



LIFE13/NAT/FI/000099

FINAL Report

Covering the project activities from 01/08/2014 to 31/07/2020

20/09/2020

Light & Fire LIFE

Project location	Finland
Project start date:	01/08/2014
Project end date:	31/07/2020
Total Project duration	72 months
Total budget	4 150 943 €
Total eligible budget	4 062 410 €
EU contribution:	2 031 206 €
(%) of total costs	50 %
(%) of eligible costs	50 %

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List of keywords and abbreviations

AB = Associated beneficiary
 CoB = Coordinating beneficiary (Metsähallitus, Parks & Wildlife Finland)
 FR= Final Report
 GA = Grant Agreement
 HAMI = Häme Vocational Institute Ltd.
 HAMK = Häme University of applied Sciences Ltd., associated beneficiary
 N2000 = Natura 2000
 MA = Media appearance
 MH = Metsähallitus
 MHPWF= Metsähallitus, Parks & Wildlife Finland, coordinating beneficiary
 MHF = Metsähallitus Metsätalous Oy, state forestry organization, associated beneficiary
 MoE = Ministry for Environment
 MoT = External monitoring team (NEEMO-EEIG)
 MP = Management plan
 NATA = Natura site condition assessments
 NP = National Park
 PM = Project manager
 PG = Project Action Group
 POSELY = North Savo Centre for Economic Development, Transport and the Environment, associated beneficiary
 PR = Press release
 PR1 = Progress Report 1
 PR2 = Progress Report 2
 PSG = Project Steering Group
 REC = Regional coordinator
 SMK = The Finnish Forest Centre, associated beneficiary
 UPM = UPM-Kymmene Corporation, associated beneficiary
 WWF = Maa- ja metsätalouden luonnonsuojeluyhdistys – World Wide Fund for Nature, Suomen rahasto, associated beneficiary

2. Executive Summary

The overall objective of the Light & Fire LIFE project was to improve the conservation status of 19 Habitat Directive Annex I habitats. The project covered 69 Natura 2000 areas throughout Finland. Annex 1.

Main conservation issues being targeted were: Degradation of forest habitats due to effective fire prevention, forestry in esker forests, overgrowth of sun-lit habitats, overgrowth of previously open coastal areas, habitat fragmentation and isolation, *Rosa rugosa* occupying space from typical native species on sandy habitats and lack of knowledge on natural values of the Natura 2000 sites.

Socio-economic context: The target habitat types are not valued as much as their high conservation value would warrant. Habitat restoration is sometimes negatively perceived by local people due to lack of knowledge about the objectives, and this may create general negative attitude towards nature conservation. The objectives of the Natura 2000 network and the value of Natura 2000 sites are still unclear to many citizens. This threat is relevant for all target HD-habitats and species.

Main objectives:

Preparation of a detailed restoration action plans for carrying out the concrete conservation for 34 restoration sites (351 ha). Management plans for 2 Natura 2000 sites (7 267 ha) and 11 fire continuum plans covering total of 40 000 ha for 17 sites. Biotope and species inventories (in 10 and 25 sites, respectively) and cultural heritage inventories/surveys (65 sites) to precede compilation of the restoration of management plans to provide necessary background information for the planning process. Species inventories mainly focusing on poorly known taxa (e.g. *Coleoptera*, *Polypores*, *Araneae*, *Lepidoptera*, *Heteroptera* and *Hymenoptera*) and on the sites where existing information indicates probable occurrence of Birds or Habitat Directive species or other threatened species. Cultural heritage site inventories helping to understand how the characteristics of the biotopes have been influenced by early land-use. Versatile and participatory management planning to conciliate habitat restoration and other conservation measures and various uses of the Natura 2000 sites.

Habitat restoration measures enhancing the representativeness and quality of Habitats Directive Annex I habitats in all 69 Natura 2000 sites included in the project. Controlled burning in 38 sites (ca 470 ha) to restore Western taiga forest. Habitat restoration of sunlit habitats (34 sites, 345 ha) and Baltic sandy beaches (5 sites, ca 6 ha) will also include removal of invasive alien species. In many sub-sites tree removal is a necessary precursor to the other restoration actions and will be done in 19 project sites (147 ha). Habitat restoration to improve the quality of existing sites and to create new habitat patches for *Pulsatilla patens* in 7 sites (8 ha), and the species assisting to disperse to the newly created habitat areas.

Increasing public awareness and dissemination of the results at national level. Communication measuring to promote greater awareness and understanding of the target habitats and conservation issues as integral part of the project. Direct communication measures including media cooperation, activity in social media, project's website, audiovisual materials, information tables and restoration trail.

Results of the project:

The project progressed efficiently and mostly as planned. All the actions were on schedule, though there were some small changes in the time plan and objectives of the actions. The number of the targeted Habitat Directive Annex I habitats diminished by two to be 17 in the eventually. The project actions covered eventually 68 Natura 2000 sites, because one was left out from the actions. Some changes also in the timetable of certain actions and changes in project personnel, especially PM, which changed twice, and the consist of beneficiaries have occurred, but they did not really affect on successful implementation of the project.

Project management (F1) was set up in 2014 and the necessary personnel has been employed or nominated in line with the technical progress of the project. Also, the project groups were nominated in 2014 and they have met regularly, see chapter 4.1.

MHPWF coordinated the project and the actions were implemented together with the project beneficiaries POSELY, UPM, SMK, MHF, HAMK and WWF.

The project objectives and work plan were as stated in GA, the requested modifications to it, and two amendments, and all objectives have been reached. The results of each action are described in detail in the technical part of this report (chapter 5). The deliverables and their progress are presented also in annex 2.

Key deliverables and outputs:

The project progressed efficiently and as planned and all objectives have been reached and the project is completed. Some of the objectives exceeded. Some minor changes in the actions' sites, restoration areas and timetables have occurred, but they did not affect on the implementation of the project. Please find out the Gantt chart as annex 3.

- 32 restoration plans completed for 539 ha
- Species inventories on 20 sites
- Biotope inventories on 11 sites, ca 200 ha
- Cultural heritage surveys or inspections on 57 sites
- Management plans and NATA evaluation for 2 N2000 sites, covering 7 267 ha.
- 11 fire continuum plans for 17 N2000 sites covering over 40 000 ha
- Monitoring plan, communication plan and *Pulsatilla patens* translocation and monitoring plan are completed, and measures done according to the plans
- One-off compensation payment has been completed and 20,5 ha of valuable land has been acquired for protection
- Prescribed forest burning completed in all 38 sites. The total burning area is 487 ha
- 396 ha of sun-lit habitats in 34 sites restored
- *Thymys* seedlings collection, cloning, nursing & planting in 3 sites
- Tree removal in 15 sites on 162 ha
- Restoration of Baltic sandy beaches in 6 sites on 10,7 ha. *Rosa rugosa* eradicated from over 6 ha
- *Pulsatilla patens* habitat restoration in 7 sites on 16,9 ha. Seedlings collection, cloning, nursing & planting in 7 sites
- 9 volunteer camps organized, 68 days, 54 ha of habitats restored
- Two 2-day training workshops and 2 field training sessions & one international workshop arranged
- Monitoring of actions C1, C2 and C4 done on all sites

- Impact assessment on socio-economy and ecosystem functions done
- Project presented in different media 184 times
- AV presentation completed
- Project's website with 22 322 visits, project visible in social media 318 times
- 40 photos bought, 2 short video clips done, and re-photography photos taken
- Lay-man's report completed
- 93 temporary and 13 semi-permanent notice boards in 69 project sites
- Restoration trail completed
- Active networking with other projects and attending in seminars and workshops done
- Audit report completed
- After LIFE conservation plan completed

The costs of the project were well in line with the technical progress of the project, although the total costs exceeded budgeted (in GA total budget 4 062 410 € and actualized total budget 4 150 943 €). The exceeded part is covered by the beneficiaries' share. The financial report of the project is presented in detail in financial part of this report (chapter 6).

In this final report there are following chapters:

Executive Summary of the project and introduction to the project, administrative part, including the description of the management system. The next chapter is the biggest: Technical part, where the real, technical progress of the project is described, per task. Then there is chapter of project's dissemination actions and overview per activity, following the evaluation of project implementation and analysis of long-term benefits. Then follows the chapter of finance: Comments on the financial report, summary of costs incurred, accounting system, auditor's report/declaration. The last chapter is the annexes: List of annexes, Layman's report and other dissemination annexes.

3. Introduction

The overall objective of the Light & Fire LIFE project was to improve the conservation status of 19 Habitat Directive Annex I habitats. Their overall conservation status in the boreal biogeographic region of Finland was assessed as unfavourable-bad or unfavourable-inadequate for all, except one (1220) Perennial vegetation of stony banks, of the targeted habitats in the Finnish country report on Habitats Directive Article 17 Reporting (period 2001-2006). The project actions covered eventually 68 Natura 2000 sites, because one was left out from the actions, the map of the N2000 sites as annex 1.

Main conservation issues being targeted were: Degradation of forest habitats due to effective fire prevention, forestry in esker forests, overgrowth of sun-lit habitats, overgrowth of previously open coastal areas, habitat fragmentation and isolation, *Rosa rugosa* occupying space from typical native species on sandy habitats and lack of knowledge on natural values of the Natura 2000 sites.

Light & Fire LIFE focused on Natura 2000 habitats whose ecological characteristics are shaped by fire (fire-born habitats) or extreme solar radiation and luminosity (sunlit habitats). Restoration and management measures targeted several priority habitats; coastal meadows (1630*), fixed coastal dunes (2130*), dry grasslands (6210*, 6270*, 6280*) and forests (9010* and 9030*). Other targeted Natura 2000 habitats include various open or semi-open coastal

(1210, 1220, 1610, 1640) and dune habitats (2110, 2120, 2140, 2180, 2190, 2320), heath and scrub (4030) and esker forests (9060). Concrete conservation actions restored structural features important for the maintenance of the biological diversity of these habitats and increased the extent of the target habitats by restoring severely degraded areas.

Furthermore, several Bird or Habitat Directive species found in these habitats were concurrently targeted by project actions, including HD Annex II and IV species *Pulsatilla patens*. *Pulsatilla* - one of the most vulnerable plant species in Europe – is limited to esker forests in Häme region in Finland, and its status is unfavourable bad in the 2013 Habitat Directive Reporting. Bird Directive Annex I species *Lanius collurio* and *Sylvia nisoria* were also directly benefitting from restoration measures targeting their breeding habitat. Habitat restoration measures helped to increase the population size of numerous other Habitat and Bird Directive species by offering them new areas to colonize, which help to combat the effects of habitat fragmentation and isolation and increased the resilience of the populations to climate change.

Project's objectives are all achieved or exceeded, were to restore fire borned and fire shaped habitats as well as sun lit and beach habitats. Prescribed forest burnings conducted in 38 Natura 2000 sites total area of 487 ha. 396 ha of sun-lit habitats in 34 N2000 sites were restored as well as Baltic sandy beaches in 6 N2000 sites on 10,7 ha. *Pulsatilla patens* habitats were restored in 7 N2000 sites on 16,9 ha and in the sites were also translocation of the plant. These actions were carefully planned with major inventories and planning, and they were afterwards monitored. Socio economic factors of the actions were also studied. Increasing public awareness and dissemination of the results at national level. There were lots of action on communication measuring to promote greater awareness and understanding of the target habitats and conservation issues as integral part of the project. Direct communication measures included media cooperation, activity in social media, project's website, audiovisual materials, information tables and restoration trail.

Expected longer term results will be better protection and status of the habitats involved. Some of the results in the habitats are shown immediately, for example after the prescribed fires and removing of the shading trees and bushes. Some results will show up in long term, like slow shifting of some species. In some cases, the restoration actions will not automatically change the conservation status of the habitat better, but in the long run, they will maintain it on the same level, preventing the lowering the status.

4. Administrative part

4.1 Description of the management system

The management structure of the project and the coordinating beneficiary was set up during 8-9/2014. Mr. Jouni Penttinen was employed as the project manager since 1.8.2014. Three regional co-ordinators were nominated to CoB, one for each region; Southern Finland, Pohjanmaa and Lapland. In addition, species inventories coordinator in the project and timber sales coordinator for action C3 and organisation of burnings in action C1 and C2 were nominated. There have been several changes with the consist of coordinators, they are all reported to the commission. Mrs. Anne Rähkä was nominated as the financial secretary of the project and she has been the key person for accounting of the project costs of MHPWF.

Also associated beneficiaries nominated their project coordinators and persons responsible for accounting and financial report for the project in 8-9/2014. The coordinators are Mrs. Anne Grönlund for POSELY, Mr. Petteri Tolvanen for WWF, Mr. Henrik Lindberg for HAMK, Mr. Juha-Matti Valonen for UPM and Mr. Timo Vesanto for SMK. Mr. Timo Vesanto was replaced by Mrs. Irmeli Ruokanen in 4/2015. Metsähallitus Forestry joined the project as associated beneficiary and the grand agreement was modified due to this change, introduced in Amendment II, since 15.4.2016. The coordinator from MHMT is Mr. Antti Otsamo.

The organigram or management chart of the project team and the project management structure is below (Fig.1)

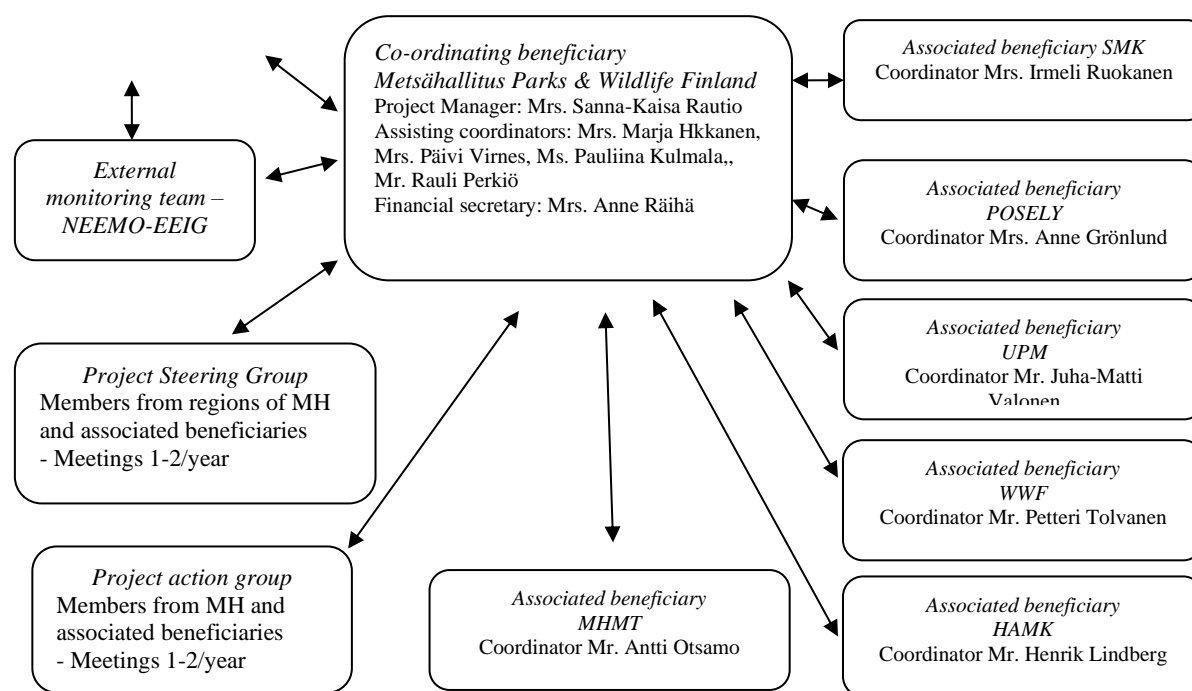


Figure 1. Organigramme of the project team and the project management structure.

Project steering group

The members of the PSG and the meeting dates are presented in annex 4. The PSG has held 10 meetings during the project. The PSG approved all activity and financial reports prior to sending to the Commission. Also, all substantial changes to the project were first discussed and approved in the PSG before the Commission was asked to approve the changes. The general progress of the project has also been discussed via email, and in project group meetings. All the earlier memos of the PSG's meeting have been delivered to the EC as annexes of the earlier reports. The last memos of PSG's meetings are as annexes 5. & 6.

Project action group

Project action group (PG) has met nine times and the meeting dates and the members of the PG are presented in annex 4. With CoB the Project action groups were divided geographically to smaller subgroups for the more efficient work, for the last 3 meetings. PG was a working group of the project closely involved in the planning and implementation of the actions. In addition, the associated beneficiaries had their own internal meetings on project management. All the

earlier memos of the PG's meeting have been delivered to the EC as annexes of the earlier reports. The last memos of PG's meetings are as annexes 7.-12.

Project Manager

The Project Manager has changed twice. The project started with PM Mr. Jouni Penttinen, the second PM Mr. Tuomas Haapalehto started in 1st of January 2016. A new manager, Mrs. Sanna-Kaisa Rautio, started in 1st of August 2017. She worked first two months part time, and since 1st of October 2017 full time as Project Manager. PMs have been actively in contact with all the beneficiaries for successful implementation of the project. Despite the changes of the leading person, the project has been a success, but of course the situation with two changes is not ideal.

Amendments

There have been two amendments in project:

The Amendment I in 2015, the changes applied from 1st of January 2015.

The first amendment was about the English name change of the coordinating beneficiary from Metsähallitus Natural Heritage Services to Metsähallitus Park and Wildlife Finland. And the change of the name and legal status of the associated beneficiary "Hämeen ammatillisen korkeakoulutuksen kuntayhtymä" to "Häme University of Applied Sciences Ltd."

The Amendment II in 2016, the changes applied from 15th of April 2016.

Metsähallitus Metsätalous Oy joined the project as associated beneficiary and the grand agreement was modified due to this change, introduced in, since 15.4.2016.

All the partnership agreements were submitted to the Commission with Inception Report, except the Metsähallitus Forestry's partnership agreements, which was submitted to the Commission with Mid Term Report.

4.2 Evaluation of the management system

The project management has been smooth and efficient, even though the PM has switched twice, and this, of course, effects on managing the project. The familiarization both with, the project and the staff in the project, takes always time, for the new person. After all, everything has run smoothly. The regional coordinators in CoB helped the smooth changes of the PM, so did the Steering Group and the partners.

The project manager has kept close contacts to the associated beneficiaries. The progress and the implementation of the project actions was regularly discussed, also when actions ran smoothly. The general progress of the project has been good, and the objectives of the actions as stated in GA. The minor changes in the implementation (e.g. minor delays) were relatively easy to discuss and solve.

The project partners are encouraged to keep close contact to project manager and among the people working in project. As there were altogether six project partners, the management and technical and financial monitoring of the project surely required a fulltime project manager.

PM communicated regularly The European Commission and Monitoring Team (NEEMO). The project hosted MoT external monitor Mrs Camilla Strandberg-Panelius six times and once more, seventh time, after the project end, on August 2020. The cooperation with external

monitor has been active, easy going and very positive. PM highly appreciates monitors advices, devotion to projects and all the help she has given to PM to run project smoothly.

The Letter from Commission after Progress Report 2 and Mission on 8 April 2019 (Ref. Ares(2019)4520819 - 12/07/2019) as well as the Letter from Commission after Mid Term Report (Ref. Ares(2018)1312290 - 09/03/2018) had some questions and comments. The answers for those are replied in this report, on each action or section, where they were targeted, and all of them also composed in annex 13.

Delivered reports:

Report	Reporting date
Inception report	30.4.2015
Progress report II	30.9.2016
Mid Term Report	14.12.2017
Progress Report II	23.5.2019
Final Report	30.11.2020

5. Technical part (maximum 50 pages)

The project restored fire-borned and sun-lit habitats and increased awareness on these habitats. The preparatory actions of the project included e.g. inventories, preparation of restoration plans and management plans and a one-off compensation payment for a valuable N2000 site. The key actions of the project were the various restoration actions in various habitat types. Communicational materials were produced, and media work was done to promote the protection and management of unique natural values of fire-borne and sun-lit habitats in the Finnish N2000 network.

5.1. Technical progress, per task

Notes:

The objectives of actions below are modified according to the changes proposed in the Inception report (30/04/2015), the Progress report (30.9.2016), the Midterm report (14.12.2017) and during the monitoring visits. The changes accepted by the Commission letters: CL (Ares(2015)4094957 - 05/10/2015), Ref. Ares(2016)3271582 - 08/07/2016, CL (Ares(2017)135665 - 11/01/2017), Ref. Ares(2017)4109509 - 21/08/2017 and Ref. Ares(2018)1312290 - 09/03/2018, Ref. Ares(2018)4358006 - 23/08/2018 and Ref. Ares(2019)4520819 - 12/07/2019. Some smaller changes are accepted also via e-mail, or they have been just informed to the Emo and/or EC.

We have also updated the list of milestones and deliverables according to these changes, there is also information, with which report the deliverables have been submitted to the Commission, (Annex 2.)

5.1.1. Action A1. Restoration plans

Foreseen: Preparation of 31 restoration plans covering 374 ha in 28 N2000 sites. The number of plans and the coverage area has changed during the whole project due to more precise inventories and field work. The restoration plans delivered only in electronic format. There was need to do changes to restoration planning, number of plans, consist of plans and planning areas and some of the restoration plans were combined with fire continuum plans. These changes have been accepted by EC at first in Ref. Ares(2015)4094957 - 05/10/2015 and later in Ref. Ares(2017)135665 - 11/01/2017.

Supplementary biotope inventories carried out on 11 project sites, species inventories on 20 sites and cultural heritage inventories on 56 sites. All inventories completed by 31.10.2017 and plans completed by 31.12.2018 (permission for prolongation in CL (Ref. Ares(2018)1312290 - 09/03/2018)).

Beneficiary responsible for implementation: MHPWF, SMK

Outcomes: **Action successful and target exceeded.**

The objectives of this action have achieved almost as stated in GA. 35 restoration plans covering in total 539 ha in 32 sites completed and most of them delivered to Commission with earlier reports. The last plans to the sites as annexes 15-18. The total area of plans grew. The cost of the planning was still lower than expected. The situation of all A-Actions as annex 14.

Most of the restoration plans were just routine work for planners, the restoration sites are situated in remote area and there was no public pressure on the actions. Some of the sites were more complicated, even in early planning process.

Site 2. Tulliniemen linnustonsuojelualue was complicated issue. There were communicational problems in Hanko town, because the site is very important and dear for many inhabitants of Hanko. There was certain need for more involvement for different stakeholders for the whole planning process. There was also need for another cultural heritage inventory on war history in site. Archeologic Jan Fast and his assistant did inventory as volunteer work on the war sites and marked them on the site, so they could be avoided during the restoration action. They were doing the inventory as volunteer work, we paid only the travel expenses for them. Totally the restoration action planning was delayed. We asked and got a prolongation of this action to December 2018, accepted in CL letter Ref. Ares(2019)4520819 - 12/07/2019. We learned that even prolongation was too short, and we informed the monitor about another becoming delay already on the December 2018, and got the permission for couple of more months for the restoration plan and the extra cultural heritage inventory (war heritage) of the site until 30.4.2019. The delays did not affect the successful implementation of the restoration actions in any way, situation is opposite. The plan was ready in April 2019 and is attached as annex 15.



Photo 1. Monitor Camilla Strandberg-Panelius from NEEMO and planning officer Esko Tainio from Metsähallitus Parks & Wildlife Finland are discussing the challenges of restoration process in site 2. Tulliniemen linnustonsuojelualue in April 2019. Photo: Sanna-Kaisa Rautio

The **site 15. Matinsilta** There was quite quick need for extra planning for extra measures of Action C4. More detailed explanations on chapter Action C4. The new plan for restoration of *Pulsatilla patens* habitats of the area 11,2 ha as annex 16.

Site 29. Pyssyharju, owned by UPM, they wanted to have bigger scale planning for site for becoming ten years, to combine the protection of the important esker forests and sun lit habitats with heavy recreational use and also forestry, that they conduct in the area. The plan was done together with the ELY Centre of Häme region. We asked and got a prolongation of

this action until the 30.6.2020. The plan is attached as annex 17. The implementation of the plan is described in after LIFE section.

There was certain need to more precise planning for the extra restoration of sun lit habitats in 49. Rokua. The plan is attached as annex 18.

Biotope inventories are completed in all 11 sites (ca 200 ha) and the data is saved into the GI system of Metsähallitus (annex 14.). Biotope inventories were necessary, because the basic data of biotopes was missing in many sites. Either there were no data at all, or the data was estimated, or it was outdated. Now the GI system is up to date and the information of biotopes, species and amount of dead wood and needs for restoration are precise. The updated data was significant in restoration planning and carrying out the measures. There was really need for more precise information of the sites to be restored, even in the basic data of nature types. In the GA the assumption was that the project will also conduct restoration actions on 0,1 ha of 6280 Nordic alvar and precambrian calcareous flatrocks* in Site 8. Seksmiilarin saaristo and 1,1 ha of 9030 *Natural forests of primary succession stages of landupheaval coast in Site 9. Örö. These nature types were not the real target habitats of the project, because of the wrong information in original nature type data. This information unfortunately reached the PM only when gathering the results of the restoration actions.

In site 8. Type 6280 was at first typed incorrectly on the field, the closer inventions showed up that the nature type in real is 6210 Seminatural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia), not 6280.

In site 9. The nature type 9030, was used at first in some sites as second or third nature type, but with closer inventions and common agreement resulted, that the nature type 9030 does not exist in real in Örö island, because of the really slow land rising and the history of planted trees and intense grazing.

Species inventories are ready in all 20 sites. Inventories were delivered to Commission as electronic annexes of the earlier reports, that is also seen in the chart in annex 14. Species inventories were done by taxon experts. The invented species groups were arachnids, coleopterons, lepidopterans, the *Heteroptera*, the *Hymenoptera*, birds, polypore and vascular plants. The amount of new information about these threatened species group is significant in national level. The information was used in management measures to improve the conservation status of the species.



Photo 2: Critically endangered Eastern baton blue (Pseudophilotes vicrama) is one of the species that are dependent on open sun lit environments. Photo: Teemu Rintala.

Cultural heritage inventories are completed at all 56 sites, annex 14. There were two ways of conduct the cultural heritage inventories, inspections were done only by maps, satellite data and other sources, they were quite light, but there was no need for more inventory actions on those sites. There are no certain reports from inspections of the sites, only one report, where they are all gathered, this was delivered to the EC as annex of the MtR. This situation was discussed with the External monitor on the last monitoring of the project in August 2020. The surveys were more detailed and larger scale than inspections. Cultural heritage inspections were done in 25 sites and surveys were done in 31 sites. 8 of the foreseen survey-sites were changed to inspection sites, mostly due to the location and or the size of the restoration site. Some restoration sites were in certain areas, where the archaeologists did the inspections only via maps, satellite images and older info of the sites and the results showed that there was no need for more precise surveys. There was one extra inventory and survey done for the site 2, due to the needs to conduct the restoration measures carefully. Inventory reports were delivered to Commission as annexes of the earlier reports. One extra report of the site 2 is enclosed as annex 19.

5.1.2. Action A2. Management plans and fire continuum plans

Foreseen: Management plans for Natura 2000 sites 20. Maakylä-Räyskälä and 33. Hällämönharju-Valkeiskangas, covering a total of 7 267 hectares, by 31.12.2018. Deadline for site 33 MP postponed until March 2019, accepted in CL (Ref. Ares(2018)4358006 - 23/08/2018).

11 fire continuum plans, covering total of 40 000 hectares and 17 Natura 2000 -sites by 30.6.2020.

Beneficiary responsible for implementation: MHPWF, POSELY

***Outcomes:* Action successful and the objectives of this action have achieved with minor changes**

Management plan by POSELY of the site 33, Hällämönharju-Valkeiskangas (1 406 ha) was started in 2016 and completed in December 2017. It was a big effort and success and it will conduct the land use for becoming years. It was delivered to Commission as annex of the Progress report 2.

Management plan by MHLP of the site 20, Maakylä-Räyskälä was more like a struggle. The implementation started already in 2014, but due to too many changes in personnel and organization, the plan was not progressing like it was supposed to. At last we had a dedicated person to lead the MP to the end. With the lengthening time schedule the MP was ready in 7.3.2019. MP as annex 20. The Ministry of Environment qualified the MP in 25.6.2020, annex 21.

The coverage area of the MP is 1 811 ha, covering the state own land and 9 private conservation areas. The original planning area was supposed to be 5 861 ha. With several changing persons and weak communication, both as persons doing the MP and PMs of the project, caused that problem. Luckily, we created a solution and carried out the Natura site condition assessments (NATA) with ELY Centre for these privately-owned lands, covering the whole Natura 2000 area (5 856 ha). The NATA was prepared, and it was qualified in 29.3.2019 by Regional Director of Metsähallitus, Parks & Wildlife Finland, Lakeland. NATA as annex 22.

We reported this solution in Progress Report 2 and continued the conversation in the monitor visit. Due to letter from EC (Ref. Ares(2019)4520819 - 12/07/2019) we were told to represent NATA to monitoring team in to ensure the proper management of the area. And so, we did in the last monitoring visit of the project in Öro in August 2020. NATA involve evaluation of much the same site information that is used in more thorough management plans. NATA, as such, can be used as a “means of implementation” of the required conservation measures on N2000 sites. NATAs involve defining the key on-site natural, cultural, and use values and their status, the pressures and threats having an impact on them, as well as the measures and planning needed to maintain these values or restore them to the target condition. A menu of the key value types, as well as the attributes and indicators that are used in protected area assessments, are presented in attachment "Key values". Key values are one way of depicting ecosystem services of a site, and impact assessment is a method of analyzing conflicting use pressures directed at the natural environment and resources.

The status of the features based on the Habitats and Birds Directives that are found on the N2000 sites, and the adequacy of conservation measures to secure them, is specifically assessed. The features that have been the justification for establishing such sites are documented in the Standard Data Forms (N2000 database). According to the National Biodiversity Strategy 2012-2020, the long-term goal in Finland is to assess all N2000 sites, simultaneously updating SDF. Management plans and NATAs are necessary for identifying, analyzing and eliminating the threats that might jeopardize the favorable conservation status of the N2000 site, to match the pressures of use and conservation issues, and to define necessary management measures for the future. NATA is device for reconcile nature conservation with other land use interests.

However, in this Maakylän-Räyskälä Natura 2000 area, most of the area outside strictly protected area is privately owned and it is protected only by Land Extraction Act. So, the soil only, especially in these esker areas, the gravel, is the protected thing. So, for the rest, above the soil, there are no special restrictions for the land use, for example forestry. So, due to this “light” protection of the Natura 2000 site, Master Plan could not have done any real policy in the area, nor the NATA, only recommendations. So, by these means, their guidance in land use are in same level.

11 fire continuum plans covering 17 N2000 areas and total over 40 000 hectares have been prepared. According to GA, there were project action sites as well as not project action sites (0-site) involved in these fire continuum plans. The last fire continuum plan from 0-site Multarinmeri as annex 23.

5.1.3. Action A3 Monitoring and communication plans

Foreseen: Monitoring plan by 10/2015 and first version of communication plan by 3/2015. Project logo by 1/2015 and 100 t-shirts by 5/2015.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful.**

Monitoring plan finished in 5/2016 and delivered to project employees. Communication plan completed in 11/2014 and updated in 3/2015 as well as 3/2016. Project logo finished in 10/2014, 100 project t-shirts with Life and N2000 logos ordered in 4/2015. Plans sent to Commission as annexes of IncR and PR1. Communication and monitoring plans were used during the whole project actively.

5.1.4. Action A4 Pulsatilla patens translocation and monitoring plan

Foreseen: Pulsatilla patens monitoring and translocation plan ready by 2/2015.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful.**

The objectives of this action have achieved, and the action is completed. Monitoring and translocation plan completed 10/2015 and management actions are ongoing according to the plan. The plan includes detailed guidelines for translocation, habitat restoration and

monitoring of *Pulsatilla Patens* at 7 project sites. *Pulsatilla* translocation plan sent to Commission as annex of PR1.



Photo 3. Pulsatilla patens monitoring and translocation plan was made in the project to help this delicate and rare beauty. Photo: Jouni Penttinen

5.1.5. Action A5 Preparatory training

Foreseen: Two 2-day training workshops and production of training materials by 30.6.2016.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful.**

The objectives of this action have achieved, and the action is completed. Action done with small timely changes as discussed during the MoT visits 5/2016 & 5/2017. One additional 3-person training session was held in 10/2014 and video conference training sessions on safety issues of conducting a restoration burning were organized in 5/2015 for 48 employees of MHLP. The internal work safety instructions of Metsähallitus were updated because of this training session. The first training workshop was held in Evo region in Southern Finland 26-27th April 2016. The second restoration workshop “Best practices and challenges in restoration burning” was organized together with Swedish LIFE Taiga 25-27th April 2017 in Lammi Biological Station in Southern Finland. Workshops and trainings were success and participants found them very useful. All the training material can be found on project’s web site.



*Photo 4. The participants of the training workshop in Evo, Southern Finland 27.4.2016.
Photo: Tuomas Haapalehto*

5.1.6. Action B1 One-off compensation payment in Hällämönharju-Valkeiskangas

Foreseen: One-off compensation payment in Hällämönharju-Valkeiskangas

Beneficiary responsible for implementation: POSELY

Outcomes: Action successful and targets exceeded

The objectives of this action have achieved as stated in GA. 20,5 hectares of valuable eskers forests at Hällämönharju-Valkeiskangas acquired for permanent protection. The associated documentation was enclosed in the Inception report.

5.1.7. Action C1 Restoration / controlled burning

Foreseen: Controlled burnings within 38 sites covering total area of 470 ha. Purchase of heavy burning arsenal and other gear needed in the burnings. The changes due to number of the burning sites were accepted in CL Ref.Ares(2015)4094957 - 05/10/2015 and CL (Ref. Ares(2018)1312290 - 09/03/2018).

Beneficiary responsible for implementation: MHPWF, UPM, HAMK, MHF

Outcomes: **Action successful and target exceeded.**

The objectives of this action have achieved, and the action is completed. Restoration burnings completed totally in all 38 sites with an area of 487 ha. Chart of the C1, C2, C3, C4 & C5 actions as annex 24. Maps of the burned areas are as annexes 25-68.

The burnings were success, although they were very hard to conduct in many sites. The restoration burning needs lots of experienced staff, good preparatory actions, lots of heavy burning arsenal, co-operation with rescue departments and appropriate weather conditions. We got very wet summers in 2015, 2016 and 2017 and were quite nervous, because we could not conduct the burnings due to wet conditions. Then we got very dry summer in 2018, and conducted many burnings, but then the weather conditions became so extreme with too dry conditions, that the burnings were impossible or very tough to conduct. We were running behind the schedule, but then we managed to conduct rest of the burnings in the summer 2019. Heavy burning arsenal and other gear needed in the burnings were purchased more than we thought in GA. The burning season is very short in every summer, and there are long distances between the areas and shortage of the equipment and experienced staff. We needed to have several burning gears in use in the same time. We also had to purchase new gear due to breaking up the pumps and hoses. All the burning equipment purchased stays in use for the restoration actions in Natura 2000 sites throughout the country.

Most of the burnings went well and as planned.

In the **Site 48. Oulanka** the area to be burnt changed compared to the Grant Agreement. This was noticed by PM only now, when gathering the information to FR. The planning in Oulanka was fire continuum planning and the best site to be burned was selected by the local biologists and planning officers. The replacing site is within the same N2000 area. The reasons to change the burning site were especially ecological, the wider dimension of the trees and type of the forest. The ecological outcome of restoration in the new burning site was a lot better than in the original area. Due to change of personnel and communication problems, the change of the burning site did not reach the PM. The burning was conducted successfully in 5.8.2019 in the area of 7,7 ha.



Photos 5. & 6. Burning of the site 36. Älänne in 14.6.2019. On the left: Wetting the bounds of the burning area. Before the burning, the moss layer, dwarf shrubs and the trees outside the burning area must be wetted carefully. Especially in the cases like this, when there is no fire corridor, the area where the trees have been cut and the soil has been revealed.

On the right: The prescribed burning of the forest moves slowly forward. The conditions for burning must be good, the forest should be dry and the wind not too hard. The fire does not kill the old pines, they survive with their thick bark. Photos: Sanna-Kaisa Rautio



Photo 7. Burning of the site 36. Älänne in 14.6.2019. Immediately after the burning, the forest is black, hot and smoky. The guarding of the burned area afterwards can take several days and

someone have to be awake day and night for the heavy winds that could light again the fire. Luckily the summer rains are common in Finland and the suppress many of the burning sites eventually. Photo: Sanna-Kaisa Rautio

5.1.8. Action C2 Restoration of sun-lit habitats

Foreseen: Sunlit coastal dune and heath habitats will be restored in 34 project sites, covering an estimated total area of 345 ha. The changes due to number of the restoration sites and hectares to be restored were accepted in CL Ref.Ares(2015)4094957 - 05/10/2015.

Beneficiary responsible for implementation: MHPWF, SMK, UPM, HAMK, MHF

Outcomes: **Action successful and target exceeded.**

The objectives of this action have achieved, and the action is completed. 404 ha restored at 34 sites annex 24. Maps of the restored areas are as annexes 29, 30, 35, 109, 110, 112 & 9-106.

Seedlings of *Thymus serpyllum* cloned in nursery garden and translocations of the seedlings started during summer 2016 and ended up in 2020 in 3 sites 49. Rokua, 1. Tammissaaren ja Hangon and 2. Tulliniemen linnustonsuojelualue.



Photos 8. & 9. On the left: Thymus serpyllum, which was the target species of many C2 actions. Photo: Teemu Rintala.

On the right: Endangered Dianthus arenarius subsp. borussicus, growing in one of its northernmost known habitats in Älänne Natura 2000 area. Photo: Sanna-Kaisa Rautio

These following changes were accepted in CL Ref. Ares(2018)4358006 - 23/08/2018 and in CL Ref. Ares(2019)4520819 - 12/07/2019, and EC asked for clear reporting of the outcomes:

We asked and got the permission to shift 13,8 ha of the restoration of sunlit habitats (Action C2) from **Site 53. Siikajoen lintuvedet ja suot** to **45. Hailuoto, pohjoisranta**. The extra restoration measures in the area were conducted in 2019 and 2020. The restoration actions were remarkable help for preventing the overgrowth of the area. The open space was created to the dunes and heathlands. Also, the landowners of the private-owned nature conservation areas in the site gave very positive feedback of the restoration of coastal habitats. They, and owners of the summer cottages in the area, appreciated the old scenery with open landscape and dunes.

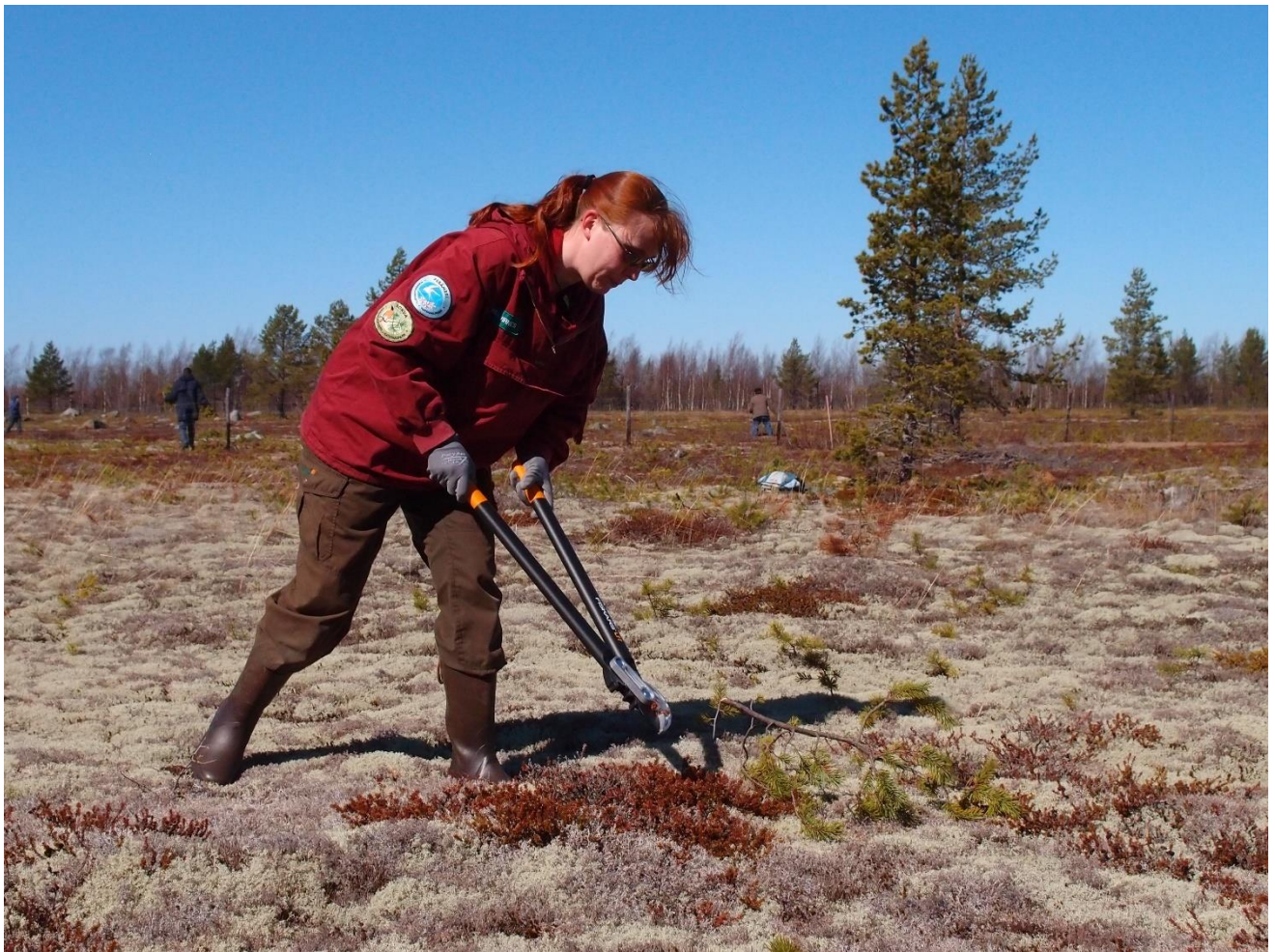


Photo 10. Conservation biologist Päivi Virnes is cutting the excess seedlings of pines from site 45. Hailuoto, pohjoisranta.

Site 2. Tulliniemen linnustonsuojelualue and **site 9. Örö** the restoration areas of sun-lit habitats increased to compensate the decrease in other areas. The additions in Tulliniemi were 6 ha and in Örö 3 ha, both of the sites are extremely important as conservation of the coastal habitats and there were certain needs to do restoration actions more than was anticipated. The restoration measures were diverse, cutting the excess trees, clearing and burning the bushes and heathland and scarring the soil. **Site 24. Itäisen Suomenlahden saaristo ja vedet** the restoration target was not exceeded, even it was at first assumed.

Site 49. Rokua AB SMK increased the targeted area to compensate for the decrease in sites 33 and 37. Rokua is extremely important esker forest area with lot of sun lit habitats. The addition was 3,8 ha and it was done as patch scarification and planting the seedlings of *Thymys serpyllum* to increase the biodiversity on the site. The more precise documentation of the actions in found in annex 107.

5.1.9. Action C3 Tree removal

Foreseen: Tree removal within 18 project sites, covering an estimated total area of 147 ha. Several small changes to the sites and areas of the tree removal were accepted in CL Ref. Ares(2017)135665 - 11/01/2017 and CL (Ref. Ares(2018)1312290 - 09/03/2018).

Beneficiary responsible for implementation: MHPWF, MHF

Outcomes: **Action successful.**

The objectives of this action have achieved, and the action is completed. 162 ha had tree removal at 15 sites annex 108. Maps of the areas, where tree removal was conducted are as annexes 25-28, 31, 32, 35-38, 71-73, 77, 78, 101-103, 109, 110 & 112. There has been quite a lot of changes, due to more precise planning of the restoration actions, whether the removal of the trees was needed or not. This action was done only in sites that really need it. Most of the sites that had tree removal, had it because of the safety conduct of prescribed burnings. Especially in Southern Finland the forests were too dense and needed the tree removal before safe burning. Tree removal was done in many areas also on fire corridors. The other reason for tree removal was shading of sun lit habitats, that happened both in eskers and in heathlands. The income from selling the trees was used in the project as part of the own contribution of Coordinating beneficiary.



Photo 11. From most of the burning sites in Southern Finland, excess trees must be removed before the burning, due to safety reasons and for controlling the intensity of the fire. Burning in the site 20. Maakylä-Räyskälä 1.6.2016 Photo: Tuomas Haapalehto

5.1.10. Action C4 Restoration of Baltic sandy beaches

Foreseen: Restoration of Baltic sandy beaches in 5 sites on 6,61 ha. *Rosa rugosa* eradicated from 3,8 ha. The changes in hectares to be restored were accepted in CL Ref.Ares(2015)4094957 - 05/10/2015.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful and target exceeded.**

The objectives of this action have achieved, and the action is completed. 10,7 ha restored at 6 sites annex 24. Maps of the restored areas are as annexes 69-71, 77, 78, 85, 99, 100, 113 & 114. *Rosa rugosa* eradicated from several different points in the area more than 6 ha, map of the points of eradication as annexes 113 & 115. In addition, almost every restoration site of the Baltic sandy beach consisted also eradicating alienate *Rosa rugosa*, with different methods. Eradication of *Rosa rugosa* typically involved several visits to the same site during the project, but the results are really promising.

Along this action the 350 m wooden boardwalk trail was built in site 2. Tulliniemi. The boardwalk prevents the people walk randomly on the delicate dune habitats.



Photo 12. Site 1. Tammisaaren ja Hangon saariston ja Pohjanpitäjänlahden merensuojelualue. Before the restoration actions, the beach was full of alienate Rosa rugosa in 2018.



Photo 13. Site 1. Tammisaaren ja Hangon saariston ja Pohjanpitäjänlahden merensuojelualue. Same beach after several years of restoration and eradication of Rosa rugosa, in 2020.



Photo 14. Wooden boardwalk, wide enough for wheelchairs and baby carriages is now tempting walkway on Site 2. Tulliniemi's famous beach. It protects the dune habitats. Photo: Hans-Erik Nyman.

*5.1.11. Action C5 Habitat restoration and translocation of *Pulsatilla patens**

Foreseen: Habitat restoration and translocation of *Pulsatilla patens* in 7 sites on total area of 8,1 ha. *P. Patens* seed material collected by 31 July 2018 and *P. patens* habitat restoration completed by September 2019. Lengthening the schedule and conducting more restoration actions in sites accepted in CL (Ares(2017)135665 - 11/01/2017 and in CL Ref. Ares(2019) 4520819 - 12/07/2019.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful and target exceeded.**

The objectives of this action have achieved, and the action is completed. Habitat restoration done in 16,9 ha restored at 7 sites, annex 24. Maps of the restored areas are as annexes 82, 111, 116-120. *P. Patens* seed material collected, grew and planted in all 7 sites. Action progressed according to the *P. patens* translocation & restoration plan and the results are promising and good. 65 % of the seedlings are alive, after two or three years from planting. Annex 121.

In CL Ref. Ares(2019)4520819 - 12/07/2019 we asked us to report clearly the outcome of the following actions in the Final Report:

The **site 15. Matinsilta** the restoration actions of *Pulsatilla patens* habitats area was enlarged to total 7,8 ha. The urgent need became, when 10 ha of previously privately-owned land (inside the Natura 2000 are, where the soil and esker formation were only protected) changed owner and the land is owned by the state now, and it will be strict conservation area in near future.

The subsite is extremely precious with several habitats of *Pulsatilla patens*. The habitats were in bad state, the plants suffering shading and too much raw humus, litter and mosses. We carried out restoration measures in 2019 in that new subsite, both machine and man work, cleared the shading young pine trees and bushes and conducted the patch scarification (patches size 5-10 m² all the way to the mineral soil) in that area. The measures affected also the habitats in the originally managed area, because the new pine stand growing in the new area was shading a lot the original area, too. The new plan of the restoration measures in the area as annex 16 and map of the area restored as annex 119.

In the **site 11. Fagerinmäki-Kyöpelinvuori** we conducted restoration actions of *Pulsatilla patens* habitats for area of 1,2 ha and we announced the site to be ready in midterm report 2017. Anyway, we had to do more restoration work in the area because after the thinning operation in 2016 the habitats got much lighter and that caused lots of coppicing. In 2019 we cleared the coppice and girdle some of the big birches and aspens. We also conducted some new patch scarification (patches size 5-10 m² all the way to the mineral soil) in the south-west side of the area. Map of the area as annex 116.



Photos 15. & 16. Photo on the left, 2-year-old seedling of Pulsatilla patens, just planted to the site. Photo: Tuomas Haapalehto.

Photo on the right, flowering Pulsatilla patens. Photo: Teijo Heinänen.

5.1.12. Action C6 Restoration camps for volunteers

Foreseen: 10 restoration camps (64 camp days) organized in the project. Each camp is expected to have ca 20 volunteers. Permission to make some changes for the sites and durations and the DL for the camps in CL (Ref. Ares(2018)1312290 - 09/03/2018).

Beneficiary responsible for implementation: WWF

Outcomes: **Action successful and target exceeded.**

Action progressed mainly according to the plan presented in the Inception report. 9 restoration camps (68 camp days) were organized. Altogether 180 volunteers (on average 20 volunteers per camp) took part. Volunteer work camps have been organized successfully and without problems. All the camps were extremely popular, they were filled with volunteers immediately on the first hours of registration. The work that volunteers did in the Natura 2000 sites was important and effective. In many sites, there were lots of tasks, that could not be done by machines, and hiring such a lot of labor would have been expensive. The total area that the volunteers managed in 6 N2000 sites was 50 hectares. In each long camp the volunteers had one day off to rest and explore the nature. The camps have also had high media visibility even on the national level. The details of the camps are shown in the table, annex 122.



Photo 17. Volunteers doing hard labor for the nature in the beautiful surroundings of site 8. Seksmiilarin saaristo, in Isokari in 2017. Photo: Jussi Nikula.

5.1.13. Action D1 Monitoring of restoration sites

Foreseen: Monitoring of actions C1, C2 and C4 on all restoration sites.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful and target exceeded.**

Action done according to the monitoring plan A3, the monitoring of C1 sites took place ca. year after the controlled burning. The monitoring of restored sunlit habitats C2 and Baltic sandy beaches C4 was done after the restoration, annex 123.

There were different needs for monitoring, in some sites more precise monitoring was carried out, and in some sites, only the basic, after burning monitoring. The monitoring actions done in the project proved preliminary, that our restoration actions have been successful. In the sun lit habitats, the removing of the shading trees and bushes and scratching the soil changed the light and temperature situation immediately, and the first signs of the recovery of the species started immediately. However, most of the effects are long termed, and they cannot be seen in such a short monitoring period, but it is safe to assume that the fauna and flora will benefit from the actions on longer term.

According to our monitoring results in prescribed burning areas, most small dimension broadleaved trees and spruces, and significant number of small pines also, died in one year after the burning. Bigger broadleaved trees and spruces and almost all the big pines were surviving still one year after burning. The aim in the burning is to create chaffed and burned decaying wood succession, and it totally succeed.

The results will be used in future planning and conducting the restoration measures. Monitoring reports as annexes 124-214.



Photo 18. Monitoring of action C1 included forest measurements. Photo: Sanna-Kaisa Rautio

5.1.14. Action D2 Impact assessment on socio-economy and ecosystem functions

Foreseen: The action was divided in three individual chapters: 1) description of ecosystem functions, 2) new tool for examining socio-economic impacts, 3) assessing the impacts of restoration on recreational use. The formation of the action was accepted in CL (Ares(2017)4109509 - 21/08/2017).

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful and completed**

All three phases were started in 2017. 1) Description of ecosystem functions and 3) Assessing the impacts of restoration on recreational use. Both studies were delivered as annexes in PR2.

Phase 2) New tool for examining socio-economic impacts. There was the need to develop a new tool, which can be used especially in MH's projects to clarify the socio-economic impacts of different actions. The development process started with 4 LIFE projects in Metsähallitus: Light & Fire LIFE, LIFE Saimaa Seal, Wild Forest Reindeer LIFE and Freshabit LIFE IP. The tool was created together with Professor Emeritus Eero Vatanen from University of Eastern Finland. The calculations produced the result that the total economy coefficient was 2,5. Meaning that the 1 € put into the project actions produced totally 2,5 € benefit in the society. Total cost of the project was 4,15 M€, so the total economy benefit was 10,38 M€.

The calculations produced the result that the total employment coefficient was 1,5. Meaning that the 1 working month in the project, produced totally 1,5 working month benefit in the society. In the project the total employment was 62,5 man-months. The Impact assessment on socio-economy and ecosystem functions annex 216.

5.1.15. Action F7 Networking

Foreseen: Participating 2 SER Europe meeting and Eurosite seminar. Active networking with LIFE Taiga, other LIFE-projects and other restoration projects. Some minor changes accepted in CL (Ref. Ares(2018)1312290 - 09/03/2018).

Outcomes: **Action successful.**

Project has attended numerous seminars, workshops and held some also itself, annex 217. In the last reporting period, the PM attended the Nordic Platform Meeting in Denmark in September 2019. In June 2019 the project hosted two excursions to the project's forest restoration sites to the Lithuanian LIFE IP project.



Photo 24. It is always a pleasure to network with people. And delightful to find out different kind of biotopes and restoration acts. The group on bird watching tower in Nordic Platform Meeting in Denmark in September 2019. Photo: Sanna-Kaisa Rautio

5.1.16. Action F8 Audit

Foreseen: Audit report to be attached to the Final Report.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful.**

The audit was carried out in August-October in 2020 by KPMG, the official audit of CoB MHWPWF. The audit report as annex 218.

5.1.17. Action F9 After-LIFE conservation plan

Foreseen: After-LIFE conservation plan to be attached to the Final Report.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful.**

The objectives of this action have been achieved as stated in GA and the action is completed. The After-LIFE conservation plan describing the future actions and responsibilities as well as the resources as annex 219.

MHPWF will continue its work related to nature conservation and restoration in all its varieties. Reusable equipment and vehicles purchased during the project will be utilized in nature conservation and nature restoration work. The work done in this project will be lessons learned for many techniques and best practice, both in restoration and dissemination work. The monitoring of the results of the restoration actions will be carried out.

A subsequent LIFE projects, Beetles LIFE, coordinated by MHPWF, continues forest restoration by prescribed burning and Coast Net LIFE continues the work with coastal habitats. There is also planning to go on in a new international LIFE project, Taiga LIFE II, together with Sweden and Latvia. In Taiga LIFE II, the MHPWF would be an associated beneficiary. The project will be submitted to the Commission in 2021 and the aim is to continue the forest restoration by prescribed burning as well as more networking and changing the best practices.

MHF will continue actions in removing the trees from restoration areas. It is quite different work than in normal forestry so lots of expertise gained with contractors, could be used in the future restoration actions. They are an associated beneficiary also in Beetles LIFE, Flying squirrel LIFE and Hydrology LIFE.

SMK will continue actions on privately owned forest and among the private forest owners and forest experts. There is quite much funding available also for protecting the biodiversity in the commercial forests as well, and surely need to do that. The best practices from the project could be dispersed now widely. There are several ongoing and upcoming projects to continue these actions. They are an associated beneficiary also in Hydrology LIFE and Flying squirrel LIFE.

HAMK will continue actions in teaching of the becoming forest professionals. The issues of nature conservation, restoration and especially prescribed burning will be conducted in the teaching, both theoretically and also in practice.

POSELY will continue actions in purchasing the new conservation areas. They did another good purchasing in the site 33. Hällämönharju, so there is interested landowners around. They are an associated beneficiary also in Hydrology LIFE and Flying squirrel LIFE.

WWF will continue actions in volunteer work for the nature. They will also carry on the efficient dissemination work. They are an associated beneficiary also in Coast Net LIFE.

UPM will continue actions on company's own forests. They will implement the site 29. Pyssyharju plan. As well as they will keep on the prescribed burnings and use of the fire in their own forests.

Site by site after LIFE

In the sites, where the **prescribed burnings** were conducted, there is a will and aim to conduct more prescribed burnings in the future, to create suitable burned habitats for the species dependent on them. But of course, the actions are carried out in different parts of the Natura 2000 sites. See the chart below. In all the sites there are still degraded forest habitats left, suitable for prescribed burnings. Some of the sites are in Beetles LIFE and/or will be in the new LIFE Taiga II, or they will have burnings with HELMI funding or within the normal budget of MHPWF. Unfortunately, we cannot promise the burnings to continue in all sites or near of the, but at least we will try, to keep up the fire continuum areas.

Site number	Site name
3	Nuukio
7	Kolkansuo
16	Seitsemäinen
19	Evon alue
20	Maakylän-Räyskälän alue
21	Helvetinjärvi
22	Liesjärvi
26	Kakonsalon järvi
26	Kakonsalon järvi
27	Kuijärvi - Sonnanen
30	Suurlahden lampi
32	Sorsaveden saaristo
36	Älänne
41	Peuralamminneva
42	Suurisuo-Sepänsuo-Paanasenneva-Teerineva
43	Salamajärvi
46	Veneneva-Pelso
47	Etelä-Kuusamon metsät
48	Oulanka
50	Litokaira
51	Olvassuo
52	Törmäsenrimpi-Kolkanneva
54	Latva-Korte – Kärppävaara
55	Kylmäluoma
56	Niittysuo-Siiransuo
57	Torvensuo-Viidansuo
58	Lentuan alue
59	Iso Palonen - Maariansärkät
60	Sydänmaanaro
61	Mäntypuro
62	Talaskankaan alue
63	Riisitunturin kansallispuisto
64	Mustarinnan tunturi
65	Asmuntinsuo-Lamminsuo
66	Joutensuo
67	Martimoaapa-Lumiaapa-Penikat
68	UK-puisto-Sompio-Kemihaara
69	Sota-aapa

Chart 2. The sites, where the prescribed burnings were conducted and hopefully will be again in the future.

In the site 35. Tavisuo the prescribed burning was not planned nor done, because of the nesting osprey. So hopefully it will be the target for the future burnings, also.

In the sites, where the **restoration of sun lit habitats or/and beach habitats** were conducted, the situation varies quite a lot. In some smaller areas like site 2. Tulliniemi, almost all the actions were carried out once, and the more restoration will not be needed in near future. But in the same time, many of these areas have lots of degraded habitats, and some of them are in Coast Net LIFE or they will have restoration and grazing actions with HELMI funding or within the normal budget of MHPWF. The actions carried out in Light & Fire LIFE project, were effective, but carried out still in relatively small areas, and new needs for restoration will come up in the other parts of the sites. Some of the areas are real biodiversity hot spots, like unique site 9. Öro, and that is why it is important to conduct restoration measures there.

Site number	Site name
1	Tammisaaren ja Hangon saariston ja Pohjanpitäjänlahden merensuojelualue
2	Tulliniemen linnustonsuojelualue
4	Hämeen kangas
5	Säkylänharju
6	Uudenkaupungin saaristo
8	Seksmiilarin saaristo
9	Öro
10	Aurinkovuori
13	Vatulanharju-Ulvaanharju
18	Porttilanharju
19	Evon alue
20	Maakylän-Räyskälän alue
23	Kaukolanharju
24	Itäisen Suomenlahden saaristo ja vedet
25	Kyläniemi
27	Kuijärvi - Sonnanen
28	Punkaharju
29	Pyssyharju
31	Pyörissalo
33	Hällämönharju-Valkeiskangas
34	Lintharju-Kirjosuo sekä Vakkarsuo
36	Älänne
37	Iso-Juurikan - Leveävaaran alue
38	Kauhaneva - Pohjankangas
39	Pohjoisneva
40	Uudenkaarlepyyn saaristo
44	Tervaneva-Sivakkaneva-Pitkäkangas
45	Hailuoto, pohjoisranta
49	Rokua
53	Siikajoen lintuvedet ja suot

Chart 3. The sites, where the restoration of sun lit and/or beach habitats were conducted

Restoration of *Pulsatilla patens* habitats was conducted in 7 sites, chart below. The restoration measures were done at first delicately and they had to be repeated in some sites. Now all the sites seem to be ready, so we hope to have long lasting results.

11	Kyöpelinvuori-Fagerinmäki
12	Ruskeanmullanharju
14	Ahvenistonharju-Vuorenharju
15	Matinsilta
17	Tunturinvuori
18	Porttilanharju
20	Maakylän-Räyskälän alue

Chart 4. The sites, where the restoration of *Pulsatilla patens* habitats were conducted

5.2 Dissemination actions

5.2.1 Objectives

<i>Type of media</i>	<i>Objective in the GA</i>	<i>Achieved</i>
Press releases	20	65
General public article in regional and national press (newspapers and general magazines)	30	63
General public article in local press	40	44
Specialised press article	10	18
Internet article	60	113
Media excursions or educational events	8	9
TV news/reportage	5	9
Radio news/reportage	10	12
Coverage in social media channels (Facebook, Instagram, Twitter)	20	318

Chart 5. Media objectives and progress of the project.

The objectives of the dissemination were quite high, see the chart above. But project gained and exceeded all the objectives. The LIFE & Natura 2000 logos were used in all the dissemination material.

5.2.2 Action E1 Media cooperation

Foreseen: Project presented in different media at least 175 times.

Beneficiary responsible for implementation: MHPWF

Outcomes: **Action successful and target exceeded.**

Action has been a success and progressed fast due to the efficient communication work by practitioners and communication officers. The project has been presented in media (paper or internet articles in newspapers and magazines, TV, radio) already 184 times. Press releases and media coverage are listed in Media coverage in annex 222, and copies of the last press releases and articles are as annexes 223-265.

5.2.3 Action E2 Audiovisual materials

Foreseen: Audiovisual presentation by 31.12.2018. The audiovisual materials will be produced only in electric form, accepted in CL: (Ares (2017)4109509 - 21/08/2017).

Outcomes: **Action successful.**

The film is ready: <https://www.youtube.com/watch?v=eHw9mzAGp4c&t=7s> The action progressed as planned after overcoming the initial technical problems with time-lapse shot material, reported in the Inception report. Only part of the time-lapse shot material could be used in the audiovisual presentation, but the rest of the material will be used in the action E3 as photos and short video clips. The film is distributed in internet, in Metsähallitus Parks & Wildlife Services Youtube channel, it is also available to be seen in Nature Centres and it is promoted in Social media.

5.2.4 Action E3 Project communication

Foreseen: Website with 4000 visits, project activities communicated in SoMe at least 50 times, 40 high-quality photos bought, 1-3 short video clips, Layman's report.

Outcomes: **Action successful and targets exceeded**

Website of the project has been extremely, they gained much more website visits than expected, total 22 322 visits in project's webpage (17 561 in Finnish webpage, 3 447 in English webpage, and 1 314 in Swedish webpage).

The webpage addresses:

<https://www.metsa.fi/projekti/paahde-life-hanke/>

<https://www.metsa.fi/en/project/light-fire-life/>

<https://www.metsa.fi/sv/projekt/ljus-eld-life/>

In social media the project has also been active: 318 postings in SoMe related to project actions (ca. 5 times more than expected), In Twitter, 119 tweets: <https://twitter.com/hashtag/paahdelife>, in Instagram, #paahdelife and #lightandfirelife 101 public posts: <https://www.instagram.com/explore/tags/paahdelife/?hl=fi> and in Facebook, #paahdelife or #lightandfirelife 98 public posts. Examples on project appearance in Facebook in annex 265.

The 40 high-quality photographs have been bought or taken by MH's staff, photos are found in MH's photo service. You can view and download the photos from this link:

www.images.nationalparks.fi: <https://images.nationalparks.fi/1/kZ5L8CrSjCGt>

Info of the photos as annex 266 and all the photos are as annexes in annex folder 267.

The Re-photography photos before and after actions have been taken from several sites, the samples of them are as annexes 267-284.

Two short video clips were produced and they are available as online film is in the YouTube channel of Metsähallitus Park and Wildlife Finland:

<https://www.youtube.com/watch?v=WZUJRe4iRMk> and

<https://www.youtube.com/watch?v=hJ8qta7hj1s>

Layman's report is produced in Finnish and English and is available in printed version and also in online in Finnish: <https://julkaisut.metsa.fi/julkaisut/show/2468> and in English:

<https://julkaisut.metsa.fi/julkaisut/show/2469>

And also, as annexes 275 & 276.

5.2.5 Action E4 Notice boards

Foreseen: Temporary notice boards in 69 project sites and semi-permanent notice boards for 5-10 sites, the types and the amount of the notice boards accepted in CL:(2015)4094957 - 05/10/2015.

Outcomes: **Action successful and targets exceeded**

93 temporary and 13 semi-permanent notice boards were taken to the sites when the restoration action was carried out. Chart of the notice board on the sites as annex 304. Photos of the info boards delivered as annex 25 in IncR, annexes 96-117 in PR1, annexes 120-132 and 141-147 in MtR and 79 & 80 (11 sites) in PR2. Rest photos of the notice boards on the sites as annexes 277-303.

Many restored sites are situated literally in the middle of nowhere, and hardly anyone will ever pass them by. That is why most of the sites were supplied only with temporary laminated info boards. To the sites, which are in more popular areas, near the roads or hiking trails, the semi-permanent info boards were established.

There was a certain need for one extra semi-permanent info board to be established in the site 8. Seksmiilarin saaristo, in the Isokari island. The new info board was established in Isokari in June 2020. Isokari island has become popular destination for visitors, due to better boat connections from the mainland. It is good place to promote restoration actions in the archipelago nature as well as Natura 2000 network.

Isonkarin luontoa hoidetaan Naturen på Enskär vårdas Habitat management in Isokari



Sellkämeen saarilla maankohoaminen, tuulen ja jään kuluttava vaikutus sekä ilmisen elinehto-olosuhteista karjanhoitoon ovat ylläpitäneet avoimia, vakaisia alueita, jille metsä ei ole päässyt kasvamaan. Erityisesti uhanalaiset perinneympäristöjen ja paahdealueiden lajit ovat tilpuvaisia näitä olosuhteista.

Alueita uhoaa umpeenkasvu, kun saaristossa on enää vähän asukkaita ja karjan lakkunus on loppunut. Umpeenkasua kiihdyttävät myös liikenteen ja lämmityksen tuottamat, rikkaita typpijääkkeitä.

Isonkarin metsälaitumet, niitit ja kedot muodostavat monimuotoisen elinympäristöjen verkoston. Maarinvierojen ja näkimeinien kukoittamat niittily ja uhanalaiset roidanalut ovat harvan katajien suosissa.

Isossaaltoa harvinaisia luontotyyppisiä ja lajitoja hoidetaan rakentamalla ja laadullisilla perinneympäristöillä sekä peittamalla nummivarvikoita ja pirta-kaivonluottoja.

Häiden tuottoa on lisättä ja ylläpitää avoimia alueita ja suo-jeilla niiden harvinaista lajitoja.

Pö holtama i Bottniska havet har landhöjningen, erosionen som orsakas av vind och is samt människans näringslagring från fisket till boskapskötsel bidragit till att det finns öppna, soliga områden där ingen skog fått växa. I synnerhet är hotade arter som kve, vildsvin och sol-exponerade miljör beroende av dessa förhållanden.

Nuomet hotar desia öppna områden att växa igen. Skärgårdens avvikelse och bokap betar inte längre på holtama. De övergödande kvävetilläppen från uppämning och tuurken bidrar också till igenväxningen.

Enskärns skogsbeten, lingar och torningar bildar ett varierande nätverk av habitat. Småbete och kangrynna fiodas på ångarna, medan hotade läsbärnar påträffas endast i skydd av de enkla enbuskningen.

Pö Enskär vårdas de sällsynta naturtyperna och arterna med hjälp av bete och röjning av värdebiotopen samt bränning av riset på hedmarkerna och markvegetationen.

Syftet med naturvårdsåtgärdena är att utöka och upprätthålla de öppna områdena och skydda de sällsynta arter som lever där.

On islands in the Bothnian Sea, land uplift, erosion caused by the wind and ice, and human industries, ranging from fishing to livestock grazing have maintained open, bright areas where the forest has not been able to grow. Endangered species of semi-natural grasslands and sun-lit environments depend on these conditions.

Today the open areas risk being overgrown because of the dwindling population and absence of grazing livestock. Overgrowth is further accelerated by nitrogen emissions from transport and heating, which drive eutrophication.

The grazed woodlands and meadows of Isokari form a habitat network with a high level of biodiversity. The common agrimony and oregano thrive in the meadows, while the endangered moonwort is protected by sparse junipers.

In Isokari, rare habitats and species are managed by clearing and grazing semi-natural grasslands, as well as by prescribed burning of shrub heaths and surface vegetation.

The objective of management is to expand and maintain open areas and to protect their rare species.

Paahde-LIFE 2014–2020
Paahde-LIFE-hankkeessa hoidetaan EU-rahoituksen avulla erokeita, pilsoin paahdeisten elinympäristöjen luontotyyppisiä ja lajeja 69-ää Natura 2000-alueella.

Ljus & Eld-LIFE 2014–2020
Med stöd från EU vårdas inom projektet värdefulla naturtyper och arter i sol-exponerade miljöer i 69 Natura 2000-områden.

Light & Fire LIFE 2014–2020
With funding from the EU the project takes care of valuable habitats created through heat or fire and the species living in these environments in 69 Natura 2000 sites.






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Photo 19. Site 8. Seksmiölarin saaristo. The content of the info board.



Photo 20. Site 8. Seksmiölarin saaristo. The semi permanent info board in Isokari island. The beautiful light house behind the info board was under renovation in summer 2020.

5.2.6 Action E5 Restoration trail

Foreseen: Restoration trail with 5 small information boards by 31.7.2018. Permission to extend the deadline in CL (Ref. Ares(2018)1312290 - 09/03/2018).

Outcomes: **Action successful.**

The trail with new and good information boards is ready, we reported it already in PR2. The restoration trail is situated in the Komio Nature Reserve, which is a part of the nationally valuable and diverse project site 20. Maakylä-Räyskälä area. The two big information boards, size A0 are established in the beginning of the trail and 4 smaller ones along the trail. The texts in all of them are in Finnish, Swedish and English. In addition, 9 smaller information boards with QR codes were established. The QR codes lead the reader to the web pages of the project and other sources with lots of information about the species, nature types, Natura 2000 areas etc. The info boards were presented as annexes in earlier reports.

We were supposed to held small inauguration of the trail in the spring 2019 or 2020. We postponed it to 2020 and due to Covid-19 situation, could not held it. After all the trail has attracted many nature lovers and the information given there is important, because the restoration actions in the area are really visible and all of them are not so charming, like the restoration burnings for couple of years after burning.



Photo 21. Site 20. Maakylä-Räyskälän alue. The beginning of the restoration nature trail, with two big (A0) information boards attracts trekkers. Photo: Jari Kostet.



Photo 22. Site 20. Maakylä-Räyskälän alue. Along the restoration nature trail, there are different kind of information boards. Here is the new small extra info bord with QR code, which leads the visitors to more information in the www. Photo: Outi Ala-Härkönen

5.3 Evaluation of Project Implementation

The project progressed efficiently and as planned and all objectives have been reached and the project is completed. The key element to the highly successful results achieved in the project is that the project beneficiaries have a long history of working with the topics of the project. There is lots of best practices and lessons learned in each beneficiary. This project just combined these beneficiaries together in this important case, especially concentrating on the fire in the forests, the rare sun lit habitats and esker forests' problematics. In this project, it was the first time in Finland, that the restoration actions were conducted in Natura 2000 sites, owned by state, owned by private people or owned by companies. And the organizations worked in this together, so it was great experience to get to know each other's, to change best practices, conduct restoration and to promote together the nature conservation, restoration, esker forests, sun lit habitats and especially prescribed burning. This could not have happened without this project and LIFE funding.

In the land purchase action (B1) and preparation of successful management plan (A2), POSELY's long experience in acquiring land for conservation purposes and existing good contacts with the landowner were very important for the great results on these actions.

In the actions regarding for example restoration planning (A actions) and concrete restoration actions (C1-C6) the expertise gained by MHPWS during the more than 20 years of prescribed burnings and habitat restoration made it possible to work cost-efficiently and still ecologically effectively. The coordination of the LIFE projects has also developed a lot in the MHPWS. When there are obstacles or problems, there is always peer support to tackle them.

HAMK holds the highest practical and scientific knowledge of the prescribed burnings and in generally the fire in the forests in Finland. So, it was a brilliant co-operation in this subject. HAMK also gave opportunities for forest students to learn the prescribed burning techniques in practise.

SMK was active on privately owned site's restoration actions of sun lit habitats and esker forests. They conducted effective restoration methods, but also promoted the esker forests and sun lit habitats restoration for private forest owners as well as the other forest professionals throughout the country.

UPM is actively taking care of their own fire dependent habitats. They conducted cost-efficiently prescribed fires, did large scale planning of the areas and are promoting the use of fire, taking care of the endangered habitats in forestry sector in outstanding way.

WWF has long tradition of volunteer work and camps for the nature. This knowledge and best practices were in use and refined in several camps, which were but effective in restoration actions but also in raising the awareness of the nature conservation.

MHF came as beneficiary in the middle of the project. They gave good and efficient practice of removing the excess trees from the burning sites and sun lit habitats.

However, there were some problems, too. Two changes of the PM caused some extra work, it is not ideal situation to have changes in the major personnel in the big project.

In Action A2. in management planning of site 20. there were difficulties mainly because of organizational and staff changes of CoB MHPWF. Any how the result (explained earlier) to combine MP and NATA evaluations in this lightly protected N2000 site was good solution.

In action C1. Restoration the forests by prescribed burning we were late from the schedule, because of the rainy summers 2015, 2016 & 2017. Due to the wet conditions, conducting the prescribed burnings was impossible. In the other hand, the following summers 2018 & 2019 were dry and hot, and figured out, that too dry and hot, because the authorities disallowed us to conduct the burnings in many sites in 2018. But in the end, we got all the burnings done, even though we had to purchase quite more heavy burning arsenal, both because of the breaking down of the equipment, but also because the burning sites were so long distance from each other's, and when we had the right timeframe to burn, it happened often at same time in all sites.

Implementing all the actions in site 2. Tulliniemi was challenging task. The restoration planning was exceptionally long and difficult process. The local people were afraid of the actions and it took lots of effort to convince all about the solutions. There was certain need in this overgrowth forested dune area to do big actions for the habitats and the species, but local people were suspicious, and it took several meetings, excursions, phone calls and social media interruption to convince people. The media interest in this topic was high and there was overreaction in many ways and total disinformation also. The implementation of the restoration plan with machines, man work, volunteer camp and finally building the new board walk was rewarding, because even all the loudest opponents were happy and satisfied with the results, and they even admitted it in the media.

Implementation of all the actions in site 35. Tavisuo, were cancelled, because of the nest of an osprey. EC gave permission to cancel the actions and move the 2,8 hectares to be burnt in another site, 32. Sorsavesi.

Almost all the other actions were on schedule and there were no substantial changes in the time plan or objectives of the actions. Some needs for minor changes in the actions occurred and they were informed to the EC and got permissions to change. (For example, number and areas of the A- & C-actions).

Some of the restoration actions improved the quality of habitat immediately, some will require several years after restoration, to have full benefits. The prescribed burning of the forest effects the forest habitats positively, right after the burning, especially in the cases, where wide dimensioned charred and burnt wood is created. The fire dependent species head to the burning sites immediately, when they sense the smoke and heat. Also, the removing the excess, shading trees and bushes from sun lit habitats has straight effects on many conditions and that way to the species. Scratching and revealing the mineral soil in sun lit habitats effects also to the species composition rapidly, and mineral soil patches are very important to many plants and insects. On the dune habitats, removing the excess trees and vegetation releases the sand to move immediately and that creates new dune habitats.

In some habitats and restoration actions the results will be visible only after years, like in sun lit habitats, where the aim is to increase amount of *Thymys*. Even after the restoration actions and translocations the progress is very slow and takes normally 4 to 7 years to strengthen. In Finland early summers are often too dry for the small seeds and seedlings to grow.

Task	Foreseen in the revised proposal	Achieved	Evaluation
A1. Restoration action plans, overall	31 restoration plans for 28 N2000 areas covering 351 ha.	32 restoration plans completed for 539 ha.	Objectives met and exceeded. Restoration plans enabled cost-efficient and ecologically effective restoration in all project sites during the project. There was need for do small changes of planning in many Natura 2000 sites. In some areas the more precise planning was needed, in some areas not.
A1. Restoration plans, inventories	Species inventories on 20 sites specialized on poor known taxas: Aves, Araneae, Coleoptera, Polypores, Lepidoptera, Heteroptera, Hymenoptera & Vascular plant. A1.	Species inventories on 20 sites specialized on poor known taxas: Aves, Araneae, Coleoptera, Polypores, Lepidoptera, Heteroptera, Hymenoptera & Vascular plant.	Objectives met. The new information of poor known taxa in many sites was totally new and led the restoration actions in many ways.

	<p>Biotope inventories on 11 sites, ca 200 ha.</p> <p>Cultural heritage surveys or inspections on 57 sites.</p>	<p>Biotope inventories on 11 sites, ca 200 ha.</p> <p>Cultural heritage surveys or inspections on 57 sites.</p>	
A2. Management plans and fire continuum plans	<p>Management plans for 2 N2000 sites, covering 7 267 ha.</p> <p>11 fire continuum plans for 17 N2000 sites covering 40 000 ha.</p>	<p>Management plans and NATA evaluation for 2 N2000 sites, covering 7 267 ha.</p> <p>11 fire continuum plans for 17 N2000 sites covering over 40 000 ha.</p>	<p>Objectives met. With fire continuum plans well, but with the other management plan had some difficulties. In management planning of site 20. there were difficulties mainly because of organizational and staff changes of CoB MHPWF. Any how the result to combine MP and NATA evaluations in this lightly protected N2000 site was good solution.</p> <p>Management plans and the fire continuum plans prepared during the project will be followed/taken into action in the years after the project.</p>
A3. Monitoring and communication plans	<p>Monitoring plan and communication plan.</p>	<p>Communication plan completed in 11/2014 and updated in 2/2016. Monitoring plan completed in 2015.</p>	<p>Objectives met. Communication plan was good and led the communication of the project. The monitoring plan was essential on carrying on the monitoring of the restoration.</p>
A4. Pulsatilla patens translocation and monitoring plan	<p>Pulsatilla patens translocation and monitoring plan for 7 N2000 sites</p>	<p>Pulsatilla patens translocation and monitoring plan for 7 N2000 sites</p>	<p>Objectives met. Pulsatilla patens translocation and monitoring plan was good co-operation with authorities and the implementation of the plan was success story.</p>
A5. Preparatory training	<p>Two 2-day training workshops.</p>	<p>Two 2-day training workshops and 2 field training sessions & one international workshop.</p>	<p>Objectives exceeded. The trainings guaranteed that best practises were used during the project and will also be used in the future restoration activities.</p>
B1. One-off compensation payment	<p>One-off compensation payment in Hällämönharju-Valkeiskangas completed by 31.12.2014</p>	<p>One-off compensation payment completed and 20,5 ha at Hällämönharju-Valkeiskangas acquired for permanent protection.</p>	<p>Objectives met. The action went well, and the new site is valuable esker forest with sun lit habitats. The protection of the area inspired landowners to conduct another new conservation contract later in the same site. So, the strictly protected area in the site is growing quite a lot</p>

C1. Controlled burning	Controlled burning at 38 sites on 470 ha.	Burning completed in all 38 sites. The total burning area is 487 ha.	Objectives met and exceeded. Even though the conducting the prescribed burnings was a battle, with too wet summers and then too dry summers. There was needs to purchase more heavy burning arsenal to conduct the burnings safely.
C2. Restoration of sun-lit habitats	345 ha of sun-lit habitats in 34 sites. Thymys seedlings collection, cloning, nursing & planting in 3 sites	396 ha of sun-lit habitats in 34 sites restored. Thymys seedlings collection, cloning, nursing & planting in 3 sites.	Objectives met and exceeded. The restoration of sun lit habitats required management during several consequent years to allow full restoration outcome.
C3. Tree removal	Tree removal in 19 sites on 147 ha.	Tree removal in 15 sites on 162 ha.	Objectives met. The needs for tree removal got more precise on the restoration planning.
C4. Restoration of Baltic sandy beaches	Restoration of Baltic sandy beaches in 5 sites on 6,6 ha. Rosa rugosa eradicated from 3,8 ha.	Restoration of Baltic sandy beaches in 6 sites on 10,7 ha. Rosa rugosa eradicated from over 6 ha.	Objectives met and exceeded. The restoration of beach habitats required management during several consequent years to allow full restoration outcome. Same situation with Rosa rugosa eradication, which was carried out in several years in several points with different techniques.
C5. Habitat restoration and translocation of <i>P. patens</i>	Habitat restoration in 7 sites on a total area of 8,6 ha. Seedlings collection, cloning, nursing & planting in 7 sites.	<i>Pulsatilla patens</i> habitat restoration in 7 sites on 16,9 ha. Seedlings collection, cloning, nursing & planting in 7 sites.	Objectives met and exceeded. The restoration of <i>P. patens</i> habitats, required management during several consequent years to allow full restoration outcome. Translocation was success story.
C6. Restoration camps	9 camps in 6 sites, 64 camp days, restoration target 31,7 ha.	9 (8, but two smaller ones were combined to longer one) camps organized, 68 days, 54 ha restored. Smaller volunteer happenings “talkoot” in actions C1. & C2.	Objectives met. Restoration camps have been organized successfully. The camps have had high media visibility.
D1. Monitoring of restoration sites	Monitoring of actions C1, C2 and C4 on all restoration sites	Monitoring of actions C1, C2 and C4 on all restoration sites.	Objectives met.

D2. Impact assessment on socio-economy and ecosystem functions	1) description of ecosystem functions, 2) new tool for examining socio-economic impacts, 3) assessing the impacts of restoration on recreational use.	1) description of ecosystem functions, 2) new tool for examining socio-economic impacts, 3) assessing the impacts of restoration on recreational use.	Objectives met. There was a certain need for better tool to examine socio-economic impacts of the actions.
E1. Media Cooperation	Project presented in different media at least 175 times.	Project presented in different media 184 times.	Objectives exceeded. The project, LIFE and the values of mires and the N2000 network were very well visible in media throughout the project period.
E2. Audiovisual materials	Audiovisual presentation by 31.12.2018	AV presentation completed in 2018.	Objectives met. The AV presentation is online in YouTube to present the project, LIFE and the N2000 network.
E3. Project communication	Website with 4 000 visits, project in social media 50 times, 40 photos bought, 1-3 short video clips, Lay-man's report	Website with 22 322 visits, project in social media 318 times, 40 photos bought, 2 short video clips, re-photography photos from sites, Lay-man's report.	Objectives met. Produced material/services effectively disseminated information on the projects progress and results during the project.
E4. Notice boards	Semi-permanent notice boards for 10-15 sites and temporary boards in 69 project sites.	93 temporary and 13 semi-permanent notice boards in 69 project sites.	Objectives met. The temporary boards highlighted the project, LIFE and N2000 network during the project and the semi-permanent boards will continue to do so for many years to come.
E5. Restoration trail	Restoration trail with 5 info boards.	Restoration trail with 2 big, 4 small & 9 smaller info boards.	Objectives met. The trail has been popular destination to hikers, nice trek, with lots of information.
F1., F2., F3., F4., F5. & F6 Project management MH, HAMK, POSELY, WWF, UPM & HAMK	Fluent management of the project at all the beneficiaries.	Fluent management of the project at all the beneficiaries.	Objectives met. Even though the change of the PM twice is not the best option on smooth management. Frequent contact between the PM and project staff ensured the timely progress of the project.
F7. Networking	SER Europe congress and Eurosite congress. Active networking with other projects.	SER Europe congress and Eurosite congress. F7. LIFE Platform meetings & several other congresses and workshops.	Objectives exceeded. The project attended in congresses and workshops actively. The networking and knowledge sharing were effective and gave lots of information and inspiration for project implementation. The project, LIFE and N2000 network were highlighted in the networking.

F8. Audit	Audit report to be attached to the FR.	Audit report attached to the FR.	Objectives met.
F9. After-LIFE conservation plan	After-LIFE conservation plan to be attached to the FR.	After-LIFE conservation plan attached to the FR.	Objectives met.

Chart 6. Evaluation of the project

The dissemination work in the project was highly successful and effective and there were no major drawbacks. The project, LIFE and Natura 2000 network were present in all traditional medias – TV, radio, national, regional and local newspapers– at least 184 times during the project. In the project’s webpage there has been already over 22 000 visits and in the social media #paahdelife and #lightandfirelife have been visible in Facebook, Instagram and Twitter.

The audiovisual presentation and short videos are permanently available in You Tube. The semi-permanent notice boards and restoration trail are in popular recreational areas and they will ensure that good work and the best practices of the project LIFE funding and Natura 2000 network were spread widely also long after the project has ended.

5.4 Analysis of long-term benefits

Most of the restoration actions either targeted the HD Annex I habitats, either increasing their favourable status or keeping it up, or they targeted to habitats that were degraded, and could change to HD Annex I habitats immediately or towards them on slower progress. Project conducted restoration actions on 1 124 ha of habitats, from which 458 were conducted in the identified HD Annex I habitats. 433 ha were done in degraded forest habitats, that changed after prescribed burning to habitat 9010 Western Taiga. The conservation status of the restored habitats per site by site in annex 305.

In some sites, the habitats were representing 2 HD Annex I habitats in the same time. The common situation is in esker forests, they represent in primary the type 9060 Coniferous forests on, or connected to, glaciofluvial eskers, forests and if the forests are natural enough, they represent secondly habitat type 9010 Western Taiga. The site 9. Örö is in the top priority, when coming to biodiversity richness and actions’ importance of this project, almost the whole island is representing in primary the type 1610 Baltic esker islands with sandy, rocky and shingle beach vegetation and sublittoral vegetation and in addition the same sites were secondly representing another HD Annex I habitats, totally 12 different of them in the targeted restoration actions. HD Annex I habitats’ hectares targeted by restoration actions do differ from the real conducted hectares, because in many sites, the 1 ha multiplies in 2 ha, because both existing HD Annex I habitats do benefit from the action.

In general action C1 was carried out mainly in former commercially utilized forest stands, that were not fulfilling the criteria for habitat type 9010 Western Taiga. These forests were burned to increase their biodiversity value and to restore them to the habitat type 9010, so after the burning they were classified immediately as 9010 Western Taiga. Some of the prescribed

burnings were conducted in already existing habitat type 9010 or and type 9060 Coniferous forests on, or connected to, glaciofluvial eskers. Burning in these habitats, the aim was to improve the ecological quality and representativeness of the habitat types, and to enhance natural fire regime in N2000 areas. After the burning the representativeness of the habitat types improved.

Action C2 was divided on two sections, one dealt with inland eskers and their habitats and the other with numerous coastal habitats.

In eskers the target habitat was type 9060 Coniferous forests on, or connected to, glaciofluvial eskers. The aim of these actions was to improve the ecological quality and representativeness of the habitat types, especially the sun lit habitats of eskers. These are endangered habitats and they were restored by burning, removing the trees and bushes, removing the litter layer, lichen, moss and other excess vegetation and revealing the mineral soil. In these habitats the *Pulsatilla patens* habitat restoration and translocation was also conducted C5. The long and difficult process of translocation could not have been done without the extra funding of LIFE. It was experimental, but really successful action.

In coastal sites, the target habitats of actions C2 & C4 were: and 1210 Annual vegetation of drift lines, 1220 Perennial vegetation of stony banks, 1610 Baltic esker islands with sandy, rocky and shingle beach vegetation and sublittoral vegetation, 1630 *Boreal Baltic coastal meadows, 1640 Boreal Baltic sand beaches with perennial vegetation,) (*important orchid sites), 2110 Embryonic shifting dunes, 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes), 2130 *Fixed coastal dunes with herbaceous vegetation (grey dunes), 2140 *Decalcified fixed dunes with *Empetrum nigrum*, 2180 Wooded dunes of the Atlantic, Continental and Boreal region, 2190 Humid dune slacks, 2320 Dry sand heaths with *Calluna* and *Empetrum nigrum*, 4030 European dry heaths, 6210 Seminatural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) and 6270 *Fennoscandian lowland species-rich dry to mesic grasslands. These are endangered habitats and they were restored in many different techniques: by burning, removing the trees and bushes, removing the litter layer, lichen, moss and other excess vegetation, cutting the hay, grazing, with machine work and revealing the mineral soil. In some site the actions had to be repeated in several years a row, to achieve the results.

In the GA the suggestion was that the project will also conduct restoration actions on 0,1 ha of 6280 Nordic alvar and precambrian calcareous flatrocks* in Site 8. Seksmiilarin saaristo and 1,1 ha of 9030 *Natural forests of primary succession stages of landupheaval coast in Site 9. Örö. These nature types were not the real target habitats of the project, because of the wrong information in original nature type data.

In site 8. Type 6280 was at first typed incorrectly on the field, the closer inventions showed up that the nature type in real is 6210 Seminatural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*), not 6280.

In site 9. The nature type 9030, was used at first in some sites as second or third nature type, but with closer inventions and common agreement resulted, that the nature type 9030 does not exist in real in Örö island, because of the really slow land rising and the history of planted trees and intense grazing.

In the action C2 the target was also to eradicate and destroy alienate species *Rosa rugosa*. This was done in many sites, in many habitats, total area covering over 6 ha. Some of the areas were totally covered with *Rosa*, some plants were just individuals. Many different

techniques were used from excavating, covering, uprooting, wilting and in some sites also poisoning. The actions had to be repeated in several years, to achieve the results. The poisoning was done only in sites, where there was no delicate, endangered species around the Rosa bushes. These long and quite expensive actions, (the sites are mainly on the islands, you need always boat etc.) could not be done without the extra funding of LIFE.

The *Thymus* translocation was done in 3 sites of sun lit habitats, one in esker forest and two in coastal sun lit habitats. This quite long and experimental process could not be done without the extra funding of LIFE.

In some sites the restoration actions are especially effective. This kind of site is for example the site 9. Örö. Örö is in the top priority, when coming to biodiversity richness and actions' importance of this project, there were 13 different HD Annex I habitats targeted of the restoration actions. In this project we could take almost the whole island and concentrate to the most endangered and suffering habitats. We made the planning and restoration actions as a whole and it was both cost efficient as efficient to the nature.

The similar situation was with the *Pulsatilla patens* and their habitat network on 7 N2000 sites. They were invented, planned and restored as a unity. And so was the translocation process also done. This ensured the best practices and cost efficiency.

Then in the different level, there are several big Natura 2000 sites around the country, where the prescribed burning was carried out in relatively small areas. So, the effect alone in one N2000 site is not so big, comparing to Örö, or other biodiversity hot spots. Still these burned areas are and will be important parts of the fire continuum network, where the endangered fire dependent or fire preferential species live. But in the average, if we compare the sites and the actions done in them, we can make them in some kind importance order. But even the less important actions and sites are extremely precious on this fight toward the biodiversity loss.

These expensive restoration actions in many sites and habitats could not have been done in this level and intensity and effectivity without the funding from LIFE. It is important to see the big picture and it is effective to run the actions as coordinated project.

Dissemination of the topics related to nature conservation, restoration, habitats and species, LIFE funding and Natura 2000 network has been active and effective. In all the levels we have had positive vibes leading the dissemination, even though there were some struggles.

The situation with targeted habitats and species seems better in the restored sites. Of course, all the effects could not be seen yet and there are still threats left. Threat is that there is no funding or skills to carry on prescribed burnings, the sun lit habitats of esker forests are not recognized, the shading and too much nutrition will degrade the habitats, the ignorant people will pick and cave the *Pulsatilla patens*. The work for the habitats and species continues within all the beneficiaries, throughout the budget funding and via other LIFE projects, HELMI- and METSO -funding. The prescribed burning of the forests is essential to carry on, same goes with the restoration of the sun lit and beach habitats, that are not restored yet. The *Pulsatilla patens* still need more habitats to grow. And the knowledge and awareness of the nature must be maintained and developed.

There are also social benefits of the nature and restoration. Positive effects on employment are seen, restoration actions carried out have significant impact on local economies and employment. Lately there has been lots of studies about the health impacts of the nature. They show clearly that the nature has major effects on the physical and mental health and immune

system of the people. The Covid-19 crises has risen the value of nature even more and the attitudes on nature conservation are getting more positive all the time.

6. Comments on the financial report

6.1. Summary of Costs Incurred

Budget category	Budgeted total	Final costs	%
Personnel	2 100 816	2 061 097	98
Travel	306 109	336 602	110
External assistance	1 049 366	1 100 670	105
Land acquisition	150 000	160 000	107
Durable goods	38 925	62 291	160
Consumable material	149 884	147 098	98
Other costs	11 359	22 150	195
Overheads	255 951	261 034	102
TOTAL	4 062 410	4 150 943	102

Chart 7. Project costs incurred.

The actual real costs were higher than in budgeted, but the excess costs comparing the budgeted are beneficiaries’ own contribution. All project objectives are achieved, some of them seemed to be more expensive than thought. The prices in overall have risen. There have been some minor changes between the cost categories, but they are all under the threshold set in article 15 of the Common Provisions. Only the cost category Travel, is “tickling the limits.

The cost category travel was underbudgeted. Finland is big country with long distances, and sites are away from each other’s. The prices in overall have risen, also. All the travel costs were necessary and well justified, seemed that the budget was just underestimating them.

The cost category external assistance was underbudgeted. Most of the cost in this category were machine work for the restoration actions. The work was tended out and seemed that the budget was just underestimating them. The prices in overall have risen. All the external assistance costs were necessary and well justified.

The cost category durable goods was underbudgeted. We had lots of problems with conducting the action C1. Prescribed burnings of the forests. The heavy burning arsenal gear broke down and there were situations, where more burning arsenal was needed in the same time in many places. We had to do more purchasing. All the equipment stays in nature conservation use, and they will be used in future prescribed burnings. All the durable goods costs were necessary and well justified.

The cost category other costs was underbudgeted. The costs in this category are mainly the service and refreshments in meetings, volunteer gatherings, especially in the prescribed

burnings, advertisements of the events on the newspapers etc. We underestimated the costs of these occasions, but all the other costs were necessary and well justified.

6.2. Accounting system

All beneficiaries have analytical accounting system. The project has a project numbers in all beneficiaries, which are used to account all costs related to the project. All beneficiaries have also been advised to account the costs to action level when possible. The PM prepared financial monitoring guidelines for accounting the project costs at MHPWF. The guidelines have also been sent to the associated beneficiaries. The PM has had meetings with the project coordinators and financial staff. During the meeting the accounting and financial monitoring (e.g. use of timesheets) and reporting requirements were discussed in detail. In MHPWF a special tool collecting information on various accounting sources (salary software, invoicing software, travel invoice software), for monitoring the costs of the project at action and site level have been developed and used.

The descriptions of the beneficiaries' accounting systems and revisions of them, have been delivered to the EC as annexes of the InR and PRII. All the beneficiaries' accounting systems were under the audit of the accounts and got good evaluations.

The invoices related to the project are entered a separate cost centre with a project code. All the invoices go through an approval process before the payment. They are checked by the subscriber and approved by the head of the programme (e.g. Conservation programme, Communication department etc.).

The person responsible for approval will also assign invoices to the project cost centre. The invoices related to the project include a reference code used at the European Commission, hence "LIFE13/NAT/FI/000099" and the text: "Light & Fire LIFE" or "Paahde LIFE". If they did not contain this code, a new invoice was asked. Once approved, the invoices are further processed and paid in the Finance Department. Travel costs of all beneficiaries are reimbursed according to the Finnish tax legislation based on the invoices and receipts submitted by the employee.

The project beneficiaries used excel-based timesheets to register the hours devoted to the project. These timesheets were signed by the employee and approved and signed by his/her superior, on the beginning of the subsequent month. The salaries were then transferred to the project cost centre within the accounting system based on the approved timesheets.

6.3. Partnership arrangements

The beneficiaries set the rules and arrangements to reporting between Coordinating beneficiary and associated beneficiaries in Partnership Agreements (see Chapter 4). All partnership agreements delivered to the commission as annexes in InR and MtR. All Partnership Agreements followed the Guidelines of the Commission. The Associated beneficiaries entered the information to the financial tables themselves and sent them to the Coordinating beneficiary regularly. The financial transaction was accomplished after actualized and reported costs.

6.4. Auditor's report/declaration

The external auditor for Metsähallitus Parks & Wildlife is:

KPMG Oy
Töölönlahdenkatu 3 A
00100 Helsinki
PL 1037, 00101 Helsinki Finland.

All the project's beneficiaries were audited. The auditor's report is attached as annex 218. The conclusion of the audit signed 30.10.2020 in Helsinki Finland by Tuomas Koskenniemi, Authorized Public Accountant is:

“On the basis of the financial control, in accordance with the programme described above, we consider that we have obtained reasonable assurance that the financial report of project no LIFE13/NAT/FI/000099, title: Light & Fire LIFE, start date 1.8.2014, end date 31.7.2020, gives a true and fair view of the expenses, income and investments incurred/made by Metsähallitus Luontopalvelut, Park & Wildlife Finland, Metsähallitus Forestry Oy, North Savo Centre for Economic Development, Transport and the Environment, UPM-Kymmene Corporation, The Finnish Forest Centre, Häme University of applied Sciences Ltd and World Wide Fund for Nature, Suomen rahasto in connection with the abovementioned project within the time limit laid down by the Commission and in accordance with the LIFE+ Programme Common Provisions, the national legislation and accounting rules.”

6.5 Summary of costs per action

In the chart below, there is summary of the costs per action, compared to the budgeted. This chart is available also as excel annex 306.

Action	Foreseen costs, €	Final costs, €	%
A1. Restoration plans	477 452	451 563	95
A2. Management plans and fire continuum plans	285 671	244 253	86
A3. Monitoring and communication plans	24 020	8 762	36
A4. <i>Pulsatilla patens</i> translocation and monitoring plan	5 218	5 871	113
A5. Preparatory training	67 848	77 685	114
B1. One-off compensation payment in Hällämönharju-Valkeiskangas	150 000	160 000	107
C1. Restoration / controlled burning	632 649	837 776	132
C2. Restoration of sun-lit habitats	762 331	894 361	117
C3. Tree removal	229 568	338 939	148
C4. Restoration of Baltic sandy beaches	60 306	101 408	168
C5. Habitat restoration and translocation of <i>Pulsatilla patens</i>	46 071	36 118	78
C6. Restoration camps for volunteers	178 770	151 069	85
D1. Monitoring of restoration sites	16 415	28 424	173
D2. Impact assessment on socio-economy and ecosystem functions	1 635	7 209	441
E1. Media cooperation	41 450	9 938	24
E2. Audiovisual materials	14 625	20 847	143
E3. Project communication	39 375	20 334	52
E4. Notice boards	21 225	10 205	48
E5. Restoration trail	11 215	9 179	82
F1. Project management MH	657 943	358 418	54
F2. Project management SMK	9 516	18 400	193
F3. Project management WWF	7 248	9 574	132
F4. Project management POSELY	7 842	8 313	106
F5. Project management UPM	9 516	10 328	109
F6. Project management HAMK	6 366	18 444	290
F7. Networking	27 184	24 298	89
F8. Audit	15 000	28 191	188
F9. After-LIFE conservation plan	0	0	0
Overheads	255 951	261 034	102
TOTAL	4 062 410	4 150 944	102

Chart 8. summary of the costs per action, compared to the budgeted

In A-actions, the costs were quite well estimated in the budget. In the biggest A actions: A1. Restoration plans and A2. Management plans and fire continuum plans, the budgets were little bit too big, especially in A2. But the estimation of costs of the planning is hard, when there are lots of sites, employees and different kind of needs. You must use the arithmetic mean cost in the budgeting, and it hardly ever matches. In the action A3 Monitoring and communication plans the budget was estimated too big. The action was implemented well with far less costs. Small, but important action A4 *Pulsatilla patens* translocation and monitoring plan was quite well budgeted. So was Action A5 Preparatory training, even though, the costs were some higher than budgeted.

In C-actions, the costs were estimated too low in the budget. Especially in action C1 Restoration / controlled burning, C3 Tree removal and C4 Restoration of Baltic sandy beaches. These actions are dependent on machine work. And that is why lots of the costs were dependent also on competitive tendering. There was also lot of man work. The estimation of costs of the actions is hard, when there are lots of sites, lots of hectares, employees and different kind of needs. You must use the arithmetic mean cost in the budgeting, and it hardly ever matches. Also, the final areas restored, were little bit bigger than assumed, though that was done only for essential needs on the sites. In chart below, are the mean prices per hectare in different C-actions. All the “big” actions’ (from C1 to C4) costs were underestimated in the budget. Though, all the costs are real and essential and work carried put effectively. But for the future restoration actions, this information about the restoration costs is essential. Actions C5 Habitat restoration and translocation of *Pulsatilla patens* and Action C6 Restoration camps for volunteers were quite well estimated in the budget and the costs remained lower than budgeted.

	Estimated, € per ha	Final costs, € per ha
C1. Restoration / controlled burning	1 349	1 720
C2. Restoration of sun-lit habitats	2 209	2 328
C3. Tree removal	1 560	1 914
C4. Restoration of Baltic sandy beaches	9 124	9 477
C5. Habitat restoration and translocation of <i>Pulsatilla patens</i>	5 357	2 150

Chart 9. The mean prices per hectare in different C-actions

In D-actions, the costs were estimated too low in the budget. At first, there was no clear idea of implementation of the actions. When it was designed, the cost of the actions was exceeding the budgeted. But the monitoring the restoration actions and socio-economic effects is important, and the actions were carried out, even though with little higher costs. In action D1 Monitoring of restoration sites, the costs exceeded the budgeted mainly because of the higher salary costs than expected. Especially the C1 action’s monitoring was time consuming on the sites. Action D2 Impact assessment on socio-economy and ecosystem functions was totally designed during the project, and implementation was good and gave new information.

In E-actions, the costs did not reach the budget, except the action E2 Audiovisual materials, which was more expensive than expected. The other E actions had brilliant results, with quite low costs.

In F-actions, the costs totally did not reach the budget, but there were some differences between the beneficiaries. The coordinating beneficiary reached only 54 % of the budgeted in action F1 Project management MH. There are some reasons for that, the PMs did also other actions and their costs were registered in those actions. The salary of the PM is maybe not in the right level, considering the workload. Maybe that workload could have been divided to PM and planning officer, doing work for the project. Anyway, the project was success and even saved money in this action, so it could be used in other actions, like real restoration. In the other hand, the project management of associated beneficiaries were budgeted too low. It seems that the tough regulation of LIFE projects causes lots of extra work also for financial secretaries etc. in the organizations, and that was not foreseen in budget.

Action F8 Audit was far more expensive than assumed. The auditor was tendered out by the coordinating beneficiary and the cost is real, after long and precise audit.

7. Annexes

7.1 Administrative annexes

All partnership agreements have been delivered to the commission as annexes in Inception Report (HAMK, POSELY, SMK, WWF, UPM) and as annex in Midterm Report (MHF).

7.2 Technical annexes

- Annex 1. Light & Fire project sites (1-69)
- Annex 2. The updated list of deliverables
- Annex 3. Light & Fire LIFE_Gantt chart
- Annex 4. The members of the PSG and the PG and the meeting dates of the both groups
- Annex 5. The memo of the PSG meeting_10.10.2019
- Annex 6. The memo of the PSG meeting_8.6.2020
- Annex 7. The memo of the partial PG meeting_5.2.2019
- Annex 8. The memo of the partial PG meeting_7.2.2019
- Annex 9. The memo of the partial PG meeting_8.2.2019
- Annex 10. The memo of the partial PG meeting_4.11.2019
- Annex 11. The memo of the partial PG meeting_7.11.2019
- Annex 12. The memo of the partial PG meeting_20.11.2019
- Annex 13. Responses to the Commission Letters
- Annex 14. Light&FireLIFE_Actions_A
- Annex 21. Qualification of MP of site 20. Maakylä-Räyskälä
- Annex 24. Light&FireLIFE_Actions_C
- Annex 107. Report of the extra actions site 49.SMK
- Annex 108. Action C3
- Annex 121. Action C5. Pulsatilla planting and monitoring
- Annex 122. Action C6_camps for volunteers
- Annex 123. Action D1_monitoring the sites
- Annex 217. Networking
- Annex 304. Chart of the infoboards on the sites
- Annex 305. Light&Fire LIFE_N2000 habitat types per site
- Annex 307. Light&FireLIFE Final outcome indicator tables
- Annex 419. The list of annexes

7.3 Dissemination annexes

7.3.1 Layman's report

- Annex 275. Light&Fire Life Laymans report_FIN
- Annex 276. Light&Fire Life Laymans report_EN

7.3.3 Other dissemination annexes

- Annex 222. Media Coverage_Light&Fire LIFE
- Annex 223. Press releases
- Annex 224. Hankolainen_20.6.2019
- Annex 225. Hämeen Sanomat_elokuu 2020
- Annex 226. Lehdistöiedote_kulotus_110619_UPM
- Annex 227. Lehtijuttu 20.8. Pyssyharju
- Annex 228. Lehtijuttu 20.8.jatkoa Pyssyharju
- Annex 229. Maaseudun Tulevaisuus_11.6.2019
- Annex 230. Osakesijoittaja_UPM_Loppi_11.06.2019
- Annex 231. Suojelutyöllä on vaikutusta_YLE_3.2019
- Annex 232. Suomussalmi_poltto_17.6.2019
- Annex 233. Evon kulotus_Itä-Häme
- Annex 234. Evon poltot_mielipidekirjoitus_8_2020_Hämeen Sanomat
15.1.2019_Hämeen Sanomat
- Annex 235. 2019_06_06_Ylä_Kainuu_Sydänmaanaro
- Annex 236. 2019_06_13_Forssan_lehti_Liesjärvi_poltto
- Annex 237. 2019_06_13_Savon Sanomat_Älänne
- Annex 238. 2019_06_14_YLE_uutiset_Metsähallitus_polttaa_Rautavaaralla
- Annex 239. 2019_06_20_Seura_Hangon_pyhät_petäjät
- Annex 240. 2019_09_10_Hämeen_Sanomakylmäkukka
- Annex 241. 2019_09_12_YLE_hämeenkylmäkukan_hoito
- Annex 242. Forssan lehti_15.1.2019
- Annex 243. Hangö Tidningen_4.6.2019
- Annex 244. Hangö Tidningen_20.6.2019
- Annex 245. Hangö Tidningen_9.4.2020
- Annex 246. Hangötidningen_18.4.2019
- Annex 247. Hankolainen_18.4.2019
- Annex 248. Hankolainen_20.6.2019
- Annex 249. svenska yle kevät 2019_somekeskustelu tulliniemestä
- Annex 250. Tulliniemi WWF tiedote_06_2019
- Annex 251. Tiedote_Ennallistamispoltto Älänneellä_14.6.2019
- Annex 252. Tiedote_Tulliniemenrannalle puinen kulkutie_2020
- Annex 253. Tulliniemi WWF tiedote_2019
- Annex 254. Tulliniemi_pitkokset_Hankolainen_2906_2020
- Annex 255. Tullstranden_15.3.2019_Svenska YLE_www
- Annex 256. Tullstranden_17.4.2019_Svenska YLE_www
- Annex 257. VUOSI LUONNOSSA_Liesjäven poltto_22.5.2019
- Annex 258. Västra Nyland_24.4.2020
- Annex 259. Västra Nyland_3.5.2019
- Annex 260. VÄSTRA NYLAND_18.4.2019
- Annex 261. YLE Savonlinnassa kulotettiin metsää_20.5.2019
- Annex 262. YLE Svenska_30.4.2019
- Annex 263. YLE västnyland_9.6.2019
- Annex 264. YLE_Tulliniemi_20.6.2019
- Annex 265. Examples for project visibility in SoMe
- Annex 266. 40 photos of Light and Fire LIFE Project_info
- Annex 267. The 40 photos of Light & Fire project_folder
- Annex 268. Site 1. Tammisaaren Re-photography

Annex 269.	Site 2. Tulliniemen Re-photgraphy
Annex 270.	Site 8. Seksmiilarin Re-photgraphy
Annex 271.	Site 24. Itäisen Suomenlahde Re-photgraphy
Annex 272.	Site 40. Uudenkaarlepyyn Re-photgraphy
Annex 273.	Site 50. Litokaira Re-photgraphy
Annex 274.	Site 67. Martimoaapa Re-photgraphy
Annex 277.	Site 6. Uudenkaupungin infoboards
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Annex 279.	Site 10. Aurinkovuori SMK infoboard
Annex 280.	Site 20. Maakylä-Räyskälä SMK infoboard
Annex 281.	Site 24. Itäisen Suomenlahden infoboard
Annex 282.	Site 26. Kakonsalon UPM infoboard
Annex 283.	Site 30. Suurlahden infoboard
Annex 284.	Site 31. Pyörissalo infoboard
Annex 285.	Site 36. Älänne infoboard
Annex 286.	Site 37. Isojuurikan infoboard
Annex 287.	Site 37. Iso-Juurikan SMK infoboard
Annex 288.	Site 40. Uudenkaarlepyyn infoboard
Annex 289.	Site 43. Salamajärvi infoboard
Annex 290.	Site 47. Etelä-Kuusamon infoboard
Annex 291.	Site 48. Oulanka infoboard
Annex 292.	Site 49. Rokua SMK infoboard
Annex 293.	Site 51. Olvassuo infoboard
Annex 294.	Site 54. Latvakorte-Kärppävaara infoboard
Annex 295.	Site 55. Kylmäluoma infoboard
Annex 296.	Site 58. Lentua infoboard
Annex 297.	Site 60. Sydänmaanaro infoboard
Annex 298.	Site 61. Mäntypuro infoboard
Annex 299.	Site 63. Riisitunturi infoboard
Annex 300.	Site 64. Mustarinnantunturi infoboard
Annex 301.	Site 67. Martimoaapa infoboard
Annex 302.	Site 2. Tulliniemi semi permanent infoboard
Annex 303.	Site 28. Punkaharju semi-permanent infoboard

7.3.4 Annexes which are deliverables

Annex 15.	Restoration plan of site 2. Tulliniemi
Annex 16.	Restoration plan of site 15. Matinsilta_extra
Annex 17.	Restoration plan of site 29. Pyssyharju UPM
Annex 18.	Restoration plan of site 49. Rokua_SMK_extra
Annex 19.	Cultural history inventory of site 2. Tulliniemi
Annex 20.	Master Plan of site 20. Maakylä-Räyskälä
Annex 22.	NATA of site 20. Maakylä-Räyskälä
Annex 23.	Fire continuum plan site 0. Multarinmeri
Annex 25.	Map of the site 3. Nuuksio
Annex 26.	Map of the site 3. Nuuksio_more precise
Annex 27.	Map of the site 7. Kolkansuo
Annex 28.	Map of the site 16. Seitsemäinen
Annex 29.	Map of the site 19. Evo

Annex 30. Map of the site 20. Maakylä-Räyskälä_UPM
Annex 31. Map of the site 21. Helvetinjärvi
Annex 32. Map of the site 22. Liesjärvi
Annex 33. Map of the site 26. Kakonsalo
Annex 34. Map of the site 26. Kakonsalo_UPM
Annex 35. Map of the site 27. Kujjärvi-Sonnanen
Annex 36. Map of the site 30. Suurlahden lampialue
Annex 37. Map of the site 32. Sorsaveden saaristo
Annex 38. Map of the site 32. Sorsaveden saaristo_precise
Annex 39. Map of the site 36. Älänne_C1
Annex 40. Map of the site 41. Peuralamminneva
Annex 41. Map of the site 42. Suurisuo-Sepänsuo-
Annex 42. Map of the site 43. Salamajärvi
Annex 43. Map of the site 46. Veneneva-Pelso
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Annex 47. Map of the site 50. Litokaira
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Annex 49. Map of the site 51. Olvassuo
Annex 50. Map of the site 52. Törmäsenrimpi-
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Annex 52. Map of the site 55. Kylmäluoma
Annex 53. Map of the site 56. Niittysuo-Siiransuo
Annex 54. Map of the site 57. Torvensuo-Viidansuo
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Annex 58. Map of the site 61. Mäntypuro
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Annex 61. Map of the site 63. Riisitunturin_precise
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Annex 69. Map of the site 1. Tammisaaren
Annex 70. Map of the site 1. Tammisaaren_precise
Annex 71. Map of the site 2. Tulliniemen
Annex 72. Map of the site 4. Hämeen kangas
Annex 73. Map of the site 5. Säköjärvi
Annex 74. Map of the site 6. Uudenkaupungin_C2
Annex 75. Map of the site 8. Seksmiilarin
Annex 76. Map of the site 8. Seksmiilarin_precise
Annex 77. Map of the site 9. Öro_part1
Annex 78. Map of the site 9. Öro_part2
Annex 79. Map of the site 10. Aurinkovuori

- Annex 80. Map of the site 10. Aurinkovuori_SMK
- Annex 81. Map of the site 13_Vatulanharju-_SMK
- Annex 82. Map of the site 18. Porttilanharju_C5
- Annex 83. Map of the site 20. Maakylä-Räyskälä_SMK
- Annex 84. Map of the site 23. Kaukolanharju_UPM
- Annex 85. Map of the site 24. Itäisen Suomalahden_C2
- Annex 86. Map of the site 25. Kyläniemi_SMK
- Annex 87. Map of the site 28. Punkaharju
- Annex 88. Map of the site 29. Pyssyharju_UPM
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- Annex 90. Map of the site 33. Hällämöharju-
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- Annex 99. Map of the site 40. Uudenkaarlepyyn
- Annex 100. Map of the site 40. Uudenkaarlepyyn_precise
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- Annex 102. Map of the site 45. Hailuoto_precise1
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- Annex 111. Map of the site 20. Maakylä-Räyskälä_MH_C5
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- Annex 116. Map of the site 11. Kyöpelinvuori-_C5
- Annex 117. Map of the site 12. Ruskeamullanharju_C5
- Annex 118. Map of the site 14. Ahvenistonharju_C5
- Annex 119. Map of the site 15. Matinsilta_C5
- Annex 120. Map of the site 17. Tunturivuori_C5
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Annex 152. Site 21. C1_Monitoring_2
Annex 153. Site 21. C1_Monitoring
Annex 154. Site 22._C1_Monitoring
Annex 155. Site 22._C1_Monitoring_2
Annex 156. Site 23._C2_UPM_Monitoring
Annex 157. Site 26._C1_UPM_Monitoring
Annex 158. Site 24._C2 & C4_Monitoring
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Annex 160. Site 25._C2_SMK_Monitoring
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Annex 171. Site 32._C1_Monitoring
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Annex 176. Site 37._C2_Monitoring
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Annex 178. Site 38._C2_SMK_Monitoring
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Annex 202.	Site 58._C1_Monitoring
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Annex 205.	Site 61._C1_Monitoring
Annex 206.	Site 62._C1_Monitoring
Annex 207.	Site 63._C1_Monitoring
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Annex 209.	Site 65._C1_Monitoring
Annex 210.	Site 66._C1_Monitoring
Annex 211.	Site 66._C1_Monitoring_2
Annex 212.	Site 66._C1_Monitoring_3
Annex 213.	Site 67._C1_Monitoring
Annex 214.	Site 68._C1_Monitoring
Annex 215.	Site 69._C1_Monitoring
Annex 216.	Socio-economic impacts
Annex 219.	Light&Fire LIFE_After LIFE conservation plan

7.4 Final table of indicators

The final outcome indicators' table as annex 307.

8. Financial report and annexes

'The Standard Payment Request and Beneficiary's Certificate' is duly signed and the electronic copy submitted with this report, annex 308.

The coordinating beneficiary MHPWF, that is the only beneficiary having durable goods within the budget, has signed the 'Beneficiary's Certificate for Nature Projects' and 'Consolidated Cost Statement for the Project' and the electronic copies submitted with this report annexes 309 & 310.

All project beneficiaries (CB and ABs) are using the financial forms at the LIFE homepage. The signed Financial Statements of the Individual Beneficiaries are completed for each project beneficiary and the electronic copies included with this report. The signed pages alone as pdf forms as annexes 311-317 and the whole financial statements as excel forms annexes 318-324.

Auditor's report using the standard reporting format as annex 218.

Supporting documents, and further information or clarifications, which are requested in previous letters from the Commission as information and answer in annex 13 and additional annexes 325-418.

MHPWF

Personnel costs:

Seemed that the expected daily rate cost of the communication officers is totally wrong calculated for budget, because they are all too low, comparing to the real costs. Anyhow, the costs are real and relevant for the project.

Seemed that the expected daily rate cost of the conservation biologist is calculated too low for the budget, because they are all too low, comparing to the real costs. Only the youngest ones, with the beginning salary, not so big stayed around the assumed daily rate cost. Anyhow, the costs are real and relevant for the project.

Equipment:

Heavy burning arsenal and other gear needed in the burnings were purchased more than we thought in GA. The burning season is very short in every summer, and there are long distances between the areas and shortage of the equipment and experienced staff. We needed to have several burning gears in use in the same time. We also had to purchase new gear due to breaking up the pumps and hoses. All the burning equipment purchased stays in use for the restoration actions in Natura 2000 sites throughout the country.

In the chapters 6.1. & 6.5. there are lots of information about the costs incurred.

UPM

Personnel costs:

There were unseen personal costs of the salaries of trainees. They were doing the same work as planning officers, but in the summertime, they were substitutes for the planning officers on holidays and essential for the actions carried out successfully.

8.1 Financial annexes

8.1.1 Signed documents:

- Annex 308. LightFireLIFE_Standard Payment Request_signed
- Annex 309. Light&Fire LIFE_Beneficiarys certificate_signed
- Annex 310. LightFire LIFE_consolidated statement_signed
- Annex 311. Light&Fire LIFE_Individual Cost Statemnt_MHPWF_signed
- Annex 312. LightFire LIFE_Individual_Cost_Statement_SMK_signed
- Annex 313. LightFireLIFE_Individual_Cost_Statement_POSELY_signed

- Annex 314. Individual cost statement_HAMK_signed
- Annex 315. Light&Fire LIFE_Individual Cost Statemnt_MHF_signed
- Annex 316. LightFireLIFE_Individual_Cost_Statement_WWF_signed
- Annex 317. LightFireLIFE_Individual_Cost_Statement_UPM_signed

8.1.2 Financial reports of the beneficiaries

Those signed documents above in pdf form, so the real excel sheets of financial statements of the beneficiaries are: (*The Annexes in cursive form are confidential*)

- Annex 318. LightFire LIFE_financial_reporting_MHPWF*
- Annex 319. LightFire LIFE_financial_reporting_SMK*
- Annex 320. Light&Fire LIFE_Financial_reporting_POSELY*
- Annex 321. Light&Fire LIFE_Financial_reporting_HAMK*
- Annex 322. Light&Fire LIFE_Financial_reporting_MHF*
- Annex 323. Light & Fire LIFE_financial_reporting_WWF*
- Annex 324. Light & fire LIFE_financial reporting_UPM*

8.1.3. The other financial documents

- Annex 13. Responses to the Commission Letters
- Annex 218. Light & Fire LIFE_audit_report
- Annex 306. Light&FireLIFE_Costs per action
- Annex 325. MHPWF_contract_Penttinen Jouni 1.8.-31.12.2014*
- Annex 326. MHPWF_contract_Penttinen Jouni 1.1.2015*
- Annex 327. MHPWF_Contract_Penttinen Jouni 1.1.2016-*
- Annex 328. MHPWF_salary slips_Penttinen Jouni 2014-2019*
- Annex 329. MHPWF_timesheets_Penttinen Jouni*
- Annex 330. MHPWF_Contract_Haapalehto Tuomas 1.1.2016-*
- Annex 331. MHPWF_Salary slips_Haapalehto tuomas 2016-17*
- Annex 332. MHPWF_timesheets_Haapalehto Tuomas*
- Annex 333. HAMK Employment contract Lindberg*
- Annex 334. HAMK Salary statement Lindberg Henrik 2014*
- Annex 335. HAMK Salary statement Lindberg Henrik 2015*
- Annex 336. HAMK Salary statement Lindberg Henrik 2016*
- Annex 337. HAMK Salary statement Lindberg Henrik 2017*
- Annex 338. HAMK Salary statement Lindberg Henrik 2018*
- Annex 339. HAMK Salary statement Lindberg Henrik 2019*
- Annex 340. HAMK Salary statement Lindberg Henrik 2020*
- Annex 341. HAMK Ts Lindberg 2014*
- Annex 342. HAMK Ts Lindberg 2015*
- Annex 343. HAMK Ts Lindberg 2016*
- Annex 344. HAMK Ts Lindberg 2017*
- Annex 345. HAMK Ts Lindberg 2018*
- Annex 346. HAMK Ts Lindberg 2019*
- Annex 347. HAMK Ts Lindberg 2020*
- Annex 348. HAMK_Sidecosts
- Annex 349. Side costs_MHPWF_2014-2020

Annex 350. *POSELY_contracts_2016_2017_Toni_Nevalainen*
 Annex 351. *POSELY_salary_slips_2016_2017_Toni_Nevalainen*
 Annex 352. *POSELY_side costs*
 Annex 353. *POSELY_timesheets_Toni_Nevalainen_2016*
 Annex 354. *POSELY_timesheets_Toni_Nevalainen_2017*
 Annex 355. *SMK_contract_Karjalainen Ari 2015-2020*
 Annex 356. *SMK_salaryslips_Karjalainen Ari 2015-2020*
 Annex 357. *SMK_salaryslips_Karjalainen Ari 2015-2020_2*
 Annex 358. *SMK_salaryslips_Karjalainen Ari 2015-2020_3*
 Annex 359. *SMK_Karjalainen_Ari timesheets_2015*
 Annex 360. *SMK_Karjalainen_Ari timesheets_2016*
 Annex 361. *SMK_Karjalainen_Ari timesheets_2017*
 Annex 362. *SMK_Karjalainen_Ari timesheets_2018*
 Annex 363. *SMK_Karjalainen_Ari timesheets_2019*
 Annex 364. *SMK_Karjalainen_Ari timesheets_2020*
 Annex 365. *SMK_sidecosts 2014-2020*
 Annex 366. *UPM_2015_hours&salary_valonen*
 Annex 367. *UPM_2016_hours&salary_valonen*
 Annex 368. *UPM_calculations 2015*
 Annex 369. *UPM_April_2016_ts_valonen*
 Annex 370. *UPM_May_2016_ts_valonen*
 Annex 371. *UPM_March_2016_ts_valonen*
 Annex 372. *UPM_salaryslips_2015-2016_Valonen*
 Annex 373. *UPM_socialcosts_2015*
 Annex 374. *UPM_socialcosts_2016*
 Annex 375. *UPM_socialcosts_2017*
 Annex 376. *UPM_socialcosts_2018*
 Annex 377. *WWF_contract_Teemu Niinimäki*
 Annex 378. *WWF_Teemu Niinimäki salary slip 12 2014*
 Annex 379. *WWF_Teemu Niinimäki salary slip 12 2015*
 Annex 380. *WWF_Teemu Niinimäki salary slip 12 2016*
 Annex 381. *WWF_Teemu Niinimäki salary slip 12 2017*
 Annex 382. *WWF_Teemu Niinimäki salary slip 12 2018*
 Annex 383. *WWF_Teemu Niinimäki salary slip 12 2019*
 Annex 384. *WWF_Niinimäki Teemu_salary and social charges*
 Annex 385. *WWF_Teemu Niinimäki_ts_2014*
 Annex 386. *WWF_Teemu Niinimäki_ts_2015*
 Annex 387. *WWF_Teemu Niinimäki_ts_2016*
 Annex 388. *WWF_Teemu Niinimäki_ts_2017*
 Annex 389. *WWF_Teemu Niinimäki_ts_2018*
 Annex 390. *WWF_Teemu Niinimäki_ts_2019*
 Annex 391. *common travel costs regulations_2015*
 Annex 392. *UPM_Global HR Rule for Travel*
 Annex 393. *MHPWF_travel cost_seq. no. 253*
 Annex 394. *UPM_travel cost_seq.no.1*
 Annex 395. *SMK_travelcost_seq.no.25*
 Annex 396. *MHMT_contract_Havetrans*
 Annex 397. *MHMT_contract_Metsäkonepalvelu*
 Annex 398. *MHMT_contract_Rekola*
 Annex 399. *MHPWF_invitation of the tenders_PO*

- Annex 400. MHPWF_invitation of the tenders_ES*
- Annex 401. MHPWF_invitation of the tenders_map*
- Annex 402. MHPWF_invitation of the tenders_regulations*
- Annex 403. MHPWF_comparison of the tenders*
- Annex 404. MHPWF_memo of the opening meeting*
- Annex 405. MHPWF_memo of the deciciong meeting*
- Annex 406. MHPWF_decision_PO*
- Annex 407. MHPWF_offer_Albus_PO*
- Annex 408. MHPWF_offer_Eerikin_PO*
- Annex 409. MHPWF_offer_Faunatica_PO*
- Annex 410. MHPWF_offer_Faunatica_ES*
- Annex 411. MHPWF_proof of the procurement*
- Annex 412. MHPWF_reclaim intructions for tenders*
- Annex 413. MHPWF_contract_Faunatica*
- Annex 414. MHPWF_contract_Faunatica_annex*
- Annex 415. MHPWF_invoice_FAUNATICA OY_100711*
- Annex 416. MHPWF_invoice_FAUNATICA OY_131106*
- Annex 417. MHPWF_invoice_FAUNATICA OY_1900003752*
- Annex 418. MHPWF_invoice_FAUNATICA OY_1900004757*