LIFE Project Number

LIFE18 GIE/IT/000755

Final

Covering the project activities from 1/10/2019[1] to 30/09/2024

Reporting Date[2]
30/9/2024

LIFE 4 POLLINATORS

Data Project

Project location:	Italy, Greece, Slovenia, Spain
Project start date:	01/10/2019
Project end date:	30/09/2023 **Extension date: 30/09/2024**
Total budget:	€ 2.460.717,98
EU contribution:	€ 1.345.190,21
(%) of eligible costs:	54.98%

Data Beneficiary

Name Beneficiary:	Alma Mater Studiorum - Università di Bologna
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[1]Project start date

[2]Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission.
Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Package completeness and correctness check	
Obligatory elements	**✓ or N/A**
Technical report	
The correct latest template for the type of project (e.g. traditional) has been followed and all sections have been filled in, in English *In electronic version only*	✓
Index of deliverables with short description annexed, in English *In electronic version only*	✓
Mid-term report: Deliverables due in the reporting period (from project start) annexed Final report: Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English *In electronic version only*	✓
Financial report	
The reporting period in the financial report (consolidated financial statement **and** financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	✓
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)*	✓
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. *In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals**	✓
Amounts, names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement)	✓
Mid-term report (for all projects except IPs): the threshold for the second pre-financing payment has been reached	N/A
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)*	N/A
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) *Electronically Q-signed or if paper submission signed original and in electronic version (pdf)*	N/A
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due) *In electronic version only*	✓
This table, page 2 of the Mid-term / Final report, is completed - each tick box is filled in *In electronic version only*	

**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

Instructions:

Please refer to the General Conditions annexed to your grant agreement for the contractual requirements concerning a Mid-term/Final Report.

Both Mid-term and Final Technical Reports shall report on progress from the project start-date. The Final Report must be submitted to the Agency no later than 3 months after the project end date.

Please follow the reporting instructions concerning your technical report, deliverables and financial report that are described in the document Guidance on how to report on your LIFE 2014-2020 project, available on the LIFE website. Please check if you have the latest version of the guidance as it is regularly updated. Additional guidance concerning deliverables, including the layman's report and after-LIFE plan, are given at the end of this reporting template.

Regarding the length of your report, try to adhere to the suggested number of pages while providing all the required information as described in the guidance per section within this template.

1. Table of contents

2. List of key-words and abbreviations

The following abbreviations shall be used for the purposes of this report.

UNIBO: Alma Mater Studiorum - Università di Bologna
BIGEA: Department of Biological, Geological and Environmental Sciences
DISTAL: Department of Agricultural and Food Sciences
CREA: Council for Agricultural Research and Economics (CREA-AA: Agriculture and environment)
UVIGO: University of Vigo
CSIC: Spanish National Research Council (CSIC-IMEDEA: Mediterranean Institute for Advanced Studies)
UAEGEAN: University of Aegean
Coldiretti: Coldiretti Emilia-Romagna
Conf: Confagricoltura dell'Emilia-Romagna
EU: European Union
N2000: Natura 2000
ER: Emilia-Romagna
MS: Member State
PP: project partners
PA: Public Administration
CS: Citizen Science
FB: Facebook
Tw: Twitter
In: Instagram
CV: Curriculum Vitae
IT: Italy, Italian
ES: Spain, Spanish
SI: Slovenia, Slovenian
EN: English
GR: Greece, Greek
IPBES: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
ISPRA: Istituto Superiore per la Protezione e la Ricerca Ambientale
CAP: Common Agriculture Policy
RDP: Rural Development Programme
MASE: Ministero dell'Ambiente e della Sicurezza Energetica (Ministry of Environment and Energetic Safety)
MASAF: Ministero dell'Agricoltura e della Sovranità Alimentare e delle Foreste (Ministry of Agriculture and of Food Sovereignity and of the Forest)

SMA: University Museum Network of the University of Bologna (Sistema Museale di Ateneo)
D.: Deliverable
An.: Annex

3. Executive Summary

3.1. General Progress

The overall objective of this project is to gain environmental benefits improving environmental governance, by involving and training people and key stakeholders on wild pollinators importance and conservation, in order to increase their knowledge and awareness, and possibly change their behaviours towards pollinator-friendly attitudes. The taxonomic groups of Hymenoptera, Diptera, Coleoptera and Lepidoptera have been selected together with a certain number of entomophilous plants morpho-groups as project targets.
All the activities planned at the start (development of common protocols, identification of project areas, involvement of different categories of target groups, pilot project, dissemination and management) were launched on time. No financial or organisational difficulties have risen at the very early period, while very soon in March 2020 the beginning of the pandemic crisis caused by the virus SARS-CoV-2 affected one after the other all the partners and the activities planned. However, foreseen deliverables have been edited, and milestones have been reached, even though one year later.
The common protocols (field guides and handbooks for target groups and for citizen science) have been developed with a delay of 12 months, the identification of project areas with a delay of 9 months. Monitoring, networking and dissemination activities and management have been carried on along the project implementation and following the involvement of target groups (urban green areas managers/technicians, farmers, protected areas managers/technicians, teachers and educators).
A mobile pollination exhibition illustrating the fundamental role of pollinator diversity in nature and agriculture and inspiring actions to help their conservation was realized. A web platform has been launched to broaden public engagement in data collection (https://www.life4pollinators.eu/en/submission): approximately 2300 photos have been collected, with almost 1000 records from N2000 sites and some relevant information on species of conservation concern. The social network campaign, the bioblitzes, the events (mainly trainings) to involve key stakeholders and the educational project with students have generally started on time however the finalization of them was delayed due to the pandemic restrictions that reduced the chances to organize events in presence and to technical and administrative reasons, better explained in paragraph 5.2.
The project has risen a lot of interest. In fact, we received requests from different private and public bodies (municipalities, schools, parks, etc.), as well as local and international projects for cooperation, exchanges and participation to the core actions (trainings/bioblitz, etc.). Moreover, each event or talk about the project has been welcomed with questions and interest also by remote. Throughout the project implementation, we have organized /participated in about 200 public events and the project staff have shared scientific results at several national and international conferences. The project has been presented or is mentioned in different local newspapers, press and online magazines in Spain, Greece and Italy (see Action D.2 with annexed documentation).

4. Introduction

Wild pollinators are the core of our ecosystems and are reducing dramatically in the last decades: among the main causes are land-use change, destruction of habitats, intensive agricultural management and pesticide use, environmental pollution, invasive alien species, pathogens and climate change (IPBES, 2016) and unsustainable beekeeping. This decline is amongst the most severe instance of modern biodiversity loss so far documented, representing a crisis for environmental health and agriculture. It is estimated that 84% of EU crop species and 78% of wildflower species rely on insect pollination. The ecosystem service provided to the EU by pollinators is valued at €15 billion/year. Wild pollinators in the EU Mediterranean countries are represented mainly by bees (Hymenoptera, Apoidea), bee flies and hoverflies (Diptera, Bombyliidae and Syrphidae), and in smaller weight butterflies and moths (Lepidoptera), bugs (Coleoptera) and wasps (Hymenoptera). Very little is still known about their conservation status, distribution, and ecology. Moreover, the environmental information regarding the interactions with native plants (food resources), essential to them, is generally limited or not available to practitioners and concerned authorities. Reversing the decline of pollinators to ensure a sustainable ecosystem and addressing many of the factors causing biodiversity decline was the main objective of LIFE 4 Pollinators, through the improvement of knowledge and awareness in citizens and key stakeholders and through the incitement to change behaviour in order to manage urban public and private green areas and productive farmlands more sustainably in Italy, Spain, Greece and Slovenia.

Coherently with Pollinators Initiative, Pesticide Directive and the Nature Restoration Law, LIFE 4 Pollinators developed activities to improve the application of pollinator-friendly practices in agriculture and beekeeping management, in public and private gardening, in the management of urban green spaces and natural areas, including N2000 sites. The specific objectives of the proposal could be so resumed:

- To gain environmental benefits by improving pollinator conservation, through the creation of a virtuous circuit that leads to a progressive change in environmental and agricultural management practices in Mediterranean countries
- To raise citizens and stakeholders' awareness and knowledge on the importance of pollinators and their biodiversity
- To promote attitudes and behaviours of key stakeholders in favour of native wild pollinators (safe use of chemicals, green infrastructures, rural and urban management, etc.)
- To stimulate national policies/strategies for pollinators conservation

Short term impacts could include changes in species abundance or community diversity as a result of the application of pollinator-friendly practices (e.g., change in garden maintenance; code of conduct adoption by farmers, etc.). Key stakeholders' behavioural changes, as starting point of virtuous circuits, represent the main long-term impact achieved (see chapter 7.KPI).

5. Administrative part

The project management process and the working method

The LIFE 4 Pollinators project was implemented by the coordinating beneficiary UNIBO and the associated beneficiaries EZAVOD, CREA, Coldiretti (later replaced by Confagricoltura), CSIC, UAEGEAN, UVIGO.

On 16/12/2019, the kick-off meeting was held in Bologna with the beneficiaries to share information and strategies. Decisions were always shared, and online meetings were organized every 1-2 month. A virtual space (nextcloud) was created in order to share and store documents,

project materials, and other relevant project material for immediate access. The partnership agreement was developed by all the beneficiaries and duly signed by the legal representatives.

Daily or periodically, the following activities were performed:
- project management meetings;
- every 3 months, each beneficiary was asked to collect and store documents related to the cost incurred. The personnel involved in the Project had to submit the filled timesheet monthly. This allowed the project manager to verify that the documentation provided was in compliance with the LIFE administrative rules and, if necessary, to request additions and changes;
- Answer the beneficiaries' administrative questions to help with the reporting process and rules;
- Collaboration in the development of the main procedures for the external assignments, service providers or consultancies in order to comply with the LIFE regulations, the Italian regulations;
- Organization of online meetings (coordination, networking, and project meetings: when not in person, project meetings were done online ca. every 3 months);
- Organization of project meeting in Lesvos, November 25-26, 2021;
- Organization of the monitoring visits on June 22, 2020, April 29-30, 2021, and June 26-28, 2022, preparation of the documents for the visit and reports;
- Organization of project meeting in Mallorca, October 24-25, 2022;
- Organization of the Final Conference on September 4-5 and following monitoring visit on Sept 6, 2024;
- Frequent contacts with the beneficiaries to monitor the technical progresses;
- Communication with the monitor and requests for some clarifications, preparation, and submission of updates to the monitor;
- Request for partners' contribution in completing scientific/financial reports to be submitted to the Monitor and Project Adviser.

Significant deviations from the work plan

Despite the difficulties due to the pandemic and the withdrawal of the associated beneficiary Coldiretti, milestones and deliverables of the project were not changed. Nonetheless, a delay in the preliminary schedule and therefore in the achievement of the results was encountered. Hence an amendment to postpone the end-date of the project of one year was requested. The necessary changes, physiological in each project to adapt to the situation, were always discussed with the individual associated beneficiary in meetings with the scientific coordinator and the project manager to ensure that the requests were compliant with the LIFE rules and to find the best solution. Subsequently, the Coordinating Beneficiary informed and updated the monitor to get suggestions on the best ways to proceed or to inform CINEA.

Communication with the Agency and Monitoring team

Communication with CINEA has always been active. The reference figure for the Coordinating Beneficiary was the monitor Ms. Stefania Dall'Olio for the first year and then, Ms. Iva Rossi who always supported us with advice and suggestions to manage the project as best as possible. Starting from July 2023, Ms. Dall'Olio covered the role of monitor again and, further to the internal reorganisation of Elmen EEIG, the Helpdesk was introduced as a tool to interact with the monitor and submit any questions or doubts relating to the progress of the project. In total, 5 tickets were submitted via the Helpdesk, mainly under the topic "Contractual and project implementation issues". Overall, communication with the monitoring team was excellent and continuous, every time the scientific coordinator and the project manager asked the monitor for

information and clarifications, she answered promptly facilitating the management of the project.

The Changes due to amendments to the Grant Agreement

On 26/07/2022, the Coordinating Beneficiary sent to the CINEA the 1st amendment request to the project regarding the following changes:

1. Partnership modification: withdrawal of the associated beneficiary Federazione Regionale Coldiretti Emilia-Romagna and addition of the new beneficiary Confagricoltura Emilia-Romagna;
2. Extension of the project duration to 30/09/2024 (Actual expected end date:30/09/2023);
3. Change in bank references of the coordinating beneficiary Alma Mater Studiurum – Università di Bologna;
4. Coordinating beneficiary name change from Alma Mater Studiorum – Università di Bologna - Dipartimento di Scienze Biologiche, Geologiche e Ambientali - BIGEA to Alma Mater Studiorum - Università di Bologna;
5. Modification of the name of the legal representative of the coordinating beneficiary, the new legal representative is Professor Alessandro Chiarucci.

6. Technical part

6.1. Technical progress, per Action

The principal purpose of this section is to present and describe the activities conducted by the partners during the LIFE 4 Pollinators, from December 2019 until the end of September 2024. Information about the development of dissemination tools and handbooks for the different key stakeholders are reported in this document with the aim to describe the evolution of the various work phases, the unforeseen encountered during the various phases mainly due to the pandemic crisis and the solutions that have led to the current state.
Each action has been divided according to the geographical area of implementation and the time required for their performance.

Action A.1 – Development of common protocols

Foreseen Start date	October 1st, 2019	**Foreseen End date**	July 30, 2020
Actual Start date	November 7 th, 2019	**Actual End date**	June 30th, 2022
Deliverables	- Simplified tools for target species identification ~~30/6/2020~~ actual 31/5/2021 - handbook for N2000 managers, Park officers and competent authorities ~~30/6/2020~~ 30/6/2021 - handbook for Citizen Science (originally named for students) ~~30/6/2020~~ 30/6/2021 - handbook for farmers and gardeners ~~30/6/2020~~ MODIFIED in handbook for urban green areas and Handbook for farmers amended 30/6/2022		
Milestones	- Common protocols development ~~30/6/2020~~ actual 30/6/2022		

The staff of the project has been divided in two main working group to implement this activity: one for "handbooks" and one for "ID tools & grid parameters". After, a **list of selected pollinators** to be targeted, has been developed by the scientific committee and each partner was responsible for one or more morpho-group. The list was decided not to be strict at species level but focused on five morpho-groups: Apoidea, Vespidae, diurnal and nocturnal Lepidoptera, Syrphidae and Bombyliidae, as Diptera and Coleoptera. **List of alien species** has been drafted based on IAS Directive list, and is reported in the handbook for managers of natural parks and protected areas.
The **simplified tools and keys for the identification of species** developed are five field guides, one per each target pollinators group that includes a general identification key. The guides have been created using illustrations of the species selected, made by CSIC-IMEDEA. A specific additional field guide with a more complex identification key has been developed for the entomophilous plants by UNIBO_BIGEA, with illustration of flowers made by Marta Barberis (UNIBO, PhD student volunteer participant to the project). A common editing style has been used. Per each species a digital card has been created and published on the project website. Handbooks originally should have been three, but all PP agreed to develop 4 handbooks, with the same general introduction on pollination and pollinators followed by specific contents: 1. **Handbook for managers of Natural Parks and Protected Areas** where the threats to pollinators and the measures to protect them are specified; 2. **Citizen Science handbook** (originally named for students) where the educational project and the activities to involve citizens in data collection are described, with field recording sheets; 3. **Management of urban green areas handbook,** for gardeners and urban managers, with the description of different green urban spaces and the suggested pollinator-friendly measures; 4. **Handbook for farmers**, where threats and possible measures to reduce the impact of agriculture on wild pollinators are

described. Moreover, a **Code of conduct for farmers** (see Action B.4) and a **Declaration for pollinator friendly municipalities** were drafted, through a participatory process with two municipalities (San Lazzaro di Savena and Casalecchio di Reno) supporting the project since the beginning and based on the protocol "Helping pollinators locally – developing a local pollinator action plan or strategy" produced within the program Buglife UK. All handbooks have a common mock-up and were developed by UNIBO, CREA, CSIC, UAEGEAN. The products are all downloadable in five languages (EN, IT, ES, GR, SI) from the website.
All aforementioned activities have been delayed by one year (deliverables deadline shift from 30/6/2020 to 31/05/2021) because of administrative delays in the stipulation of contracts with the additional staff of all partners, the unforeseen pandemic events which provoke a complete stop for two months in 2020 and then a very slow new start with new methodologies (smart working, meetings by remote, slowing of administrative procedures, etc.) and because one partner (Coldiretti) unexpectedly decided in 2021 to withdrawal from the project. This imposed to delay also the core actions (B) and the final publication of the Handbook for farmers and the Code of Conduct for farmers that were finalized in June and available for download in September 2022, after the new partner Conf joined the partnership.
Design of citizens science projects for schools and other target audience have been created after the organization of an internal training on Citizen Science for all PP; it is an educational project named Students 4 Pollinators (described in D.13 Handbooks for Citizen Science), it includes the description of 3 field activities with specific protocols. Additionally, **pollinator-friendly certification** was assigned to virtuous schools (see D.28, and An. B.3).

All the translated field guides and handbooks are available and freely downloadable on the project website (download sections for each PP language).

Action A.2 – Identification of project's areas among the selected ones

Foreseen Start date	October 1st, 2019	**Foreseen End date**	March 30, 2020
Actual Start date	November 4th, 2019	**Actual End date**	January 2024
Deliverables	- Communication Plan ~~31/3/2020~~ actual 30/11/2020 - Supporting letters received ~~31/3/2020~~ actual 30/9/2024		
Milestones	- Identification of sites for project's implementation (Actions B and C) ~~31/3/20~~ actual 31/1/2024		

A.2.1 Identification of methods and location for Pilot project (Action B.4)

Action A.2.1 is preliminary to the Pilot Project of Action B.4.1 aimed to test the suitability of the new BEE indicator, based on functional and taxonomical features of wild bees, to assess Rural Development Plan measures. To achieve this goal, two main activities were identified: a) establishing the elements that should be included in the indicator, balancing scientific information achievable through field monitoring and reviewing the existing CAP indicators (leading to Albertazzi et al. 2021, An.-Scientific articles and communications); and b) selecting sites with different environmental/agricultural characteristics to test the indicator using 3 basic criteria: farming practice (conventional, organic), altitude, farm extent. The planned output, the selection of five farms, was accomplished accordingly with the delay superimposed by the COVID-19 crisis. However, the unpredictable withdrawal of Coldiretti substituted by Conf re-opened the site selection. At the end, 3 farms expressed their interest to continue the collaboration and 2 new farms, proposed by Conf, were included in the Pilot Project (See An. A.2.1 for details).

A.2.2 Identification of target areas for events and monitoring UNIBO

Target areas for events (Action B.1) and monitoring (Action C.2) have been confirmed according to the initial proposal or identified by PP after discussion with competent authorities (e.g. N2000 managers, farmers and landowners, municipalities, etc.). Selected sites for monitoring surveys (except from those in agricultural habitats in ER, Italy) have been selected among the N2000 sites where project events will take place, taking also into account the monitoring protocol approved by the project scientific committee (Action C.2).
Regarding action B.2 (trainings to stakeholders), the originally proposed locations were confirmed, but due to the pandemic, online instead of in presence trainings have been done.
The list of the areas selected for events and scientific monitoring, is hereafter reported:
ITALY: Gessi Bolognesi in Emilia-Romagna (IT4050001), Monte d'Alma in Tuscany (IT51A0008), Riserva Naturale Oasi Le Bine (IT20A0004) in Lombardy, Parco Nazionale Gran Sasso Monti della Laga (IT7110128), San Marino (not EU) and 12 agricultural areas in ER (see list in Action C.2.1).

SPAIN- Galicia: Parque Nacional das Illas Atlánticas de Galicia, including: Complexo Húmido de Corrubedo- arquipélago de Sálvora (ZEC ES1110006); 'Complexo Ons-O Grove (ZEC ES1140004); Illas Cíes (ZEC ES0000001); Sierra de Courel (Ancares - Courel; ES1120001); Parque Natural da Serra de Enciña da Lastra (ZEC ES1130009).

SPAIN- Baleares: S'Albufera de Mallorca Natural Park (ES5310125), Es Trenc – Salobrar de Campos Natural Park in Mallorca (ES0000037), Albufera des Grau Natural Park in Menorca (ES0000234), Ses Salines Natural Park (Ibiza and Formentera) (ES000084). Additional sites: Albufereta Natural Park (ES0000226), Ariant Tramuntana Protected Area (ES000073), Llevant Natural Park (ES0000227), Mondragó Natural Park (ES0000145), Son Real Natural Protected Area (ES0000544).

GREECE: Dytiki Chersonisos – Apolithomeno Dasos (GR4110003), Kolpos Kallonis KaI Chersaia Paraktia Zoni (GR4110004). The scientific monitoring site was carried out at the Castle of Mytilene (see Action C.2.1).

SLOVENIJA: Škocjan Caves Regional Park, located within the N2000 site Kras (SI5000023).

The target areas for events and monitoring were slightly changes compared to the ones listed in the original proposal and chosen before project's implementation. Indeed: Gera Gulf, Ntipi-Larsos marsh and Olympus mount – Evergetoulas River (GR4110005) was not used for carrying out any project activity; one site was added for a bioblitz in Galicia; one site was changed for a bioblitz in Italy (Monte d'Alma instead of Val di Farma) to improve the efficacy of the event that was organized in early spring 2024 in collaboration with the Park Administration, the local Museum of Natural History of Maremma, and European Citizen Science association; and two new sites were added in Italy to perform unforeseen Bioblitz events. Finally, more sites were targeted in Balearic Islands for Bioblitz and training events, to achieve the project objectives (n. of participants). The activity deadline was changed but it did not affect the implementation of the activities, that were also delayed.

A.2.3 Project's Communication Plan

The Communication Plan (Annex VII) has been developed in EN, together with an external assistance (Muschi&Licheni), subcontracting has been finalized later than expected for administrative procedure, that were changed during the Pandemic crisis. The Plan has been drafted considering the LIFE recommendation and toolkit for Communication[3] Strategy, key messages and hashtags for social networks were identified.

[3] https://ec.europa.eu/environment/archives/life/toolkit/comtools/resources/documents/communica-strategy_lifeplus.pdf

A specific graphic to be used for communication purposes (the "flower circle") has been created by UNIBO team composing project illustrations, based on the original idea by M. Galloni.

A.2.4 Supporting Letters gathering

Since the project start, we organized several meetings with private and public stakeholders for networking purposes (see Action D.2), asking them to formally support the project through an official letter. Despite the interest and ongoing exchange and collaboration, we received 4 official supporting letters from the: CS project X-Polli:Nation, Barilla group-Italy, Ptuj Municipality, Beekeeper society Ptuj (see D.5). Notwithstanding, other documents such as the "pollinator-friendly" declarations of intents officially adopted by 6 municipalities so far, as well as the Pollinator-friendly certificate assigned to schools, associations, private and public bodies, often as result of active networking (see Action D.2), can be considered as well with this regard. Moreover, we collaborated with other local and EU projects (e.g. SPRING, URWAN, LIFE PollinAction, LIFE BEEAdapt, Beewatching) without the need of supporting letter. Collaborations will continue after project's end. After initial difficulties, we fruitfully collaborated to the organization of the national event held in Rome on March 20th 2024 (Action B.2.1) with ISPRA (see also Action B.5.3), to stimulate pollinator conservation policies in Italy through the national participation to the Promote Pollinators coalition (https://promotepollinators.org/) (minutes of the meeting held on 2-2-2021 in An. E.1).

Action B.1 – General Public involvement

Foreseen Start date	April 1st, 2020	**Foreseen End date**	June 30th, 2023
Actual Start date	January 1st, 2020	**Actual End date**	June 30th 2024
Deliverables	short digital guide on the botanical garden wild bees ~~31/3/21~~ amended ~~31/5/22~~ actual 30/6/2023		
Milestones	Bioblitz finalized ~~30/4/2023~~ amended ~~30/11/23~~ actual 31/5/2024 Pollinator garden and bee-hotel creation ~~31/3/2021~~ amended ~~30/6/22~~ actual 30/6/2023 First video elaboration ~~31/10/2021~~ amended ~~30/6/2022~~ 31/7/2022 Short digital guide on the botanical garden wild bees ONLINE ~~31/3/2021~~ amended ~~31/5/22~~ actual 30/6/2023 Second video elaboration ~~31/1/2023~~ actual 28/2/2023		

B.1.1 EU web campaign through social networking

EZVD was in charge for social networking, promoting the project on FB, Tw and In until March 2023. An external expert was hired to help with creation of posts and video posts and selection of pictures. While, the coordinator, UNIBO, was always contributing to the management of the profiles of In and FB and all partners contributed actively to write posts sending news and pictures to EZVD. From March 2023 the duty regarding this activity passed to CREA because EZVD was having problem to continue the management. Once a month a message was sent to all PP to collect information on past and future events, to be disseminated through posts on social channels, tailored to the specific public targeted.

The FB page (published online on 19/5/2020) was recognized as one of the primary tools to establish exchanges and communication with general public and stakeholders. Within the period Nov2021-Sept2024 the @life4pollinators FB page counted 1,745 followers, with 11670 content interactions (likes, comments) and a post coverage of 55,980. Tw (published online on 14//5/2020) was used for short project news and announcements. The account has 406 followers and is currently following 126 profiles. The role of the In profile (activated on 19/5/2020) is to attract younger users with pictures and videos. The profile has 1,340 followers, reaching 110,043 users, with 23,753 views, we published so far almost 500 posts, and we are

following 950 profiles. The social networking aspect of the project was highly successful, reaching a wide audience and producing 3-4 pieces of content per week, including stories and educational materials. It effectively promoted events, shared partners activities over the years, and engaged users with the project.

B.1.2 Validation of data sent on the web

A validation team with members from all countries and expertise has been approved during the Project Meeting in Lesvos (24-25/11/2021) and met regularly. J. Devalez (UAEGEAN) was the first coordinator of the team and the validators were: J. Devalez, E.L. Zenga, (CREA), R. Beltran Mas (CSIC), J.M. Sanchez (UVIGO), F. Bitonto, L. Lenzi and M. Galloni (UNIBO). Due to difficulties and delays in handling the validation process, the scientific committee agreed to include in the team more plant and insect taxonomists (volunteers), also to guarantee the long-term continuation of this tool. The team members have changed during the project implementation: currently, there are 29 members, 26 are volunteers. At first, E. Keller (UNIBO) and A. Chroni (UAEGEAN, for GR submissions) were manually sending emails to the users in their own languages, with correct identifications. Currently no message is sent, because -as it is explained in the submission webform- the photos with correct ID are uploaded to the map at least 3 times per year. E. Keller was the contact point with the subcontractor (Alekos.net) that built the web platform (https://www.life4pollinators.eu/en/submission). Both the submission and the validation process were tested several times and the last one along with the protocol was finalized in June 2021. Various internal trainings were held (2021 to 2024). The platform was advertised in occasion of project events and activities, in order to promote photos submissions. All scientific partners participated in this activity. A relevant result was the first pollinator interaction networks of Ons Island. The analyses will continue after the end of the project (see Action B.5.1 and D.22- Guidelines).

B.1.3 Expert-assisted citizen science activities in NATURA2000 sites

The pandemic crisis affected the implementation of this action all over EU. Until 2021 due to the specific Covid-19 restrictions, the experts' assisted activities could only be implemented in Italy and Spain. All the information (list of participants, pictures, leaflet) per each event can be found in An. B.1.3- All Bioblitzes, the whole list of events carried out is in the table below.

Date	Partner	Country	Location	N2000 site code	n. participants	n. participants virtual	total per event	total per country
04/06/22	UAEGEAN	Greece	Petrified Forest of Lesvos island	GR4110003	16	0	**16**	138
8/4/2023	UAEGEAN	Greece	Castle of Mytilene, Lesvos island	n.a.	54	0	**54**	
21/04/23	UAEGEAN	Greece	Castle of Mytilene, Lesvos island	n.a.	68	0	**68**	
02/02/21	CSIC IMEDEA	SPAIN	Finca publica de Son Real, Maiorca	n.a.	12	0	**12**	166
05/06/21	CSIC IMEDEA	SPAIN	Albufereta natural park	ES0000226	13	0	**13**	
16/05/21	CSIC IMEDEA	SPAIN	Es trenc	ES0000037	10	0	**10**	
26/06/21	CSIC IMEDEA	SPAIN	Ariant Tramuntana protected area	ES0000073	13	0	**13**	
12/06/21	CSIC IMEDEA	SPAIN	Albufera natural park	ES0000038	17	0	**17**	
26/03/22	CSIC IMEDEA	SPAIN	Llevant Natural Park	ES0000227	16	0	**16**	
30/04/22	CSIC IMEDEA	SPAIN	Mondragó Natural Park	ES0000145	16	0	**16**	
21/05/22	CSIC IMEDEA	SPAIN	Ariant Tramuntana protected area	ES0000073	9	0	**9**	
22/05/22	CSIC IMEDEA	SPAIN	Son Real Natural Protected Area	ES0000544	6	0	**6**	
28/05/22	CSIC IMEDEA	SPAIN	Ses Salines Natural Park(Ibiza)	ES0000084	6	0	**6**	
11/06/22	CSIC IMEDEA	SPAIN	Ses Salines Natural Park(Formentera)	ES0000084	6	0	**6**	
01/04/23	CSIC IMEDEA	SPAIN	Natural Park s'Albufera	ES0000038	22	0	**22**	
29/04/23	CSIC IMEDEA	SPAIN	Natural Park d'Es Trenc	ES0000037	20	0	**20**	
24/05/22	UVIGO	SPAIN	Sierra de Courel, Spain	ES1120001	16	0	**16**	108
19/05/23	UVIGO	SPAIN	Cies Island-National Park of Atlantic island of Galicia	ES0000001	36	0	**36**	
23/05/23	UVIGO	SPAIN	Sierra de Courel, Biosphere Reserve	ES1120001	24	0	**24**	
20/05/23	UVIGO	SPAIN	Ons Island-National Park of Atlantic island of Galicia	ES1140004	32	0	**32**	
13/06/21	UNIBO	Italy	Le Bine- Lombardia	IT20A0004	96	0	**96**	308
06/08/22	UNIBO	Italy	Montebello di Bertona- Parco Nazionale del Gran Sasso Monti della Laga- Abruzzo	IT7110128	20	0	**20**	
26/06/22	UNIBO	Italy	Gessi Bolognesi e Calanchi della Badessa Emilia Romagna	IT4050001	39	0	**39**	
06/05/23	UNIBO	Italy	Giardino della Mediateca - Emilia Romagna	n.a.	14	0	**14**	
20/04/24	UNIBO	Italy	Parco delle Colline Metallifere -Monte d'Alma- Toscana	IT51A0008	79	0	**79**	
05/05/24	UNIBO CREA	Italy	San Marino- extra EU	n.a.	60	0	**60**	
20/05/23	UNIBO EZAVOD	Slovenia	Skocjan Caves Caves Park- Reka	SI3000223	49	0	**49**	49
					769			
							769	**769**

ITALY- Four mini BioBlitz in Italy-Lombardy, in the Natural Reserve "Oasi Le Bine" (IT20A0004), in Emilia Romagna, in Tuscany and in San Marino. The events were organized by UNIBO and CREA, in collaboration with the management bodies of the areas or similar. Previous to the concrete implementation of the first one in Lombardy, a meeting to present all materials and methodology has been organized online for educators and managers of all Lombardy Protected Areas, in order to make them able to run a mini-bioblitz focusing on wild pollinators autonomously. These bioblitz were performed in several Protected Areas in Lombardy in parallel, on June 13th and 27th, 2021 and lasted approximately 8 hours (see An. B.1.3- Replication in Lombardy). During the preparation of the last event in Tuscany with Andrea Sforzi (Museo di Storia Naturale della Maremma) a new name was coined: PolliBlitz to be used for mini bioblitz specifically focused on pollinators. The staff of CREA and UNIBO organized and implemented the mini-bioblitz and led the activities to collect biodiversity data in the field (e.g., microscopes observations of wild pollinators and flowers).
All data/pictures collected were mostly uploaded to the LIFE 4 Pollinators web platform or, if another platform was used (i.e. INaturalist), data were downloaded and directly added to our database. In IT, the number of events and people participating was higher than the expected because 3 additional mini-bioblitz were organized (Montebello di Bertona, Giardini Mediateca- BO, San Marino) thanks also to the support and help of various external bodies.

SPAIN- **Balearic Islands-** In 2021 due to the specific Covid-19 restrictions, the experts' assisted activities were mostly implemented in Spain, specifically in the Balearic Islands. Until March 2022 (MidTerm report), 4 Bioblitzes were held in the island of Mallorca (Spain). The events had average participation of approximately 20 people each. After March 2022, 6 Bioblitzes were further performed and 3 more during 2023 on the Balearic Islands. All Bioblitzes were carried out in N2000 sites, such as natural parks or protected areas and all aimed at discovering and learning the most relevant pollinators and diversity of the region. A brief talk was included after the registration, the events were run for half day.
The majority of the Bioblitzes were planned and led by Rafel Beltran Mas., Anna Traveset and Coral Aranda also participated in the execution and in some cases, they were supported by environmental educators . During 2023 the Bioblitz were led by Pau Enric Serra Marin and the last one was supported also by Xavier Canyelles, an entomologist. Due to the great interest of public and to achieve the expected number of participants, more Bioblitzes have been carried out than previously planned.
We consider all activities very successful, both in terms of public participation and in meeting the objectives of the LIFE Project. Overall, because more bioblitzes were done compared to those originally planned, although the budget did not significantly change.
SPAIN- Galicia: 4 Bioblitz have been organized by UVigo, less than originally planned. On May 2022 a Bioblitz was carried out in the Sierra de Courel with participation of 16 well-trained on taxonomy peoples. During the month of May 2023, 3 bioblitzes were carried out in the protected areas of the Cies and Ons Islands (both located in the National Park of the Atlantic Islands of Galicia) and in the Sierra de Courel with 92 participants in all 3 activities.

GREECE – Three bioblitzes were conducted during the period 2022-2023 in Greece. The first bioblitz was carried out on June 4th, 2022, at the Petrified Forest of Lesvos (GR4110003) in the Western peninsula of Lesvos, while the second and the third were carried out on April 8th and April 21st, 2023, respectively, at the Castle of Mytilene. Although other N2000 sites had been foreseen for bioblitzes in year 2023, viz., Kalloni Gulf & coastal zone (GR4110004) and Gera Gulf, Ntipi-Larsos marsh and Olympus mount – Evergetoulas River (GR4110005), the UAEGEAN team decided not to perform the bioblitzes in these areas due to the late flowering

in them which would cost in lower participation of the public. Finally, the UAEGEAN team decided to perform the bioblitzes at the Castle of Mytilene, i.e. same site of the scientific monitoring.

B.1.4 Creating a pollinator-garden and native bee-plants nursery in strategic places

ITALY - The Pollinator Garden at the Botanic Garden of Bologna University has been finally opened on 15/05/2024. Nicola Lothar Herrmann, the young technician in charge of this action was recruited on October, 11th, 2021 with 1 year of delay because of COVID-19 and consequent administrative problems. Moreover, the botanic garden has been closed for renewing by the central direction of the University, this is why the deadline for the completion shifted to 2022 and then to 2024. The pollinator garden occupies an area of 43 sqm divided into 8 different sectors, 1 per each flower type. To complete the garden, 2 beehotels, 8 ceramic flower sculptures and the descriptive panels were installed (photos in An. B.1.4). This garden is thought to be dedicated both to educational activities and to pollinators sustainment. The 8-sectors structure, emphasizing the pollination syndrome, helps to understand the strong connection between pollinators and plants. At the same time, the presence of the 8 different flower types, will provide food for a large number of pollinators taxa. Currently the garden hosts around 100 different plant species. A nursery and a seedbank were created in order to have some spare plants and seeds available both for the garden and for the dissemination events. Most species were collected from local natural populations. Another part was growing spontaneously or semi-spontaneously in the Botanic Garden of UNIBO. Some seeds come from other Italian botanical gardens or were collected in natural populations. Unforeseen collaborations were set up with the art high school "F. Arcangeli" and the Academy of Fine Arts of Bologna to involve students and to beautify the garden. A15-hour course was conducted with 3 classes of the art high school (around 20 students each), on the importance of pollinators, their diversity, threats and mitigations. At the end of the course, each class produced artworks to be installed in the garden. Two classes from the wood design course created 2 bee hotels. The ceramics design class, created 8 flower sculptures, 1 for each section of the garden. Panels illustrating the structure of the garden and its importance for pollinator conservation were designed and produced with a trainee from the Academy of Fine Arts (all photos in A. B.1.4). Moreover, a short digital guide on wild bees of Bologna Botanical Garden with more than 450 photos (Deliverable n. 20) and a list of suggested entomophilous plant species to be planted in urban public and private green spaces was developed and is downloadable at project website (https://www.life4pollinators.eu/it/node/4336; https://www.life4pollinators.eu/it/node/4001) .

SPAIN- Balearic Islands. In the initial proposal, it was foreseen to create 1 pollinator garden in the Soller Botanical Garden (Mallorca, Spain). But when the project started, this section of the garden was already realized. As an alternative, during the months of May and June 2021, 5 pollinator gardens were created in the city of Palma in collaboration with the Palma City Council, together with the European pilot project "BiodiverCities". The BiodiverCities project has only played as intermediary between the Palma City Council and the LIFE 4 Pollinators project. 12 environmental education workshops were held with 9 schools, to create the gardens. A total of about 20-30 primary school students (2 or 3 per school) were involved in the co-creation process. Photos of the events available in An. B.1.4 (see also Action B.3).

SLOVENIA- An unforeseen additional pollinator garden was realized as result of a training to urban green managers (see Action B.2.2).

B.1.5 Developing/distributing animation videos

Three animation videos were made to give social visibility to the project. A first video was made to present the project (https://vimeo.com/392306226). This was followed by 2 videos focused on explaining the diversity of pollinators (https://vimeo.com/722080405) and the causes of their decline and the protocols to be used to combat this problem (https://vimeo.com/794677411). These videos, produced in English, have been translated into the national languages of the project partners (IT, ES, GR, SL) and also into languages that have facilitated their use and dissemination in Mediterranean countries such as Portuguese, Catalan and Galician. In parallel, to test the models and 3D animation techniques that have been used in these videos, on April 30th, 2021, a short video clip was presented on social networks in which we show why it is important to conserve a wide diversity of pollinators (https://vimeo.com/543581419). Moreover, in collaboration with another LIFE Insular, an animated film has been produced to draw attention to the problems that can be caused by the loss of pollinators and to invite the viewer to reflect on the legacy we want to leave to future generations (https://vimeo.com/820786791), currently this video is only in Spanish. All these videos, in addition to being viewed online, are being used by partners and associated institutions to promote pollinator conservation and awareness.
All videos are available at project website.

Action B.2 – Stakeholders involvement

Foreseen Start date	January 15th, 2021	**Foreseen End date**	June 30th, 2023
Actual Start date	June 6th, 2020	**Actual End date**	August 31th, 2024
Deliverables	- 2020 bundle of questionnaires to citizens, students and training activities in (B.2.1-B.2.3…) for Park Officers and N2000 competent authorities, Gardeners and Urban — managers for all Countries ~~28/02/21~~ (DELETED) - 2021 bundle of questionnaires and training activities in (B.2.1-B.2.3…) for Park Officers and N2000 competent authorities, Gardeners and Urban parks managers for all Countries ~~28/02/22~~ amended 31/10/2022 (containing only the questionnaires) - 2022 bundle of questionnaires and training activities in (B.2.1-B.2.3…) for Park Officers and N2000 competent authorities, Gardeners and Urban parks managers for all Countries 28/2/2023 amended 31/12/2023 (transformed in dashboards)		
Milestones	- Training to Park officers finalized ~~30/9/2022~~ amended 31/12/2023 actual 6/2024 - Web training tools published ~~15/1/2021~~ amended 31/12/2022 actual 8/2024 - Training on pollinator garden and pollinator-friendly gardening done ~~30/9/2021~~ amended ~~31/3/2023~~ actual 31/3/2024 - Farmers information events concluded ~~15/12/2022~~ amended 31/12/2023 actual 30/4/2024		

The deliverables called "bundle of questionnaires and training activities…" were changed in dashboards: web-visible pages accessible to external users that illustrates the main trends emerging from the submission of questionnaires, through navigable pages and different filters. The questionnaires per each category are available in D.17- Bundle of questionnaires. The deliverables could not be developed because the outputs of the questionnaires were huge excel files that, if not processed, cannot be easily understood. They were developed with the questionnaires to students and citizen: the ones that got the most responses and on which it made sense to give feedback until 11/2023. Indicators could be performed only on final data (surveymonkey, for detailed explanation see Action C.1, D. 35 Final Socioeconomic Report). All sub-actions suffered a delay due to Covid-19 crisis, during the events, the "Pollinator KITs" produced in Action D.1 and the specific Handbook (A.1) were distributed to the participants.

EZVD developed specific online trainings in form of an online tool available in English in the project website. Online Tool is designed to enhance the understanding of pollinators through

engaging videos and interactive quizzes. Two versions were developed – 1 for farmers and 1 for managers of protected areas. EZVD started the communication with potential contractors for webtool in 9/10-2021. EZVD was responsible for the creation of the online training that should be based on the trainings organized by UNIBO and CREA in Italy. Both activities were closed in 3-2024, moreover recoding of the events could not be used for privacy reasons, so we had to start from scratch. The external expert (subcontractor) for the webtool was then, selected in 9-2023. The webtool was finalized on 4-2024 and published on 8-2024.

B.2.1 Park officers and N2000 competent authorities training (An. B.2.1)

Date	Partner	Country	Location	n. participants in presence	n. participants virtual	Total per event	total per country
11/05/22	UAEGEAN	Greece	Management Unit of Procted Areas of Central Macedonia - NECCA - Kerkini Lake, Serres	9	0	9	
14/05/22	UAEGEAN	Greece	Management Unit of Olympus National Park - NECCA - Litochoro, Pieria	9	1	10	
18/4/2024 - 19/4/2024	UAEGEAN	Greece	Management Unit of Protected Areas of Southern Peloponnese - NECCA - Astros, Arcadia	15	0	15	
6/6/2024 - 7/6/2024	UAEGEAN	Greece	Management Unit of Protected Areas of Epirus & Management Unit of Northern Pindos National Park - NECCA - Ioannina, Epirus	36		36	70
10/07/20	CSIC IMEDEA	SPAIN	ES TRENC NATURAL PARK, MALLORCA	3		3	
25/05/22	CSIC IMEDEA	SPAIN	Son Real Natural Protected Area Maiorca	11		11	
20/05/23	CSIC IMEDEA	SPAIN	Colonia de St. Jordi	20	0	20	
12/12/22	UVIGO	SPAIN	Vigo, Spain	54		54	
25/05/23	UVIGO	SPAIN	Vigo, Spain	14		14	
26/04/24	UVIGO	SPAIN	Centro de Interpretación y Educación Ambiental Dehesa de la Villa, Madrid	36	0	36	138
12/04/23	Unibo	Italy	Masseria Galeone - CUFA	28		28	
18/04/23	Unibo	Italy	Parco della Marsiliana - CUFA	28		28	
09/09/23	Unibo	Italy	online- AIGAE	0	40	40	
19/03/24	Unibo	Italy	Orto Botanico di Roma- Federparchi LIFEPollinAction	23		23	
20/03/24	Unibo	Italy	Bioparco di Roma_ Federparchi LIFEPollinAction LIFE BeeAdapt	92		92	211
TOTAL						419	419

ITALY - In 2021 and until 2023, it has not been possible to implement the activities foreseen in Action B.2.1 because of Covid-19 restrictions and uncertainty. Afterwards 4 training cycles were organized: 2 targeting the personnel of CUFA (Reparto Biodiversità Carabinieri Forestali) proposed to the Chief of the department Gen.le Raffaele Manicone that subscribed a commitment to support the trainings offering the space and hosting the participants in 2 locations: Masseria Galeone in Apulia and Parco della Marsigliana in Tuscany. A total of 54 civil and military staff of CUFA participated. Moreover, a specific online training was organized for AIGAE the Italian Association of Environmental Guides and a 2 days' workshop was held in Rome with the support of FederParchi (supporting the proposal since the beginning), LIFE PollinAction and LIFE BeeAdapt. The programs of the events are attached but basically a general introductory session on LIFE 4 Pollinators, the benefit of pollination and how to include pollinators in management planning, was presented by Giovanna Dante (UNIBO-BIGEA), a core session on pollinators diversity and conservation strategy was presented by Marino Quaranta (CREA-AA) and a final session on plants diversity and conservation was presented by Prof.ssa Marta Galloni/Marta Barberis (UNIBO-BIGEA). Whenever it was possible, a field part to show different sampling technique and the approach to use our CS field sheets, was also included.

SPAIN- Balearic Islands- In 2022, a first workshop with 11 participants, was organized in Son Real, Mallorca. Attendees had the opportunity to exchange experiences and acquire new skills to enhance the administration of these protected areas (leaflet or poster and the list of participants with signatures are not available as attachment). In 2023, an event involving 20 environmental workers from the Cabrera Archipelago National Park took place in Colonia de Sant Jordi, Mallorca, Spain and it was led by Pau Enric Serra.

Galicia- UVIGO has participated and supported the training of the Park Officers of the National Park of the Atlantic Islands of Galicia. For this purpose, 2 events were held in December 2022 and May 2023, attended by 68 people. Park personnel have been trained in pollinator censuses, identification and pollinator-friendly management protocols. These trainings have been carried out during the springs of 2022 and 2023, together with the pollinator surveys that have been conducted throughout the park.

Finally, on April 26, 2024, IMEDEA and UVIGO organized a workshop in Madrid (in Dehesa de la Villa) on the importance of pollinators. This workshop aimed at training and exchanging knowledge with environmental managers from local, regional, and national governments, protected areas and environmental organizations and also at enhancing the adoption of correct governance on pollinators (the action was also planned as part of action B.5.4). The number of assistants was 36. It was a very fruitful workshop where people engaged in a large discussion on how to involve more people on the conservation of pollinators and how to increase awareness about pollinators loss and their consequences.

GREECE – Initially, the action was delayed because of the Covid-19 crisis and 3 out of 5 Management Bodies to be targeted (Kerkini Lake; Northern Pindos and Tzoumerka; Acheloos Valley, Agrafa & Meteora), were repealed with Decisions (No. 116471/4301, No. 116755/74322, and No. 116474/4302, respectively) of the Hellenic Ministry of Environment and Energy in 12-2021. The Management of all the above bodies were incorporated into the National Environment & Climate Change Agency (N.E.C.C.A.) under a new contact with the Head of N.E.C.C.A. made in January 2022. The updated plan of the Aegean team foresaw that the training seminars to the park officers and N2000 competent authorities would be carried out in spring 2022. Progressively, all Management Bodies in Greece were repealed and integrated into N.E.C.C.A, including Mount Parnon & Moustos Wetland and Olympus National Park (Decisions: No. 11828/467 and No. 116755/4322, respectively), in which events were to be organised by the Aegean team. Considering the changes in the organization structure of the Protected Areas in Greece, the UAEGEAN team came into collaboration with N.E.C.C.A. and managed to conduct 4 training seminars for the personnel of the Management Units of Protected Areas (MUPA) namely: (a) Central Macedonia (Lake Kerkini) in May 2022, (b) Olympus National Park in May 2022, (c) Southern Peloponnese (Parnon and Moustos Wetland) in April 2024, (d) Epirus (Tzoumerka, Acheloos Valley, Agrafa and Meteora), and (e) Northern Pindos National Park in June 2024. The personnel of each MUPA was trained to be able to identify pollinators in different habitat types occurring in the area the MUPA were located; e.g. MUPAs in Epirus for mountain systems, MUPA in Peloponnese for Mediterranean systems, etc.

B.2.2 Training on pollinator-garden creation and to botanical garden managers, urban park managers and private gardeners (An. B.2.2)

date	Partner	Country	location	n. participants in presence	n. participants virtual	total per event	total per country
24/03/22	Unibo	Italy	Bologna botanic garden	20	13	33	
22/03/24	Unibo	Italy	Bologna botanic garden	57		57	
05/04/24	Unibo (Ordine Architetti, Biologi e Servizio Giardini Comune di Roma)	Italy	Festival del Verde e del Paesaggio, Auditorium Parco della Musica- Roma	39		39	129
20/05/22	EZAVOD	Slovenia	Archeological park Panorama Ptuj	23		23	23
06/06/23	**UAEGEAN**	GREECE	**Metohi Study Center, Kalloni, Lesvos island**	**0**		**0**	**0**
01/07/20	**CSIC/IMEDEA**	SPAIN	**PALMA, MALLORCA; ES**	**6**		**6**	
25/05/22	**UVIGO**	SPAIN	**Seoane do Courel, Spain**	**28**		**28**	**34**
TOTAL				**173**	**13**	**186**	**186**

ITALY: The training on pollinator garden-creation was organized together with the training to botanical garden managers, urban park managers and private gardeners. Only after the end of the restrictions due to the Pandemic crisis the first training meeting for urban park manager, private gardeners and local municipalities' technicians could be organized at the Botanic Garden (March 24th 2022, both in person and online). The training included a visit to the Garden, to show the progresses in the Pollinator Garden creation, and a talk to help people creating pollinator-friendly gardens, terraces, and balconies. A training on urban green management has been organized on March 22nd, 2024, at the Botanical Garden; the 57 participants have been selected amongst Botanic Garden curators, urban park managers, gardeners, local administrations' managers, and city dwellers. During the morning session, the project, its objectives and strategies, measures to protect pollinators in urban areas, and the Declaration of Intents for pollinator-friendly municipality were presented. In the afternoon session, Botanic Garden curators and local municipalities' technicians and managers illustrated their "pollinators friendly" activities; the last part of the event occurred outdoors in the Botanical Garden, where methods, goals and constraints for the realization of a pollinator garden have been illustrated, and the results achieved have been highlighted. The event was advertised through the Italian Botanical Society (workgroup Botanical and historical gardens), direct contact with local municipalities and with strategic target audience. The last training meeting for urban planners and managers was held on April 5th, 2024, at the Festival del Verde e del Paesaggio, Auditorium Parco della Musica Ennio Morricone in Rome; the 39 participants have been selected amongst landscape architects, environmental biologists and urban gardeners of Rome council (Servizio Giardini Roma Capitale, Federazione Nazionale Biologi Italiani and Ordine degli Architetti di Roma e provincia were invited and the last two were also co-organizer of the event). Moreover, a preliminary online information event was organized in April 23rd, 2023 to involve the Bologna Municipal commission "Commissione Consiliare Urbanistica, Edilizia, Ambiente, Politiche per l'Abitare, Benessere Animali" - Udienza conoscitiva in merito a: protezione degli insetti impollinatori nella gestione della città (PG. N.371306/2023). The meeting was attended by assessors and members of Bologna City Council, and it is available on the official YouTube channel of the municipality (https://www.youtube.com/watch?v=PtwuOzOOtww). A second online meeting was organized on December 5th, 2023, and the "Pollinator friendly declaration" was explained and promoted. Technicians and assessors of 2 "pollinator friendly" municipalities illustrated the procedures they adopted for adhering to the Declaration of Intents. U. Mossetti (Botanic Garden Curator) was leading this sub-action for UNIBO, F. Sgolastra, M. Galloni, N. Lothar Herrmann and G. Dante contributed to the implementation as speakers and organizers.

SPAIN- **Balearic Islands-** Preliminary meetings have been held to organize training sessions with the Soller Botanical Garden and some collaborations have been carried out, for example, to designate the appropriate flora for the creation of pollinator gardens. Only 1 meeting was organized with the Municipality of Mallorca at the beginning of the project in 2020, with 6 people, where importance of pollinators and pollinators friendly practices were presented.

SPAIN- Galicia- In May 2022, 28 agronomy and floriculture students were trained in the identification and conservation of pollinators in the Sierra de Courel biosphere reserve.

GREECE – Since January 2022, meetings have been held with local authorities on Lesvos Island to present the project and to organize trainings for urban park managers and gardeners, as well as to eventually install bee hotels and plant entomophilous plants. The events were to take place, starting from 2023, at the urban parks of: (a) Municipality of Mytilene and (b) Municipality of Western Lesvos (MWL), with additional locations being under examination (e.g., Athens). An attempt to train 4 gardeners of the Municipality of Mytilene, responsible for the plants of the Castle of Mytilene, was done between 2022 and 2024. The gardeners were trained to differentiate the way of mowing, i.e. avoiding mowing the entire set of wild plants while blooming but leaving wide strips of flowering plants between corridors for passing humans. Furthermore, the gardeners helped with planting entomophilous flowering plants in early spring 2022, of which later they took care of. In June 2023, the UAEGEAN team organised a training seminar for local farmers and urban park managers and gardeners at the Metohi Study Center in Kalloni, MWL, that was not attended by anyone of its personnel. Thus, the team decided to focus on other target groups more interested about pollinators, i.e., schoolteachers, students and citizens. Although the goal was not achieved, the UAEGEAN team tried different approaches to raise local authorities' awareness about pollinators: several bee-hotels were built and installed mainly on Lesvos Island (6 in year 2022 replaced next year by other 3 in the Castle of Mytilene; and another 6 in other areas on Lesvos, such as schools or the Petrified Forest of Lesvos), but also at Ancient Stageira (at the eastern coast of the peninsula of Halkidiki), at the MUPA of Olympus National Park in Pieria and at the LLCES of Korthi on Andros Island. Finally, unexpectedly in November 2023 the City Council decided to sign the Declaration of Intent approving the Regulation of Urban Green Areas of the project that make MWL compatible with the Strategy for Pollinators for the period 2024-2029.

SLOVENIA - EZVD organised an unforeseen training on pollinator garden creation on 20th of May 2022 in the area of Archeological Park Panorama, in Ptuj, Slovenia. 27 participants from City Municipality Ptuj, Public service company for urban green areas, Beekeepers society of Ptuj and mentors responsible for school gardens with more than 30 school children from 3 local primary schools, tutors and students from Biotechnical school Ptuj, created a pollinator garden. An expert for the creation of pollinator-friendly gardens presented all the steps for the creation: how to select the location, the plants and the supporting structures.

B.2.3 Information events for farmers and beekeepers on CAP greening measures, non-chemical farming, pollinator-friendly management (An. B.2.3)

The trainings were held in IT, ES and GR and the handbook for farmers and Code of Conduct were promoted, together with CAP measures to reduce chemicals.

date	Partner	Country	location	n. participants in presence	participants virtual	total per event	total per country
10/05/22	UAEGEAN	Greece	Management Unit of Protected Areas of Central Macedonia - NECCA - Kerkini Lake, Serres	4	0	4	
13/05/22	UAEGEAN	Greece	Management Unit of Olympus National Park - NECCA - Litochoro, Pieria	11	2	13	
06/06/23	UAEGEAN	Greece	Metohi Study Center, Kalloni, Lesvos island	13	0	13	
1/12/2023 - 3/12/2023	UAEGEAN	Greece	14th Festival of Greek Honey and Honeybee Products - Athens	50		50	
18/4/2024 - 19/4/2024	UAEGEAN	Greece	Management Unit of Protected Areas of Southern Peloponnese - NECCA - Astros, Arcadia	4	0	4	84
28/10/20	CSIC IMEDEA	SPAIN	online_APAEMA	0	20	20	
10/07/21	CSIC IMEDEA	SPAIN	Porreres, APAEMA, Maiorca	30	0	30	
05/11/21	CSIC IMEDEA	SPAIN	Palma de Maiorca	13	0	13	
18/11/21	CSIC IMEDEA	SPAIN	Palma de Maiorca	18	0	18	
27/05/22	CSIC IMEDEA	SPAIN	Ibiza- farmers APAEEF	6	0	6	
09/04/22	UVIGO	SPAIN	Lalin, Spain	64	0	64	
23/04/22	UVIGO	SPAIN	Tomiño, Spain	80	0	80	
27-28/10/2023	UVIGO	SPAIN	Lalin, Spain	31	0	31	262
01/03/2023 06/03/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Bologna		25	25	
29/03/2023 03/04/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Ferrara		31	31	
15/03/2023 20/03/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Forlì-Cesena		29	29	
27/02/2023 03/03/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Modena		26	26	
12/04/2023 17/04/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Parma		28	28	
05/04/2023 11/04/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Piacenza		26	26	
22/03/2023 27/03/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Ravenna		20	20	
15/02/2023 20/02/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Reggio Emilia		32	32	
09/03/2023 13/03/2023	CREA-Confagricoltura-UNIBO	Italy	on-line Rimini		21	21	
20-21/12/24	CREA-Confagricoltura-UNIBO	Italy	on-line Puglia		18	18	
31/10/24 7/11/24	CREA-Confagricoltura-UNIBO	Italy	on-line Veneto		15	15	
8-9/04/24	CREA-Confagricoltura-UNIBO	Italy	on-line Italy		81	81	352
TOTAL							**698**

The events were delayed because of Covid-19 crisis. Another setback was that the Handbook for farmers and the Code of Conduct for Farmers had not been finalized until spring 2021, and after Coldiretti's withdrawal from the Project the handbook had to be revised by Conf. Thus, the events were reorganized in Italy and only in 2022 they were implemented.

ITALY- 12 meetings organized by Coldiretti with the support of CREA, were originally planned in 12 sites of E-R, involving ca. 20-30 people each, from 10-2020 until 2023, plus 2 events in other regions (Tuscany, Lombardy) and 1 at national level. Due to Covid-19 the events were postponed by 1 year, and in agreement with Coldiretti the meetings should have been held between 11-2021 and 3-2022. Following the withdrawal of Coldiretti the planning collapsed, and a new partner was sought. The trainings were reorganized with Conf at the beginning of 2022. At the same time the new indications of the CAP, which was in the final approval phase, provided interesting new contents. Conf took care of the logistic organization, identifying the farmers, from different ER provinces, with the external support of DINAMICA Soc. Cons. (a company specialized in professional trainings to the agri-food sector. CREA defined the contents of the training, transferred them to Conf consultants (B.3.2), and then to farmers. A total of 9 online training sessions, each consisting of 2 lessons, were organized for a total of 238 participating farmers, starting in 1-2023. Although the total number of hectares managed by Conf farmers and by Codiretti farmers in ER, is mainly the same, the number of farmers is lower. Thus, to involve the foreseen number of farmers in trainings, the trainings were opened also to other farmers associations. Two events outside ER were carried out, but in other regions than those foreseen by the project: Veneto and Apulia (18 and 15 participants respectively). Veneto was chosen as northern region instead of Lombardy because Conf had good contacts with this regional headquarters; Apulia was included to have a region of Southern Italy with climatic characteristics of the Mediterranean area. A national training opened to all participants and organised directly by CREA and UNIBO was carried out in April 2024 and over 80 farmers participated. In total 352 farmers were reached by the trainings. This number is line with the expected results of 20-30 farmers per events foreseen in the proposal, but it was overall lower than what expected in the KPI project table, mainly due to the lower

representation of Conf in the territory compared to Coldiretti. In addition, 3 unforeseen meetings were held for the technicians of Barilla in 3-2022, an Italian agro-industry company, during which the diversity and importance of wild pollinators, the ways to protect them and the measures of the CAP in favour of pollinators were illustrated; 15 people participated.

SPAIN- Balearic Islands: 5 information and training sessions (4 in person, 1 online) have been held by IMEDEA with the support of farmers and beekeeper local associations.

SPAIN- Galicia: As part of the Galician beekeeping fair, on 4-2022, the project was presented to beekeepers and a fruitful round table and debate on the importance of conserving pollinator diversity was held. In the same month in the annual meeting of the Galicia farmers association, a talk titled "Benefits of the biodiversity of auxiliary flora and fauna with the potential for better exploitation: pollination ecosystem service" was held. An international workshop for farmers and beekeepers (31 participants) was organized on 10-2023 to emphasize the importance of bees in the primary sector and the need to conserve the diversity of pollinators, thanks to an agreement between the regional government of Galicia and various EU organizations.

GREECE –During 2021-22, the preparation and identification of locations were implemented, and target audience was contacted. 6 information events for farmers and beekeepers were organized in the regions where the 5 MUPAs are located, namely in Serres, Pieria, Peloponnese and Epirus, including Lesvos Island and Athens (national event) between 2022 and 2024. A total number of 84 farmers and beekeepers out of 150 participants foreseen, participated. It is worth to mention that > 1,000 visitors had the chance to see and learn about wild bees and other pollinators of the Mediterranean through the art exhibition "Wild bees and other pollinators on the flowers of my homeplace" (see Action B.3) installed for 3 days at the14th Festival of Greek Honey and Honeybee Products in Athens[4] (12-2023, Peace and Friendship Stadium).

B.2.4 Involvement of young agronomists and floriculturists (An. B.2.4)

date	Partner	Country	location	n. participants in presence	n. participants virtual	total per event	total per country
18/05/22	Unibo	Italy	DISTAL	5	22	27	
10/09/22	Unibo	Italy	Bologna Margherita garden	14		14	
16/05/23	Unibo	Italy	DISTAL		21		
04/04/24	UNibo + CREA	Italy	online SPILINBERGO Istituto Agrario		12	12	
23/05/24	Unibo	Italy	DISTAL	23		23	76
23-25/5/22	UVIGO	Spain	Seoane do Courel (Lugo, Galicia)	28		28	
20/06/23	UVIGO	Spain	Santiago de Compostela, Spain	41		41	
22/05/23 23/05/23 24/05/23	UVIGO	Spain	Seoane do Courel (Lugo, Galicia, Spain)	14		14	
20-22/05/24	UVIGO	Spain	Seoane do Courel (Lugo, Galicia, Spain)	12		12	95
TOTAL							**171**

ITALY – From 2022 to 2024, 4 training activities/seminars for young agronomists and floriculturists have been organized. The outline of the seminar was: general presentation of the project, importance of pollinators and their role in agroecosystems, pesticides use effects and pollinator-friendly mitigation measures. In total 71 students from the first cycle degree program in Marketing and Economics of the Agro-Industrial System at UNIBO attended the seminar. A specific event for floriculturists was organized at Giardini Margherita (BO) during the Event "Giardini e Terrazzi" in 9- 2022 with the participation of 14 people. The participants to the

[4] The Greek Honey and Bee Products Festival is a national event for beekeepers in Greece, which is accompanied with the homonymous Conference.

training attended with enthusiasm raising several questions. The speaker was Fabio Sgolastra with the support of 3 research fellows hired during the project (Martina Parrilli, Lucia Lenzi and Roberto Costantino)". An unforeseen seminar was held online (with CREA) for an agronomic high school that contacted the project.

SPAIN- Galicia- The activities in UVIGO has started with delay because of the Covid-19. During 5-2023 and 2024, 2 trainings for ecology and agronomy students were held in the Sierra de Courel Biosphere Reserve. The outline of the seminars was: the importance of pollinators in the production of fruits and seeds, diversity and effectiveness of pollinators, identification and monitoring of pollinator assemblages. Nevertheless, during 3-2022 UVIGO trained students from Chilean Universities, local farmers and staff from the San Ignacio de Huinay Foundation in Chile. Although outside the EU and not charged to the project, it is worth mention that 24 students of the course "Ecological plant-animal interactions in transitional ecosystems" were trained on the decline of pollinators, the importance of conserving them and on pollinator friendly agricultural practices .

Action B.3 - Environmental education programme

Foreseen Start date	October 1st, 2019	**Foreseen End date**	March 30th, 2020
Actual Start date	January 1st, 2020	**Actual End date**	July 31th 2024
Deliverables	- Report on schools involved, with number of students 2019-20 MODIFIED 2020-21~~; 31/7/20~~ amended ~~31/7/2021~~ 31/12/21 - Report on schools involved, with number of students 2020-21 MODIFIED 2021-22 ~~31/7/21~~ amended 31/12/22 - Report on schools involved, with number of students 2021-22 MODIFIED 2022-2024 ~~31/7/22~~ amended 31/7/2024		
Milestones	- CS schools project implemented 30/4/2023 amended 30/6/2024		

	CLASSES	STUDENTS	TEACHERS (activity)	Questionnaires by students	Teachers trained	Questionnaires by teachers
TOT ITALY	38	923	66	455	68	29
TOT SPAIN	19	ca. 900	33	0	60	na
TOT GREECE	15	278	34	10	185	123
TOTAL	**72**	**ca. 2100**	**133**	**465**	**313**	**152**

Table with synthetic results. For details see An. B.3-ALL DATA

In 2020 due to Covid-19 restrictions it has not been possible to perform the foreseen educational project with schools. Nevertheless, during that time, we defined the common protocols and the project called "Students 4 Pollinators" based on CS approach and started to disseminate our educational proposal with schoolteachers and educators. Networking has been done with the project X-Polli:Nation funded by National Geographic and coordinated in Italy by Museo di Storia Naturale della Maremma. In 2021 due to Covid-19 restrictions and uncertainty, the educational activities foreseen were only partially implemented: in-presence activities with students were performed only in Italy by UNIBO and in the Balearic Islands - Spain by CSIC. In Greece big flower-pollinator models were developed by UAEGEAN team, models were used for educational purposes. Following in-presence events, participants were asked to reply to a dedicated online questionnaires, as for other project activities (see Action C.1.2). Due to privacy rules, students received the link to the online questionnaire through their

schoolteachers. (see An. B.3-ALL DATA). An email was sent to the teachers and educators who participated to the training.

A Table with summarized information: n° participants per year (schools, classes, students, teachers), activity held, is in An. B.3-ALL DATA, as also the list of certified "Pollinator-friendly" schools (An. B.3-LIST of AWARDED SCHOOLS), and the attendance sheets of the trainings to teachers, flyers and pictures (An. B.3-Training teachers). All details and pictures are reported in the action's deliverables "Report schools" D.14, 21, 28)

ITALY – In Italy the CS educational project "Students 4 Pollinators" has been held by UNIBO with five 2nd level secondary schools (9 classes) and seven 1st level secondary schools (29 classes), involving in total 923 pupils. The activity with higher schools was done in collaboration with UNIBO-PLS Project http://www.pls.unibo.it/it/scienze-naturali-ambientali.

Moreover, 3 trainings to schoolteachers were performed in 2022 and 2023: a total of 68 teachers participated (25 in presence, 43 virtually). The feedback was extremely positive and since schoolyear 2022-2023 the educational programme "Students 4 pollinators" has been included in the didactic offer of SMA- UNIBO (https://sma.unibo.it/it/visita/scuole/percorsi-didattici/students-4-pollinators-giovani-scienziati-alla-scoperta-della-biodiversita-nascosta-in-un-giardino-fiorito) in order to accompany educators and guarantee the After-LIFE continuation of the action. Six Italian schools received the "Pollinator-friendly Certificate" after developing concrete actions to help wild pollinators in their courtyard.

SPAIN – **Balearic Islands** - From March 2021 to March 2022, 12 environmental education workshops were held by CSIC staff at different schools on the island of Mallorca and the island of Menorca. The workshops were held for both primary and secondary students. In these workshops, apart from presenting the LIFE 4 Pollinators project and talking about the problem of pollinator biodiversity, the CS handbook was presented. In some schools, nectar plant planting workshops were held and insect hotels were built. Both the planting and the insect hotels were made with resources from educational centres. Students were also encouraged to participate in bioblitzes. Additionally, on October 12 and 30, 2020, 2 workshops aimed at primary and secondary teachers were also held at the University of the Balearic Islands (UIB), with the participation of 2 groups of ca. 30 students each. In these workshops, the pedagogies necessary to work on the issue of pollinators were discussed. From March 16 to 18, 2022, the "Environmental Education" workshop for secondary school students was held in Sineu, Mallorca, Spain. The workshop aimed to educate 20-25 students from various schools about environmental issues, fostering responsibility and awareness. Selected for their interest in environmental conservation, the students participated in interactive lectures, field trips, practical workshops, group discussions, and project creation. This workshop significantly impacted raising environmental awareness among the students, equipping them with lasting knowledge and skills for active participation in environmental conservation.

SPAIN- Galicia : In 2023, 7 sessions of talks on "Pollinators in urban areas: an opportunity for their conservation" were given in high schools and primary schools in Galicia, attended by approximately 250 students by the staff of UVIGO.

GREECE – The initial plan to conduct the training program in the LLCE of Arnaia in spring 2020 was delayed due to the Covid-19 crisis. The training program was developed in 2021: besides the common focus on wild bees and other pollinators, it included specific topics for the different LLCEs, depending on the natural and/or socioeconomic local environment. For instance, the particular focus in Korthi's program on Mediterranean habitats, that of Arnaia on

wild bees vis-à-vis beekeeping in continental sub-Mediterranean habitats and of Eleftherio Kordelio and Vertiskos on wild bees a.o. pollinators in urban ecosystems.
Three training seminars for teachers were held in: (a) Arnaia, Halkidiki in May 2022, (b) Korthi, Andros Island in May 2023 and (c) Thessaloniki in May 2024. The seminars in (a) and (b) lasted 3 days, while in (c) 2 days, and they consisted of theoretical and practical part (implementation of the protocol "Students 4 Pollinators"). The total number of participants was 185 teachers (out of 15 participants foreseen), who would transfer the knowledge about pollinators to their students. Given that a typical class has 15-20 students in GR, > 3,000 students (out of > 600 students foreseen) could learn about pollinators via the trained teachers. The UAEGEAN team also collaborated with the Directorate of Primary and Secondary Education of Lesvos Island and organised mini seminars in schools of the island during 2022-2024. Other mini seminars were held on Chios Island, in Kavala (virtual) and Athens (university students). Through these seminars, the UAEGEAN team trained and informed 190 students and 25 teachers. Furthermore, the teachers of LLCES of Korthi, in collaboration with the UAEGEAN team, developed educational material for a new environmental program concerning pollinators, which was implemented in spring 2024. Three schools of Andros Island, with 86 students and 9 teachers, visited the LLCES of Korthi in May 2024 and were informed about pollinators. The environmental program regarding bees at the LLCES of Arnaia was enriched with the material developed by the project (field guides, handbook for CS). Another key achievement was the Panhellenic Drawing Competition for elementary and high school children, entitled "Wild bees and other pollinators on the flowers of my home-place", which was organised in collaboration with the Department of Geography of the UAEGEAN, during the school year 2022-2023. An unexpectedly high number of drawings, ca. 3,100 from 305 schools all over GR was received. An art exhibition under the same name -product of the Panhellenic Drawing Competition- was installed at the Castle of Mytilene between 9-11- 2023, visited by 483 students with 48 teachers. Part of the exhibition was also installed at the UAEGEAN for the 30 years of the Department of Geography, visited by 50 other students.
A 2-step process to award schools with the pollinator-friendly certificate was created: (a) completion of an application by describing activities implemented at the school and (b) sending the application and some photographs from the activities. Till now, 23 schools all over GR got the certificate. Last but not least, the UAEGEAN team, in collaboration with an artist, has created 3D models of flowering plants and pollinators that were used for educational and dissemination purposes. An art exhibition was inaugurated on 28/9/2024 at the Museum – Library Stratis Eleftheriadis – Tériade on Lesvos Island.

Action B.4 Pilot project in Emilia Romagna

Foreseen Start date	January 15th, 2020	**Foreseen End date**	June 30th, 2023
Actual Start date	January 15th, 2020	**Actual End date**	
Deliverables	- Replication report SLOVENIA - Replication report GREECE - Replication report SPAIN - Replication report ITALY - Feasibility and effectiveness analysis of the pollinator-friendly label: ~~30/6/2020~~ actual 31/1/21 - Guidelines developed		
Milestones	- Training to Coldiretti done ~~30/9/2020 delayed 31/10/2022~~ in November-December 2024 - Workshop to ER Region done ~~15/6/2023~~ 16/05/2024 - Pollinator-friendly label created 15/12/2020 - Guidelines elaborated ~~15/9/2022 delayed~~ 31/07/2024		

The title of the sub-action B.4.3 has been changed deleting “Coldiretti” and adding “farmers consultants” after Coldiretti withdrawal and with the Amendment sent on 26/07/2022.

B.4.1 Protocol and experimental application of a new biodiversity indicator for Rural Development Plan evaluation and validation

Objective of the sub-action was the definition of a new bioindicator to assess agri-environmental Rural Development Plan (RDP) measures. CREA team decided to develop the indicator based on wild bees. In order to design the new BEE indicator, field data were firstly collected once a month from 5 to 10- 2021, in 5 farms in ER; surveys were replicated in 2022 and 2023 (see Action C.2.2). Other pollinators were monitored in the field for future comparisons among multiple bioindicators, too.

The monitoring activity, planned for the period 2020-2022, was postponed following the Covid-19 pandemic and due to administrative delays in hiring staff.

The activities implemented were divided in subtasks: B.4.1.1. Field Monitoring; B.4.1.2 The BEE indicator design; B.4.1.3 The BEE indicator: a new tool; the details are in D.22 and downloadable from the project website.

B.4.2 Final drafting of identified protocols to use indicator. Guidelines development and distribution

The development of the guidelines, initially scheduled for 9-2022, has been postponed to the end of 7- 2024 following the delay of all B.4 actions, and in particular to be able to process all monitoring data from the farms. The document GUIDELINES (D. 22) contains a summary of the scientific effort behind the Pilot Project, the BEE Indicator and the information for applying it (protocol for field sampling and calculations with the data collected). In the Guidelines, the reader can follow each step adopted in the design of the BEE indicator and can replicate the scientific procedure or could skip that part and directly employ the non-specialist protocol to obtain the data for the application of the BEE Indicator formula. Both protocols are along with examples of results and further analyses, and a printable field sheet was created to complete field work understanding. Additionally, the “Farm Report” are aimed to help a shared acknowledgement of farm bee biodiversity. These chapters of the Guidelines were previously employed in meetings occurred with local regional administrations in Italy, Spain and Greece (Action B.4.5 and B.5.4), allowing us to test the interest that the new tool could raise. There is also a chapter dedicated to protection measures for integrated agriculture (Action B.4.3), rules for obtaining the bee-friendly ecolabel (Action B.4.4) and best practices for the protection of pollination networks. They were distributed during the final conference and are available on project website.

B.4.3 Identification of protection measures for integrated agriculture and organization of a workshop to farmers consultants (Details in An. B.4.3)

In line with the indication highlighted in the Handbook for farmers and the Code of Conduct, measures to improve the integrated production regulations have been proposed to the ER region. General indications were drafted and it was proposed to integrate the table of active ingredients allowed for each individual crop the indication of their toxicity towards bees, in the Technical cultivation Standard. In order to promote the use of the less toxic compounds towards bees, a simple classification with 3 graphic icons, was proposed. The 3 graphic icons were not accepted but ER region has agreed to include the link to the table, with the suggestion of using the less toxic compounds, in the Technical cultivation standards in February 2025.
During the first year 3 training events with 10-15 Coldiretti consultants, should have been held. The meetings were scheduled in 9-2021 after the postponing due to Covid-19, concurrently,

the new advice of the CAP, that includes in Italy a specific eco-scheme for the protection of pollinators, provided new opportunities and needs for agronomic consultants. Just before the planned meetings, Coldiretti withdrew from the project and at the beginning of 2022, Conf joined the project. The trainings towards technicians were thus, rescheduled. A first meeting was held on 28-4-2022 with Conf representative to define topics and dates and a second meeting was held on 5-10-2022 to refine dates and discuss the new CAP measures. The trainings to Conf consultants were organized on-line and lasted 4 hours each, taking place on 23-11 and 12-12-2022. The topics of the trainings, dates and documentation are in An. B.4.3. The new CAP was finalized at the end of 2022 and adopted at the beginning of 2023. The contents of the training were gradually updated according to the new regulation. In the original planning, this action foresaw that CREA trained the consultants and they in turn organized the training to the farmers with the support of CREA (original action B.2.3 for Italy). However, after the withdrawal of Coldiretti we had to reorganize the activity based on the structure of Conf, which does not have specific technicians. Thus, training for farmers were carried out directly by CREA, with the support of Conf for specific aspects of CAP measures.

B.4.4 Pollinator-friendly label

The activities have been implemented with 6 months delay due to the Covid-19 crisis. Coldiretti created a label for pollinator friendly bodies (products or entities) in EN and IT. The final design has been chosen between 3 options together with the coordination team of the project (see picture below). A feasibility study in Italian has been drafted from a subcontractor of Coldiretti in 1-2021; the index and the summary were translated in EN. The label is used in all the Codes of Conduct/Declarations developed.

The pollinator-friendly label was described and proposed for the adoption during the trainings to farmers and beekeepers (Action B.2.3), a specific email was created to process all the request of adoption (amicidegliimpollinatori@gmail.com). According to the proposal, at least 50 farmers were expected to adopt the label; in 2023 and 2024 we received 32 requests from farmers, of which 20 completed the procedure and obtained the certificate. This can be assessed as a good result, considering that the trainings were finalized less than 1 year ago (see An. B.4.4). Additionally, 2 farms abroad (1 in GR and 1 in ES) received the pollinator-friendly certificate for 2024, as the farmers adopted the Code of Conduct.

B.4.5 Workshop for application to Emilia-Romagna Regional Administration

The date of the workshop, foreseen for 15-6-2023, has been postponed to 16-5-2024 due to the unavailability of the ER Region, following the flood disaster occurred in 5-2023, which caused numerous damages to agriculture and absorbed the region's activity for the entire year. During the workshop the results of the Pilot project were shown and Bee indicator and protection measures for integrated agriculture were proposed for adoption by researchers from CREA and UNIBO (See An. E.1). The Region also illustrated the results of the CAP measures adhesion and problems encountered. At the end of the meeting, a discussion was held on how to integrate the measures proposed by the project into regional regulations (Action B.5.2).

B.4.6 Mini-pilots for replication

This action aimed at replicating action B4.1. Replications were carried out in 8 farms in Slovenia, Spain and Italy[5], to verify the feasibility of the application of the BEE indicator applying the procedure as described in the Guidelines. Replications were carried out by:

- applying the non-specialist version of the BEE indicator protocol (page 16 D.22);
- selecting an organic and a conventional farm at a site/s in each country, after cartographic analysis and survey by local staff;
- recruiting samplers among volunteers, students and CREA employees (See D.22, 24, 25, 26, 27).

Action B.5 - Replicability and governance

Foreseen Start date	October 1st, 2021	**Foreseen End date**	September 30th, 2023
Actual Start date	July 1st, 2021	**Actual End date**	September 30th, 2024
Deliverables	- Replicability Plan ~~30/6/2022~~ amended 30/6/23 - Data processing report ~~30/6/2023~~ amended 30/9/2024		
Milestones	- Replicability WS finalized ~~30/9/2023~~ amended 30/9/2024 - Organization of interministerial table for National Pollinator Initiatives ~~30/6/2023~~ amended 30/9/2024		

B.5.1 Citizen Science data processing and validation

Collected data are incorporated in the database as soon as they are sent and validated by taxonomist team (currently 29 volunteer expert taxonomists of different nationalities).
The web platform (https://www.life4pollinators.eu/en/submission) collected totally 2,295 photo-records throughout project implementation (for main results and the list of identified species and conservation status see D.30 "Data processing report"). All pictures have been processed and validated and are visible in the map at project website (https://www.life4pollinators.eu/en/map). All the data collected will be freely available to the scientific community and competent authorities through the publication of a data-paper (currently in preparation). In the meantime, the database is available upon specific request. Relevant information on threatened and alien species in N2000 sites has been transferred to the competent authorities (An.B.5.1), as well as the results of pollination networks analyses (see Chapter 7 D.22). A manuscript analyzing all data collected until to 31-5-2024 is currently under revision. Results have been presented in occasion of several national and international congresses (see An.-Scientific articles and communications). Apart from during the expert-assisted CS activities (actions B1.2 and B1.3), many people uploaded pictures independently from project events. This participative platform has proven to be very successful and will remain active after the end of the project (See After-LIFE Plan), being managed by UNIBO.

B.5.2 Formal adoption of indicators and pollinators protection measures by E-R integrated agriculture plan

As mentioned in B.4.3, 2022 was a transition year between two CAP frameworks. Farmers should adapt their practices following the indications of the new CAP 2023-2027, that contains more measures about pollinators. The technical table with ER regional administration was delayed awaiting the outcome of the EU Commission on the Italian national CAP Plan presented before proceeding. The adoption of the proposed measures was further delayed due to the flood disaster that occurred in May 2023, and when the ER administration was available

[5] two in Spain (Balearic Islands), two in Slovenia, and four in Italy in two distant regions, Apulia (Puglia) and Veneto. Basing to the similar climate, Apulia was chosen as a proxy for Greece, where the lack of suitable farms prevented us from performing the mini-pilot.

again, it was too late to include the proposed measures in the regional regulations by the project end. Therefore, ER Region committed (An. B.5.2) to consider including the BEE indicator in the Regional Evaluation Plan of the CoPSR 2023-2027 (currently being drafted) and to include in the General Regulations for integrated agriculture the table we proposed (toxicity levels, towards bees and other pollinators, of the active ingredients) by 2-25.

B.5.3 First step for the organization of a table to stimulate the development of the national pollinator initiative- Action Plan

A letter was sent by M. Galloni to ISPRA (technical branch of MASE) to inform them about the LIFE 4 Pollinators project and about the 'Promote Pollinators' initiative (IPBES). After, an online meeting was organized on 2-2-2021 (Participants: L. Bortolotti and M. Quaranta (CREA), M. Galloni and G. Dante (UNIBO), V. Bellucci, V. Silli, V. Giovanelli and L. Ciccarese (ISPRA)). The aim was to stimulate the participation of Italy to the IPBES coalition and to start the implementation of inter-ministerial communication on the development of a National Strategy on Pollinators. On 20-3-2024 together with FederParchi, LIFE BEEAdapt and LIFE PollinAction an event to sensitize competent authorities was organized at the Fondazione BIOPARCO, Rome (IT). Representative of MASE and MASAF were invited to a 1-day workshop where a round table was also held on "What is the future of pollinators in Protected Areas?". The project staff (M. Galloni and G. Dante) presented the work done by LIFE4Pollinators and underlined the need to draft a National Action Plan, the competence of which lies on the MASE, the two Ministries together, otherwise the implementation of the Plan could become very difficult. Susanna D'Antoni (ISPRA) highlighted how an Action Plan for Pollinators cannot be implemented if the PAN (National Action Plan for the sustainable use of pesticide) is not adopted (although it has been already drafted). The production and implementation of these 2 Plans are fundamental for the future of pollinators and agriculture in Italy. The timeplan for the drafting is not yet known, at least to our knowledge.

GREECE- As a follow up of the outreach activities carried out throughout GR, in particular those conducted in the 5 Management Units of Protected Areas (see Action B.2) and the discussions T. Petanidou had with officials of OFYPEKA in Athens, the Ministry of Environment and Energy decided to proceed to the draft of a National Action Plan for Pollinators (NAPP). The decision was largely urged by the necessity to develop a NAPP in the frame of the European Pollinator Initiative. To this end, the General Director of Environmental Policy, Mr Konstantinos Dimopoulos, invited T. Petanidou to undertake the task of drafting a NAPP for Greece. Following a meeting in person conducted in the headquarters of the Ministry in Athens (29-5-2024) and several other online meetings. T. Petanidou submitted a proposal describing the resources (team of scientists, funds) necessary for the fulfilment of the task. Once funded, the NAPP will be drafted in the course of 5 months, then will be subjected to public consultation, corrected by the scientific team, and when signed by 2 ministers (of Environment and Energy and of Rural Development and Food) will become national law. The NAPP is expected to have been completed by the end of 2025.

B.5.4 Organization of workshops to government authorities, policy makers, regional administrators

Six workshops were organised during the last year of the project in Italy (Rome at national level, Veneto, Lombardy and Friuli-Venezia Giulia at regional level), Spain (Madrid, national level) and Greece (Athene, national level) to export and promote the experience of the Pilot project and to facilitate the transfer of knowledge of the successful approaches implemented by LIFE 4 Pollinators. During the workshop also the Declaration of Intents for public entities (municipalities) was presented. Originally one workshop was foreseen in Tuscany but location

was changed with Veneto, since Veneto was the target of other project activities (Action B.2.3). Additionally, Friuli-Venezia Giulia region was added, after we acknowledge their interest.
Although it was not possible to organize the workshop in Slovenia, researchers from CREA participated to the workshop of the EU CAP Network 'Promoting pollinator-friendly farming' (18/19-6-2024, Ljubljana - SL) to disseminate project materials.
Until now 6 municipalities formally signed the declaration to become Pollinator friendly: Casalecchio di Reno, Monterenzio, San Lazzaro di Savena, Medolla, Aprilia, Western Lesvos (An. B.5.4_Pollinator-friendly municipalities). This result is in line with expectations.

Additional governance output. An unexpected output of the project in Italy is represented by the contribution to the supporting information for Italian CAP National Plan: CREA (L. Bortolotti) and UNIBO (M. Galloni) collaborated to the drafting of the "Guidelines for the choice of plant species of bee interest allowed for eco-scheme 5 and other recommendations", edited in Feruary 2023 by Rete Rurale Nazionale and available online (https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/24482) and also downloadable from project website (https://life4pollinators.eu/sites/default/files/2023-03/Linee_guida_per_la_scelta_delle_piante_di_interesse_apistico_Ecoschema_5_24_feb_compressed1.pdf). The document includes indications for sustainable agricultural practices, coherently with the Handbook for farmers. See also Action D.2.4.

Action C.1: LIFE KPI Webtool contribution and update – Socio-economic Impact

Foreseen Start date	January 15th, 2020	**Foreseen End date**	September 30th, 2023
Actual Start date	April 1st, 2020	**Actual End date**	September 30th, 2024
Deliverables	- baseline report resulting from analysis of the ex-ante monitoring ~~31/03/2020~~ 31/12/2020 - Update LIFE Specific Indicators excel table + KPI updating (midterm report) ~~30/04/2021~~ actual 31/12/2022 - Update LIFE Specific Indicators excel table + KPI updating (end of the project) (to be included in the final report foreseen 3 months after the end of the project) amended 31/12/24 - Socio-economic report ~~30/9/2023~~ amended ~~30/9/2024~~ actual 31/12/2024 - ~~Update LIFE Specific Indicators excel table + KPI first setting (first report) 11/2020~~ DELETED - ~~Update LIFE Specific Indicators excel table + KPI updating (third report) 10/2022~~ DELETED - Mid term socio economic report ~~30/4/2021~~ amended ~~30/9/2022~~ actual 31/12/2022		
Milestones	- KPI first setting (first progress report) – ~~30/11/2020~~ DELETED		

The deliverables "Update LIFE Specific Indicators excel table + KPI updating" was not produced because the KPIs are now uploaded and updated in the KPI webtool.

C.1.1 LIFE KPI indicators' monitoring

KPIs monitor the expected level of awareness on target audience and stakeholders involved in the project and their change of behaviour. Updating and monitoring these indicators provided a feedback to the project team to correct the project actions in order to achieve the objectives of the project. The calculation of the most important KPIs of LIFE 4 Pollinators was based on the surveys (See Action C.1.2 and D.17) carried on target audience after their participation in the actions B.1.3; B.2.1; B.2.2, B.2.3, B.2.4 and B.3. Coordination team sent an email explaining how to fill the survey within 2 weeks after the event. A remind was sent within 1 month. Preliminary results were shown in a dashboard (D.38) and in the Mid-term socio

economic report (D.18), final results are discussed in the Socio-economic report (D.35). The KPIs listed in the GA have been used to filled in the KPI Webtool where possible, with this regard it should be highlighted that in the tool: it was not possible to include the indicators related to improved Nature, Species and Biodiversity because indicator 7.4, categories and parameters considered are not consistent with the target of the scientific monitoring of wild bees described in action C.2.1; no initial value for the indicator 10.2 has been provided because this was not foreseen in the GA and the final value of indicator 11.1 differs to the one provided in the GA since the unit is different, the GA refers to the total visualizations whereas 11.1 refers to unique visitors. Moreover, it should be noted that the KPI webtool, for the farmers behavioural change indicator refers only to training activities foreseen by action B.2.3 in the GA.

C.1.2 Monitoring of the impact of the project (socio-economic and behavioural change)

The activity has been subcontracted following a 3 offers procedure. The activity was assigned to Centrale Valutativa S.r.l. (CV), finalized in 4-2020, just at the beginning of the Pandemic crisis affecting the deadlines of the report. In 12-2020 CV submitted the Baseline report with the description of the methodology to be applied (D.6). From that time, questionnaires addressed to general public, students, teachers, urban park managers and gardeners, protected area managers, young agronomists and floral nurserymen and farmers, have been developed. CV with the project team drafted them in EN and translated in the different languages: IT, GR, ES and SI (few). They have been built on a survey platform which enables CAWI (Computer Assisted Web Interviewing) interviews. They include a self-assessment on pre- and post- event general knowledge, and willingness to adopt pollinator friendly measures/behaviours, and specific question to assess the knowledge and the level of awareness (D.17) achieved by the participants. The participants received a link and could answer via smart phone or computer. A total of 201 general public, 448 students, 153 teachers, 45 urban park managers and gardeners, 154 farmers, 121 conservationists and park manager or technicians, 33 young agronomists and 9 from agri-food industry (Barilla) replied to the survey, representing between 30-70% of the participants to the events. The majority of the respondents were Italian because the majority of the activities were implemented in IT. The discussion of the indicators and methodologies used to process data and infer the results on the whole participants can be found in the Socio-economic report (D.35).

Action C.2 - Scientific Monitoring including Indicators implementation and update

Foreseen Start date	April 1st, 2020	**Foreseen End date**	September 30th, 2023
Actual Start date	February 4th, 2020	**Actual End date**	September 30th, 2024
Deliverables	Report: monitoring of the impact of the project on environmental problem ~~30/9/23~~ amended 30/9/2024		
Milestones	-RDP indicator validated ~~15/6/2023~~ amended 31/12/2023 -Surveys done ~~30/6/2023~~ amended 30/6/2024 - Monitoring of the impact of the project on environmental problem available ~~30/9/2023~~ amended 30/9/2024		

C.2.1 Monitoring the impact of the pilot project and CS activities

The scientific monitoring has been performed as foreseen in 12 target areas in Italy (Emilia-Romagna) before and after the implementation of pollinator-friendly measures, and in 1 site per partner countries ES and GR, to verify their effectiveness on wild pollinator populations and ecosystem services. The methodology was developed by the scientific committee (Action A.2): two protocols were used, depending on the taxonomic knowledge and expertise of the people involved in the field surveys, they are described in a dedicated box in D. 22.

Protocol 1: 12 agricultural and natural areas in E-R (IT)
Protocol 2 (simplified): 1 site IT, 3 sites ES-Mallorca, 1 site (GR-modified*)
Details on the survey method and results are reported in the "Report: monitoring of the impact of the project on environmental problem", D.34.
As extra value for the project's outcomes and to increase the robustness of the monitoring action (for more details see D.34), additional investigations were performed thanks to unforeseen research opportunities and conservation priorities (ES-Galicia), to the adoption of different survey procedures coherently to the local context requirements (GR*). Specifically:

IT- In general, ex-ante (2022) and ex-post monitoring (2024) demonstrated the effectiveness and importance of conservation actions and low invasive management practices (e.g. reduced mowing, no pesticide use) in agricultural and natural areas for the protection of wild pollinators. Totally (through Protocol 1) more than 12,000 pollinators were recorded, and over 100,000 pollination units (individual flowers or inflorescences, depending on the plant species) from 171 species across 35 plant families, were counted. Data indicate a general increase in the abundance of pollinators in 2024, with a similar trend of trophic resources (floral pollination units). This suggests that greater access to these essential resources directly supports the growth and sustainability of pollinator populations. For details see D.34 focused on these data. A scientific manuscript focused on these data is currently under revision in AoB Plants Journal (An. D.2.2).

ES-Mallorca- The results obtained from the surveys performed in the urban sites in Mallorca showed a higher abundance of pollinators in the pollinator gardens compared to the respective control areas, highlighting the importance of incorporating refuge sites for pollinators in urban areas to promote their presence in cities.

GR –No field surveys were conducted in 2020 and 2021 to identify and quantify the baseline for figuring out the ex-ante situation because of the Covid-19 crisis. In March 2022, the UAEGEAN team planted 150 entomophilous Mediterranean plant species (i.e., *Asphodelus, Urginea/Drimia, Salvia triloba, Rosmarinus officinalis, Thymbra capitate, Satureja thymbra*) at the Castle of Mytilene area (monitoring site). In April 2022, another intervention was used, namely the installation of 5 insect hotels. Only a single round of sampling was conducted in 2022, because the gardeners mowed the wildflowers of the area; thus, the collected data were not used in the monitoring report. Concerning the planted individuals of 2022, only a small number of them survived, probably because of the extreme heat in summer 2022 and the insufficient watering. In 2023, 3 rounds of sampling were carried out successfully. Even though the area was mowed again before the last round of sampling, the team tackled this challenge by performing the same samplings in the mowed area, but in a nearby non-mowed area, to record the impact of mowing the flora on the pollinator populations. In 2024, 3 rounds of sampling were also conducted. 1475 insects were collected and observed during the 3-year monitoring, and 914 of them were classified into some taxonomic category (Family, Genus, Species), the remaining samples will be identified during the After-LIFE period. We can conclude that although the years 2022, 2023 and 2024 were among the most adverse for flowering, and for (honey) beekeeping, as well as for pollinator conservation in the Aegean, the results gotten during the monitoring in the Castle of Mytilene were not discouraging, likely due to practical and information actions (see D.34).

ES- Galicia -Throughout the Project, UVIGO was conducting long-term monitoring of the role of protected areas in the maintenance of pollination interactions in threatened plant species and in the efficiency of native pollinators in the pollination process of these threatened plant species. The results of this monitoring are already being processed and are beginning to be

published in scientific journals. 8 scientific publications have resulted from the work carried out in this project (Annex C.2.1 and Action D.2).

C.2.2 RDP indicator validation and monitoring

Two CREA technicians within the 5 target areas of ER region selected for the Pilot project (Action A.2.1 and B.4.1) following the protocol described in Action B.4.1/B.4.2 and in the Guidelines (D.22) implemented this pollinator monitoring. Originally, the activity was planned from 3-2021 to 6-2023 but following the Covid-19 and the delay of Action B.4.1, it was postponed by 1 year, starting in 3-2022 and ending in 1-2024. Target groups of pollinators (wild bees, butterflies, syrphid and beeflies) were sampled through a monthly transect, collection and identification of wild bees at species level and measures the related value of the BEE indicator, were performed. The other pollinators (butterflies, syrphid and beeflies) were identified at genus or species level for future comparisons among multiple bioindicators. Details in D.22.

Action D.1: Public awareness and dissemination of results

Foreseen Start date	November 1st, 2019	**Foreseen End date**	September 30th, 2023
Actual Start date	November 18th, 2019	**Actual End date**	September 30th, 2024
Deliverables	- Notice Boards ~~31/03/2020~~ actual 30/4/2021 - Pollinators Kits ~~31/06/2020~~ actual 30/5/2021 - Project intermediate video (1) ~~31/12/2020~~ actual 30/4/2020 - Project final publication ~~30/9/2023~~ amended 30/9/2024 - Project final video (2) ~~30/9/2023~~ amended 30/9/2024 - Project website 31/3/2020 actual 31/5/2020 - Project brochures in IT, EN, ES, GR, SI ~~31/10/2020~~ amended 31/5/2022 - Layman's report ~~30/9/2023~~ amended 30/9/2024		
Milestones	- Pollinator kit sent ~~31/3/2020~~ actual 31/7/2021 - Project video finalized ~~31/3/2020~~ actual 30/4/2020 - Website online 30/6/2020		

D.1.1 Project website and database

The web site has been set up and published in 2020, then it was further developed over the course of 2021 to create additional pages in IT, ES, GR and Catalan (EZavod decided to use the website in EN, so no translation in SL). The website includes information and detailed images of all the plants and pollinator groups presented in the fieldguides. The *download* section of the website has been constantly updated, it includes all the fieldguides and the handbooks in EN, IT, GR, ES, SI and Catalan. Moreover, additional documents and material produced by PP (the ones available only in the partner's language, are downloadable only from the specific language section) can be found in the sub-menu *Other materials*, together with the printable field recording sheets mentioned in the CS handbook. The sub-section "Become Pollinator-friendly" has been added to further disseminate the Pollinator-friendly certification, the Code of conduct and Declaration of Intents for Municipalities: achievements until project's end are there reported. The website comprises a frame displaying the social channels (FB, Tw/X, In). The pages *press releases* and *news & events* were added to better display news and upcoming events. Events and most relevant news have also been promoted via a "teaser box" on the homepage.

In order to monitor the performance of the website a web analytics module has been implemented (An. D.1 – Web analytics). The only modification done that was not foreseen and did not have any added cost, was the change of partners that also applied to the mentioning on the website. Until September 30th 2024 the visits were 26,767 and the unique downloads 11,920. M. Galloni and BiGeA Dept. staff will maintain and update the website and web

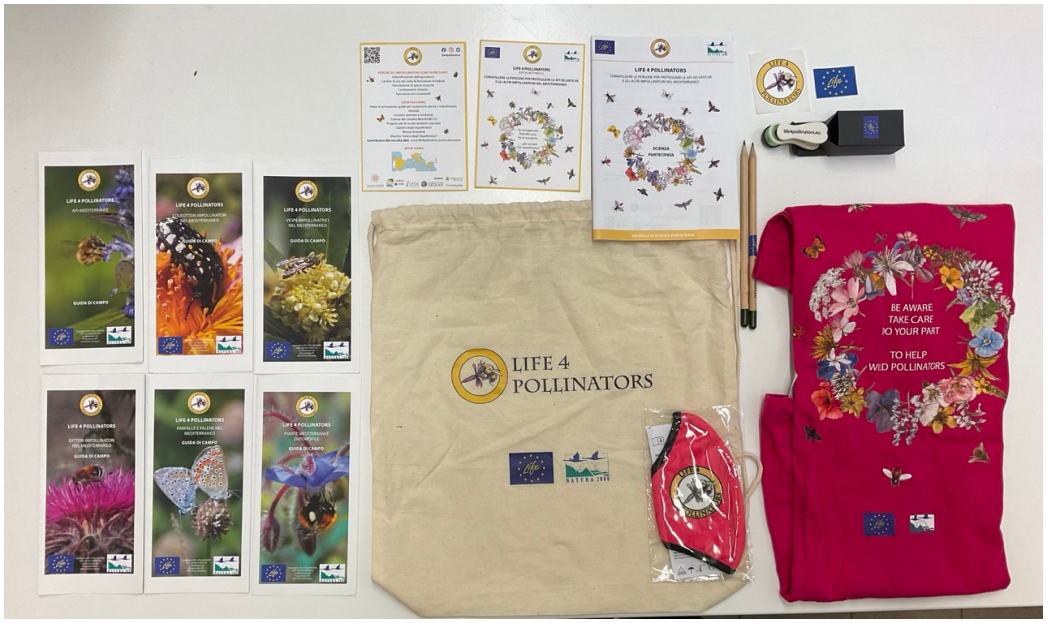
platform for at least 10 years, with no additional costs for hosting thanks to the migration to UNIBO servers.

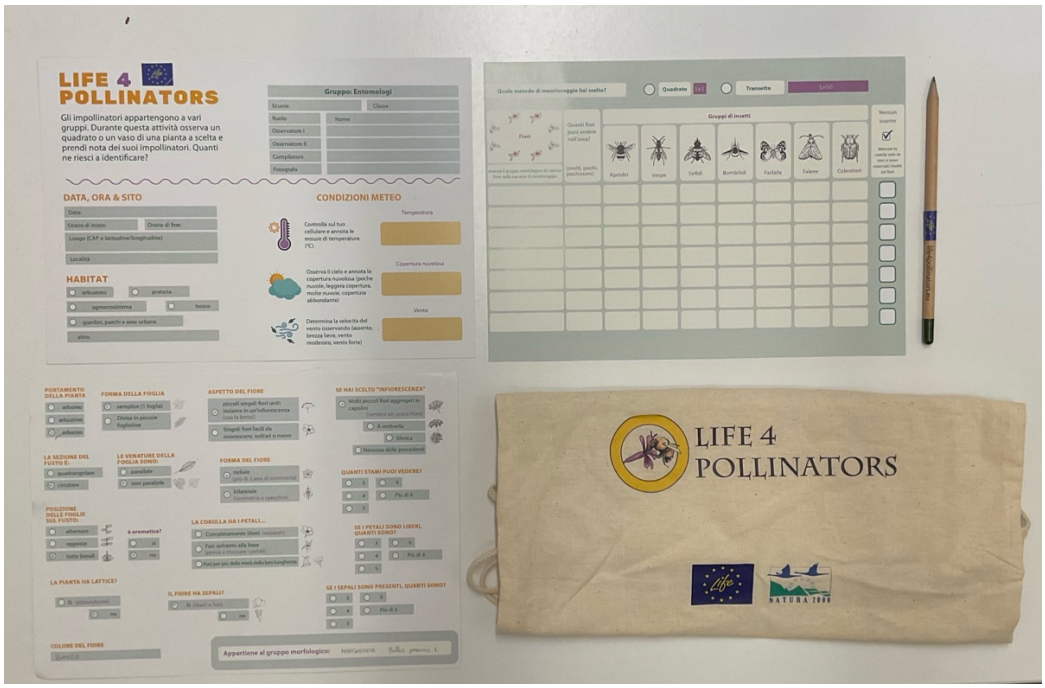
D.1.2 Project dissemination

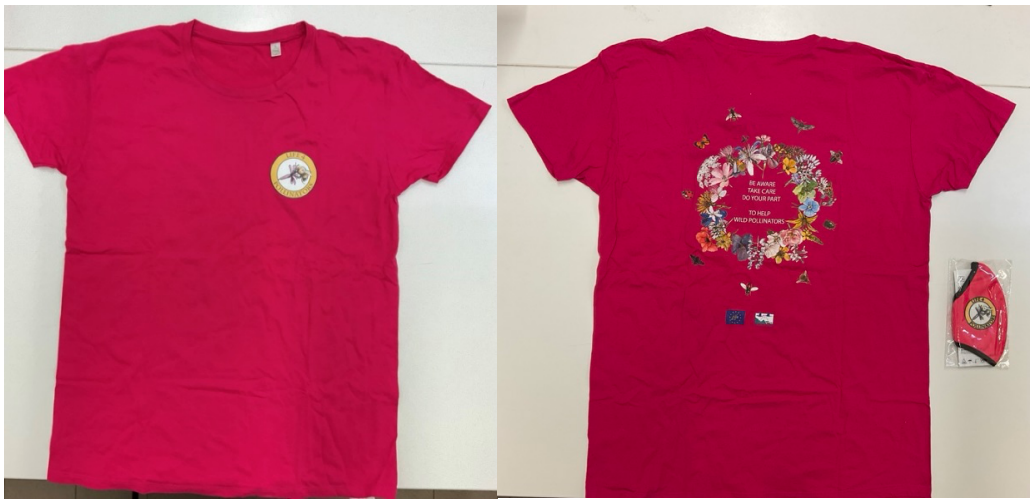
Notice board (see D.3) has been produced as a roll up and poster, first in EN and then translated by PP in their own language, to be used during the events and attached in the partners' headquarters (pictures already sent in An. I with Mid-term report). UNIBO drafted the text and the graphic design and printed for the IT partners (5 roll-up and 10 posters, plus 2 forex panels placed outdoor at the botanic garden). UVIGO handled the editing of translated versions for the other PP and then each partner printed its own roll-up and/or poster (number of printed items: GR: 2, ES-Galicia: 1, ES-Balearic Islands: 1 poster and 5 panels for pollinator gardens, SL: 2 poster and 1 panel for the pollinator garden). In total, (see Action B.1.3), 14 different layouts were realized (5 roll-up in the different languages, 2 posters, 7 panels in forex for the pollinator gardens).

The leaflet of the project has been created as postcard (see D.15), because the coordination team considered the postcard easier reading, less destroyed and much easily hanged up on walls of offices. A first draft, used only in IT, has been printed for the events of 2021 (ca.100 copies), then after the withdrawal of Coldiretti a new version has been edited: 5000 copies in IT, 5000 in EN, and 1000 in GR have been printed.

Pollinator kits have been chosen and bought following a 3 offers procedure. Quotes for the different materials to be produced with the logos of the project (a pencil with seed, a lens for mobile phone, a bag and a sticker) have been requested and then the best offer was chosen. Also, a T-shirt and a mask of the project (due to pandemic restrictions) were produced and bought although not foreseen (picture below). Quantification of the materials purchased for the kit are listed in the table below. UNIBO sent them to the partners in July 2021.







Materials	UVIGO	UAEGEAN	CSIC	UNIBO	CREA	COLDI	EZAVOD	CONFA	totale
bags	500	500	500	1500	3				3000
pencil daisy	400	400	400	500	3				1000
pencil sage	100	100	100	500					1000
pencil thyme	0	0	0	500					1000
lens	500	500	500	1500	3				3000
stickers	500	500	500	3500	3				5000
masks	10	13	10	14	3	4	2		90
t shirt	10	13	10	14	3	4	2		90

The project's Final publication (D. 31) was edited by combining the contents of Layman's report and Replicability plan, to improve the replicability of the project in the After-LIFE.

D.1.3 Project video

A short video for project presentation was finalized the first year of the project from UVIGO. The duration (0:56') is shorter than expected because it will be easier to use by remote. The video (called TEASER) was published in the project website, has been used in the dissemination events and is available in the stand online of the researchers Night and in the Invertebrate playlist- LIFE you tube channel.

D.1.4 Layman's report downloadable at: https://www.life4pollinators.eu/en/laymans-report

The report drafting started in May 2024 and it was prepared by the project coordination through a collaborative approach to ensure a comprehensive and consensual view of the project consortium, and a coherent and accurate presentation of project's objectives, methodologies, actions and achievements. The Layman's report was published in early September 2024 before the final conference and the EN version was printed in 400 copies, distributed during the conference. The digital version of the report is available for downloading from the project website, in 4 languages, translated and edited by project partners under UNIBO supervision.

Action D.2: Events (local events, final conference and Networking)

Foreseen Start date	November 1st, 2019	**Foreseen End date**	September 30th, 2023
Actual Start date	November19th, 2019	**Actual End date**	September 30th, 2024
Deliverables	N.A.		
Milestones	- Pollination exhibition finalized ~~30/9/2022~~ amended ~~30/9/2023~~ actual 30/3/2024 - Final project conference done ~~30/9/2023~~ amended 30/9/24		

D.2.1 Mobile "pollination exhibition"

The University Museum Network (Sistema Museale di Ateneo) of UNIBO played a pivotal role in the realization of the traveling exhibition. This exhibition was conceived as a flexible and engaging tool designed to fulfil 3 fundamental objectives: to be easily transportable across EU and to be simple to assemble and disassemble, to effectively convey content, and to foster interactions. It travelled in a box and, like a pollinator, exchanged knowledge in the places where it "rested," gracefully and without interfering with its surroundings. Originally, the exhibition should have been ready by 30-9-2022, then when the project was extended by one year, the deadline was postponed to 31-7-2023, but for administrative reasons, procurement procedures were started by SMA with delay and were concluded in 12-2023. The design and realization were completed in 3-2024. The first intended destination was SL- "Altermed & Flora" fair at Celjski sejem in 15/17- 3- 2024, organized by E-ZAVOD. Due to technical shipping issues, the transport was unsuccessful, and the exhibition, after a period of storage in the shipper's warehouses, returned to Bologna. Successfully, it could reach the second stop: GR. There it was hosted at the National Garden of Athens from 26-4 to 15-6, 2024. The third stop was ES- Madrid, during the International Botanical Congress 21/27-7- 2024 (https://ibcmadrid2024.com/docs/programa.pdf see p.161). The fourth stop was Bologna for the closing conference of the project, held on 5-9-2024 at the Auditorium Biagi - Biblioteca Salaborsa of Bologna Municipality. The exhibition will be permanently housed in the premises of the SMA at the Botanical Garden of Bologna, where it will continue to disseminate the project messages. Future travels will be considered upon request.

In GR, additional 3D models of flowering plants and pollinators have been created by a UAEGEAN Pollinator Expert with a local artist, Ms. Fereniki Tsambarli. This collaboration for educational (B.3) and expository activities was in place since 6-2020 (see An. D.2.1)

In ES, in collaboration with the LIFE insular project, an art exhibition entitled "The pollinator crisis: a conservation challenge" was prepared and installed at the Visitor Center of the National

Park of the Atlantic Islands of Galicia (Vigo) and at the Environmental Education Center Dehesa de la Villa (Madrid). The exhibition has been visited by more than 7500 people so far.

D.2.2 Events and participation to other events and fairs to disseminate results

All partners participated to national and international events (mostly online during pandemics, in presence in the last period) to present the project and to spread the methodologies and materials developed. The project was presented in about 200 events targeting scientific or general public, involving likely more than 10.000 people, mainly across all target countries. The list of these events with link (when available) and other details (n. of people, etc…) is available in An.D.2.2-Table of events (https://b2drop.eudat.eu/s/EHyMoB956DRrjpa), pictures plus specific information (event title and type, n° of participants, complete program, etc.) are collected in the project cloud and information of main events is available in Annexes: FOLDER "D.2.EVENTS-General public"

The list of scientific conferences (13 oral and 19 poster presentations, in occasion of 23 conferences) and papers (10 articles and 1 book chapter have been published or are currently under revision or in press) are specifically reported in 2 different sheets of An.D.2.2, and relevant available documentation (abstracts, published articles) is in a separate document: An.-Scientific articles and communications. Moreover, all partners contributed to the dissemination of the project promoting writing of articles on local or national press and media (TV, radio): the project has been mentioned in at least 30 press or online popular articles (An.-Press and online articles) and 5 TV/radio interviews (details in the dedicated sheets in An.D.2.2.Table).

D.2.3 Final project conference

The final conference was held in Bologna on September 5th 2024 in Bologna, preceded by 2 satellite events on Sept 4th: the visit to the Pollinator Garden and the technical workshop to transfer the pilot project results (by CREA and UNIBO). The programme, list of participants and pictures are in An.D.2.3-Final conference. Around 100 people attended the conference. Two invited speakers opened the morning and afternoon sessions (Prof. Mario Balzan from Malta, Prof. Bostjan Surina from Slovenia) and participated to the round tables. The conference was highly successful considering the number of participants and the feedback received in person and via email. PP from ES could not come for personal reasons, thus videos of their presentations were shown. In this occasion, the authors of the 10 best photos uploaded to the platform were awarded by a commission of 3 professional photographers, these pictures were printed in post-card format (n.100 each, total 1000 copies) and distributed to participants, as well as other material (Postcards, Layman's report, Guidelines and complete kit - to keynote and roundtables speakers).

D.2.4 Networking with other LIFE projects

Meetings to present our project, share methodologies and exchange information and strategies have been organized with several LIFE Projects: LIFE Drylands - LIFE NAT 18 NAT/IT/000803; LIFE Insect Responsible Sourcing Regions - LIFE 19 GIE/DE/000785; LIFE CLIVUT - LIFE18 GIC/IT/001217; LIFE Shep for BIO - LIFE20 NAT/IT/001076; LIFE SEEDFORCE - LIFE20 NAT/IT/001468; LIFE PollinAction - LIFE 19 NAT/IT/000848; LIFE INSULAR - LIFE20 NAT/ES/001007; LIFE NatConnect2030 - LIFE22-IPN-IT-LIFE-NatConnect2030/101104366.

Specifically, particularly relevant collaboration was implemented with:

- LIFE Insect Responsible Sourcing Regions: a fruitful exchange (3 video calls) on code of conduct for farmers and methods to assign the label;
- LIFE PollinAction: networking meetings, collaboration in the organization of replication workshop (action B.5.4), collaboration to the drafting of the "Guidelines for the choice of

plant species of bee interest allowed for eco-scheme 5 and other recommendations" (https://life4pollinators.eu/sites/default/files/2023-03/Linee_guida_per_la_scelta_delle_piante_di_interesse_apistico_Ecoschema_5_24_feb_compressed1.pdf), co-organization of the event targeting protected Areas and nature conservationists (see action B.2.1 and action B.5.3) held in Rome (IT) on 20/3/2024

- LIFE BeeAdapt: LIFE 4 Pollinators coordinator M. Galloni and CREA representative L. Bortolotti participated (and still do) to the LIFE BeeAdapt consultation Board; LIFE BeeAdapt supported the organization of the above-mentioned event in Rome.
- LIFE insular: co-organization of the art exhibition entitled "The pollinator crisis: a conservation challenge" (see D.2.1) and co-production of an additional animated film (see B.1.5).

Apart from networking with other LIFE projects, we collaborated with different local and international projects (e.g. Beewatching (IT), AEMPolly (IT), URWAN (EU- Interreg), SPRING (EU), ConservePlants (EU-COST), as well as with several local associations and different bodies (see An. D.2.2, An. D.2), starting a process that is going to continue after project's end. As an example, a very fruitful collaboration was held with the local public association "Casa di Quartiere 2 Agosto 1980 - Orti Urbani Via Saragozza 142", that involved LIFE 4 Pollinators in 2 local participatory projects (ApiPista, Semina Urbana - Stagioni della vita) leading to increase the dissemination of our messages and materials, and create new proposals, some to be realized in the After-LIFE (e.g. realization of "pollinator cards" for blind people, etc..). This association deserved our "pollinator-friendly" certification (https://www.life4pollinators.eu/en/become-pollinator-friendly).

Action E.1: Project management by UNIBO

Foreseen Start date	October 1st, 2019	**Foreseen End date**	September 30th, 2023
Actual Start date	November 05th, 2019	**Actual End date**	
Deliverables	- Management Plan with annexed Monitoring Protocol ~~11/2019~~ actual 12/2019 - After Life Plan ~~31/12/23~~ amended 30/9/24 - Project's Final Technical Report ~~31/12/23~~ amended 30/9/24		
Milestones	Kick off meeting and presentation of the management staff, SC and board selection ~~11/2019~~ actual 12/2019		

E.1.1 – Project management by UNIBO

LIFE 4 Pollinators was a project with considerable size and ambitions, in need of a sound management and monitoring with the cooperation of 7 partners from different countries. The management action ensured the correct administration of the entire proposal and secure achievement of project objectives within budget, quality and deadlines.

The management plan has been composed and presented at the kick off meeting (held on 16-17/12/2019) to the partners (minutes in An. E.1). It is constantly updated and contains a table with the activities, deliverables and milestones per each action. This table indicates the deadline the duration and the delay of each action.

The SC and the project restricted BOARD were identified at the kick off meeting. Then due to the Covid 19 crisis a new organization of the coordination was developed to guarantee monitoring and implementation of the project in the new conditions. More operational working groups were identified:

- scientific committee (M. Galloni, T. Petanidou, A. Traveset, F. Sgolastra, L. Bortolotti, M. Quaranta, J. M. Sanchez) was formed to develop common methodologies and protocols for materials and scientific monitoring

- communication group (V. Petrinec, E. M. Keller and Marco D'Agostino) to follow website, social networking and graphic design of the project
- technical coordination team (M. Galloni, G. Dante, G. Girolimetti and S. Colaizzi and at least one person per each PP) to monitor and coordinate the concrete development of the activities.
Table of the Personnel is in An. E.1.
Project meetings have been organized regularly by remote (once each 3-6 months approximately: 16/4/2020, 8/5/2020, 29/12/2020, 16/4/2021, 25-26/11/2021) and in presential/hybrid mode (Bologna 2022, Lesvos 2022, Mallorca 2023, Bologna 2024). Throughout project implementation, several restricted meetings to solve specific technical or financial issue, or per activity, have been organized to adjust specific strategies and/or speed the achievement of project results. Minutes of most relevant meetings are available (An. E.1).
In September 2021, the partner Coldiretti decided to leave the project, this created delays in the implementation of some actions (B.2.3, B.4) as already underlined above and in the amendment. The technical coordination team was promptly alerted and solved the issue in ca. 9 months finding a substitute partner; the foreseen actions have been re-scheduled.

E.1.2 - Monitoring, Quality and Financial control, Risk Management UNIBO

The project coordinator (M. Galloni) manages the relations with partners, stakeholders and project supporters (local and competent authorities, etc.) from a technical point of view and to fulfil the concrete implementation of the foreseen actions.
The financial manager (Ivan Sgandurra the first year, G. Girolimetti until Sept. 2022, Simona Colaizzi until July 2024, Sara Venturelli until the end. Both Girolimetti and Colaizzi decided to leave the working position at UNIBO) covers the relations with the various authorities and organizations, suppliers, project partners for administrative and financial issues related to the project.
The activities that were carried out in an ordinary or periodical manner concerned:
- Ordinary project management;
- Collection and storage of expense documents (including monthly timesheets filled in by the personnel involved in the Project), and verification of their compliance with the LIFE administrative rules;
- Monitoring of the technical progress of the actions through continuous contacts with the beneficiaries.
- Contacts with the monitor;
- Responses to administrative doubts of the beneficiaries about reporting;
- Collaboration in the development of the main procedures for the external assignments, service providers or consultancies in order to comply with the LIFE regulations, the Italian regulations and the project regulations;
- Organization of meetings between partners and monitoring visits;
- Preparation and submission of three-month reports for the monitor until the protocol changed.

E.1.3 - After LIFE PLAN

The After-LIFE Plan is provided as separate document. downloadable at:
https://www.life4pollinators.eu/sites/default/files/2025-04/AFTER%20LIFE%20PLAN_OK.pdf

6.2. Main deviations, problems and corrective actions implemented

LIFE 4 Pollinators activities were affected by various problems caused by the Covid-19 crisis: we encountered difficulties in communicating, meeting in person and travelling. Extra time was needed to get used to work by remote to organize discussion for taking shared decisions (sites and species selection, handbooks and field guides, ID tools creation and editing, scientific methodologies linked to the newly published EU Pollinator Monitoring Scheme and Indicators). Indeed, the scientific discussion by remote turned out to be very difficult:

participants often paid less attention being often distracted, internet connection was not always working properly maintaining concentration and involvement during 2-hour online meeting is very challenging. As a result, it generally took longer to find an agreement on any kind of decision. The Covid-19 crisis led to a delay in the recruitment of additional personnel because the administrative procedures stopped during the lock-down, in IT between March – May 2020 and later in all other partners countries. Furthermore, after the Covid lockdown, the way of living and working has changed, slowing the administrative procedures for personnel recruitment. Consequentially, the core actions B involving general public and key stakeholders have been scaled down during the reporting period. Another general consequence of the Covid-19 crisis was the difficulty to reach the participation of 50-80 persons in the planned events because of the new rules and restrictions. We have tried to overcome this problem organizing a larger number of events for a smaller number of citizens, but this has meant longer time for the achievement of the expected results (number of participants). In addition, a problem with our partner Coldiretti arose the last year. Specifically, Coldiretti decided to leave the project unexpectedly in September 2021 thus we had to postpone activities with farmers and invest time to search for a substitute. Conf joined the project on March 15th, 2022. This led to a delay in the implementation of the actions B.2.3 and B.4.3 which started in autumn 2022. In general, the aforementioned issues led us to ask for the prolongation of the project to one year, through the amendment request sent on 26/07/2022.

6.3. Evaluation of Project Implementation

The team developed every action working together in order to share information as much as possible. Local authorities and key stakeholders have been involved in the development of the Code of conduct and Declaration of Intents and in the identification of project sites This improved their participation to project activities and stimulate policies towards pollinator conservation. However, the unforeseen pandemic crisis and withdrawal of one partner, obliged to re-modulate actions and to invest time to find new methods for project actions implementation limiting the delays. Continuous communication within working groups even from remote guaranteed the achievement of most of the expected results. Clearly the character of the project that foresees several activities in presence (training, public events, educational project, etc.) determines that the core actions could not start before the end of the restrictions. Nevertheless, we were contacted by several bodies interested to collaborate with us (e.g., schools, local authorities, agri-food industry, etc.) demonstrating the success of our dissemination approach, not only at local level (see Action D.2). Despite the replacement of personnel and the delays, the team demonstrated a great adaptability and capacity to achieve the foreseen objectives. Regarding materials produced (field guides, handbooks) and promoted through social networks and website and distributed in the events, we received great feedback from the public in all countries. Different entities requested to use them in events/activities, e.g., EU SPRING Project, National Park Gran Sasso e Monti della Laga, Bergamo Botanic Garden, etc. or asked to be supported in local participatory process to improve pollinator conservation at local level (e.g., San Lazzaro di Savena, etc.). However, the time consumed to produce them was surely underestimated, probably because communication by remote make understanding and agreement often tricky.

On the other hand, the complexity of the project actions targeting different sectors affected the implementation of some actions that suffered further delays. To solve this problem, the team identified different solutions using even personal contact or links with the aforementioned sector.

The pilot project (B.4) needed to be re-modulated, not only because of the change of PP but also because the competent authority could not respect the timeline for the workshop due to the occurrence of a catastrophic flooding event. Nevertheless, as a result of the workshop, the Region formally confirmed the intention to fulfil the original commitment (An. B.5.2).

Despite the difficulties encountered, LIFE 4 Pollinators achieved all the foreseen objectives (except for the adoption of the Bee indicator by ER), which can be considered a great success taking into consideration that the project started at the beginning of the pandemic (table below).

Action	Foreseen in the revised proposal	Achieved	Evaluation
A.1 Development of Common Protocols	Objectives: Identify target species/taxonomic group Develop a common protocol. Expected results: − handbook for Protected Areas − handbook for farmers and gardeners − handbook for students − ca. 40 identification cards produced in PP languages + EN (Simplified tools for target species identification)	Yes >100%	The work from remote and the delays in the recruitment of personnel due to pandemic created technical difficulties to achieve the results in time. The technical handbook for farmers and gardeners foreseen in the proposal has been split in two: handbook for farmers and handbook for Urban green areas. The simplified tools are 6 field guides (for 5 main pollinator groups and 1 for entomophilous plants). We received appreciations and several requests to use the material, at national and international level. VERY SUCCESSFUL
A.2 Identification of project's areas among the selected ones	− Identification of the areas in each MS − Development of communication Plan − Collection of supporting letters	Yes	The communication plan has been developed and shared between the partners: it represents the approach we want to apply to the whole project activities implementation. Areas identified needed to be slightly changed (see Action A.2) but they are all N2000 sites. 4 Additional supporting letters received during project implementation. SUCCESSFUL
B.1 General Public involvement	− Project will reach ca. 1.000.000 people, raising awareness in at least 10% − CS in protected areas: bioblitzes performed by 4 PP in at least 11 sites, increasing knowledge and awareness on at least 50% of 1300 citizen involved, change in behaviour in at least 10%-40% − Creation of 2 pollinator gardens (IT, ES) and a nursery of native bee-plants: 80.000 visitors expected − Short digital guide on the botanical garden wild bees − 2 professional animation videos elaborated	Yes	Considering all the activities, the materials realized (videos, guides, handbooks, web platform, etc), the school project, the contribution to guidelines at national level in IT (see D.2.4), the social networking, the art exhibitions, etc.. it realistic to think that the project could have reached tens of thousands of people. - Awareness raising in 59% of total participants, well beyond the expected result. - 27 bioblitzes were implemented (27), all of them very successful. - 7 Pollinator gardens have been created (1 in T, 5 in ES-Balearic Islands, 1 in SL). - Digital guide of the wild bees of the Botanical Garden of the University of Bologna has been realized. - Two animation videos and a short clip have been realized by the project.

			Additionally, LIFE 4 Pollinators contributes to the production of an animated film and a documentary in ES. VERY SUCCESSFUL
B.2 Stakeholders involvement	- Training to ca. 350 natural park personnel and competent authorities involving ca. 50 parks/ N2000 sites, increase of awareness expected in at least 50%. - ONLINE training at least to SI stakeholders linked with E-Zadov. - 24 meetings reaching ca. 600 farmers in IT and 40 in ES-Balearic Islands. Behavioural change: raising awareness expected for at least 50%, change of behaviour expected on 30% farmers - ONLINE training at least to SI farmers linked to E-Zadov - Pollinator-garden training and pollinator-friendly gardening: 2 events involving at least 60 people (IT, ES) - Young agronomists	Yes >100%	The activities generally started later than foreseen due to Covid 19 crisis. Farmers training suffered strong delay because of the withdrawal of Coldiretti. On the other hand, an unforeseen training to technicians of the **Barilla** Agri-food industry have been performed (15 people). Nevertheless, results were achieved, well beyond expectations. -Training to natural parks: 419 participants, 59% awareness increased after the workshop - Information events for farmers: 698 farmers participated, in IT (12 online), ES (8) and GR (5) - Pollinator-garden training and pollinator-friendly gardening: 7 events involving in total 186 people (IT, ES, GR, SL), 84 % awareness increased and 63 % change of behaviour (intention) - Training to young agronomists held in ES (4 events) and IT (5 events): 171 participants - ONLINE tool was finalized with delay, anyway it can be of great support for the After-LIFE. VERY SUCCESSFUL (details in D.35)
B.3 Environmental education programme	- Expert-assisted CS project for schools: participation of at least 25 teachers and 2000 pupils in 3 MS. Increasing awareness in at least 50% - Drafting reports	Yes >100%	- More students (2100) and teachers (313) than expected participated to the activities. 32 schools gained the "pollinator friendly" certification. After the educational activity students' level of knowledge increased from 13% to 39%, and behavioural change (intention to adopt pollinator-friendly behaviours) from 21% to 39%. Reagrding teachers, 153 replied to questionnaire, showing a general increase in their knowledge level, and the great majority expressed the intention to implement the educational activity in the future. -After-LIFE continuation of the educational project assured in IT, GR -Reports delivered VERY SUCCESSFUL
B.4 Pilot project in Emilia Romagna	- 3 events to 10-15 consultants ~~of Coldiretti~~ - Feasibility and effectiveness analysis of for the pollinator-friendly label - 50 agricultural farmers adopt the label - Development of guidelines	Yes < 100%	- Coldiretti left the project thus the training has been done with delay to 11 CONF technicians in11/12-2023. - The label has been developed in time together with the feasibility study. - 32 farmers requested the "pollinator-friendly" assignment, and by 30/9/2024 22 completed the procedure.

			− The Guidelines were developed and are freely downloadable from the project website (D.22). SUCCESSFUL
B.5 Replicability and governance	− Adoption by E-R regional authority of BEE biodiversity indicator for RDP measures evaluation (IT) − 6 Workshops in 4 MS to improve replication involving at least 200 environment/agriculture officers − Creation of interactive data-base on plant-pollinator interactions (data available upon request) − 3 handbooks. ca. 3.000 Printed copies distributed in 4 MS − Promotion of job opportunities in agri-consulting: at least 20 agronomists will be trained to achieve this − new expertise (IT), we expect 70% of succeeding training − Construction of pollinator-plant networks: information transferred to managers of about 10 N2000 sites − Implementation of pollinator initiative promoted in IT and GR − Data processing reports	Yes almost 100%	− ER region formally committed to apply the BEE biodiversity indicator for IT RDP measures evaluation (see An.B.5.2) although it could not be achieved by the end of the project because of climate change disaster (flooding) happened in 2023 and 24 − LIFE 4 Pollinators staff contributed to draft the IT guidelines in support to the application of CAP-Ecoscheme 5. − 6 workshops (3 in not targeted IT regions, 1 at National level in Rome, 2 in EU MS (ES and GR)). Overall, 53 environment/agriculture technicians participated to these workshops. Moreover, project results and materials were distributed to the workshop of the EU CAP Network in Ljubljana, SI (94 participants). Nevertheless, the officers involved were less than expected. − The database on plant-pollinator interactions was finalized: a data paper is in preparation and data are available upon request − 4 handbooks. ca. 3.000 printed copies were distributed in 4 MS − 171young agronomists participated to the trainings but the results were lower than expected − Information on species of conservation concern in N2000 sites transferred to competent authorities. − Implementation of National Pollinator Initiative were promoted in IT and GR and in GR the Pollinator Action Plan drafting was assigned to UAEGEAN − Data processing report (D.30) MEDIUM SUCCESSFUL
C.1 LIFE KPI Webtool contribution and update - Social economic Impact	− Baseline report developed − Uploading and updating of the KPI in the webtool − Drafting reports	Yes	− Because of the delays in project implementation the 3 reports (baseline, mid-term, final) have been delivered with some delay. − KPI updated and uploaded in the webtool − Reports delivered SUCCESSFULL
C.2 Scientific Monitoring including Indicators implementation and update	− Monitoring of the impact of the project on environmental problem − Validation of the developed indicator	Yes	− Methodology has been shared and agreed after meetings and discussions. − The scientific monitoring demonstrated the effectiveness of the pollinator-friendly actions identified and promoted by the project (see D.34). SUCCESSFULL
D.1 Public	− 1 project CS website	Yes	− Project website and dissemination -

awareness and dissemination of results	− Project dissemination material (leaflets, Pollinator KIT, etc.) available to a large audience through website, directly distributed to at least to 3.000 people − Awareness campaign reaching at least 10.000 citizens, promoting behavioural change and raising awareness in at least 10%. − 2 videos in PP languages + EN, reaching at least 1.000.000 people	100%	materials were developed almost on time and pollinator Kit was assembled and sent to partners. Website visits were more than 20,000, unique downloads were 11,920. − Awareness campaign, through social media, art exhibitions and dissemination events, reached more thousands of people, likely more than 10,000. − All foreseen videos were produced on time and are available at project website. Two additional videos were produced with other entities and links are available. VERY SUCCESSFULL
D.2 Events (local events, final conference and Networking)	− Networking and dissemination activities − Pollination exhibition finalized	Yes	All partners disseminated the project in events and the coordination team organized successful networking meetings with various projects, discussing methodologies, sharing ideas, materials and even organizing a national event together. Pollination exhibition finalized with delay, installed in 3 occasions in Greece, Spain and Italy, reaching thousands of people. VERY SUCCESSFULL
E.1 Project management by UNIBO	Objectives and expected results: − Project management by UNIBO − Monitoring, quality control and risk management − After-LIFE plan.	Yes	All the expected results have been achieved, generally well beyond expectations. The readjustment of some actions because of the pandemic crisis and the change of a partner, were big challenges. The coordination team was able in reasonable time to find solutions and overcome the issues. The After-LIFE Plan shows the great commitment of the beneficiaries to the project results and objectives. VERY SUCCESSFULL

6.4. Analysis of benefits

Overall, the project resulted in several benefits, from the environmental to the governance aspects, as well as socioeconomic. Through the involvement of different actors of civil society, training to main stakeholders and active networking, the project was able to activate a virtuous cycle, addressing the targeted environmental issue. Moreover, all the material produced, including codes of conduct and guidelines, have met the general public with incredible success and will support the replication and the implementation of future actions to safeguard wild pollinators.

1. Environmental benefits
   a. Direct / quantitative environmental benefits:

   Direct quantitative environmental benefits were assessed through scientific and socioeconomic monitoring on people's behavioural change (Actions C).

The scientific monitoring performed in IT, ES, GR generally demonstrated the effectiveness of pollinator-friendly measures (pesticides avoidance/sustainable use, flower strips, pollinator nesting places installation) on wild pollinator populations. In the IT agricultural study sites, we recorded higher ex-post pollinator abundance, proportionally to the trophic floral resources. Accordingly, in the urban sites in Mallorca a higher abundance of pollinators was found in the pollinator gardens compared to the respective control areas, highlighting the importance of incorporating refuge sites for pollinators in urban areas to promote their presence in cities. Specific information on the quantitative benefits is discussed in Chapter 7 (Indicators 1.6) and in D.35. The assessment on change of attitudes and behaviours in the different targets (citizens, students, teachers, urban park managers and gardeners, protected area managers, young agronomists and floral nurserymen and farmers) highlight a general increase of knowledge and awareness on the topic, as well as the intention to adopt pollinator-friendly measures.

b. Qualitative environmental benefits

As a result of the project, the data collected through the CS activities (bioblitzes and web-platform) as well as through the scientific monitoring contributed to the biodiversity information available on pollinators and plant-pollinator interactions (map and report are online, a data-paper is in preparation). More specifically, new data on species of conservation concern were transferred to the management bodies of N2000 sites (An. B.5.1). The CS methodology proposed is expected to be adopted by local administrations and competent authorities. All materials produced by the project are available and freely downloadable to support the transferability/replicability process.

The adoption of the **code of conduct** for pollinator-friendly farms led to the assignment of the **pollinator-friendly label** to 22 farms to date (plus 10 pending), and we expect more requests in the After-Life period, with long term qualitative effects.

The "**pilot project**" replication workshops (Action B.4) in other regions/countries helped the transferability of this methodology. At local level, the ER Regional Department of Agriculture expressed formally the intention to include in the General Regulations the table of toxicity levels towards bees and other pollinators of the active ingredients allowed in integrated agriculture[6], and to include the BEE indicator in the Regional Evaluation Plan of the CoPSR 2023-2027.

We received manifestations of interest to use the BEE indicator by other regional authorities, too. CREA-AA committed to support this activity in the After-LIFE period.

The **Declaration of Intents**, drafted through a participatory process and already signed by 5 IT and 1 GR municipalities, will be proposed to other local authorities, with continuative environmental positive effects.

<u>Environmental policies</u>

The project contributed to the dissemination and application of EU environmental policies (EU Green Deal, Pollinator Initiative, Nature Restoration Law, see also point 7) in different ways, mainly through training, dissemination and governance actions.

Despite the initial difficulties encountered, we were able to stimulate the organization of multi-actor intergovernmental workshops towards the implementation of thew

[6] Published on February 2025

Pollinator Initiiative and the drafting of the National Action Plans for pollinator conservation in IT and GR. In GR the competent authority assigned to UAEGEAN the drafting of the National Action Plan, that started just after the end of the project.
Moreover, Laura Bortolotti (CREA) and Marta Galloni (Unibo) contributed to the "Guidelines for the choice of plant species of bee interest allowed for eco-scheme 5 and other recommendations" edited by Italian National Rural Network to support interventions by farmers requesting CAP fundings within Strategic Plan 2023-2027 Eco-scheme 5.

2. Economic benefits.
The pollinator-friendly management in both urban and rural-agricultural environments implies economic benefits, mainly because of the reduced use of chemical products and, more in general, reduced human interventions (e.g. mowing). Moreover, economic benefits may arise from project's actions towards different categories: farmers can benefit from the pollinator-friendly quality logo, the tourism sector from the "pollinator-friendly" declaration of intents, the newly created pollinator gardens will likely create new job opportunities for qualified staff.

3. Social benefits.
The additional staff improved their skills and competences helping future employment in EU context. Moreover, the project offered training and working opportunities to PhD (1), MSc (10), and BSc (5), and traineeship (7 + 3 international-Erasmus+), students with no added costs, as well as to several volunteers who took part to different project actions: throughout project duration, 5 BSc (2 yet ongoing) and 10 MSc final thesis at UNIBO relate to different project topics. A specific PhD project entitled "Pollination services for environmental sustainability: participatory science and scientific monitoring" (2022-2024) with a scholarship funded by the National Operative Program "Research and Innovation" 2014-2020: the research focused on the monitoring actions and on the assessment of socioeconomic impact, as well as on the reliability of data collected by citizens. The involvement of academic students in the project will benefit their future careers. In addition to project staff, 26 expert plant and insect taxonomists were involved as volunteers to validate the pictures sent by citizens to the web-platform. Upon requests, they received a certification and, depending on their contribution effort, they are differently included as co-authors in scientific articles and congress communications, benefiting their CVs.
A pollinator-friendly management of urban green and agroecosystems benefits social communities because of the expected lower chemical and noise pollution, "greener" and healthier environment, more in general thanks to the improved environmental services/benefits and quality life (both that can be quantified).

4. Replicability, transferability, cooperation.
The project has proven high potential for replicability and transferability. In fact, replication of some core actions already started in parallel with project implementation. The most successful once in this sense were the bioblitzes and the educational project.
- Bioblitzes: in Lombardy (IT) in 2021 project event was held in Le Bine N2000 site, but on the same day the regional A.R.E.A Parchi organized parallel bioblitzes in

several protected areas and N2000 sites of the Lombardy network focusing on pollinators and using project field guides and CS monitoring protocols. Project personnel was asked to participate to unforeseen bioblitzes organized by different subjects (associations, public bodies, …).

- Students 4 pollinators: the educational project has been already replicated (at least in IT and GR) thanks to the training to teachers and environmental educators. Moreover, thanks to its success in Bologna (IT) the LIFE 4 Pollinators educational project has been included in the SMA-UNIBO didactic offer to schools for schoolyears 2022-23, 2023-24, 2024-25, and it will likely be also in the coming programmes.

The CS methodology may be successfully transferred to other contexts, and the development of technological instruments, such as informatic applications to collect the data, etc., with broader potentialities, including economic ones, is under study.

The "pollinator-gardens" is expected to be successfully replicated besides and after project implementation, thanks to the workshop held in Bologna where curators and directors of other Italian botanical gardens participated. UNIBO staff will keep training in the After-LIFE period to promote their realization.

The replication of the pollinator-friendly label, for farmers and municipalities that adopt the identified best practices to protect wild pollinators, will be supported by the PP.

Moreover, the CS protocols and the web-platform will remain available to be used for replication, exchange and further participative data collection and related publicly available information.

5. Best Practice lessons.

The actions implemented are based on known methodologies: for example, the definition of our educational project and the CS protocols have been drafted after a dedicated training by an expert and after a first year of confrontation/networking with a similar project (X-Polli:Nation). The final methodology adopted reflects the geographical context where the project is implemented. Similarly, the "Pollinator-friendly declaration for local authorities" is based on the best practice guidance produced by buglife UK: "helping pollinators locally – developing a local pollinator action plan or strategy", then implemented and adapted to the specific context.

The materials developed include Best Practices for pollinator conservation in various context: urban environment, rural agroecosystems, RDF authorities. The project guidelines (D.22) and the Replicability Plan (D.23) represent a new base for the implementation of communication campaigns on wild pollinators in the Mediterranean region. These documents, together with the field guides and the handbooks, can be used to disseminate the best practices identified, and make them available in an easy-to-use format, suitable for experts, competent authorities, schools, educators and environmental operators.

Additionally, a novelty of this project consists in the collection of pollinator-plant interactions data, which consent the analyses of pollination networks, representing a Best scientific practice for conservation purposes.

6. Innovation and demonstration value.

The most innovative aspects of LIFE 4 Pollinators project regard:

- the **participative integrate approach** that characterizes many of the activities foreseen (including the educational ones), favouring the active participation of different target audiences, the level of awareness and the change towards more sustainable and pollinator-friendly daily life way of behaving, and helping the creation of a virtuous circle involving civil society.
- the **code of conduct for farmers**, that sets environmentally sustainable management rules for pollinator-friendly farms, contributing to priority EU policies (EU Pollinator Initiative, Farm to fork strategy, Biodiversity Strategy, Safe use of chemicals …)
- the **pollinator-friendly label**, that identifies pollinator-friendly farms and highlights virtuous behaviours and actions of other private and public subject (e.g., "pollinator-friendly" designation assigned to municipalities, schools, associations)
- the **biodiversity ecological information** collected through CS and scientific monitoring, meaning the data of pollinator-plant interactions, that will consent pollination networks analyses (a novel relevant information for conservation management purposes, see above).
- The **integration of art and science** for dissemination purposes, that lead to the realization of: the beautifully illustrated field guides to plants and pollinator groups, the animation videos, the "mobile pollination exhibition", the 3D flower models and the installations in the pollinator garden.
- The development of the **training online tools**

7. Policy implications.
   In general, the project contributes to the implementation of the following EU policies: EU Biodiversity Strategy, Nature Restoration Law (Regulation EU 2029/1991), EU Pollinators Initiative (COM/2018/395) and its Revision: a new deal for pollinators (COM/2023/35), EU Thematic strategy on the sustainable use of pesticides (Directive 2009/128/EC), Reg EU 1143/2014 on Invasive Alien Species. At regional level it contributes to National Action Plans for the benefit of pollinators in rural/urban environments: Italian National Biodiversity Strategy (2010), Greek National Strategy for Adaptation to Climate Change (NAS) (Submeasure 5.3 - Sustainable biodiversity management measures on agricultural ecosystems and pastures).

7. Key Project-level Indicators

Indicators has been uploaded in the KPI webtool after discussions with the External Monitor Iva Rossi.

In this chapter are presented and discussed the uploaded KPI. Moreover, the differences between the value of the KPIs as uploaded in the first report and the value uploaded in the final report, are explained. This will be done basically considering the methods of the monitoring and data collection that are detailed in D.35. The KPI are discussed one by one and per each context. The context of the project are there.

7.1 Context Pilot Project IT Emilia Romagna [ITH5]

This context represents the location of the pilot project (action B.4) that was Emilia-Romagna region (Italy).

INDICATOR CODE: 1.6

INDICATOR NAME: Number of supervisory / enforcement bodies involved
Unit of measure: Number of Regional authorities involved as supervisor
The indicator refers to the Emilia-Romagna Region that was involved in actions B.4 and B.5. ER Region committed to improve the regulation for integrated agriculture in favour to pollinator conservation and to apply the BEE indicator developed by the project.

INDICATOR CODE: 14.4.3

INDICATOR NAME: Entry into new geographic areas / ITALIA (ITALY)
Descriptor: ITALIA, GRECIA, SPAGNA, ITALIA NORD-EST
The indicator refers to the replication events held at National level (Rome, Madrid, Athens) and at Regional level (Veneto and Friuli Venezia-Giulia).

7.2 Context: Involving people to protect wildbees and other pollinators in the Mediterranean

EL42, EL52, EL53, EL54, EL65, ES11, ES53, ITC4, ITH5, ITI1, NEU, SI0, GR4110003(SCI/SAC), GR4110004(SCI/SAC), ES1140004(SCI/SAC), ES0000226(SPA and SCI/SAC), ES0000037(SPA and SCI/SAC), ES0000145(SPA and SCI/SAC), ES0000227(SPA and SCI/SAC), IT4050001(SPA and SCI/SAC), IT20A0004(SCI/SAC), ES0000544(SPA), ES0000073(SPA), IT51A0008(SCI/SAC), IT7110128(SPA), SI3000223(SCI/SAC), ES0000001(SPA and SCI/SAC), ES0000084(SPA and SCI/SAC), ES0000038(SPA), ES1120001(SCI/SAC)

This context includes all the sites where project actions were implemented. It includes: Natura 2000 sites where bioblitzes were held (Action B.1.3), the regions where training were organized (either in person or online; Action B.2), the countries targeted by events at national level (Italy, Spain, Greece and Slovenia, Action B.2, B.4, B.5). Non-EU country is included because one bioblitz was implemented in San Marino (unforeseen).

INDICATOR CODE: 1.5

INDICATOR NAME: Project area/length
Unit of measure: ha
End value foreseen according to first report: 84,158
End value measured: **6,582.8**

In the first report the value for this indicator was calculated using an estimation of the initial N2000 Sites targeted by LIFE4Pollinators. At the end of the project the number refers to the surface of the farms, municipalities and protected areas that signed the declaration of intent or code of conduct to become pollinator friendly. The difference is thus referable to a different method of calculation, initially based on the N2000 sites targeted. In the final report we decide to follow the indicator descriptor: Conservation or improvement of the status of an area or segment. So, we exclusively refer to the surfaces of the sites for which *Declaration of Intent* or *Code of Conduct* were adopted, and a change of management started thanks to the project.

INDICATOR CODE: 1.6

INDICATOR NAME: Other persons influenced
Unit of measure: Number of other persons influenced /impacted independently of the project area.
End value foreseen according to first report: NOT PROVIDED
End value measured: **11,920**

The indicator refers to the number of unique downloads of material from Download section of the project website, in different languages. Originally, this indicator was not foreseen.

INDICATOR CODE: 1.6

INDICATOR NAME: Humans (to be) influenced by the project/ Persons who may have been influenced via dissemination or awareness raising project-actions (reaching)

Unit of measure: Number of other persons influenced /impacted independently of the project area

End value foreseen according to first report: 3,556

End value measured: **4,670**

The indicator refers to the total number of participants to the activities within actions B.1.3 and B.2 (see above). The 4,670 people who participated may have been influenced by the project. In the first report, the value for this indicator was calculated using an estimation of the participants to project's activities (as per the original KPI excel file, corrected and sent on May 2022). At the end of the project the number refers to the people that participated to project's activities. The difference is thus attributable to a more conservative estimation on number of participants to the project actions.

INDICATOR CODE: 1.6

INDICATOR NAME: Humans (to be) influenced by the project/ Persons with improved capacity or knowledge due to project actions

Unit of measure: Number of other persons influenced /impacted independently of the project area

End value foreseen according to first report: 1,786

End value measured: **1,951**

This indicator refers to the number participants who demonstrated increased awareness after participating to the following activities: B.1.3 (bioblitzes), B.2.1 (training to natural areas managers...), B.2.2 (training to urban green managers...), B.2.3 (training to farmers), B.2.4 (training to young agronomists), B.3 (educational project), B.4 (training to technicians of agroindustry). The indicator has been calculated through the analysis of responses to a survey specifically developed for each target group (see D.35 Socioeconomic report and KPI webtool). The value (1,951) was calculated by applying an inference to the valid answers received (indicator 11.3).

In the first report, the value for this indicator was calculated using an estimation that foresaw that 50% of participants would increase awareness (as per the original KPI excel file, corrected and sent on May 2022). At the end of the project the value, although higher (because the total number of participants was higher, see previous indicator), shows a performance slightly lower compared with the one originally foreseen: 42% activities participants resulted with increased awareness.

INDICATOR CODE: 1.6

INDICATOR NAME: Humans (to be) influenced by the project/ Persons who changed their behaviour or practices due to the project actions

Unit of measure: Number of other persons influenced /impacted independently of the project area

End value foreseen according to first report: 382

End value measured: **785**

In the first report, the value for this indicator was based on a prudential estimation that foresaw that 10% of citizen would adopt pollinator friendly behaviour. A more prudential estimation

has been used for farmers and urban managers and gardeners (as per the original KPI excel file, corrected and sent on May 2022). The difference between the two values is mainly because the percentage of citizen changing behaviour is more or less around 41%. This happened because the citizen participating voluntary to the bioblitz were already advancely aware on the importance of pollinators.

INDICATOR CODE: 10.1.2

INDICATOR NAME: Supervisory/enforcement bodies involved/ Local authorities
Unit of measure: Number of supervisory / enforcement bodies involved
End value foreseen according to first report: 5
End value measured: **6**
The indicator refers to the number of municipalities (6) that formally adopted the "Declaration of intents" and became pollinator-friendly.
One municipality more than expected signed the Declaration.

INDICATOR CODE: 10.2

INDICATOR NAME: Involvement of non-governmental organisations (NGOs) and other stakeholders in project activities / Public body/bodies
Unit of measure: number of stakeholders involved due to the project
End value foreseen according to first report: 30
End value measured: **125**
The first report estimation was based on the number of training activities foreseen, unexpectedly the final value is much higher because the activities attracted and interested a high number of schools (59 tot, IT 15, GR 24, ES 19, SL 1), municipalities (14 tot, IT 9, GR 3, ES 1, SL 1), competent authorities including National Ministry and Protected areas management bodies (37 tot, IT 22, GR 9, ES 5, SL 1) and other Universities (15 tot, IT 12, ES 1, SL 1) participating to the training activities and bioblitzes.

INDICATOR CODE: 10.2

INDICATOR NAME: Involvement of non-governmental organisations (NGOs) and other stakeholders in project activities / NGO
Unit of measure: number of stakeholders involved due to the project
End value foreseen according to first report: NOT PROVIDED
End value measured: **71**
The value was not included in the first report. The number refers to the local and national associations or other entities (tot 71, IT 35, GR 9, ES 24, SL 3) participating to the training activities and to other communication and dissemination activities.

INDICATOR CODE: 11.1

INDICATOR NAME: Website / No. of unique visits
Unit of measure: Number of unique website visits
End value foreseen according to first report: 10,000
End value measured: **26,767**
The first report estimation was prudential, the final report value represents the number of unique LIFE4Pollinators website visit recorded.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Number of different publications made (Journal/conference)
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: NOT PROVIDED
End value measured: 43
The first report estimation was prudential. The indicator refers to the number of scientific papers/ book chapters already published before project's end, and the number of congress communication: 32 total (13 oral + 19 poster presentations). Additionally, additional 5 articles are in review or in press, and the project is going to be presented in several congresses.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Number of different displayed information created (posters, information boards)
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: 10
End value measured: 14
The total number of layouts for panel site and roll up was higher than expected because catalan language was added and at the pollinator garden in Bologna additional information boards have been produced.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Number of articles in print media (e.g. newspaper and magazine articles)
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: NOT PROVIDED
End value measured: 18
The value refers only to the printed articles, additional online and radio interviews were also produced.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Number of events/exhibitions organised
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: 18
End value measured: **31**
The first report value referred to the number of bioblitz and exhibitions foreseen at the initial phase. The final value is higher mainly because more bioblitz than expected were organized in Balearic Islands and Italy.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Number of discrete Project Reports drafted
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: 14
End value measured: **9**
The first report value referred to the number of materials to be produced (now under indicator 11.2 “Other distinct media products created (e.g. different videos/broadcast/leaflets)”). The final report value was correctly calculated as the number of monitoring reports produced as

result of citizen science (2), scientific IT (2) + final scientific monitoring report (1) replication (4) + scientific monitoring action C.2 (1).

INDICATOR NAME: Other tools for reaching/raising awareness of the general public/ Other distinct media products created (e.g. different videos/broadcast/leaflets)
Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: 4
End value measured: **47**
The first report value referred only to the number of videos and leaflet (postcard) foreseen. The final report calculation counted all the materials the project developed (field guides, handbook, guidelines, code of conduct, etc.). It has to be considered that the majority of them were also produced in different languages.

INDICATOR CODE: 11.3

INDICATOR NAME: Surveys carried out regarding awareness of the environmental/climate problem addressed (only mandatory for information and awareness projects)/Individuals
Unit of measure: number of individuals surveyed who are aware of the environmental and/or climate action issue addressed
End value foreseen according to first report: 1750
End value measured: **468**
In the first report, the value for this indicator was an estimation of the share of target audience (citizen, farmers and beekeepers, protected area managers, urban park managers and gardeners, students, teachers, agronomists) who will raise their awareness or willingness to adopt pollinator friendly behaviour (based wrongly on the original KPI excel file, sent with the proposal in 2018), by mistake it was consider as denominator the number of foreseen participants and not the number of respondent to the survey. The value of the final report refers to participants (except teachers) with valid responses (1,164) that resulted aware. The difference between the two values is therefore, on the one hand due to the use of a different excel file than the one sent in 2022 (and used for the calculation of indicator 1.6 also in the initial phase), and secondly because in the initial phase the indicator was calculated on the participants and not on an estimate of possible respondents.

INDICATOR CODE: 11.3

INDICATOR NAME: Surveys carried out regarding awareness of the environmental/climate problem addressed (only mandatory for information and awareness projects)/Other
Unit of measure: number of individuals surveyed
End value foreseen according to first report: 2,000
End value measured: **1,164**
In the first report, the value for this indicator was an estimation of the share of target audience (citizen, farmers and beekeepers, protected area managers, urban park managers and gardeners, students, teachers, agronomists) who was expected to participate to the survey (calculated using the numbers on the original KPI excel file, sent with the proposal in 2018). The final report value refers to the participants (except teachers) who submitted valid responses. The difference between the two values is, therefore, on the one hand due to the use of an excel file different from the one sent in 2022 and used to calculate the indicator 1.6, and secondly because the in the initial phase the indicator was overestimated assuming that more than half participants would have responded to our surveys.

INDICATOR CODE: 12.1

INDICATOR NAME: Networking / Members of interest groups / lobby organisations
Unit of measure: number of individuals surveyed
End value foreseen according to first report: 20
End value measured: **30**
In the first report, the value for this indicator was underestimated; the final report value refers to the real number of individuals representing 20 associations/projects or groups that LIFE4Pollinators staff met in different ways as networking.

INDICATOR CODE: 12.2

INDICATOR NAME: Professional training or education / Members of interest groups / lobby organisations
Unit of measure: number of individuals
End value foreseen according to first report: 400
End value measured: **419**
In the first report, the value for this indicator was underestimated; the final report value refers to the real number of participants to action B.2.1, regarding Protected Areas

INDICATOR CODE: 12.2

INDICATOR NAME: Professional training or education / Professionals - experts in the field
Unit of measure: number of individuals
End value foreseen according to first report: 1100
End value measured: **869**
In the first report, the value for this indicator was overestimated; the final report value refers to the real number of farmers and young agronomists participated to action B.2.3 and B.2.4, regarding agriculture. The difference is mainly due to the change of associated beneficiary (withdrawal of Coldiretti) that has a higher number of associated farmers.

INDICATOR CODE: 12.2

INDICATOR NAME: Professional training or education / Students (in higher education)
Unit of measure: number of individuals
End value foreseen according to first report: 2,026
End value measured: **2,413**
The difference between the first and the final report are due to an underestimation of school interest in the project. The total number represent indeed the total number of students participating in the activities run through action B.3.
INDICATOR CODE: 12.2

INDICATOR NAME: Professional training or education / Other
Unit of measure: number of individuals
End value foreseen according to first report: 80
End value measured: **186**
The value refers to the participants in action B.2.2 regarding urban green areas management. In the first report it was underestimated. The final number is the real number of participants to the activities organized.

INDICATOR CODE: 13

INDICATOR NAME: Jobs
Unit of measure: No. of FTE
End value foreseen according to first report: 5.6

End value measured: **5.77**
The total value was calculated based on the real additional personnel that worked on the project, as Full Time Equivalent created by LIFE 4 Pollinators. Calculation has been made starting from the number of w/d of additional personnel per PP:
UNIBO: 3.196,07 days
CREA: 745,15 days
CSIC: 490,13 days
UAEGEAN: 901,53 days
UVIGO: 1.022,23 days
EZAVOD E CONF: 0
TOTAL: 6.355,11 days
6355.11/220*5=6355.11/1100= 5.77 FTE

INDICATOR CODE: 14.1

INDICATOR NAME: Running cost/operating costs during the project and expected in case of continuation/replication/transfer after the project period
Unit of measure: €
End value foreseen according to first report: 2,485,965
End value measured: **2,460,717.98**
The final report value refers to the real final cost of the project, including non eligible cost.

INDICATOR CODE: 14.2.2

INDICATOR NAME: Operating expenses expected in case of continuation/replication/transfer after the project period
Unit of measure: €
End value foreseen according to first report: 47,385
End value measured: **208,690**
The final cost has been estimated taking into account own resources (108,690 €) including personnel and other costs, and external funds (100,000 €). This value was underestimated in the initial phase. For details on the after-life activities foreseen and their estimated costs see the AFTER-LIFE plan.

INDICATOR CODE: 14.3

INDICATOR NAME: Future funding / Beneficiary own contribution
Unit of measure: €
End value foreseen according to first report: 47,385
End value measured: **108,690**
The final report value refers to the expected cost and investment for the After-LIFE continuation of the project. In the After-LIFE Plan specific information on how such amount has been calculated can be found.

7.3 Context Replication of bioblitz in Lombardia Region [ITC4]
This context includes a specific replication activity that was organized in Lombardy Region, upon request of the Environmental authority.

INDICATOR CODE: 11.2

INDICATOR NAME: Other tools for reaching/raising awareness of the general public / Number of events/exhibitions organised

Unit of measure: Number of outcomes (e.g. nr of reports, events, etc)
End value foreseen according to first report: NOT PROVIDED
End value measured: **43**
This indicator represents the results of unforeseen replication of the activities that was run in the Lombardy region, were LIFE4Pollinators methodologies for miniBioblitz were used in 43 natural parks and protected areas in 2021, after the regional staff of protected areas was trained (see also 12.2)

INDICATOR CODE: 11.2

INDICATOR NAME: Professional training or education / Professionals - experts in the field
Unit of measure: No. of individuals
End value foreseen according to first report: NOT PROVIDED
End value measured: **100**
This indicator represents the number of personnel of the Lombardy region that was trained to implement Citizen Science activities proposed by LIFE4Pollinators and so organize a minibioblitz on pollinators.

INDICATOR CODE: 14.4.3

INDICATOR NAME: Entry into new geographic areas
Descriptor: ITALIA (ITALY)
The indicator refers to the bioblitzes replicated in parallel to project's event, in other protected areas in Lombardy.