery could not be used for installation of "spiral" type markers (action C.1). Therefore, those were replaced with the high visibility wire markers (action C.2). However, such changes of the wire markers did not reduce the effectiveness of the implemented bird collision mitigation measures, because "spiral" type wire markers which are, in fact, less visible, were replaced with the high visibility markers in the most sensitive sites for birds.

The monitoring of the project actions implementation (action D.1) was carried by the LOD staff, and its reports were approved by the PSC. The project also carried out *ex-ante* and *expost* study (action D.2), when birds mortality and falcons breeding population were monitored. All *ex-ante* and *ex-post* monitoring reports were approved by the PSC.

During the Project implementation period beneath the high voltage electricity wires 852 km were monitored walking on foot, including 320 km beneath the lines without installation of visual measures and 521 km beneath the lines with visual measures installed in the Project implementation.

The most important results of the monitoring of bird deaths:

- **254** bird victims (112 mute swans in the Nemunas river in Kaunas in winter, 142 birds of different species monitoring other high voltage electricity lines) were found caused by collision with the wires;
- According to the experts, in Lithuania, the annual toll of up to 45 thousand bird deaths caused by collisions with the voltage electricity lines occurs;
- The annual toll of **11,1** bird deaths per 1 km of the high voltage overhead electricity lines without installation of visibility increasing measures occurs;
- The annual toll of up to **3**,**6** bird deaths per 1 km of the high voltage overhead electricity lines with installation of visibility increasing measures occurs;
- Beneath the lines with installation of visibility increasing measures introduced in the Project implementation the rate of birth deaths reduced in different months from 1,2 to 4 times, compared to the lines the visibility of which had not been improved;

• Calculation showed, that having implemented protection measures **1 374** bird deaths yearly are avoided in the high voltage overhead electricity lines extending 123 km.

By the end of 2018 on high voltage electricity transmission pylons 580 nest-boxes for common kestrels were erected and currently 40 percent of the national Common Kestrel population breeds in the artificial nests. Within 4 years of the project implementation kestrels bred over 700 chicks there.

From its start in 2014, the project, its progress and achievements were widely disseminated to the general public, thus all the planned media indicators were overachieved. During entire project period the following media coverage was achieved: 22 press releases, 13 general public articles in national press, 22 general public articles in local press, 84 internet articles, 11 TV/radio reportages.

In the Project implementation the Lithuanian Ornithological Society was seeking to draw attention to threats caused by electricity transmission lines contributed efforts to the public awareness activities: 18 info stands were erected next to the lines that used to cause major threats, and now fitted with visibility increasing measures – we often do not think that changed landscape makes an impact on migrating birds, flocks of which make their way for wintering places following the same routes.

A wide information campaign was conducted: a short film about installation of bird protection measures on high voltage overhead electricity transmission lines was broadcasted on the national TV, 600 DVD copies of the film were distributed to various stakeholders. Progress of the Project and information regarding threats for birds caused by electrical wires was widely provided in articles of the national and regional mass-media, several publications about birds were produced.

Considerable public interest was shown in live broadcast in the course of several years of the "multi-chick" family of kestrels from their nest-box installed on the roof of Klaipėda University buildings. In 2018, this pair of kestrels succeeded to bring up their 6 youngs, while in other places - in the average 3 youngs per pair. Kestrels contribute directly to sustainable agriculture – they feed mainly on murids, a pair of kestrels exterminate about 350 of them annually, thus supporting farmers.

The Lithuanian Ornithological Society organised an international workshop *Birds' protection practices on electricity grids* aiming at presentation of the results at the national level and sharing of international experience in the reduction of bird mortality in electricity grids. In the event ornithologists working in various institutions, operators of electricity grids, producers of bird protection devices from Portugal, Bulgaria, Belgium, Germany, Sweden, Belarus and other European countries shared their experience.

The main communication channel providing detailed information about the implemented activities is website <u>www.birds-electrogrid.lt</u>, here one can find Project publications, monitoring reports – all that was produced within 4,5 years of the Project. Beyond completion of the Project the website will be provided with additional relevant information as some activities will be continued.

Project management system, as well as financial management system was set-up in both beneficiaries, persons responsible for the implementation of the project were assigned, and project management team was formed. The project steering committee (PSC) was an advisory board, giving insights on the content of the project, as well as ensuring that both beneficiaries and main stakeholders would be informed about the project's progress. The PSC was formed from representatives of the LOD and the LITGRID, AB ESO (national operator of the electricity distribution network), the Ministry of Environment (MoE) and the State service for

projected areas under the MoE. Five PSC meetings within the project implementation time took place. The project established communication links with other projects in Lithuania, Belgium, Bulgaria, Portugal, Germany other countries implementing similar activities on protection of birds' species.

With the Final report the project reports 1.294.515,26 EUR of expenditures, which make 82,7% out of total project budget (1.565.261,00 Eur). Both project beneficiaries had established analytical accounting system and used accounting software for the registry and traceability of the expenditures and income. The eligibility of the expenses was confirmed by the auditor statement.

In mid-2018, the project was prolonged by 5 months until end 2018 and indicators for the actions C.1.-C.4. and E.6. were increased. Although the project has reached its initial targets within the main implementation time, the main reason of prolongation was to increase the scope of practical conservation actions and to disseminate achievements to the general public and targeted audience, and thus to increase the project impact.

# 3. Introduction

In numerous countries bird deaths caused by collision with high voltage overhead electricity transmission lines are considered a serious problem and in some areas it is critical due to significant numbers of bird victims. Comprehensive research of the scope of bird deaths in electricity transmission grids have been carried out in the USA and Canada, in Europe research of bird collisions with overhead electricity transmission lines was started in late sixties of the 20<sup>th</sup> century. The scope of deaths is substantial – over one million of bird deaths in France occur annually, in West Germany within the period of 40 years over 500 dead White storks were found, this figure accounting for a significant share of the breeding population of this bird species in the country. In Lithuania, no research has been conducted until now. However, situation in places with abundance of birds and frequent visits by people, for example like the Nemunas river segment in the city of Kaunas, disclosed urgency of the problem. Along with changing landscapes, developing urbanisation birds also adapted themselves to the changes – white storks perch and Northern ravens nest on pylons of high voltage electricity transmission lines, and later various falcons move into abandoned nests of the latter. Besides, high voltage overhead electricity transmission lines or pylons are used by numerous birds as supports for perching, hunting and overnight stay. Such close presence is not safe for birds, also people suffer material losses, for example, caused by White storks perching on pylons of overhead electricity lines, as their droppings on the wires trigger electrocution, also leading to bird deaths in most cases. Electricity grid operators are reported line outages involving costs to remove electricity supply disruptions. Various measures are applied to solve the problem - installation of underground electricity lines (cabling) is most effective, however, solution concerning high voltage overhead electricity transmission lines is not possible in every case due to high costs and site peculiarities. Installation of bird flight diverters on overhead electricity lines and implementation of measures hindering landing on pylons are frequently used means to solve conflicting situations with birds.

In Lithuania the threat of the high voltage electricity lines is the most important for the species as swans (Mute, Whooper), geese (White-fronted, Bean, Greylag), ducks (almost all, which make numerous concentrations), White stork, Common crane. While threat of electrocution on high voltage overhead electricity lines is important for White Stork and White-tailed eagle (last species with smaller extend).

Common Kestrel (*Falco tinnunculus*), although having favorable international protection status (IUCN category – Least Concern) and widely distributed in Lithuania, is included into Lithuanian Red Data Book List and belongs to the category "Rare species", and has unfavorable conservation status in the country. Lack of the nesting sites was one of the important threats for the species. Currently, 40% of the national population of Common Kestrel breeds in the artificial nest-boxes, which were erected within the project and last years' trends show, that the national population has potential to grow and to expand to new territories.

The project was implemented in fourteen sites. Eight project sites (Birveta wetlands complex, Kretuonas Lake, Zuvintas wetlands complex, Kamanos bog, Mūšos Tyrelis bog, Curonian Lagoon, Nemunas river delta and Curonian Spit) are characterized by high concentrations of waterfowl.

One of the most successful results is that for the first time in Lithuania data revealing the scope of bird deaths nationally was collected, also the so called "hot spots" were identified, i.e. the sites where particularly high numbers of bird deaths occur, also assessment of efficiency of protection measures was carried out; and as bird observations in the high voltage

electricity transmission grid prior to the Project implementation had been fragmented the data collected during these observations did not allow to make overall conclusions concerning scopes of bird mortality caused by collisions with wires of high voltage electricity transmission lines. The Lithuanian Ornithological Society and LITGRID will continue the cooperation beyond the Project. According to the existing practice when high voltage electricity transmission lines are renovated, or new ones built if the procedures require to prepare Environmental Impact Assessment, ornithologists are invited to render assistance in identifying the most dangerous segments of the electricity lines for birds. When Lithuania joins the common European electricity transmission network, the impact of high voltage electricity transmission lines on birds will be carried out, and the most threatening lines will be marked with visibility increasing measures. LITGRID foresees to implement bird protection measures for replaced pylons (200 units annually), i.e. wishbone type bird flight diverters impeding birds (storks) to perch on support structures above insulators, also saucer type casings of a bigger diameter above insulators will be erected.

# 4. Administrative part

# 4.1 Description of the management system

The whole project implementation can be divided into three main stages: preparatory stage (first 12 months), implementation and finalisation (last 12 months). The main emphasis during the preparatory stage was given to the A, D and E actions, while the project management activities were running in parallel though the whole project's implementation time. Project's preparatory actions were devoted for smooth implementation of the project's key actions - practical conservation actions (C actions) directly addressed to the decrease of the bird deaths within the high voltage electricity grid. During these actions birds protection measures for wires' marking were selected (action A.1), a national-level scheme of the segments of high voltage overhead electricity transmission lines for installation of the bird protection measures on the utility poles was elaborated (action A.2), as well as installation scheme for the falcons nest-boxes on the high voltage electricity lines in Lithuania and nesting-boxes scheme were prepared (action A.3). All conservation actions were implemented strictly following operational plans, elaborated by the AB Litgrid and agreed with the services providers - most of the practical conservation actions required disconnection of the lines, thus the detailed operational plans for implementation of the project measures were coordinated with the annual repairs of the lines and were scheduled well in advance. AB Litgrid was closely collaborating both with the LOD and service providers during the whole project implementation.

The first project stage was also important for implementation of the *ex-ante* monitoring activities, which also brought some changes into implementation of the practical conservation measures afterwards.

Project administrative group (PM and PA) organised quarterly meetings with other staff, involved into implementation of D and E activities, where the current implementation status was discussed. These meetings were also devoted discussing problematic issues, deviations from the workplan and mitigation measures, that should be taken.

The last – finalization stage was oriented on the capitalization of results, as many activities were run in parallel and numerous outputs, demonstrating achievement of the whole project were elaborated, i.e. Technical report (E.7), ex-ante and ex-post monitoring report, After-LIFE Communication plan and others.

Project management activities of the coordinating beneficiary (CB) Lithuanian Ornithological Society (LOD) started at the very beginning of the project.

After project started regular meetings with partners were held to discuss up-to date information on project activities, partnership agreements and co-financing issues. PC and PA started preparation of the partnership agreements in early stages of project implementation.

In total the LOD and LITGRID had more than 20 half-day-length meetings that in general aimed to make implementation of the project more efficient and effective, and to optimise implementation of project activities. During those regular meetings beneficiaries discussed implementation of the project activities. Meetings were organized at least once at the beginning of the project activity, to discuss in detail what actions and how will be implemented, how problems should be identified, etc. The partners also actively communicated by e-mail and phone. LITGRID provided technical activities and financial reports including copies of project financial documents and proofs of project implementation to the LOD on quarterly basis.

Accounting software and invoices management system of both project beneficiaries were updated with needed functions before the project's start. Undertaken measures allowed clear traceability of project's expenditures and income. The accounting systems of both beneficiaries are described in more detail in section 6.2 of this report.

The organigramme of the project team and the project management structure is presented below and is the same as was presented in the Project application.



Project Steering Committee (PSC) was formed by the end of January 2015, when the CB sent invitations to stakeholders and AB asking to appoint their representatives to the PSC according to the preliminary list of the organisations, which was provided within the project application. The PSC consisted of two LOD representatives, two LITGRID representatives, one AB ESO representative (national operator of the electricity distribution network, former AB LESTO), one representative from State Service for the Protected Areas under the MoE, and two representatives of the MoE. There were five PSC meetings organised: on June 18, 2015, July 14, 2016, November 15, 2017, May 29, 2018 and December 19, 2019. The PSC was an advisory board, giving insights on the content of the project, as well as ensuring that both beneficiaries, as well as main stakeholders will be informed about the course of the project. During its five meetings PSC approved five project progress monitoring reports (action D.1), report on the measures for wires marking and bird protection on the utility poles

(action A.1), report with location scheme on bird protection on the utility poles within high voltage electricity transmission grid in Lithuania (action A.2), report on the nest-boxes installation scheme (action A.3), ex-ante and ex-post monitoring reports for 2015, 2016, 2017 and 2018 (action D.2).

Within the project implementation framework Amendment No.1 to the Grant agreement (dated 19/07/2018) was concluded: the project implementation period was prolonged until 31/12/2018 and indicators for the actions C.1.-C.4. and E.6. increased. Although the project has reached its initial targets within the main implementation time, the main reason of prolongation was to increase the scope of practical conservation actions and to disseminate achievements to the general public and targeted audience. The detailed information on the prolongation was presented within the modification request.

Some minor deviations from the initial project budget had occurred. The issues were discussed in the Mid-term report section 6. (Comments on the Financial report). Some of the issues were also discussed in the Inception report.

Since the beginning of the project the CB had submitted project Inception report (03/03/2015), Mid-term report (22/08/2016) and Progress report (20/02/2018)

# 4.2 Evaluation of the management system

The project partnership consists of two beneficiaries of the project. The LOD is an NGO that unites nature conservation and ornithological specialists. The LOD has explicit experience in implementation of various nature protection, and namely birds' protection projects. While LITGRID is the only national operator of the high voltage electricity transmission lines grid (further, "GRID") with full official authorization on the management of the GRID, therefore the Project did not need special licenses for the implementation of the practical conservation actions (C.1–C.4). The only condition was that the implementation of all practical conservation actions had to be planned in accordance to the protocol of the continuous electricity supply for the national electricity network. This condition required some adjustments on the time schedule of the implementation of the practical conservation actions of the Project.

Every beneficiary nominated persons responsible for the management of the project. The CB is a non-tendering body according to the Public Procurement Law of the Republic of Lithuania. It has its own internal procurement rules that set-up clear and transparent procurement procedure. Nevertheless, MoE co-funding agreement set-up requirements that order of the Minister of Finances of 11 June 2008 No 1K-212 "On the implementation and supervision of the procurement of the juridical persons who are not public tendering bodies according to the Public Procurement Law of the Republic of Lithuania" must be applied for the purchasing of the project. Thus, the LOD follows this order for the implementation of the project.

The LITGRID is a public tendering body acting according to the national Public Procurement Law, thus it follows its internal public tendering rules that are in-line to the Public Procurement Law.

The PSC was an advisory board, giving insights on the content of the project, as well as ensuring that both beneficiaries, as well as main stakeholders will be informed about the course of the project. There were five meetings of PSC. More information on the PSC is provided in Section 4.1 of this Final Report.

# 5. Technical part

# 5.1. Technical progress, per task

# A. Preparatory actions.

# A.1 Elaboration of the measures for wires marking and bird protection on the utility poles of the high voltage overhead power lines

#### Action implementation dates:

Start date End date				
Planned in project	Actual	Planned in project	Actual	Status of the action
application		application		
2014 III	2014 III	2015 I	2015 II	Completed

	Deadline			
	Planned in project	Revised in	Completed on	
	application	Inception report		
Deliverable				
Report on the measures	15/01/2015	28/02/2015	30/03/2015	
for wires marking and				
bird protection on the				
utility poles				
Milestone				
Report on the measures	31/03/2015	No revision	18/06/2015	
for wires marking and				
bird protection on the				
utility poles endorsed				

### Action related milestones and deliverables:

The draft report on the measures for wires marking and bird protection on the utility poles was completed according to revised time-schedule, i.e. by 28/02/2015. However, some revisions of the report were made after the consultations between the project partners and final report was completed by 30/03/2015, i.e. with two and a half months delay comparing with the date indicated in the project application. Lately, the report was approved by the Project Steering Committee (PSC), during its first meeting on 18/06/2015. The report is uploaded on the project website at http://www.birds-electrogrid.lt/lt/life-projektas/projektodokumentai/. This delay was caused by the need to identify potential suppliers of the "spiral" type of markers. It turned out, that potential national producer of "spiral" type wires markers does not have sufficient capacities to apply complicated technology of the production of the markers, and would not be able to produce needed number of markers. Finally, Associated Beneficiary, which was responsible for the implementation of the Actions C.1 and C.2 installation of the wire markers, decided to buy those markers from the producers around a world. The Swedish practice was an example of the most applicable to the Lithuanian high voltage electricity overhead lines grid due to the similar technical conditions (thickness of the wires, similar weather conditions, especially, in winter season with possible icing, similar voltage of the grid, etc.). However, from the conservation point of view the Spanish, Italian and British practices seemed to be the most effective in reduction of the number of collisions. Nevertheless, Lithuanian climatic conditions also need to be considered, as it's very important in terms of longevity of the installed wires markers. The analysis of the elaboration of the measures was completed in line to the project time schedule and delay was related only to the finalization of the report.

# A.2 Elaboration of national scheme for bird protection on the utility poles within high voltage electricity transmission grid in Lithuania

Action implementation dates.						
Start date		End date				
Planned in project	Actual	Planned in project Actual		Status of the action		
application		application				
2014 III	2014 III	2015 I	2015 II	Completed		

# Action implementation dates:

#### Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in	Completed on	
	project	Inception report	_	
	application			
Deliverable				
Report with location scheme on	28/02/2015	15/03/2015	30/04/2015	
bird protection on the utility				
poles within high voltage				
electricity transmission grid in				
Lithuania				
Milestone				
Report with location scheme on	31/03/2015	No revision	18/06/2015	
bird protection on the utility				
poles within high voltage				
electricity transmission grid in				
Lithuania endorsed				

Lithuanian Ornithological Society started implementation of the action according to the project application time-schedule with employment of four fieldworkers in August and September 2014. GIS expert was employed in order to support fieldwork with preparation of the digital schemes of the high voltage electricity transmission grid of Lithuania for the fieldworkers. She prepared digital maps for fieldworkers, who started fieldwork according to the time schedule of the project application. The fieldwork was completed by the end of February, 2015. All fieldwork's expenses were in line with the project budget. GIS expert, digitized the collected fieldwork data and finished the processing of the data for the report. The official report with locations' scheme for bird protection on the utility poles was completed by the mid-March 2015, i.e. before the PSC meeting for its' endorsement. The preparation of the report slightly delayed according to the project time-schedule, as due to the bad weather and roads conditions, the fieldwork took much longer than it was expected during preparation of the project application. Lately, some corrections were made based on the comments of the associated beneficiary, which were related with time-table of the procured services for the implementation of the practical conservation action C.3. The final draft of the report was completed by the April 2015 and it was approved by the PSC on 18/06/2015. The report was uploaded on the project website at http://www.birdselectrogrid.lt/lt/life-projektas/projekto-dokumentai/

Teton imprementation dates:						
Start date						
Planned in project	Actual	Planned in project Actual		Status of the action		
application		application				
2014 III	2014 II	2015 I	2015 II	Completed		

### Action implementation dates:

#### Action related milestones and deliverables:

	Deadline			
	Planned in project	Completed on		
	application	Inception report	-	
Deliverable				
Report on the nest-boxes	31/01/2015	28/02/2015	28/02/2015	
installation scheme				
Milestone				
Report on the nest-boxes	31/03/2015	No revision	18/06/2015	
installation scheme				
endorsed				

This project action focused on the implementation of two project objectives: to stop the deterioration of the breeding conditions of the falcons (namely Common Kestrel *Falco tinnunculus*) on the pylons of the high voltage electricity transmission grid in Lithuania by erecting 500 nest-boxes there, and to improve the conservation status of the Common Kestrel breeding population in Lithuania.

LOD started implementation of the action one month earlier than was planned in the project application, i.e. in June 2014. This was related to the falcons breeding season in order to collect the latest information on the distribution of the breeding pairs. Such data was of crucial importance for the elaboration of the nest-boxes installation scheme for falcons. Both Biological and GIS experts were employed for the implementation of this action from the very beginning of the project implementation. Biological expert started collection of the available data on the Common Kestrel distribution in the whole country territory. GIS expert put all this information on the GIS layers and started planning the "buffer zones" of each location in order to make the map of the potential zones for the installment of the nesting-boxes should be installed. The GIS database expert made a list of the poles, basing on the digital electricity lines data, where Associated Beneficiary installed the nesting-boxes. The list was provided to the Associated Beneficiary in February 2015, while the official report was completed at a very end of the reporting period.

The draft report was presented to the PSC for the official endorsement during the first PSC meeting. The report was endorsed by the PSC, during its first meeting on 18/06/2015. The report is uploaded on the project website at <u>http://www.birds-electrogrid.lt/lt/life-projektas/projekto-dokumentai/</u>.

LITGRID was responsible for the installation of the nesting-boxes. It was informed regarding the installation scheme for 2015 already in November 2014.

# C. Concrete conservation actions.

# C.1 Installation of bird collision mitigation measures on the transmission powerlines in the important bird staging areas in Lithuania

Start date		End date				
Planned in project application	Actual	Planned in project application	Revised in the Progress report	Revised in the request modification	Actual	Status of the action
2014 IV	2014 IV	2017 II	2018 II	2018 IV	2018 IV	Completed

### Action implementation dates:

### Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in the	Revised in the	Milestone status
	project	Progress report	Request for	
	application		modification	
Milestone				
6464 "spiral" type bird	30/06/2017	30/06/2018	31/12/2018	Completed
flight diverters (out of				
7100 planned in the GA)				
put up on the at least 92				
km (instead of 80 km				
planned in the GA)				
length of the high				
voltage electricity lines				



The Associated Beneficiary LITGRID performed a few public procurement procedures on the installation of the bird collision mitigation measures (spiral type markers of wires) on electricity lines of the high voltage electricity transmission grid since project start in 2014.

Selected specific "spiral" type markers were recommended both by the LITGRID, and the Ornithological Society as a result of the analysis of the experience of other countries and technical characteristic of the Lithuanian electricity lines during implementation of the preparatory action A.1.

Implementation of this action in some project sites started in April 2015 already, and the action was fully completed by 31/12/2018. Since the project start 6464 "spiral" type markers were installed on the high voltage electricity lines with the total length of 93,9 km, a map with indicated sites with the installed "spiral" type markers is presented below. As this conservation measure proved to be efficient, in the request for prolongation, dated 07/06/2018, it was requested to prolong implementation of this action until very end of the project. It must be admitted that all the measures, planned during the prolongation of the project until end of 2018 were additional, e.g. project successfully reached targets indicated in the project application within the initially planned time. Slightly smaller amount (initially planned 7100, installed 6464) of the "spiral" type wire markers was installed due to technical reasons: their installation cause problems in some places due to the complicated access to the electricity lines in open water and swampy areas, the special machinery (car with tower crane) could not be used for installation of "spiral" type markers in some of the sites that were planned initially in project proposal. However, the relevant decision was made to install high visibility wire markers instead of "spiral" type markers in places where installation of "spiral" type markers was impossible because of technical reasons.

However, such changes of the wire markers do not reduce the effectiveness of the implemented bird collision mitigation measures, because "spiral" type wire markers of less visibility were replaced with high visibility markers, which were planned to be installed under the action C.2 in the most sensitive sites for birds. Besides, the costs of the high visibility wire markers are higher comparing with "spiral" type. During the 5 months prolongation additionally 216 "spiral" type markers were installed, and the final numbers cover also measures implemented during the prolongation. Installation of the wire markers was done by the same suppliers and simultaneously to the routine maintenance of the electricity lines. These activities were implemented strictly after disconnection of the electricity supply. Due to the complex impact of the disconnection of the electricity supply to the appearing need for the power line maintenance, but it also was discussed and agreed-upon with various stakeholders well in advance.



Locations of the sites where project action C.1 was implemented

# C.2 Installation of high visibility wires markers on the transmission powerlines in the most sensitive bird areas in Lithuania

Start date		End date					
Planned in project application	Actual	Planned in project application	Revised in the Progress report	Revised in the request for modification	Actual	Status of the action	
2015 I	2014 IV	2018 I	2018 II	2018 IV	2018 IV	Completed	

# Action implementation dates:

# Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in the	Revised in the	Milestone status
	project	Progress report	request for	
	application		modification	
Milestone				
2890 well visible bird flight	31/03/2018	30/06/2018	31/12/2018	Completed
diverters, put up on the at least				-
30,8 km length of the high				
voltage electricity lines				



This project action also focused on the implementation of the project objective to improve the conservation status of the migratory, wintering and some breeding bird species, through the reduction of the negative impact of the high voltage overhead electricity transmission lines on their populations.

The Associated Beneficiary LITGRID, performed a few procurement procedures on the installation of the high visibility wires' markers on the electricity lines of the high voltage electricity transmission grid since project start in 2014. Specific wires' markers – flight diverts, were recommended both by the LITGRID and the Ornithological Society as a result

of the analysis of the experience of other countries, and technical characteristic of the Lithuanian electricity lines, and on national experience that already was gained during implementation of the preparatory action A.1. Practical implementation of this action in two project locations started in April 2015, and was fully completed by 31/12/2018.

2890 high visibility wire markers instead of planned in the project application 1500. <u>Out of those 471 were installed during the prolongation, i.e. August-December 2018.</u>

Higher amount of the high visibility wire markers was installed because of their installation in three places instead of "spiral" type of the wire markers. Such situation appeared due to the technical reasons: installation of the "spiral" type wire markers caused technical problems in some places because of habitat particularities – areas of open water or swampy habitats under the electricity lines used for wire marking. The situation was also explained, and decisions justified in detail in the description of the action C.1.

In total 2890 high visibility markers were installed on 31,2 km of high voltage electricity transmission wires, a map with indicated sites with the installed high visibility wire markers is presented below.



Locations of the sites where project action C.2 was implemented

# C.3 Installation of the bird protection measures on the utility poles within high voltage electricity transmission grid in Lithuania

Start date		End date				
Planned in	Actual	Planned in	Revised in	Revised in	Actual	Status of the action
project		project	the	the request		
application		application	Progress	for		
			Report	modification		
2014 IV	2014	2018 I	2018 II	2018 IV	2018 IV	Completed
	IV					-

# Action implementation dates:

## Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in the	Revised in the	Milestone status
	project	Progress	request for	
	application	Report	modification	
Milestone				
10800 "Wishbone"	31/03/2018	30/06/2018	31/12/2018	Completed
and 6,900 "Saucer"				
type installations				
(17,700 units in				
total) put up on the				
3133 utility poles				



This project action focused on the implementation of the project objective to reduce significantly White Stork mortality rate caused by the electrocution by installing special protective measures on the pylons of the high voltage overhead electricity transmission lines. Implementation of this action is in-line with the time schedule of the project application and was implemented by AB - LITGRID.

The associated beneficiary LITGRID performed a few public procurement procedures on the installation of the bird protection measures ("wishbone" and "saucer" type installations) on the utility poles of high voltage electricity transmission grid since project start in 2014. The Lithuanian Ornithological Society elaborated a map with the specific locations/sites where "wishbone" and "saucer" type installations will have to be installed. This was a result of the preparatory action A.2 after providing the Interim report to the associated beneficiary on the completed fieldwork data. Practical implementation of this action started in late March 2015, and was completed by 31/12/2018, including 5 months project extension.

At the end of the project 11032 "wishbone" bird protection measures were installed on 2717 utility poles and 7075 "saucer" type bird protection measures were installed on 2068 utility poles. Initially (in the project application) it was planned to install 6000 units of each type (12000 in total) during whole project period on 1200 utility poles. The target, even increased within the project implementation, was overachieved by the end of the project respectively by 183% and 118%. A map with indicated sites with the installed wishbone" and "saucer" type devices is presented below.



For installation of additional bird protection measures saving from the action C.1 were used.

Locations of the sites where project action C.3 was implemented

# C.4 Erection of the nest-boxes for falcons

Start date		End date						
Planned in	Actual	Planned in	Revised in the	Revised in the	Actual	Status of the		
project		project	Progress report	request for		action		
application		application		modification				
2014 IV	2014	2017 I	2018 II	2018 IV	2018 IV	Completed		
	IV					-		

### Action implementation dates:

## Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in the	Revised in the	Milestone status
	project	Progress Report	request for	
	application		modification	
Milestone				
580 nest-boxes for falcons	31/03/2017	30/06/2018	31/12/2018	Completed
erected on electricity pylons				



This project action focused on the implementation of two project objectives: to stop the deterioration of the breeding conditions of the falcons (namely Common Kestrel *Falco tinnunculus*) on the pylons of the high voltage electricity transmission grid in Lithuania by erecting 580 nesting-boxes there, and to improve the conservation status of the Common Kestrel breeding population in Lithuania.

LITGRID performed public procurement procedures on the installation of the nest-boxes for falcons on the pylons of the high voltage electricity since project start in 2014. The LOD indicated locations/sites where the nest-boxes shall be installed as a result of the preparatory action A.3. The first tentative installation of one nest-boxes was done at the end of 2014

already, and practical implementation of this action started in late March 2015. The installation works were completed by 31/12/2018.

At the same time, the Coordinating Beneficiary completed procurement procedures on the manufacturing of the nest-boxes and signed the agreement on the production of the 500 units nest-boxes in December 2014. 500 nest-boxes according to the procurement conditions were produced by August 2015, while the additional amount, 93 units, including the need for prolongation period, was produced until September 2018. The price per unit was applied the same as for the main part of the procurement. A map with indicated sites, where the nest-boxes were erected, is presented below.

Although it was not planned initially in project budget, the technical project of falcons nesting boxes had to be prepared by external subcontractor. The preparation of the project for the nesting box was necessary, as this project was amended to the Terms of References for tendering documents for the purchasing of the nesting boxes. This was needed, so that the supplier would ensure proper construction and quality of the produced nest-boxes, so that these would meet technical requirements for their placement on the pylons as well as construction based on the experience from other countries. The subcontractor, which produced the technical project of nesting boxes was cooperating closely with project biological expert.

At the end of the project 580 nest-boxes for the kestrels were erected on the electricity pylons, including 50 units of nest-boxes planned within the Grant agreement amendment framework and 13 additional nest-boxes, which were erected at the places, where the nest boxes were damaged or lost (by replacing nest-boxes of bad condition or lost ones).

The nest-boxes were erected taking into consideration plans for renovation works on the high voltage electricity transmission lines, within the Project framework from 20 to 120 nest-boxes were erected annually. The first kestrels could occupy and start breeding in newly introduced nest-boxes in 2015. In 2017, in the nests erected on pylons 64 pairs bred their chicks; in 2018 - 87 pairs. Currently, kestrels breeding in nests on pylons account for a big share of the entire population nationally - 150-300 pairs of these birds breed in Lithuania, including 40 percent of them - in the artificial nests. In the Project implementation in total 189 breeding cases of common kestrels in erected nest-boxes were registered. The average number of the young per pair varied from 3,5 to 4,2 in one nest-box, noticeably exceeding the reproduction level of kestrels breeding in natural conditions (in nests of other birds). The highest occupancy rate of nest-boxes by kestrels was in the districts of Klaipėda, Kaunas, Vilnius and Alytus, also the comfortable nest-boxes homed birds turned out of the towns by renovation of apartment blocks. It was noticed that when kestrels occupied a nest-box, next year more nearby nestboxes became occupied too. Within 4 years kestrels bred over 700 chicks. The share of occupied erected nest-boxes is app. 1/3. However, the potential of nest-boxes exists for growing population of breeding kestrels.

Although 50 % occupancy rate has not been reached during the project implementation period, it's expected that beyond accomplishment of the Project implemented, the population of Common kestrels in Lithuania would further increase as a result of the rather dense network of the erected nest-boxes. The planned 50% occupancy rate was too optimistic because large number (580) of the erected nest-boxes, which significantly exceeded the number of the national breeding population (app. 300 breeding pairs). A part of the nest-boxes was erected in larger numbers comparing with current breeding Common Kestrel population with the purpose, that hatched juveniles will come back to the birthplace next year and will find not occupied nest-boxes for breeding. Besides, some nest-boxes were erected in the neighbouring places of the existing breeding sites with the purpose to stimulate distribution of the species' breeding population to the new areas in Lithuania. The increase of the distribution range should be based on the rather high number of the hatched juveniles in the currently existing breeding sites. Similar situation was observed in other neighbouring

countries (mainly Scandinavian). It should be noted, that 80 nest boxes were erected during the last project year after the end of the breeding season and cannot be taken into the statistics of occupied nest-boxes.



Locations of the sites where project action C.4 was implemented

# D. Monitoring of the impact of the project actions

Both monitoring actions were related to the implementation of the project objective to evaluate the effectiveness of the practical conservation actions on the birds' population state through the implementation of the adapted detailed monitoring programs. D actions were focused on the achievement of this objective.

## D.1 Monitoring of the project actions

Start date		End date						
Planned in A project application	Actual	Planned in project application	Revised in the Progress report	Revised in the request for modification	Actual	Status of the action		
2014 III 2	2014 IV	2018 II	2018 III	2018 IV	2018 IV	Completed		

#### Action implementation dates:

г

Action	related	milestones	and	deliverables:

	Deadline				
	Planned in	Revised in	Revised in	Revised in	Completed
	project	Inception	the Progress	the request	on
	application	report	report	for	
		_	-	modification	
Deliverable					
1 <sup>st</sup> project	31/01/2015	31/03/2015	-	-	31/03/2015
progress					
monitoring report					
2 <sup>nd</sup> project	31/03/2016	No revision	-	-	01/07/2016
progress					
monitoring report					
3 <sup>rd</sup> project	31/03/2017	No revision	-	-	15/11/2017
progress					
monitoring report					
4 <sup>th</sup> project	31/03/2018	No revision	-	-	29/05/2018
progress					
monitoring repor					
5 <sup>th</sup> project	31/12/2018	-	31/07/2017	28/12/2018	19/12/2018
progress					
monitoring report					



This action was directly related to the evaluation of the progress of the implementation of the project actions, including the preparatory, concrete conservation actions, monitoring, dissemination, and project management activities. All results of monitoring were summarized

and presented to the Project Steering Committee (PSC) for further evaluation of the project's progress.

All reports are uploaded on the project website and available at <u>http://www.birds-electrogrid.lt/lt/life-projektas/projekto-dokumentai/</u>.

# **D.2** Designing, elaboration and implementation of the Ex-ante and ex-post-ante monitoring scheme

Start date		End date					
Planned in project application	Actual	Planned in project application	Revised/proposed in the Progress report	Revised in the request for modification	Actual	Status of the action	
2014 III	2014 III	2018 II	2018 III	2018 IV	2018 IV	Completed	

# Action implementation dates:

## Action related milestones and deliverables:

	Deadline				
	Planned in	Revised in	Revised in	Revised in	Completed
	project	Inception	Mid-term	the request	on
	application	report	report	for	
				modification	
Deliverable					
A draft of the ex-ante	30/09/2014	30/11/2014	No	-	30/11/2014
and ex-post			revision		
monitoring scheme					
1st ex-ante and ex-post	31/03/2015	No	31/03/2016	-	31/03/2016
monitoring report		revision			
2nd ex-ante and ex-	31/03/2016	No	31/03/2017	-	15/11/2017
post monitoring report		revision			
3 <sup>rd</sup> ex-ante and ex-post	31/03/2017	No	31/03/2018	-	31/03/2018
monitoring report		revision			
4th ex-ante and ex-post	31/03/2018	No	31/07/2018	28/12/2018	19/12/2018
monitoring report		revision			
Milestone					
Ex-ante and ex-post	30/09/2014	30/11/2014	-		30/11/2014
monitoring scheme					
drafted					
Ex-ante and ex-post	30/06/2017	No	31/07/2018	-	31/12/2018
monitoring		revision			
implemented, baseline					
data available					

The implementation of the action started at the beginning of the project implementation, i.e. in September 2014. The first activity was related to the elaboration of the birds' mortality and falcon breeding population monitoring schemes. Another activity was focused on the monitoring of mortality due to the collisions with electricity lines wires of wintering waterfowl in Kaunas and Klaipėda regions. This data of birds' mortality monitoring is presented in the 1<sup>st</sup> ex-ante and ex-post monitoring report. The schemes were uploaded on the project's website. Both monitoring schemes were drafted by the end of November 2014. The quantitative and qualifying indicators and their measuring techniques were elaborated and proposed for approval of the PSC. The report was approved by the PSC in its meeting on 18/06/2015.

The first surveys on monitoring of birds' mortality of migratory and breeding birds in 2015, started in late March and were implemented by two project field-workers, which were already employed in September 2014 for the implementation of action A.2. Annual reports on the monitoring of birds' mortality in the high voltage electricity lines grid, and breeding population of the kestrel were planned to be prepared on annual basis after the end of each calendar year. However, project had limited time for monitoring in 2014, and it covered only full autumn season and one month of the winter season, thus the report for 2014 was not submitted. As for the evaluation of the impact on birds it is important to cover all seasons of

the year, it was decided to prepare one joint ex-ante and ex-post monitoring report for the years 2014 and 2015. It was submitted for the approval by the PSC as the 1<sup>st</sup> ex-ante and expost monitoring report by 31/03/2016, and approved during the 2<sup>nd</sup> PSC meeting on 14/07/2016. During the reporting period July 2016 – December 2017, the second project monitoring report, which covers project progress during year the 2016, was produced by 31/03/2017 and presented for the PSC meeting, which was organized on 15/11/2017. The second project progress monitoring report was approved by the PSC too. Both reports are uploaded on the project website at <u>http://www.birds-electrogrid.lt/lt/life-projektas/projekto-</u>dokumentai/.

The monitoring of the occupancy of the nesting boxes for falcons in 2016 showed considerable success (18%) of the action C.4 during the first breeding season already, although, the breeding success of all feeding on rodents bird species was very low this year in Lithuania. This is why 18% rate is estimated as quite high comparing with planned 30% in the project application. Also, we have to admit, that at the moment of the drafting of the project application there was a lack of practical experience of work on the breeding population of kestrel in Lithuania, and 30% occupancy rate was overestimated, because breeding population of the kestrel was rather low (300-400 pairs) in Lithuania in comparison to other countries (Spain, Denmark, Sweden), which effectiveness and nest-boxes occupancy rate was considered in the application.

In 2018 87 pairs were breeding in the nest-boxes, erected during the project. Currently, kestrels breeding in nests on pylons account for a big share of the entire population nationally - 150-300 pairs of these birds breed in Lithuania, including 40 percent of them - in the artificial nests. In the Project implementation in total 189 breeding cases of common kestrels in erected nest-boxes were registered. The average number of the young per pair varied from 3,5 to 4,2 in one nest-box, noticeably exceeding the reproduction level of kestrels breeding in natural conditions (in nests of other birds). The highest occupancy rate of nest-boxes by kestrels was in Klaipėda city (76,2%) and Klaipėda district (54,5%), also in Alytus district (88,2%), where the comfortable nest-boxes homed birds turned out of the towns by renovation of apartment blocks. It was noticed that when kestrels occupied a nest-box, next year more nearby nest-boxes became occupied too. Within 4 years kestrels bred over 700 chicks. The share of occupied erected nest-boxes accounted for app. 1/3. However, the potential of nest-boxes exists for growing population of breeding kestrels. It is expected that beyond accomplishment of the Project implemented by the Lithuanian Ornithological Society the population of common kestrels in Lithuania would further increase as a result of the erected nest-boxes. The planned 50% occupancy rate was too optimistic because large number (580) of the erected nest-boxes, which significantly exceeded the number of the national breeding population. A part of the nest-boxes was erected in larger numbers comparing with current breeding Common Kestrel population with the purpose, that hatched juveniles will come back to the birthplace next year and will find not occupied nest-boxes for breeding. Besides, some nest-boxes were erected in the neighbouring places of the existing breeding sites with the purpose to stimulate distribution of the species' breeding population to the new areas in Lithuania. The increase of the distribution range should be based on the rather high number of the hatched juveniles in the currently existing breeding sites. Similar situation was observed in other neighbouring countries (mainly Scandinavian). It should be also noted, that 80 nest boxes were erected during the last project year after the end of the breeding season, therefore there was even no theoretical possibility to occupy it during the breeding season 2018.

All information about the installed nest-boxes and results of the monitoring of the occupancy of the nests boxes are placed in the special prepared database (<u>http://corpi.lt/data/lizdai/</u>), which is available on the project website and presented as separate banner "Pelėsakalių inkilų duomenų bazė". This tool will be in further use, as it allows up to date to monitor the

occupancy rate of the nest-boxes, breeding success and thus to evaluate current situation and to foresee population's trends.

The monitoring data showed significant results regarding the impact of the implemented bird protection measures against the bird persecution: only 12 cases of disconnection of high voltage electricity lines were registered in 2017, in comparison to 79 disconnections of electricity supply before the project started (ex-ante period).

The most important results of the monitoring of bird deaths are summarised below:

- 254 bird victims (112 mute swans in the Nemunas river in Kaunas in winter, 142 birds of different species monitoring other high voltage electricity lines) were found caused by collision with the wires;
- Based on the collected data, according to the experts judgment, in Lithuania, the annual toll of up to 45 thousand bird deaths caused by collisions with the high voltage electricity lines occurs;
- The annual toll of 11,1 bird deaths per 1 km of the high voltage overhead electricity lines without installation of visibility increasing measures occurs;
- The annual toll of up to 3,6 bird deaths per 1 km of the high voltage overhead electricity lines with installation of visibility increasing measures occurs;
- Beneath the lines with installation of visibility increasing measures introduced in the Project implementation the rate of bird deaths reduced in different months from 1,2 to 4 times, compared to the lines the visibility of which had not been improved;
- Analysis of the collected data showed, that having implemented protection measures 1374 bird deaths yearly are avoided in the high voltage overhead electricity lines extending 123 km.

# F Project management

F.1 Project management by the coordinating beneficiary – Lithuanian Ornithological Society

Start date		End date			
Planned in	Actual	Planned in	Revised in the	Actual	Status of the action
project		project	request for		
application		application	modification		
2014 II	2014	2018 III	2018 IV	2018 IV	Completed
	II				-

## Action implementation dates:

#### Action related milestones and deliverables:

	Deadline	Deadline								
	Planned in	Revised in	Revised in the	Completed on	Milestone					
	project	Inception	request for		implementation					
	application	report	modification		status					
Milestone										
Contracts between	31/07/2014	01/03/2015	-	27/02/2015	Completed					
partners signed										
Project management	31/08/2014	02/06/2014	-	02/02/2014	Completed					
structure established										
Project inception report	16/02/2015	No revision	-	03/03/2015	Completed					
submitted to EC										
Project mid-term report	01/08/2016	No revision	-	23/08/2016	Completed					
submitted to EC										
Project progress report	18/12/2017	No revision	-	20/02/2018	Completed					
submitted to EC										
At least 5 project Steering	31/05/2018	No revision	28/12/2018	19/12/2018	Completed					
Committee meetings held										
Project final report	31/10/2018	No revision	31/03/2018	-	Completed					
submitted to EC										

Project management system and list of staff of both beneficiaries is discussed in detail in the chapter 4 of the Final report – "Administrative part".

Summarising information of the Chapter 4, 13 persons were employed by the CB and 5 PSC organised, Project Inception, Mid-term and Progress reports submitted and lately approved by the EC.

Regarding staff composition of CB, during the reporting period, there were several nonsignificant changes, which are described in detail in the chapter 4 of this Report.

# F.2 Project management by the associated beneficiary – "Litgrid AB"

Action implementation dates.									
Start date			End date						
Planned	in	Actual	Planned in	Revised in the	Actual	Current status			
project			project	request 101		of the action			
application			application	modification					
2014 II		2014 III	2018 III	2018 IV	2018 IV	Completed			

## Action implementation dates:

### Action related milestones and deliverables:

	Deadline			
	Planned in	Milestone		
	project	Inception report		implementation
	application			status
Milestone				
Contracts between partners	31/07/2014	01/03/2015	27/02/2015	Completed
signed				
Project management structure	31/08/2014	13/11/2014	13/11/2014	Completed
established				

Project management system and list of staff of both beneficiaries is discussed in detail in the chapter 4 of the Final report – "Administrative part".

Summarising information of the Chapter 4, 13 persons were assigned by the AB and 5 PSC organised, Project Inception, Mid-term and Progress reports submitted and lately approved by the EC.

The partnership agreement between LOD and LITGRID was signed only on 27 February 2015, because of the late signing of the project co-financing agreement between the LOD and the Ministry of Environment of the Republic of Lithuania (MoE). The partnership agreement was in more detail discussed in Mid-term report Section 4.

# F.3 Elaboration of "After-LIFE Communication Plan"

1 iction im	Tetion implementation dates.									
Start date			End date							
Planned	in	Actual	Planned i	in	Revised in the	Actual	Status of the			
project			project		request for		action			
application			application		modification					
2018 III		2018 IV	2018 III		2019 I	2019 I	Completed			

#### Action implementation dates:

#### Action related milestones and deliverables:

	Deadline									
	Planned in	Completed on								
	project	request for								
	application	modification								
Deliverable										
"After-LIFE	31/10/2018	31/03/2019	31/03/2019							
Communication Plan"										
(included in Final										
Report)										

After-LIFE communication plan was elaborated during the 1st quarter of 2019, after the practical implementation of the project actions and in parallel to the Final project report preparation. The plan includes overview on the implemented communication measures and tools, implemented in the framework of the projects, as well as on-going and future actions. Digital version of the plan was prepared in English and Lithuanian languages as it will be distributed to national and international stakeholders. The After-LIFE communication plan is available on the project website <a href="http://www.birds-electrogrid.lt/lt/life-projektas/projekto-dokumentai/">http://www.birds-electrogrid.lt/lt/life-projektas/projekto-dokumentai/</a>

## F.4 Networking with other projects

Start date			End date					
Planned	in	Actual	Planned in	Revised	in	the	Actual	Status of the action
project			project	request		for		
application			application	modificatio	on			
2014 II		2014	2018 III	2018 IV			2018 IV	Completed
		II						

### Action implementation dates:

Since its start, the project has been very active in exchanging information and experience with similar LIFE projects, as the topic was rather new in Lithuania and there was no experience to uptake on the national level, therefore the LOD started to contact primarily Birdlife partners and other environmental organisations, working on the topic, to get their experience while preparing for implementation of the practical conservation actions.

After the negotiations with representatives of BirdLife Europe (it was agreed that the Lithuanian Ornithological Society will host a workshop/ roundtable discussion on development of the electricity grid in Lithuania, as a part of the EU BESTGRID project which was funded by EU Programme Intelligent Energy Europe (www.bestgrid.eu). This project aimed to increase collaboration between NGOs, industry, authorities, and academia in order to reduce possible negative impacts of the power lines needed for the transmission of the renewable energy (e. i. contribution to the mitigation of the climate change), and to increase public support to the planned solutions. This was an important contribution to the formation and incorporation of a good practice in development of European electricity grid, and in particularly in the development of a high voltage transmission network as EU "projects of common interest". These projects can receive EU funding and national governments are required to give them a favorable treatment in national planning and permitting. It is important that we help ensuring that these flagship projects are selected and delivered in an ecologically sensitive way.

The joint workshop "Reduction of the negative environmental impacts when planning development of electricity grid" was organized on 14 April 2015 in Vilnius. The Ornithological Society was responsible for the development and organizing of the event's agenda, including invitation of the foreign speakers, and invitation of the participants. The aim of the workshop was to enhance communication and dialogue among national stakeholders in a way to improve practical implementation of the procedures of planning of infrastructure development projects, their strategic impacts assessment and environmental impact assessment, in a way that adverse environmental effects would be minimized and the perception of the development of the project by society would be positive. It was also aimed to discuss practical example of planning and initial phases of construction of Lithuanian-Poland cross-border electricity connection "LitPol Link". Event was attended by 26 participants, representing key stakeholders, involved in the process of the planning of electricity grid development, such as NGOs (Lithuanian Ornithological Society, Lithuanian Fund for Nature, , Foundation for the development of nature protection projects, Social Health Academy), local community (Rudamina Community), relevant state institutions (Ministry of Environment, Ministry of Energy, Environment Protection Agency; State Service for Protected Areas, Energy Agency), developers of infrastructure projects (national companies, responsible for the electricity supply and development and maintenance of electricity grids -AB Ligrid and AB Lesto). Workshop presentations covered these topics: 1) Objectives and aims of BESTGRID project; 2) Grid development projects and nature conservation needs in

the EU; 3) Lithuanian and Polish experience of LITPOL Link grid development. The LIFE project funding was not used for the organization of this workshop.

Three representatives of the project participated in international 6th Birds Conservation Conference in Budapest on 18 November 2015. The conference was organized by MAVIR Independent Transmission Operator Company and Hermann Otto Institute. The main topic of the conference was nature conservation potentials of energetic infrastructure and management of nature conservation problems caused by this infrastructure. The project team shared information about project activities and experiences with other participants of the conference. The project presentation placed the special conference is on website http://www.hoi.hu/node/595996. Although participation in the workshop was not planned in project application, it was significant for the exchange of experience and networking.

The project also networked with following Life projects on the various topics related to the issues tackled by the project through e-mail, phone or personal contacts:

- LIFE-ELIA, Using electricity transmission network routes as active vectors for positive developments in biodiversity, Nr. LIFE10 NAT/BE/709 (www.life-elia.eu).
- Securing prey sources for endangered Falco cherrug and Aquila organize population in the Carpathian basin, Nr. LIFE13 NAT/HU/000183 (www. Sakerlife3.mme.hu/hu).
- Energy in the land power lines and conservation of priority bird species in Natura 2000 sites, Nr. LIFE13 NAT/SK001272 (www.lifeenergia.sk).
- Conservation of *Falco vespertinus* in the Pannonian Region, Nr. LIFE05 NAT/H/000122 (http://www.kekvercse.mme.hu).
- Conservation of White Storks (*Ciconia ciconia*) in Lithuania, No LIFE07 NAT/LT/000531 (www.ciconia.lt), LOD was lead partner in this project, however intensive communication and networking on Electrogrid project is being carried out with former partner AB ESO (previous name AB LESTO).

The communication with other relevant project had allowed the project to collect knowledge and lessons learned that were accumulated by other projects. This knowledge was used by the project in implementation of the action A.1 and delivering of its results. This, consequently, were transferred to the reaching of the results of the actions C.1 and C.2. Moreover, the project also had possibility to share its experience with other projects. Therefore, the experience of the project shall also be helpful for other European project to avoid mistakes and pitfalls.

On 28-29/09/2017 the project was presented by Project representative during the LIFE partnership meeting "Baltic networking meeting 2017", which was organized by the LIFE project "Coastal Habitat Conservation in Nature Park 'Piejūra', Natura 2000 site", LIFE CoHaBit, LIFE 15NAT/LV/000900 in Parnu. The project presentation is provided in the overview of the event on the website: <u>http://dabasparkspiejura.lv/index.php/lv/110-noritejis-seminars-baltic-networking-meeting-2017</u>. Representatives of these LIFE projects took part in the meeting, and shared their experience on the implementation of the different projects:

- Awareness raising and application quality improvement of the LIFE program in Estonia, AwaRaEst LIFE, No. LIFE 14 CAP/EE/000009;
- Building LIFE capacities in Lithuania, LIFE LT, No. LIFE14 CAP/LT/000008;
- Capacity Building For LIFE Programme Implementation in Latvia, CAP LIFE LAT, No. LIFE 14 CAP/LV/000002;
- Coastal Habitat Conservation in Nature Park 'Piejūra', Natura 2000 site, LIFE CoHaBit, LIFE 15NAT/LV/000900;
- Assessment of ecosystems and their services for nature biodiversity conservation and management, LIFE EcosystemServices, LIFE13ENV/LV/000839;

- Baltic pilot cases on reduction of emissions by substitution of hazardous chemicals and resource efficiency, No. LIFE14ENV/LV000174;
- Alternative use of biomass for maintenance of grassland biodiversity and ecosystem services, LIFE GRASSSERVICE, No. LIFE12 BIO/LV/001130;
- LIFE to alvars Restoration of Estonian alvar grasslands, LIFE to alvars, No. LIFE13 NAT/EE/000082;
- Sustainable and responsible management and re-use of degraded peatlands in Latvia, LIFE REstore, No. LIFE14 CCM/LV/001103;
- Demonstrative restoration of the Tyruliai bog as a part of the initiative of the re-wetting of Lithuanian peatlands, Tyruliai–Life, No. LIFE12 NAT/LT/001186 (please note, that LOD is lead beneficiary for this project);
- LIFE+ URBANCOWS Restoration of urban coastal meadow complex in Pärnu town, Estonia, No. LIFE10 NAT/EE/000107;
- Integrated planning tool to ensure viability of grasslands, LIFE Viva Grass, No. LIFE13 ENV/LT/000189;
- Conservation and Management of priority Wetland habitats in Latvia, LIFE «Wetlands», No. LIFE13 NAT/LV/000578.

Representatives of the project attended the "18<sup>th</sup> Conference of the Goose specialists group", which was organized 27-30/03/2018 in Klaipėda, Lithuania. They shared experience on introducing protection measures at the goose roosting areas during the migration season with the presentation "*Overlap of electricity grid and geese staging areas in Lithuania*".

On 20-21/09/2018 the project was presented by Project staff at the LIFE partnership meeting "Baltic networking meeting 2018", which was organized by LIFE project "Building LIFE capacities in Lithuania" No. LIFE14 CAP/LT/000008 with participants from Lithuania, Latvia, Estonia and Denmark. He introduced experience in implementing LIFE projects, as well as participated in the discussions about EU added value and challenges of the After-Life period. The second day of the event was devoted to the field trip – participants visited a project site of the LIFE project LIFEMAGNIDUCATUSACROLA (LIFE15 NAT/LT/001024) and Ventė ornithological station, where LOD representatives introduced LIFE projects, implemented by the Lithuanian ornithological society.

15-19/10/2018 project ornithological expert attended the 6th International Swan Symposium, which was held in Estonia, Tartu. Around 60 participants from various countries took part at the event. Participants from China to the USA presented the newest research on the protection of 8 swan species. The biggest emphasis was given to the swan protection at their breeding, roosting and wintering sites. Representative of the LOD introduced the LOD efforts while improving wintering conditions for swans in Kaunas town. He presented project's actions, which aim to decrease mortality of swans due to the electrocution at the wintering sites. Dozens of birds die annually due to the electrocution in Kaunas town near the wintering sites. During the project, practical conservation measures – special markers were installed and thus the lines became more visible for swans and other waterfowl. Project's ornithological expert also shared practical findings of the project how to decrease the danger of electricity lines for birds. Estonia is also planning to start similar actions at the wintering sites of swans close to the electricity lines.



Photo: Project staff at the poster about implemented project activities.

# F.5 Project auditing

### Action implementation dates:

Start date		End date			
Planned in project application	Actual	Planned in project application	Revised in the request for modification	Actual	Status of the action
2015 I	2015 I	2018 III	2018 IV	2018 IV	Completed

## Action related milestones and deliverables:

	Deadline								
	Planned in	Revised in	Revised in	Completed	Implementation				
	project	Inception	the request	on	status				
	application	report	for						
			modification						
Milestone (previously –									
Deliverable)									
1 <sup>st</sup> interim auditing report	31/03/2015	28/09/2015	-	29/10/2015	Completed				
2 <sup>nd</sup> interim auditing report	31/03/2016	31/10/2016	-	31/10/2016	Completed				
3 <sup>rd</sup> interim auditing report	31/03/2017	-	-	28/04/2017	Completed				
4 <sup>th</sup> interim auditing report	31/03/2018	-	-	31/05/2018	Completed				
Deliverable									
Final auditing report	31/08/2018	-	31/12/2018	31/12/2018	Completed				

The audit was performed in accordance with the Guidelines provided by the European Commission. The interim audits of the project were scheduled in a way that the project could

timely identify mistakes or problems that might occur in financial management of the project and would apply mitigation measures. Results of the interim reports were incorporated in the Final project audit report. The Final project audit report covered the entire project implementation from its start. The auditors' report clearly states, that that the project financial report is in compliance with the LIFE+ Programme Common Provisions, the national legislation and accounting rules.

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# 5.2 Dissemination actions

# 5.2.1 Objectives

The main objective of the dissemination actions was to increase public awareness on the bird mortality problem within high voltage electricity transmission lines grid. All following E actions were focused on the achievement of this objective: Production and erection of the info stands in the project areas (E.1), Production and broadcasting of a film on bird mortality problem within the power lines grid (E.2), International seminar on the reduction of bird mortality within electric transmission and distribution grids (E.3), Creation and maintenance of project website (E.4), Work with media (E.5), Production and distribution of printed materials about the project and problem-solving (E.6), Preparation and dissemination of the technical report on the bird protection measures within high voltage electricity transmission grid in Lithuania (E.7) and Production and distribution of Layman's report (E.8).

Although most of the dissemination actions were implemented, as the project was extended by 5 months, the implementation of the following dissemination actions was extended too: E.4, E.5, E.6 and E.8. Additional time allowed to reach more indicators, and these additional results were widely disseminated to the audience.

# 5.2.2 Dissemination: overview per activity

## E.1 Production and erection of the info stands in the project areas

Action implementation dates:											
Start date				End date							
Planned	in	project	Actual	Planned	in	project	Revised	in	Status	of	the
application				application			Progress rep	ort	action		
2015 II			2015 IV	2017 IV			2018 II		Comple	ted	

# Action related milestones and deliverables:

i i etti etti etti etti etti etti etti	ones ana ae			
	Deadline			
	Planned in	Completed on		
	project	Mid-term	Progress report	_
	application	report		
Deliverable				•
Full materials for 18 info	31/03/2017	No revision	-	03/11/2017
stands				
Milestone				
At least 9 info stands in	31/05/2016	30/11/2016	-	06/04/2017
place				
All 18 info stands in	31/10/2017	No revision	31/05/2018	29/06/2018
place				



LOD was responsible for the implementation of the action. The selected places are located in the non-distinct places, comfortable to be visited and comfortable to be stopped-by for reading of the information about implementation of the project. Nine information stands were constructed by 06/04/2017: 2 in Kaunas town, 2 in Elektrenai district, and 1 per each of the following districts: Ignalina, Švenčionys, Kaišiadoriai, Alytus, Kaunas district. Six more information stands were constructed by 31/12/2017: in Palanga, Zarasai district, Šilutė distr., Joniškis distr., Jurbarkas distr., Trakai distr. The last three information stands were erected in Klaipeda distr., Alytus distr. and Zarasai distr. next to the high voltage electricity lines with installed birds' protection measures.

Locations of the installed information stands are provided in the map above.



Locations of the information stands

# E.2 Production and broadcasting of a film on bird mortality problem within the powerlines grid

Action implementation dates.									
Start date		End date							
Planned in project application	Actual	Planned i project application	in	Revised in the Mid-term report	Revised in Progress report	Actual	Status of the action		
2015 III	2015 I	2016 IV		2017 II	2018 I	2018 II	Completed		

# Action implementation dates:

### Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in	Revised in	Completed on
	project	Mid-term	Progress report	
	application	report		
Deliverable				
DVD copy of the film on	30/11/2015	31/12/2016	-	26/06/2017
bird mortality problem				
within the power lines grid				
Milestone				
A film on bird mortality	31/12/2016	30/04/2017	11/03/2018	04/07/2018
problem within the power				
lines grid broadcasted at				

least 5 times		

LOD was responsible for the implementation of the action. The action started six months earlier than it was planned in the project application, i.e. in the 1<sup>st</sup> quarter of 2015.,. Earlier start was important for filming of the problematic cases and sites with the high concentration of wintering waterfowl, where project's concrete conservation actions were implemented. In addition, filming in winter season was very important for the demonstration purposes



Cover of the film DVD in Lithuanian and English

400 copies of the film "At a junction of two worlds" were produced in Lithuanian language, and 200 copies in English. The DVDs were distributed to more than 200 schools in the regions of the project, environmental agencies, administrations of protected areas, NGOs, members of the LOD, participants of the LOD events, and project AB. More than 100 copies of the film in English were distributed to the international partners of the LOD, environmental organisations and AB. The remaining amount, 100 units, were distributed during LOD events, mainly addressed to general public or LOD members.

Also, the film was broadcasted five times on national TV till 31/12/2018.

The project also placed web cameras for the breeding period in one of the nesting boxes of the Project where Common Kestrel nested. Live broadcast from the nesting box with chickens was placed on the project web-page <a href="http://www.birds-electrogrid.lt/news/63/166/Stebekite-pelesakaliu-seimos-gyvenima-tiesiogiai/">http://www.birds-electrogrid.lt/news/63/166/Stebekite-pelesakaliu-seimos-gyvenima-tiesiogiai/</a>. This broadcast allowed to increase visibility of the project among general public. We had announced about the broadcast on the project on project internet page, webpage of LOD and LOD Facebook group, other web-pages, announced and sent information to LOD members. As in the first year the broadcast started almost at the end of the breeding season, the figures of visitors' increase were calculated only from the next year. Camera was operational during the breeding season in 2016, 2017 and 2018, the number of

visitors during the live broadcast increased more than twice and had reaches on average 490 unique visitors, while during the absence of web-came this number drops to 240 unique visitors. It is planned to continue live broadcast for the upcoming seasons, as this visibility measure was very positively evaluated by the website visitors.

E.3 International seminar on the reduction of bird mortality within electric transmission and distribution grids

### Action implementation dates:

1						
Start date		End date				
Planned in project application	Actual	Planned in project	Revised in the Mid-term report	Revised in Progress	Actual	Status of the action
		application		report		
2016 III	Not started yet	2017 I	2017 IV	2018 II	2018 II	Completed according to the revised deadline

## Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in	Revised in	Completed on
	project	Mid-term	Progress report	
	application	report		
Deliverable				
Printed seminar materials	30/11/2016	31/08/2017	31/05/2018	15/06/2018
Milestone				
International seminar	15/02/2017	30/11/2017	15/06/2018	28-29/06/2018
organized				



The international seminar "Birds' protection practices on electricity grids", which was held on 28-29 June, 2018, in Vilnius, was organised by the LOD in cooperation with the LITGRID. The main aim of the event was to invite relevant stakeholders (representatives of the Ministry of Environment of the Republic of Lithuania and its subordinated institutions, electricity grid operators from different countries, producers of the bird protection measures for electrogrids, etc.), birds' experts, scientists, representatives of national and international green route NGOs, to share experience of different countries, discuss the problems and achieved project results, conclude best known practices, which are the most effective for the reduction of the birds'

mortality on electricity grid. 34 participants from Portugal, Bulgaria, Belgium, Germany, Sweden, Belarus and other countries shared their experience with the Lithuanian colleagues. As the project was coming to the end this year, therefore it was a great opportunity to share the findings and experience, gained in Lithuania, with the international audience. This event also contributed to the implementation of action F.4. Networking with other projects, including LIFE projects ("LIFE BIRDS on POWER LINES - Conservation of threatened birds trough retrofitting powerlines overhead Natura 2000 of hazardous in sites in Bulgaria" W LIFE16/NAT/BG/000612, "LIFE for safe grid - Enhance conservation of the globally threatened power Eagle in Bulgaria by reducing mortality caused by lines" Imperial LIFE12/NAT/BG/000572). All presentation are available at the project's website http://www.birds-electrogrid.lt/news/120/208/Vilniuje-vyko-tarptautinis-seminaras-Pauksciuapsaugos-priemones-ir-patirtys-elektros-perdavimo-tinkluose/d.detalus/.



The second day of the event was devoted to the field trip. Participants visited project territories, where the protection measures on the high voltage electricity grids have been installed. The LOD staff showed the grids with the protection measures, which increase the visibility of the wires and protect from the short circuit the birds, as well as nesting boxes for Common Kestrel, which have been erected on the electricity pylons. Participants also visited Zuvintas Biosphere Reserve, which is one of the birds' paradise in Lithuania with thousands of birds in various seasons. There LIFE a unique opportunity to see outcomes of another project thev got "LIFEMagniDucatusAcrola - Stepping stones towards ensuring long-term favourable conservation status of Aquatic warbler in Lithuania" LIFE15 NAT/LT/001024 - 50 juveniles of Aquatic Warbler brought from Belarus have been raised in Zuvintas with the aim to restore local population of this globally threatened bird.



Comparing to the initial plans, the international seminar was postposed to the late project implementation stage, but it allowed to share the project findings as the field data from 4 field seasons were summarized and presented to the international audience.

### E.4 Creation and maintenance of project website

#### Action implementation dates:

Start date				End date								
Planned	in	project	Actual	Planned	in	project	Revised	in	the	Status	of	the
application				application			modificat	ion		action		
2014 II			2014 III	2018 III			2018 IV			Comple	ted	

#### Action related milestones and deliverables:

	Deadline			
	Planned in	Revised in	Completed	Milestone status
	project	Inception report	-	
	application			
Milestone				
Project website functioning and	31/08/2014	30/11/2014	30/11/2014	Completed
on-line				

The LOD was in charge of this action. The bilingual project website www.birds-electrogrid.lt was developed and updated on regular basis; all news messages were developed in parallel in Lithuanian and English languages. All relevant project documents (including reports, published materials, etc.) and information on implementation of the project's actions during the whole project implementation was uploaded on the project website. On average, the number of visitors per month on the webpage reached 294 unique visitors instead of planned 280 in the project application with significant increase during the breeding season of the Common Kestrel and live broadcast from the nest-box. The website is also a gateway for the kestrels' database, which is on-line operational and attracts many visitors, active members of the LOD.

The LOD continues maintenance of the project website at least 5 year after the project end, as some actions will be continued further (more details about future in the description of the action F.3 "Development of After LIFE communication plan").

# E.5 Work with media

## Action implementation dates:

Start date		End date		Status of the action
Planned in project	Actual	Planned in project	Actual end date	
application		application		
2014 II	2014 III	2018 III	2018 IV	Completed

From its start in 2014, the project, its progress and achievements were widely disseminated to the general public, thus all the planned indicators were overachieved.

During entire project period the following media coverage was achieved: 22 press releases, 13 general public articles in national press, 22 general public articles in local press, 84 internet articles, 7 TV and 4 radio reportages.

The project was presented to media and public in other events as well:

• On 03-05/03/2017 LOD participated in the traditional public event "Kaziuko mugė" in Vilnius, and presented the LOD activities, as well as the project, its activities, achievements. It is estimated, hat during the entire project the information tent of the LOD was visited by 2 000 persons, that had learned about the project.



- On 09/05/2017 LOD participated at the LIFE info day "LIFE Fair/LIFE25". It was organized to celebrate 25 years of LIFE programme, share the experience of implemented LIFE projects and introduce LIFE programme and 2017 Call to potential applicants. The Minister of Environment of Lithuania Mr. Kestutis Navickas, European Commission representative Mr. Christian Strasser, LIFE project coordinator Mr. Michal Miazga from 'REC Poland' and Lithuanian NCPs presented LIFE programme's achievements, requirements and objectives. During the break, participants had a chance to visit demonstration stands of Lithuanian LIFE projects, photography exhibition, watch film about LIFE and exchange contacts with potential project partners. The project, its progress and achievements were presented to participants of the event.
- On 16-17/03/2018 the project and its activities were presented in annual meeting of the LOD members with attendance of more than 70 participants. The project progress was also

presented during the annual meetings of LOD members on 21-22-03/2015, 09/04/2016 and 11-12/03/2017. There were more than 80 participants in each of the events.



September 19, 2018, Lithuanian Ornithological Society organised a field trip to South Lithuania and Žuvintas lake. Organisers of the trip presented to the participants results of the practical conservation actions performed in the frame of the jointly with the electricity transmission operator AB "Litgrid". At the field trip took part media representatives, as well as communication and public relations specialists, representatives from the Ministry of Energy and AB "Litgrid".

The main destination of the trip was Žuvintas Biosphere Reserve and its surrounding, where during the spring and autumn migration huge flocks of waterfowl are concentrated. During the autumn migration huge flocks of geese and cranes choose Žuvintas as roosting place. However, this site is potentially dangerous due to the high voltage electricity lines close to the Reserve.

During the field trip participants got possibility to see all practical protection measures, representatives of the LOD and Director of the Reserve introduced to the participants unique fauna of Žuvintas as well project activities implemented in the Žuvintas Biosphere Reserve.

The project will continue implementing communication with media after the end of the project as it is indicated in the After LIFE communication plan.

# E.6 Production and distribution of printed materials about the project and problem-solving

#### Action implementation dates:

Start date		End date			
Planned in proje application	t Actual start date	Planned in project application	Revised in the request for modification	Actual end date	Status of the action
2014 II	2014 III	2017 IV	2018 IV	2018 IV	Completed

#### Action related milestones and deliverables:

	Deadline		
	Planned in	Revised in Inception	Completed
	project	report/Mid-term	_
	application	report/Progress	
		report/Ammendment	
Deliverable			
Project leaflet	31/08/2014	30/09/2014	30/09/2014
		(Inception report)	
Wall calendar 1 <sup>st</sup> year	30/11/2014	28/11/2014	28/11/2014
		(Inception report)	
Poster on problem of birds	Not	-	26/05/2015
mortality on electricity grid	planned		
Printed popular brochure for kids	31/12/2014	30/04/2015	13/11/2015
on birds conservation within		(Inception report)	
electricity grid			
Wall calendar 2 <sup>nd</sup> year	30/11/2015	No	22/12/2015
		revision	
Printed popular brochure on birds	30/09/2016	31/03/2018	28/06/2018
mortality problems on the		(Progress	
overhead electricity lines network		report)	
Wall calendar 3 <sup>rd</sup> year	30/11/2016	No	16/11/2016
		revision	
Wall calendar 4 <sup>th</sup> year	30/11/2017	No revision	15/01/2018
Wall calendar 5 <sup>th</sup> year	30/11/2018	New deliverable	17/10/2018
		included into	
		Amendment 1 for the	
		Grand contract	
		(19/07/2018)	

LOD was responsible for the implementation of the action.

A project leaflet in 1000 copies has been prepared and distributed at the beginning of the project. It was distributed to the relevant stakeholders during project events. This publication is available in digital format on the project website.

During the project implementation, the LOD has produced **5 wall calendars**. All calendars were produced in 500 copies (in total 2500 units) and distributed during the meetings with stakeholders concerned, administrations of the protected areas and their information centers, national NGOs, members of the LOD, schools, and general public.

**Popular brochure for children**. The brochure for children about problems of bird mortality and protection measures on electricity grid in 750 copies of the colourful publication was printed in 2015. Publication was distributed to schools and centers of youth education, administrations of protected area, MoE, members of the LOD and in digital version available on the project website.

In addition to the planned project deliverables, the project team has published a project poster, with the help of its society members were called to inform LOD about birds' death cases. 1000 units of the poster were published in 2015. The poster was distributed to various stakeholders, including the LOD members, LITGRID employees and partners, MoE, the poster was placed in towns and rural areas on information boards and notice boards close to the areas of project implementation. The digital version of the poster is available on the project website.

**Printed popular brochure on birds' mortality problems on the overhead electricity lines network "Birds' protection and electricity transmission lines**" was published just before the International seminar (action E.3). It summarizes both – project experience and finding from other countries about the birds' mortality problems and possible solutions. The brochure was printed in 800 copies (500 copies LT and 300 copies EN). The English version of the brochure was also distributed during Birdlife partnership meetings with attendance of the LOD representative, as well during the LIFE projects beneficiaries of 2017 call during the meeting in Brussels in November 2018 and LIFE Baltic countries meeting, which was held in September 2018 in Klaipeda, Lithuania.

Digital version of the brochure in both languages is available on the project website for download.

# E.7 Preparation and dissemination of the technical report on the bird protection measures within high voltage electricity transmission grid in Lithuania

#### Action implementation dates:

Start date			End date						
Planned project application	in	Actual start date	Planned project application	in	Revised in Progress report	Actual end date	Status action	of	the
2017 IV		2017 IV	2018 I		2018 II	2018 IV	Comple	ted	

#### Action related milestones and deliverables:

	Deadline		
	Planned in project application	Revised in Progress report	Completed on
Deliverable			
Technical report on the bird protection measures within high voltage electricity transmission grid	31/03/2018	30/06/2018	10/12/2018

The technical report on the bird protection measures within high voltage electricity transmission grid was elaborated by the LOD at the very final stage of the project. Although elaboration of the report was delayed comparing to the deadline set in the application, it included data from the field season in 2018 as well as data of the practical conservation measures installed by the associated beneficiary LITGRID including season 2018, what was not planned initially, but it obviously made the findings of the report more comprehensive as the data from one more field seasons were included.

It contains a detailed review of measures implemented within the Project framework, also applied in foreign countries, assessment of their effectiveness and contribution to protection of breeding, migratory and wintering birds. In Lithuania, it is the first study of this nature, bird observations in the high voltage electricity transmission grid prior to the Project implementation had been fragmented, and the data collected during these observations did not allow to make overall conclusions concerning scopes of bird mortality caused by collisions with wires of electricity lines. Besides, practical bird protection measures to reduce collisions with electricity transmission wires had been introduced only in fragmented segments of newly erected lines, bird death cases were observed solely within these segments, not along the entire national grid. Based on the survey data of bird victims and the situation concerning breeding population of Common kestrels gathered within the 4-year Project implementation period, the Report provides recommendations how to improve bird protection in high voltage electricity transmission grids. It would lead to significant reduction of bird victims caused both by electrocution and collisions with electrical wires. Besides, the Report overviews effectiveness of applied and other measures for bird protection, assessed based on the bird survey data collected within the Project implementation and in other countries. Following the recommendations bird protection measures can be foreseen in the existing high voltage electricity transmission grid as well as the newly planned lines in Lithuania, also this experience may be applicable in other countries.

Report was elaborated both in Lithuanian and English in digital version and distributed to the relevant stakeholders both nationally and internationally (Birdlife partnership network, EU Best Grid Initiative, members of PSC, participants of international seminar, national NGOs, MoE, State Service for protected areas etc.). The technical report on the bird protection measures within high voltage electricity transmission grid was approved by the Project Steering Committee on the last meeting on 19/12/2018. The digital version in both languages of the report is available on the project website.

### E.8 Production and distribution of Layman's report

Start date			End date			
Planned in project	Revised in	Actual start	Planned in project	Revised in	Actual end	Status of
application	the request	date	application	the request	date	the action
	for			for		
	modification			modification		
2018 I	2018 III	2018 III	2018 II	2018 IV	2018 IV	Completed

#### Action implementation dates:

### Action related milestones and deliverables:

	Deadline		
	Planned in project	Revised in the request	Completed on
	application	for modification	-
Deliverable			
Layman's report	31/05/2018	30/11/2018	21/12/2018

The Layman report was elaborated by the LOD at the very end of the project as it included findings from the last field monitoring season and the last figures submitted by the Associated beneficiary LITGRID. In total 700 copies were printed (450 in Lithuanian language and 250 in English) and distributed to national and international stakeholders (nature conservation organisations and authorities, electricity grid operators, green-route NGOs, specialists of other similar projects). This publication summarizes in user friendly language the main achievements of the project – significantly increased population of Common Kestrel, decreased mortality rate of birds in the most dangerous segments of the high voltage electricity grid and increased engagement of society. Electronic version of the publication in both languages is available on project website.

# 5.3 Evaluation of Project Implementation

## **Applied methodology**

The **applied methodology** in the most cases had proved to be successful, and even though in some cases a few technical problems occurred, they were solved when implementing actions of the project. The biggest challenge became implementation of the practical conservation action C.1 – installation of the "spiral type" wire markers above open water areas and swampy habitats, as these areas were difficult to access by specialized machinery with a crane for the installation of this type of wire markers. Nevertheless, the applied wires marking methodology was not changed essentially: the associated beneficiary installed higher visibility markers instead of planned "spiral type", as for installation of high visibility markers special "wire lift" could be used, and special vehicle machinery was not required by installation technology. According to the experience from other countries and scientific studies, high visibility markers (used for implementation of the project action C.2) are much more effective in terms of their visibility comparing to the "spiral type" ones. Thus, this change of wire markers type determined installation of not fewer effective measures, thus, it should be treated as measure allowing to reach more effective/positive impact.

There was also some change of methodology of implementation of the action C.3 in comparison to the project application. Initially, installation of the "wishbone" and "saucer" type bird protection devices of the high voltage electricity lines utility poles, was planned in places where the protection measures were not installed. However, results of project preparatory action A.2 showed, that the action needs also to be implemented in locations, where this type of protection measures were installed some time prior to the project, however they were already of bad condition, or even lost. Due to this decision, the area of the country where high voltage electricity overhead transmission lines are equipped with these bird protective measures was enlarged.

The methodology of the installation of the nest-boxes for falcons under the action C.4 was not described in detail in the project application. This was because at that time it was not clear, what type of the high voltage electricity lines utility poles will be used for the installation of the nest-boxes: metallic constructions, or round reinforced concrete poles. Based on the results of the preparatory action A.3 it was decided that the nesting-boxes will be installed on concrete poles, because number of these poles in the high voltage electricity overhead lines significantly prevails to the number of metallic construction pylons. This decision determined method for fastening of the nest-boxes to the pole, and construction of the nest-box. Technical solution on the attachment of the nest-boxes to the pole was provided in the special technical project of falcons' nest-boxes prepared by the external subcontractor. Such technical project needed to be developed to ensure proper construction and quality of the produced nest-boxes, so that these would meet technical requirements for their placement on the pylons and longer lasting time period of their functioning. The project considered experience of other countries. The most cost-efficient solution was selected for the construction of the nest-boxes including the method of the attachment to the electricity utility poles.

In order to have more interested people in the implementation of the project action, live broadcast from the nest-box was implemented as the additional project activity, which had not been planned in the project application. In order to ensure wider dissemination of the project results and findings, the International seminar was organized with participation of the relevant experts and other stakeholders from ten European countries. Apart from the common dissemination measures, project findings were discussed in detail and presented in the Technical report on the bird protection measures within the high voltage electricity transmission grid in Lithuania. The report was widely distributed among the relevant stakeholders both on the national and international level.

#### Achieved results, lessons learned

After 25 months of the project implementation all three project preparatory actions (A.1–A.2) were fully completed with slight delay comparing to the project time plan. However, this slight delay didn't impact negatively overall time schedule of the implementation of the concrete conservation actions. Three concrete conservation actions (C.2-C.4) were well-in-progress following the project time-plan including project prolongation period. The postponement of the deadline of the implementation of the Action C.1 for nine months, i.e. till 31/03/2018, was submitted in the Inception report. This change was related to the need to harmonize implementation of the action C.1 with schedule of the routine maintenance of the electricity grid. The installation of the "spiral" type wire markers was done by the same suppliers and simultaneously to the routine maintenance of the electricity lines. Both C.1 and C.2 activities must be done strictly after disconnection of the electricity supply. Because of the complex impact of the disconnection of the electricity supply to the country economics and electricity supply system, schedule of these works depends not only on the appearing need for the power line maintenance. Both project actions related with increasing of the wires' visibility (C.1 and C.2) were implemented during the project prolongation period as well, thus, with reaching exceeded indicators comparing with planned in the project application.

All concrete conservation actions were fully implemented. Nevertheless, 2.890 high visibility wire markers (out of planned 1.500 during whole project period) were installed (action C.2). Out of those 471 were installed during the prolongation, i.e. August-December 2018. This concrete conservation action was implemented in sixteen (out of fourteen planned) project sites and covers 31,2 km length of the electricity lines (out of planned 28 km) by the project's end. The higher number of the installed high visibility wire markers is related to installation of those markers instead of the "spiral" type because of mentioned reasons above (5.1 chapter of this report). All other concrete conservation actions (C.3–C.4) as well as project monitoring (D.1–D.2) actions were implemented as per approved project time plan.

Time-table for implementation of some project dissemination actions – production of the infostands (E.1), production and broadcasting of a film (E.2), international seminar (E.3), project web-site production (E.4), and dissemination of some printed materials (E.6) – was proposed to be changed because of various reasons, which are described in the chapter 5.2 of this report. However, all achieved project results indicate that all project objectives were reached.

Task/objectives	Foreseen in	Achieved	Evaluation
	the revised		
	proposal		

Task/objectives	Foreseen in	Achieved		Evaluation
	the revised			
	proposal			
To elaborate measures for	Not changed	Yes,	fully	The report on wires marking and bird
wires marking and bird		achieved		protection measures on the utility poles
protection on the utility				of the high voltage overhead power
poles of the high voltage				lines was prepared and approved by the
overhead power lines				Project Steering Committee (PSC).
				during its first meeting on 18/06/2015
To elaborate national	Not changed	Yes,	fully	The national scheme for bird protection
scheme for bird protection		achieved		measures on the utility poles of the high
on the utility poles within				voltage overhead power lines was
high voltage electricity				elaborated and approved by the Project
transmission grid in				Steering Committee (PSC), during its
Lithuania				first meeting on 18/06/2015
To elaborate nest-boxes	Not changed	Yes,	fully	The nest-boxes for falcons' scheme was
installation scheme for		achieved		elaborated and approved by the Project
falcons in Lithuania				Steering Committee (PSC), during its
				first meeting on 18/06/2015
To install the bird collision	Finalization	Yes,	fully	This project action started in April
mitigation measures on the	of this action	achieved	•	2015, and was completed by
transmission powerlines in	postponed by			31/12/2018 (Action C.1). Since the
the important bird staging	9 months			project start 6464 "spiral" type markers
areas in Lithuania				were installed on the high voltage
				electricity lines with the total length of
				93,9 km.
To install the high	Not changed	Yes,	fully	2890 high visibility wire markers
visibility wires markers on	U	achieved	2	instead of planned in the project
the transmission				application 1500 (Action C.2). Out of
powerlines in the most				those 471 were installed during the
sensitive bird areas in				prolongation, i.e. August-December
Lithuania				2018.

Task/objectives	Foreseen in	Achieved		Evaluation
5	the revised			
	proposal			
To install the birds protection measures on the utility poles within high voltage electricity transmission grid in Lithuania	Not changed	Yes, achieved	fully	At the end of the project 11032 "wishbone" bird protection measures were installed on 2717 utility poles and 7075 "saucer" type bird protection measures were installed on 2068 utility poles. Initially (in the project application) it was planned to install 6000 units of each type (12000 in total) during whole project period on 1200 utility poles (Action C.3). The target, even increased within the project implementation, was overachieved by the end of the project respectively by 1829(and 1189)
To erect the nest-boxes for falcons in whole area of Lithuania	Not changed	Yes, achieved	fully	580 nest-boxes for the kestrels were erected on the electricity pylons by the end of the project, including 50 units of nest-boxes planned within the Grant amendment framework (after the Project Modification) and 13 additional nest-boxes, which were erected at the places, where the nest boxes were damaged or lost.
To monitor whole implementation process and impact of the project actions on breeding and migratory birds	Not changed	Yes, achieved	fully	Birds' monitoring in all project implementation areas was conducted regularly. Evaluation of the project implementation process at the level of each project action was also conducted regularly.
To raise public awareness on bird conservation within high voltage overhead electricity transmission grid.	Not changed	Yes, achieved	fully	Awareness of the general public was increased due to dissemination of information through mass media, project leaflets, five annual calendars, poster and brochure on problems of birds' mortality on electricity grid and popular brochure for kinds, Layman's report, website, that were prepared during the project implementation period.

### Visibility of results

Results, that were immediately visible, were related with the implementation of the project preparatory actions (A.1–A.3), concrete conservation actions (Actions C.1, C.2, C.3 and C.4), monitoring of the project actions (D.1), ex-ante – ex-post monitoring (D.2), networking with other projects (F.4) and the most of dissemination actions, i.e. project film, popular brochures, wall-calendars, information stands, articles in media, the technical report on the bird protection measures within high voltage electricity transmission grid in Lithuania, Layman's report and website (Actions E.1–E.7). Bird monitoring data clearly showed positive impact of the implemented actions on the conservation status of the targeted bird species, ensuring of which was the main objective of the project. Project Layman's and technical reports were widely distributed among the relevant stakeholders on the national and international levels (NGOs, grid operators, scientific institutions).

The results of some public awareness raising actions, like production of leaflets, poster, popular brochure, calendars, Layman's report and project website became visible and available for the public after wide and appropriate dissemination of their products, while effect of work with media can be observed immediately after implementation of the product/action.

#### Amendments of the project

Within the project implementation framework Amendment No.1 to the Grant agreement (dated 19/07/2018) was concluded: the project implementation period was prolonged until 31/12/2018 and indicators for the actions C.1.-C.4. and E.6. increased. Although the project has reached its initial targets within the main implementation time, the main reason of prolongation was to increase the scope of practical conservation actions and to disseminate achievements to the general public and targeted audience. In addition, some changes, not needing signed amendment were required. One of them was related to the implementation of the practical conservation action C.1, i.e. installation of the "spiral type" wire markers above open water bodies and swampy habitats, which are difficult to be accessed by the specialized machinery for the installation of this type of wire markers. Wires marking method was changed, however the changes were not essential. The associated beneficiary installed high visibility markers instead of planned "spiral type". This was done in places, which are unapproachable by special machinery needed for "spiral" type markers and where special "wire lift" could be used for installation of high visibility markers. Nevertheless, the experience from other countries and scientific studies indicated, that high visibility markers (used for implementation of the project action C.2) are much more effective from the point of view of their visibility comparing to "spiral type" ones. Thus, this replacement of different kind of wire markers determines installation of more effective measures and should be interpreted as reaching more effective/positive impact of the project.

Another change was related with the Project management by the associated beneficiary – LITGRID. AB decided not to use project budget to cover salaries of its permanent staff appointed for the Project implementation, as well as travel and subsistence costs. This was because LITGRID does not account these costs by every single project. AB assured that these expenses will be covered from own LITGRID resources and this will not have a negative impact on project implementation and its results. Saved funds were used for the implementation of the concrete conservation actions according to the project need to ensure quality, durability and

effectiveness of the project results. Such changes of the re-allocation of the project budget were discussed with the Commission during their project Monitoring visit and approved by them.

Besides, an additional project poster on birds' mortality problem on electricity grid was published, even thought it was not initially planned in the project application. However, the poster informed public (especially, seniors in the countryside) about the project, its activities and asked the public for the immediate and easy to implement action – to inform the LOD about birds' death cases and to assist in collection of the information. Thus, the added value of the poster was that it also helped to raise general public awareness on the problem and to increase its environmental consciousness by providing possibility to participate in the nature protection activities, even though symbolically, and also assisted in creation of the ownership feeling among the public.

The project also placed web-cameras for the breeding period in one of the nest-boxes where Common Kestrel nested, although it was not planned initially. The live broadcast from the nestbox with chickens was placed on the project webpage. This broadcast allowed increasing visibility of the project among general public. Project implementation team announced about the broadcast on the project internet page, the LOD webpage and Facebook group, other webpages, announced and distributed information by email to the LOD members. The video broadcast from the nest- box was repeated during whole kestrels' breeding seasons of the project implementation period and it will be continued after the end of the project. This is indicated in the project After-Life Communication plan.

#### **Effectiveness of dissemination**

The most of the already implemented project dissemination actions were effective in terms of number of general public informed. The most effective and informative was information dissemination in media (E.5), mainly because of the large number of the internet publications and participation in radio news broadcast, both of which are extremely popular among the general public (22 press releases, 13 general public articles in national press, 22 general public articles in local press, 84 internet articles, 7 TV/radio reportages). The introduction of the project to the general public during the national public events (like "Kaziuko muge" in Vilnius) was considered as very successful project dissemination action. Another successful dissemination tool was website (Action E.4). The number of website visitors per month on the webpage, on average, reached 294 unique visitors instead of planned 280 in the project application with significant increase during the breeding season of the Common Kestrel and live broadcast from the nest-box. The total monthly number of sessions is 392.

Besides, printed materials – leaflets (1.000 copies) and 5 wall calendars (500 copies each), project poster (1.000 copies) and brochures for kids (750 copies) and general public (800 copies, 500 units in LT and 300 units in EN languages), project film (broadcasted on national TV channels and distributed on DVD format) as well as in web format prepared the project Technical report – were used for informing of all relevant stakeholders and general public. The popular brochure, Layman's report and Project Technical report were distributed among the relevant stakeholders on national and European level including Birdlife partnership meetings with attendance of the LOD representative, as well during the LIFE projects beneficiaries of 2017 call during the meeting in Brussels in November 2018 and LIFE Baltic countries meeting, which was held in September 2018 in Klaipeda, Lithuania, attenders of the Project International seminar and European "Best Grid Initiative".

#### 5.4 Analysis of long-term benefits

#### **Environmental benefits**

Manmade alterations to natural habitats and landscape increased considerably during the 20th century and leads to an ever-growing impact on the wildlife. In the developed countries, the spread and profusion power lines make them a serious threat for a wide range of birds' species, including up to 7% of the Species of European Conservation Concern.

Basing on the experience from different European countries, overhead electricity lines and, namely, high voltage power lines, from the point of view of collisions with wires and electrocution, are the most dangerous for certain birds – mainly species having heavy body and soaring large birds, and, especially, for their concentrations. Among those species, for Lithuania targeted are swans (Mute, Whooper), geese (White-fronted, Bean, Greylag), ducks (almost all make numerous concentrations), White stork, and Common crane as well as night-time various migrants including passerine birds. While from the point of view of electrocution on high voltage overhead electricity lines, for Lithuania targeted species are White Stork and White-tailed eagle (the latter one species on a smaller extent). This list clearly indicates which sites/areas in the country might be important for the protection for above mentioned species and, accordingly, where negative impact of the high voltage overhead electricity transmission lines on them is the most expected. For waterfowl and crane, the most sensitive from the point of view of the collision are areas with high concentration of staging birds (migratory, wintering) with some exception for a few areas with high density of the breeding Whooper swan and Common crane. Above mentioned waterfowl staging areas with high concentration of birds, quite often have Natura 2000 status as designated Special Protected Areas (SPAs) or are of the international importance because of large aggregations of birds. This is why implementation of this project in Lithuania made significant contribution to the conservation of migratory waterfowl - swans, geese and ducks as well as Common crane on the EU scale, since the project actions had positive impact on the staging concentrations of the above-mentioned birds during seasonal migration and wintering periods. Whereas during other seasons - breeding, wintering or even other migration periods, those birds stay in different EU countries. Moreover, eight project sites support high concentrations of waterfowl and have the SPA status. The project practical conservations actions aimed to reduce mortality of staging birds' species on high voltage overhead electricity transmission lines grid (Project actions C.1, C.2) in those areas or in close vicinity of them. Those were Birveta wetlands complex, Kretuonas Lake, Zuvintas wetlands complex, Kamanos bog, Mūšos Tyrelis bog, Kauno marios, Nemunas river delta and Gražutė Regional Park. Thus, the above-mentioned birds' conservation efforts there, i.e. reduction of the birds' mortality by installing collision mitigation measures, and improved their conservation status, also supported implementation of the EU Birds Directive. In case of Birveta wetland complex SPA, implemented mitigation measures for reduction of the collision rate with electricity power lines of migratory waterbirds concentrations, also supported favourable conservation status of breeding Whooper swan population. The species is trigger species of this Natura 2000 sites. While in other SPAs the project actions supported reduction of the mortality of the migratory birds (mostly waterfowl).

Whole area of Lithuania is covered with a dense grid of the high voltage overhead electricity transmission lines, thus for the protection of White stork it is important to protect it against the electrocution. One of the project's targeted birds species was White Stork (*Ciconia ciconia*). This species is included in the Annex I of the EU Birds Directive. Lithuanian population of White stork constitutes up to 10% of the EU population. Therefore, from the EU point of view, all conservation efforts, which support favourable conservation status of Lithuanian population of the White Stork significantly contribute to the dynamic of the population.

Common Kestrel (Falco tinnunculus), although having favourable international protection status (IUCN category - Least Concern) and distributed in Lithuania, is included into Lithuanian Red Data Book List and belongs to the category "Rare species". One project concrete conservation action (C.4) was directly targeting local species populations in Lithuania, which had unfavourable conservation status, and lack of the nesting sites was one of the important threats. Thus, Project action C.4, which focused to reduce impact of this threat, covered whole territory of the country and directly contributed to the improvement of the conservation status of national species population. Before the project start up to 50% of kestrels' national population bred in the abandoned nests of large birds (mainly Raven), however monitoring results from 2108 shows, that recently 40% of the total population breeds in the artificial nests, erected within the project. However, according to the national and, especially, the EU regulations on the maintenance of the overhead electricity lines, all additional materials, including nests of large birds, must be removed both from the utility poles and wires. Thus, after Lithuania joined the EU, nests of the large birds are being regularly removed from the overhead electricity lines (including high voltage) network. The possible solution of the problem was installation of the artificial nests for falcons - special nest-boxes - on the electricity pylons. Such action was an alternative measure to compensate lack of the formerly abundant nesting sites – natural nests of large birds, and ensure their favourable conservation status. The experience of other EU countries shows very positive acceptance of the installed nest boxes by the species and high occupation rate of the nest-boxes on the electricity lines pylons by Common Kestrel. Within 4 project implementation years kestrels bred over 700 chicks in the erected nest-boxes. The share of occupied erected nestboxes accounted for app. 1/3. However, the potential of nest-boxes exists for growing population of breeding kestrels. It is expected that beyond accomplishment of the Project implemented by the Lithuanian Ornithological Society the population of Common kestrels in Lithuania would further increase as a result of the erected nest-boxes.

It is impossible to calculate real bird mortality reduction rate after the implementation of the project as we don't have the baseline information on birds' mortality in the most project implementation sites before the start of the implementation of the project practical conservation measures. However, there is a set of the detail monitoring and research data on the bird mortality over the overhead electricity transmission lines in other EU countries. This data provides rather

precise estimation of the reduction of birds' mortality rate after the implementation of certain wire visualization measures. Thus, logic of the project application was that if after the project the same measures with the same (or similar) technical solution will be implemented, similar birds' mortality reduction rate should be reached in Lithuania as well. The reduction of the birds' mortality rate usually fluctuates in the interval of the 60-90% in different EU countries for different birds' species. Our expectations were to reduce mortality rate by 90% for wintering, migratory and breeding swans, by 70-80% for migratory cranes and geese as well as wintering ducks and similar size waterfowl, and at least by 60% for breeding and migratory ducks and similar size waterfowl, also migratory passerines, and birds of prey.

However, the Project monitoring results basing on the conducted surveys, showed following findings:

• 852 km of high voltage overhead electricity transmission lines were surveyed by the fieldworkers walking beneath the electricity lines;

• 254 bird victims (112 mute swans in the Nemunas river in Kaunas in winter, 142 birds of different species monitoring other high voltage electricity lines) were found caused by collision with the wires;

• In Lithuania, the annual toll of up to **44 295** bird deaths caused by collisions with the high voltage electricity lines occurs;

• The annual toll of 11,1 bird deaths per 1 km of the high voltage overhead electricity lines without installation of visibility increasing measures occurs;

• The annual toll of up to 3,6 bird deaths per 1 km of the high voltage overhead electricity lines with installation of visibility increasing measures occurs;

• Beneath the lines with installation of visibility increasing measures introduced in the Project implementation the rate of bird deaths reduced in different months from 1,2 to 4 times, compared to the lines the visibility of which had not been improved;

• Having implemented protection measures 1 374 bird deaths are avoided in the high voltage overhead electricity lines extending 123 km;

• Installing spiral bird flight diverters on electricity lines is one of the most effective methods to reduce bird deaths in open habitats in Lithuania.

Installation of the bird protection measures on the utility poles within high voltage electricity transmission grid also showed significant reduction of the mortality rate of the White stork because of electrocution. Before installation of bird protection measures against electrocution

(wishbone and saucer type) on the high voltage electricity transmission lines in the areas of premigratory concentrations important for White storks, each year up to 50 deaths of the species were registered until the project start. Analysis of later years shows that after the wide scale installation of the bird protection measures on the utility poles of the high voltage electricity transmission grid in the most dangerous for White Stork areas solely 23 power outages due to the impact of birds were registered in 2017, including only 3 cases in the segments where protection measures were installed in the Project implementation. In 2018 solely 5 power outages due to the impact of birds were registered across whole country only. It shows effectiveness of those measures.

### Relevance for environmentally significant issues or policy areas

According to the existing practice when high voltage electricity transmission lines are reconstructed, or new ones built, during the Environmental Impact Assessment procedures, basing on the project results, relevant experts (ornithologists) will be invited to render assistance in identifying the most dangerous segments of the electricity lines for birds. Such practise is recommended by the European Commission in the Guidance on Energy Transmission Infrastructure and EU nature legislation (2018) as well as BirdLife International (BirdLife Position statement on Power lines and Grid development in the European Union). Relevant commitments were reached by the only national high voltage electricity transmission grid operator in Lithuania - AB LITGRID. When Lithuania joins the common European electricity transmission network, the impact assessment of high voltage electricity transmission lines on birds will be carried out, and the most threatening lines will be marked with visibility increasing measures. LITGRID during regular maintenance of the high voltage electricity lines foresees to implement bird protection measures for replaced pylons (200 units annually), i.e. wishbone type bird flight diverters impeding birds (storks) to perch on support structures above insulators, also saucer type casings of a bigger diameter above insulators will be erected. Information concerning bird victims beneath the high voltage electricity lines will be collected on a voluntary basis (involving members of the LOD), and the collected data will enable to identify lines posing threats and facilitate installation of visibility increasing measures on the wires. AB LITGRID again committed to install wires visibility increasing measures in the most dangerous for birds' segments of the high voltage grid.

#### Long-term benefits and sustainability

Long-term environmental benefits are related to long lasting sustainability of the measures, which have been implemented during the project. The Lithuanian Ornithological Society and LITGRID will continue the cooperation beyond the Project. The nest-boxes for falcons should be proper for breeding for at least 10 years (Action C.4), while protective measures for White storks (Action C.3) should be functional even for a longer time if will be maintained during routine high voltage electricity line maintenance works, which usually are done every eight-ten years. According to different published sources, "spiral type" wire markers, are still functioning after 20 years after their installation. High visibility "bird diverters" usually are functional for shorter period, nevertheless their producers provide up to ten years warranty. LITGRID foresees to

implement bird protection measures for replaced pylons (200 units annually), i.e. wishbone type bird diverters impeding birds (mainly, storks) to perch on support structures above insulators, also saucer type casings of a bigger diameter above insulators will be erected. However, the same protection measures should have positive impact for all large body and long-winged birds. AB LITGRID plans to continue installation of bird protection measures against electrocution on high voltage electricity grid after the end of the project across whole area of the country. Information concerning bird victims beneath the high voltage electricity lines will be collected on a voluntary basis (involving members of the LOD), and the collected data will enable to identify lines posing threats and facilitate installation of visibility increasing measures on the wires. LITGRID foresees to implement bird protection measures for replaced pylons (200 units annually), i.e. wishbone type bird diverters impeding birds (storks) to perch on support structures above insulators, also saucer type casings of a bigger diameter above insulators will be erected. Information concerning bird victims beneath the high voltage electricity lines will be collected on a voluntary basis (involving members of the LOD), and the collected data will enable to identify lines posing threats and facilitate installation of visibility increasing measures on the wires.

AB LITGRID committed to maintain installed bird protection measures (Action C.3) at least for a lifetime of certain high voltage overhead electricity lines. CB LOD has also negotiated with the associated beneficiary that it would commit to maintain installed wire markers for a longer period than warranty of the producers. In addition, in case of the construction of the new high voltage overhead electricity transmission lines as well as reconstruction of the existing ones, basing on the project results, the visualization of the electricity wires in the most sensitive place was committed by the associated beneficiary – AB LITGRID. Selection of the most dangerous for birds' electricity lines segments in terms of bird collisions with wires will be implemented during the EIA process. Associated beneficiary has promised to put this requirement into the technical documentation of the procurement of the external experts.

Long-term qualitative economic and social benefits are mainly related to the implementation of the bird protection measures (Action C.3), which also ensure continuous power supply. Because of short circuits caused by birds (which also cause death from electric shock) the high voltage electricity transmission line gets out of order, which causes financial losses for the electricity suppliers, and also might cause social problems for the society in case of loss of power supply. Besides, production of the bird protection measures – "wishbone" and "saucer" type – gets quite popular, thus, this creates some additional opportunities for local economy and labour market. Production of big number of nest-boxes also had positive impact for small local producers, especially, having in mind the possibility of the replication of the implementation of the Action A.4 or later replacement of the installed nest-boxes. LOD has committed to produce at least 20 nest-boxes per year during minimum 5 years period after project end and provide for LITGRID with clear indication of the sites where currently installed nest-boxes should be replaced with

new ones and/or installed additionally in the new places. AB LITGRID also committed to install those nest-boxes according to the recommendations of LOD.

Additional work-time used for installation of all measures during implementation of the concrete conservation actions (C.1-C.4) also support local economy through the additional incomes of the relevant contractors.

The main aim of the communication activities after the end of the project is to capitalise Project results and further educate public on the bird mortality problem within the high voltage electricity transmission grid. The communication actions will be mainly performed by the LOD with the main focus on five main communication actions:

- 1. Maintenance of the Project website;
- 2. Work with media;
- 3. Live broadcast from the kestrels' nest;
- 4. Maintenance of the kestrels' database;
- 5. Repair and maintenance of info stands (optional).

#### Replicability, demonstration, transferability, cooperation

All four concrete conservation actions (C.1–C.4) of the project have potential to be applied on a larger scale both in Lithuania and other EU countries. The project findings with relevant recommendations are presented in the Project Technical Report (E.7), which was widely distributed among relevant stakeholders on the national and international levels (NGOs, grid operators, academic institutions, etc.). Moreover, all project concrete conservation actions can be implemented not only on the high voltage electricity transmission grid, but also on medium and low voltage electricity lines grid, including distribution network. Such transferability to other voltage electricity lines network is extremely important from the point of view of bird protection as medium and low voltage grid is much more widely distributed and this grid is much denser in all the EU countries. At the same time, lower voltage electricity lines are more dangerous for bird collisions with wires and electrocution. Thus, installation of the relevant mitigation measures is of high birds' protection importance.

Replicability of wire marking is based on the experience of other countries around the world. Various technical solutions and selection of the entire wire markers were analysed in detail when implementing the project preparatory action A.1. The analysis and selection of practical solutions were done in cooperation with project partner LITGRID, which was responsible for practical implementation of installation of wire markers (Actions C.1 and C.2).

High effectiveness of the implemented White stork protection measures against the electrocution (Action C.3) demonstrated importance of the installation of such measures on whole overhead electricity lines network (of all voltage values) both in Lithuania and other EU countries. Especially, having in mind that the same protection measures should have positive impact for all large body and long-winged birds. AB LITGRID plans to continue installation of bird protection measures against electrocution on high voltage electricity grid after the end of the project across

whole territory of the country. Therefore, cooperation between nature conservationists and operators of the medium and low voltage electricity grids (for example, ESSO in Lithuania) are of crucial importance. The project partnership between CB LOD, and AB LITGRID, can be an example of such cooperation possibility in the field of nature conservation.

The most of project solutions on the implementation of the practical conservation measures were the most cost-effective if to compare to analogous works in other countries. First of all, implementation of the project actions C.1-C.3 was harmonized with the schedule of the routine maintenance of the power lines and switching-off of the electricity supply. Combination of the routine maintenance of the power lines allowed to reduced costs of the implementation of the bird protection measures on the high voltage electricity lines avoiding costs for workers logistic, etc. as it was covered by planned lines maintenance work.

Use of "wire lift" for installation of the "bird diverters" was also very cost-effective solution comparing with the cost of helicopter work, which is widely used around the world. Besides, switching-off of the high voltage electricity supply in even in one line, requires strategic planning of the maintenance of whole national electricity supply system and causes some financial loss. However, in case "bird diverters" are being installed on the ground cable by using "wire lift" switching-off of the high voltage electricity supply is not needed, while it was obligatory condition if using helicopter.

In addition, project activities and implementation of dissemination actions determine better visibility of birds-friendly solutions during development and maintenance of the high voltage electricity grid. The project visibility among various stakeholders was increased by various Project actions – International seminar, networking with other projects and project website. As for the general public basing on the experience of other projects, all the most effective awareness and dissemination measures including wide involvement of media were implemented – work with media, info stands, publications including wall-calendars, project film and live-stream broadcast from the Common Kestrel breeding site.

The project experience can be easily repeated in other EU countries, because the coverage of the overhead electricity lines grid grows rapidly, especially, in parallel with development of the renewable energy. Thus, the increased bird mortality risk requires implementation of the relevant mitigation measures to reduce bird collision and electrocution risk.

Coordinating beneficiary – the LOD – has distributed information on its experience among the BirdLife partners across the Europe, and during international seminar that was organised in 2018.

All four concrete conservation actions had also demonstrative character for Lithuania, because such approach was used in the country for the first time. Thus, their implementation with clear benefit for environment should boost the implementation of such bird protection measures on wider scale in whole national electricity supply sector including electricity distribution network.

#### **Best Practice lessons**

The project uses already tested experience from other countries (Sweden, Denmark, Spain, Hungary and other) on the support of the falcons breeding populations through the installation of nest-boxes on the electricity lines poles (Action C.4). Such practices effectively support falcons breeding populations and ensured their favourable conservation status in several countries.

Moreover, White stork protection measures – "wishbone" and "saucer" type installations used for the implementation of the project action C.3 – have been installed on the part of the network in Lithuania to experiment and test their efficiency before the start of the project already. Project associated beneficiary LITGRID tested the effectiveness of the proposed measures. The perfect results were received, with almost zero number of the accidents because of electrocution of White storks on the experimental electricity transmission lines. Thus, because of the high positive effect, it was decided to place such new installations in other sites of the high voltage electricity network in Lithuania that are already outside of the project scope.

In addition, special devices – "wires lifts" – were used for the installation of the high visibility wires markers – "bird diverters". This device was selected basing on the practice from other countries. The device was tested on one segment of the high voltage electricity line near Kaunas city before the start of the project already. The advantage of the "wire lift" is that it allows installing wire markers on the electricity lines above open water or swampy habitats, i.e. in places where special ground machinery and equipment cannot be used. Moreover, this is quite cost-effective measure comparing to the use of helicopters what is a practice in many other countries.

Best practice and experience of other projects was also used for dissemination of the project activities. Wall calendars were chosen as very effective and rather long-time lasting information dissemination measure. A poster was published and disseminated in countryside around the country, which allowed reach quite a lot of senior people who do not use Internet intensively or even do not use it at all. The project film with broadcasts on the national TV basing on the common practice allowed to reach wide public audience, while distributed Layman's report and Project Technical report ensured share of the project finding to the relevant stakeholders. Live broadcasting from the Common Kestrel nest also attracted people attention to the project webside.

#### Innovation and demonstration value

The project has one clear innovative aspect for Lithuania and other EU countries – the installation of the bird protection measures on the utility poles within high voltage electricity transmission grid. These measures were implemented in order to reduce the mortality rate of the White stork because of electrocution. The reason for such accidents is short circuits that are caused by White storks themselves when these large birds move their own bowels while sitting on the insulators of the high voltage electricity pylons (what they do quite often). The only possibility to reduce number of such mortality cases of the species is to chase them away from

the dangerous places on the pylons of the high voltage electricity transmission lines. For this purpose, AB LITGRID, had proposed installation of the special "wishbone" and "saucer" type installations over the insulators on the pylons. "Wishbone" type installations do not allow birds to make a touchdown on the insulators, while "saucer" type installation protect electric wires against the fall of the excrements on them. To reach higher efficiency, both types of installations were installed on the same place, and double protection was created. Project associated beneficiary had tested the effectiveness of the proposed measures already before the project started and got perfect results with almost zero of the accidents caused by storks on the experimental electricity transmission lines.

Before installation of bird protection measures against electrocution (wishbone and saucer type) on high voltage electricity transmission lines in the areas of pre-migratory concentrations important for white storks, each year up to 50 deaths of the species were registered. Analysis of later years shows that in the segments of the high voltage electricity transmission grid solely 12 power outages due to the impact of birds were registered, including only 2 cases in the segments where protection measures were installed during the Project implementation. It shows effectiveness of the measures. Because of the high positive impact, it was decided to replicate such new installations on the high voltage electricity pylons during implementation of the project as an effective new practice to other sites of the high voltage electricity network in Lithuania. Thus, this practice is innovative for other EU countries too. Having in mind the effectiveness of newly implemented measures on reduction of the White storks' mortality, such innovative practice should be repeated for demonstration purposes on other electricity transmission or even distribution lines in Lithuania and other countries.

All four activities of the concrete conservation actions had clear **demonstrative** character and were implemented during the reporting period:

- Installation of bird collision mitigation measures on the transmission power lines in the important bird staging areas in Lithuania (C.1.).

- Installation of high visibility wires markers on the transmission power lines in the most sensitive bird areas in Lithuania (C.2).

- Installation of the bird protection measures on the utility poles within high voltage electricity transmission grid in Lithuania (C.3).

- Erection of the nest-boxes for falcons (C.4).

Methods used by three concrete conservation actions - C.1, C.2 and C.4 – were already applied in some EU countries prior to the project. However, these were quite new for Lithuania. At the same time all those practical conservation measures had a demonstrative character on the EU level as well having in mind that monitoring results have proved their effectiveness. Method used in C.3 action was innovative even on the EU level and had strong demonstrative character because of possible replication by other stakeholders in Lithuania, EU countries and beyond.

Although supplementary visualization of the electricity lines wires is quite common practice in several EU countries, there was no larger scale installations of the bird flight diverters on Lithuanian electricity grid before the project, and only several tests on local scale were done.

Regarding the nest-boxes for falcons, such country-wide schemes were also implemented in several EU countries, however, had never been used in Lithuania. Thus, erection of the nest-boxes on the pylons of electricity lines, should be considered as demonstrative practice for Lithuania and neighbouring countries.

And finally, elaborated ex-ante and post-ante monitoring program adapted for the evaluation of the electricity network impact on birds' mortality can be applied on other electricity grids – mid and low voltage electricity distribution grid, and it also has demonstrative character.

### Long-term indicators of the project success

The project targeted to reduce mortality of the migratory birds (mainly waterfowl in their staging areas) and breeding White storks and improve the breeding population of the Common Kestrel. Therefore, number of killed migratory/wintering birds because of collision with wires, number of killed White storks because of electrocution, and number of breeding Common Kestrel pairs on the high voltage overhead electricity grid are the main indicators, which clearly illustrate the positive impact of the project actions on their populations. This can be assessed through regular monitoring of killed birds in the sections of the high voltage overhead electricity grid, where practical project actions for the reduction of birds' mortality were implemented. Beneath the lines with installation of visibility increasing measures introduced in the Project implementation the rate of birth deaths reduced in different months from 1,2 to 4 times, compared to the lines the visibility of which had not been improved. Long-term recurrent monitoring of the occupancy of the falcons' nest-boxes also presents valuable information on the project success, namely in securing of the favourable conservation status of Common Kestrel breeding population in Lithuania, which also makes a significant impact of the population in whole Eastern Baltic region.

The continuation of the installation of the White stork protection measures against electrocution on national high voltage overhead electricity grid after the end of the project will be a clear indicator of the project success. Information on the scale and number of the installation of the "wishbone" and "saucer" type measures can be regularly provided by AB LITGRID. LITGRID is the only operator of the high voltage electricity grid in Lithuania.

Number of installed wire markers for their better visibility on newly built high voltage electricity transmission lines in the sensitive for birds' sites also should be used to assessed project success and transferability of the project experience. Such kind of information also can be provided by the AB LITGRID.

Additional indicator of long-term project success can be an increase of number of the installed nest-boxes for falcons on low and medium voltage electricity grid and their placement on trees and buildings. This will indicate replicability and transferability of the project experience with a possible long-term positive impact on the breeding population of Common Kestrel.