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Inception Report
Covering the project activities from 01/07/2013 to 31/03/2014

Reporting Date
<31/03/2014>

LIFE+ PROJECT Acronym
<LIFE CONOPS>

Data Project

Project location	Greece - Italy
Project start date:	<01/07/2013>
Project end date:	<31/12/2017>
Total budget	2.989.314 €
EC contribution:	1.480.656 €
(%) of eligible costs	50%

Data Beneficiary

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1. List of abbreviations

BPI (Benaki Phytopathological Institute)

AUA (Agricultural University of Athens)

N.C.S.R Demokritos (National Centre for Scientific Research)

UEHR (University Research Institute of. Environmental and Human Resources)

CAA (Centro Agricoltura Ambiente “G. Nicoli”)

PH-ER (Public Health Service of Emilia-Romagna)

AUSL (Azienda Unità Sanitaria Locale)

AOO (Area Organizzativa Omogenea)

HCDCP-KEELPNO (Hellenic Centre for Disease Control and Prevention)

IMS (Invasive Mosquito Species)

DF (Dengue fever)

WRF (Weather Research and Forecasting)

2. Executive summary

2.1. General progress

Invasive mosquito species (IMS) into Europe have raised great concern over their establishment in European countries as well as public health issues. In LIFE CONOPS the study of these species has been focused on Italy and Greece and has been analyzed taking into consideration the Climatic Change as well as parameters dealing with their population monitoring and socioeconomic factors in both countries. The project implementation started on 1st July 2013. The official kick-off meeting took place in Athens, Greece, in September 2013 where Italian and Greek partners introduced themselves and discussed about the actions that they were assigned and at the same time the collaboration frameworks, as well as future activities, were set. In this respect, preliminary results of population monitoring of IMS and results of bioassays with insecticides in combination with disseminating information about the project to stakeholders in public and private sector of Italy and Greece are presented in Action A.1. The analysis of the socioeconomic aspect of IMS including prevention costs paid by municipalities, regions and public bodies for fighting mosquitoes in Greece and Emilia-Romagna is presented in A.3. Action B.1 includes the design of a state of the art prototype trap for capturing IMS and comparing other trapping methods for mosquitoes. The preliminary results about isolation, retrieval and analyses of EOs (essential oils) and full description of materials and methods used are presented in Action B.3. Action B.4 incorporates preliminary results (given as maps) over the determination of future climatic and environmental data in Greece and Italy that will reinforce the dispersal of IMS. For Action C.2 preliminary literature survey conducted for the methods used for the estimation of environmental impacts of management plans, which will be similar to those that will be developed in LIFE CONOPS. Action D.1 includes the completed official logo of the project. Relevant actions to launching the official website are included in Action D.2. Finally, Action D.3 presents many dissemination activities, including two workshops held in Greece and Italy. Up till now all programmed actions are implemented successfully without any

significant time delay that could affect the timeline of the project. The BPI is responsible for the effective management of the project, the operational internal communication, the effective administrative and technical control of the project and the successful implementation of the Actions through decision-making, consulting and providing guidance to the Associated Beneficiaries. Several formal meetings were carried out during the first nine months of the project (Action E.1). Regarding Action E.3, networking activities with other relevant EU projects, collaboration has been established with relevant projects and this effort was reinforced through the dissemination activities. Finally, for Actions E.2 and E.5 QA/QC and Carbon footprint Reports were delivered, for the first 9 months of the project, under the activities for the monitoring of project progress and the monitoring of project Carbon footprint, respectively.

2.2. Assessment as to whether the project objectives and work plan are still viable

Activities and deliverables are on time and any minimal extensions do not affect the overall aim of the project and do not require any modification of the budget. Therefore, all project objectives are valid and the work plan is still viable and within the approved time-scheduled.

2.3. Problems encountered

Major problem(s)

According to the Italian Regional Law nr 22 issued on November 21st 2013, from the 1st of January 2014 a new organization has been established (Azienda USL della Romagna) which includes the ex-AUSL of Cesena, Ravenna, Forli and Rimini. From the above mentioned AUSLs Cesena and Ravenna are the two of the ten partners involved in the LIFE CONOPS project. These two partners have been renamed to Area Organizzativa Omogenea Cesena and Area Organizzativa Omogenea Ravenna, respectively. Regarding their administrative and financial status, they have the same VAT, while they still keep separate bank accounts and preserve their management, travel and equipment different as stated in the approved proposal. Project Management Team and the external monitoring team of the project have been already informed in order to investigate the need of an amendment and to efficiently adjust the LIFE CONOPS scheme. For more details regarding the supporting documents and the measures already taken to overcome the problems please see Annex E1.1.

Minor problem(s)

For Actions A3 and B4 we claim their extension until 31/12/2014. The main reasons of the 9-month extension of Action A.3 are: i) re-organization of the municipalities according to the “Kallikratis” plan which took place in Greece in 2011 which makes difficult the identification and mining of costs’ data incurred by local authorities, ii) identification of several stakeholders, both private and public, that are involved in the management of the costs and will provide us with useful information in order to achieve a thorough identification and evaluation of the costs incurred iii) the complexity of allocating the prevention costs and, to some extent, the ex-post costs between invasive and native mosquito species. Regarding

Action B.4 the extension is essential due to the fact that the expected computational time needed for WRF simulations proved not to be adequate. The time needed for this part of the work was underestimated and was much longer than originally planned due to the very fine spatial resolution used. During this period, we are going to examine whether the selected for comparison three current and three future years are representative for the targeted decades. Last but not least, due to the time consumable internal rules and procedures of NCSR “Demokritos”, hiring of the temporary staff was delayed.

Both extensions do not require any modification of the budget. For both Actions preliminary results are presented in the current inception report (see Annexes A3.1 and B4.1) while in Annexes A3.2 and B4.2 the detailed description of the problems, together with the measures taken to overcome them, is presented.

3. Administrative part

3.1. Description of project management

Benaki Phytopathological Institute (BPI) is the Coordinating Beneficiary of the project and the project management-coordination is performed by Dr Antonios Michaelakis. BPI is responsible for the effective management of the project, the operational internal communication, the effective administrative and technical control of the project and the successful implementation of the Actions by providing decision-making, consultation and guidance to the Associated Beneficiaries. Other members of staff of BPI with coordinating duties are Dr George Koliopoulos, Dr Panagiotis Milonas and Dr Kyriaki Machera.

Three (3) Management Committees (Scientific, Financial and Technical) were assigned for more successful and effective project management. Each Committee consists of one representative by each LIFE CONOPS beneficiary, while they are coordinated by Dr Antonios Michaelakis.

More specifically, the Scientific Committee decides on the implementation of the Actions, monitors the scientific rationality and action performance and evaluates the results of each Action.

The Financial Committee monitors the economic figures of the project and performs the necessary contacts with partners’ financial departments. Each partner maintains up-to-date books of account, in accordance with the normal accounting conventions imposed by law and existing regulations of each country.

The Technical Committee is responsible for all technical aspects of the project (definition of technical specifications for acquired equipment, market research, evaluation of technical offers etc.) and its demonstrative operation.

Sixteen (16) formal meetings were carried out during the first nine months of the project implementation. More specifically, i) on 11 July 2013, a “kick-off” meeting was held between Greek partners, ii) the official kick-off meeting was held on 11-12 September 2013,

in Athens iii) on 9 October 2013 representatives of LIFE CONOPS participated at the LIFE12 kick-off meeting, iv) on 15 October 2013, partners met the external monitoring team v) a meeting of the Financial and Technical Committee was held on 1 November 2013, vi) Scientific and Technical Committees also met on 14 November 2013, vii) The Project Coordinator met several stakeholders in Crete on 28-29 November and 01 December 2013, viii) two additional meetings between Financial, Technical and Scientific Committees were also held on 23 January and 11 February 2014, ix) meetings between Greek and Italian partners were carried out on 8-11 March 2014, during the 2nd Stakeholder Workshop in Italy, x) Partners met each other on 20 March 2014 in order to discuss the progress of the project. Detailed information about meetings and relevant material (agendas, attendance lists, photos) are included in Annex E1.2.

Informal and internal meetings were also implemented between each Greek and Italian partners, as well (at least every month one meeting). Partners submit to the coordinating beneficiary progress reports monthly as well as financial reports (every 3 months).

It should be noted that communication and interaction between the coordinating beneficiary and associated partners (telephone, emails and Skype meetings) was almost conducted on a daily basis in order to ensure the successful implementation of actions and plans of the project.

In addition, beneficiaries signed full and part time temporary contracts, under personnel, with specialists to facilitate the implementation of specific Actions of the project. The temporary personnel hired by each beneficiary and the involvement of each one in LIFE CONOPS are presented in the below table:

Beneficiary	Name of contractor	Qualification	Specific tasks
BPI	Athanasia Mandoulaki	Agronomist MSc	Scientific secretary
BPI	Evangelos Badieritakis	Agronomist - Entomologist PhD	Surveying and monitoring of IMS, identification of IMS, field and laboratory experiments, participation in the development of the management plans, study of their impacts
BPI	Christina Loukoutou	Economist – Auditor	Financial management of the project
AUA	Epameinondas Evergetis	Agriculturalist	Extraction of essentials oils and chemical analysis
Demokritos	Efthimios Tagaris	Physician, Environmental Engineer	Assess the climatic parameters affecting IMS using NASA GISS ModelE global climate model and downscale GISS output in S.E. Europe
Demokritos	Rafaella Sotiropoulou	Environmentalist	Assess the climatic parameters affecting IMS using NASA GISS

			ModelE global climate model and downscale GISS output in S.E. Europe
UEHR	Panagiotis Kalimeris	MSc Economist, PhD candidate	Database organization, Financial Management
UEHR	Antonis Kolimenakis	MSc Economist, PhD candidate	Socio-economic Impact assessment
UEHR	Konstantinos Bithas	PhD, Professor of environmental & natural resources economics	Socio-economic Impact analysis
AUSL Emilia Romagna – AOO Cesena	Carmela Matrangolo	Biologist	Surveillance and management of urban pests of sanitary importance as well as the surveillance and control of vectors of disease agents
CAA	Alessandro Albieri	Information Specialist	Technical assistance and computerized census of urban green, design and enhancement of green areas (AGR Department); technical field work activities in mosquito control projects and expert in GIS/GPS applications for mosquitoes control and monitoring (EMV Department)

Contracts and specific issues are presented in Annex E1.3.

A concerted effort was also made, mainly through dissemination activities, to accomplish collaboration with stakeholders and other interested parties involved in IMS problem. Contacts with public or private units have been established, in both Greece and Italy and are being continued aiming to successfully implement the project actions. In particular, LIFE CONOPS organized two Stakeholder Workshops in Greece and Italy. A number of several articles, press releases and announcements were referred to in newspapers, magazines and scientific journals. Beneficiaries of the project were interviewed by journalists working for newspapers and TV channels, whereas representatives of LIFE CONOPS partners participated in several conferences, workshops and scientific meetings.

3.2. Organigram of the project team and the project management structure

Three (3) Management (Scientific, Financial and Technical) and two (2) Subsidiary (QA/QC Committee and Carbon Footprint Committee) Committees were formed at the beginning of the project. The management organigram of the LIFE CONOPS is illustrated below: Detailed personnel lists of the beneficiaries are presented in Annex E1.4 (Figure 1).

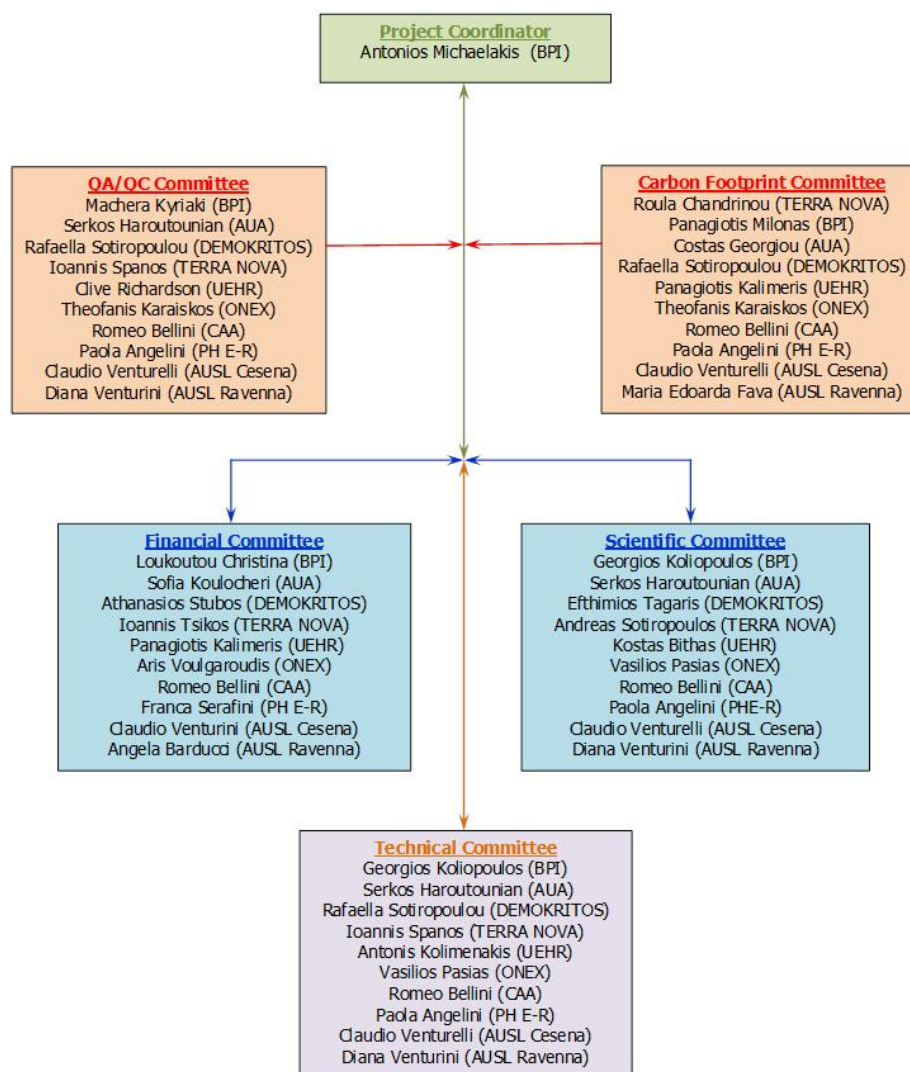


Figure 1. Organigram of the management structure

3.3. Partnership agreements status (incl. date of signature) and key content

During the first months of the project, Partnership Agreements between the coordinating beneficiary and all the associated beneficiaries were prepared and signed:

- Partnership agreement with Agricultural University of Athens (AUA), Greece
- Partnership agreement with N.C.R.S “Demokritos”, Greece
- Partnership agreement with Azienda Unità Sanitaria Locale di Cesena (AUSL Cesena), Italy
- Partnership agreement with Azienda Unità Sanitaria Locale di Ravenna (AUSL Ravenna), Italy
- Partnership agreement with Centro Agricoltura Ambiente “G.Nicoli” S.R.L.s (CAA), Italy
- Partnership agreement with ONEX, Greece

- Partnership agreement with Regione Emilia-Romagna – Public Health Service (PH-ER), Italy
- Partnership agreement with Terra Nova Ltd, Greece
- Partnership agreement with Panteion University (UEHR), Greece

The agreements were constructed in accordance to the LIFE+ guidelines and the Common Provisions (2012). Each agreement contains various articles under the following headings:

Items, Duration, Obligations of Coordinating beneficiary, Obligations Associated beneficiary, Role and obligations associated beneficiaries, Common obligations of both beneficiaries, Funding - Description of the works, Project co-financiers, Liability, Subcontractors, Payments, Technical activity reports, Technical Reports Financial Reports, Monitoring and Control, Communication Actions, Communication of Community support and audio-visual products, Confidentiality, Audits and inspections, Termination of the cooperation, Jurisdiction clause, Amendments or additions to the contract, Various, Annexes I, II and III and APPENDIX IV

All partnership agreements were signed within 4 months after the first pre-financial payment by the EU. The signed partnership agreements are attached in Annex E1.5.

4. Technical part

The basic idea of the project is to implement the newly released European Centre for Diseases Prevention and Control (ECDC) “Guidelines for the surveillance of invasive mosquitoes in Europe” in both countries in order to improve the States capacity of active detection of invasive mosquito species (IMS) and then include these activities in the structural permanent activity of Public Health Services. The problem of IMS, such as *Aedes albopictus*, *Aedes aegypti*, *Aedes atropalpus*, *Aedes koreicus*, *Aedes japonicus*, *Aedes triseriatus*, is of paramount importance in the EU scenario as has been proved by the increasing number of detection in different EU countries and because of the public health risk related to the vector capacity of some of these mosquitoes.

4.1. Actions

4.1.1. Action A: Preparatory actions

Action A.1: Current state of the problem targeted

Foreseen start date : 01/07/2013	Actual start date: 01/07/2013
Foreseen end date: 30/06/2014	Actual end date: 30/06/2014

Achievements and description of the progress: Oviposition traps and human bait collections are considered the most suitable methods for surveying and monitoring IMS. At the beginning of the project preliminary monitoring of IMS was conducted in several areas to collect information for the dispersal and the biology of IMS in Greece. These results were evaluated and a regular winter monitoring system was later set up at selected points of entry. In some

cases, the setup of traps at these points (areas) required a special permission. In more details, these systems were divided into:

- a) a regular winter monitoring system operating between November 2013 and May 2014 (Table 1) which aims at detecting IMS at points of entry, such as the Port of Piraeus (Figure 1) the Port of Lavrion (Figure 2, Annex A.1) and in the vicinity of Athens International Airport “Eleftherios Venizelos” (Markopoulo) (Figures 3-4, Annex A.1) before setting up the permanent network from April 2014 until the end of the project. These ovitraps were generally inspected every 7-10 days. The winter monitoring system also aims at relating high temperatures than the winter ones to the presence of mosquitoes laying eggs. Up till now no eggs have been recorded from ovitraps placed in Greece during the winter monitoring.
- b) a temporal network in several parts of Greece (July-October 2013). This network included areas located in the Athens plain (Kifissia, Votanicos), the Port of Volos, the Port of Thessaloniki and the Port of Kavala where two traps were placed once in each region (Table 2, Annex A.1). Except the Port of Kavala, where no eggs of IMS were detected with ovitraps, eggs of IMS were recorded from the other regions of the study and were identified as *Ae. albopictus* after egg hatching and emergence of adults.

Furthermore, human bait collections were also carried out from July 2013 to November 2013, in the region of Attica (Kifissia, Rizoupoli, Votanikos) Thessaloniki and Crete (Chania) (Table 3, Annex A.1). These collections confirmed the presence of *Ae. albopictus* in Attica and Thessaloniki and that of *Ae. cretinus* in Chania.

In collaboration with the Hellenic Centre for Disease Control and Prevention (HCDCP-KEELPNO) preliminary monitoring data of LIFE CONOPS (concerning IMS) were used for the investigation of a confirmed imported case of dengue fever (DF) (Table 4 and Figures 5-8, Annex A.1). Therefore, a small scale ovitrap system was set up in selected areas in Athens (Figure 5) near the house of a female patient (Glyfada) (Figure 6, Annex A.1) and near her workplaces (Marousi and Centre of Athens) (Figures 7 and 8 of Annex A.1, respectively). Results from the aforementioned small scale ovitrap systems revealed established populations of *Aedes albopictus* everywhere (Table 4, Annex A.1).

Bioassays regarding the resistance of *Ae. albopictus* to registered insecticides in Greece (until 31/12/2013) were also carried out. These insecticides were tested at preliminary application rates and included Du-Dim (diflubenzuron) 15 SC, Mozkill 120 Sc (spinosad), Vectobac (*Bacillus thuringiensis*) 120 SC and Bioprene BM (*S-methoprene*) 20 EC.

As it was mentioned previously, contacts were made with people in charge of the aforementioned points of entry in Greece in order to establish and run the permanent monitoring system which will be operating from April 2014 based on the preliminary samplings with ovitraps and evaluating these areas regarding their suitability for holding the permanent monitoring system. As regards Greece, these contacts included Mr Ganatsios of Attiki Odos Highways S.A., Mr Anagnostopoulos of Athens International Airport “Eleftherios Venizelos”, Mr Floras and Ms Stamatiadi of Customs Offices of Piraeus, Mr Mavragani and Mr Aesopou of TRAINOSE Railways for placing pilot “mosquito traps”.

There was also contact with Mr Sidiropoulos of the Development Agency of Western Macedonia for providing a local study about the impact of mosquitoes (appropriate licences and authorisations are presented in Annex E1.6).

In Italy, Emilia-Romagna has an extended regional monitoring network for the Asian tiger mosquito (*Ae. albopictus*) for many years. Data for the *Ae. albopictus* were used as a baseline to detect the areas more prone to the establishment of other IMS. These data are essential to detect the areas more prone to the establishment of other IMS.

Mosquito species *Aedes koreicus* and *Aedes japonicus* are considered having high potential to spread in Italy: the first one because it is already established in the Region Veneto and the second one because it is well established in Central Europe. Approximately 100-200 ovitraps have been set up and are currently inspected (during winter months) in high risk for introduction of IMS areas (Bologna, Cesena, Ferrara, Modena, Piacenza, Ravenna, Reggio, Rimini) (Tables 5, 6 and Figures 9, 10, Annex A.1).

During August-September-October 2013 *Aedes albopictus* pilot BG Sentinel™ traps were set up to investigate the correlation with the mean egg density registered in ovitraps. BG-Sentinel and ovitraps were set up in 7 stations: in each station the traps were placed 10-50 meters apart. The correlation between adults collected in BG Sentinel traps and the mean number of eggs collected in ovitraps is considered useful to develop the plan for the surveillance of IMS. A high correlation was found between the number of females and males and the number of eggs of *Ae. albopictus* collected by the traps. Detailed results are presented in Tables 7, 8 and Figures 11, 12 of Annex A.1.

Other implemented actions involved field and house inspections in order to monitor population densities of *Ae. albopictus* by collecting adult mosquitoes. The analysis of the resistance status of the IMS in Italy was focused on *Aedes albopictus*, which is submitted to intensive larval control programs, mainly using formulations containing Diflubenzuron as active ingredient. Two field collected populations (from Riccione and Bologna) were tested by bioassay conducted with the WHO standard protocol, obtaining results showing that the sensitivity of the long time treated populations is the same with that estimated before the beginning of the control programs. Relevant results are presented in Table 9 of Annex A.1.

In Italy a stakeholder meeting was held with the working group of Public Health on 10 March 2014. This group is officially established and composed by referents from all Italian Regions aiming at coordinating the intervention of all Italian Regions in Public Health issues. During this meeting they were informed about the project objectives, actions and means of the LIFE CONOPS. This collaboration is considered very important for the surveillance in ports and tires stocking sites. In Cesena contacts were made with the local Authorities to improve mosquito control methods.

Other actions involved:

- Discussion and brainstorming for the formulation of appropriate strategies applicable in each country (Greece and Italy)

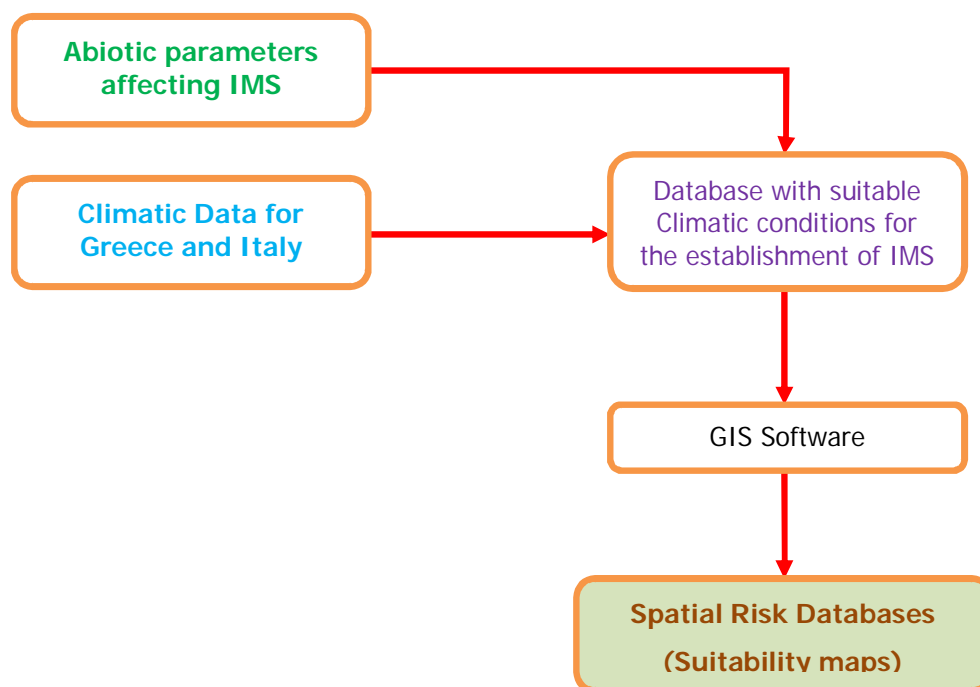
- Provision and mailing a questionnaire to pest control companies operating in the AUSL Cesena's territory to check the work quality and develop a procedure to conform the working methodology
- Contacts with port authorities in regions of Italy
- Contacts with local Authorities to improve mosquito control methods and design efficient and innovative control strategies of the IMS
- Several contacts with the Department of Work Safety, the Department of Public Health, Municipalities and Professional Associations

Problems/Delays: No problems or delays occurred during the 9-month period that caused any delays of other actions of the project. Deliverables: Deadline of deliverables is on 30/06/2014.

Action A.2: Analysis of climatic & environmental parameters influencing the invasive mosquitoes introduction & establishment

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
 Foreseen end date: 30/06/2014 Actual end date: 30/06/2014

Achievements and description of the progress: Aim of this Action is to provide the Spatial Risk Databases for the establishment of IMS in Greece and Italy. In order to achieve this goal, a methodological approach was designed and applied (Annex A.2) according to the following scheme:



The outcome of the abovementioned approach is the development of the IMS Spatial Risk Databases (Suitability Maps) for Greece and Italy which are also given attached in the Inception Report.

This Action is implemented by TERRA NOVA Ltd. with the contribution of the Benaki Phytopathological Institute, NCSR Democritos and CAA.

Problems/Delays: No problems or delays occurred during the 9-month period that caused any delays of other actions of the project. Deliverables: Deadline of deliverables is on 31/12/2013 and 30/06/2014.

Action A.3: Socio-economic impacts of the problem targeted (01/07/2013 – 31/03/2014)

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 31/03/2014 Actual end date: 31/12/2014

Achievements and description of the progress: During the first months of implementation the scientific team focused on the identification of state of the art methods relevant to the problem targeted. This was followed by a “session” of meetings and discussions with experts and stakeholders for the evaluation of the cost category of “public prevention costs”. The Italian partners collected data related with the costs of the Regional Plan of Emilia-Romagna in order to define the costs sustained by Municipalities, updated their estimation on the amount of expenses and provided us with relevant figures for the preparation of the first report on “The Public prevention costs”. In the meantime LIFE CONOPS team dealing with A.3 has been expanding its collaboration network, both through the first workshop in Greece as well as through personal contacts, with other important stakeholders, private companies and experts. This expansion has been necessary for both the evaluation of other cost categories, such as medical costs and the enhancement of cost valuation methods and tools applied in relevance with the problem targeted. For the estimation of health impacts, our team prepared “Tables of Databases” concerning the cost categories of health impacts, medical costs and productivity losses, in order to evaluate the cost of certain disease outbreaks in Greece and Italy. Finally, LIFE CONOPS team is already working in collaboration with experts for designing the appropriate methodological framework and specialised questionnaires concerning the estimation of the IMS impact on the private level. A magnitude of the private (households’) costs is expected to be estimated with the “elicitation” of “benefit” levels that households derive from the application of certain mosquito control programs. Due to aforementioned reasons in subsection 3.3, preliminary results of the current Action are presented in Annex A3.1.

Problems/Delays: Problems or difficulties that occurred during the 9-month period are described in the subsection 3.3 of this report and are also presented in Annex A3.2
Deliverables: Preliminary report is attached in Annex A3.1. New deadline of deliverables is on the 31th of December 2014.

4.1.2. Action B: Implementation actions

Action B.1: Design and development of the prototype IMS monitoring (surveillance) device

Foreseen start date : 01/10/2013 Actual start date: 01/10/2013

Foreseen end date: 30/09/2014 Actual end date: 30/09/2014

Achievements and description of the progress: The aim of this Action is the development of a prototype IMS monitoring device that will be of low-cost, self-sufficient and environmentally friendly. The first phase towards the implementation of the Action involved a scientific literature review. Besides, in close collaboration with the entomologist researchers of the Project (BPI) and under their supervision, the basic knowledge of the biology and habits of mosquitoes was acquired.

In addition, other insect trapping and monitoring devices and relative technologies were studied via proper market research (international literature, internet). In this framework, the methods for collecting IMS were analysed.

The next phase involved a state-of-the-art and market study regarding IMS traps implementations and relative technologies, aiming to provide a coherent set of inputs for further designing and developing the Prototype IMS Monitoring Device and its sub-systems. Furthermore, a feasibility study so that to investigate potential technological and business limitation(s) regarding the development of the Prototype IMS Monitoring Device and its sub-systems, considering its basic characteristics that is low-cost, self-sufficiency and environmental friendliness, also took place. In fact the Prototype IMS Monitoring Device should incorporate modular architecture and consist of low-cost components so that to achieve economy of scale and cost-effective developments. Besides, its operation should be automated, thus essentially autonomous, enabling remote monitoring & management and long-term operation without physical supervision. Naturally, its structure should incorporate only environmental-friendly materials.

The next phase involved the definition of the functional capabilities and therefore the Functional System Design (FSD) of the IMS monitoring devices. In this framework, the components of each IMS monitoring device were defined, while the operation of the subsystems of the IMS monitoring devices was analytically described.

Finally, the detailed functional specifications of the subsystems of the IMS monitoring devices were defined. The definition of the detailed architecture of the prototype IMS monitoring device, including the specifications of the various sensor node hardware & software subsystems, their interfaces and interdependencies, have also taken place. The detailed system design was performed based on previous work (FSD) and the detailed technical specifications of the subsystems of the IMS monitoring devices were defined.

The IMS monitoring devices essentially include the next subsystems:

1. Two (2) basic capturing subsystems for the entrapment of IMS:
 - IMS Chemical Attractant Monitoring Subsystem (ICAMS), consisting of:
 - The capturing & collecting part including the electrical and mechanical mechanisms for capturing and collecting the mosquito species.
 - The storage part for the proper storage of the collected mosquito species for later analysis, under controlled environmental conditions (refrigeration-assisted preservation).
 - Ovitrap-based Collection Subsystem.
2. An embedded controller for IMD monitoring and management.
3. An environmental monitoring subsystem for local meteorological data acquisition that includes temperature, humidity, rain precipitation, and wind speed sensors.
4. A wireless (GSM/GPRS/3G) communications subsystem to enable remote monitoring and management.
5. An optional special power supply system to support the IMD operation consisting of a small-form factor solar panels unit and a backup batteries unit.

The required information for accomplishing the aforementioned tasks was collected from various sources, including scientific publications and technical datasheets/manuals, which was properly analysed with the assistance of the Entomologists of the Project (BFI). In addition, several discussions and meetings were held with the other beneficiary partners and the Technical Committee, during the current report period so that to standardise FSD and the detailed system design.

The integrated IMS monitoring device (demonstrator) prototype development and assembly, involving market research and the acquisition of the required materials, is currently under progress.

Problems/Delays: No problems or delays occurred. Deliverables: i. Report on the detailed functional specifications of the prototype IMS monitoring device and its sub-systems (including performance criteria) (Annex B1.1), ii. Report on state-of-the-art technology and the feasibility of the prototype IMS monitoring device and its sub-systems (Annex B1.2), iii. Detailed description of the prototype IMS device architecture (Annex B1.3), iv. Integrated prototype IMS monitoring device (demonstrator) (Annex B1.4).

Action B.2: Pilot implementation of the surveillance plan

Foreseen start date : 01/07/2014 Foreseen end date: 31/12/2017

Achievements and description of the progress: Action has not started yet. Pilot implementation of the surveillance plan will start at the 13th month of the project.

Action B.3: Development and production of biodegradable substances to control invasive mosquitoes

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 31/03/2015 Actual end date: 31/03/2015

Achievements and description of the progress: LIFE CONOPS team previous research results have stressed that the essential oils (EOs) of *Juniperus* sp. plants and *Citrus* sp. fruits display potentials for upgrading and large scale application for the control of mosquito's population. In this context, two generic sources of EO were selected: i) wastes from *Citrus* juicing processes and ii) parts of *Juniperus* plants (taxa *J. drupacea* and *J. phoenicea*). Plants were collected from distinct parts of Greece such as Sterea Hellas, Mt Parnassus (*Juniperus phoenicea*), Peloponnesus, Mt Parnon (*Juniperus drupacea*), Peloponnesus, Argos (*Citrus limon*, *Citrus X paradisi*, *Citrus reticulate*, *Citrus sinensis*) and the Ionian Islands, Corfu (*Citrus japonica*). The main methods that were used for the EO isolation and retrieval from herbal tissues was the conventional hydro-distillation and microwave assisted hydro-distillation, while cold pressing was applied in the context of processing the *Citrus* juice industry wastes. Identification of Essential Oil Components was performed using Gas chromatography-Mass Spectrometry (GC/MS). Four different species of *Citrus* cold pressed EOs have been secured and further processed with the application of conventional and MARS hydro-distillation. The *Citrus* retrieved EOs account to 24 expected samples, exceeding by 30% the originally foreseen. Regarding the *Juniperus* plants, four different samples have been collected, in respect to their organography and are processed, providing thus 48 instead of 36 EOs from the two taxa. More details regarding the methods that were implicated for the isolation, retrieval and analyses of EOs are presented in Annex B.3.

Problems/Delays: No problems or delays occurred. Deliverables: Deadline of deliverables is in 30/06/2014, 30/09/2014, 31/10/2014 and 31/03/2015.

Action B.4: Future climatic and environmental data projection

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 30/06/2014 Actual end date: 31/12/2014

Achievements and description of the progress: The aim of this Action is the prediction of future climatic and environmental data in Greece and Italy for the development of integrated management plans. The current and future simulation periods are 2009-2012 and 2049-2051, respectively. The climatic changes over Italy and Greece are estimated using data from a Global Climate Model (GCM) and a new workstation specifically designed for the purposes of the project has been set up. The model installation was evaluated using a benchmark suite provided by NASA that concerns both software testing and case testing. The Weather Research and Forecasting (WRF) mesoscale meteorological model has been set up and tested using the "WRF Testing Framework" utility. The simulations of climatology with starting year 1880 using the NASA GISS ModelE started on time and have been completed. The post processing work of the GISS GCM outputs has started. The downscaling procedure where

WRF simulations were performed using data is ongoing. The purpose of using this model is to obtain high resolution data. GISS GCM resolution of $2^{\circ} \times 2.5^{\circ}$ is downscaled at a resolution of 9km x 9km in S.E. Europe adding up more detail from local topography, coastline and land uses. The analysis of the downscaled results will start after the completion of WRF simulations. Preliminary results of the 9 months of project implementation are presented in Annex B4.1.

Problems/Delays: Due to the fact that the expected computational time for part of Action work was underestimated and proved to be inadequate, the expected results have not been achieved yet. Therefore, Action B.4 is still ongoing. Problems or difficulties that occurred during the 9-month period are described in the subsection 3.3 of this report and are also presented in Annex B4.2. Deliverables: Deadline of deliverables is in 31/12/2014.

Action B.5: Design of management plans to control IMS

Foreseen start date : 01/07/2014 Foreseen end date: 31/03/2015

Achievements and description of the progress: Action has not started yet. Design of management plans to control IMS will start in the 13th month of the project.

Action B.6: Pilot implementation of management plans to control IMS

Foreseen start date : 01/04/2015 Foreseen end date: 30/09/2017

Achievements and description of the progress: Action has not started yet. The pilot implementation of management plans will start at the 21st month of the project.

Action B.7: Development of integrated management plans to control IMS

Foreseen start date : 01/04/2017 Foreseen end date: 31/12/2017

Achievements and description of the progress: Action has not started yet. Development of integrated management plans will have been developed by the end of the project.

4.1.3. Action C: Monitoring of the impact of the project actions

Action C.1: Monitoring of the performance of the pilot implementations

Foreseen start date : 01/07/2014 Foreseen end date: 30/09/2017

Achievements and description of the progress: Action has not started yet. This Action will start in the 13th month of the project.

Action C.2: Assessment of the environmental impacts of the management plans

Foreseen start date : 01/04/2015 Actual start date: 04/09/2013
Foreseen end date: 30/09/2017 Actual end date: 30/09/2017

Achievements and description of the progress: Some preparation work was performed in Action C.2. This work was related to literature survey over methods used for the estimation of environmental impacts derived from the implementation of management plans similar to the ones that will be developed in LIFE CONOPS. The preparatory work performed in this Action is considered crucial when the implementation of the management plans takes place, the environmental monitoring team will be ready for the evaluation procedure based on state of the art methods. Moreover, it is essential to have an initial estimation of the expected environmental impacts in order the appropriate measures to be taken into account during the design phase of the management plans.

Action C.3: Assessment of the socio-economic impacts of the management plans

Foreseen start date : 01/01/2016 Foreseen end date: 30/09/2017

Achievements and description of the progress: Action has not started yet. This Action will start in January 2016.

4.1.4. Action D: Communication and dissemination actions

Action D.1: Creation of project logo

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 30/09/2013 Actual end date: 30/09/2013

Achievements and description of the progress: The designing of the project logo began in August 2013. The draft designs were presented to the beneficiaries and were debated during the kick-off meeting, in September 2013. The final LIFE CONOPS logo was selected among five (5) alternative ones. The official logos were developed at the end of the 3rd month, in colour, greyscale formats in both 2000x2000 and 450x450 pixel dimensions and are being used for dissemination activities. Action D.1 has been already completed.

Problems/Delays: No problems or delays occurred. Deliverables: Deliverable D.1: LIFE CONOPS logo (Annex D.1).

Action D.2: Development, launching and maintenance of project website

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: The designing of the website and the development of its content began in August 2013. The website was launched on the internet in three languages (Greek, English, and Italian) in September 2013 (www.conops.gr). Simultaneously, links to the LIFE CONOPS website were inserted in beneficiaries' websites (www.bpi.gr; www.caa.it; www.uehr.gr; www2.ipta.demokritos.gr/page3.html). The LIFE CONOPS website offers information about the project and its actions, the beneficiaries and the project activities, such as events, workshops and conferences that are held during the

implementation of the project. In addition, it contains useful articles, additional resources and links to the official Facebook page and Twitter account of the project. The website is being maintained and will continue to be maintained and updated until the end of the project. Until 31/03/2014, almost 6000 visits had been recorded. The website features the budget, EC contribution and an explicit acknowledgement to the support of the LIFE+ financial instrument of the EU. More information about the website structure and analytics regarding the audience overview are presented in Annex D.2.

Problems/Delays: No problems or delays occurred. Deliverables: Deliverable D.2: LIFE CONOPS website designed, developed and launched (Annex D.2). The website is maintained by BPI with the monthly contribution of all beneficiaries.

Action D.3: Dissemination of project progress and results

Achievements and description of the progress: This Action aims at the implementation of activities that will ensure the dissemination of the project objectives, actions and results to relevant stakeholders, scientific community and public in general. An extensive informative campaign was implemented during the first 9 months of project implementation. In particular, LIFE CONOPS organized two Stakeholder Workshops in Greece and Italy. Three (3) articles, four (4) press releases, one (1) newsletter and four (4) announcements were published in newspapers, magazines, internet and scientific journals. Beneficiaries of the project were also interviewed by journalists working for newspapers and TV channels (two (2) interviews), whereas representatives of LIFE CONOPS partners participated in three (3) conferences: i) “The vectors surveillance and the related infectious diseases in the Alps”, coordinated by the Alto Adige Asl, in Bologna, Italy, ii) “DISINFEST V”, in Oristano, Sardinia, iii) “ADAPTtoCLIMATE” in Nicosia, Cyprus, in the workshop titled “Approaches of prevention and control of the main arthropods vectors of infectious diseases” that was held in San Marino, Italy and in two (2) scientific meetings: i) IPLA technicians (Company of the Piedmont Region), in Italy and ii) VBORNET-EMCA in Antwerp, Belgium. In addition, LIFE CONOPS participated to the “[Innovation Exhibition](#)”, that was held on 10 January 2014 in the frame of the kick-off meeting for the new Framework-Programme for Research and Innovation “Horizon 2020. LIFE CONOPS was also presented in the frame of two (2) Postgraduate courses. Informative LIFE CONOPS’ leaflet (Greek, English) and poster (Greek) were designed and developed, while Facebook and Twitter profiles of LIFE CONOPS were created. Details on the dissemination activities are presented in Annex D.3.

Problems/Delays: The 2nd Stakeholder Workshop in Italy was postponed until 10 March 2014. First, this facilitated the participation and the involvement of the project partners in both workshops. In addition, the main purpose of the first Stakeholder Workshop in Greece was to inform the relevant stakeholders and the general public about the IMS problem, the actions and objectives of the LIFE CONOPS project aiming to establish collaborations that would contribute to the successful implementation of the project. In Italy, the workshop mainly aimed at presenting the first results of the preparatory actions of the project due to the fact that IMS problem is not an unknown one there and involved public and/or private sector have already experienced mosquito borne-diseases outbreaks. Deliverables: Deliverable D.3: Stakeholder Workshop in Greece and Italy (Annex D.3).

Action D.4: Development of project notice boards

Foreseen start date : 01/07/2014, 01/04/2015 Actual start date: 01/07/2014, 01/04/2015
Foreseen end date: 30/09/2014, 30/06/2015 Actual end date: 30/09/2014, 30/06/2015

Achievements and description of the progress: This action is scheduled to start in the 13th and at the 22st month of the project and its total duration will be 6 months.

Action D.5: Development of Layman's Report

Foreseen start date : 01/10/2013 Actual start date: 01/10/2013
Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: This action will take place during the last 3 months of the project implementation.

4.1.5. Action E: Project management and monitoring of the project progress

Action E.1: Project management by BPI

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: Detailed description of the project management procedures are presented in the Administrative and Financial part of this report (Annex E1.1 to Annex E1.7).

Action E.2: Monitoring of project progress

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013
Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: A Quality Assurance/Quality Control System was developed in order to monitor the progress of the implementation of the LIFE CONOPS project. A QA/QC Committee was formed and in September 2013, the QA/QC manual was formulated by the Committee (Annex E2.1). The Committee consists of one representative of each project beneficiary. Its role is to assist the task of project monitoring by completing and evaluating every nine months the corresponding report. The report evaluation outcome – especially early warnings- are being transferred to scientific, technical and financial committees for further action (if necessary). The QA/QC Committee members (headed by the project manager-coordinator, Dr Antonios Michaelakis) are presented in detail in Table 1. The first QA/QC Report of the first 9 months of the project is included in the Annex E2.2.

Problems/Delays: No problems or delays occurred. Deliverables: Deliverable E.2: i. QA/QC Manual (Annex E2.1), ii. 1st QA/QC Report (Annex E2.2). The report was developed by BPI with the contribution of all beneficiaries that provided the required data.

Table 2. The LIFE CONOPS' QA/QC Committee

Machera Kyriaki	BPI
Serkos Haroutounian	AUA
Rafaella Sotiropoulou	DEMOKRITOS
Ioannis Spanos	TERRA NOVA
Clive Richardson	UEHR
Theofanis Karaiskos	ONEX
Romeo Bellini	CAA
Paola Angelini	PH E-R
Claudio Venturelli	AUS Cesena
Diana Venturini	AUS Ravenna

Action E.3: Networking activities with other relevant EU projects

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013

Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: During this Action, a thorough search has been performed by both Greek and Italian partners in order to find out projects relevant to LIFE CONOPS. A total of fifteen (15) LIFE, FP7 and other EU projects have been found so far. Currently, the project has established collaboration with the following six (6) projects and this effort was reinforced through the dissemination activities: i) IMCM LIFE08 ENV/F/000488 “Control of noxious or vector mosquitoes: implementation of integrated management consistent with sustainable development”, ii) CYPADAPT LIFE10ENV/CY/00072 “Development of a national strategy for adaptation to climate change adverse impacts in Cyprus”, iii) FP7 EU INFRAVEC Project “Research capacity for the implementation of genetic control of mosquitoes”, iv) VBORNET “European Network for Arthropod Vector Surveillance for Human Public Health funded by ECDC”, v) “Pest Practice” Life Long Learning Programme, Leonardo da Vinci and vi) MALWEST “Integrated surveillance and control programme for West Nile virus and malaria in Greece”. Research of relevant projects, communication and collaboration with LIFE, FP7 and other EU projects is still in progress and will be continued until the end of the project.

Problems/Delays: No problems or delays occurred. Deliverables: Deliverable E.3: i) List and Data of other relevant EU projects (Annex E3.1), ii) Contact data list of persons involved in relevant efforts (Annex E3.2).

Action E.4: Development of project's After-LIFE Communication Plan

Foreseen start date : 01/07/2013 Foreseen end date: 31/12/2017

Achievements and description of the progress: This action will take place during the last 3 months of the project implementation.

Action E.5: Monitoring of project Carbon footprint

Foreseen start date : 01/07/2013 Actual start date: 01/07/2013

Foreseen end date: 31/12/2017 Actual end date: 31/12/2017

Achievements and description of the progress: Scope of Action E.5 is the monitoring of the carbon footprint of the LIFE CONOPS Project. In March 31, 2014 the first Carbon Footprint Report was delivered according to the project timetable. In order to estimate, calculate, monitor and reduce if possible, the Greenhouse Gas emissions resulting from the implementation of the project, the steps followed are: i) Ensuring the support of all participating Beneficiaries, ii) Collection of primary quantitative data related to recognized sources of direct and indirect emissions required for the calculation of carbon footprint, iii) Calculation of the carbon footprint resulting from the project's implementation and compilation of the Carbon Footprint Report and iv) Taking action: Identification of actions and measures in order to achieve reduction of the carbon footprint of the project. The Carbon Footprint Committee through the coordinator will communicate these results to all participating Beneficiaries. Due to the fact that this is the first carbon footprint report the actions and measures in order to reduce the emissions will be general and are the ones presented in the carbon footprint manual.

The manual and the report are given attached in Annexes E5.1 and E5.2 respectively. The report was developed by TERRA NOVA Ltd. with the contribution of all beneficiaries that collected the required data

Problems/Delays: No problems or delays occurred. Deliverables: Deliverable E.5: i) Carbon Footprint Monitoring Manual (Annex E5.1), ii) 1st Carbon Footprint Report (Annex E5.2).

Action E.6: Audit of project financials

Achievements and description of the progress: This action will take place during the last 3 months of the project's implementation.

4.2. Availability of appropriate licences and authorisations

Currently, authorisations and permits needed for the project implementation are related to setting up pilot mosquito traps and the access to properties and areas in the frame of the pilot implementation of the surveillance plan.

In particular, as regards Greece BPI obtained the permission to access and place mosquito traps in the following public or private Authorities: Attiki Odos, Custom Offices of Pireaus, TRAINOSE Railways and Athens International Airport “El. Venizelos” (all requests by BPI are included to the Annex E1.6). For Italy, the responsible beneficiary is the Regione Emilia-Romagna Public Health Service which also is the responsible Public body for the necessary authorizations.

4.3. Envisaged progress until next report

Actions A.1, A.2 and B.1 will be completed in the following months and surveillance plan will be implemented in the pilot areas (Action B.2) the performance of which will be monitored (Action C.1). Meanwhile, the biodegradable substances will be developed (Action B.3) and Actions A.3 and B.4 will be finalized. Actions concerning the dissemination of the project will be continued (Actions D.2 and D.3).

Action No	2013				2014				2015				2016				2017			
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV		
A1																				
A2																				
A3																				
B1																				
B2																				
B3																				
B4																				
B5																				
B6																				
B7																				
C1																				
C2																				
C3																				
D1																				
D2																				
D3																				
D4																				
D5																				
E1																				
E2																				
E3																				
E4																				
E5																				
E6																				

6. Annexes

Annex	Title	Action
A.1	Preliminary Results for Action A.1	A.1
A.2	Deliverables A.2: Methodology Report for the Analysis of the climatic data influencing the IMS introduction and establishment in Greece and Italy and for the development of suitability maps	A.2
A3.1	Preliminary Results for Action A.3	A.3
A3.2	Problems encountered in Action A.3	A.3
B1.1	Deliverable B.1: Report on the detailed functional specifications of the prototype IMS monitoring device and its sub-systems (including performance criteria)	B.1
B1.2	Deliverable B.1: Report on the technology state-of-the-art and the feasibility of the prototype IMS monitoring device and its sub-systems	B.1
B1.3	Deliverable B.1: Detailed description of the prototype IMS monitoring device architecture (specification of the various sensors node H/W & S/W sub-systems, their interfaces and interdependencies)	B.1
B1.4	Deliverable B.1: Integrated Prototype IMS Monitoring Device (demonstrator)	B.1
B.3	Preliminary results for Action B.3	B.3
B4.1	Preliminary Results for Action B.4	B.4
B4.2	Problems encountered in Action B.4	B.4
D.1	Deliverable D.1: CONOPS logo	D.1
D.2	LIFE CONOPS website (designed, developed and launched), Facebook and Twitter	D.2
D.3	Dissemination of the project progress and results	D.3
E1.1	Problems encountered in Action E.1	E.1
E1.2	LIFE CONOPS Formal meetings	E.1
E1.3	Temporary staff and contracts	E.1
E1.4	Personnel lists per beneficiary	E.1
E1.5	Partnership agreements	E.1
E1.6	Appropriate licences and authorisations	E.1
E1.7	Output indicators	E.1
E2.1	Deliverable E.2: QA/QC Manual	E.2
E2.2	Deliverable E.2: 1 st QA/QC Report	E.2
E3.1	Deliverable E.3: List and data of other relevant EU projects	E.3
E3.2	Deliverable E.3: Contact data list of persons involved in relevant efforts	E.3
E5.1	Deliverable E.5: Carbon Footprint Monitoring Manual	E.5
E5.2	Deliverable E.5: Calculation & Monitoring Project's Carbon Footprint 1 st Carbon Footprint Report	E.5

6.1. Partnership agreements

Partnerships agreements are included in Annex E1.5.

6.2. Deliverables

Deliverables are presented in the Table of Annexes.

6.3. Maps, drawings, technical designs, technical memos etc. as appropriate.

The maps included in Action A.2 (Annex A.2) are also presented in files with high resolution (maps). For more details see files “*Aedes triseriatus_map.pdf*”, “*Aedes albopictus_map.pdf*” and “*Aedes aegypti_map.pdf*”.

6.4. Output indicators. Definition.

Output indicators are included in the Annex E1.7.