

LIFE FOR EUROPEAN FOREST GENETIC MONITORING SYSTEM

Progress Report

Covering project activities from
July 1st, 2014 to June 30th, 2016

Reporting Date: **September 30th, 2016**



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LIFE FOR FOREST GENETIC MONITORING SYSTEM LIFEGENMON

Data Project

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Data Beneficiary

Name: **Beneficiary Slovenian Forestry Institute**

Contact person: **Prof. Dr. Hojka Kraigher**

Postal address: **Večna pot 2, 1000 Ljubljana, Slovenia**

Telephone: **+386-1-2007800 + direct n° +386-1-2007820**

Fax: **+386-1-2573589**

E-mail: **hojka.kraigher@gozdis.si**

Project Website: **<http://www.lifegenmon.si/>**

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Authors: the LIFEGENMON Project team (alphabetically): Paraskevi Alizoti, F. A. Aravanopoulos, Evangelia Avramidou, Roland Baier, Marko Bajc, Tjaša Baloh, Gregor Božič, Andrej Breznikar, Tina Divjak, Domen Finžgar, Barbara Fussi, Pavlos Hassalidis, Melita Hrenko, Darius Kavaliauskas, Fotis Kiourtsis, Monika Konnert, Hojka Kraigher, Ermioni Malliarou, Tina Michieli, Pavlos Bekiaroglou, Iakovos Papadopolous, Boris Rantaša, Chrysi Sarvani, Živan Veselič, Veronika Vodlan, Mark Walter, Marjana Westergren

Advisory Board members: Ricardo Alia, Vlatko Andonovski, F.A. Aravanopoulos, Dalibor Ballian, Tjaša Baloh, Sandor Bordacs, Franz Brosinger, Barbara Fussi, Jason Hubert, Davorin Kajba, Fotis Kiourtsis, Monika Konnert, Heino Konrad, Alenka Korenjak, Hojka Kraigher, Tina Michieli, Saša Orlovič, Despina Paitairidou, Boris Rantaša, Mari Rusanen, Živan Veselič, Veronika Vodlan, Marjana Westergren

Authors of photos: Gregor Božič, Domen Finžgar, Hojka Kraigher, Boris Rantaša, Urša Vilhar

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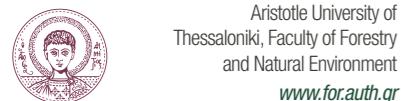
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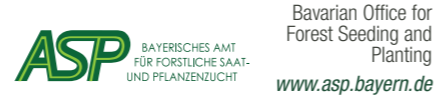
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www.cnvos.si



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www.for.auth.gr



Decentralized Administration of
Macedonia & Thrace
General Directorate
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www.damt.gov.gr



Bavarian Office for
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www.asp.bayern.de

Table of contents

1. Short description of the project LIFEGENMON.....	1
2. List of abbreviations.....	1
3. Executive summary.....	2
3.1. General progress.....	2
4. Technical part per action.....	3
A: Preparatory Action.....	3
B: Implementation Action.....	4
B1: Defining of optimal criteria and indicators.....	4
B2: Preparation of Guidelines and Management Strategy.....	5
B3: Policy Guidelines.....	6
C: Monitoring of the impact of the project actions.....	7
C1: Project and impact monitoring.....	7
C2: Monitoring of the impact of the project actions.....	7
D: Communication and Dissemination action.....	7
D1: General Dissemination.....	7
D2: Target Dissemination.....	9
E: Project management and monitoring of project progress.....	10
E1: The Advisory Board and networking.....	10
E2: Project management and monitoring of project progress.....	10
Impact.....	11
5. Envisaged progress until next report.....	12

1. Short description of the project LIFE GENMON

The aim of the project LIFE GENMON is the development of a system for European forest genetic monitoring to support the long-term maintenance of adaptability of forest genetic resources to the changing environment through. The project is co-funded by the European Union's LIFE (the Financial Instrument for the Environment) and national funding agencies. It combines the efforts of 6 partners from 3 European countries (Germany, Greece and Slovenia). It is coordinated by Prof. Dr. Hojka Kraigher from the Slovenian Forestry Institute, and lasts from July 2014 until June 2020. The total budget is €5,484,162.

2. List of abbreviations

SFI - Slovenian Forestry Institute
 ASP - Bavarian Office for Forest Seeding and Planting
 CNVOS – Centre for Information service, co-operation and development of NGOs
 AUTH - Aristotle University of Thessaloniki
 GDDAY – DAMT - The Decentralized Administration of Macedonia – Thrace
 SFS - Slovenia Forest Service
 RC – AUTH – Research Committee Aristotle University of Thessaloniki
 GA – Grant Agreement
 PA – Partnership agreement
 LoC – Letter of Commitment
 AB – Advisory Board
 TB – Technical Board
 NFP – National Focal Points
 CBP – Coordinating Beneficiary Partner
 ABP – Associated Beneficiary Partner
 PC – Project coordinator (Prof. Dr. Hojka Kraigher)
 PM – Project manager (Tjaša Baloh)
 DM – Dissemination manager (Boris Rantaša / Urša Vilhar)
 FM – Financial manager (Polona Vukovič)
 BL – Beneficiary leaders (Hojka Kraigher, Barbara Fussi, Veronika Vodlan, Filippos Aravanopoulos, Nikitas Fragiskakis / Fotis Kiourtsis, Živan Veselič)
 AL – Action leaders (Barbara Fussi, Filippos Aravanopoulos, Monika Konnert, Marjana Westergren, Veronika Vodlan, Boris Rantaša / Urša Vilhar, Hojka Kraigher)
 BAR – Beneficiary Action Responsible
 BFM – Beneficiary Financial Manager, responsible for LIFE GENMON
 SOP – Standard Operation Procedures
 PM SOP – Project Management Standard Operation Procedures
 FGM – Forest Genetic Monitoring
 FGR – Forest Gene Resources
 FRM – Forest Reproductive Material
 DCU – Dynamic Conservation Units (Forest Gene Reserves)
 EUFORGEN – European Forest Genetic Resources Programme
 ICP Forests – International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests
 BLAG – German Expert group on conservation of Forest genetic resources
 RAP – Refined Action Plan

3. Executive summary

3.1. General progress

The project LIFE GENMON started with its highly intensive schedule on July 1st 2014. The first Technical Board and Kick-off Advisory Board – Preparatory Action Meeting (part of **Preparatory Action A**) were held in Teisendorf, Germany, in mid-July 2014, when the Technical and Financial rules of LIFE projects were presented by the Coordinating Beneficiary Partner and accepted by all beneficiaries. Also the Advisory Board was formed at the very beginning of the project, due to organisational activities having already started before the project contract was signed.

The Beneficiary Partner leaders are:

- SFI (Coordinating beneficiary partner: Slovenian Forestry Institute): Hojka Kraigher, project coordinator, Tjaša Baloh, project manager, Polona Vukovič, financial manager, Boris Rantaša, project dissemination manager
- ASP (Bavarian Office for Forest Seeding and Planting): Barbara Fussi
- CNVOS (Centre for Information Service, co-operation and development of NGOs): Veronika Vodlan
- AUTH (Aristotle University of Thessaloniki): Filippos Aravanopoulos
- GDDAY – DAMT (The Decentralized Administration of Macedonia – Thrace): Nikitas Fragiskakis and Fotis Kiourtsis
- SFS (Slovenia Forest Service): Živan Veselič

Immediately after the first AB meeting, the transect drive from Bavaria to Greece was organised for CBP and ABP representatives, and led by the country representatives – national focal points (NFPs). The transect drive was of the utmost importance for the project team to get a first-hand information about the state of forests, forestry, forest legislation and the state of forest genetic resources in the region, in which forest genetic monitoring is to be proposed for implementation. However, since some partners could not join the July 2014 transect drive, and since not all countries / regions could be visited, a continuation of this drive was organised in early July 2015. During the July 2014 drive ministry representatives from BiH and Serbia met, and plots in BiH, Vojvodina, FYROM and Greece were visited. In July 2015 the ministry representatives from FYROM and Croatia met, and plots in Central Serbia, eastern BiH, Croatia, Hungary and Slovenia were visited.

In Preparatory Action A, the list of national legislation for all countries from Germany to Greece, as well as European strategies and legislative documents important for forest genetic resources, were collected, a general overview of forest genetic monitoring regions was prepared, indicators and verifiers were selected, potential monitoring plots in all three participating countries were proposed, visited, and selected. The review paper "FOREST GENETIC MONITORING: AN OVERVIEW OF CONCEPTS AND DEFINITIONS" has been accepted for publication by the Journal "Environmental Monitoring and Assessment".

Closely linked to Preparatory Action A were all other actions, particularly E Management (described above), and by M9 all management activities had already been transferred to action E, including the organisation of the 2nd AB meeting in early March 2015 in Thessaloniki. ABP financial representatives and action responsible persons were defined and reporting procedures between BPs and between CBP, the external evaluator and the LIFE Team were included in the Standard Operation Procedures for project management. These activities were done in close cooperation with the internal monitoring action C, led by ABP CNVOS. Furthermore, the project communication system (4th office), also needed for monitoring, was established.

The Implementation Action B1 started in January 2015, immediately concentrating on the monitoring regions, the selection of the monitoring plots and on the selection and the definitions of monitoring criteria, indicators and verifiers. The other two implementation actions started in autumn 2015 and January 2016, and are already fully operational.

The actions with most activities planned and carried out were the Dissemination Actions, led by the Dissemination Manager (DM),



and corresponding ABP responsible persons. The home page is fully operational and highly visible (the website counter shows over 35.000 visits), the project leaflet and newsletters were prepared and printed, notice boards were printed in English and in three national languages and posted on the plots, the lists of media contacts in the three project countries were obtained, and the activities within the Refined Action Plan were defined. Since the dissemination activities are by definition most flexible and should be easily adaptable to any opportunities arising during the project, the Refined Action Plan also reflects the possibility for flexibly addressing any opportunities to promote forest genetic monitoring, forests and forestry to the target audiences and listed stakeholders at different levels.

4. Technical part per action

A: Preparatory Action

A1: Screening

Preparatory actions were finalised by July, 2015. National focal points (NFP) have been defined and invited to project meetings. The NFPs have also been involved with their expert advice in the preparation of the national policies of the transect countries. The project team prepared a list of European regulations.

Collection of information on existing plots within the transect, including EUFGIS DCU, ICP Forests Level I, II, ICOS sites, Life+ ManFor C. BD and any existing 'super sites', etc., their characteristics, data collection per plot, management, financing schemes, and permanence was done and access to relevant databases was established. Information (data standards and minimum requirements) for EUFGIS DCU are given in Koskela et al. 2013 and Lefèvre et al. 2013. At the moment, there are 120 DGCU for *Fagus sylvatica* within the transect (Austria 78, BiH 13, Croatia 3, Germany 22, Serbia 1, Slovenia 4), 110 for *Abies alba* (Austria 75, BiH 18, Croatia 4, Germany 8, Serbia 1, Slovenia 3) and 4 for *A. borisii regis* (FYR Macedonia 1, Greece 3). Other existing monitoring plots within the project (ICP Forests, Life+ ManFor CBD, ICOS) have been identified per country level, the information to be reviewed within action B2. However, a strategy/common framework is needed to present the collection of information in a clear way. Selected existing monitoring plots in Central Serbia and Croatia were visited and discussed during the second transect drive.

A pilot overview of existing policies and sites was collected in a list of national policies and description of existing sites and a compilation of definitions and concepts and relevant literature has been performed and made available as a bibliography divided by relevant topics. The Review Paper of definitions and concepts in genetic monitoring was submitted to the journal "Environmental Monitoring and Assessment" and was accepted for publication and appeared online in July 2016.

A2: Definitions and concepts

The project team also compiled an overview of possible vegetation / ecological zones to be applied and considered in the transect and tree species for preparation of genetic monitoring criteria. Concepts for consideration regarding the choice of tree species for genetic monitoring have been reviewed. Different authors recommend various characteristics/criteria for species selection, but until now only a few studies have proposed accurate criteria and their rating within an FGM scheme. Certain species for FGM based on different characteristics have been proposed in the concepts. These are: (i) economic significance or ecological significance of a species; (ii) rare/endangered species; (iii) indicator value of a species, i.e. representativeness of a species of a large class of ecologically significant species. Suggested characteristics are relativised by the statement that it is not necessary for all candidate species to meet all characteristics. More detailed description of definitions of criteria for species selection for large-scale FGM will be prepared in action B.2.1.

A Review Paper named "FOREST GENETIC MONITORING: AN OVERVIEW OF CONCEPTS AND DEFINITIONS", authored by Barbara Fussi, Marjana Westergren, Filippos Aravanopoulos, Roland Baier, Darius Kavaliauskas, Domen Finžgar, Paraskevi Alizoti, Gregor Božič, Evangelia Avramidou, Monika Konnert, Hojka Kraigher has been accepted

for publication. The Review Paper was decided to be submitted to a special journal for monitoring "Environmental Monitoring and Assessment" (<http://link.springer.com/journal/10661>). It is an international journal devoted to progress in the use of monitoring data in assessing environmental risks to man and the environment. The main reason was the preference for an international outreach of the journal over a regional impact, since it is a topic relevant for European and world wide forest ecosystems. Other reasons were that we wanted to get valuable critics from reviewers and the fact that the impact factor is higher than that of regional forestry journals.

B: Implementation Action

B1: Defining of optimal criteria and indicators

B1.1. Testing of indicators

Action B1 started in January 2015 based on the Preparatory Action A activities.

Action B1.1.1. Definition of monitoring regions (areas) for seven keystone tree species.

Data regarding monitoring regions (for better understanding the 2nd TB decision was to change areas to regions) for seven keystone tree species (*Fagus sylvatica*, *Populus nigra*, *Fraxinus excelsior*, *Abies alba/Abies borisii-regis* complex, *Pinus nigra*, *Prunus avium*, *Quercus petraea/robur* complex), are compiled so that monitoring regions can be defined for each country participating in the transect from the Bavarian Alps to Mt Olympus. The crucial cooperation of the NFPs was verified during the 2nd AB meeting. This discussion – a cross-talk between ABPs and NFPs was found to be beneficial for the final deliverable, therefore the final delivery date was moved to M13.

Definition of monitoring regions was successfully accomplished. A relevant poster was presented at the IUFRO 2016 Conference in Arcachon. (Aravanopoulos F.A., Westergren M, Fussi B, Avramidou E., Bozic G, Kavaliauskas D, Finzgar D, Alizoti P., Baier R, Barbas E, Malliarou H, Ganopoulos I, Bekiaroglou P, Hasilidis P, Andonovski V, Ballian D, Bordacs S, Kajba D, Konrad H, Orlovic S, Kiourtsis F, Veselic Z, Konnert M & H Kraigher 2016. On the demarcation of forest genetic monitoring regions. *In: Proc. IUFRO Genomics and Forest Tree Genetics Conference*, 30 May - 3 June, 2016, Arcachon, France, p. 108. A manuscript is in preparation in order to be submitted to a journal

Action B1.1.2. Selection of genetic monitoring sites for two species.

The selection of genetic monitoring sites for two species (*Fagus sylvatica*, *Abies alba/Abies borisii-regis*), has been carried out considering already proposed monitoring. The selection of genetic monitoring sites for two species was successfully accomplished for all partners regarding *Fagus sylvatica* and *Abies alba/Abies borisii-regis*.

Action B1.1.3. Establishment of genetic monitoring sites and assessment of demographic baseline data

The establishment of FGM sites was done in the period April 2015 – June 2015 (M10-12) and was centred on obtaining field measurements of selected trees in both species in the relevant sites. Demographic assessment that includes age and size class distribution, regeneration abundance, and phenology, will be monitored throughout the project (flushing, flowering etc.). Protocols were prepared for the phenology phases of both species. Demographic assessment for size class distribution, regeneration abundance and phenology (for 2016) has been accomplished and relevant data have been collected by all partners.

Action B1.1.4. Sampling in the genetic monitoring sites for the assessment of genetic baseline data.

Field samplings were done in the period May 2015 August 2015 (M11-14) and shall be repeated by August 2019 (M62). Sampling of seeds depends on the occurrence of the mast year for the two species within the duration of the project. Field sampling has been completed for *Abies* sp. regarding both needles and seeds for all partners. For *Fagus sylvatica* only leaves have been collected as there has not been any mast year so far for all partners – the mast year has been foreseen in autumn 2016.

Action B1.1.5. Assessment of genetic baseline data from genetic monitoring sites.

Laboratory assessment of field samples to be done in M15-27 was proposed for prolongation till March 2017 (M33), and is to be repeated in the period August 2019 – December 2019 (M62-66). The selection of genetic parameters for the genetic monitoring indicators and verifiers is in progress and will be completed by M33 as planned. Activities have concentrated on the organisation of technical specifications for genetic parameter analyses, and on harmonisation of genetic markers suitable for *Fagus sylvatica* and *Abies alba* genetic analysis. Special care has been taken to organise the storage of tissue and seeds for analysis.

The organisation of technical specifications and the harmonisation of genetic markers has been completed. A series of ring tests have been performed by all partners and for most primers in both species have been successful. As a result, these markers can be safely used for genetic monitoring across laboratories for both species. A couple of primers for Abies have been proven problematic during the ring tests and therefore their removal from the relevant list of Abies primers is suggested. This is not considered to be a major issue for the Abies genetic monitoring as there are still eleven stable and repeatable primers across laboratories. This exercise has shown the high validity of ring tests when performing genetic monitoring at multiple laboratories.

B1.2 Selection and valorisation of indicators

Action B1.2.1. Cost assessment per species, level, indicator and time requirements

This action (ongoing until June, 2017 with re-evaluation in the final phase of the project) will be based on the estimation of labour, laboratory costs and time requirements, the recording of costs and time spent started immediately in Action A. We have concluded that this is a complex and crucial exercise and plan to devise a procedure for the analytical description of costs and time requirements for all partners in the same manner (although these may vary across partner situations). This aspect needs to be revised and ready for implementation by M36.

Action B1.2.2. Indicators and criteria for further implementation.

These will be defined based on the outcome of the data from the test plots and the cost-benefit analysis, considering the estimation of minimum and optimum numbers of indicators and verifiers with respect to time and cost requirements (done in M28-36 and re-evaluated in M63-66).

Action B1.2.3. Development of a draft Decision Support System.

Based on the above actions Action B1.2.1. and Action B1.2.2; submitted to actions B2 and B3 for finalisation.

Action B1.2.4. Standardisation of demographic data.

This will be performed by establishing common protocols after an evaluation of the monitoring exercise and its repetition. The establishment of detailed common protocols across partners was a challenge, but the standardisation of assessment procedures and sample standards have already been achieved.

Action B1.2.5. Standardisation of genetic data.

Standardisation of genetic data has been achieved through common protocols sample standards and the performance of ring tests.

Action B1.2.6. Database for genetic monitoring

A suitable database structure for genetic monitoring data will be developed also considering the operational EUGIS and any other relevant databases. During the TB1 meeting a Committee was formed to prepare the design and establishment of this database, and approved by the AB2.

Action is ongoing and the database structure is to be presented and discussed at the AB3 meeting.

B2: Preparation of Guidelines and Management Strategy

Current – The action started in October 2015 and now is in full working phase.

B2.1 Establishing guidelines

B2.1.1. Review of existing concepts, forest management practices and monitoring sites, elaboration of differences between them (literature search, contact with national focal points, compilation of results)

The review of existing concepts was done through a review paper, which is already published in an international journal for monitoring "Environmental Monitoring and Assessment". Publication title - "FOREST GENETIC MONITORING: AN OVERVIEW OF CONCEPTS AND DEFINITIONS", authors: Barbara Fussi, Marjana Westergren, Filippos Aravanopoulos, Roland Baier, Darius Kavaliauskas, Domen Finzgar, Paraskevi Alizoti, Gregor Božič, Evangelia Avramidou, Monika Konnert, Hojka Kraigher.

A poster was presented at the IUFRO 2016 Conference in Arcachon. "FOREST GENETIC MONITORING: AN OVERVIEW OF CONCEPTS AND DEFINITIONS", authored by Barbara Fussi, Marjana Westergren, Filippos Aravanopoulos, Roland Baier, Darius Kavaliauskas, Domen Finzgar, Paraskevi Alizoti, Gregor Božič, Evangelia Avramidou, Monika Konnert, Hojka Kraigher.

Compilation of forest management practices and existing monitoring sites has already been finished and distributed among partners for further discussions. The first step of this action was to enlarge the review done in Preparatory Action on forest management practices. The next step is to improve and finalise this milestone.

B2.1.2. Training workshops on forest genetic monitoring and its cross-linking to general forest monitoring in order to establish standardisation of genetic monitoring procedures, and to better integrate genetic monitoring into existing forest monitoring activities.

Discussions within the BLAG – German Expert Group on conservation of forest genetic resources in relation to the ICP Forests monitoring programme led to the conclusion that some data from ICP Forests monitoring can be used for FGM (e.g. temperature, precipitation etc.). However, to combine FGM with ICP Forests monitoring seems rather complicated because of the different design of the two systems. e.g. sometimes only five trees per species are used in the ICP Forests programme whereas FGM needs a population-based approach.

B2.1.3. Generalisation of the outcome from the validation of indicators in action B1

Needs to be done after the validation of the indicators in B1.

B2.1.4. Standardisation of protocols for field measurements and lab work

Standardisation of protocols will be an upgrade of the deliverable from B1 based on the approaches optimised for different levels. Common protocols for field measurements (plot establishments, sampling, phenology observations) and lab work were established. After an evaluation of the monitoring results, these protocols will be reassessed and standardised.

B2.3 Implementation and training

B2.3.1. Workshops for NFPs, forest managers, and forest experts will be organised to present and discuss the validation of indicators from action B1

During the two workshops participants were introduced to forest genetic monitoring and to the project LIFE GENMON. The Abies alba FGM plot was visited within the workshop for foresters from Baden-Württemberg State Forest.

- Workshop for foresters and forest control officers in Bavaria (Kontrollbeamtentagung 02-04 05 2016).
- Workshop for foresters from Baden-Württemberg State Forest (Vermehrungsgutbeauftragte ForstBW 07-09 07 2015).

B3: Policy Guidelines

2016 - The action started in January 2016, after all beneficiary responsible leaders had been identified in Preparatory Action A.

Expert collaboration:

This work is done in close collaboration with the stakeholders and is supported by the NFPs and other experts (see Actions A and E1). The inclusion of the stakeholders helps to identify possible issues not considered in the compiled literature or existing legislation, resolutions and strategies, and creates innovative ideas for better future strategic and legislative solutions.

B3.1 Formation of an action plan (M18 –M30)

Identification of the national / regional / EU and global-wide genetic monitoring problems, objectives and strategies to meet the objectives (M18-30).

Identification of communication systems with key stakeholders and policy makers (M18-30).

Formation of an action plan on the procedures needed to obtain a discussion line with policy makers (M18 – 30).



C: Monitoring of the impact of the project actions

C1: Project and impact monitoring

Action C1: Monitoring of technical effectiveness of the project action



The monitoring matrix that was developed in the previous period was updated and revised to reflect the changes in the Refined Action Plan. The most significant changes appeared in Action D – Communication and Dissemination. This is the most diverse action of the project where there are lots of deliverables and in the process of project implementation possibilities for bigger impact has been identified. The activities were adopted according to these identified opportunities to ensure the biggest possible impact of the intervention.

Action C2: Monitoring of the impact of the project actions

For the purposes of impact monitoring a set of questionnaires was developed. The questionnaires were produced for each activity (where suitable) and will be used by dissemination team members. Two different templates were produced – one for the web page and other for workshops. Both questionnaires are drafts and should be adjusted to each specific situation. Activity D team members are encouraged to consult with the monitoring team when preparing the questionnaire for each specific activity. When possible, the e-version of the questionnaires should be used.

D: Communication and Dissemination action

D1: General Dissemination

D1.1 E-communications

The open access home page is operational and updated at regular intervals. In the reporting period, 7,454 users visited the website in 10,670 sessions. They have visited 24,642 pages in total, 2.31 per session (data source: Google analytics 31.8.2016). The website counter currently shows over 35,502 visits (source: www.lifegenmon.si counter 31.8.2016).

The project's social profiles are in healthy shape and are very active during communication peaks. The social profiles have already reached over 1,000 visitors (estimated based on past engagement on Facebook and Twitter). The LIFEGENMON Facebook profile currently has 388 followers and top posts are reaching cca. 1,500 users and commanding around 50 reactions (engagement) (source: Facebook insights). The Twitter profile averages 2,000 – 3,000 impressions and 100 profile visits per month (source: Twitter analytics). The LIFEGENMON LinkedIn profile is less active – the top posts get over 100 impressions and up to 5 engagements (Source: LinkedIn analytics).

D.1.1.4. Portal

The LIFEGENMON Portal launch is planned for the end of July 2017. Currently, Portal activity is in the planning phase.

D1.2 Printed information

Three newsletters have been produced in this reporting period: NL1 – 1 year of LIFEGENMON, NL2 – LIFEGENMON Transect and NL3 – LIFEGENMON Communication and Dissemination activities. Each Newsletter has been printed in 450 copies in 4 project languages. The official project leaflet has been published in 4 languages; 500 copies per language. Several draft general pamphlets were prepared and printed as needed at partner institutions. The 2nd

general pamphlet will be published in July 2017 (for dissemination at the IUFRO 2017 conference). The short version of the Inception report was published in 450 copies per language; 4 project languages.

D1.3.2. Training courses for teachers

Over 200 teachers were reached in 4 seminars for teachers. All seminars were organised in cooperation with the Slovenian network of forest schools and kindergartens and the project team plans to continue participating in future seminars as lecturers and demonstrators.

D1.3.2. Teaching materials for teachers/schools

The teaching materials for teachers have been prepared in cooperation with LIFE+ ManFor CB.D project in order to make a greater impact, achieve higher quality and reduce costs. The result is the Handbook for Learning and Play in the Forest, which has been printed in 1000 copies in the Slovenian language due to very high levels of interest among teachers. The Handbook was published online ([http://eprints.gozdis.si/2052/1/Prirocnik_za_ucenje_in_igro_v_gozdu_9_10_\(1\).pdf](http://eprints.gozdis.si/2052/1/Prirocnik_za_ucenje_in_igro_v_gozdu_9_10_(1).pdf)). The Handbook has been translated into English and will be printed in 500 copies. The English version will also be published online in a pdf version.

D.1.3.3. Workshops with children

Activities for children have reached over 2,000 children in the project countries. Workshops for children took place at partner institutions, at schools and during popular science events such as International Plant Fascination Day. The activities have begun at a slower pace in Germany and Greece due to delays in preparation activities for the workshops. The ASP has established a good collaboration with institutions for children and reached 370 children since the beginning of the project. All concepts for workshops with children on forestry, climate change and forest genetics have been finalised and a larger number of children will be addressed within the next years.

Country/Age (years)	Older (10+)	Under (<10)	Total
Austria	27	137	164
Germany	72	298	370
Greece	203	70	273
Slovenia	692	581	1273
Total	994	1086	2080

D.1.3.4. Children's books and cartoons on forestry

A total of 3 children's books and 3 children's cartoons will be produced before July 2017. The first children's book has already been published.

D.1.3.5. Computer game

The LIFEGENMON computer game will be launched as app for android and iOS at the end of July 2017. The game will convey the project's goals in a playful way and animate the user to be part of the project as "urban scientist".

D.1.5.2. Special groups of target audiences

In all, 9 visits to the plots have been realised for special groups of target audiences: 1 in Slovenia, 5 in Germany and 3 in Greece.

D1.6 Open days for general public

Open Days for the general public were realised by 2015 all project countries, reaching 689 people in several locations and events. In 2016 Open Days were took place in Slovenia and Germany, reaching 247 people in total.

D1.7 Media

The project team has been successful in working with the media so far. Securing media publication will be emphasised in Greece in the next reporting period.

Scale/media/country	EU	National				Regional				Total
	Print	Print	Radio	TV	Web	Print	Radio	TV	Web	
BiH		3	1	1						5
Croatia			1							1
EU	6									6
Germany		1				13		1		15
Greece				1	1		1			3
Slovenia		3	1	4	1	4	1		1	15
South Africa							1			1
Total	6	7	3	6	2	17	3	1	1	46

With the Refined Action Plan the project team set up additional activities to ensure a higher impact:

- **D1.8 Co-organisation of events for important groups of stakeholders**
- **D1.9 Participation at trade fairs and popular science events**

The project team has participated at 7 trade fairs and popular science events, 4 in Slovenia and 3 in Germany

D2 Target Dissemination

D.2.2.2. Workshop of portal establishing activities

By June 2016, 4 workshops of portal establishing activities have been organised as an addition to other project activities (workshops etc.) After July 2nd additional workshops have been organised. We will continue to organise them in the future.

D.2.3.2. Internal workshops for forest owners, users of FRM, tree dealers, nurseries, seed dealers, silviculturists and forest managers

Two one-day workshops have been organised in Slovenia and 3 in Germany for a total of 128 persons.

D2.4 Participation in management/planning meetings of forest services and officers involved in management and planning forest services

Two workshops took place with regional forest management and heads of regional departments for silviculture and forest protection. Two committees on forest reproductive material took place at the Ministry of Agriculture, Forestry and Food in Slovenia, discussing FGM progress.

D2.8 Workshops and summer schools for students

Three workshops for students (2 for IFSA students) took place in Slovenia and 2 for Greek students at AUTH.

D2.9 Scientific conferences

The first scientific conference will be organized in 2017, and shall coincide with the organisation of a compiled session at the 125th Anniversary IUFRO Congress in Freiburg since it would reach a broader scientific audience compared to a special conference in the same year in Slovenia.

D2.11 Participation at scientific, professional, legislative and governance events

LIFEGENMON was presented at several EUFORGEN SC meetings, the XIV International Forestry Congress in Durban SA, at EVOLTREE meetings, IUFRO sessions meetings, COST actions meetings and summer schools, and meetings

of forest seed dealers and nurseries, as well as at meetings with ministries responsible for forestry or the environment.

D2.12 Publishing and co-publishing of professional and scientific work

The Silva Slovenica publishing centre has co-published a monograph titled: "Varijabilnost obične jele (*Abies Alba* Mill.) u BiH" ("The Variability of Silver Fir (*Abies Alba* Mill.) in Bosnia and Herzegovina") in the framework of the LIFEGENMON project. (Annex D2_12: Varijabilnost obične jele (*Abies Alba* Mill.) u BiH). A similar monograph is planned to be co-published in 2017.

D2.13 Co-organisation of events for target stakeholders

Four events for target stakeholders have been co-organised in Slovenia together with the Slovenia Forest Service.

D2.14 LIFE Networking visits

A LIFE networking visit was organised by the SFI for delegates from LIFE HESOFF project in May 2016.

E: Project management and monitoring of project progress

E1: The Advisory Board and networking

The Advisory Board has been set up with representatives from the EUFORGEN Steering Committee, experts from SE Europe, and relevant ministries. The experts from SE Europe (National Focal Points, NFPs) were chosen from among EUFORGEN national coordinators and EUFGIS national focal points (an AGRI GEN RES project lasting from 2007 – 2011. Two AB meetings have been held (July 2014, March 2015). The 3rd AB meetings will take place in Ljubljana on 6th and 7th September, 2016.

E2: Project management and monitoring of project progress

LIFEGENMON project management and coordination is implemented at two levels: activity level and general project level. In addition, the implementation is ensured through the day-to-day management at each ABP, as described in chapter 4.1.

Activity level management is carried out through the project intranet 4th Office, where groups have been designed according to project actions. Each activity has the main content deliverables and milestones embedded into the timeline, as well as assigned project teams, which have been set up at partner and action level. Action leaders can communicate with team members as well as Advisory Board members included in the action. Through the application all tasks can be assigned as well as deadlines. The leaders can monitor the task progress on a daily basis and intervene when necessary.

The overall project management is carried out through different channels, mainly through 4th Office and direct email. The project manager (PM) (Tjaša Baloh) is responsible for day-to-day management and meetings organisation. The PC is coordinating the technical progress of the project through regular Skype conferences and emails.



Impact

1. Foreseen objectives achieved

The impact of the project so far has been much better than what we planned for. The planned activities in preparatory and implementation actions have resulted in the establishment of FGM plots, the acceptance of the introductory review paper, the finalisation of the sampling and common laboratory protocols, with an important output: the necessity and validity of ring tests when performing genetic monitoring at multiple laboratories. The project was presented at several international events and had great visibility (details in the report on dissemination activities). The impacts of the genetic monitoring will be known in the last period of the project, however, the project has already achieved an increase in the awareness of the importance of forest genetic diversity and its monitoring, not only in countries where the project is taking place, but also in countries that are not directly involved. In this way a network of potential supporters and advocates of forest genetic monitoring is being established and will serve as a tool for putting forest genetic monitoring into practice after the closure of the project. The project coordinator, Prof. Dr. Hojka Kraigher, has also been announced as the keynote speaker at the IUFRO 125th Anniversary Congress in 2017 which is considered to be the most important conference for forest researchers in 2017. A number of other project team members will also give presentations at the conference sessions. Considering the current achievements, we expect the impacts of project to exceed expectations.

2. Direct / quantitative environmental benefits

The six forest genetic monitoring plots, two per country, have been installed, initialising and contributing to the overall goal of the project, the development of the system for FGM. During the selection process the high overgrazing with wildlife and its negative impact for fir regeneration was detected and its consequences signalled to the forestry officials and the general public, strengthening the communication with hunters' organisations. The indicators and verifiers have been reviewed, the testing started, and the protocols for ring tests established, thus standardising the procedures and allowing comparability among different molecular labs working in forest genetic diversity assessment.

3. Relevance for environmentally significant issues or policy areas

The communication plan on the role of forest genetic diversity in sustainability of forests, and the initialisation of the FGM system with forestry policy makers has been prepared in one country to be applied and further developed in the other two participating as well as in the transect countries. Particularly, large scale disturbances and climate change effects on the future distribution of forest trees, and thus the existence of forests in future climates, have been communicated at the national level. Thus in the CBP country, in Slovenia, a target developmental project thematic has been opened, confirming the effectiveness of the initialised policy-oriented communication plan. Also, EU Access to and benefit sharing regulation (based on the Nagoya protocol) has been considered as relevant for forest genetic resources, and the representatives nominated to the national committee on its execution at the national level. Furthermore, the development of the FGM system contributes directly to all activities within the EUFORGEN programme and its inputs to the FOREST EUROPE process, as well as to fulfilling the EU biodiversity strategy and its action plan till 2020.

4. Long-term / qualitative environmental benefits

In the long term FGM shall allow for improved adaptive forest management for resilience to climate change effects on the sustainability of forests.

5. Long-term / qualitative economic benefits – long-term financial sustainability, if relevant bankability

Long-term benefits include the valuation of ecosystem services and biodiversity benefit sharing based on the improved resilience of forest ecosystems in the changing climates, based on support for improved genetic diversity.

6. Long-term / qualitative social benefits

Also, social benefits are based on ecosystem services. The more resilient forests shall provide more in the long term.

7. Continuation of the project actions by the beneficiary or by other stakeholders

The policy makers communication action plan (B3), all dissemination activities (D) and networking (E1) are aimed at the preparation of the after-life communication plan and its long-term effects and impacts.

8. Replicability

The project activities are aimed at the national and regional level with a view to serve as a case study and system on the Pan-European scale, and for repetition of the concept in other EU regions.

9. Demonstration value

The project is preparing the basis for a future FGM system on the national, regional and EU scales, to promote implementation and enforcement of national and EC environmental legislation and biodiversity initiatives, improving the

knowledge base for forestry strategy and biodiversity policy in the area. Particularly the output shall be the Decision Support System for policy makers to decide on the needs and means on which level of FGM to apply at the national level. Furthermore, the great emphasis on dissemination will encourage a better understanding of forestry and the role of forest genetic diversity and its monitoring among different stakeholders and in general publics.

10. Transferability

The project activities are aimed at the national level in the three partner countries, and aim at the regional level of South East Europe, with a view to serve as a case study and system at the Pan-European scale.

5. Envisaged progress until next report

By the next report (M45) the following results/milestones will be achieved:

B1:

- Laboratory assessments will be performed with a new deadline proposed in the RAP (March 31st, 2017)
- Draft indicators and verifiers will be selected and costs quantified. Proposed new deadline in the RAP (May 31st, 2017 due to the delay in the assessment of Fagus seeds because of the absence of mast year. Draft to be verified within second sampling & analysis (30.03.2020))

B2:

- Forest management practices and monitoring plots will be compiled by a new deadline proposed in the RAP (December 30th, 2016) and a review paper on forest management practices and monitoring plots will be prepared with a new deadline proposed in the RAP (July 30th, 2017)
- Indicators for large scale FGM will be defined. As a continuation of the B1 action, where the deadline has been postponed, this milestone due date prolongation has also been proposed (December 30th, 2016).

B3:

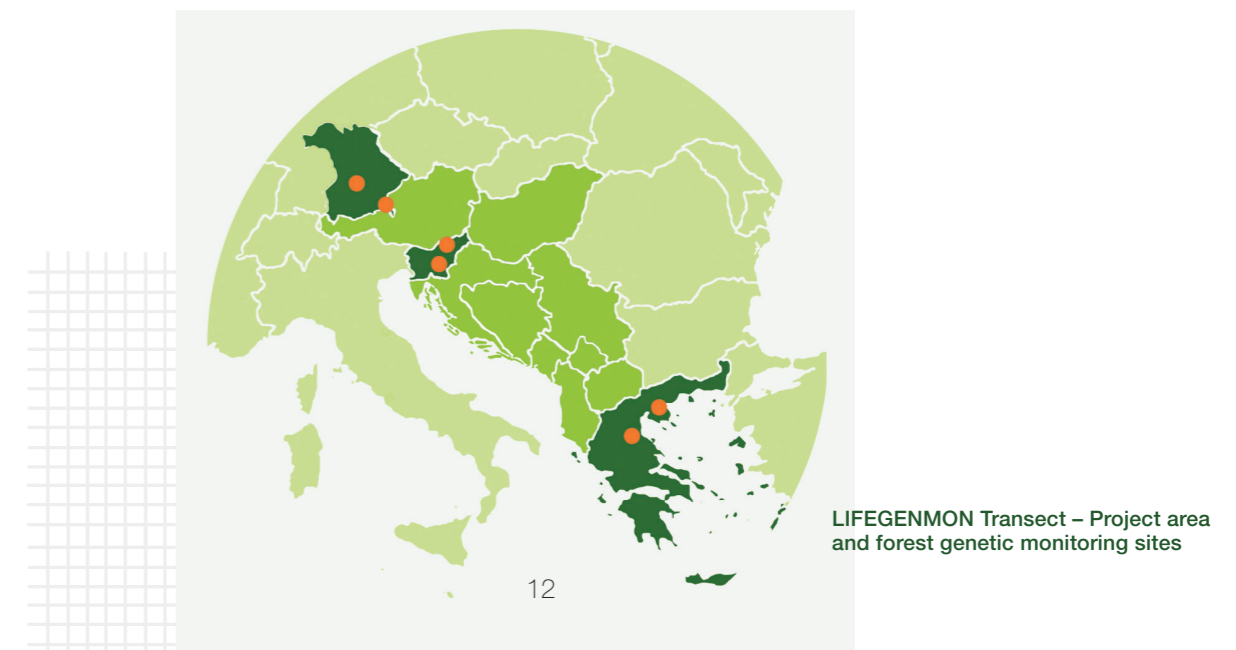
- The list of regulations, strategies and action plans from the transect countries, the list of key stakeholders and policy makers and the ways and means to address them. This list will be an upgrade of the deliverable from Preparatory Action A1 – to be finalised by 31.12.2016
- The Report on the FGM problems on different scales will be prepared (new deadline in RAP December 31st, 2016).
- Action Plan for communication with stakeholders and policy makers will be drafted (new deadline in RAP December 31st, 2016), supporting its flexibility in further adaptation throughout the project duration.

C:

- The monitoring team will continuously assess the effectiveness of the project's actions

D:

- The dissemination team, in collaboration with the implementation action team, will continuously disseminate and communicate the project's activities. The workshops with different stakeholders will be carried out and the project portal will be established.





LIFE FOR EUROPEAN FOREST GENETIC MONITORING SYSTEM