LIFE12 NAT/SE/000132

FINAL Report
Covering the project activities from 01/09/2013 to 31/12/2018

Reporting Date
31/12/2018
LIFE+ Vänern

Project Data

Project location	Sweden, regions Norra Mellansverige and Västsverige
Project start date:	01/09/2013
Project end date:	31/12/2018
Total Project duration (in months)	64 months
Total budget	2,439,546
Total eligible budget	2,439,546
EU contribution:	1,219,773 €
(%) of total costs	50 %
(%) of eligible costs	50 %

Beneficiary Data

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2. Executive Summary

LIFE Vänern is a nature conservation project run by the County Administrative Boards (CAB) of Värmland and Västra Götaland, from September 2013 to December 2018. The project objectives have been to restore important habitats (see selection in table 2) listed in annex 1 to the Habitat Directive and important breeding and staging sites for birds (see selection in table 3) listed in Annex 1 to the Habitat Directive around Lake Vänern and facilitate for the recurring management of the project areas after the project. The physical actions (C-actions) of the project has been carried out in 17 different Natura 2000 areas around Lake Vänern (see map and names in figure 2). Above that the project has also been dealing with dissemination of information about nature conservation in general, and specific information about the species, habitats and areas included in the Natura 2000 network.

The project has comprised a wide range of different actions, from restoration of overgrown grasslands and breeding sites for birds, to production of plans, reports, information and building of facilities for visitors. The implementation of the project has substantially been running smoothly and there have not been any major setbacks. The project crew are looking forward to keeping on managing the restored habitats and bird-sites and we are positive to set-up or join similar LIFE-projects or other EU-financed projects in the future.

Figure 1. LIFE Vänern has been a diverse project, with different kinds of nature conservation actions. Two common themes have been restoration of open landscapes and providing sheltered breeding and staging sites for birds.

2.1 Administrative part

The coordinating beneficiary, County Administrative Board of Värmland (Lst S), has been responsible for the implementation of the project and has had the direct responsibility for the financial control and practical implementation of the project, as well as reporting, financial monitoring and accounting. The associated beneficiary, County Administrative Boards of Västra Götaland (Lst O) has been responsible for the implementation and project administration in their county. The project management group consisted of four persons, three from Lst S and one from Lst O.

The coordinating beneficiary (Lst S) has appointed a project manager, financial advisor and a regional project coordinator. The associated beneficiary (Lst O) has appointed a regional project coordinator. The project management system has been the same during the project duration. However, the project manager (Lst S) has been replaced twice and the regional project coordinators for each county have been replaced once. The changes in personnel has caused minor delays which have not been crucial for the project.

The project management group has held 34 meetings via Skype and 6 meetings in person where practical implementation and administration has been processed. A group-specific, joint web-site has been used to share documents and information between the collaborators. Since the middle of 2017 there has also been a steering group consisting of three Heads of departments on Lst S with aim to support the Project manager in the implementation of the project. The steering group has held 9 meetings during 2017 and 2018.

The beneficiaries have had reference group meetings but a long with the progress of the project, both beneficiaries switched to the use of more direct consultation of local expertise, experts, and stakeholders to help us out with the project. To optimize the capacity of the project there has also been other staff from the County Administrative Boards, not involved in the management groups, working in the project. The purpose has been to use the right qualifications for the right aims. All staff who has been working in LIFE Vänern have notes of secondment to the project.

2.2 Technical part

All technical project actions have been finished at the end of the project 31 December 2018.

2.2.1 A-actions

All ten restoration plans (A1) were completed and published on the project website in 2015. Thereafter the restoration plans have been updated and published successively. All plans have been completed during the autumn 2018 so that all figures and maps are corresponding to the final achievement of the actions.

The preparatory inventory of biological-cultural heritage (A2) was carried out in 2014 and the results have been incorporated in the restoration plans.

Working with different permit procedures (A3) has been an ongoing process in LIFE Vänern. In total there has been 53 permits or land owner agreements applied for in the project. The last permits, regarding the view platform in project area 5, was finally received in April 2018.

Due to the many different actions in LIFE Vänern we have put a lot of effort in different tendering processes (A4). In total there has been 41 "call for tenders" in competition and many other procurements under the base-level. Most tendering processes has been concerning smaller amounts, around 10 000 Euro. Just a few of the tendering processes has been big, with contract amounts above 50 000 Euro. Both beneficiaries have also been using frame contracts for some of the services needed in the project. The framework contracts have covered important actions like clearing of vegetation, boat transports and building of uncomplicated facilities for visitors, which has been requested in the project.

A management strategy for important breeding sites for birds has been compiled during the autumn 2018 (A5). It contains an introduction which describes the background and strategic aspects that should considered in the future. The second part is an annex which contains a description of the future management for every single skerry that were restored in LIFE Vänern.

2.2.2 C-actions

Numerous concrete nature conservation actions (C-actions) has been carried through in LIFE Vänern. Many of them has been conducted by different entrepreneurs who has been contracted through different kinds of tendering processes.

Clearing of skerries important for colony nesting birds (C1a) has been the most widespread of all actions in the project, accomplished in 13 Natura 2000-areas around the lake. The clearings have been conducted through manual cutting with brush-cutter or chainsaw. In total 214 different skerries, covering 78,1 hectares have been cleared from small trees, bushes and shrubs. Most of the skerries have been cleared twice during the project but 3 skerries has only been cleared once and 36 skerries has been cleared three times during the project.

Clearings of trees and bushes (C1b) was also the first step in restoration of grassland-habitats, which was conducted in four different project areas in LIFE Vänern. In project area 1 "Millesviks och Lurö skärgård" the clearings were situated on islands which was quite challenging to reach. Another challenge was to remove all the woody vegetation on the wet grasslands in project area 5 "Klarälvsdeltat" close by the residence town Karlstad.

Burning of grasslands and heather (C2) has been carried out on in total 28,7 hectares. The action is a crucial part in regenerating the vegetation into functional pastures. The action has mainly been carried out by staff from the County Administrative Board of Värmland under supervision from experts who had performed controlled burning in the other Swedish life-project "LIFE Grace".

Restoration by fire management in 9010 *Western Taiga (C3) is another profound action that has been conducted in the project. In total 17,7 hectares of forest land has been burnt spread on three different islands. The carrying through of the action became crucial during 2018 due to the hot and dry summer. We had to conduct our efforts at the same time as huge wild fires were raging in Sweden. Thanks to an extensive communication and cooperation with our partner project "LIFE Taiga" we managed to conduct the burnings without any major complains.

Cutting of tussocks and stump grinding (C4) is an action that only has been carried through in project area 5. The action is crucial for empowering the cattle and machines to reach the whole area in the future. The cutting was conducted by the same entrepreneurs who were responsible for the cutting of trees and bushes (action C1b) in the area.

Restoration mowing (C5) has been done in two small sub-sites in project area 4, Nötön-Åråsviken. The restorations comprise in total 1 hectare of former meadows on peninsulas in the area which in the future will be maintained by recurrent mowing performed by small scale, motor-manual mowing machines or tools.

Reintroduction of grazing (C6) has been carried through in the project in four different project areas; 1, 4, 5, and 6. In total 114 hectares of pastures has been restored where the long-time objective is to keep on grazing in favour of the targeted habitats 4030, 6410, 8230 and 9070. In all areas 2016 became the first grazing season except for project area 5 when the first season was 2017. Instead of building fences around islands and along shorelines, which would have restricted the development of important habitats, we have invested in some other devices to facilitate the grazing in an efficient way. For example, the action has included some special measures like building a gangway for cattle which facilitates the transports of animals back and forth to islands in project area 1. The fences in project area 5 is another innovative solution where the flexibility of the construction allows threes to fall over them without breaking the fences. GPS collars have given us knowledge about grazing patterns and facilitated the troublesome supervision of cattle in the archipelago. These kinds of facilities might be crucial for the long-time sustainability of the grazing and the pastures.

Creating breeding sites for birds (C7) is divided in two sub-actions; building semi-natural nesting platforms for Osprey and White-tailed Eagle, and construction of breeding islands for ground nesting birds. We have built in total 16 nesting platforms for the raptors. This is five less than mentioned in the application. We stopped building platforms because the result was not as expected. In earlier try-outs there has been a high degree of nesting activities on the built platforms. But in LIFE Vänern only one of the 16 nesting platforms has been used. The other part of action C7 was to build breeding islands for terns and gulls in project area 2. Here the result was much more encouraging. Already during the first breeding season 2018, there were at least 12 pairs of Common terns *Sterna hirundo,* breeding on one of the islands. On the other islands there were a lot of birds resting and roosting and among them there were observed groups of Little Gull which might bread on the islands in the coming years.

2.2.3 D-actions

Habitats and species have been monitored (D1) in the project to evaluate in what extent the project targets are met. In some actions monitoring has been carried out both before and after restoration. Some have only been monitored after that action has been completed.

Photographs before and after actions has been taken in specific points and angles in all restored grassland areas. Photos has also been taken of the skerries before and after clearing.

Grassland-vegetation and birds has been monitored by different consultants, before and after the restorations. The results are in many ways positive even though the some of the target-species have not shown up in the way we had expected. Although the vegetation and birdlife has started evolving, there will take some time until typical species and structures has returned to the grasslands in full extent.

Monitoring of the burnt Western taiga sub-sites has been conducted in line with the application, including aerial photographs, specific photo points on the ground, basal area of different tree species etc. The results from the areas burnt during the extremely dry summer 2018 shows, as expected, quite hard and deep impact of the fires.

For the cleared skerries we have got data of the number of breeding birds from the national monitoring program for colony nesting birds in Lake Vänern which has been running since 1989 (not financed by the project). An evaluation of the results from the program was compiled by the Department of Biology, University of Lund in the end of 2018. It shows no signs that the bird populations on the skerries in Lake Vänern has increased due to the clearings that has been carried out. Instead the project has probably contributed to keep the numbers of these species in the same level as before the clearings.

Tendering for consultants to accomplish the assessment of socio-economic impact and ecosystem functions (D2) was done during the summer 2018 and the investigation, which is divided into 4 different sections, was finished in November 2018. The analysis shows that the project has contributed to local and regional economy in many ways. For example, the total amount of orders in the project, about 1 million Euro, has contributed to the economy of more than 100 different companies and contractors. The value of contracts and procurements has been distributed so that about 60 % has been used on local companies and 40 % on long range companies. Another quantitative part of the socio-economic study shows that the monetary value of restored grasslands in the project, in terms of possibilities to get subsidies for these, is assessed to 36 000 Euro per year.

2.2.4 F-actions (except from project management/administration F1)

Networking with other LIFE and non-LIFE (F2) projects have been the main F-action except project management during the project. The time spent on networking has exceeded the budget for the action. Our networking has covered five international LIFE-meetings as well as five national LIFE-meetings. We have also participated in final seminars of three Swedish LIFE projects. In 2014 we made a rewarding study visit to the Slovenia LIFE-project LIVE Drava where they e.g. showed us their inventory methods and work on building breeding sites for Common tern, *Sterna hirundo*.

Financial audit (F3) was performed in the end of the project by Certified Internal Auditor (CIA) during two on spot visits and distance work. The auditor's report was completed and submitted to Lst S in March 2019.

The long-term document “After LIFE conservation plan” (F4) has been compiled during the end of the project. In the plan the future demands of management and measures are summarized. In the first part of the plan includes a SWOT-analysis where different Strengths, Weaknesses, Options and Threats are discussed considering the long-term sustainability of the project actions. In the following chapters the after-LIFE situation is

described from three different angles. From the habitats point of view, from the species point of view and from the actions and project area point of view. Summarizing the plan, we can see that the future costs of after-LIFE management are estimated at 67 100 Euro per year. The County Administrative Boards are responsible for most of the actions which will be conducted for the different actions. By keeping on monitoring the habitats and species there will also be a possibility to adapt the future management to different scenarios.

2.3 Dissemination actions

2.3.1 E-actions

Several notice boards (E1) has been put up in accordance with the application. In the beginning of the project 56 notice boards were put up presenting general information about the project. The signs were erected in public places like beaches, marinas, and natural reserves. The aim was to spread information about the project and its coming actions.

During the latter part of the project we have also produced site-specific signs. For our three burnt Western taiga areas there has been one site specific sign produced for each site. The signs have been erected on in total 7 locations. In June 2018 we completed a site-specific sign for the restored pastures on islands in project area 1. This sign has been erected in 3 locations in the area. Another site-specific sign, that was completed during the end of 2018 and erected in 2 places, informs about habitats and birds in project area 5. And finally, there has also been a specific information-sign produced and erected at two location along the main road passing by our project areas 2, 4, 6, 7 and 8, informing about the Ramsar area and Natura 2000 sites associated with this the area.

The project website (E2), www.lifevanern.se, was created in the beginning of the project. Thereafter we have been publishing news and additional data throughout the project. The website has information about the project areas, project activities, progress and our results. We have reports, restoration plans, maps, printed information material, and other important documents presented there as well. Lst S will keep on manage the website for at least 5 more years after the end of the project.

We have produced three different leaflets (E3) in the project. A leaflet with general information was produced early in the project and spread in 1000 printed copies. Our next leaflet was produced in 2018, concerning the protected areas, including Natura 2000, in Lake Vänern. This leaflet has been spread to tourist offices, associations, municipalities etc. in over 5000 copies. Finally, we have also produced our Layman's report "LIFE Vänern 2014-2018". In this report we are describing the project actions and sites in an easy and educational way. The report which includes many photographs, was printed in 500 copies just before our final seminar. All leaflets and reports are published on our website.

We have taken active part in 27 information meetings (E4) with associations, municipalities, stakeholders etc, which mainly has been arranged by other actors than LIFE Vänern. The meetings, which has been spread over the whole project period, have reached from 8 to 200 people.

Facilities for visitors (E5) has mainly been built during the latter part of the project. The project has produced three docking points for boats (bridges), two toilets, one view platform accessible for wheel chairs, about 14 kilometres of trails including footbridges, markings and signs, two picnic areas with tables and benches, two parking areas for 10 respectively 20 cars. The trail from the parking lot to the view platform has been constructed for wheel chair accessibility. In some locations the facilities have already been taken in use and we have got a lot of positive feedback on the arrangements. Among those constructions that were finished during autumn 2018 there are some that have not been fully discovered by the public yet. But during the spring we are convinced that many people will have the opportunity to enjoy these facilities and their surrounding landscapes.

In LIFE Vänern we have held two seminars and one field trip (E6). Our inception seminar was co-arranged with several other organisations on "Vänerns dag" in June 2014. The final seminar, which was held in 5-6 September 2018, gathered about 70 participants on the first day, which included presentations of the project etc. indoor in Karlstad. On the second day we had a fieldtrip to project area 1, Lurö skärgård. The excursion, which included about 60 participants, was a big success. We had short presentations and a lot of interesting and rewarding discussions during the day. The feedback from the participants was very positive. The media has payed attention to the project during the whole project-period which has resulted in several articles in newspapers, journals and interviews in radio-programs.

2.4 Key deliverables and outputs

LIFE Vänern has substantially finished all its actions and commitments due to the application. We have achieved all milestones and deliverables (annex 7.1.3) set for the project, except for the two milestones "First excerpt from monitoring of colony breeding birds 2014-12-31" and "Ferry docking points completed 2015-10-31" where the performance of the actions has been changed after approval from the EU Commission and two deliverables regarding "Press releases" 2016-10-31 and 2018-10-31" which has not been performed due to the high media interest that has been prevailing for the project. Several milestones and deliverables have not been finished in time, but that had no substantial impact on the project result.

In total, there are many achievements and different outputs from LIFE Vänern whereof some of the most important are listed in the table below.

Table 1. Summary of achievements and outputs from LIFE Vänern compared to planned extent in the application. Where no unit is specified the figure refers to the number of achieved outputs.

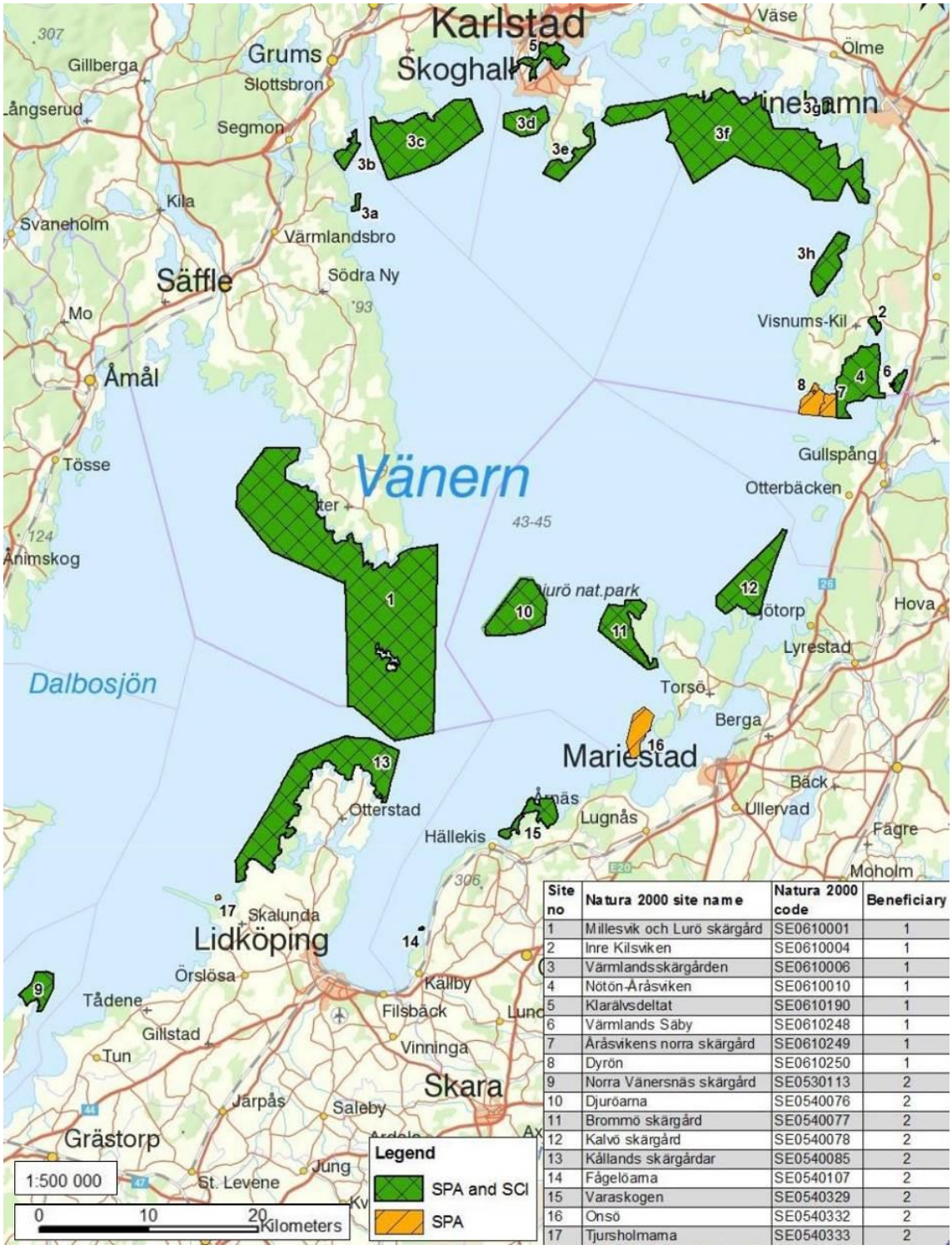
Action nr	Achievement/Output description	Planned in the application	Output from LIFE Vänern
A1	Restoration plans	17	10
A3	Preparatory inventory	1	1
A3	Permit procedures	n.a.	53
A4	Tendering processes	21	41
A5	Management strategy for important breeding sites	1	1
C1a	Clearing of skerries, important for breeding birds	209	214
C1a	Clearing of skerries, important for breeding birds	96,9 ha	78,1 ha
C1b	Clearing of trees and bushes on grasslands	103,5 ha	98 ha
C2	Restoration by burning of grassland and heather	27,5 ha	28,7 ha
C3	Controlled burning in *Western taiga	26,6 ha	17,7 ha
C4	Cutting of tussocks and stump grinding	40,3 ha	51,9 ha
C5	Restoration by mowing	1 ha	1 ha
C6	Reintroduction of grazing on pastures	102,6 ha	114 ha
C6	Fencing	15 633 m	8 992 m
C6	Detachable gangway for cattle ferry	n.a.	1
C7	Nesting platforms for Osprey and White-tailed Eagle	21	16
C7	Built breeding islands for terns and gulls	0,3 ha	0,12 ha
D1	Monitoring activities and compilations	6	7
D2	Socio-economic analysis and visitor study	2	2
E1	General information sign about the project	44	56
E1	Site specific signs	12	14
E2	Project specific website	1	1
E3	Leaflets and Laymans report	3	3
E4	Participation in meetings with organisations	20	27
E5	Docking points for boats	3	3
E5	Parking areas	2	2
E5	Toilets	2	2
E5	View platform	1	1
E5	Trails	14 km	13,7 km
E5	Pic-nic areas	2	2
E6	Arranged seminars and fieldtrip	3	3
F4	After-LIFE Conservation Plan	1	1

3. Introduction

3.1 Background, problem and objectives

Lake Vänern is the largest freshwater lake in the EU and has the largest freshwater archipelago in EU with approximately 22 000 islands, islets and skerries. The lake is home to a large population of seabirds and is an important staging site for migrating birds in the spring and autumn. White-tailed Eagle and Osprey breed on islands in the archipelago. The rich birdlife around Lake Vänern is dependent on open nesting

environments, not only open heaths and grasslands, but also open islets and skerries where colony nesting species breed. The objectives of the project LIFE Vänern are to restore, maintain and improve the quality of the open islands and shorelines for the biodiversity in 17 Natura 2000 sites around Lake Vänern in the counties of Värmland and Västra Götaland (see figure 2 below).



Site no	Natura 2000 site name	Natura 2000 code	Beneficiary
1	Millesvik och Lurö skärgård	SE0610001	1
2	Inre Kilsviken	SE0610004	1
3	Värmlandsskärgården	SE0610006	1
4	Nötön-Åråsviken	SE0610010	1
5	Klarälvsdeltat	SE0610190	1
6	Värmlands Säby	SE0610248	1
7	Åråsvikens norra skärgård	SE0610249	1
8	Dyrön	SE0610250	1
9	Norra Vänersnäs skärgård	SE0530113	2
10	Djuröarna	SE0540076	2
11	Brommö skärgård	SE0540077	2
12	Kalvö skärgård	SE0540078	2
13	Kållands skärgårdar	SE0540085	2
14	Fågelöarna	SE0540107	2
15	Varaskogen	SE0540329	2
16	Onsö	SE0540332	2
17	Tjursholmarna	SE0540333	2

Figure 2. Map and list of the 17 Natura 2000-areas included in LIFE Vänern.

Changes in land use and water management during the 20th and 21st century have caused a severe decline in habitat quality. Skerries and shores that were formerly completely bare are suffering from intense overgrowth of bushes and trees. This is an overall threat to the flora and fauna in the region, particularly when the water fluctuations in Lake Vänern are being kept at a minimum and when conditions for grazing and mowing on the islands are more difficult than on the mainland.

Pastoral practices on islands and wetlands have ceased almost completely during the 20th century. Small scale grazing and mowing is not profitable, especially not in remote areas. Areas that are too small, too wet or too distant to easily be converted to modern large-scale farming have been abandoned. Lack of necessary infrastructure for transportation of cattle and other equipment, is also a threat to the management of grassland habitats on islands. Due to the lack of management and overgrowth, very few birds use the area for breeding today.

Due to forest management and efficient control of forest fires during the last 150-200 years, the forests on some of the islands in the archipelago have become denser and with a higher proportion of spruce. In some of the project areas, forestry has had a negative impact on structures and composition of species. Denser and darker forests have a negative impact on species dependent on sun-exposed old pines. The lack of old trees and dead wood is a threat to many of the species normally associated with the habitat Western Taiga.

Table 2: Targeted habitats in LIFE Vänern.

Code	Name
4030	European dry heaths
6410	Molinia meadows on calcareous, peaty or clayey-siltladen soils
6510	Lowland hay meadows
8230	Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dilleniid
9010	*Western taiga
9070	Fennoscandian wooded pastures

Table 3. Targeted species in LIFE Vänern.

Code	Name (English)	Name (Latin)
A002	Black-throated Loon	Gavia arctica
A045	Barnacle Goose	Branta leucopsis
A075	White-tailed Eagle	Haliaeetus albicilla
A094	Osprey	Pandion haliaetus
A119	Spotted Crake	Porzana porzana
A151	Ruff	Philomachus pugnax
A166	Wood Sandpiper	Tringa glareola
A177	Little Gull	Hydrocoloeus (Larus) minutus
A190	Caspian Tern	Sterna caspia
A193	Common Tern	Sterna hirundo
A194	Arctic Tern	Sterna paradisaea

The quality and quantity of targeted habitats (table 2) are declining around Lake Vänern, and the same tendency can be seen in most parts of Sweden. Consequently, other threatened species will benefit from the project actions as well, not only the targeted species (table 3).

The archipelago of Lake Vänern is a very popular area for outdoor life and recreation during the whole year. During the summer large numbers of people enjoy the archipelago by boat or kayak, and during the winter ice-skating and ice-fishing are popular pastimes. Some of the species of the archipelago are very sensitive to disturbance during part of the year, especially birds during the breeding season. The great effort through the project to raise knowledge among local stakeholders and others active in Lake Vänern will hopefully pay off, minimizing the disturbance of habitats and species in Lake Vänern. At the same time, we hope that more people can enjoy the special environment that Lake Vänern provides, but in a sustainable way. The lake is important for the tourism and outdoor life in the region. Therefore, the restorations will also contribute in a socio-economic context.

3.2 Expected long term results

Expected long term results of the project area summarized in the following section. The long-term aspects of the project are also discussed in section 5.1.18 After-LIFE Conservation Plan and in section 5.4 Evaluation of long-term benefits, further below.

The skerries and islets cleared in the project are expected to provide suitable breeding environments for the targeted colony nesting birds and other birds. The bird colonies in the skerries will be numerous with a high diversity of different species. The habitat *8230 Siliceous rock with pioneer vegetation (Sedo-Scleranthion, Sedo-albi Veronicion dillenii)* will develop into favourable status and other groups of species, benefiting from these exposed environments, e.g. vascular plants, lichens and butterflies, will develop in a diverse and positive direction. Example of red listed species that, beyond the targeted species, might benefit from the cleared skerries are the bird turnstone (*Arenaria interpres*) and the red listed plant northern eyebright (*Euphrasia micrantha*). If the regulation of the water levels in Lake Vänern does not change into a more favourable regime for the open habitats on the skerries, the manual clearings will keep on being an important factor to maintain the breeding populations of birds in the lake.

The pastures and meadows restored in the project will be kept in shape through persevering management. The grasslands will successively develop into favorable condition regarding the habitats; *European dry heaths (4030), the Molinia meadows on calcareous, peaty or clayey-silt-laden soils (6410), the Lowland hay meadows (6510), the Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo-albi Vornicion dillenii (8230), and the Fennoscandian wooded pastures (9070).* The restoration will bring back the open landscape and the flora and fauna connected to this. Important structures and functions like flowering plants flooded wet meadows, rich insect-life, disturbances by hooves etc will reappear. Targeted bird species like the *Wood Sandpiper Tringa glareola (A166), Ruff, Philomachus pugnax (A151),* and *Spotted Crake, Porzana porzana (A119),* will regularly be breeding or staging on the pastures. Other, more widespread bird species like the Lapwing, *Vanellus vanellus,* Meadow pipit, *Anthus pratensis* and Yellow wagtail *Motacilla flava,* are common in the

areas. The development of nature values in the restored grasslands might take time. That is why the management must be sustainable.

The *Western taiga (9010)* will benefit from the controlled burning efforts in the project, creating and improving the habitat on in total 17,7 hectares on three islands. The burning has improved qualities and quantities of structures and functions in the habitats generating a mosaic of more open forests, warmer microclimate, more dead wood and in time possibly a higher content of deciduous trees.

Even though the built nesting platforms for Osprey, *Pandion heliaetus* and White-tailed Eagle, *Haliaeetus albicilla*, was not as successful as expected in the project application, we are still hoping that some of the nests will be used in the coming years. In this sense, each pair that can avoid disturbances from visitors through nesting in these semi-natural nests in remote areas, is a success for the project. When it comes to the built breeding islands in project area 2, Inre Kilsviken, we are hoping that the breeding activity of Common tern, *Sterna hirundo*, and other species will keep on and establish after the project.

Building of small-scale facilities for visitors in the areas will contribute to enhanced channelling of people to certain places where disturbance on wildlife, such as breeding birds, can be avoided. This factor is very hard to predict and describe in quantitative terms, but we know by experiences that people are easy to guide through these kinds of trails and infrastructure. We also believe that the enhanced possibilities to visit these protected areas will contribute to a wider consciousness and knowledge about our nature and its vulnerable values.

The long-term results for the habitats and species are hard to predict both in qualitative and quantitative terms. The only way to be able to manage the future development is to keep on monitoring the progress in different views. Our plans for future monitoring of the measures that has been taken within LIFE Vänern, is described in the After-LIFE Conservation plan (section 5.1.18 and Annex 7.3.2).

4. Administrative part

During the last two years of the project there has been a strong focus on finishing all the ongoing restoration actions and to manage all the dissemination actions and monitoring actions as well. While LIFE Vänern is a multifaceted project, with a lot of different actions, this has been a lot of coordination for the project group and project manager. To meet these challenges, we have had frequent meetings and contacts within the group especially during the last 6 months of the project. In the earlier phases there were several project meetings to establish good administration and to initialize the different actions in the project. The project management group has also met in person, approximately once a year.

In total we have held 34 organized project management group meetings via Skype and 6 meetings in person which often has had a thematic content. During these meetings we have discussed project progress and exchanged experiences and information about the technical implementation of the project actions and the dissemination and monitoring actions. Since there are only two partners, a lot of the day to day issues has been handled

straight away. At the management group meetings, common information issues have been discussed, as well as the actions and the administrative part including reporting and financial issues.

There are no amendments made to the Grant Agreement in the project. The project objectives and goals are still the same as defined in the Grant Agreement (GA). All actions have been finished as effective as possible. The details are presented in the Technical part of the report and in the updated tables for Milestones and deliverables (Annex 7.1.3), Gantt chart (Annex 7.1.4) and Progress table (Annex 7.1.5).

The partnership agreement was signed on 14/05/2014 and submitted with the Inception Report on 31/05/2014. The content of the partnership agreement is consistent with the guidelines for partnership agreements.

4.1 Description of the management system

The coordinating beneficiary (Lst S) has appointed a project manager, financial advisor and a regional project coordinator. The associated beneficiary (Lst O) has appointed a regional project coordinator. The project management system has been the same during the project duration and is the same as outlined in the application (Figure 3).

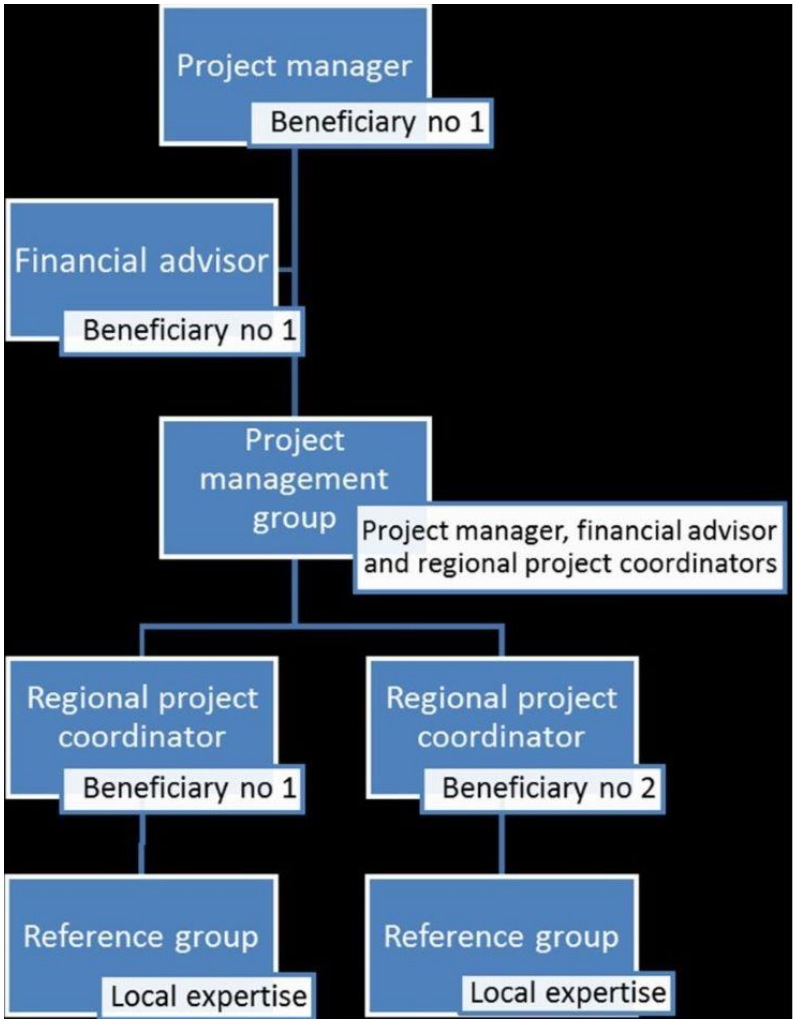


Figure 3. The organigram describes the structure of the management system of LIFE Vänern, where benificiary no 1 is the coordinating benificiary Lst S and benificary no 2 is the associated benificiary Lst O. The project manager and the financial advisor are placed at Lst S.

The coordinating beneficiary has been responsible for the implementation of the project and has had direct responsibility for the financial control and practical implementation of the project, as well as all reporting and financial monitoring. To manage the project, the coordinating beneficiary formed a project management group together with the associated beneficiary including four persons; the project manager, regional project coordinators and the financial advisor (for officer names see table 4 and 5 below). Mainly during the last years, the management group has been expanded with one person supporting us with the dissemination actions.

As mentioned in the Midterm report we have three new roles for personnel compared to the original budget (form F1); Project manager assistant, Information officer and Project staff (see further comments in section 6.1).

To get a good support from the leaders on Lst S a Steering group was set up in the middle of 2017. The group has been consisting, besides the project manager and financial advisor for LIFE Vänern, of Head of Unit for Nature Conservation (Thomas Östlund, Laura Hedberg and Linda Sundström), Head of Department (Torben Ericson) and Head of Unit for Administrative Support (Marie Örtengren). The Steering group has met nine times and made it possible for the LIFE Vänern project team to get useful support from the rest of the organisation at Lst S. No costs connected to the steering group have been registered in LIFE Vänern. Through this arrangement we got the opportunity to use special competences like communication-experts, agricultural-experts and GIS-experts from different parts of the Lst S. The construction was in many ways necessary to fulfil the demands, in both qualitative and quantitative terms, of the actions and administration in the project during 2017 and 2018.

The project management group has dealt with the day to day implementation of the project actions, and when more expert knowledge was needed both beneficiaries used national, regional and local expertise, other colleagues. In total we have held 34 organized project management group meetings via Skype (meeting minutes are available upon request). All personnel working in the project have notes of secondment to the LIFE project and the new ones, not submitted in earlier reports, are annexed in this report (Annex 7.1.2). Both beneficiaries have informed their respective Deputy Governors of the project including the planned actions and has continuously kept them updated on the project progress. The Governor of Lst S participated on our final seminar and has been supporting us during the whole project. Basic information about the project is also spread to the employees of both beneficiaries.

The project manager starting the project, Jenny Sander, was replaced on the 1st of January 2015 by Oscar Säwström who in turn was replaced by Gunnar Lagerkvist on the 1st of April 2018. The financial advisor Jurga Johansson and the former regional project coordinator at Lst S, Gunnar Lagerkvist have been involved in the project from the start to the end. Since the 1 st of April 2018 Johan Bohlin were operating as regional coordinator at the Lst S. At the coordinating beneficiary we have had an extended group of colleagues working with the different project actions according to table 4 below.

Table 4. Overview of employees on Lst S who has been working for LIFE Vänern. Notes of secondments has been annexed to our reports successively during the project.

Name	Role	Period	Action nr and (Project area)
Gunnar Lagerkvist	Regional Project Coordinator Project manager	2013- March 2018 From April 2018	Various Various
Oscar Säwström	Project Manager Regional Manager Assistant	2014 2016- mars 2018	Various Various
Jenny Sander	Project manager Project staff	2013-15 2016-18	Various C3 (3)
Jurga Johansson	Financial Advisor	2013-18	F1
Johan Bohlin	Project staff Regional Project Coordinator	2014-16, 2017-18 From April 2018	C7 (1, 3, 4, 8) Various
Johanna Malmgren	Project staff	2014-16	Various (4,6)
Frida Karlsson	Information Officer	2013	E1-E4, E6
Fredrik Andersson	Information Officer	2014-2018	E1-E4, E6
Frida Olsson	Information Officer	2017-2018	E1-E4, E6
Birger Gustavsson	Project staff	2016-2018	C1, C5 (4)
Dick Östlund	Project staff	2015-2018	C3 (3)
Per Gustafsson	Project staff	2016-2018	C3 (3)
Pia Immonen	Project staff	2017-2018	C3 (3) E1-E4, E6
Malin Johansson	Project staff	2016-2017	C1, C2 (1)
Per Tidlund	Project staff	2016-2017	C1, C2 (1)
Jonny Daborg	Project staff	2016-2017	C1, C2 (1)
Elin Sundberg	Project staff	2018	A3, A5
Ingrid Wirberg	Project staff	2018	A5
Maria Sundqvist	Project staff	2018	E6
Joanna Gebril	Project staff	2018	A4
Margareta Åkerman	Project staff	2018	C3 (3)
Dan Mangsbo	Project staff	2018	C3 (3)
Fredrik Wilde	Project staff	2018	C3 (3)
Anders Tedeholm	Project staff	2018	C3 (3)
Martin Larsson	Project staff	2018	C3 (3)
Helena Malmestrand	Project staff	2018	C3 (3)
Björn Nilsson	Project staff	2018	C3 (3)

The regional project coordinator for Lst O starting the project, Peter Ericsson, was replaced on the 1st of January 2015 by Andreas Furustam who has been coordinating the project at Lst O all the way through.

At the associated beneficiary Lst O, there are other colleagues involved in the project and helping with the project actions. Notes of secondment for all staff in Lst O working in the project has been submitted in earlier reports. Anders Stagen was involved in the application phase of the project and has been responsible for the overall management of many of the project areas. He has been responsible for the burning of Western Taiga in project area 12. He has also supported the management in other actions as well. Ulf Wiktander was involved in the application phase of the project and has also been working with monitoring of skerries in project area 9. The extended group of colleagues working with the project actions on Lst O is listed in table 5 below.

Table 5. Overview of employees on Lst O who has been working for LIFE Vänern. Notes of secondments has been annexed in earlier reports.

Name	Role	Period	Action nr and (Project area)
Peter Ericsson	Regional Project Coordinator Project staff	2013-2015 2018	Various C3, F1
Andreas Furustam	Regional Project Coordinator	2015-2018	Various
Anders Stagen	Project staff	2015-2018	Various
Ulf Wiktander	Project staff	2015	A3
Örjan Hedhman	Project staff	2016-2017	A4, E5
Ulrika Jemdal	Project staff	2017-2018	F1

The coordinating beneficiary has adapted ~~a~~ financial system and an accounting plan to meet up with the needs for both the project, and for the two beneficiaries involved including specifications for time registration. Both beneficiaries have implemented the system including a schedule for the financial reports from the associated beneficiary (more details under section 6.2). We have also decided for a digital document sharing system via a share-point called LIFE Vänern. The share-point has been used for sharing documents, e.g. protocols from meetings, reporting instructions, comprehensive table for reporting the actions' progress, etc.

Both beneficiaries have reference groups, although we have only had two official reference group meetings. Lst S held a meeting with the reference group for grassland restorations in 2014 (protocol submitted with the Inception report 2014). We have held one reference group meeting including both beneficiaries, expert on bird life and Lake Vänern (Thomas Landgren) and the Lake Vänern Water Conservation Association (protocol submitted with the Progress report 2015).

We have also used the field-meetings on the skerry Fjällbergen in project area 3 as reference group meetings (three protocols submitted in earlier reports). The project manager, the regional project coordinators, contractors and local expertise on birdlife and restoration of skerries has discussed and tried out different methods for clearing of the overgrowth on important breeding sites. The knowledge acquired has been used for setting up the actions C1 and A5.

Lst S also had a plan to form a reference group consisting of bird experts for the restorations in project area 5, Klarälvsdeltat, but the experts declined to participate. Still, they wanted to comment on the project restorations and their comments and suggestions were collected via email and phone. From this process we learned that traditional reference group meetings were not something to continue with. Instead, the communication with experts has developed toward more direct consultations, both for the grassland restorations at Lst S and for the bird breeding sites restorations at Lst S and Lst O. Both beneficiaries have a wide network including Lake Vänern Water Conservation Association (Sara Peilot), bird experts (Thomas Landgren, Dan Mangsbo, Stefan Asker, Olle Kvarnbäck, Per Gustafsson, Johan Bohlin, etc.), colleagues that are experts in management of the archipelago, grassland restorations, subsidies for farmers for the long-term management, cultural heritage (Anders Stagen, Ulf Wiktander, Niklas Wahlström, Maria Sundqvist, Sara Bodin, etc.). While participating in different meeting with stakeholders we have also had the opportunity to check of different actions and

decisions (see action E4, section 5.2.2.4). And on our final seminar and field trip we hired some experts with experiences from similar projects to discuss the sustainability of these kind of actions (see action E6, section 5.2.2.6).

During the last phase of the project we have focused more on dissemination actions, facilities for visitors and monitoring. These actions have claimed other kind of experts who have been contacted trough existing networks or by searching for new experts. For example, when constructing the view platform in Project area 5, Klarälvsdeltat, we had a lot of discussions with officers at the Municipality of Hammarö including expert on accessibility for people with limited mobility. We also made a separate field visit with a wheel chair-bound birdwatcher to discuss different aspects of accessibility on the view platform. The final configuration of the platform was drawn by a professional architect based on the notes that we had collected from different experts and stakeholders. In this way the use of experts on different topics has been even more efficient than if we had kept on trying to call reference group meetings.

4.2 Evaluation of the management system

4.2.1 The Project management-process

The project management arrangements have been well planned and is not an issue regarding the project success or not. The project manager and the financial advisor have established all the appropriate reporting routines and management tools. The routines have been implemented and, when needed, updated. The members of the project management group have planned coordinated and effectuated the different project actions. Each partner has been responsible for the actions within their county. Common actions have been conducted in cooperation. The project management group has been the forum in which we have decide the next coming steps, distribution of work, share problems and successes, and keep everyone informed about the project status. The need for meetings was more frequent in the beginning of the project, a bit smaller in the middle and then more frequent again at the end of the project. With only two partners, a lot of problems encountered has been handled directly over the phone. In total we are confident that the project has contributed a lot to coordinating nature conservation and management measures around Lake Vänern, for a long time ahead.

4.2.3 The problems encountered

There have been no major problems in the management of the project, but as mentioned in the earlier reports, the changes in both project manager and regional project coordinators for both beneficiaries have caused some delays.

One aspect that might be considered as a problem has been the high diversity of actions that has taken place in the project. Even though it might be interesting and challenging to deal with many different actions it can also be demanding. Due to the high degree of legislation about procurements and tendering each process had a risk to expand and all together there might be a considerably heavier project to manage compared to a project which consists of just a few large processes.

Looking at the time spent in the project there has been underspending of time in the early stages of the project. We believe that this pattern is quite normal to project though pressure on producing tend to be stronger the closer connected you are to the project

and the closer you are to its deadline. This might also have contributed to why we could not meet all the milestones in time. And this is probably also the main reason why our last year became very busy, as we had to finish a large amount of actions during a single year.

In some cases, actions took longer time than planned in the application which has contributed to some delays in the project. Most obvious are action A3 Permit procedures and action A4 Call for tenders where the some of the procedures were more extended than expected, and we didn't have any choice since we were needing the permissions and since we had to follow the proper tendering process.

Because of varying weather conditions during the project period, two of three planned burnings of standing forest (Action C3) had to be postponed until the last year of the project. As we could not guarantee that the burning would be carried out, we even started preparing for a prolongation of the project. Luckily, even though the summer was extremely dry and hot, we managed to accomplish the burnings so that the project could be finished in time.

Unfortunately, our best expert on bird life in Lake Vänern, Thomas Landgren, passed away in September 2016 due to cancer. He was the mastermind behind many of the project actions, invaluable for the project management group with his knowledge. The loss of Thomas Landgren was a big loss to the project not only as a theoretical support but also in practical aspects as his support was planned in creating the Long-term Management Plan for Important Breeding Sites (action A5). We have done our best to cover up for the loss of Thomas Landgren through both internal and external experts, but it has not been easy.

During the whole project period we have been aware of the tight economic situation considering the 2 % rule (Common provisions, Article 25:2) and the 10 %-rule mentioned in the application guidelines. These issues area further described in section 6.1 and 6.5.

4.2.4 The partnerships and their added value

It is very valuable to have Lst O and Lst S as partners in the project since we cover Lake Vänern and have the management responsibility for almost all the protected areas in and around the lake. Birds are mobile, and the environments restored in the project are similar for both partners. Thus, all knowledge gained from this project can be directly implemented by both partners in the future management of these protected areas. The cooperation has also opened new channels to cooperate about monitoring and sharing results and information with each other.

Lst O is closely linked to the Lake Vänern Water Conservation Association since they share the same building and cooperate closely. Throughout the project it has been natural to use the large network of the Association to spread information about ongoing and future projects, results and actions taken. For example, the association played a crucial role in spreading the information about the final seminar and through that they had an important impact on getting the seminar to such success as it became. There are no significant deviations from the arrangements contained in the partnership agreement between Lst S and Lst O to report.

4.2.5 Communication with EC and Monitoring team

Once a year except for 2017 we have been welcoming our monitors from NEEMO for a visit. During the first four years we had Inga Racinska visiting us 6-7/03/2014, 28-29/04/2015 and 18-19/05/2016 and 20-21/06-2017. In the last year the monitor visit was made by Inta Duse during 19-20/06/2018. All monitor visits have included meetings at the office, reviewing the project progress as well as administrative and economic issues. They have also included field visits which has focused on different project areas and different actions.

Besides the monitor visits the project has had continuous contact with our monitor by e-mail throughout the years about actual issues that we have wanted to discuss. We have been appreciating the knowledge and insightful comments of both monitors who has helped us through the different rules and prerequisites that apply working in the LIFE+ program.

Communication with the commission was through our four former reports (Inception Report submitted 31/05/2014, Progress report 1, submitted 31/11/2015, Midterm report, submitted 31/12/2016 and Progress report 2, submitted 28/02/2018) and via our monitor.

Beyond numerous platform- and network-meetings with other LIFE-projects (see action F2, section 5.1.16), LIFE Vänern also attended in the Lead-partner meeting in Copenhagen in October 2013.

Feedback from the commission in form of EC letters have been given concerning both monitor visits and submitted reports. The EC letters have been well structured and easy to read, and the remarks have been understandable. Issues raised in the EC letters 28/03/2017 (feedback to Mid-term report) and 11/09/2018 (feedback on Progress report 2 and Monitor visit 5) are addressed in annex 7.1.1 to this report.

5. Technical part

5.1. Technical progress, per task

Under each section we describe what has been done and how the action has been implemented. The concrete conservation actions (C-actions) have been planned and discussed with experts (including reference groups) and stakeholders. Figures are compiled in the Action progress table attached to this Report as Annex 7.1.5.

5.1.1 Action A1 Production of restoration plans

All restoration plans were completed and published on the project website before the 31st of December 2015 (see table 6). Thereafter the restoration plans have been updated successively and published on the project website. All plans have been completed during the autumn 2018 so that all figures and maps are corresponding to the final achievements of the actions. All plans are available as annexes to this report (see annex 7.2.1. to 7.2.10, submitted in electronic versions only).

In the beginning of the project the coordinating beneficiary produced a template for the restoration plans in order to get the same structure regardless beneficiary or responsible project colleague writing it. The original plan was to produce 17 plans, where some were thematic, and some were based on each project site. After discussions in the project management group we decided to do more thematic division of the plans in Lst O as well, resulting in a total number of 10 restoration plans which was approved in the EC letter 16/07/2016. Good quality of plans where acknowledged with the EC letter of 28/03/2017.

Table 6. A description of how the different restoration plans are divided thematically or per project site, covering all actions and all sites in the project.

Benefi-ciary	Action(s)	Main theme/content	Project area(s)	Annex no.
Lst S	C(1a) D(1) E(1)	Clearing of overgrowth on important breeding sites	1, 3, 7, 8, 9	7.2.8
Lst S	C(1b,2,6) D(1) E(1,5)	Grassland restoration and facilities for visitors in Millesviks och Lurö skärgård	1	7.2.1
Lst S	C(1b,2,5,6) D(1) E(1)	Grassland restoration in Nötön-Åråsviken	4	7.2.4
Lst S	C(1b,2,4,5,6) D(1) E(1,5)	Grassland restoration and facilities for visitors in Klarälvsdeltat	5	7.2.5
Lst S	C(1b,6) D(1) E(1)	Grassland restoration in Värmlands Säby	6	7.2.6
Lst S	C(3) D(1) E(1)	Fire management in Värmlandsskärgården	3	7.2.3
Lst S	C(7) D(1)	Nesting platforms	1, 3, 4, 6, 7, 8	7.2.7
Lst S	C(7) D(1) E(1)	Creating breeding island in Inre Kilsviken	2	7.2.2
Lst O	C(1a) D(1) E(1)	Clearing of overgrowth on important breeding sites	9, 10, 11, 12, 13, 14, 15, 16, 17	7.2.9
Lst O	C(3) D(1) E(1,5)	Fire management and facilities for visitors in Kalvö skärgård	12	7.2.10

The plans include descriptions of the actions, maps, time schedule for the restorations and some administrative data of the sites e.g. affected properties. For all plans including grassland restorations we have added the report from the preparatory inventory of biological-cultural heritage (section 5.1.2). The information was very useful when planning the restoration details, since historic land use is a key factor for success working with grassland restorations.

5.1.2 Action A2 Preparatory inventories

The preparatory inventory of biological-cultural heritage was completed in 2014 and the results were presented in a report submitted with the Progress report 2015. The consultant visited Lst S and presented the results verbally, showing pictures and giving us an opportunity to ask questions. This was very valuable when planning our C-actions in the grasslands. The report is included as an annex to the restoration plans for each project area targeted, i.e. for project area 1, 4, 5 and 6. Project area 2 was excluded in accordance with the comment in the Inception report 2014 and approved in the EC letter

27/03/2014. In the EC letter EC18/02/2016 we were requested to place the logos on the report and upload it to our website, which were done soon thereafter.

5.1.3 Action A3 Permit procedures

Necessary permits for the different actions due to Swedish legislation have been applied for and approved along the way of the project. The permits were for example for actions in Natura 2000 areas, for excavating in water and for building of facilities for visitors. The permit procedures for building breeding islands (action C7) were finished and approved in July 2017 and the last and final permits in the project, regarding building the view platform in project area 5, were approved in April 2018. All 53 permits or land owner agreements which have been applied for in the project are listed in Annex 7.2.11.

The focus in the first project period were to contact land owners and ascertain their cooperation with the project. Most land owners were positive to the project actions and agreed to the actions, but some were sceptical. In most cases the problem was solved quickly but, in some cases, as in project area 5, the discussions kept on until 2017.

Many of the small skerries in the archipelago did not have a registered land owner. To ensure that there were no unregistered land owner or stakeholders for those skerries, both beneficiaries published public notices in regional newspapers to inform of the planned clearing actions. The notices were submitted in the Inception report 2014.

Two landowners did in an early state reply that they were opposed to the project actions on their land. This affected 1,54 ha for action C3 in project area 3, Värmlandsskärgården, and 3 ha for action C1a in project area 1, Millesvik och Lurö skärgård. These changes were presented in specific annexes in the Midterm report. The final, detailed extent of these actions has also been inserted in each restoration plan.

Dealing with land owners and neighbouring land owners in project area 5, Klarälvsdeltat, have taken more time than expected. Sometimes we had to find a good way to pass their land even though they were not directly affected by the project action, and sometimes we just gave them information about the project action. Increased costs in Action A3 area discussed in chapter 6.

5.1.4 Action A4 Call for tenders

The last tendering process in the project, concerning the Socio-economic study, was completed in September 2018. It ended a long row of tendering processes whereof many have been extensive work with a lot of issues to be solved. In total there has been 41 tendering processes in competition in the project which are listed in Annex 7.2.12.

Some of the contracts amounts above 50 000 Euro but there is only one contract exceeding 100 000 Euro. It was regarding the grazing assignment for Project area 1 “Lurö och Millesviks skärgård”, which is extended over five years (2016-2021). Due to the many different activities in LIFE Vänern the project has been characterized by many small procurations. Some have been time consuming while some other have been easy. The reason why the budget for A4 after all has been held is that some of the time spent on planning public tendering and agreements have been registered under the C or D-actions instead of A4.

Figure 4. Field visits during tendering processes have made the entrepreneurs feel comfortable with the project actions. Left: Project area 5, Klarälvsdeltat. Right: Project area 1, Lurö skärgård.

Besides the ordinary tendering processes, an important part of the implementation of the project has been the use of framework agreements, which has been signed by both beneficiaries, covering some of the project areas and actions throughout the project. These contracts have made it possible for the beneficiaries to make small sub-orders continuously during the project which has been quite efficient. The framework contracts have covered important services like clearing of vegetation, boat transports and building of uncomplicated facilities for visitors which are requested in the project.

Due to the high amount of tendering processes there has been some delays compared to the Milestones which were set for the project. This applies e.g. for the procuration of C4, Cutting of tussocks and stump grinding and the procuration of C7, Building a breeding islands for birds. Although the delays in some cases have pushed the chain of actions forward in time, they have not really caused any substantial changes of the outcome of the project. All significant delays in the project have been reported in our reports to the EC or to our monitor.

5.1.5 Action A5 Management strategy for important breeding sites for birds

The strategy document has been completed during the autumn 2018, see annex 7.2.25. It contains an introduction which describes the background and strategic aspects that should considered in the future. The second part is an annex which contains a description of the future management regime for every single skerry that were restored in LIFE Vänern. In contrast to what was planned in the application to the project, the work was conducted by our own staff at Lst S and Lst O. The change in implementation strategy of this action was because the expert that we had counted on helping us with the content of the report died in cancer in 2016. As we were not prepared to guide a non-initiated external contractor in writing the strategy we had to do most of the work by ourselves, using a contractor just for compilation and basic structuring of data. When designing the document, we have emphasized that it should be useful in the future for tendering processes or for sub-orders from frame contracts.

All skerries cleared in LIFE Vänern has been reported in the Swedish digital database used for management of protected areas (SkötselDOS). See screenshot, figure 5, below.

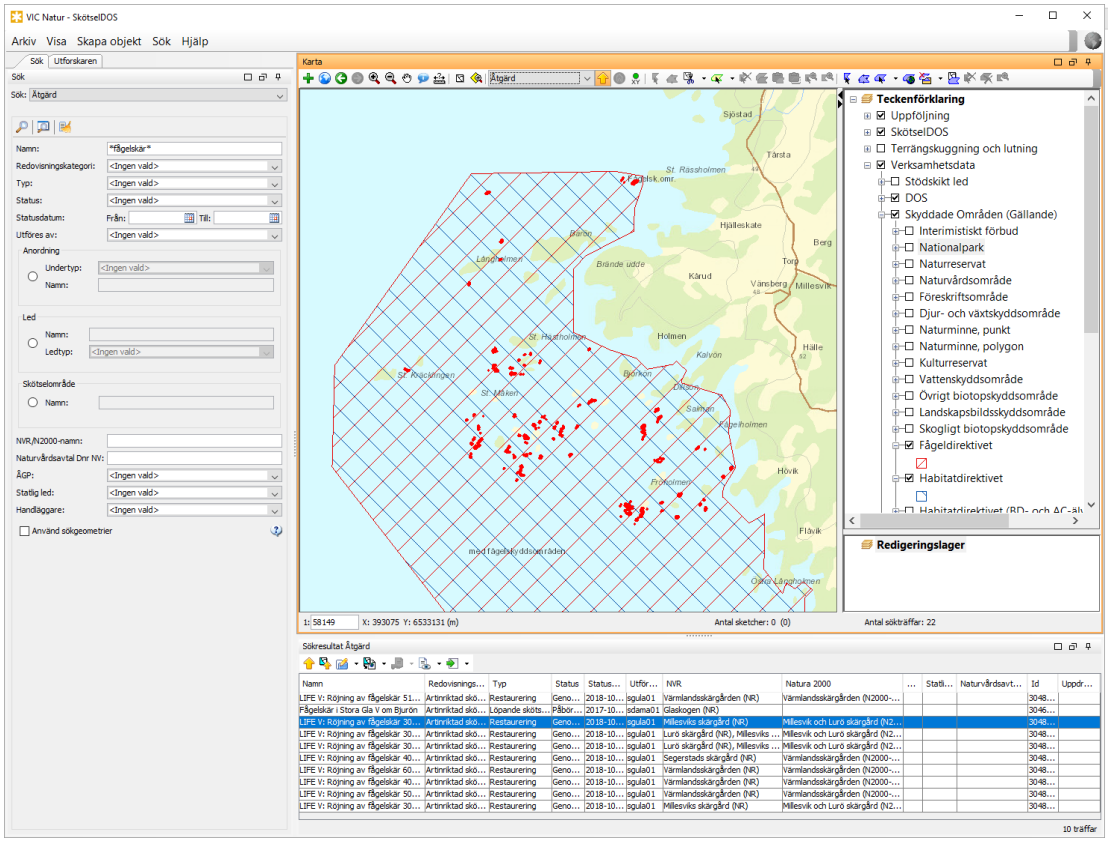


Figure 5. Screenshot from the Swedish digital database used for management of protected areas (SkötselDOS) where the action C1a and the other actions has been documented as a foundation for future management.

5.1.6 Action C1 Clearing of trees and bushes

Action C1 is divided in two sub-actions, where clearing of trees and bushes on skerries and shores is reported as C1a and clearings of trees and bushes in grasslands is reported as C1b.

C1a Clearing of skerries and shores

Skerries and shores in Lake Vänern are becoming more and more overgrown by trees and bushes. This is a threat to the colony nesting birds using the open skerries for breeding. The overgrowth is caused by several factors such as lack of water fluctuations, climate change, nitrogen fall-out etc.

Clearing of skerries important for colony nesting birds (C1a) has been the most widespread of all actions in the project, accomplished in 13 Natura 2000-areas (Project area 1, 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17) around the lake. The first clearing was conducted during 2015 to 2016 and the second clearing during 2017 and 2018. A third clearing of selected skerries has also been carried out during the autumn 2018. This complementary clearing round was approved in the EC letter 11/09/2018.

After finalizing the second and third clearing of skerries in total 214 different skerries and 78,1 ha have been cleared in the project. This is 5 more skerries cleared than in the application (209 skerries applied). The cleared area, 78,1 ha is 19 % smaller than the applied area, 96,9 ha. The decrease in area was described in our midterm-report and approved in the EC letter 28/03/2017. This discrepancy is due to the poor quality of the background maps used during the application phase. Some parts of the larger skerries

were not suitable for clearing since they were covered by forests. Those parts will in the future be more suitable for breeding raptors like Osprey (*Pandion haliaetus*).

As mentioned already in the midterm report there have been some changes in the selection of skerries included in the project. One of the skerries originally included in the application has been excluded because the landowner was opposed to the project action (project area 1 Millesvik och Lurö skärgård). There are six new skerries included in the project; in project area 1 (Millesvik och Lurö skärgård), one new skerry is added. In project area 3 (Värmlandsskärgården) there are three new skerries and in project area 9 (Vänersnäs skärgård) there are two new skerries (maps showing the new skerries were attached to the Midterm report). All changes have been inserted in the restoration plans so that the content and maps are corresponding to the final performance of the clearings.

Within the 214 skerries there are 3 skerries that has only been cleared once during the project period. 175 skerries has been cleared twice and 36 that has been cleared three times. The additional third clearing was conducted during 2018 after approval in the EC letter 11/09/2018. The two restoration plans for this action (one for Lst S and one for Lst O) contains detailed maps over the final distribution of skerries in the project (Annexes 7.2.8 and 7.2.9).

Figure 6. Skerrie 30438 in project area 1 (above) and skerrie 40108 in project area 3 (below) before (left) and after (right) clearing.

Most of the clearings on the skerries have been performed by contractors. Both County Administrative Boards are using framework agreements for this kind of assignments. The use of contractors can be very favourable when the relationship is good and the communication frank and direct. By the other hand there might be a lot of struggling if you do not agree about essential parts of the agreements.

Due to a strong documentation during the first clearing of the skerries including maps, photos, duration for clearing and burning we had a good foundation for the second round. The documentation has also provided information for the long-term management

plan (action A5) and the After-LIFE conservation plan (action F4). The future management will be carried out by the CABs using general funding for management of nature reserves and other protected areas in their counties.

C1b Clearing of grassland habitats

The C1b action has been conducted in 4 different project areas (project area 1, 4, 5, and 6) as foreseen in the application. See details in the restoration plans for each project area (annex 7.2.1, 7.2.4, 7.2.5 and 7.2.6). In total, 98,0 ha have been cleared which is 95 % compared to the application (103,5 ha). The deviation from the application is caused by an overestimation of land covered by bushes and trees in the southern part of project area 5. The cleared area in project area 5 proved to be 45,3 ha instead of 53,2 ha in the application. Some early changes in restored areas concerning project area 1 and 4, were reported in our Midterm report and all the restoration plans have been updated accordingly.

The clearings in Project area 1 and 4 were conducted according to the Milestone while the clearings in Project area 5 and 6 were delayed. All the major clearings were finished during winter 2016 and 2017 and after that there have only been complementary C1b-actions conducted. Due to the extremely warm and dry summer 2018 the need for complementary clearings was not as big as expected. On the dryer parts of our pastures the growth of grass and bushes ceased early in the summer due to the hot weather.

The clearing of grassland habitats in project area 1, performed on islands, were completed in autumn 2015. Due to the location there were a lot of logistic issues to take care of. For example, there had to be forestry machines on the islands which had to be transported on barges which transported the cleared trees and bushes to the mainland. The work was performed by a coordinating contractor with at least five different subcontractors involved. An extensive work performed under a period with diversified weather conditions including strong winds.

The other big challenge in C1b action was project area 5. In this area the actions started in spring 2016 but according to the Species protection regulations there had to be a stop during late spring and summer due to migrating and breeding birds in the area. The action was finally completed in winter 2016/2017. Another reason why this action could not be completed earlier was because the warm winter 2015/2016, which did not allow the machines to cross the wetland due to the lack of frozen ground.

5.1.7 Action C2 Restoration by burning of grassland and heather

Burning of grasslands and heather is a traditional management method for improving grasslands for grazing. Burning of old grass and heather removes the older woody stems and residues, favouring grasses and herbs as well as rejuvenating the heather.

The whole action was finished in April 2018 when in total 28,7 ha had been burnt in the project distributed on 27,9 ha in project area 1 and 0,8 ha in project area 4. The burnt area is slightly more than mentioned in the application (27,5 ha). In project area 1, Millesvik och Lurö skärgård, the burnt areas are distributed on different islands and the burning actions have been performed in steps over the years 2016, 2017 and 2018. The smaller burning of two meadows in project area 4 was successfully carried out in spring 2015. By burning on different occasions on the islands, we have minimized the risk of species becoming locally extinct because of the quite drastic conservation action. We

have also differentiated the regrowth of heather and other flowering species providing important nectar sources for insects in the area.

The burning efforts in the archipelago has substantially been performed by our own staff from Lst S with some help from external contractors. It has been very educational for us to elaborate this kind of fire management which has not been used before in the region. And the result looks promising. All over the islands the heather is rejuvenated in different stages and the cattle is grazing it as if it was grass. The result is a much lower vegetation (see figure 7 below), which gives space for plants who are weaker in competition of light and probably, in connection to flowering plants, there are also a lot of insects like butterflies and bugs who can benefit from the new environment. We believe that this method can be a crucial factor in keeping the islands open and diverse in the future.

Figure 7. Left: Action C2, Restoration by burning of grasslands and heather on Ärnön in project area 1, April 2016. Right: Rejuvenated heather (Calluna vulgaris) a few years after burning.

5.1.8 Action C3 Restoration by fire management in 9010 *Western Taiga

Due to lack of natural disturbances, the forests in the archipelago have become denser with spruce spreading in the area. The controlled burning will favour pine and disfavour spruce creating lighter and warmer forests with more dead wood which are essential for the habitat and species connected to *Western taiga (9010).

Controlled burning has been conducted in two project areas in the project. Project area 3, Värmlandsskärgården, has two small sub-sites (total 4,7 ha) and project area 12, Kalvö skärgård, has one larger burning area (total 13 ha). The total area burnt (17,7 ha) is less than planned in the application (26,6 ha). The efforts have substantially improved the conservation status for the habitat *Western taiga (9010) in the areas.

The first burning was done in 2015 on Harvelsön in project area 3 (for details, see annex 7.2.19). After a wet summer we finally had sufficiently good weather in August to carry out the burning on the island. The results were satisfactory, although the high relative humidity in the air and low humidity in the deeper duff layer prolonged the smouldering

process. This is good for nature conservation but made the action more expensive than the budget available since we had to spend more time on after fire control.

Figure 8. Action C3, Burning of standing forest on Bärön in project area 3, May 2018.

The second burning effort in the project was made in May 2018 on Bärön in project area 3 (for details, see annex 7.2.20). The sub-site was chosen in 2016 as we had to change burning area because a landowner who changed his mind about the action (the change was described in the Midterm report and approved with the EC letter 28/03/2017). The final area burnt on this site was 2,2 ha. This burning was conducted by our own personnel at Lst S with some assistance from the Swedish Forestry Agency. The reason why this action was performed by us was that Lst S is involved in LIFE Taiga, another LIFE-project fully oriented on controlled burning of forest. The knowledge and the equipment collected in that project made it possible for Lst S to manage this burning effort on their own. The experience from this action will be useful in the future though it is quite hard to procure this kind of management which is depending a lot on weather conditions. This means that when the weather conditions are right, everybody wants to perform nature management by burning at the same time and the firing entrepreneurs will be very busy.

The third burning was made by Lst O who hired an entrepreneur to complete a burning plan for project area 12 Kalvö skärgård (for details, see annex 7.2.21). The plan was used as the foundation for the restoration plan and for the public tendering process. In spring 2016 an agreement was signed between Lst O and a contractor to do the burning but due to different circumstances such as breeding Osprey in the area and rainfalls during 2016 and 2017, the burning had to wait until 2018. In July 2018 the burning was carried out by the contractor.

The burnt area in Kalvö skärgård covered in total 13 ha forest land. This was a considerably smaller area than what was written in the application (22 ha) and it entails that the total area burnt forest in the project, 17,7 ha is smaller than the total pledged area (26,6 ha). The reason why the area became smaller was the unfavourable conditions for burning during these years. As mentioned above, during 2016 and 2017, there were

several factors which forced us to postpone the action until 2018. And during 2018, the conditions for burning was so favourable, that there was a big struggle with wild forest fires all over Sweden. This meant that there was a big hostility towards burning in Sweden during this year. We even had to apply for an exemption from the fire prohibitions that were valid during the whole summer. Another factor was that we wanted to limit the amount of quenching activities, which must be more extensive during extremely dry conditions, like year 2018. As a conclusion the contractor and Lst O agreed about a smaller extent of the burning area than in the application.

More gratifying was that the burning actions in 2018 were even more efficient. The dry weather, which lasted throughout May, June and July made the soil very dry and the fires could go deep down and burn great amounts of the organic matter. This means that the effect of the fires was extensive and deep on the areas that were burnt. Our assessment is that the effect of the actions during 2018 was on the about equal as if the planned areas would have been burnt during a normal year.

We have experienced that planning of fire management is very difficult due to the varying weather conditions, development of new methods and a quite new market for entrepreneurs and other performers. The burning of two sub-areas by Lst S became more expensive than expected. In total they exceeded the budget by 35 919 Euro. On the other hand, the burning which was conducted by Lst O on Kalvö became 64 379 Euro cheaper than expected so that the total cost of the action stayed within the budget. The experiences from both procurement and accomplishment with our own staff will be very useful in the future management of Western taiga, in our region.

5.1.9 Action C4 Cutting of tussocks and stump grinding

Cutting of tussocks and stump grinding is essential for the grazing animals to move around in the wet grasslands and to be able to graze the area with good results. Grazing is essential for managing the habitat and for the targeted bird species.

Figure 9. Action C4, cutting of tussocks and stump grinding in project area 5, 2016-2017. The purpose of the action is to increase the accessibility for the cattle and machines in order to maintain grazing all over the area.

The action was substantially carried out in project area 5, Klarälvsdeltat during 2016 and 2017 (see maps and details in restoration plan, annex 7.2.5). The fact that the action was postponed until 2016 and 2017 has not substantially affected the restoration of the areas. In the sub-site Nolgårdsviken 32,9 ha where treated and in sub-site Djupsundsviken 19,0 ha. In total the treated area covers 51,9 ha. This is considerably more (129 %) than stated in the application and one of the reasons why the action was more expensive than expected (see further comments in chapter 6). The fact that the machines could cover a larger area than stated in the application is very positive for the objectives for the restoration. This means that the cattle will get access to a larger area for grazing which also means that the targeted habitats for birds will increase.

The other reason why the costs for action C4 exceeded the budget was that it was conducted as an integrated part in a big procurement which also included all clearing of trees and bushes in project area 5. In total we are confident that this integrated procurement was cost efficient compared to if we had split it up in separate procurements. Due to the integration, the contractor got a great opportunity to coordinate the different efforts and make them cost efficient. In this case, in project area 5, it meant that the C4-action became more expensive than expected but that the C1b-action became considerably cheaper.

As we look back on the result of the cutting of tussocks and stump grinding we can say that it was successful. The former inhospitable areas for cattle (and man), which were covered by small trees, bushes and tussocks have been converted into flat, open, well grazed and accessible pastures. The conditions for ground nesting birds and development of the habitat "6410, Molinia meadows on calcareous, peaty or clayey-siltladen soils" have improved considerably due to the action.

5.1.10 Action C5 Restoration mowing

Meadows have traditionally been used for the harvest of winter fodder for animals. Flowering meadows requires mowing to remain in good conservation status, and they are important to many plants and insects. The massive deterioration of managed meadows in the landscape is probably the dominating reason for the decline in typical species for grasslands, e.g. butterflies.

Figure 10. Action C5, restoration mowing. Left; Arskagsudden 2016. Right: Hästudden 2018. Both objects are in project area 4, Nötön-Åråsviken.

After the initial clearing of trees and burning, mowing has been done on the two sub-sites in project area 4 Nötön-Åråsviken by contractor in cooperation with our own temporary staff. The two sub-sites Hästudden (0,45 ha) and Arskagsudden (0,55 ha) were successfully mowed 2015-2017 according to the application. Carrying out the action was no problem but the vegetation in the restored meadows did not recover as fast as expected to qualify into the definition of 6510 Lowland hay meadow. That is why we suggested a fourth year of restoration mowing in both areas in our Progress report, 28th February 2018. This complementary action was approved in the EC letter 11/09/2018 and has been carried out during the summer 2018 to a total cost of 1 254,85 Euro. The extension did not entail any overdraft of the original budget of action C5.

5.1.11 Action C6 Reintroduction of grazing

Grazing is an essential management tool for the habitats *Fennoscandian lowland species-rich dry to mesic grasslands (6270), Molinia meadows on calcareous, peaty or clayey-siltladen soils (6410) and Fennoscandian wooded pastures (9070). The disturbance caused by grazing is holding back the regeneration of bushes and trees in open habitats. For other open habitats e.g. Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Vornicion dillenii (8230) and European heaths (4030), the disturbance can also be provided naturally by water fluctuations, ice and wind, and also by grazing.

Grazing has been carried out in four project areas (1, 4, 5 and 6), as foreseen. See details in the restoration plans for each project area (annexes 7.2.1, 7.2.4, 7.2.5, 7.2.6). The first grazing season was 2016 for project area 1, 4 and 6 and 2017 for project area 5. The total area of restored pastures that has been grazed during 2017 and 2018 in the project is 114 ha which is well above (111 %) the area of 103 ha which was mentioned in the application. The total final length of fences constructed in the project is 8992 m which is 58 % of the length mentioned in the application (15 633 m). The decreased length of fence is substantially due to strategic considerations in project area 1 which is explained below.

Grazing in project area 1

The pastures that has been restored covers 42,8 ha in project area 1. This is slightly more than what was written in the application (40,6 ha). The grazed pastures in project area 1 are split into three main islands whereof one of the islands, Sönnervass, is split into one big and about ten smaller islands (for details and maps see restoration plan, annex 7.2.1). Some smaller changes in restored and grazed areas have been done during the project. On sub-site Ärnön, a small island and a wetland have been replaced and on sub-site Gunnarsholmen an enclosure has been built to keep the grazing animals outside the lighthouse on the island. The changes were described in the Midterm report and approved in the EC letter 28/03/2017.

The restoration and reintroduction of grazing animals on the islands were the most challenging part of the whole project consisting of logistic issues such as transporting cattle back and forth to the island in a safe, convenient and efficient way. A crucial part was the decision to, instead of building fixed docking points on the islands, construct a flexible and detachable gangway for cattle (see figure 11 below, the adjustment was approved in the EC letter 18/02/2016). The gangway has now been used during three

grazing seasons and the grazing contractor is very satisfied with its functionality. One big advantage with this solution, compared to fixed docking points, which was the original solution in the application, is that it can be used at different places, in various weather conditions and at different water levels in Lake Vänern.

Figure 11. Action C6, grazing. The gangway for cattle, which was built by LIFE Vänern has been a crucial factor in facilitating grazing on islands in project area 1.

Another tricky issue on the islands in project area 1 was to put up fences in an appropriate way. After a lot of discussions with the grazing contractor we decided to minimize the length of fixed fences on the islands and instead invest in some floating, mobile fences. This solution was motivated by several reasons such as difficulties to maintain fences on shore areas during the winter when the lake is covered by ice. When the ice breaks down in springtime it would break the fences and we would have to build them up again which would be very costly. Another important reason that we did not build these fences was that the wet pastures around the islands would not be grazed, which would have led to a loss of 6410 habitat and important staging and breeding areas for birds.

After three years of grazing on the islands we can see that the decision was right. The wet 6410-meadows are developing for each year of grazing. The low water levels in lake Vänern, which has been persisting during the last years, have facilitated the grazing of

these areas even more. Unfortunately, the low water has also allowed the cattle to walk over to other islands which has caused problems for the grazing entrepreneur. Still we cannot see a better way to manage these areas and to keep the islands open. The final length of fences at the end of the project in project area 1 is 191 meters of permanent fences and 1386 meters of floating, mobile fences. In total 1577 meters (8141 meters were originally planned).

Figure 12. Due to clearing, burning and grazing, dry and wet pastures are developing into Natura 2000 habitats on the island Sönnervassen in project area 1 (photographs in the same view before and after LIFE Vänern-actions).

Besides the gangway and fences, 60 mobile corals, 3 corals with gates (24 corrals were originally planned), 4 feed troughs (none planned) and 4 GPS-collars (have been bought by the project (see compilation I table 7 below). We have bought more corrals than planned but a rational handling of the animals is a key factor for the long-term management of the islands. The exceeded budget for corrals has been covered by lower costs for fencing. The costs for equipment bought for action C6 follows table C6 in the application and are registered as consumables.

Some not foreseen actions and costs has incurred in in project area 1 during 2018. After heavy storms in the spring we had to clean up trees and bushes that had fallen. This work was executed by a local association (Lurö Natur och Kulturförening) to a cost of 1 017,5 Euro. To allow people visiting the new pic-nic area on the island Vithall in a safe and convenient way, we had to improve the cattle-fences in the area to a cost of 477,5 Euro. This action was executed by a local contractor Vänerliv HB. Some extra clearings in the pastures on the islands were conducted by another contractor (Vänervård) to a cost of 2 391 Euro. The latter action was approved in EC letter 11/09/2018.

Grazing in project area 4 and 6

The year 2016 was the first grazing season in project area 4 and 6 although the initial clearing of trees and bushes only had been completed in project area 4. For project area 4 there was a slight increase in grazing area from 4,8 ha to 6,3 ha (approved with the EC letter of 28/03/2017), due to the most convenient placement of the fence. For project area 6 the total area for grazing has stayed unchanged 4 ha in accordance to the application. The area restored "9070, Fennoscandian wooded pastures" were in total 8,9 ha. The excess 1,4 ha might in time develop into "6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)". To complete the restoration, we complemented the grazing with a mechanical cut of the grass on wet areas in project area

4 during 2018. The cost incurred in this extra cutting was 1 332,7 Euro. It did not entail any overdraft of the original C6-budget.

Fences were set up in both project areas (4 and 6) during 2016, but they differ to some extent compared to the application. The reason is that we have asked the farmers responsible for the grazing action in the areas about the best placing of fences. Considering the knowledge, we have in the project management group about fencing, we were glad for the new input and changed the fences in consultation with the farmers. In project area 4 we had to put up extra fences through the forest to be able to lead the cattle from the existing pastures out to the restored pasture. On the other hand, we did not have to put up fences along the water. The final placement of the fences in both project 4 and 6 are presented in the maps in the restoration plans (see Annexes 7.2.4 and 7.2.6). Total length of fences in project area 4 is 1665 m (1435 m planned) and in project area 6 the total length is 181 m (452 m planned).

Grazing in project area 5

In project area 5 the first grazing season was completed 2017, one year later than planned in the application. The delay was due to the extensive process for clearing of trees and bushes and cutting of tussocks and stump-grinding which had to be managed before fencing and grazing could start.

Anyway, the grazing regime in project area 5 has been very successful during 2017 and 2018. The cattle have really made a tremendous work which has evolved the former abandoned and overgrown areas into short cut, open, wet pastures. During these two years in total 61,2 ha, substantially wet pastures, has been grazed in the areas, divided into 38,3 ha in sub-site Nolgårdsviken and 23,0 ha in sub-site Djupsundsviken. The total area that has been grazed is 8 ha more than what was pledged in the application (53,2 ha planned). The lost year of grazing (2016) not alter the goals and objectives for project area 5 since the cutting of tussocks and stump grinding during 2016 can be considered to have similar effect on the vegetation as grazing. Also, the money not spent on grazing during 2016, has been used to cut leftover grass in the areas during 2017, improving the grazing effect even more. Thereby the loss of grazing season 2016 in project area 5 has not affected the fulfilling of objectives for the restorations.

Figure 13. Action C6, grazing. Sub-site Nolgårdsviken in project area 5. Left: One of six cow bridges where it passes a ditch and the trail. Right: Cattle grazing with the region capital Karlstad in the background.

As mentioned in the progress report 28/02/2018, 5 569 m of fencing was completed in project area 5 in spring 2017 (planned 5 605 m). For one of the sub-areas (Djupsundsviken) we used solar cells to provide electric power for the fences, and for the second sub-area (Nolgårdsviken) we received power from a local resident. The choice of modern elastic fences for the areas which do not break when trees fall over them has been successful even though there have been several periods with strong winds and we have had a lot of trees falling over the fences.

Three access areas in project area 5 were completed in 2017 (two at sub-site Nolgårdsviken and one at sub-site Djupsundsviken) and provide easy access for the farmer and his animals, both for getting the animals out in early June and for collecting them in late September. During 2017 we also built 6 cow-bridges over ditches to make it possible for the cattle and machines to access the whole area without causing ground damage in the 6410 habitat. These additional bridges were presented in the Progress report 28/02/2018 and were approved in the EC letter 11/09/2018.

Table 7. Summary of completed C6 sub-actions in the project areas. Figures mentioned in the application within brackets.

Sub-action within C6:	Project area 1	Project area 4	Project area 5	Project area 6
Grazing (ha)	40,6 (42,8)	6,3 (4,8)	61,2 (53,2)	4,2 (4,0)
Fencing (m)	1556 (8141)	1665 (1435)	5569 (5605)	181 (452)
Corrals (#)	63 (24)	-	-	-
GPS collars (#)	4 (3)	-	-	-
Docking points (#)	0 (3)	-	-	-
Access areas (#)	-	-	3 (1)	-
Cow bridges (#)	-	-	6 (0)	-
Other equipment (#)	4 Feed troughs, 1 Gangway	-	-	-

Even though there have been several changes and in the performance of action C6, including changes in areas, fences and purchase of equipment, there has been no overdraft of the original budget. The total outcome of C6-action (333 477,35 Euro) is 85 % of the original budget (391 220 Euro).

5.1.12 Action C7 Creating breeding sites for birds

Semi-natural nests for Osprey and White-tailed Eagle

Lack of appropriate trees for nesting is an issue for Osprey *Pandion haliaetus* and White-tailed Eagle *Haliaeetus albicilla* not only in the sense of finding old and large enough trees that can carry the heavy nest, but also in terms of low disturbance from humans.

Building of the nesting platforms for Osprey and White-tailed Eagle has been going on during the years 2014, 2015, 2017 and 2018. At the end of the project there are 9 platforms built for Osprey and 7 for White-tailed Eagle, in total 16 semi natural nests. This is 5 nests less than what was written in the application (21). The reason why we have not built all the nests as planned is that we have not had birds breeding in the nests in the extent that we had hoped for. Until 2018 there had only been one Osprey-pair breeding in one of the nests. We have also seen adult White-tailed eagles reside by one

of the nests, but the pair has not been breeding in it. At other locations we have seen plumes and other remnants from birds by the platforms which show that birds are using the sites to some extent.

The weak result of this sub-action is quite surprising since former attempts with semi-artificial nests for these species in the region have been quite successful. Among 10 platforms which were built for White tailed eagle before LIFE Vänern we had breeding pairs in 4. The reason why we haven't had success in this matter in the project is unclear. Maybe we just had to wait a few years so that the birds will get used to the new sites or maybe we could not find trees in right positions for the birds while the best feeding territories was already taken. Another reason might be the fact that the stock of Osprey is decreasing in the area for other reasons so that the access to nesting places is no longer a limiting factor for them. Anyway, we found out that it is quite hard to implement this kind of action under a strict time schedule. It is easier to solve this kind of problems successively. While monitoring the bird-life in the archipelago we sometimes can see that there are territories that are not inhabited by birds. In such cases, when we are building nesting platforms, the possibility to get a positive result might be higher than when we, as in the project, are building the nest-platforms in positions where we are not sure about if they are needed or not. This is an important knowledge that we will bring with us in the further protection and management of these birds in the archipelago.

Figure 14. Action C7. The semi-natural nests are built by natural materials. When an appropriate tree is found the constructor climbs to the top and prepares the platform by cutting out branches and stacking them together forming the platform. Smaller trees from the surroundings can also be used for the foundation. Finally, small branches of spruce or juniper are spread on top of the foundation to complete the nest.

The concrete action to build the nesting platforms has been performed by both external entrepreneurs and our own staff at Lst S. During the first years we had our own expert Johan Bohlin building the nests with assistance from our frame contract entrepreneurs in the archipelago. But since Johan left our organisation in 2016, we had to do a procurement for these services. Luckily for us, it was the company "WSP", which Johan Bohlin had left for, that won the tendering so that we could keep using the knowledge of our former colleague. By this time, we had to rely on external contractors to a big extent for this action. But finally, in 2017, Johan Bohlin decided to come back to Lst S where he has helped us to complete the action in accordance to the original plan with the deviation described above.

We have considered presenting the detailed map as an annex to the restoration plan (Annex 7.2.7), but since these birds have been subjected to vandalism, we have decided just to present the relevant project areas in the restoration plan. Some of the most important conclusions from the action have been summarized in a short report, annex 7.2.18

Breeding islands for terns

In project area 2 Inre Kilsviken earlier breeding attempts of terns have failed throughout the years due to predation or fluctuation of water level. By building two breeding islands, we have increased the probability of successful breeding (see details in the restoration plan, annex 7.2.2).

After the first years of investigations, planning and consultation with experts and landowners we could finally apply for necessary permits for building the two breeding islands in 2016. We also did our first call for tenders for building the islands in October 2016, but it had to be cancelled due to prices, which exceeded the budget and the fact that we did not receive our permits yet.

As the permits finally were resolved in July 2017, we started a new tendering process which ended into a signed contract for the construction of the islands in October 2017. In accordance with the contract the entrepreneur had to finish the work before the 15th March 2018. During the last years the ice on Lake Vänern had melted down well before March but in 2018 we got a very cold spring which resulted in that the amphibious excavator had to brake its way through the ice to the sites for building the islands. Anyway, these conditions did not substantially affect the result of the construction. In total we are very satisfied with the result. The islands have stayed in place during the first year and there are only small signs of erosion along the shore lines of the islands. With time the vegetation will make the islands more stable and the risk of wind caused erosion will decrease.

In their final state the two islands are 1020 m^2 and 220 m^2 (in total 1240 m^2) which is smaller than the area written in the application (3000 m^2). The reason why the total area became smaller than planned is that the lake bottom in the area was consisting of mainly soft sediment on which it would be very difficult to build the islands. The areas that were finally chosen for the islands were consisting of harder materials like sand and gravel. Both islands are built on natural elevations on the bottom of the lake. Another reason was that the bird expert, which we consulted during the planning process, assessed that

the smaller islands would be enough to carry out the need of safe nesting environments in the area. According to the experts, these islands would be big enough to carry bird colonies that are big enough to protect the islands from predators.

A positive result of this action was delivered already during the first season of the islands. The western, bigger island was used during the whole season as a resting and roosting place for gulls, terns, ducks, geese and passerines. An interesting observation was that groups of Little Gulls were visiting the island during the summer. And gratifying, on the eastern island, there were at least 12 pairs of terns breeding already during the first season rendering at least 11 pulli. The positive response of targeted species seams promising for coming breeding seasons when the surface-material on the islands has developed into a more "natural habitat".

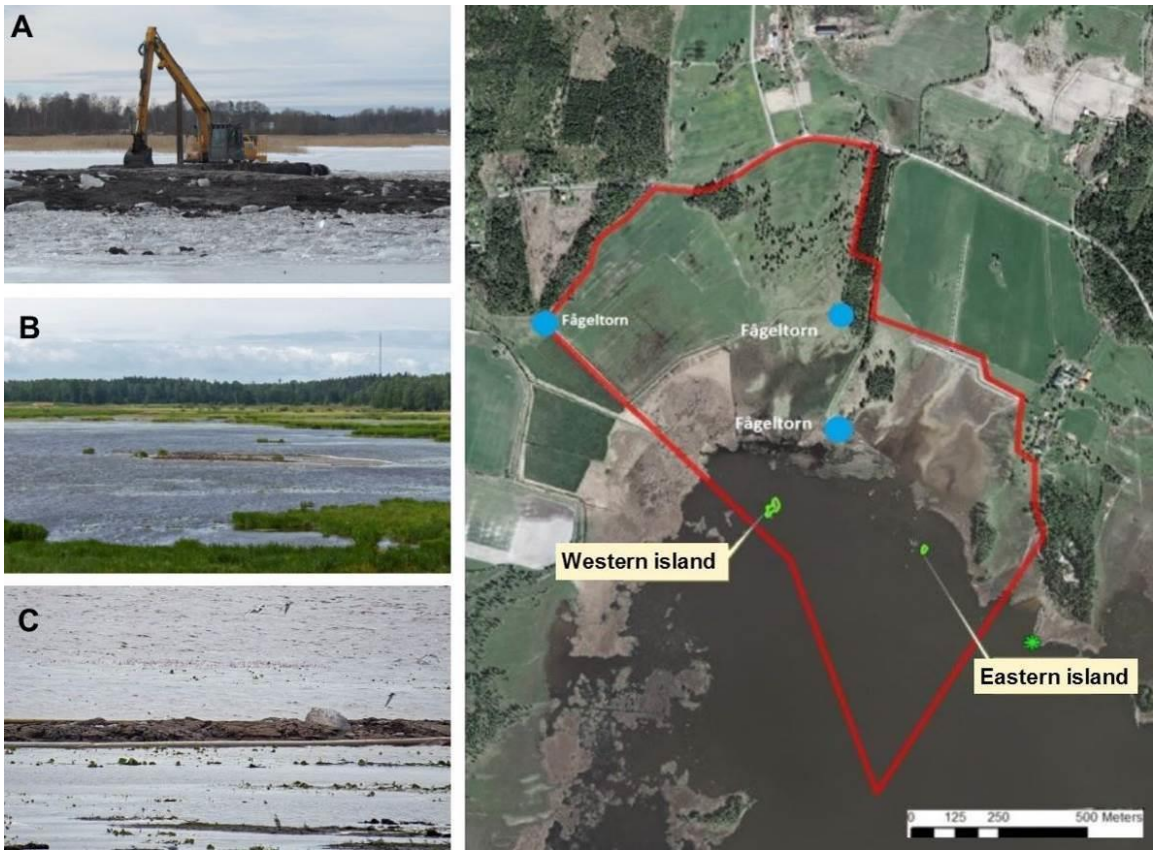


Figure 15. Action C7. Map over project area 2, Inre Kilsviken, with built breeding islands in green and view platforms in blue. Photographs: A) Excavator working in March 2018. B) Western island from the southern observation tower, May 2018, and C) Brooding Common terns on the eastern island, June 2018.

In total there has been a over-spending of 17 % above the budget in the action C7 (in total 77 587,45 Euro compared to 66 430 Euro in the budget). The major reason to this overdraft was that the building of semi-natural nests for Osprey and White-tailed Eagle was more time consuming than expected, due to an unexpected lack of proper trees in suitable areas in the archipelago (see further economic comments to the action in section 6).

5.1.13 Action D1 Monitoring of the impact of the project actions

Habitats and species have been monitored in the project to evaluate in what extent the project targets are met. In some actions monitoring has been carried out both before and after restoration. Some others have only been monitored after that action has been completed. The monitoring actions has followed the national methods and manuals approved by the SEPA, except for the photographic monitoring, the survey of the semi-natural nesting platforms and the survey of the breeding islands, where there are no manuals approved. The monitoring activities were compiled in a monitoring plan submitted with the Inception report 2014.

Two improvements of the D1-actions have been done in the project compared to the application. These were described in the Inception report 2014 and includes; 1) doing one excerpt from the national monitoring program for colony nesting birds in Lake Vänern covering the whole project period instead of three excerpts at different occasions, and 2) using the long term inventory of birds already carried out in project area 2 Inre Kilsviken covering our target species, and instead use the budget to monitor birds in the grassland restorations in project area 1. The commission commented on these changes in EC letter 27/06/2014.

The monitoring of habitats and species in the project include:

- Photographs from specific points before and after action in grasslands and on skerries
- Monitoring of grassland-vegetation in project areas 1, 4, 5 and 6
- Monitoring of grassland-birds in project areas 1 and 5
- Monitoring of burning in Western taiga in project 3 and 12
- *Yearly inventory of birds on all skerries (not financed by the project)*
- Monitoring of nesting activities in built semi-natural nesting platforms
- *Monitoring of birds on built breeding islands in project area 2 (not financed by the project)*

Photographs from specific points before and after action: Photographs before and after actions have been taken at specific points and angles in all restored grassland areas. Photos have also been taken on all skerries before and after clearing them from bushes and trees. In grasslands the photos have been taken by our own personnel while most of the photos of skerries have been taken by the hired contractors.

Some of the before and after-photos have been mounted into fixed photo collages and used in different information activities, such as on our website, in different Power Point-presentations and in printed materials. Some photo has even been taken form the same angle as older photographs from the sixties and seventies which has been very educational in our different information activities. See example below, figure 16 and a selection of copies submitted in appendix 7.3.3 and 7.3.4.

Figure 16. Example of photo-monitoring before and after action C1, C2 and C6 on island Gunnarshomen in Project area 1. In this case we even got an older picture from 1964, before the island was overgrown. Photographs: Bengt Brunsell (1964) and Gunnar Lagerkvist (2014 and 2018).

Monitoring of grassland-vegetation: For all grasslands restorations, both structures, i.e. cover of trees and bushes, and typical species, have been monitored by a consultant using 0,5 m x 0,5 m squares in a specific grid-system before and after restoration. The studies have also included an autumn visit to each project area, measuring vegetation height in the same grid system. The surveys have been conducted in project areas 1, 4, 5 and 6, and the first report was annexed to the Progress report 2015. The second "after-action-report" is attached to this report (annex 7.2.15). The second report includes comparisons with the conditions before restoration. The results clearly show the effect on the vegetation structure from the project actions. On the other hand, the reports also show that the recovery of the competition weak and light-favored flora is quite slow.

Monitoring of grassland-birds: In project area 1, Millesvik och Lurö skärgård and project area 5 Klarälvsdeltat consultants have monitored birdlife before and after the restoration activities. The before-reports were attached to the progress report in 2015 and the after-reports are attached to this report. (annex 7.2.13 and 7.2.14). A change of areas monitored (from Project area 2 to Project area 1) was described in the inception report and approved in the EC letter 27/06/2014. Both areas were covered by line inventories, in which all birds heard or seen from a specific line were noted. In addition, an assessment was made whether the birds were breeding in the area or just passing by. In Klarälvsdeltat the survey also included detailed territory mappings of specific indicator species and listening for night active birds e.g. the target species Spotted crake *Porzana porzana*. The inventories show, in both areas, a significant change in bird species-composition. Species that are tied to forest-land and scrubby bushlands have decreased while species tied to open landscapes and grazed pastures have increased. For example, in Project area 5, Klarälvsdeltat, the number of breeding pairs of Lapwing, *Vanellus vanellus,* and Meadow Pipit, *Anthus pratensis*, has increased from zero to 22 respectively 9 pairs in the two sub-sites. The presence of targeted species like Wood Sandpiper, *Tringa glareola*, and Ruff, *Philomachus pugnax,* has also increased in the area but there were no registrations of breeding activity from these species during the survey in 2018.

Monitoring of burning in Western taiga: Monitoring of burning in Western Taiga (action C3) has included aerial photographs, specific photo points on ground, basal area of different tree species measured by relascope, average tree height, average height of the lower part of the tree crowns, resin-flow and soot-height on trees. The monitoring has been done before and after the burning in all burnt areas (2 sub-sites in Project area 3 and one site in Project area 12). Measurements have also been conducted in soil-

transects in all three areas. The results from the areas burnt during the extremely dry summer 2018 shows, as expected, quite hard and deep impact of the fires. The burning on Harvelsön in 2015 did not have the same impact on the soil and vegetation but still the effects were within the objectives of the action. Se annex 7.2.19, 7.2.20 and 7.2.21 for detailed information about each sub-site.

Inventory of birds on all skerries: For the cleared skerries we have got data of the number of breeding birds from the national monitoring program for colony nesting birds in Lake Vänern which has been running since 1989. The inventory is done yearly, and the data is made available in a database that we have free access to. Early in the project we found it more expedient to make one more profound compilation of the inventories at the end of the project, instead of, like mentioned in the application, make three excerpts from the inventories during the project period (this change was approved by EC in letter 27/06/2014). The evaluation of the results from the program was; therefore, compiled by the Department of Biology, University of Lund (annex 7.2.16) in the autumn 2018. The result shows no signs that the bird populations on the skerries in Lake Vänern have increased due to the clearings that have been carried out. Instead the project has probably contributed to keep the numbers of these species in the same level as before the clearings. The results from the evaluation of the inventory of birds on skerries are also summarized in a table (annex 7.2.22) and the assessment of compliance of objectives is summarized in section 5.4 below.

Monitoring of semi-natural nesting platforms: The built semi-natural nesting platforms has been monitored yearly by our own staff, studying whether the nests are in use or not. Unfortunately, there has only been one registered breeding in the built platforms. See discussion in section 5.1.12 for the reasons to the poor result. A short report from the monitoring program is attached as annex 7.2.18.

Monitoring birds on of breeding islands: As there already was an organized monitoring of birds in project area 2 before, we did not have to set up a new survey in the project. Registration of staging and breeding birds has been done before and after building the islands. As mentioned earlier in the report, the result was better than expected, where at least 12 pairs of terns were breeding on the eastern island already during the first season rendering at least 11 pulli. Read more about the result in section 5.1.12. A short report from the monitoring of birds on the islands is attached as annex 7.2.17.

5.1.14 Action D2 Assessment of the socio-economic impact and ecosystem functions

Tendering for consultants to accomplish the assessment of socio-economic impact and ecosystem functions was done during the summer 2018. In total, seven consultants attended with offers. The assignment was given to WRS in Uppsala, a company, whose offer fulfilled our demands best in combination with a god price.

Since the budget for the investigation was limited (in total 10 000 Euro) we had to concentrate on a few essential and concrete analyses in the study. Different sections in the study deals with; 1) a quantitative analysis of contracts generated in the project including the geographic distribution of contractors, 2) the monetary rate of restored grasslands in the project, 3) free socio-economic discussion where the consultant could evolve different socio-economic aspects on the project, and 4) qualitative assessment of ecosystem services that has been affected in the project.

Besides the theoretical study and assessment of the socio-economic impact and ecosystem functions we ordered a separate visitor study by a local consultant, which was completed during a period from August to October 2018, in project area 5, sub-site Nolgårdsviken. The place where our new view platform and trails were built and ready to use in June 2018.

The theoretical part of the socio-economic analysis shows that the project has contributed to local and regional economy in many ways. For example, the total amount of orders in the project, about 1 million Euro, has contributed to the economy of more than 100 different companies and contractors. The value of contracts and procurements has been distributed so that about 60 % have been used on local companies and 40 % on long distance companies. The local companies were defined as companies that are operating in the fourteen municipalities that are surrounding Lake Vänern. Another quantitative part of the socio-economic study shows that the monetary value of restored grasslands in the project, in terms of possibilities to get subsidies for these, is assessed to 36 000 Euro per year.

In the free part of the socio-economic study the consultant highlights the positive effect of entrepreneurs who have got the opportunity to widen their range of services to more specialised task assignments like clearing of trees and bushes on islands or construction of facilities for visitors with limited movability. Another issue that is discussed in the report is the value of restored landscapes for local and long-distance visitors. This factor is often hard to evaluate in monetary terms, even though it is obvious that a positive effect is achieved.

Through the visitor study, that were set up in project area 5 during autumn 2018, we got an insight to the visitors' point of view on this kind of projects. In total, the interviewers that where present in the area on different occasions during the period, had the possibility to ask their questions to 43 persons. The result showed that the people, who mainly were locals, had a good view of the restored pastures while their awareness of the new-built view platform were quite scant. The visitor's opinions on the restored area were in general very positive. In total 88 % of the interviewed people felt that the restorations had increased their possibilities for recreation in the area and 95 % thought that the actions also were positive for people's health. We also asked questions about the persons knowledge about nature conservation which showed that 96 % were familiar with Natural reserves but only 35 % had heard about Natura 2000. Only 26 % of the people in the study had heard about our project, LIFE Vänern.

The section in the assessment of the socio-economic impact and ecosystem services that is dealing with ecosystem services is designed as a qualitative resume of the different services that the project might have affected. In total the study is discussing 17 different services divided into; Provisioning, Regulating, Cultural and Supporting services. The result is also presented in a chart where the weight of the different services in the project has been estimated in a scale from -2 to +2.

The full versions of the assessment of the socio-economic impact and ecosystem services is attached to this report as annex 7.2.23. The visitor study in project area 5 is attached as annex 7.2.24.

5.1.15 Action F1 Project management and regional project coordination

See section 4.

5.1.16 Action F2 Networking with other LIFE and non-LIFE projects

Networking is important to share experiences and knowledge with other nature conservation projects, both within and outside the LIFE program. In the application we did not foresee the importance of networking and the emphasis that EC lays on this. During the application phase we did not consider the extent of the LIFE network in Sweden or the possibility to participate in international LIFE platform meetings. Therefore, the budget for networking was exceeded with 97 % (see further economical comments in section 6.5)

We have participated at 4 LIFE platform-meetings (see table 8 below). The project was presented verbally in Rovaniemi and there was a poster session including speed dating among the project managers, present in Aalborg, 2015.

Table 8. International and national LIFE-meetings where staff from LIFE Vänern has been attended.

Meeting	LIFE Vänern staff attended
Internat. platform meeting Östersund, September 2013	J Sander, O Säwström
National LIFE-meeting in Vindelälven, October 2013	J Sander, J Johansson
Study visit to LIFE Grace, March 2014	J Sander, O Säwström, G Lagerkvist
Study visit to Slovenia, LIVE Drava, May 2014	J Sander, O Säwström, G Lagerkvist
International platform meeting in Rovaniemi, June 2014	G Lagerkvist, J Johansson
Final seminar, LIFE MIA, October 2014	G Lagerkvist
National LIFE-meeting in Söderköping, November 2014	J Sander, J Johansson
National LIFE-meeting in Visby, May 2015	O Säwström, J Johansson
Final Seminar, LIFE GRACE, August 2015	O Säwström, G Lagerkvist, A Furustam
International platform meeting, Aalborg, September 2015	O Säwström
National LIFE-meeting in Örebro, November 2016	O Säwström, J Johansson
International platform meeting in Örebro, April 2017	O Säwström
National LIFE-meeting in Östersund, November 2017	O Säwström, J Johansson
National LIFE-meeting in Västerås, May 2018	G Lagerkvist, J Johansson

We have also joined 6 national LIFE network meetings. These meetings have been very useful for project management, and to exchange knowledge of common LIFE issues from the other project managers and financial advisors. The representatives of the projects present have given short presentations of their projects, and there have been separate discussion seminars for the project managers and the financial advisors. Our project has also attended two final seminars (LIFE MIA and LIFE GRACE, see table 8). Both projects have included similar actions as LIFE Vänern. Our participation also helped us to plan and organize our own final seminar.

In 2014 three persons from Lst S did a study visit to the Slovenian LIFE project LIVE Drava (LIFE11 NAT/SI/882). A report covering that study visit was submitted in the Progress report 2015. We had a lot of concrete conservation discussions about the restoration methods for wet meadows and breeding sites for Common tern. We also visited several of their restoration sites and held an evening lecture for all the available staff at the DOOPS office in Ljubljana showing pictures from the project areas in Sweden. The visit was beneficial to both projects and gave us new perspectives on

management of breeding sites which were very useful, especially for planning our action C7 Creation of breeding islands.

In 2014 we also did a study visit to LIFE GRACE and participated in a restoration burning of heather. A report covering that study visit was submitted in the Inception report 2014. We learned a lot, both in theoretical terms and in practice from the consultant working with burning of heather, Roy Andersson. This networking gave us the necessary knowledge to plan and implement action C2 in project area 1.

A Polish conservation project concerning Osprey *Pandion heliaetus*, contacted us after they found out via our website, that we are doing conservation actions for the species in LIFE Vänern. They handed in an application for LIFE funding in autumn 2015. 1n 2018 Gunnar Lagerkvist participated in an interview-survey where a Finnish researcher from the University of Eastern Finland, were investigating conflicts in environmental projects, especially LIFE projects.

We have also done networking with different local nature conservation associations, boat associations, ornithologist associations, municipalities and the Lake Vänern Water Conservation Association. They provided us with knowledge about bird status or status of different visitor facilities and whereabouts in our project sites that had been useful for detail planning. They also helped us with our attempts to get private organisations, e.g. boat clubs, ornithologist associations, or just an interested public, to contribute by clearing skerries that are important for colony nesting birds. This can affect skerries both in and outside Nature 2000 areas.

Concerning the costs incurred within networking we noticed early in the project that the F2-budget was underestimated. To avoid overspending, some networking costs has been registered on F1. See further comments in section 6.5 below.

5.1.17 Action F3 Financial audit

Financial audit (F3) was performed by Certified Internal Auditor (CIA) during two on spot visits (November 2018 and February 2019) and distance work. The auditor's report was completed and submitted to Lst S in March 2019 (see annex 8.5). See further comments in section 6.4.

5.1.18 Action F4 After-LIFE conservation plan

5.1.18.1 Introduction

The full-version After-LIFE conservation plan is attached as annex 7.3.2 to this report. The aim of the plan is to describe and define the future management of the restored areas in the project. The long-time objectives are to maintain all the areas and actions that has taken place in the project, for a long time ahead. The plan consists of four parts, describing the future management in different views. The whole document will function as a manual for the future management of the actions that has taken place. The following sections is an extended summary of the most important parts of the After-LIFE conservation plan for LIFE Vänern.

5.1.18.2 SWOT-analysis

In the SWOT-analysis we have compiled the most important Strengths, Weaknesses, Opportunities and Threats of the project and its future management.

Strengths

One important strength that has been evolving through the project is the enhanced cooperation between the two County Administrative Boards and with other authorities, municipalities and stakeholders around Lake Vänern. These actors have also got a wider view of the actual environmental threats which are appearing around the lake. During 2018 this networking got important outcome when the discussions on our final seminar led to concrete negotiations that resulted in a new council called "Vänerråd" which shall deal with the regulation regime issues of the lake. The new council will have delegates from both County Administrative Boards, the municipalities and other stakeholders. This measure might be crucial for getting a long-time sustainable management of the open habitats on skerries and shorelines around the lake.

Another important strength is that the project has allowed us to build a strong infrastructure to support grazing in some areas around the lake. Investments in fences and logistic measures like docking points for cattle and the cattle-gangway that has been constructed in the project are important for the future management of these pastures.

A clear win-win effect, when dealing with restoration of open landscapes, is that many plants, animals and people can benefit from these actions. Through the construction of small-scale facilities for visitors we have enhanced the possibilities for people even more. At the same time, we have been able to guide our visitors to certain places or paths where their presence will not cause any disturbance to the wildlife.

Weaknesses

A troublesome weakness in LIFE Vänern is that the applied method for clearing the skerries, by manual clearing, does not appear to be sustainable in the long run. The method is too difficult and expensive and depends on several external circumstances. The prospects to finally remove the vegetation from the skerries is not very positive. In many cases, we believe that the clearings will have to keep on running in the future until there is a better solution reached. Such solution could be moderating the lake-level amplitude in a more environmentally friendly way. As mentioned above, a new council called "Vänerråd" has been put up to deal with the regulation of the lake, but it is still too early to tell if it will be successful.

Another weakness connected to LIFE Vänern is the problems encountered to get farmers or other entrepreneurs interested in dealing with the management of remote pastures and meadows. Background to the issue is that the farmers and countryside-people has left the remote areas many years ago which means that the cattle, and people who shall handle the cattle, must come from far away to do their work. Swedish legislation, which says that all cattle should have daily supervision, also contributes to make this kind of solution demanding and expensive. Available subsidies cover only about a third of the costs connected to grazing on islands in remote areas of Lake Vänern. High costs may in the long run be a crucial part of the long-time sustainability of restored areas like Lurö skärgård (project area 1).

Options
The cooperation between authorities and stakeholders that has started in LIFE Vänern and will continue in e.g. the new council "Vänerråd" is an option for the future management of some of the threatened habitats around Lake Vänern (read more above, in section "Strengths").

Another option is the possibility to expand the nature-oriented tourism and wildlife experiences for the public, such as excursions, birdwatching, canoeing, photographing etc. This option has a wide range of users. From all the people living in the region to our visitors from other regions, EU-countries and the rest of the world.

One option, that in the long run might contribute to make the management of the remote pastures more cost-effective, is the increasing awareness in society over the importance to buy meat that has been produced in an environmentally friendly way. This demand might build up a market which in the long run might be self-regulating. For example, if the meat produced on the islands in Lurö skärgård (project area 1), would obtain a price that corresponds to the production costs, it would surely be a more popular business to run for farmers and entrepreneurs in the region. The problem is that the customers in supermarkets do not include all the positive aspects that this kind of meat production is contributing to. One way to make these circumstances clearer is to package these products in an expedient way and call it e.g. "Lurö-meat" or "Archipelago-meat" to give it a clearer context.

Threats
The ongoing climate change entails many threats to the long-time status of the prioritized habitats and species in the project. The climate change is e.g. the reason why the regulation of Lake Vänern has changed to a minimum of amplitude fluctuation. It is because the responsible power-plant company and authorities are afraid of flooding, as a result of climate change. Another threat from the climate change is the change in growth on the pastures. Warm weather and a lot of rain makes the grass grow faster and during a longer season which in these days certainly is leading to higher costs for the management.

Building of houses and infrastructure in lowland shoreline-areas around Lake Vänern is another threat which might determine the future possibilities to moderate the water amplitudes in the lake in an unfavourable way.

5.1.18.3 Long time management – per action

Clearing of skerries – C1a
Management of the 214 restored skerries (in total 78 hectares) will continue after the project through manual clearing as long as no other method has evolved. The strategy for clearing is described in the "Management strategy for important breeding sites for birds" which was compiled as a separate action in the project (se annex 7.2.25).

The clearing of the skerries used by the colony nesting birds in Lake Vänern is quite difficult and expensive activity and it is depending on several external circumstances such as weather-condition, time of the year, accessibility by boat etc. For this reason, it is uncertain if the action is long time sustainable. A safer way to manage these environments would be to let the water fluctuation and ice erosion make the job in the

same way as it has been earlier. As mentioned above, there is now a new council called "Vänerråd" which will handle these issues in the future. The County Administrative Boards of Värmland and Västra Götaland will be responsible for the short-term management, manual clearing of the 214 skerries. In a few cases there are other stakeholders like individuals, landowners and NGO:s who area taking care of single or a few skerries. The future cost is estimated to 30 000 Euro per year (60 000 Euro every second year).

Restoration of grasslands– C1b, C2, C4, C5, C6
Restoration of grasslands has been conducted in four different project areas in LIFE Vänern. The future management are described in the following sections:

Project area 1, Lurö skärgård: In total 43 hectares of grassland has been restored on three islands in the archipelago. The islands form, together with the former restored island Vithall, a distinct cluster of islands with a similar demand of management within the frame of management of Natural reserves and Natura 2000.

The future strategy for the management is to carry on with long term procurements for entrepreneurs who are willing to take the responsibility for the whole chain of actions including transports of cattle, grazing and supervision of the cattle. The only parts that may be kept outside the procurements is providing the cattle ferry and gangway and to maintain the fences in the area.

It is important that the management will keep on optimizing towards economical effectiveness. This might be arranged through e.g. shortening of the grazing season, using fire-management as a tool or by using mechanical cutting of grass as a complementary method. The economic aspects are important for the long-time sustainability for the restored pastures.

Lst S is responsible for the management which will be financed by funding from the SEPA. The cost for grazing is estimated to about 40 000 Euro per year. Subsidies to the amount of approximately 16 000 Euro per year may be available to cover some of the costs. Above these amounts there will be other costs for complementary actions like burning and fencing every sixth year to the amount of about 7 000 Euros.

Project area 4, Nötön-Åråsviken: In this project area there are two meadows restored (in total 1 hectare) and one wooded pasture covering 6,3 hectares.

Since already before the project the cattle were grazing in the surrounding areas, there is an obvious opportunity to coordinate the grazing of these pastures, which will be done in a joint contract from 2020 and onwards. Lst S is responsible for the management. The costs are expected to be covered by subsidies.

Project area 5, Klarälvsdeltat: In total 61 hectares of wet grassland has been restored in the area divided into two different sub-sites Nolgårdsviken and Djupsundsviken.

The current agreement for grazing is extended until 2021. The future strategy for grazing should be to keep on procuring the assignment for the whole package of efforts that are needed to keep the pastures developing into favourable status. Established contracts

should be extended for at least 5 years ahead, to allow the farmer to adapt his cattle-stock to the actual conditions.

Lst S is responsible for the management which will be financed by funding from the SEPA. The calculated cost of about 20 000 Euro will to a high extent be covered by the subsidies which has been estimated to 18 000 Euro. County Administrative Board should consider letting the farmer deal with the subsidies which would keep the administration on a minimum level.

Project area 6, Värmlands Säby: In this area a wooden pasture on a peninsula, covering 4 hectares has been restored. Since already before the project the cattle were grazing in the surrounding areas, the grazing contracts has been coordinated already during the restoration phase in the area. The contract is running for the years 2017-2021. Lst S is responsible for the management and the costs are expected to be covered by subsidies.

Restoration by fire management – C3
Restoration by fire management in forest (Western taiga) has been carried out on three different islands in the project. In project area 3, two areas have been burnt, in total 4,7 hectares and in project area 12 one area including 13 hectares of forest land has been burnt.

No management is needed for the burnt areas. The interval to the next burning is estimated to about 25 years. The CABs are responsible for the action including any unexpected demands in the future.

Creating of breeding sites for White Tailed Eagle and Osprey – C3
In the northern part of Lake Vänern, in total 16 nesting platforms for White-tailed Eagle and Osprey, have been built.

The platforms will be monitored during the coming five years to verify their utilization and maintenance. If needed, reparations will be made during the period. If the provided platforms have not been occupied by then, we will let them decay without further management. We will also make a new assessment of the actual problems with disturbance from people at the nesting sites and decide whether there should be new platforms built in undisturbed areas.

Creating of breeding islands– C3
Two breeding islands for terns and gulls, covering in total 0,12 hectares, have been built in the Natura 20000-area Inre Kilsviken (project area 2).

The two islands were finished in March 2018 and during the first 6 months they were protected by booms. During this period, only small-scale erosion could be observed on the islands. Further surveillance will be needed during the coming years to secure that the islands will not be eroded. Depending on the kind of vegetation that will colonize the islands there might also be a need for management of that. If there are higher plants like reed or bulrush there will certainly be a need of management, either just once a year in wintertime, or if the vegetations becomes dense, twice, to keep higher vegetation away from the islands.

Lst S is responsible for monitoring and management. Monitoring will be performed continuously by our staff and will be combined with the monitoring of birds in the area. The cost for vegetation management is calculated to about 500 Euro per year.

Monitoring – D1
Further monitoring of the actions will be accomplished in different ways. The yearly ongoing inventory of colony nesting birds on skerries in Lake Vänern will keep on going as a part of the programs for regional monitoring which is managed by both County Administrative Boards. Also, the monitoring of grasslands will be repeated with longer intervals, as a part of the mentioned program in Lst S. Different kind of monitoring of burnt forest-areas will be conducted with 2 to 15 years intervals.

When it comes to the built nesting platforms there will be recurrent visits during the following five years to determine the status of the platforms and whether there has been any breeding activity or not. During summer-seasons there will also be weekly registrations of birds nesting and staging on the built nesting islands. The monitoring-activities will be coordinated with controls of the status of the constructions.

The total cost for further monitoring of the actions conducted in LIFE Vänern is calculated to 50 000 Euros for the coming 15 years (about 3 300 Euros per year).

Information – E1, E2, E3
The general project sign will be demounted from the project areas during 2019. The remaining signs that have been produced by the project will be managed by the County Administrative Boards as long as possible (at least 5 years). The project web-page will be managed and maintained for at least 5 years. No further printing of the project folders has been planned. The County Administrative Boards will order complementary copies of the folder "Din skyddade natur i Vänern" (In English: "Protected Nature in Lake Vänern") if there is a demand for the folder from tourist offices etc. In total the costs for information in connection to LIFE Vänern is estimated to about 100 Euros per year.

Facilities for visitors – E5
Those facilities for visitors that have been built within LIFE Vänern will be managed by each CAB which is financed by the SEPA. Exception is facilities built in Klarälvsdeltat (Project area %) where the municipality will take care of them. The costs for supervision and maintenance of the buildings, trails etc. is estimated to about 5 000 Euros per year.

5.1.18.4 Compilation of costs for After-LIFE management

The costs for After-LIFE management has been estimated for each action (se sections above) and compiled in table 9 below.

Table 9. Compilation of costs for After-LIFE management. PA = Project area.

Action/Projekt area	**Responsible for management**	**Yearly netto-cost**	**Comments**
Clearing of skerries C1a	Lst S+O	30 000 Euro	
Grazing C6 – PA1 -PA4 -PA5 -PA6 Mowing C5 -PA4 Burning of heather C3 -PA1	Lst S Lst S Lst S Lst S Lst S Lst S	24 000 Euro 0 Euro 2 000 Eoru 0 Euro 1 200 Euro 1 000 Euro	Including subsidies Including subsidies Including subsidies Including subsidies Including subsidies
Fire Western taiga C3	Lst S+O	0 Euro	Longtime action >25 years
Nesting platforms C7	Lst S	0 Euro	Included ind D1 below
Bredding islands C7	Lst S	500 Euro	Management of vegetation
Monitoring D1	Lst S+O	3 300 Euro	50 000 Euro, 15 years
Information signs E1	Lst S+O	0 Euro	
Web-page E2	Lst S	100 Euro	Web-page + domain name
Folders E3	Lst S+O	0 Euro	
Facilities for visitors E5	Lst S+O Hammarö munic.	4 000 tkr 1 000 tkr	 Project area 5
Totalt		**67 100 Euro**	

5.2 Dissemination actions

5.2.1 Objectives

The archipelago of Lake Vänern is a very popular area for recreation. During the summer large numbers of people enjoy the archipelago by boat or kayak, and during the winter ice-skating and ice fishing are popular activities. There are also other stakeholders and industries using Lake Vänern, e.g. fishing industry and hydro power plant industry. Such a diverse target group is a challenge for the project. Different activities are planned during the project to disseminate the project actions and to raise the awareness of the biological values and the management of the unique habitats of Lake Vänern.

An important view is to meet targeted groups through various information meetings and field excursions (action E4 and E6). To reach a broader audience, the project also has had recurrent contacts with media. Information materials have been produced and published on our website and in three different folders. General information signs have been put up in all project areas and on the strategic sites in the large project areas to reach as many as possible. Specific signs describing forest fire management have been put up in project area 3 and 12. Specific signs has also been put up in project area 1 and 5 covering pastoral practice and restoration actions in these areas. Finally, a coordinating sign, which covers the project areas 2, 4, 6, 7 and 8, has been put up in a service area by the main road passing by the areas. At the end of the project a long-term management plan for all skerries (action A5), and an after-LIFE conservation plan has been produced.

5.2.2 Dissemination: overview per activity

5.2.2.1 Action E1 Notice boards

Notice board with general information about the project has been produced and put up in all project areas. In total, 56 notice boards presenting the project have been put up on strategic sites to make sure that the public and others spending time on or around Lake Vänern are aware of the project. Some of the notice boards are positioned at different places in accordance to the application. A detailed map showing the location of the signs and an annex with photos of some of the signs (11 examples), were submitted in the Progress report 2015 in accordance with EC letter 21/05/2015.

Before and during the burning actions C3 in project area 3 and 12 we have had site-specific signs put up in strategic places in and around the areas. Two of these signs, regarding Harvelsön were attached to our Midterm report. During the spring 2018 we have produced three permanent, site-specific signs about the burning activities in our three sub-sites. These have also been erected in and outside the areas at 7 different strategic places. The placements of each sign can be seen on maps in each restoration plans (annex 7.2.3, and 7.2.10). The signs are attached in annex 7.3.5.

In June 2018 we completed the site-specific sign over pastoral practice in the Lurö archipelago, project area 1. The sign has been erected in 3 locations in accordance with the maps in the restoration plan (annex 7.2.1). The sign itself is attached in annex 7.3.6.

A sight specific information sign has also been produced and printed which covers the restored areas in Project area 5 including the restored habitat 6410 and the bird life that is connected (annex 7.3.7). This sign has been erected in 2 positions in the area in accordance with the maps in the restoration plan (annex 7.2.5).

Finally, we have also finished and put up the information sign about project area 2, 4, 6, 7 and 8, which serves as a guide to the protected areas in the Ramsar-area and as general information about Natura 2000 and nature protection. The sign is erected in two locations along the main road east of the areas, where many travellers stop daily (annex 7.3.8).

The cost of producing information signs did balance the budget (97 % use) but the costs for external assistance exceeded the budget. The reason to this overdraft is the underestimated costs for building stands for the signs. As many signs are placed on islands the construction needed certain logistics which was expensive.

Figure 17. Photographs of the four different site-specific signs that has been produced by the project. Upper left: Sign about burning of standing forest on island in project area 3c. Upper right: Sign about protected areas in Ramsar-area, covering project area 2, 4, 6, 7 and 8. Lower left: Site specific sign in project area 5. Lower right: Site specific sign on island in project area 1.

5.2.2.2 Action E2 Website

The website www.lifevanern.se has been available to the public from 13/01/2014, and we have continuously been working on the website presenting the latest actions and progress of the project. In total there have been 69 news flashes published by the project. Most of them and all the general information about the project have an English translated summary. We have also published our information material, reports and other important documents on the website. The website is exclusively for LIFE Vänern and is managed mostly by Lst S, even though Lst O also publishes news from their county.

In total there has been more than 10 000 visitors to the webpage during five years of LIFE Vänern. It is over 2000 visits each year, 180 visits per month in average. During October to mid December 2018 we had problems getting the website working properly. It worked slow and some pages were not accessible at all. Luckily our information staff managed to solve the problem so that the website is running smoothly again. The website will be managed by Lst S for at least 5 years after the project.

5.2.2.3 Action E3 Laymans report and other printed information materials

In the project three different leaflets have been produced in accordance to the application.

A leaflet with general information about the project was produced in June 2014 and the first 500 printed copies have been handed out at different events, e.g. the inception seminar and other information meetings. In 2016 we ran out of leaflets and another 500 copies had to be printed for the upcoming information meetings. The leaflet was attached to the Midterm report and is therefore not submitted with this report.

After a lot of discussion about the content, we could finally send a leaflet about protected areas, including Natura 2000 in the Lake Vänern-area, for printing in summer 2018. At first, we printed 500 copies which was financed by the project in accordance with the application. After all copies were distributed, we ordered another printing of 5000 copies which were financed by the CAB:s. The leaflet has been sent out to all tourist offices around the lake, boat associations and other important stakeholders. Our objective is that the leaflet will help people to understand the aim of protected areas like Natura 2000 and thereby make it easier for them to not disturb the wild life in the areas. The leaflet is attached as annex 7.3.9 to this report.

Another important publication that was finished and printed in 500 copies during the summer 2018, right before our final seminar, was the Laymans report "LIFE Vänern 2014-2018". Though we found this product important for the understanding of the project, and the nature conservation issues around lake Vänern, we tried our best to make it as appealing as possible. One objective was to get good photos from the project areas and actions, which we solved by hiring a local photograph to take appropriate pictures. We are confident that the measure was right though we have had a lot of positive feedback on the leaflet. Some of the photographs have also been used on our website, in Power point presentations, reports etc. The Laymans report is attached as annex 7.3.1 to this report.

Figure 18. The three leaflets that has been produced by LIFE Vänern. Left: General project leaflet from 2014. Middle: Leaflet about protected areas including Natura 2000 in the Lake Vänern-area. Right: Laymans report.

In 2014 we made two roll-ups with general information about the project. The roll-ups have been used by both Lst S and Lst O at many different information meetings, e.g. at the Inception seminar, at the platform meeting in Aalborg 2015 and at the Final seminar in 2018.

We have also produced a small project sign (7 cm x 10 cm) that comes in two different materials; one as a plastic sign and one as a sticker. The sign includes information such as LIFE logo, Natura 2000 logo, project logo, the general County Board logo and a reference to the project website. The sign and sticker have been used to clearly indicate the connection to the project, e.g. on fences and facilities for visitors.

The roll-ups and the small project sign were attached to the Midterm report and is not submitted with this report.

5.2.2.4 Action E4 Arrange and participate in information meetings with stakeholders

One of the project objectives has been to increase public awareness and increase the common knowledge of values for nature conservation within Lake Vänern. Since the lake is of national interest for both recreational values and nature conservation, many different people visit Lake Vänern with diverse intentions. Taking active part in meetings arranged by other organisations and boat clubs around Lake Vänern, has given us an opportunity to reach people that are not already interested in nature conservation. Meetings with NGOs such as Bird associations, Boat associations and Nature Conservation associations has also returned a lot of knowledge and viewpoints that has been important for managing the project.

The interest for the project has been high among the public, the regional NGOs and regional authorities. The project manager and regional project coordinators have presented the project at 27 different information meetings with between 8-200 participants per occasion. See list of meetings in annex 7.3.10. An example of Power Point-presentation from the project can be seen in annex 7.3.14

5.2.2.5 Action E5 Facilities for visitors

After a lot of planning and discussion with stakeholders, land owners and municipalities during the first years of the project, the building of facilities for visitors started in 2017 and has been a prioritized action during 2018.

All facilities for visitors have been built in accordance with the application and we have already had a lot of positive response on the constructions. The location of the different facilites can be seen in maps in the updated restoration plans (annex 7.2.1, 7.2.5 and 7.2.10). A selection of pictures of the facilities are attached in annex 7.3.3 and 7.3.4. Five examples are given below in figure 19.

Figure 19. Photographs of some of the facilities for visitors that has been built in the project. A) Composting toilet in Kalvö skärgård, Project area 12, B) Footbridge and trail in Klarälvsdeltat, Project area 5, C) View plattform, accessible for wheelchairs in Klarälvsdeltat, Project area 5, D) Docking point for boats in Kalvö skärgård, Project area 12 and E) Docking point for boats in Lurö skärgård, Project area 1.

The first two docking points for visitors were built in Kalvö skärgård, project area 12 during 2017. The construction offers a convenient and secure docking of boats to the islands which has been appreciated by the visitors. The third docking point, on the island Vithall in Project area 1 was finished in April 2018. A robust platform is built on a small island which is connected to the main island by a foot bridge. This docking point entails an improvement of the accessibility to the island with its small museum and the restored pastures.

Two toilets were built in Project area 12, Kalvö skärgård, during 2017. Along with the other facilities on the island, they will offer a considerable increase in accessibility for visitors on the islands. Functional toilets are also an important factor to avoid littering in this kind of remote areas.

The view platform in Project area 5, Klarälvsdeltat, stood ready to use in June 2018. Internal planning for the platform went on during the autumn 2017 and in December we hired an architect for the drawings. As the drawings were finished we could enter the tendering process which was finalized in April 2018. We are very satisfied with the look and the functions of the platform and we have had a lot of positive response on it already, although the accessible trail, which is connecting the platform with the parking area, was finished as late as November 2018.

The trail in Kalvö skärgård, Project area 12 were finished in 2018. It runs all over the islands Hemön and Österön including the burnt area on Österön and is in total 12 kilometers long. The trails constructed in Klarälvsdeltat, project area 5 are in total 1,7 kilometers long. Some foot-bridges had to be built to lead the trails over wet areas on the paths in both sub-sites; Nolgårdsviken and Djupsundsviken. Road- and trail-signs for route guidance has been put up by Lst S and the Municipality of Hammarö which has not been financed by the LIFE-project.

Two picnic areas have been built in Klarälvsdeltat, Project area 5. One in the north-west where an existing trail is ending by an old view platform. The other picnic area is situated by the view platform and is constructed so that it is accessible for wheel chairs and people with variated mobility. Two parking areas have also been constructed in Klarälvsdeltat, Project area 5, during 2016 and 2017, with room for 10 respectively 20 cars. The trail from the parking area to the view platform has been constructed for wheel chair accessibility. This part of the trail has not been financed by the LIFE-project.

The costs for building facilities for visitors in accordance with the application became considerably higher than expected. This applies especially to the view platform in project area 5, where the cost was more than double. As this outcome of E5-costs affected our situation regarding the 10 %-rule, mentioned in the Application guide, we had to remove two invoices, in total 55 399,95 Euro, from the action (see further comments in the financial part, section 6.5, below).

5.2.2.6 Action E6 Public seminars, dissemination of project results and media work

The Inception seminar was successfully arranged in Karlstad, June 2014. It was co-arranged with several other organisations active around Lake Vänern. In total there were over 3000 visitors. We had a showcase with information materials and a seminar session with several speakers including the keynote speaker Thomas Landgren.

The final seminar, which was held on 5-6 September 2018 in Karlstad, gathering about 70 participants during the first day of indoor presentations (se invitation and program in annex 7.3.11 and list of participants in 7.3.12). The program included an accurate review of the implementation of LIFE Vänern. During the first day we also had some presentations from adjacent projects. For example, we had the project manager from LIFE Coastal Benefit talking and staff from a local project for keeping sandy environments in the northern part of Lake Vänern open. In the afternoon the governor of Lst S was giving his view of nature protection and Lake Vänern along with some of our entrepreneurs who talked about keeping grazing animals in remote places such as uninhabited islands in the lake.

During the second day of the seminar we arranged an excursion to Project area 1, Lurö skärgård. The excursion, which also fulfilled our commitment of a field trip with experts and different stakeholders, attracted over 60 participants. On the island Vithall we had several different activities; such as listening to different experts at different stations on the island and teamwork over actual topics, related to nature conservation, in small groups. The field trip gave us a lot of exchange of different views and experiences and we could see in the evaluation that it had been informative and appreciated by the participants. For us, working in the project, it was very positive to get a lot of response and views on the project actions.

Figure 20. Pictures from the final seminar and the field trip to Lurö skärgård, Project area 1, 5-6 September 2018. Photographs by Frida Olsson, Lst S.

The media has shown interest in the project during the whole period and this has resulted in several regional reportages in newspapers, journals and in radio. Copies of articles and radio coverage have been submitted in all former reports from the project. To this report we are only attaching the coverage during 2018, see in Annex 7.3.13.

As the good relation to media has been maintained during the whole project there has not been any need for the press releases which was pledged in the application. Our coverage in newspapers has been good and continuous. So instead of sending out press releases we have prioritized to participate in different meetings with stakeholders and to be active in other dissemination actions.

5.2.2.7 List of dissemination deliverables

The following information products and activities have been produced within LIFE Vänern:

- Life logos and Natura 2000 logos have been put on all products from the project, like; restoration plans, monitoring reports, project leaflets, information signs, roll-ups, website, facilities for visitors, fences, trails etc.
- 1 general information signs on 56 places (E1)
- 3 site specific information signs about forest fire in 6 locations (E1)
- 1 site specific information sign about grazing in archipelago in 3 locations (E1)
- 1 overview sign about Natura 2000 in the Ramsar area in 2 locations (E1)
- 1 site specific sign about birdlife and Natura 2000 in 3 locations (E1)
- Our project website has been updated continuously during the project (E2)
- 1 project leaflet describing the objectives and planned actions in 1000 copies (E3)

- 1 leaflet about protected areas in Lake Vänern in 500 copies (E3)
- 1 Laymans report in 500 copies (E3)
- 2 rollups (E3)
- Small project sign and stickers, 7 cm x 10 cm (E3)
- Participated in 27 different information meetings (E4)
- 3 docking points for boat bound visitors on islands (E5)
- 2 toilets on islands in project area 12 (E5)
- 13,7 km of trails on islands and on the mainland (E5)
- 1 view platform with access for wheelchairs (E5)
- 3 picnic areas on islands and on the mainland (E5)
- 2 parking areas in project area 5 (E5)
- Press coverage (E6)
- Inception seminar, final seminar and field trip with experts (E6)
- Social media work, e.g. news flashes on Lst S Instagram and Facebook

5.3 Evaluation of Project Implementation

Methodology applied

As the project has contained a lot of different concrete conservation actions in different habitats there has been a great diversity of methodology applied. In the following section we will comment on some important methods used and highlight some issues in the project. All targeted habitats restored in the project has reached or will reach a state of favourable conditions in the future due to the project. The species area harder to assess. Overall the response from targeted bird species, this far has been unexpectedly weak. Instead some other bird species, which also are connected to the restored habitats, have increased. The reason to the lack of response on targeted species is that the birds are affected by many different factors during their life cycles. Furthermore, some of the targeted species, like the Ruff *Philomachus pugnax* and the Spotted crake *Porzana porzana* are quite rare in the region. This means that it might be hard for the birds to discover and build new life stocks in the restored areas. Both when it comes to habitats and bird species there will have to take some time until the new environment has settled and until the bird stocks have adapted to the new environment.

C1a Manual clearing of skerries: Clearing of vegetation on skerries has been one of the most pervading actions in the project. It will require recurrent efforts in the future to keep these important bird habitats open. Due to logistic obstacles there is no possibility to use heavy machines for the clearing. The work must be done manually with brush cutter and/or chain saw. Early attempts to use lever technique to pull up the vegetation failed due to the extremely strong roots that are developed on vegetation growing in wind exposed environments. Hopefully, the recurrent cutting of the sprouts will impoverish the vegetation. But as the efforts cannot be done during the peak of the vegetation season, due to breeding birds on the skerries, this might take long time. It is likely that locations with different soil conditions will differ in the frequency needed to impoverish the vegetation. The different clearing rounds on the skerries have in many ways confirmed what we thought about the extent of work. More than 50 % of the budget was used at the first clearing according to the plan, while the second and third clearings have been considerably cheaper.

C1b Clearing of trees and bushes in grassland habitats: There were a lot of questions raised on how to cut the vegetation on the islands in project area 1 and get it removed from the islands in a cost-efficient way. From an earlier project with similar objectives we knew that burning piles from this kind of dense vegetation on islands, is a very heavy and dirty job. Burning large amounts of trees and bushes on the islands would also cause a lot of CO_2 emissions without being able to make use of the heat produced. Consequently, we decided to make a single procurement where the contractor should cut all the vegetation and transport it to the mainland in one coordinated effort. The implementation was a success from our perspective, getting open landscapes ready for grazing without a lot of scars in the bedrock or high nutrient areas with *Urtica dioica* and *Rubus idaeus*. Due to varying weather conditions, this kind of restoration actions can be difficult to estimate, both in terms of costs and time spent. The contractor argued that there was more vegetation than expected on the islands. But since we had arranged a field visit for potential contractors during the tendering process and the contractor had insisted to have a fixed price, the costs for the delay had to be covered by the contractor. Overall, the method of collective effort on the islands seems to be right, but it is important to get a fair deal for all parts. It might have been better with a variable price.

Due to the favourable outcome of the C1b-clearings in project area 1 we made an even bigger package of the initial restoration procurement in project area 5. In this tendering-package we even included "C4 Cutting of tussocks and stump grinding" which gave the winning entrepreneur a good opportunity to coordinate the work. From our point of view, it also simplified the communication as we only had to deal with one contractor for the whole chain of actions which was a big help as we had to make an unforeseen stop in the process due to breeding and migrating birds in the areas during the spring and summer 2016. We are confident that we saved a lot of time and money by making a big procurement of these actions instead of many small.

For project area 4 we used a different approach for C1b. The area was an overgrown wooded pasture covering about 5 hectares. Due to the location it was very costly to get larger machinery out there, and considering the targeted habitat wooded pastures (9070) it was not justified financially to use larger machinery to transport everything out. Instead we organized several deposits of dead wood in strategic spots, preventing the general lack of dead wood in the landscape. We also burned several large piles of smaller trees and bushes on the spot.

C2 Restoration by burning of grasslands and heather: Fire has been used for management of semi-natural grasslands and heathers for a long time, but in later decades the knowledge has decreased a lot among farmers and landowners. To get rid of old grass in the unmanaged pastures in project area 1 and meadows in project area 4, we used fire. In both cases the burning has been carried out successfully by our own staff in combination with external assistance, burning the areas slowly upwind. In project area 1 about 50 % of the burning was carried out during the first year after clearing of bushes and trees (2016). We also piled and burned leftover branches and bushes after the clearings. This management proved to be very efficient. The islands were divided in three burning areas, leaving about 25 % of the area for the spring 2017 and 25 % for 2018 burning. By burning at three separate occasions on the islands, we have minimized the risk of species becoming locally extinct because of the quite drastic conservation action. We also differentiated the regrowth of heather and other flowering species providing important nectar sources in the area. In total we believe that the efforts

conducted has contributed to a big increase in knowledge over this management method which will be very useful and contribute to cost efficiency in the future. Challenges in this action is to spot the right occasion for burning due to weather conditions and to quickly gather enough people to manage the action.

C3 Restoration by fire management in 9010 Western Taiga: This method has come up as one of the key factors in restoring forest ecosystems all around Sweden. Even though there have been some activities earlier in both counties, there are still a lot of knowledge to develop among officials and organisations. For example, burning on islands was a new experience which gave new perspectives and knowledge for all involved in the project. As in the C2-action described above, there is a big challenge to plan management by burning in standing forest. In the project we have tried both tendering and implementation by our own personnel. However, we cannot really say that one way is better than the other. When it comes to costs it seems that the two alternatives eventuate on the same levels. A crucial factor is, that when the weather during the summer in Sweden becomes appropriate for restoration by burning, a lot of different organisations want to get their burnings done at the same time, which ends up in a competition about those quite few entrepreneurs available for the action. This is one of the reasons why Sweden has applied for and started LIFE Taiga. Through this project the knowledge has spread, and equipment has been bought which allows new organisations and actors to conduct burnings when the weather is right. This is what we used in LIFE Vänern, in project area 3 during 2018 where Lst S made the burning of 2 hectares almost all by themselves with the equipment bought within LIFE Taiga. The flexibility when more organisations get the knowledge and equipment for burning is favourable for the forest nature conservation in Sweden in the future.

Another interesting view of this action is the dissemination of knowledge which was quite demanding during 2018. As it was the last year of the project, we had to conduct the remaining burnings in project area 3 and 12. But as the summer developed into one of the driest and warmest in Sweden for decades, it was very challenging to communicate our efforts to the public. While there were big, wild forest fires flaming all around Sweden, we had to communicate and conduct our controlled restoration fires. It was indeed challenging, and we got some critical questions and inputs on our efforts. But in total we are quite satisfied that we managed to answer all questions and carry out with the actions. A crucial factor might have been that we communicated a lot in advance. We used our websites, temporary information signs erected in the areas, e-mails and phone calls directed to key persons in the districts that might be affected. Thanks to these efforts we might have avoided a lot of annoyed and worried people as well as questions and negative media attention.

C4 Cutting of tussocks and stump grinding: For this action we had a close look at a previous LIFE projects restoring wet grasslands, LIFE Foder & Fägring. Cutting of tussocks and stump grinding must be done by a groomer with wide tracks making it possible to drive over the wet areas without harming the ground. A specialist was consulted through a public tendering procedure which was coordinated with the clearing of trees and bushes in the area (se comments above under C1b). After two years of grazing on the pastures we can see that the action was successful. During the autumn 2017 it gave us the opportunity to make a complementary cutting of leftover grass in the area which had been impossible to carry out if the tussocks and stumps had remained in place. And in 2018 we could see that the cattle had grazed the whole area in an

appropriate way which indicates that the accessibility for the animals is good all over the area.

C5 Restoration mowing: For the two meadows in project area 4 we used a proven method for restoration mowing during the four years - mowing using brush cutters. The results so far are satisfactory and after 2018 we expect the areas to have reached favourable conditions for habitat lowland meadows (6510). From 2019 and onwards we will change method for mowing to use of scythe and/or hand driven mowing machine which allows us to apply for the farmland subsidies that are provided for this kind of services.

C6 Reintroduction of grazing: In project area 1, the logistics for transportation of cattle and material have been a crucial factor for the efficiency when reintroducing grazing cattle on the islands. Initially, we had discussions with farmers and experts in transporting cattle to and from islands. In the application we had indicated that we should construct ferry docking points on the islands to which the cattle barge could dock. But as we were discussing this issue, we realized that it might be a more flexible solution to make modifications on the cattle barge instead. We decided to make an amendment for construction a special gangway for cattle. This gangway, which is 4 meters long, detachable and can be raised and lowered from the barge, was constructed during spring 2016. After three seasons of using the gangway in operation, under different water levels and weather conditions, we can say that the solution is favourable for the logistics. The flexibility in this solution means that we did not have to build any docking points on the islands. We are confident that this is the most cost-efficient solution. Another issue of methodology on the islands in project area 1 is how to put up fences in an appropriate way. The issue is discussed in section 5.1.11 above, and a continuous testing of different solutions will keep on for several years after the project. For grazing in project area 4, 5 and 6 we also constructed fences in cooperation with the cattle owner to maximize the biological value, wellness of the cattle, and convenience for the cattle owner. All factors are important to be able to restore and manage grasslands in long term.

An unexpected success in the project, which is worth emphasizing, was the grazing-season 2018, in project area 5. The restored pastures in the area are developing fast into big open grasslands as described in section 5.1.11 above. During the extremely hot and dry summer 2018 they also served as an extra fodder supply for the contracted farmer. The wet lake-pastures kept on producing fresh grass during the whole summer and autumn and as other farmers, strictly dependent on fodder from fields, had big problems feeding their animals, our farmer could put even more cattle om the restored meadows, where they were fed all through the autumn. This is a good example of the sustainability-factor when using semi-natural pastures for grazing, instead of just being dependent on farmed fields for fodder supply.

C7 Creating breeding sites for birds: For the construction of semi-artificial nesting platforms for osprey and white-tailed eagle we use a modified old technique. Instead of bringing woodwork up in the trees for the construction of a platform we are using only natural material found in the surroundings. The material, mainly consisting of branches, twigs and grass, is attached and kept together to the upper part of suitable trees by metal-wires. By choosing trees in desolated areas, disturbances from people can be

minimized during the nesting period for these raptors. Thereby, their breeding success can be improved.

The low use of the built platforms is discussed in section 5.1.12 above. As mentioned we do not think that the problem is connected to the technical execution of the nests. Our hypothesis is instead pointing at distributional limitations and timing issues.

The immediate success on the breeding islands in project area 2 is promising for the future outcome of the action. Even though it is too early to say if the constructions will have a sustainable impact on bird reproduction in the area, we are expectant for the coming breeding seasons.

Project amendment
No amendment has been made in the project.

Effectiveness of dissemination
When it comes to information to the public in this kind of projects, it is important to use different channels at different occasions. As mentioned above about burning of forest (section 5.1.8), we have learned that direct communication with stakeholders that are or might be directly affected by the actions especially when it comes to extensive measures which may cause impact on the surroundings is important. In these cases, one cannot rely only on the information signs or pamphlets. The best way to spread information is to talk to people directly or via letters or e-mail which facilitates sustainable contact with inhabitants of the area. For general information, it might be more efficient to erect information signs, visit certain meetings and/or spread folders to key places where the targeted stakeholders are present. A glimpse of to what extent the public has come to know about LIFE Vänern was assessed in the small visitor study, conducted in project area 5 (see review of results above in section 5.1.14 above).

5.4 Analysis of long-term benefits

Environmental benefits – habitats and species

Habitats
Seven habitats of EU importance are targeted in the project. Open habitats in general are threatened in the Swedish landscape and not in favourable condition according to the latest Article 17 reporting. The most important reasons are lack of management (grazing or mowing) leading to overgrowth of trees and bushes and that the areas are too small and too fragmented. The same patterns with declining open habitats are very much applicable to the areas around Lake Vänern. Another important factor around Lake Vänern is the lack of water fluctuation clearing overgrowth of scrubs and trees on skerries and shores. Nine of the eleven targeted species in the project are dependent on the open habitats. The forest habitats are not in favourable condition according to the latest Article 17 reporting. This applies to the islands in Lake Vänern as well, with declining condition, mostly due to the lack of disturbance leading to a disproportionately high proportion of spruce in the pine dominated Western Taiga areas. By using fire management in the Western Taiga, we can disfavour spruce creating better conditions for pine, create a warmer forest with sun-exposed old pines, and increase the amount of dead wood that several species are dependent on. By favouring pine, we can also, in time, provide suitable trees for breeding osprey and white-tailed eagle.

The need of restoration is therefore high for the targeted habitats and species. The purpose of the restoration actions is to enhance the possibilities for the habitats and species to reach favourable conditions in a national/ biogeographic scale. Unfortunately, the prognosis for these habitats from a national/ biogeographic point of view is not good, emphasise the importance of the protected Natura 2000 areas. The concrete conservation actions in the project have resulted in quantitative and qualitative improvements for all targeted habitats.

In total 14,7 ha of the habitat *4030 European dry heaths* have been restored on the islands in project area 1. The areas which were considerably overgrown with threes, Juniperus and bushy heather have been converted through clearing, burning and grazing into a shortcut open landscape. The number of typical species such as *Danthonia decumbens* and *Carex panicea* have increased, indicating that the habitat is developing towards favourable conditions.

The habitat *6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)* has been restored in the two project areas 1 and 5. The total area restored habitat in the project is 69,2 hectares divided into 16,8 hectares in project area 1 and 52,4 ha in project area 5. According to the monitoring report, the pastures in project area 5 are developing nicely towards favourable conservatory status and typical species like *Galium uliginosum* and *Lythrum salicaria* are spreading in the areas. In project area 1 the habitat-definition is more unclear. Some parts are definitively developing into favourable 6410 while other parts, e.g. areas where reed is still dominating, might not fit in to the definition. Future inventories and the further development of the pastures will determine the final classification of these areas.

Habitat *6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)* has only been restored on 1 ha in the project on two sub-sites. The restoration has been successful and species like *Antennaria dioica* and *Campanula rotundifolia* and *Dianthus deltoids* are present.

The habitat *8230 Siliceous rock with pioneer vegetation (Sedo-Scleranthion, Sedo-albi Veronicion dillenii)* is widespread on the islands in Lake Vänern. In the project areas the habitat has been restored as a side effect when clearing skerries for the bird colonies (Action C1a). Preliminary, in total 66,6 ha of the habitat have been restored in this action around the lake (no monitoring has been conducted in the project to classify the habitats on the skerries). The habitat has also been restored on 10,5 ha through clearing, burning and grazing actions in the pastures on islands in project area 1. Here we can see, through the monitoring of grassland vegetation that was conducted in 2014 and 2018, that the areas are developing towards favorable conditions. Species like *Viola tricolor* and *Sedum acre* are spreading out. The project has in total contributed to improve 8230 habitats on approximately 77,1 ha.

9010 Western taiga has been restored through controlled fire management on 17,7 hectares in the project. On Bärön, in project area 3, the restoration improved 2,2 hectare 9010. On Harvelsö in project area 3 and Kalvö, in project area 12 (in total 15,5 ha) the efforts resulted in new 9010-areas.

Habitat *9070 Fennoscandian wooded pastures* have been restored on 8,9 ha in project area 4 and 6. The restorations have been completed very carefully to avoid damage on the trees and the epiphytic flora and fauna on them. As expected, the direct effects of the restorations are relatively slow. The pastures were quite rich in typical species already before the project and due to the restoration, the habitats will improve even more.

Table 10. Areals of habitat-improvements in LIFE Vänern

Habitat	**Project area**	**Areal (ha)**
4030 European dry heaths	1	14,7
6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	1, 5	69,2
6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	4	1,0
8230 Siliceous rock with pioneer vegetation (Sedo-Scleranthion, Sedo-albi Veronicion dillenii)	1, 3, 10, 11, 12, 13, 14	66,6
9010 Western taiga	3, 12	17,7
9070 Fennoscandian wooded pastures	4, 6	8,9
Total enhanced area		**188,6**

Species

Considering the targeted bird species in the project (see table 3 above) there has been a focus on restoration and creation of open habitats which can serve as breeding and staging sites for them. Nine of the eleven targeted species in the project are dependent on the open habitats for breeding and staging. The project has evolved concrete conservation actions that can serve as possible solutions for other areas in Lake Vänern and in other lakes and archipelagos. Manual clearing of skerries (Action C1a) is one method that has been elaborated in large scale during the project. Another important habitat for birds targeted in the project is the wet meadows which has been restored through a chain of actions (C1, C2, C4 and C6) in project area 1 and 5. A more specialised part of the project has been to build semi-natural nesting platforms in trees (action C7) for the two big raptors White tailed eagle and Osprey. The method can be a useful tool in future management of these species. A knowledge evolved from this project is that you need a lot of data over territories and local conditions for the actions to be successful.

In the following section the compliance of objectives (see annex 7.2.22) for targeted bird species will be discussed. Quantitative data has been collected from the ongoing yearly monitoring of colony nesting birds in Lake Vänern and from the monitoring actions that have been conducted in LIFE Vänern, i.e. monitoring of birds on wet meadows before and after restoration and monitoring of built semi-natural nesting platforms. Compilation of data has been conducted by contracted bird experts, inventories and by the project staff at the CAB:s (see annexes 7.2.13, 7.2.14, 7.2.16 and 7.2.18).

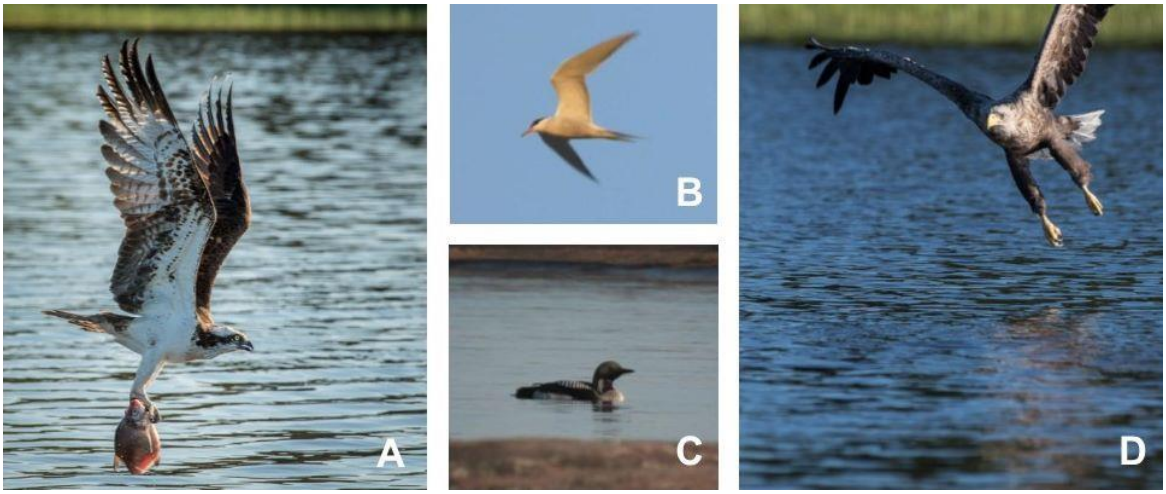


Figure 21. Some of the targeted species in the project. A) Osprey, B) Common tern, C) Black-throated Loon and D) White-tailed Eagle.

20 % of the population (about 20 pairs) of the *Black-throated Loon, Gavia arctica (A002),* was expected to benefit from the improved habitat quality on cleared skerries in the project. The Loon is not explicit tied to the bird colonies on the skerries in Lake Vänern. The species can also breed in secluded shorelines on bigger islands or on the mainland. But the species seams to take advantage of the collective predator protection in the colonies. Before the project there were 19 pairs of Loon breeding on the later cleared skerries. After first clearing there were 18 pairs and after second clearing 15 pairs were present. The results are indicating that the efforts in the project were negative to the species. But due to the small number of birds that are counted yearly in the inventory, that conclusion might be too drastic. More likely the connection between clearing of skerries and the population of Loon on these skerries are inexplicit, due to the species diversified choices of nesting-habitat.

The former rare bird-species in Lake Vänern *Barnacle Goose, Branta leucopsis (A045)* have had an increasing population in the lake during the project period. The species have been recorded with 7-10 pairs on the cleared skerries which is an increase from the conditions before the project. The number makes 27 % of the whole population in Lake Vänern which is high above the indicated objective (0-5 %). The recorded number of birds on the skerries is still too low to evaluate if the specie has really benefited from the project actions or if the increase is just a part of an overall trend.

White-tailed Eagle, Haliaeetus albicilla (A075), did not respond to our invitation on nesting on semi-natural platforms in secluded locations. Of the 7 platforms that were designed for the Eagle, none were used during the project period. As the White-tailed Eagle numbers are increasing in the area there is not a big problem for the species but still there will continue to be disturbances by several nesting areas which is a problem on the local scale. See further commentaries to the weak result in section 5.1.12 above.

When it comes to *Osprey, Pandion heliaetus (A094),* one of our 9 built platforms were used by the species during 2016-2018. The result is much lower than expected. The indicated objective was that 12 pairs should benefit from the action. As the Osprey numbers are decreasing in the region, it is a problem for the species to survive if they do not choose the artificial nest-platforms that has been offered in secluded areas. See further comments to the weak result in section 5.1.12 above.

The *Spotted Crake, Porzana porzana (A119)* did not occur in the overgrown pastures before the project and unfortunately, we have not been able to record any positive response to our restoration actions on the species. The Spotted Crake is quite rare in the area and, as mentioned in the application, it is hard to predict the effect of these kind of restoration actions on such species.

The spectacular wader-bird *Ruff, Philomachus pugnax (A151),* is another quite rare bird in the region that was targeted in the project. We know that the species is passing through the region on its way back and forth to its breeding grounds up north. The result of one female staging in Nolgårdsviken (project area 5) in spring 2018 is not very uprising for the project. But we hope that the occurrence is just a premonition for the coming years when the Ruff will be staging in higher numbers on the restored pastures.

Another, more subdued wader, the *Wood Sandpiper, Tringa glareola (A166),* has been staging in greater numbers on the pastures after the restorations. In Project area 5 (Nolgårdsviken and Djupsundsviken) the number of staging birds increased from 2 before (2014) to 10 after the restoration (2018) and in Project area 1 (Lurö skärgård) there were an increase from zero to 5 birds recorded during the two inventories. The increased presence might indicate that the species may come to breed in the areas in the future.

The *Little Gull, Hydrocoloeus (Larus) minutus (A177)* has had a positive trend in Lake Vänern during the project period. The species has increased from about 10 breeding pairs on skerries before the project to about 50 pairs during the last years. The share of pairs of Little Gulls breeding on the skerries cleared by LIFE Vänern was 26-38 % of the whole population which is at the same level as the indicated objective (25-50 %).

Caspian tern, Sterna caspia (A190) is one of the most endangered and rare birds in lake Vänern. During the years 2003 to 2013 there were only one pair breeding on a skerrie in the southern part of the lake. But during the project-period, there has been an increase to the top score level of 5 breeding pairs in 2018. Still there has only been one pair breeding, for one year, on one of the cleared skerries in the project. So, we cannot credit the project for the positive progress of the Caspian tern. In the long run, it might be favorable for the Caspian tern that there have been habitats suitable for the species restored.

The most numerous of the targeted species in the project is the *Common tern, Sterna hirundo (A193)*. Due to the objectives, 50 % of the breeding pairs in the lake should benefit from the project action C1a (clearing of skerries). The project did not really live up to that level but still, nowadays a large number as 33-42 % of the total population is breeding on restored skerries, corresponding about 1000 pairs of Common terns which is about 1 % of the total breeding population in EU. In this view the skerries in Lake Vänern have an important role in reproducing Common tern which later might colonize other areas where the species is rarer.

A sister species to the former is the *Arctic tern, Sterna paradisaea (A194).* Even though this species is scarcer, its long-term population is developing in a positive way in Lake Vänern, just like the Common tern. The project objectives for the Arctic tern was that 30 % of the breeding pairs should benefit from the project actions. The objective has

been fulfilled as the monitoring is showing that 37-47 % of the total population now is breeding on the cleared skerries.

Finally, we also defined an objective for the red listed *Turnstone, Arenaria interpres* in the project. The objective (0-10 % pairs expected benefit) was set even though the species is not prioritized by the EU. But, as its breeding activity on the skerries in the freshwater Lake Vänern is quite sensational, we decided to include the species among our targeted species. The result, one pair breeding on one cleared skerrie, during one year of the project-period, was not what we had hoped for. In the whole Lake Vänern the species were increasing during 2016 (3 pairs) and 2017 (4 pairs) but dipped again to zero breeding pairs in 2018.

Many other species, beyond the targeted species mentioned above, have benefited from the project. This is especially clear when we look at the monitoring of birds in the restored pastures of project area 1 and 5. The restorations in these areas were extensive and the results are quite clear when it comes to promoting birdlife tied to open landscape and grazed grasslands.

In project are 1, the restoration of the three islands, has led to an increase of Lapwing, *Vanellus vanellus,* from zero to 18 birds observed during the inventories. A similar growth was registered for Common snipe, *Gallinago gallinago*, which increased from zero to 17 registered birds. Other species that are tied to the open landscape according to the inventories seem to have gained from the restorations in project area 1 are for e.g. Yellow wagtail *Motacilla flava*, Barn Swallow, *Hirundo rustica* and Starling *Sturnus vulgaris*. Species that have decreased in appearance on the islands are fore example Chafinch, *Fringilla coelebs,* Willow warbler, *Phylloscopus trochilus* and Robin, *Erithacus rubecula.*

In project are 5 (sub-sites Nolgårdsviken and Djupsundsviken) the increase of open-grassland birds is even more obvious according to the inventories. Common Crane, *Grus grus* and Whooper Swan, *Cygnus cygnus,* have been breeding in the surroundings of the meadows and are frequently using the grasslands for foraging. Lapwing, *Vanellus vanellus,* has increased from zero to 22 breeding pairs and the small wading-bird Little Ringed Plover *Charadrius dubius,* appeared with one singing male. Among passerines the Meadow pipit, *Anthus pratensis*, increased from zero to 9 pairs, Whinchat, *Saxicola rubetra*, from zero to 5 pairs and Wheatear, *Oenanthe oenanthe,* from zero to one pair in 2018.

Among staging and foraging birds in project area 5 we have recorded the increases of Redshank, *Tringa glareola,* who appeared in Nolgårdsviken with up to 3 birds, Greenshank, *Tringa nebularia*, who appeared with 6 birds and Green sandpiper, *Tringa ochropus,* which appeared with up to 5 birds in spring 2018. Among passerines the Yellow wagtail, *Motacilla flava ssp. thunbergi*, were staging in quite large groups among the cattle in August and September and Starling, *Sturnus vulgaris*, was seen foraging in the pastures with up to 60 individuals at the same time in 29018.

Species that decreased in numbers in the restored project area 5 are for example Reed Warbler, *Acrocephalus scirpaceus,* Thrush Nightingale, *Luscinia luscinia* and Common Reed Bunting, *Emberiza schoeniclus.*

The project actions have also benefited other groups of species associated with open landscapes, e.g. both nectar and pollen producing plants like *Succica pratensis, Sedum telephium*, and other species of *Vicia sp., Cirsium sp., Viola sp*., etc. The increase in flowering plants will consequently benefit insects like butterflies and wild bees. Spring spawning fish, e.g. the ecologically and economically important pike, is spawning on flooded wet managed grasslands. The restored wet pastures in LIFE Vänern has provided appropriate spawning areas for e.g. pike, roach, tench, etc. Pike is a commercially important fish that used to be more common, but the latest monitoring shows a decline in population numbers. One of the reasons for the decline is the decrease in appropriate spawning areas, i.e. managed wet grasslands on islands and along the shores of Lake Vänern. The restored meadows will contribute to the fulfilling of the EU Water Framework Directive.

Long term benefits and sustainability

The overall project plan has been to increase the targeted habitats through the project actions, and that the population of targeted species will develop in a positive direction. Many of the restoration efforts in LIFE Vänern include clearing actions, such as mechanical or manual clearing of trees and bushes or burning in standing forest, heather or grasslands. These restored habitats are dependent on a continuous management or recurrent disturbance of the upcoming vegetation.

In the restored pastures and meadows, the continuous disturbance, i.e. management, will be arranged through continuous grazing by cattle or mowing. An important factor for the long-term sustainability and cost effectiveness is that vital investments and infrastructure are in place. The project has prepared all areas for the upcoming long-term management, not only by clearings and restoration of the habitat, but also by putting up reliable fences, arranging the logistics for transporting cattle back and forth to the islands, facilitates for the daily supervision of cattle using GPS collars, necessary access areas for machinery and cattle in some of the restored areas, etc. For these areas the long-term management will be secured through agreements between Lst S and different contractors. A problem might be that it can be difficult to get contractors interested in working with remote areas.

Even though the project has invested in important infrastructure there are still a lot extra work needed for cattle transport and the supervision of cattle in the archipelago. Management will be funded by the subsidies to farmers for cattle grazing or mowing these grasslands. However, in some cases where the subsidies are not enough to get farmers interested in the management, Lst S will have to add extra money from the general funding for management of nature reserves and other protected areas in the county. To secure the long-term management of the restored areas Lst S will incorporate all grasslands in our program for management of nature reserves and other protected areas.

The searching for optimal methods for the management of these grasslands will continue after the project. Aspects that might be modified are the length of the grazing season and the number of grazing animals on the pastures. The possibility to support grazing and mowing by recurrent burning is an interesting issue where the knowledge that has been built up in the project will be useful. Due to the decreasing presence of farmers in remote areas, it is essential to find other methods and/or executors of the

long-term management of the sparse grasslands in the landscape, habitats that are so important for the biodiversity.

A long-term, qualitative economic benefit that comes from the open landscapes is that they are very appreciated by visitors. By creating attractive sights for tourists and other local visitors, the project will benefit the tourism industry. We have had an extra focus on visitors in project area 1 (Lurö Millesvik skärgård), 5 (Klarälvsdeltat) and 12 (Kalvö skärgård). Because these areas already were of some interest for visitors, we decided to concentrate our efforts by building facilities for visitors there. The monetary value of the restored grasslands based on the subsidies that in accordance with the current Swedish regulations has been calculated to 36 000 Euro yearly. Another economic benefit from these open grasslands is that the meat produced in a sustainable and ecological way can be sold to a higher price than ordinary meat. These economic and other effects are evaluated in the socio-economic analysis (se section 5.1.14 and annex 7.2.23).

Restoration by fire management in Western Taiga (pine forests) is an attempt to simulate a natural reoccurring disturbance that was more common 150-200 years ago. This management action is quite expensive, although not frequent, resulting in a lower proportion of spruce, more dead wood and sun exposed pines providing a suitable habitat for insects e.g. *Nothorhina muricata*. Because the ecological effect of this action is long -lasting and do not require any recurrent actions, it should be considered as relatively sustainable.

The long-term sustainability is also dependent on available knowledge and entrepreneurs. Many consultants have been contracted during the project and have had opportunities to develop equipment and machines for managing the open landscape around Lake Vänern. The project has contributed to improved knowledge among contractors increasing their ability to have restoration and management services available in the future. With higher knowledge among different actors and stakeholders, future cooperation between different entrepreneurs, industries, municipalities, local authorities and NGO´s is more likely to find win-win trade-offs. Some municipalities in the area are organizing their own habitat restoration actions around Lake Vänern, and in some cases, using the same entrepreneurs as we in the LIFE Vänern project.

As shown by the After-LIFE Conservation Plan (section 5.1.18, annex 7.3.2) the continuation of some project actions is relying on governmental financed management of natural reserves, which is managed by the CAB:s. The municipalities have taken the long-term responsibility in a few cases, such as for the facilities for visitors in project area 5. There are also a few examples where NGOs have adopted skerries for their future management.

Replicability, demonstration, transferability, cooperation

The experiences and knowledge acquired in LIFE Vänern can be transferred to other areas and to other projects. The project have many lessons learned when it comes to restoring overgrown habitats on shorelines and islands in lakes and seas, for example; restoration of grasslands on islands, reintroduction of grazing on island, restoration of wetland pastures, fire management of Western Taiga on islands (sub-type natural old

pine forests), clearing of skerries in an archipelago, building semi-natural nesting platforms for raptors and breeding islands for terns and gulls.

One of the most innovative actions in the project has certainly been, setting up the infrastructure for cattle transportation in project area 1. The decision to construct a cattle gangway instead of building docking-points on the islands is described above in section 5.1.11 and 5.3. After three seasons of testing the gangway we are quite convenient to recommend this innovation in other areas or projects.

The benefit that comes from the open landscapes regarding visitors and tourism mentioned in the section above does certainly bring commercial opportunities and benefits for different stakeholders in the region. Different collaborations within the project participants and between these and external actors are another spin-off factor of the project. For example, there are a couple of NGOs and private persons which have been inspired to clear complementary skerries in the same way as our C1a action. We have also been invited to talk about the project-actions on meetings in areas where the project has been less present. The well-developed cooperation with a sizable number of entrepreneurs, mentioned above under "Long term benefits and sustainability", is another important dispersion factor of the project. Finally, the increased cooperation between the two counties, the Lake Vänern Water Conservation Association and other regional and local actors around the lake, will surely be a good platform for progress in nature conservation around the lake in the future.

The C7 action, building semi-natural nests for white tailed eagle and osprey, may also be interesting for other actors even though the results in this project relatively low. The method, which is described under section 5.1.12 and 5.3 has potential to solve problems concerning disturbances from people these two species, but probably also other tree nesting raptors.

A major problem the long-term management of the restored grazing areas in the archipelago is the high costs of daily supervision of the cattle which is required according to the Swedish legislation on domestic animals. The fact, that subsidies available for this activity is much lower than the cost, is a significant threat to the sustainability of the action. A hard-to-reach-vision is that it would be profitable again to use this kind of land for fodder supply. One way to reach this goal would be hard restriction on meat production or, more preferably, greatly increased demands and prices on sustainable produced meat. An alternative solution, to use wild animals for grazing, that do not require any supervision, would certainly be cheaper. However, this raises a lot of other questions such as how to keep them on the islands, how to get the right grazing pressure, interactions with visitors, etc. Other alternatives to lower the costs of supervision, such as shorten the grazing season or use of burning, might be more realistic solutions.

Best Practice lessons

The methods used in this project have been described above (see section 5.3). Best practice in restoring and managing the targeted habitats is used and in general we are following the ways and means described in the application. The change in strategy of loading and unloading grazing animals in project area 1 is an adjustment compared to

the application, but still a method we feel confident about as best practice for transporting cattle in this archipelago.

An important topic in getting high efficiency for money in this kind of projects is the strategy for procurements and tendering processes. In LIFE Vänern it has been a crucial factor to build the right tendering packages and to make them fit in to the overall time-schedule of the project. We are confident that the "big packages" procured for clearing, grinding etc. in project area 1 and 5 were good practice. The evaluation criteria in the tendering processes needs to evolve towards quality-oriented criteria instead of the price-oriented criteria in the future.

The best practice when it comes to keeping the grazing cattle on the right islands in the archipelago is still an unsolved issue (more details under section 5.1.11 and 5.3). We are sure that fencing in the shoreline would cause a lot of problems and obstruct the important evolution of grazed, wet pastures which is so important for migrating and breeding birds. Our try-outs with floating fences have not been as successful as we hoped. It seems that they are keeping the cattle inside if the water levels are high. But when the water level is getting lower the cattle can pass by them and escape to other islands in the area.

Innovation and demonstration value

Actions including innovative aspects in the project which can serve as demonstration for other actors are primarily the cattle gangway (se section 5.1.11 and 5.3) and the technique for building semi-natural nesting platforms for White-tailed Eagle and Osprey (se section 5.1.12 and 5.3). Various dissemination tools have also been used to spread the knowledge and experience from the project (see further under section 5.2).

Long term indicators of the project success

The long-term monitoring of the project areas will be performed by the CAB:s, financed by the SEPA. The methodology and indicators chosen are in accordance with the national methods and manuals approved by the SEPA, including habitats, structures, typical species, etc. For the future monitoring there will be a relatively intense monitoring in grasslands, whereas the forest habitats will be monitored in longer intervals. Regarding the colony nesting birds in Lake Vänern, the profoundly tested and evolved yearly survey will continue which will give us feedback on the progress for these bird species and their habitat. SEPA will organize the assessments of conservation status for habitats and species on a biogeographical level for the Article 17 reporting and incorporate data from all Natura 2000 sites including the restored areas from LIFE Vänern.

6. Comments on the financial report

6.1. Summary of Costs Incurred

Table 11. Costs incurred per budget-line

PROJECT COSTS INCURRED (01/09/2013 – 31/12/2018)			
Cost category	**Budget according to the grant agreement***	**Costs incurred within the project duration**	**%****
1 Personnel	724 710	633 169,89	87
2 Travel	70 570	29 774,01	42
3 External assistance	1 278 374	1 060 732,25	83
4 Durables: total non-depreciated cost	89 556	64 825,49	72
- *Infrastructure sub-tot.*		*64 825,49*	
- *Equipment sub-tot.*			
- *Prototypes sub-tot.*			
5 Consumables	84 961	31 060,05	37
6 Other costs	31 779	20 636,64	65
7 Overheads	159 596	128 813,88	
TOTAL	**2 439 546**	**1 969 012,21**	**81**

*) If the Commission has officially approved a budget modification indicate the breakdown of the revised budget Otherwise this should be the budget in the original grant agreement.
**) Calculate the percentages by budget lines: e.g. the % of the budgeted personnel costs that were actually incurred.

The costs incurred per budget-line are summarized in the table above (table 11) and commented in the following section. The figures are covering the period from the start of the project 01/09/2013 until 31/12/2018 except for Financial audit which is extended to 31/03/2019. The compilation is based on the financial reporting from each partner presented in Annexes 8.2.3 and 8.2.6.

The total cost incurred for the project is 1 969 012,21 Euro, which is 81 % of the original budget. All budget-lines are within the budget and consequently, there has been no exceeding of the 30 000 Euro/10 %-rule stated in Article 15.2 of the Common Provisions. The costs of Personnel, External assistance and Durables has reached 87, 83 and 72 % respectively of their budgets which is considered as fair economical outcomes. Among the categories Travel, Consumables and Other Costs the use of budget has been weaker, ending up at 42, 37 and 65 % used. See also comments to financial issues raised in the EC letters 28/03/2017 and 11/09/2018 in Annex 7.1.1 and economical comments per action, section 6.5 below.

Personnel

The personnel costs reached 87 % of the budget which is considered a fair economical outcome (see table 11 above). The major part of the personnel costs has incurred in action F1, Project management and regional coordination, which includes a broad range of

services such as; project coordination, project meetings, financial control, reporting etc. Relatively high personnel costs, that were not foreseen in the application, has incurred in action A3, Permit procedures (8 279,50 Euro spent, 4 998 Euro in budget) due to the extensive work in applying for the multiple permits for the project (see technical comments in section 5.1.2).

Relatively high personnel costs have also incurred in C2, Restoration by burning of grassland and heather (10 273,20 Euro spent, 2 940 in budget) and C3, Restoration by fire management in 9010 Western taiga (26 548,54 Euro spent, 4 116 Euro in budget) due to changes in strategies for conducting these actions (see further comments about the execution of these actions in section 5.1.7 and 5.1.8 above). The personnel costs in action E6 and F2 did also become considerably higher than expected (E6; 14 971,14 Euro spent, 7 838 Euro in budget and F2; 22 716,42 Euro spent, 10 584 Euro in budget) due to the high attention to the project from the public, organizations and from media. Overspending of personnel costs in these actions has been compensated by underspending in many other actions so that the total Personnel costs were kept well within budget.

During the whole project period we have been aware of the tight situation considering the 2 % rule (Common provisions, Article 25:2) and we have continuously discussed the issue with the SEPA and our monitor. But at the end of the project (March 2018) our project manager Oscar Säwström (Permanent staff) terminated his employment at Lst S. Due to the following reorganisation of the project management group, where newly employed Johan Bolin (Temporary staff), became our new regional coordinator on Lst S, as Gunnar Lagerkvist went into the project manager role, the imbalance due to the 2 %-role decreased. Another reason why we finally managed to pass the 2 %-rule was that the overall time spent in the project was below the budget.

We note that there is a discrepancy between the personnel daily rates in the application and the personnel daily rates incurred. It is a miscalculation in the application phase. The salary of all personnel follows local agreements on the CABs. The reasons for the discrepancies are annual increase in salaries and less annual hours worked because of parental leave, vacations or part time employment.

As mentioned in the Midterm report (section 6.1, page 43) we have three new roles on Lst S for personnel compared to the original budget (form F1); Project manager assistant, Information officer and Project staff. The Project manager assistant was needed to get a smooth transition when shifting project manager in January 2015. The Information officer was needed to produce and maintain our website and to support the project in producing other information deliverables. This solution has been efficient as the Information officers participated with their specific competence and contributed to the high quality of deliverables and there has been no overdrafts of the budget in these actions (E1, E2). Project staff is all other staff used for different tasks. Unfortunately, the different roles in the project were not specified in the application where everyone, except for the Project manager and Financial advisor, was referred to as Regional project coordinator. Our intention from the start of the project was to have one Project manager and use different colleagues with different skills to implement the project actions.

Table 12. Overview of employees on Lst S and Lst O who has been working for LIFE Vänern. Notes of secondments for all the employees have been annexed to our reports successively during the project.

Name	Role	Period	Action nr and (Project area)
Lst S			
Gunnar Lagerkvist	Regional Project Coordinator Project manager	2013- March 2018 From April 2018	Various Various
Oscar Säwström	Project Manager Regional Manager Assistant	2014 2016- mars 2018	Various Various
Jenny Sander	Project manager Project staff	2013-15 2016-18	Various C3 (3)
Jurga Johansson	Financial Advisor	2013-18	F1
Johan Bohlin	Project staff Regional Project Coordinator	2014-16, 2017-18 From April 2018	C7 (1, 3, 4, 8) Various
Johanna Malmgren	Project staff	2014-16	Various (4,6)
Frida Karlsson	Information Officer	2013	E1-E4, E6
Fredrik Andersson	Information Officer	2014-2018	E1-E4, E6
Frida Olsson	Information Officer	2017-2018	E1-E4, E6
Birger Gustavsson	Project staff	2016-2018	C1, C5 (4)
Dick Östlund	Project staff	2015-2018	C3 (3)
Per Gustafsson	Project staff	2016-2018	C3 (3)
Pia Immonen	Project staff	2017-2018	C3 (3) E1-E4, E6
Malin Johansson	Project staff	2016-2017	C1, C2 (1)
Per Tidlund	Project staff	2016-2017	C1, C2 (1)
Jonny Daborg	Project staff	2016-2017	C1, C2 (1)
Elin Sundberg	Project staff	2018	A3, A5
Ingrid Wirberg	Project staff	2018	A5
Maria Sundqvist	Project staff	2018	E6
Joanna Gebril	Project staff	2018	A4
Margareta Åkerman	Project staff	2018	C3 (3)
Dan Mangsbo	Project staff	2018	C3 (3)
Fredrik Wilde	Project staff	2018	C3 (3)
Anders Tedeholm	Project staff	2018	C3 (3)
Martin Larsson	Project staff	2018	C3 (3)
Helena Malmestrand	Project staff	2018	C3 (3)
Björn Nilsson	Project staff	2018	C3 (3)
Lst O			
Peter Ericsson	Regional Project Coordinator Project staff	2013-2015 2018	Various C3, F1
Andreas Furustam	Regional Project Coordinator	2015-2018	Various
Anders Stagen	Project staff	2015-2018	Various
Ulf Wiktander	Project staff	2015	A3
Örjan Hedhman	Project staff	2016-2017	A4, E5
Ulrika Jemdal	Project staff	2017-2018	F1

Travel

The cost category has been considerably underspent in the project. Only 42 % of the budget has been used (see table 11 above). Action F2, Networking with other LIFE and

non-LIFE projects, has incurred 36 % (10 864,21 Euro spent, 7 176 Euro in budget) of these costs due to the high number of different LIFE-meetings and study visits attended (see further comments in section 5.1.16 above). Another action that spent more travel-budget than expected was C3, Restoration by fire management in 9010 Western taiga (3238,03 Euro spent, 1944 Euro in budget) see further comments about the execution of this action in section 5.1.8 above. The overspending of the travel-budget in F2 is by far covered by the underspending of travel budgets in other actions. In general, many travel costs have been registered on F1, Project management, instead of being distributed to the different actions in the project as planned in the application. The low expenditures in this category has not affected the outputs or implementation of the actions in the project. The underspending is substantially caused by an oversized budget in this cost category.

External assistance

The costs incurred in cost-category External Assistance ended up at 83 % of the budget (see table 11 above). The most expensive action in this cost-category was C1, Clearing if trees and bushes where in total 430 130,44 Euro were spent which were 74 % of the budget (580 237 Euro). Another extensive action in this cost category was C6, Reintroduction of grazing where the final costs incurred were 278 127,39 Euro (96 % of the budget, 291 221 Euro).

Major overspending of the budget for external assistance occurred in e.g. C4, Cutting of tussocks and stump grinding (65 983,78 Euro spent, 31 344 Euro budget) and in E1 Notice boards (9 887,00 Euro spent, 3 056 Euro in budget). Reasons for the overspendings are described in sections 5.1.9 and 5.2.2.1 above. These overspendings did not entail overspending of the total budget of external assistance (1 060 732,25 Euro spent, 1 278 374 Euro in budget), which in total is well below budget.

Durables (infrastructure)

The final costs incurred in this cost category ended up at 72 % of the budget (64 825,49 Euro spent, 89 556 Euro in budget). As described in section 6.5 below the costs for infrastructure in action E5, Facilities for visitors, became considerably higher than expected in the application. As this outcome of E5-costs affected our situation regarding the 10 %-rule, mentioned in the Application guide and EC letter 07/11/2017, we had to decrease our costs in this action by 55 399,95 Euro. The removal of costs from E5 also affected the budget line “Durables” (infrastructure) to the same extent.

Besides E5. Facilities for visitors there was also an investment of 11 263,95 Euro in a gangway for cattle (action C6, Reintroduction of grazing) which was constructed to facilitate the transportation of cattle on ferry in project area 1. The gangway was built instead of docking points on the islands to get a more flexible solution (see further technical comments in section 5.1.11 above). The change was approved in the EC letter 18/02/2016. Finally, the construction of access areas in Djupsundsviken and Nolgårdsviken to a cost of 4 025,50 Euro was registered as “Durables”.

Consumables

In this cost-category the spending ended up in 37 % of the budget (see table 11 above). One important reason is that there were less fences needed than expected, especially in project area 1 (see technical commentaries to in section 5.1.11). Another important reason is that some invoices, considering fencing for cattle (C6) and facilities for

visitors (E5) has not been split into services and consumables. In these cases, the costs have been recorded as external assistance.

Other costs

The total cost registered in this category is 65 % of the budget (see table 11 above). Not foreseen costs have incurred in action A3, A4 and D1. Within action A3 the not foreseen costs are associated with the permit-fees necessary for the construction of facilities like building cow-bridges, footbridges or excavating in water (1 669,40 Euro). In A4 the not foreseen costs are associated with public announcements and sandwiches for field visits (495,42 Euro). The latter has been used on field visits during tendering processes. By including a field visit for potential contractors, presenting a possibility see the project areas in the field and ask questions, we can make sure that we get better quality offers, hence getting better competition and lower prices. It will also lead to fewer discussions about what is included in the agreements when the restoration action is carried out. The not foreseen cost incurred in D1 is considering a training course in field monitoring of controlled fire management completed by Jenny Sander (79,4 Euro).

6.2. Accounting system

Accounting system

The accounting system at the beneficiaries (Agresso) is the same system as for the other CAB:s in Sweden. The invoices are scanned centrally in Frösön and sent out electronically to the project beneficiaries for control and confirmation. Since the original invoice in paper format never passes the project beneficiaries, we make sure that the contractors mark all invoices with the project reference *LIFE12 NAT/SE/000132 LIFE Vänern*. The project beneficiaries have set up account specifications that correspond to the actions of the LIFE Vänern project and each cost has been marked with the proper specification. The list describing the correspondence between specifications and action was submitted in the Progress report 2015.

Description of the Time Registration System

We provided the description of the Time Registration System in our Progress report 2015. Complementary description was provided in the Midterm report 2016. A summary of the Time Registration Systems for each beneficiary follows below:

Every Lst S employee reports his/ her working hours on daily basis per project and saves it in Agresso. Then the system automatically marks it as “ready” and automatically sends it to the closest manager for confirmation. It is not possible to make any changes in that report. After manager’s confirmation the time report goes to the accounting department and the hours are transferred to the accounting system expressed in monetary value. Thereafter the amounts are distributed according to the project. It is possible to print out the report with all worked hours per employee or worked hours for the specific project and employee.

Lst O has provided printouts from the system (Agresso) of the persons who has worked in the project. The printouts have been signed by their supervisor confirming that the project hours declared by the employee are indeed related to the project related

activities. These signed printouts have been required from the beginning of 2016. The time reported from the beginning of the project does not indicate any deviation from the work done in the project. It is possible to request the confirmation of the superior for the prior to the 2016 worked hours in the project if that is required.

6.3. Partnership arrangements

The signed partnership agreement between Lst S and Lst O regulates the conditions for payment from the coordinating beneficiary (Lst S) to the associated beneficiary (Lst O). The financial reporting is done by each partner and compiled by the coordinating beneficiary. The coordinating beneficiary makes sure that all the supporting documents are in order and properly presented.

6.4. Auditor’s report/declaration

Financial audit (F3) was performed by Certified Internal Auditor (CIA) during two on spot visits (November 2018 and February 2019) and distance work by the independent supervising financial auditor Peter Ohlson, County Administrative Board of Stockholm, Regeringsgatan 66, 11139, Stockholm, Sweden. He has done audits for other EU projects in Sweden and is suggested to do the financial audit for e.g. UC4LIFE, Sand LIFE and LIFE Reclaim. The auditor's report was completed and submitted to Lst S in March 2019 (see annex 8.5).

6.5 Summary of costs per action

Table 13. Costs incurred per action in LIFE Vänern from the start of the project to 31/12/2018.

Action no.	Short name of action	1. Personnel	2. Travel and subsistence	3. External assistance	4.a Infra-structure	4.b Equip-ment	4.c Prototype	5. Purch. or lease of land	6. Consumables	7. Other costs	TOTAL
A1	Production of restoration plans	25 706,22	893,18	2 447,78							29 047,18
A2	Preparatory inventories	1 293,15		5 662,37							6 955,52
A3	Permit procedures	8 279,50	56,92							2 644,10	10 980,52
A4	Call for tenders	48 603,05	467,31							495,42	49 565,78
A5	Management strategy for important breeding sites	4 792,74	68,22	3 352,51							8 213,47
C1	Clearing of trees and bushes	26 315,45	2 645,13	430 130,44						583,04	459 674,06
C2	Restoration by burning of grassland and heather	10 273,20	1 441,80	4 288,67							16 003,67
C3	Restoration by fire management in 9010	26 548,54	3 238,03	70 498,44					1 843,03		102 128,04
C4	Cutting of tussocks and stump grinding	711,17		65 983,78							66 694,95
C5	Restoration mowing	3 095,74	483,27	3 882,04							7 461,05
C6	Reintroduction of grazing	12 820,77	405,78	278 127,39	15 289,45				26 833,96		333 477,35
C7	Creating breeding sites for birds	6 191,64	1 446,26	69 949,55							77 587,45
D1	Monitoring of the impact of the project actions	12 506,47	762,49	45 930,17							59 278,53
D2	Assessment of the socio-economic impact etc.	1 466,14		11 395,66							12 861,80
E1	Notice boards	9 436,59	131,47	9 887,00					328,69	2 652,84	22 436,59
E2	Website	9 782,91		626,48							10 409,39
E3	Laymans report and other printed materials	6 827,03		5 733,09						2 077,93	14 638,05
E4	Arrange and participate in information meetings	9577,38	372,90	455,80						1 391,18	11 797,26
E5	Facilities for visitors	7 009,22	132,22	45 930,45	49 536,04				743,87		103 351,80
E6	Public seminars, dissemination etc.	14 971,14	313,58							9 927,21	25 211,93
F1	Project management, reg. project coordination	362 851,20	6 051,24						1 310,50	174,45	370 387,39
F2	Networking with other LIFE and non-LIFE projects	22 716,42	10864,21							611,07	34 191,70
F3	Financial audit	1 394,22	0,00	6 450,63							7 844,85
F4	After-LIFE Conservation Plan										0
OH											128 813,88
	TOTAL	633 169,89	29 774,01	1 060 732,25	64 825,49	0	0	0	31 060,05	20 636,64	1 969 012,21

The table above (table 13) shows the costs incurred per action from the start of the project to 31/12/2018. The only exception is F3 Financial audit where the costs incurred is extended to 31/3/2019. The figures are based on the financial reporting from each partner presented in Annexes 8.3.1 and 8.3.2. All the action-categories (A, C, D, E and

F) has been kept within budget. Details and discrepancies concerning the different actions are commented below.

A-actions

In total we are well below budget when it comes to A-actions (73 % used, 104 762,47 Euro spent, 144 247 Euro budget).

Production of restoration plans A1 became cheaper than expected (29 047,18 Euro spent, 50 203 Euro budget) because of the efficient handling of the restoration plans, where we used a template for layout of the plans. Our decision to coordinate the planning of Clearing of skerries (C1a) in two thematic plans might also have contributed to streamline the action. In A1, there has been 886 Euro spent since Midterm report due to the final updates of the plans.

When it comes to A3, permit procedures, the action became more expensive than foreseen (10 980,52 Euro spent, 4 998 Euro in budget) The overspending was caused by the high number of permit application processes (in total 53 permits and landowner agreements) that we had to accomplished during the project. The work on this action was considerably more extensive than expected and we could not find any way to make it more efficient. Since contact with landowners and authorities is an important factor for the success of the project, it has been highly prioritized. We have also had traveling costs in this action (56,92 Euro) that where not foreseen in the budget connected to communication with landowners in the field. This overspending has not altered the total A-action budget since the costs are small and have been compensated through considerably lower costs for in other A-actions.

The work on action A4, Call for tenders, was also an extensive work even though the figures do not reflect that (49 565,78 Euro spent, 64 646 Euro in budget). We have completed 41 different tendering processes in competition which was a lot of work. The reason why the multitude of this action cannot be seen in the cost category is that some of the time spent on tendering has been reported on the C, D or E actions connecting to the purpose of the tendering and also to some extent on F1.

The production of a A5, Management plan for important breeding sites, became considerably cheaper than expected (8 213,47 Euro spent, 15 900 Euro budget) although we used both our own personnel as external contractors for the job.

C-actions

Even though there are differences among the actions, there has been a moderate spending of the budget in C-actions (in total 83 % used: 1 063 026,57 Euro spent, 1 276 796 Euro in budget).

Within the most expensive action C1, Clearing of trees and bushes, there has been a 75 % use of budget (459 674,06 Euro spent, 615 251 Euro budget) which might be considered a normal budget saving in this kind of action. The last year's drought (2018) contributed to this, as the need of extra clearings in grasslands became lower.

The costs of C2, Restoration by burning of grassland and heather, were very hard to calculate in the application, and the action became considerably cheaper than expected

(16 003,67 Euro spent, 32 526 Euro in budget). The same circumstances apply on C3, Fire management in Western taiga, where the burnings by Lst S became considerably more expensive than expected and the burning by Lst O became considerably cheaper. The whole action ended up at 78 % use of budget (102 128,04 Euro spent, 130 588 Euro budget) which might be considered as normal result.

The biggest overspending within C-actions was in C4, cutting of tussocks and stump grinding, where the costs ended up at 204 % of the budget (66 694,95 Euro spent, 32 658 Euro budget). The reasons are explained above in section 5.1.9, whereof the most important ones may be that the machines managed to cover considerably larger areas than expected and that the costs from C1b and C4 were integrated in the procurement of actions for project area 5, which gave us a low total price for the actions. The overspending in C4 has been presented to the monitor and in our progress report 28702/2018 and commented by the EC in letters 07/11/2017 and 11/09/2018.

In C5, Restoration mowing, we suggested a fourth year of restoration mowing in both areas in our Progress report, 28th February 2018. This complementary action was approved in the EC letter 11/09/2018 and has been carried out during the summer 2018 to a total cost of 1 254,85 Euro. The extension did not entail any overspending of the original budget of either C5-budget (7 461,05 Euro spent, 8 123 Euro budget) or the total C-budget (1 063 026,57 Euro spent, 1 276 796 Euro budget).

In C6, Reintroduction of grazing, the costs incurred (333 477,34 Euro) has been well below the budget (391 220 Euro). This means that the 85 % of the C6 budget has been used.

The action C7, Creating breeding sites for birds, resulted in a 17% overspending of the budget (77 587 Euro spent, 66 430 Euro in budget) which was mainly caused by the time-consuming problems in finding appropriate trees for building the nest platforms. The circumstances forced us to use more Personnel time and External assistance for the job. The overspending of this action was in some extent reduced due to the favorable outcome of our tendering for building the nesting islands (see further comments in section 5.1.12 above).

D-actions

Looking at D-actions 78 % of the budget were spent in the project (72 140,33 Euro spent, 92 487 Euro budget) for the whole project period.

Within D1, Monitoring of the impact of the project actions, which contains all monitoring actions in the project, including inventories, excerpts, evaluations etc., our spending was 72 %, (59 278,53 Euro spent, 82193 Euro budget) while the other action D2, Assessment of Socioeconomic impact and ecosystem services, resulted in an overspending by 25 % (12 861,80 Euro spent, 10 294 Euro budget). The former was caused by underestimations of the costs for external consultants within this specific branch.

E-actions

Within E-actions outcome ended up at 74 % use of budget (187 845,02 Euro spent, 252 978 Euro budget).

The cost of the action E1 Notice boards, matched the budget (97 %, 22 436,59 Euro spent, 23 170 Euro budget), but the costs for external assistance, within the action, exceeded the budget (9 887 Euro spent, 3 056 Euro budget). This overspending was caused by underestimated costs for building stands for the signs. As many signs were placed on islands the construction needed certain expensive logistics.

Within the actions E2, Website, and E3, Laymans report and other printed information materials, the budget use has been generally low (36 % in E2: 10 409,39 Euro spent, 29 002 Euro in budget; 51 % in E3: 14 638,05 Euro spent, 28 524 Euro budget) of the budgets used. A lot of work in these actions has been carried out by our own staff at Lst S, which might have contributed to keeping the costs low. Also, the costs of action E4, Arrange and participate in information meetings with stakeholders, ended up in considerably lower costs than expected (48 %: 11 797,26 Euro spent, 24 786 Euro budget). Due to the high interest for the project, we did not have to arrange so many meetings by our own. Instead we were invited to talk on other meetings which resulted in lower costs for the project.

Within our most extensive E-action, E5, Facilities for visitors, the costs became considerably higher than expected (158 751,75 Euro spent, 126 598 Euro in budget). This applies on the view platform in project area 5, where the cost was more than doubled and on dredging for and building of docking points for boats in project area 12. As this outcome of E5-costs affected our situation regarding the 10 %-rule, mentioned in Application guide and the EC letter 07/11/2017 and the costs would be ineligible, we decided to decrease the costs in the action. In total we have withdrawn 55 399,95 Euros. The costs withdrawn are associated with the view platform in project area 5 and with dredging for docking points in project area 12. These costs have been financed by other, regional funds on the CAB:s. For transparency reasons we show the withdrawn invoices as negative posts in our financial reporting tables (Annex 8.2.3 and 8.2.6). After removing these costs, the outcome of the E5-action ended up at 82 % of the budget (103 351,80 Euro spent, 126 598 Euro in budget).

Finally, the project made a minor overspending (21 %) on E6, Public seminars, dissemination of project results and media work (25 211,93 Euro spent, 20 898 Euro budget). The costs for staff became considerably higher than expected in the action due to the extensive planning process before the final seminar. However, our careful planning resulted in av very expedient and successful meeting, with a lot goodwill acquired. Another not-foreseen cost of 1 579,51 Euro, was for the experts' presentations on the two seminars and on the field trip. This cost must be considered well invested as the experts contributed to the high quality of the seminars and thereby to the positive feedback that we received.

F-actions

When it comes to F-actions the final costs ended up at 80 % of the budget (412 423,94 Euro spent, 513 442 Euro budget).

In action F1, Project management and regional project coordination, which was by far biggest budget post considering personnel in the project, the costs generated ended up in 79 % of the action budget. Overall there has been a trend that staff associated to the project have had problems to spend their designated time in the project due to other competing duties. But as the project ended in time, with all the actions completed, we

must consider this underspending as a confirmation on the efficiency of the Project management group.

Concerning F2, Networking with other LIFE and non-LIFE projects, we noticed early in the project that the action was underestimated. To avoid this overspending, some networking during costs were registered on F1 (e.g. the International platform meeting, Aalborg, September 2015). Still, by the end of the project, the budget for networking was exceeded with 15 375,7 Euro (34 191,70 Euro spent, 18 816 Euro budget). The overspending was mentioned already in the Midterm report and approved in the EC letter 28/03/2017 (see further details in section 5.1.16 above).

Financial audit (F3) was performed by Certified Internal Auditor (CIA) during two on spot visits (November 2018 and February 2019) and distance work. Staff costs included Lst S staffs time spent with the auditor in November 2018. External costs are the auditors invoice received in March 2019. The costs for this action was not as high as estimated in the application (7 844,85 Euro spent, 24 181 Euro budget).

No costs concerning F4, the After-LIFE Conservation Plan, has been charged in the project. The plan has been written by staff at Lst S, financed by national funds outside LIFE Vänern.

7. Annexes

7.1 Administrative Annexes

7.1.1 Comments to the EC Letter 28/03/2017, and EC Letter 11/09/2018

7.1.2 Notes of secondment to the LIFE project for the new public staff (from 2018)

7.1.3 Milestones and deliverables

7.1.4 Gantt chart

7.1.5 Progress table

The partnership agreement was signed on 14/05/2014 and submitted with the Inception Report on 31/05/2014.

7.2 Technical Annexes

List of abbreviations

CAB/Lst	County Administrative Board (Länsstyrelsen)
Lst S	County Administrative Board (Länsstyrelsen i Värmlands Län), Coordinating Beneficiary
Lst O	County Administrative Board, (Länsstyrelsen i Västra Götalands Län), Associated Beneficiary
SEPA/NV	Swedish Environmental Protection Agency (Naturvårdsverket)
GA	Grant Agreement
EC	European Commission
CP	Common Provisions 2012
LIVE DRAVA	LIFE11 NAT/SI/882
LIFE MIA	LIFE07 NAT/S/000902
LIFE GRACE	LIFE09 NAT/SE/000345
UC4LIFE	LIFE10 NAT/SE/000046
LIFE Reclaim	LIFE11 NAT/SE/848
SandLIFE	LIFE11 NAT/SE/849
Foder & Fägring	LIFE08 NAT/SE/000262
LIFE Coastal Benefit	LIFE12 NAT/SE0220017
DOOPS	Bird LIFE Slovenia

Technical annexes

7.2.1 Updated restoration plan for project area 1, Lurö-Millesviks skärgård (A1)

7.2.2 Updated restoration plan for project area 2, Inre Kilviken (A1)

7.2.3 Updated restoration plan for project area 3, Värmlandsskärgården (A1)

7.2.4 Updated restoration plan for project area 4, Nötön-Åråsviken (A1)

7.2.5 Updated restoration plan for project area 5, Klarälvsdeltat (A1)

7.2.6 Updated restoration plan for project area 6, Värmlands Säby (A1)

7.2.7 Updated restoration plan for building nesting platforms for Osprey and White-tailed Eagle (A1)

7.2.8 Updated restoration plan for clearing of all skerries in Lst S (A1)

7.2.9 Updated restoration plan for clearing of all skerries in Lst O (A1)

7.2.10 Updated restoration plan for project area 12, Kalvö skärgård (A1)

The updated restoration plans (annex 7.2.1-7.2.10) are in fully submitted in paper versions and electronic format except for the annexes 7.2.1, 7.2.4, 7.2.5, 7.2.6, 7.2.8 and 7.2.9 where extensive annexes to the plans only has been submitted in electronic format.

Report from Biological-cultural heritage study (A2) was submitted with Progress report 30/11/2015.

7.2.11 List of all permits or agreements (action A3)

7.2.12 List of all call for tenders (action A4)

7.2.13 Report from monitoring of birds in grasslands in project area 1 (D1)

7.2.14 Report from monitoring of birds in grasslands in project area 5 (D1)

7.2.15 Report from monitoring of vegetation in grassland habitats in project area 1, 4, 5 and 6 (D1)

7.2.16 Evaluation of bird populations on cleared skerries (D1)

7.2.17 Memorandum over monitoring of birds on built nesting islands (D1)

7.2.18 Report from monitoring of Osprey and White-tailed Eagle breeding on built nesting platforms (D1)

7.2.19 Report from burning of Western taiga on Harvelsön (D1)

7.2.20 Report from burning of Western taiga on Bärön (D1)

7.2.21 Report from burning of Western taiga on Kalvö (D1)

7.2.22 Assessment of numbers of targeted species

7.2.23 Assessment of Socio-economic impact and Ecosystem services (D2)

7.2.24 Compilation of results from small-scale visitor study in project area 5 (D2)

7.2.25 Management strategy for important breeding sites for birds (A5)

The extensive annexes to the Management strategy (annex 7.2.25) are only submitted in electronic format.

7.3 Dissemination Annexes

7.3.1 Laymens report LIFE Vänern 2014-2018 (E3)

7.3.2 After Life Conservation Plan (F4)

Other dissemination Annexes

7.3.3 Photographs from the project sites (in electronic format only)

7.3.4 Thematic photos from the project actions (in electronic format only)

Reports from study visits and reference group meetings has been submitted with Inception report 31/05/2014, Progress report 30/11/2015 and Progress report 28/02/2018

7.3.5 Site specific signs "After burning in Western taiga" for all three burnt areas (E1)

7.3.6 Site specific sign for pasture restoration in project area 1 (E1)

7.3.7 Site specific sign for pasture restoration in project area 5 (E1)

7.3.8 Site specific sign for the Ramsar Area, project area 2, 4, 6 and 8 (E1)

Photos of "General information sign" and "Before burning in Western taiga-signs" were attached to the Midterm report 31/12/2016

7.3.9 Leaflet about Natura 2000 and other protected areas in Lake Vänern (E3)

The project leaflet, photos of rollups and small project signs and stickers where submitted with the Midterm report 31/12/2016

7.3.10 List of information meetings attended and/or arranged (E4)

7.3.11 Invitation and program from Final seminar 5-6 September 2018 (E6)

7.3.12 List of participants at Final seminar 5-6 September 2018 (E6)

7.3.13 Overview of press cuttings (E6)

7.3.14 Power Point presentation LIFE Vänern (E4 and E6)

7.4 Final table of indicators (in electronic format only)

8. Financial report and Annexes

8.1 Standard Payment Request and Beneficiary's Certificate (signed)

8.2 Consolidated Cost Statement for the project (signed)

8.2.1 Financial Statement of Lst S (signed)

8.2.2 Certificate for Nature Projects, Lst S (signed)

8.2.3 Financial reporting 01/09/2013-31/12/2018 Lst S (in electronic format only)

8.2.4 Financial Statement of Lst O (signed)

8.2.5 Certificate for Nature Projects, Lst O (signed)

8.2.6 Financial reporting 01/09/2013-31/12/2018 Lst O (in electronic format only)

8.2.7 Cost per action, Lst S, Lst O and the whole project (in electronic format only)

8.3 Supporting documents for Jenny Sander and Oscar Säwström from Lst S and Andreas Furustam from Lst O, request from EC-letter 28/03/2017 (in electronic format only)

8.4 Details of tendering and contract for Skogsägarna Mellanskog Ekonomisk Förening, request from EC-letter 28/03/2017 (in electronic format only).

8.5 Audit report