



LIFE Project Number  
**LIFE17 ENV/GR/000215**

## **Mid-term Report**

Covering the project activities from 01/09/2018 to 31/12/2019

Reporting Date  
**29/02/2020**

**LIFE GYR**

## **LIFE GreenYourRoute: A European innovative logistic platform for last mile delivery of goods in urban environment**

### Data Project

<b>Project location:</b>	Czech Republic, Greece, Italy
<b>Project start date:</b>	01/09/2018
<b>Project end date:</b>	28/02/2022 Extension date: -
<b>Total budget:</b>	€ 2,191,237
<b>EU contribution:</b>	€ 1,300,879
<b>(%) of eligible costs:</b>	60%

### Data Beneficiary

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## 2. List of key-words and abbreviations

API	Application Programming Interface
BMC	Business Model Canvas
CH <sub>4</sub>	Methane
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CP	Check Point
CSR	Corporate Social Responsibility
EA	External Assistant
EASME	Executive Agency for Small and Medium-sized Enterprises
EC	European Commission
EES	Environmental Externality Score
ERP	Enterprise Resource Planning
ETV	Environmental Technology Verification
EU	European Union
FC	Fuel Consumption
GYR	Green YourRoute
KPI	Key Project-level Indicators
MoU	Memorandum of Understanding
N <sub>2</sub> O	Nitrous Oxide
NH <sub>3</sub>	Ammonia
NO <sub>x</sub>	Nitrogen Oxides
PA	Partnership Agreement
PM	Particulate Matter
PSC	Project Steering Committee
SME	Small and medium-sized enterprise
SO <sub>2</sub>	Sulfur Dioxide
TSP	Travelling Salesman Problem
UI	User Interface
VOC	Volatile Organic Compounds
VRP	Vehicle Routing Problem

### 3. Executive Summary

LIFE GYR project was initiated in September 2018. It is a project implemented in Greece, Czech Republic and Italy. The project objectives include the development of an innovative logistics platform for last mile delivery of goods in urban environment primarily addressed to small and medium-sized enterprises to assist them in creating the environmental friendliest routes of their fleet vehicles. Its main target is to improve the efficiency of freight transportation mainly in urban and congested areas, taking environmental factors into account. During the reporting period, the preparatory actions of the project were completed. Preparatory actions included the Partnership Agreements of the project beneficiaries, the Memorandum of Understanding for Green Procurement and its guidelines and a review of the latest technical developments made after the submission of the proposal.

In the development of the platform 5 demonstrators participate. 3 demonstrators are located in Greece and perform logistics operations in the city of Athens. 1 demonstrator is located in Czech Republic and performs logistics operations in a rural environment in the greater area of Czech Republic. 1 demonstrator is a courier company located in Italy providing its services in the area of Cosenza. These five demonstrators communicated to LIFE GYR technical team the desired specifications for developing the platform.

LIFE GYR technical team is developing GYR platform. The database, the routing algorithm and the components that will constitute an operable application are currently implemented. The beta version of the platform is expected in January 2020.

The replication efforts have been initiated since the very beginning of the project. These include the establishment of a company dedicated in the commercialization of GYR platform, which is expected in the first months of 2020. Contacts with potential customers of the company have already been initiated, in order to inform them about the platform under development and the benefits they could be offered from its use both by environmental and operational aspects.

The methodology to monitor the environmental impact of the project, as well as the monitoring plan have been developed. The first environmental assessment concerns the actual environmental footprint of the companies demonstrating the project and is expected in August 2020, whereas the environmental impact of the project will be assessed during a 12 month period of operating the platform, starting from November 2020.

Social and economic benefits steaming from the project are assessed through a multi-criteria analysis approach, currently under development. The overall socio-economic impact of the project will be assessed at the final months of the project.

Dissemination activities initiated are mostly through electronic means such as the project's website and social media accounts and newsletters with relevant to the project logistics news. Material needed for direct communication of the project's objective and outcomes such as notice boards, posters, flyers and promotional packages has been produced. This material will be used mainly after the release of the platform, when dissemination of the project will intensify.

During the reporting period the following deliverables were delivered:

- Deliverable A1.1: Partnership agreements;
- Deliverable A1.2: MoU of Green Procurement;
- Deliverable A1.3: Green procurement guidelines;
- Deliverable A1.4: Review of developments after the proposal submission;
- Deliverable E1.1: Final version of the project's steering committee;
- Deliverable B4.1: Report of demonstrators requirements.

The following deliverables were prepared for the reporting period:

- Deliverable E1.2: Minutes of project meetings (updated after each meeting);
- Deliverable E1.3: Risk Management Plan associated with Risks Assessment Forms and Quality Control Report (updated every month);
- Deliverable D1: Report including material associated with dissemination pack and networking activities (updated every 6 months).

The following milestone was reached:

- Partnership Agreements signed.

## 4. Introduction

The scale of policy actions undertaken in Europe to specifically address transport-related air pollution has increased over recent years, reflecting the important contribution that transport still makes in relation to poor air quality. Transport is responsible for more than half of all NO<sub>x</sub> emissions and contributes significantly (around 10 % or more) to the total emissions of the other pollutants. Road freight transport, essential for the economic development, continues to make a significant contribution to emissions of all the main air pollutants and has several harmful effects on the environment. These include pollution, accidents, noise, congestion, resource consumption, land use deterioration and climate change.

Environmental advocates typically plead for a technology change, by patronizing clean and energy efficient road transport vehicles. The choice of fuels is one of the most important aspects of energy and resource efficiency. Almost all motor vehicles today are powered by either gasoline or diesel. Both fuels are derived from petroleum, a non-renewable resource. Alternative fuel vehicles, i.e. vehicles not run on diesel or petrol can make a big difference. The use of alternative fuels considerably decreases harmful exhaust emissions (such as carbon dioxide, carbon monoxide, particulate matter and sulfur dioxide) as well as ozone-producing emissions. A lot of progress has been made in advancing the vehicles' technology. Car engines based on liquefied petroleum gas (LPG), compressed natural gas (CNG), hydrogen, and electricity or hybrid vehicles, combining conventional with alternative fuels, could be the solution for transport companies to keep their carbon footprint as low as possible. The improvement of the transportation technologies has contributed a lot in the reduction of the emissions produced, but is still at an early stage, since conventional fuel vehicles are still the dominant mean of transport. Vehicle technology dependent solutions, although essential, since conventional fuels could one day be depleted, are very expensive to invest to.

Therefore, the use and operation of the already existing vehicle fleets should also be explored in terms of environmental effects.

GreenYourRoute (GYR) logistics platform is an innovative logistics platform for last mile delivery of goods in urban environment primarily addressed to small and medium-sized enterprises to assist them in creating the environmental friendliest routes of their fleet vehicles. Its main target is to improve the efficiency of freight transportation mainly in urban and congested areas, taking environmental factors into account.

GYR is an innovative logistics platform for increasing the efficiency of urban freight transport with respect to minimizing environmental effects. The issues that the platform handles include the minimization of the number of freight movements and the distances required to carry them out, while in parallel reducing air and noise pollution from freight movements.

One of the main principles of the platform is that lower emissions can be achieved just by improving the logistics operations performed, making the platform attractive to adopt by potential stakeholders, since actions taken on improving the efficiency of their operations contributes to the achievement of reducing the emissions produced.

The involvement of real life practitioners in the development of GYR platform results in the existence of several routing features necessary to assist a logistics company in implementing its everyday transport operations, this way standing out compared to similar services provided by other companies, which include basic routing features and are not taking real life aspects into account.

However, the novel feature of the platform lies in the environmental impact assessment. For calculating the routes to be followed by vehicle fleets, environmental aspects are taken into account. These include the vehicle attributes affecting their environmental footprint (i.e. type

and size, fuel technology and emission control technology), the circulation speed, the road characteristics (i.e. gradient and surface characteristics) and several on-road dynamics, such as the traffic flow, the wind speed and direction and the air condition usage. Emission calculation models developed for the purposes of the platform, interact with the optimization of the travelling distance and provide a green routing solution.

With GYR platform, the routing planner has the option to choose the environmental friendliest route, which is also in most cases the most profitable in terms of cost, since it results in less kilometers travelled, better occupancy rates and also greater energy efficiency, since they benefit from lower fuel consumption. The emissions emitted from daily operations are recorded and compared to the procedure followed before the use of GYR platform.

GYR platform could be integrated in any Small and medium-sized enterprise (SME) worldwide and could be transferred in other routing problem contexts. Any SMEs and organizations that need to solve in a regular base a routing problem is a potential user of the platform.



## 5. Technical part

### 5.1. Technical progress, per Action

#### **Action A1: Reviewing, partnership agreements and MoU for green procurement**

The preparatory actions of the project included producing the Partnership Agreements (PA) between the Coordinating Beneficiary of the project and all project's Associated Beneficiaries, the Memorandum of Understanding (MoU) for Green Procurement and its guidelines and a review of the relevant to the project methods, tools, practices and legislation.

The Partnership Agreements include the general and special conditions included in the LIFE Grant Agreement, the model technical report, financial statement, terms of reference for the certificate on the financial statement, the financial and administrative guidelines, a maximum budget allocation per action, sub-action and beneficiary, a detailed technical description and outlines of each action and sub-action and financial guidelines and guidelines for implementing actions, customized to the special needs of LIFE GYR actions implementation and the special characteristics of each beneficiary. The outlines assign the exact activities of each sub-action to each beneficiary as well as define intermediate deadlines for the completion of draft, intermediate and final reports, deliverables and outcomes to guarantee the timely and successful implementation of the project.

The scope of establishing Green Procurement rules through a MoU was to apply to each beneficiary general and specific rules for Green Procurement, since until the beginning of the project they did not follow a specific procedure for green procurement but only partially implemented general "green" rules. The provisions decided to be included in the MoUs take into account the environmental performance of the beneficiaries, cost considerations, market availability and ease of verification. These criteria were also decided with respect to the participating companies' nature, i.e. companies performing logistics operations, IT companies and a consulting company. These criteria are also applicable to future customers of GYR-Company, a company planned to be established under the frame of the project (see Action B6). To assist the implementation of Green Procurement rules, guidelines for implementing all rules included in the MoU were produced. To monitor the proper implementation of the MoUs, each associated beneficiary is submitting a self-assessment form on a quarterly basis, including all the relevant purchases made. These forms provide feedback to Action C2, for monitoring the relevant to Green Procurement social indicators.

The scope of reviewing the latest technical developments was to further uptake and improve the database, modelling approach and optimization algorithms of Green-VRP developed in the frame of previously, EU projects and comprise a set of recommendations and guidelines for LIFE GYR implementation actions. The outcomes of the review of the database designs, architectures and structures used in web applications are used for the implementation of Action B1; the outcomes of the review of new algorithms for solving the VRP are used in Action B2; the outcomes of the European Union (EU) policies, standards, directives and practices on air quality, noise and urban mobility are used in Action B7.

### **Action B1: GYR database and related data access service**

Based on the work done on the previous EU projects (GreenRoute, ENVRouting, FindMyWay and LIFE GreenYourMove) the database schema was adjusted and restructured in order to reflect the latest information that was included in the real life demonstrator examples. Furthermore, it was enriched with more details that came from the algorithm implementation needs and the review of the database designs in Action A1 and more entities in order to support the extra information that was needed for the development of the web and mobile applications.

Those changes were deployed in a development database in the server that is ready to use for testing purposes and support the functionality of the beta version of the apps. Some revisions will follow in order to reflect additional information that might be needed to be stored based on new and upcoming new demonstrator requirements (based on replication activities of sub-action B7.1) and in order to support the data required for the optimization of the algorithm.

Concerning the Data access service, a template file was structured with the minimal necessary information that is needed as an input from the demonstrators, in order to advance with the algorithm development and testing, and this template was communicated to the demonstrators in order to be used as a data bridge between their Enterprise Resource Planning (ERP) system and GYR platform.

Regarding the database security, all the appropriate measures have been taken until now by restricting both the physical access and the outside network access to the database server. Also all user passwords used are strongly encrypted and the access to certain entities in the database is determined based on user permissions that are set. Furthermore, the server setup ensures that data loss due to physical damage to the server is prevented. No other actions are currently considered necessary because of the restricted use of the app.

## **Action B2: Green Vehicle Routing Problem**

In this action, the Green-VRP is modelled and solution approaches are developed.

The existing modelling approaches developed under the frame of GreenRoute (single vehicle Green-VRP), EnvRouting (travelling salesman problem (TSP)) and FindMyWay (capacitated VRP), as well as the additional constraints introduced, based on demonstrators' consultation, i.e. outcomes of sub-action B4.1 "Definition of demonstrators requirements" and the outcomes of the review of new algorithms for solving the VRP of Action A1 (such as first assigning vehicles to clusters followed by the assignment of customers' demands to vehicle.), are taken into account to produce a generic modelling approach for the Green-VRP. For the modelling of the Green-VRP, the Environmental Externality Score (EES) functions developed under the frame of GreenRoute and EnvRouting projects are also used to represent the environmental impact of the routes. Additionally, a novel emission calculation model is developed for the accurate and case-tailored emission estimation which is also used in Action C1 for the calculation of the emission inventory and the monitoring of the environmental impact of the project.

The requirements included in the modelling approach developed are: pickup and delivery of freight under specified conditions; time windows of customers, roads and vehicles; different packages and material types; accessibility restrictions such as city rings, pedestrian areas, city centre constraints (e.g. ability of trucks to perform manoeuvres); different freight temperatures; vehicle attributes such as capacity, refrigerating transportation ability, existence of loading and unloading system, ability to transfer specific materials; different starting points of vehicles; performance of open routes, i.e. routes not ending at the depot; precedence constraints. Based on the specified requirements, the following Green-VRP variants can be handled by the developed modelling approach: the Capacitated VRP, the VRP with Time Windows, the VRP with Pickup and Deliveries, the VRP with Backhauls, the Multi-Depot VRP, the Open VRP, the heterogeneous fleet VRP, the asymmetric VRP, the Precedence-Constrained VRP, the Load-specific Vehicles VRP and the Customer-specific Vehicles VRP.

### **Action B3: Creation of GYR platform and apps**

Through the presentation of previous developed platforms in the frame of EU projects and the platforms developed the period before the submission of the proposal to demonstrate the technical readiness of the project, GYR team enabled the involved demonstrators to effectively understand further the layout, content and structure of the proposed GYR platform and provide their feedback. After the definitions of the demonstrators specifications in Action B4, the project team performed analysis of the necessary platform design that results to detailed sequence diagrams presenting the information and data flow. The design of GYR platform is developed based on the design of previously developed platforms.

Several designs were developed for GYR platform. These different designs were examined by the technical teams of the three beneficiaries in order to find the design which fits the needs of GYR platform. The basic criteria were: the CPU response time, the operational cost of the platform, the minimization of necessary data for the routing planning of a logistics company, the necessary interconnections of the different components (GYR API, VRP API, Maps, UIs etc.). Other entities related with clustering, emission calculation, cost matrix calculation and filtering functionality are currently in progress.

A cluster of two host machines was setup for the development, testing and hosting of the individual parts, e.g. APIs, User Interfaces, web services that form the platform. In this cluster, multiple Virtual Machines are deployed and used as development or production servers. Also, to ensure data redundancy the storage of the cluster has been setup to RAID array type 1.

In the following months of the Action, the project team will develop the beta version which is expected in February 2020 and the pre-final version of the platform, which is expected in October 2020. The beta version will include the necessary components for the formation of the platform and the pre-final version of GYR platform will be a synthesis of these components. After the publication of the beta and pre-final version of the platform some tests will be performed by the project's technical team and the 5 demonstrators under the frame of Action B4 in order to test and evaluate each version.

### **Action B4: Demonstration - 1st phase**

Action B4, and more specifically Sub-Action B4.1 started earlier than the initially planned date, to provide to the associated parties the opportunity to communicate more thoroughly the characteristics of their work. At the beginning of the action, discussions were initiated with the demonstrators.

The initial approach was a questionnaire designed, where initial information about each demonstrator was requested. Through the questionnaire, the project team realised that it was difficult to get the actual answers needed. Thus, this approach was replaced with regular Skype calls and on-site visits, when possible. Through this continuous procedure, it was found that the information gathered through the questionnaires was far from the actual needs of the demonstrators, thus, the results of the questionnaire were not taken under consideration for defining the demonstrators' requirements as through the discussions and on-site visits the project team managed to understand the needs of the demonstrators thoroughly.

## **Action B6: Marketability plan**

The objective of this action is the preparation of the market uptake of GYR Company. To this scope, a business plan is developed, the conditions under which the company will be established are set and also a certification of GYR service, the commercialization product of GYR Company, under the EU Environmental Technology Verification (ETV) is pursued.

A crucial step before the establishment of GYR Company is to develop the business plan describing how business activities and commercialisation will be managed. To this end, the project team started by preparing a plan aiming to guide the consortium where the company to be established is heading by drafting even earlier than foreseen the Business Model Canvas (BMC). BMC was identified as the appropriate method that will serve as a useful tool to describe how GYR company will create and deliver its value outlining the successful operation of the company, by identifying sources of revenue, the target customer base, products, details of financing etc.

In order to draft the BMC the following steps were followed during this reporting period:

- Collected valuable information and allocated it accordingly to the BMC;
- Reviewed the scope of GYR company and clarified the topics to be analysed;
- Researched the local market for the competition in order to compare strengths and weaknesses;
- Detected opportunity gaps and identified new perspectives;
- Created an initial competitors' profile for comparison purposes;
- Pitched investors informing them about the GYR platform;
- Analyzed new opportunities, partners, and channels;
- Defined the value proposition and competitive advantages;
- Collected data and analysed key resources and key activities;
- Defined key statement;
- Found key eager customers and initiated the use of the platform in tandem with their existing ERPs.

The benefits and disadvantages of the candidate EU member states that GYR Company may be established (economic conditions, tax system, etc.) were investigated; after this analysis, the base country of GYR Company (Greece) was determined.

The process of the Environmental Technology Verification (ETV) was initiated in March 2019. After contacting several Verification Bodies, BRE Global was identified and assigned as the appropriate Verification Body to consult GYR Consortium. Several contacts were made with BRE Global to assess the eligibility of GYR platform to apply for an ETV and to identify the technological scope for which it will be accredited. Currently the verification plan including the main steps to be followed to receive the ETV is being finalized. A timeline for its processing needs to be set, which will be defined as soon as GYR platform's beta version is released. The first step towards the ETV was the processing and submission of the Quick Scan Document. BRE Global after assessing the Quick Scan document requested from LIFE GYR team to start drafting the Verification Proposal form, which is the next step of the ETV process. However several restrictions, such as the fact that GYR Company has not yet been established and GYR platform has not yet been released prohibit its submission.

### **Action B7: Replicability and transferability Strategy**

The scope of the action is to create the framework that will provide GYR service the best possible replication potential after the end of the project. The project team creates a replicability and transferability plan, organizes webinars sessions and identifies, contacts and performs meetings with potential customers of GYR Company. In parallel, the existing EU legislation is studied and recommendations are produced for the updating of the existing legislation with a directive for green vehicle routing planning to further improve the EU effort to reduce emissions.

The project team is working closely with a legal advisor and a lobbyist to map the current legislation, identify potential policy changes that connect to LIFE GYR and promote synergies with the state, municipalities, stakeholders' associations and Corporate Social Responsibility (CSR) organisations. Comprehensive mapping of the current situation has made clear that smart-green-optimal-routing and GYR-type platforms overlap with the Union's objective to promote Intelligent Transport Systems' use in general, legislation of emissions measurement and reduction goals, effort of data-gathering to build a coherent base for the "smart-cities" plan and logistics-sector reform.

On national level research has shown that legislation totally lacks provisions that promote efficient and/or eco-friendly transport. The incumbent government is planning a reform of the logistics-sector legislation and has shown initial interest for the platform as a potential means of measurement and compliance of the companies to the emissions legislation. Meetings have been held with the Minister of Environment, who has agreed to sign a letter of endorsement, and the director of the office of the Vice-Minister for Transport, who positively discussed a letter of endorsement on his part.

An outline of basic policy recommendations has been formulated for further discussion with EU authorities, the Greek state, municipalities and stakeholders. It includes tax and financial incentives to the companies for the adoption of the platform, market benefits such as flexible toll system and promotion of peripheral green logistics practices.

### **Action C1: Monitoring of the impact of the project actions**

The scope of Action C1 is to monitor and measure the project's impact on the environmental problem targeted. A monitoring protocol is established based on a novel emission inventory methodology, which is applied in the routing problems of the project's demonstrators in order to assess the environmental impact of the problem. The expected emission reductions in terms of Fuel Consumption (FC), Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Carbon Monoxide (CO), Nitrous Oxide (N<sub>2</sub>O), Ammonia (NH<sub>3</sub>), Nitrogen Oxides (NO<sub>x</sub>), Particulate Matter (PM), Volatile Organic Compounds (VOC) and Sulfur Dioxide (SO<sub>2</sub>) are calculated during the project lifetime. For this purpose a novel emission inventory methodology was developed for the accurate and case-tailored emission inventory estimation.

For assessing the environmental impact of the project two Check Points (CPs) were established. The first one (CP1.1) is defined as the time period before the integration of GYR platform in the demonstrators' environments. Its duration is 12 months, starting from June 2019 and ending in May 2020. CP1.1 will also serve as the baseline scenario. The second (CP1.2) is defined as the time period after the introduction of GYR platform in everyday logistics operations. It runs during the real-life practice (sub-action B5.2) starting from January 2021 until December 2021.

The development of the monitoring methodology includes several steps. First step is the definition of the necessary data. These are the vehicles' attributes, the distance travelled, each vehicle's occupancy rate and the average vehicle speed. Second step is the determination of emission factors by the ambient and operating conditions of the vehicle. These include the road gradient, road surface characteristics, several on-road dynamics, such as the traffic flow, the wind speed and direction and the use of air conditioning system.

Most data are collected for CP1.1 through the demonstrators' ERP systems and for CP1.2 are dynamically extracted from the Green-VRP algorithm developed in Action B2. Distance data, road characteristics data and average circulation speed data are collected through the Cost Matrix Application Programming Interface (API). Traffic flow data are collected through the Traffic API and wind data and temperature and humidity data, necessary for estimating use of air condition, are collected through the Weather API. The Cost Matrix API, Traffic API and Weather API are developed in Action B3. In case of lack of data availability, approximation processes based on historical data are foreseen.



## **Action C2: Monitoring and assessment of the socio-economic impact of the project actions**

The project team is currently developing the socio-economic impact assessment protocol to assess the socio-economic impact of LIFE GYR. The protocol follows a multi-criteria analysis approach, aggregating the socioeconomic benefits of the project. For each axis (i.e. social and economic axis), a number of criteria and indicators are set in order to enable tracking the socio-economic impact in measureable units.

Two Check Points (CPs) are considered for the assessment of the socio-economic impact. The first is the baseline scenario at the beginning of the project (September 2018) and the second corresponds to the period after the dissemination activities, i.e. the completion of workshops and webinars (end of the project – December 2021).

Data for the socio-economic impact assessment are expected through the test and evaluation of GYR platform in Action B4, the real-life practice in Action B5, the green procurement assessment in Action A1, the uptake of GYR Company in Action B6, the replicability results and efforts to update EU policy of Action B7 and all dissemination activities in Actions D1 and D2. Several indicators assessed in Action C2 will be used for the update and monitoring of the Key Project-level Indicators (KPIs) in Action C3.

### **Action C3: Update and Monitoring of Key Project-level Indicators**

The project team in direct communication with the external monitoring team and following the instructions and guidelines provided by EASME updates the KPIs using the official web toolkit provided by EASME. The update of KPIs is in relation to the LIFE Performance Indicators defined in Article 3 Paragraph 3 of the LIFE Regulation. A set of key indicators corresponding to the sector and priority area on which the project focusses is updated, as well as on additional key indicators concerning the project's societal and economic outcomes as described in Action C2. Beyond these indicators, complementary key indicators are updated to measure and monitor the quantitative and qualitative impact of dissemination actions.

## **Action D1: Dissemination planning and execution**

The purpose of this action is to establish a vivid dissemination presence during the lifetime of LIFE GYR. The activities performed for this purpose include the production of the notice boards, printed material, such as flyers, to be distributed during participation to several events and networking activities, the project's website, the production of videos and newsletters and the networking activities performed for disseminating the project.

The project team produced eight notice boards, placed in portable stands with side cases for information material and flyers. The notice boards are placed in all beneficiaries' offices in spots where many individuals pass or visit. The project team also produced 15,000 flyers and 40 posters, which were distributed to all beneficiaries to be used in communication, promotional and networking activities. Moreover, promotional giveaway items were produced to be distributed during participation in conferences/events, meetings, workshops, etc. These included mouse pads, wire-bound notebooks including a ball pen, folders and printed linen bags..

The official website of LIFE GYR was created under the domain name [www.greenyourroute.com](http://www.greenyourroute.com). The website is available in English, Greek, Czech and Italian. LIFE GYR's website is updated regularly with events, news, articles, project material, etc. According to the website counter, 2,507 were the total hits of the website since its launch. 1,169 out of 2,507 hits were unique visitors of the website.

Accounts were created under LIFE GYR name in the following social media: [Facebook](#) for the dissemination of website content, [LinkedIn](#) for the dissemination of the project's outcomes and [YouTube](#) for hosting of produced for the purposes of the project videos. Additionally, an online helpdesk (i.e. real time chat) was created on the website's homepage. The helpdesk plays an important role concerning the replication and transfer of LIFE GYR outcomes to other logistics operators, engineers and researchers. The scope of the helpdesk is to receive questions from potential users of LIFE GYR outcomes and give real-time scientific and technical answers and guidelines.

In total two newsletters were produced during the reporting period. The [first newsletter](#) was about the environmental efficiency and logistics optimization and the initiation of LIFE GYR project and its goals and was sent to 115 recipients. The [second newsletter](#) was about green procurements in logistics and was sent to 112 recipients.

All dissemination material produced is also hosted in LIFE GYR website in the [Communication section](#).

Dissemination activities will intensify as soon as the pre-final version of the platform is released. Until then, the project website and social media accounts will continue disseminating relevant to the project news, events and articles; moreover, the third newsletter is expected in March 2020, dedicated to the European Green Deal and how LIFE GYR project outcomes could contribute in tackling climate and environmental-related challenges set in this programme.

**Action D2: Direct communication and workshops**

For dissemination purposes, the presence and presentation of LIFE GYR project to events, like workshops and conferences, is a very effective way to reach and engage all target groups as well as promote and serve its objectives and spread the benefits of its results through knowledge transfer. Most importantly, LIFE GYR team can establish alliances and join forces with similar initiatives and policy makers.

## 5.2.Evaluation of Project Implementation

### **Methodology applied**

The methodology applied for all actions is efficient since the timeframe is followed and expected results are gradually achieved.

The Actions are managed in a cost-efficient way and foreseen budget analysis covers the main needs of the project team.

### **Visibility of results**

Several dissemination activities results are visible to the public since their production, either through physical placement in facilities (i.e. beneficiaries facilities) or through the project's [website](#) and [social media accounts](#).

### **Dissemination activities**

Very few dissemination activities have been performed during the reporting period, since most dissemination activities are to be performed after the release of the platform. During the reporting period, LIFE GYR team focused on producing the necessary material for the direct communication activities, i.e. workshops, participation in conferences, which included the notice boards, promotional material and moreover, flyers and posters, not foreseen at the proposal phase. Dissemination activities performed were mostly electronic and focused on the creation of traffic in the project's website and social media accounts through relevant to LIFE GYR objectives and framework posts. The production of two newsletters informed several logistics companies regarding the forthcoming GYR platform and the expected project outcomes, as well as the importance of taking into account environmental factors in logistics operations.

### **Replication**

LIFE GYR team implements all project activities focusing on the replication of the project's outcomes. The project is implemented with the aim to ensure its replication and continuation.

### **Policy impact**

No policy impact has been achieved during the reporting period. However, the project team identified that smart-green-optimal-routing and GYR-type platforms overlap with the Union's objective to promote Intelligent Transport Systems' use in general, legislation of emissions measurement and reduction goals, effort of data-gathering to build a coherent base for the "smart-cities" plan and logistics-sector reform.

On the national level (Greece), research has shown that legislation totally lacks provisions that promote efficient and/or eco-friendly transport. The project team has already begun contacts with policy makers in Greece. The incumbent government is planning a reform of the logistics-sector legislation and has shown initial interest for the platform as a potential means of measurement and compliance of the companies to the emissions legislation.

Furthermore, the project team has tried to contact the relevant Unit of the European Commission but faces difficulties in locating the competent ones.

### 5.3. Analysis of benefits

#### **Environmental, economic and social benefits**

The environmental and social benefits of the project will become apparent during the real-life practice period, which is expected to be initiated in November 2020. The economic benefit for the reporting period corresponds to 7.9 FTE; all the staff participating in the project is aptly qualified.

#### **Replicability**

Market replication and transfer is one of the main goals of the implementation actions as well as the after-life communication plan. A key advantage of replication and transfer of GYR platform is that GYR service will get environmental technology verification and GYR Company clients will be able to incorporate to their brand, corporate image and CSR commitments by being certified with a green mobility and cleaner driving certification.

Replicability efforts have been initiated under the frame of Action B7. Logistics companies contacted so far show high interest in GYR platform. However, several other sectors, which could benefit from adapting GYR service were contacted or have been identified: these include municipalities, which perform waste collection activities, post offices, oil collection and distribution companies, etc.

#### **Best Practice lessons**

For the implementation of Actions B1, B2 and B3 the outcomes of Action A1 review were used. This review summarizes best practices in database designs, architectures and structures used in web applications, new algorithms for solving the VRP and practices on air quality, noise and urban mobility.

#### **Innovation and demonstration value**

GYR platform is innovative in the logistics industry as the developed mobile application is not a static routing planner including routing plan and information, but at the same time supports a rerouting option in case something unpredictable occurs during the execution of the initial planned route. The innovation value of LIFE GYR for the reporting period is the monitoring and calculation of produced emissions from transport, since especially in Greece, no such monitoring schemes are available.

Furthermore, for the development of GYR platform 5 demonstrators participate and suggest their routing needs, making it more attractive to logistics companies, since several special features are included compared to the existing routing platforms, which produce basic routing solutions without considering the environmental impact.

#### **Policy implications**

The project has the potential to support policy development in the EU as follows: At a national level – Greece where the GYR company will be based, law 3887/2010 regulates the field of commercial transportation. It includes conditions for land transport permits, the establishment of logistics companies, licenses for “Public Use Vehicles”, as well as fees paid for licenses that are further used for infrastructure, safety and protection of the environment. 80% of the fee to gain a vehicle authorization is reserved for works related to infrastructure, growth and the environment. A system of environmental metrics recording for the enterprises in the field of logistics is defined in the joint ministerial decision 1023/2018. Measuring of publicizing of data concerning greenhouse gases emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC and SF<sub>6</sub>), water consumption, waste and by products production and recycling is voluntary.

The European Union has established legislation concerning regulation of transport and logistics as an integral field of economy with directives no.1071-72/2009. This framework is under revision from 2017 but hasn't taken its final form yet: a new directive on Combined Transport remains in the trilogue phase (interinstitutional dialogue). The main objective is the transition from freight transport to lower-emission transport modes. Safe, efficient and environment-friendly transport is the general scope of the amendments leading in the long term to a comprehensive transformation of infrastructure and cities ("smart cities"). Good data gathering, data-driven reforms and data-based planning and execution of transport missions is the medium to achieve goals and realize strategic plans.

A report including the potential updating of EU policy and legislation of air quality and emission standards will be prepared in the following monitoring period. The report will focus on the absence of a directive for routing planning of logistics companies and will be delivered to appropriate policy makers to convince them to update existing EU policy and/or legislation.

## 6. Envisaged progress until next report

The next report is foreseen in February 2021 and is going to be a progress report.

The Green-VRP is expected to be finalized in April 2020. Adjustments are expected with the release of the pre-final version of the platform and when real-life practice begins.

The beta version of GYR platform is expected in February 2020 and the pre-final version of the platform is expected in October 2020. Integration activities will be initiated as soon as the pre-final version is released.

GYR Company is expected to be established until August 2020, earlier than foreseen. The reason for this is that a registered company should proceed with a contractual agreement for the Environmental Technology Verification.

LIFE GYR team will also start planning the implementation of workshops which are expected at the end of 2020. Dissemination activities are expected to intensify after October 2020.

Until the next report the following deliverables are expected:

- Deliverable C3.1: Report focusing on the results achieved and/or deviations experienced/expected as compared to the original estimates/inputs in the KPI Webtool and LIFE performance Indicators;
- Deliverable B4.2: Testing and evaluation report of GYR platform;
- Deliverable B1.1: Data access user manual in 11 EU languages;
- Deliverable B5.1: Report on integration activities;
- Deliverable B5.2: Integration manual in 11 EU languages.

The following deliverables will be updated for the reporting period:

- Deliverable E1.1: Final version of the project's steering committee (if changes occur);
- Deliverable E1.2: Minutes of project meetings (updated after each meeting);
- Deliverable E1.3: Risk Management Plan associated with Risks Assessment Forms and Quality Control Report (updated every month);
- Deliverable D1: Report including material associated with dissemination pack and networking activities (updated every 6 months).

The following deliverable will be prepared for the reporting period:

- Deliverable C1: Emission inventory methodology and monitoring of the environmental impact of the project (Updated on M24 & M40)

The following milestones are expected to be reached:

- Integration of GYR platform to demonstrators' environment;
- Establishment of GYR Company.