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

Deliverable C2: Quantification of socio-economic impact report including methodological approach and data collected

Partner responsible for this report: UTH

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Document Information Summary	
Action:	**C2 Monitoring and assessment of the socio-economic impact of the project actions**
Sub-action:	**Sub-action C2.1: Methodological approach** **Sub-action C2.2: Data Collection** **Sub-action C2.3: Quantification of socio-economic impact**
Deliverable Number:	**-**
Deliverable Title:	**Deliverable C2: Quantification of socio-economic impact report including methodological approach and data collected**
Leader:	**UTH**
Participants:	**UTH**
Author(s)	**Dr. Georgios K.D. Saharidis**
Project website	**www.greenyourroute.com**
Status:	**Final**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Start Date: 01 September 2018 - Duration: 42 months

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Contents

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Abbreviations

CP	Check Point
FTE	Full Time Equivalent
LIFE GYR	LIFE GreenYourRoute
S-E	Socio - Economic
SMEs	Small and medium-sized enterprises

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

List of Tables

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

List of Figures

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Abstract

The main scope of this deliverable is to develop a monitoring protocol in order to monitor the socio-economic impact of the project LIFE GreenYourRoute (GYR) in specific checkpoints (CPs).

In the next pages specific evaluation time points and data that are reported for every CP are presented. Also, the monitoring report includes a baseline associated with valid sources of verification, a methodology, data collection, quantification of socio-economic (S-E) impact and monitoring indicators. For each check point the data gathered are further analyzed and presented through charts.

In order to measure the economic impact of the project's implementation, various criteria of categories such as reduction of transport cost, economic efficiency, freight distributors' involvement, improved know-how and competiveness, employment generation, market uptake, replication and evaluation of routing plans are measured. For the estimation of project's social impact criteria of categories such as social responsibility, awareness raising, urban regeneration, networking, training, improvement of service quality, promotion of environmental friendly distribution of goods, LIFE GYR tools acceptance, update of EU policy and environmental factors are taken into account.

The tables of the S-E monitoring protocol are filled-in twice throughout the project's lifetime. The first time is during CP2.1 when the baseline data are collected (M1-M28) and the second time is during CP2.2 after the completion of the project's implementation, dissemination and demonstration actions in order to assess the overall project's socio-economic impact (M42). We have to notice that some data for the baseline scenario data are calculated using the simulation tool developed in the frame of Action C3 (see Deliverable C3.1) and during the real life demonstration period.

UTH's external experts and LIFE GYR beneficiaries collected data through field research, LIFE GYR dissemination results, demonstrators' records, questionnaires, interviews, Google Analytics or other similar applications for recording hits of the website, installation of mobile application, etc.

UTH developed the Monitoring Protocol for the assessment of the socio-economic impact of the project and the procedures that LIFE GYR beneficiaries will follow in order to record data.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

1 Introduction

LIFE GYR (GreenYourRoute) project introduces and demonstrates a logistics platform for last mile delivery of goods in urban environments developed within a multidisciplinary approach of environmental engineering, computer science and operations research. It includes a set of tools and services that promote eco-efficient sustainable freight transport operations in urban regions, via environmental-friendly vehicle routing decisions. At the same time, it addresses driving eco-requirements as well as operational cost efficiency through an innovative environmental assessment approach. LIFE GYR application is demonstrated in Greece, Czech Republic and Italy for a period of 17 months.

LIFE GYR project introduces and demonstrates an innovative tool that prevents air pollution by making freight transport greener, more attractive and more efficient in urban environments. The project promotes changes not only in the transport field but also in the economy, in the social context as well as the environment. The environmental impact of LIFE GYR is monitored in another Action (Action C1), while this protocol monitors exclusively the social and economic effects from the starting point (M1) until the end of the project within Action C2.

The economic impact mainly concerns changes in reduction of transport cost, economic efficiency, freight distributors' involvement, improved know-how and competiveness, employment generation, market uptake, replication and evaluation of routing plans, while the social impact regards social responsibility, awareness raising, urban regeneration, networking, training, improvement of service quality, promotion of environmental friendly distribution of goods, LIFE GYR tools acceptance, update of EU policy and environmental factors.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

2 Monitoring protocol

2.1 General Principles

According to the most established definition [1], socio-economic (S-E) impact assessment aims at estimating those effects which characterize and influence the community's social and economic well-being. The generic monitoring methodology which is used in LIFE GYR includes the monitoring of those two different sub-objectives, economic and social impact and a total of 16 subcategories and 85 weighted criteria. The methodology focuses on collecting quantitative data for each of the above sub-objectives and qualitatively evaluating their impact. For each check point (CP), the consortium with the support of an external assistant gather all the relevant data in reference to the specific sub-objectives and criteria.

2.2 Description of the methodology

2.2.1 Monitoring S-E impact model and data categories

The European Commission has supported impact assessment methodologies in order to address problems related to climate change (e.g. CCGT), transport (e.g. EXTERNE), and frameworks such as GREENSENSE. LIFE GYR's beneficiaries monitor the S-E impact of the project using the more customized approach of TRANSECON protocol [2]. In this methodology a set of criteria are determined in order to measure two main objectives, economic impact and social impact. For this reason two sets of various criteria, one for each objective, are established and presented in the following tables, in order to describe the impact of LIFE GYR. For each of the following two groups of sub-objectives, a set of categories of criteria has been chosen.

As far as the estimation of project's *economic impact* is concerned the consortium takes into account the following categories of criteria:

- Reduction of transport cost;
- Economic efficiency;
- Freight distributors' involvement;
- Improved know–how & Increased competitiveness;
- Employment generation;
- Market Uptake;
- Replication;
- Evaluation of routing plans.

As far as the estimation of project's *social impact* is concerned the consortium takes into account the following categories of criteria:

- Social responsibility;
- Awareness rising;

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

- Urban regeneration;
- Networking;
- Training;
- Promotion of environmental friendly distribution of goods;
- LIFE GYR tools acceptance;
- Update of EU policy;
- Environmental factors.

A number of criteria and indicators explain each of the aforementioned categories (what kind of information is monitored – what type of data should be gathered to monitor each criterion), while a normalized weight is assigned to each criterion (see Table 1). Given that both economic and social impact is equally essential to be monitored, each of those 2 objectives gathers 50 units of the total 100 units of weight.

Table 1: Weight assigned to each criterion

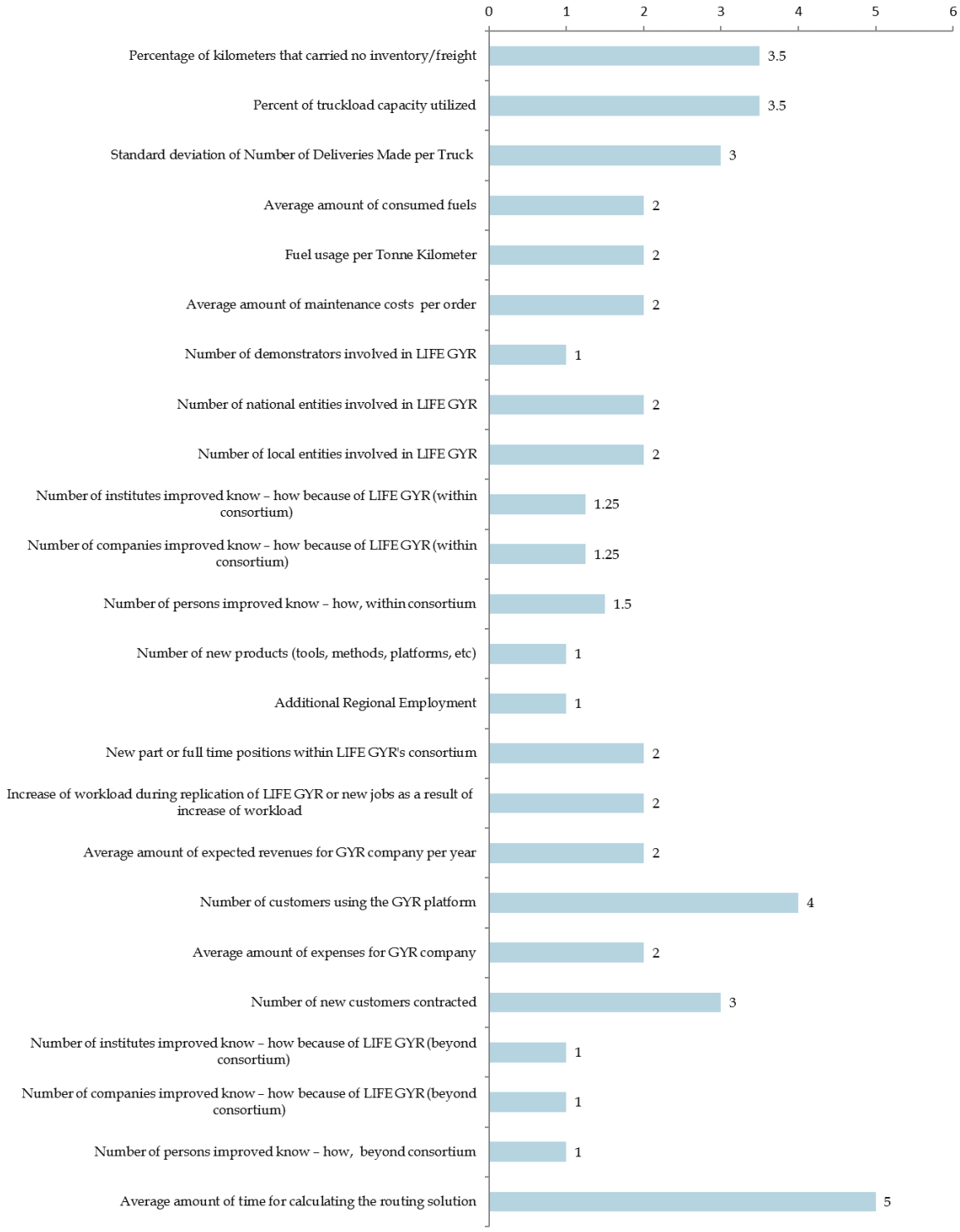
Type	Category	Category Weight
Economic	A.1 Reduction of transport cost	10
Economic	A.2 Economic efficiency	6
Economic	A.3 Freight distributors' involvement	5
Economic	A.4 Improved know–how & Increased competitiveness	5
Economic	A.5 Employment generation	5
Economic	A.6 Market Uptake	8
Economic	A.7 Replication	6
Economic	A.8 Evaluation of routing plans	5
Total Economic Weight		**50**
Social	B.1 Social responsibility	6
Social	B.2 Awareness rising	3
Social	B.3 Networking	3
Social	B.4 Training	5
Social	B.5 Promotion of env. friendly distribution of goods	10
Social	B.6 LIFE GYR tools acceptance	8
Social	B.7 Update of EU policy	8
Social	B.8 Environmental factors	5
Total Social Weight		**50**

Each indicator is then normalized according to the weight of each criterion. The weights assigned to each indicator are given on the basis of the experience of the authors of the current

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

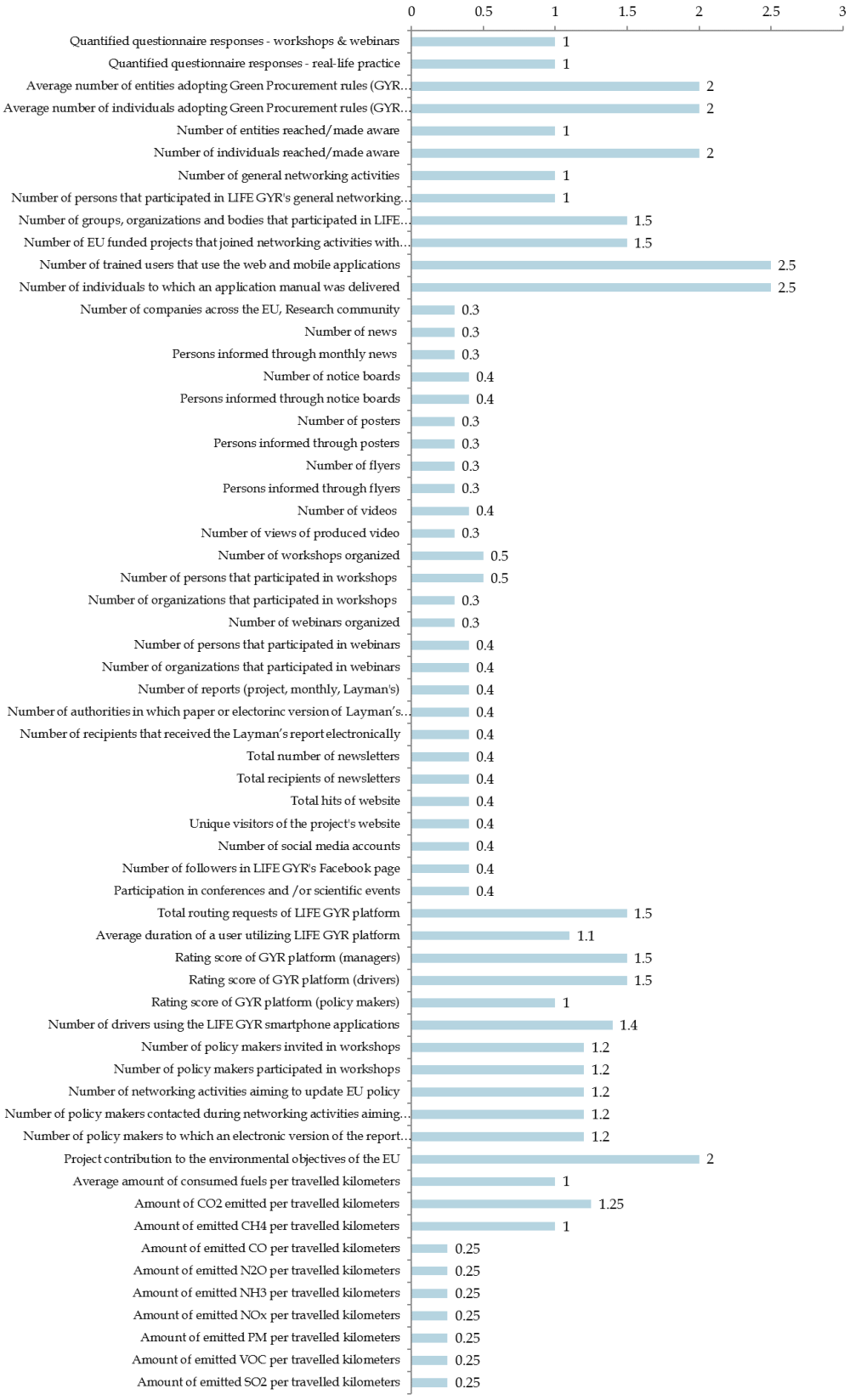
report on similar studies and on the basis of the bibliographic references and existing models (see Figure 1 and Figure 2).

Figure 1: Weights assigned to economic indicators



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 2: Weights assigned to social indicators



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

In the next sections indicators of criteria per category classified, are presented in tabular format. The monitoring of the S-E impact is undertaken both by the project beneficiaries' members and by external experts. The data gathered are digitized, normalized and divided to the maximum value and then normalized values are multiplied to the weight of each criterion. The difference of values between each check point generates the numeric impact of LIFE GYR.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

2.2.2 Sub-objective A: Economic Impact Criteria

External Assistant and LIFE GYR beneficiaries contribute to gathering and analyze data for A.1 category of indicators. The Empty kilometers (A.1.1) is calculated by the indicator percentage of kilometers that carried no inventory/freight. The required trend is descending. The Optimize Load Fulfilment (A.1.2) is calculated by the indicator percent of truckload capacity utilized. The required trend is ascending. The Dependence of Trucks (A.1.3) shows how dependable a truck is and It is calculated by the indicator Standard deviation of Number of Deliveries Made per Truck. The required trend is descending.

The indicators of A.1 category are assessed based on the following formulas:

- Percentage of kilometers that carried no inventory/freight = (Kilometer traveled with no freight deliveries / Total kilometer traveled) x 100%;
- Percent of truckload capacity utilized = (actual load / standard pay load of carrier in cubic) x 100%. The average actual vehicle's load is the mean value of the vehicle's load at each visiting point;
- Standard deviation of Number of Deliveries Made per Truck = Standard deviation (Number of Deliveries per Truck / Total number of Deliveries).

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 2: Criteria and indicators in reference to "Reduction of transport cost" category

Category		**Reduction of transport cost**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.1.1	Empty kilometers	Percentage of kilometers that carried no inventory/freight	Percentage	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform
A.1.2	Optimize Load Fulfilment (OLF)	Percent of truckload capacity utilized	Percentage	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform
A.1.3	Dependence of Trucks	Standard deviation of Number of Deliveries Made per Truck	Percentage	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform

External Assistant and LIFE GYR beneficiaries contributed to gathering data for A.2 category of indicators. The Fuel consumption (A.2.1) is calculated by the indicator average amount of consumed fuels. The required trend is descending. The Fuel efficiency (A.2.2) is calculated by the indicator fuel usage per ton kilometer. The required trend is descending. The Maintenance costs (A.2.3) is calculated by the indicator average amount of maintenance costs per order visited.

The indicators of A.2 category are assessed based on the following formulas:

- Average amount of consumed fuels = (Consumed fuels per 100Km) / (100 Kilometers traveled);

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

- Fuel usage per ton kilometer = ((Consumed fuels) / (Ton kilometers))*100;
- Average amount of maintenance costs per kilometer traveled = (Maintenance costs) / (Kilometers traveled);

Table 3: Criteria and indicators in reference to "Economic efficiency" category

Category		**Economic efficiency**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.2.1	Fuel consumption	Average amount of consumed fuels	lt/100km	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform
A.2.2	Fuel efficiency	Fuel usage per Tonne Kilometer	lt/tkm	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform
A.2.3	Maintenance costs	Average amount of maintenance costs per order	€/order	GYR Database: For CP2.1 the simulation tool is used and for CP2.2 the GYR platform and bibliography

An external assistant under the guidance of UTH is responsible for gathering the data of A.3 category. The demonstrators involved (A.3.1) are the number of demonstrators participating in the development of GYR platform, while the national and local entities involved (A.3.2 and A.3.3)

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

are the entities contributing their expertise and opinion during networking activities of the project and workshops. The required trend for all indicators of A.3 category is ascending.

Table 4: Criteria and indicators in reference to "Freight distributors' involvement" category

Category		**Freight distributors' involvement**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.3.1	Demonstrators involved	Number of demonstrators involved in LIFE GYR	Num of demonstrators	Real life participants list
A.3.2	National entities involved	Number of national entities involved in LIFE GYR	Num of national entities	Participants to the dissemination activities (conference, workshops, webinars)
A.3.3	Local entities involved	Number of local entities involved in LIFE GYR	Num of local entities	Participants to the dissemination activities (conference, workshops, webinars)

UTH's external experts are responsible for recording data for A.4 category of indicators. LIFE GYR beneficiaries also contribute to A.4 by sending data regarding their institutes and companies (A.4.1 and A.4.2). Regarding persons that improve expertise (A.4.3), all persons that receive know-how through their involvement in the development of GYR platform and its use are recorded. By new products (A.4.4), all types of products are included, that could be exploitable either by LIFE GYR beneficiaries or by other interested companies and research institutes, such as new tools, models, software, platforms and methodologies. The required trend for all indicators of this category is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 5: Criteria and indicators in reference to "Improved know–how and increased competitiveness" category

Category		**Improved know–how and increased competitiveness**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.4.1	Know-how improvement within LIFE GYR - institutes	Number of institutes improved know – how because of LIFE GYR (within consortium)	Num. of institutes	Participants to the project
A.4.2	Know-how improvement within LIFE GYR - companies	Number of companies improved know – how because of LIFE GYR (within consortium)	Num. of companies	Participants to the project
A.4.3	Know-how improvement within LIFE GYR - persons	Number of persons improved know – how, within consortium	Num. of persons	Timesheets of the project
A.4.4	New products (tools, methods, platforms, software, etc.)	Number of new products (tools, methods, platforms, etc.)	Num. of products	Technical components included in the deliverables of the project

UTH's external experts are responsible for gathering data for A.5 category of indicators. LIFE GYR beneficiaries also contribute to A.5 by sending data that regards their institutes or companies. Additional regional employment (A.5.1) is the result of LIFE GYR's jobs offered (A.5.2) and overall

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

jobs offered (A.5.3). Overall jobs offered (A.5.3) is recorded from LIFE GYR beneficiaries (UTH, CEDA, CHAPS, ITACA, ATHINAIKI, KOUKOUZELIS, PLUS, MILITOS) that get involved in LIFE GYR through the actions implementation. The required trend for all indicators is ascending. For assessing the indicators of A.5 category, an average value of 170 hours per month working time is assumed. Taking this into account, the following formulas apply:

- Additional Regional Employment = Increase of workload + new part or full time positions within consortium.
- Increase of workload = (Total hours of permanent staff occupied in LIFE GYR / 170 hours per month).
- New part or full time positions within consortium = (Total hours of additional staff occupied in LIFE GYR / 170 hours per month).

Table 6: Criteria and indicators in reference to "Employment generation" category

Category		**Employment generation**		
ID	**Criteria**	**Indicator**	**Unit**	**Way of data gathering**
A.5.1	Regional jobs offered	Additional Regional Employment	Num. of Man-Months	Timesheets of the project
A.5.2	LIFE GYR's jobs offered	New part or full time positions within LIFE GYR's consortium	Num. of Man-Months	Timesheets of the project
A.5.3	Overall jobs offered	Increase of workload during replication of LIFE GYR or new jobs as a result of increase of workload	Num. of Man-Months	Timesheets of the project

External Assistant with the support of MILITOS are responsible for gathering data of A.6 category. The criteria of this category are related to

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

GYR Company. The expected revenues (A.6.1) in GYR Company and the expected expenses (A.6.3) are the average amount of yearly expected revenues and expected expenses of GYR Company respectively, as assessed through the development of GYR Company's business plan. The required trend is ascending for the expected revenues and descending for the expenses. The market size (A.6.2) is the number of customers that will using GYR platform in the future for their daily routing planning operations. The required trend is ascending.

Table 7: Criteria and indicators in reference to "Market Uptake" category

Category		**Market Uptake**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.6.1	Expected revenues	Average amount of expected revenues for GYR company per year	1000€ /year	Business plan
A.6.2	Market size	Number of customers using the GYR platform	Number of customers	Business plan
A.6.3	Capital invested in GYR company	Average amount of expenses for GYR company	1000€ /year	Business plan

UTH's external experts are responsible for recording data for A.7 category of indicators. The number of new customers (A.7.1) of GYR Company is recorded in this category. Regarding institutes and persons that improve expertise and are not part of LIFE GYR consortium (A.7.2, A.7.3 and A.7.4), the institutes, companies and persons that receive know-how trough LIFE GYR initiatives, such as webinars or cooperation with LIFE GYR beneficiaries in view of replication purposes are recorded. The required trend for all indicators of this category is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 8: Criteria and indicators in reference to "Replication" category

Category		**Replication**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.7.1	Replication & Transfer of know-how	Number of new customers contracted	Num. of customers	Contract signed
A.7.2	Know-how improvement beyond LIFE GYR - institutes	Number of institutes improved know – how because of LIFE GYR (beyond consortium)	Num. of institutes	Participants list of workshops and webinars
A.7.3	Know-how improvement beyond LIFE GYR - companies	Number of companies improved know – how because of LIFE GYR (beyond consortium)	Num. of companies	Participants list of workshops and webinars
A.7.4	Know-how improvement beyond LIFE GYR - persons	Number of persons improved know – how, beyond consortium	Num. of persons	Participants list of workshops and webinars

UTH's external experts are responsible for recording data of A.8 category. The CPU response time (A.8.1) is assessed by calculating the average amount of time for calculating the routing solution. The complexity of the routing problem is taken into account, by also considering the number of points that need to be visited in the frame of a routing plan. We have to notice that for CP1.1, GYR platform was not ready and the answers of the demonstrators into the questioner prepared for the manager of the demonstrators is used to define the average amount of time for calculating the routing solution. For CP1.2, the data recorded in the GYR database is used. GYR database records the starting time and the termination time.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 9: Criteria and indicators in reference to "Evaluation of routing plans" category

Category		Evaluation of routing plans		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
A.8.1	CPU response time	Average amount of time for calculating the routing solution	Minutes / visiting point	Questioners and GYR database

2.2.3 Sub-objective B: Social Impact Criteria

UTH's external experts are responsible to monitor data for B.1 category of indicators. The questionnaires answered during workshops and webinars (B.1.1) and real-life practice (B.1.2) provide measureable results for how many logistics operators are indeed interested in improving their services in order to improve their environmental footprint. Also, Green Procurement guidelines have been produced by the project team. Members of LIFE GYR Consortium have signed Memorandum of Understandings for applying Green Procurement rules in their everyday purchases. The number of entities within LIFE GYR Consortium (B.1.3), as well as the persons aware of green procurement rules within these entities (B.1.4) are recorded. The required trend for Green Procurement related indicators is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 10: Criteria and indicators in reference to "Social responsibility" category

Category		**Social responsibility**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.1.1	Environmental footprint consideration - workshops	Quantified questionnaire responses – workshops & webinars	Assessment score	Questioners during workshops and webinars
B.1.2	Environmental footprint consideration - real life practice	Quantified questionnaire responses - real-life practice	Assessment score	Questioners during workshops and webinars
B.1.3	Entities adopting Green Procurement rules within GYR Consortium	Average number of entities adopting Green Procurement rules (GYR Consortium)	Num. of entities	MoU signed
B.1.4	Individuals adopting Green Procurement rules within GYR Consortium	Average number of individuals adopting Green Procurement rules (GYR Consortium)	Num. of individuals	Employees of entities signed MoU

UTH's external experts are responsible for monitoring data for B.2 category of indicators. The entities (B.2.1) and individuals (B.2.2) reached through LIFE GYR dissemination activities and made aware of LIFE GYR initiatives and objectives are recorded. The required trend for the indicators of B.2 category is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 11: Criteria and indicators in reference to "Awareness raising" category

Category		**Awareness raising**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.2.1	Entities reached/made aware	Number of entities reached/made aware	Number of 1000 entities	Participants to workshops, webinars, networking activities, project visits
B.2.2	Individuals reached / made aware	Number of individuals reached/made aware	Number of 1000 individuals	Views of videos and Facebook posts

UTH's external experts are responsible for monitoring data for B.3 category of indicators with the contribution of the rest LIFE GYR beneficiaries. The required trend for all indicators of B.3 category is ascending. The number of general networking activities (B.3.1) corresponds to the number of workshops organized, the number of persons participated to the workshops, webinars, conferences, and general networking activities corresponds to B.3.2, the number of groups, organizations and bodies that participated in workshops, webinars, and general networking activities corresponds to B.3.2 and finally the number of EU funded projects that joined networking activities with LIFE GYR or projects that LIFE GYR communicated its purposes corresponds to B3.4.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 12: Criteria and indicators in reference to "Networking" category

Category		Networking		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.3.1	Networking activities	Number of general networking activities	Num. of activities	Action D2
B.3.2	Participation in networking activities	Number of persons that participated in LIFE GYR's general networking activities	Num. of persons	Action D2
B.3.3	Overall participation on networking activities	Number of groups, organizations and bodies that participated in LIFE GYR's networking activities	Num. of bodies	Action D2
B.3.4	LIFE GYR relation to other EU projects and/or similar applications	Number of EU funded projects that joined networking activities with LIFE GYR or projects that LIFE GYR communicated its purposes	Num. of projects	Action D2

UTH's external experts are responsible for monitoring data for B.4 category of indicators with the contribution of the rest LIFE GYR beneficiaries. The number of users (B.4.1) who were trained, either by the project team or by other users of GYR platform is recorded. The number of individuals that received the application manuals of GYR platform (B.4.2), either concerning the web or the mobile application, in electronic or printed format are recorded. The required trend for the training category indicators is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 13: Criteria and indicators in reference to "Training" category

Category		**Training**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.4.1	Trained users familiar to the web and mobile applications	Number of trained users that use the web and mobile applications	Num. of persons	Training sections organized
B.4.2	Application manuals	Number of individuals to which an application manual was delivered	Num. of persons	Manual sent or delivered

UTH's external experts are responsible for monitoring data of B.5 category of indicators. For general promotion at EU level (B.5.1), the number of companies or research institutes that got familiar with LIFE GYR initiative (via mailing lists, conferences, webinars, etc.) is recorded. For news (B.5.2), the ones that are published in LIFE GYR website are monitored. For persons that are informed through news (B.5.3), the total people reached through social media are recorded. For notice boards, posters and flyers (B.5.4, B.5.6 and B.5.8) the number of pieces produced are monitored. Persons informed through notice boards (B.5.5) are monitored with LIFE GYR beneficiaries' contribution. Persons informed though posters and flyers (B.5.7 and B.5.9) are monitored via estimates of LIFE GYR beneficiaries that circulate LIFE GYR dissemination material. The number of videos (B.5.10) and the number of videos' views (B.5.11) are recorded via YouTube channel and Facebook. The total number of workshops organized (B.5.12), the total number of persons (B.5.13) and the total number of organizations (B.5.14) that participated in workshops. The total number of webinars organized, the total number of persons and the total number of organizations that participated in webinars corresponds to B.5.15, B.5.16. and B.5.17 respectively. Concerning the total number of reports, the indicator B.5.18 is introduced. The total number of authorities in which paper or electronic version of Layman's report distributed and the total number of recipients are represented via indicator B.5.19 and B.5.20. Concerning the newsletters two indicators are introduced, the first one for their total number (B.5.21) and the second on for their total number of recipients (B.5.22). The total number of hits of the website and the total unique visitors of the project's website are given by

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

indicators B.5.23 and B.5.24 respectively. Concerning the number of social media accounts, indicator B.5.25 is introduced and concern the total number of followers on Facebook page indicator B.5.26 is defined. Finally, the total number of conference and/or scientific events participation is given by B.5.27. The required trend of all indicators of B.5 category is ascending.

Table 14: Criteria and indicators in reference to "Promotion of environmental friendly distribution of goods" category

Category		**Promotion of environmental friendly distribution of goods**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.5.1	Promotion at EU level	Number of companies across the EU, Research community	Num. of companies	Via emails list and participants list to events organized
B.5.2	Promotion by news	Number of news	Num. of news	Website
B.5.3	Promotion by news	Persons informed through monthly news	Num. of persons	Facebook
B.5.4	Promotion by notice boards	Number of notice boards	Num. of notice boards	As foreseen
B.5.5	Promotion by notice boards	Persons informed through notice boards	Num. of persons	Based on the average persons passing in front of the notice board

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

B.5.6	Promotion by posters	Number of posters	Num. of posters	Number of printed posters
B.5.7	Promotion by posters	Persons informed through posters	Num. of persons	Based on the average persons passing in front of the posters used during workshops and conferences.
B.5.8	Promotion by flyers	Number of flyers	Num. of flyers	Number of flyers printed
B.5.9	Promotion by flyers	Persons informed through flyers	Num. of persons	Number of flyers distributed
B.5.10	Video impressions	Number of videos	Num. of video impressions	YouTube
B.5.11	Video impressions	Number of views of produced video	Num. of impressions	YouTube and Facebook views
B.5.12	Workshop organization	Number of workshops organized	Num. of workshops	Action D2
B.5.13	Workshop participation	Number of persons that participated in workshops	Num. of persons	Participant list
B.5.14	Workshop participation	Number of organizations that participated in workshops	Num. of organizations	Participant list

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

B.5.15	Webinar organization	Number of webinars organized	Num. of webinars	Deliverable D2
B.5.16	Webinar participation	Number of persons that participated in webinars	Num. of persons	Participant list
B.5.17	Webinar participation	Number of organizations that participated in webinars	Num. of bodies	Participant list
B.5.18	Number of reports	Number of reports (project, monthly, Layman's)	Num. of reports	As foreseen
B.5.19	Layman's report distribution per authority	Number of authorities in which paper version of Layman's report distributed	Num. of authorities	Email list
B.5.20	Layman's report recipients	Number of recipients that received the Layman's report electronically	Num. of recipients	Recipients
B.5.21	Newsletters	Total number of newsletters	Num. of newsletters	As foreseen
B.5.22	Newsletter recipients	Total recipients of newsletters	Num. of recipients	Recipient list
B.5.23	Website acceptance	Total hits of website	Num. of hits	Google analytics

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

B.5.24	Website acceptance	Unique visitors of the project's website	Num. of unique visitors	Google analytics
B.5.25	Social media dissemination	Number of social media accounts	Num. of accounts	As foreseen
B.5.26	Social media dissemination	Number of followers in LIFE GYR's Facebook page	Num. of followers	Facebook
B.5.27	Scientific conferences	Participation in conferences and /or scientific events	Num. of conferences	Action D2

UTH's external experts are responsible for gathering data of B.6 category, taking into account analytics of GYR platform and results of workshops' and webinars' questionnaires distributed. The routing requests (B.6.1) and the average duration of a user (B.6.2) of GYR platform are analytics provided directly from GYR platforms. The rating score of GYR platform according to managers (B6.3), drivers (B.6.4) and policy makers (B.6.5), is assessed through questionnaires analysis. These questionnaires are distributed 6 months before and 6 months after the beginning of the real-life practice for individuals (i.e. managers and drivers) participating in the questionnaire research within LIFE GYR consortium and during workshops for policy makers and other questionnaire participants beyond LIGE GYR consortium. The number of drivers using GYR mobile application (B.6.6) is assessed through the total number of both Android and iOS installations.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 15: Criteria and indicators in reference to "LIFE GYR tools acceptance" category

Category		**LIFE GYR tools acceptance**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.6.1	LIFE GYR platform acceptance	Total routing requests of LIFE GYR platform	Num. of routing requests	GYR database
B.6.2	LIFE GYR platform acceptance	Average duration of a user utilizing LIFE GYR platform	Minutes	GYR database
B.6.3	LIFE GYR platform acceptance	Rating score of GYR platform (managers)	Rating score	Questioners
B.6.4	LIFE GYR platform acceptance	Rating score of GYR platform (drivers)	Rating score	Questioners
B.6.5	LIFE GYR platform acceptance	Rating score of GYR platform (policy makers)	Rating score	Questioners
B.6.6	LIFE GYR mobile app acceptance	Number of drivers using the LIFE GYR smartphone applications	Number of drivers	Users of the apps

MILITOS with the support of external assistant is responsible for monitoring data for B.7.1 to B.7.4 indicators and UTH's external experts are responsible for gathering data for B.7.5 and B.7.6 indicators. The project contribution to the environmental objectives of the EU (B.7.6) is assessed through answers in the questionnaires for policy makers during workshops. The required trend for all indicators of B.7 category is ascending.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 16: Criteria and indicators in reference to "Update of EU policy" category

Category		Update of EU policy		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.7.1	Policy makers involved in workshops	Number of policy makers invited in workshops	Num. of policy makers	Email list
B.7.2	Policy makers involved in workshops	Number of policy makers participated in workshops	Num. of policy makers	Participants list
B.7.3	Networking activities with policy makers	Number of networking activities aiming to update EU policy	Num. of travels for meeting policy makers	Travelling records
B.7.4	Networking activities with policy makers	Number of policy makers contacted during networking activities aiming to update EU policy	Num. of policy makers	Email list
B.7.5	EU policy update	Number of policy makers to which an electronic version of the report including the potential updating of EU policy and legislation was sent	Num. of recipients	Recipient list
B.7.6	EU policy update	Project contribution to the environmental objectives of the EU: percentage of score derived through questionnaires for policy makers	%	Questioners

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

UTH with the support of the external assistant gathered data for B.9 category indicators. The indicators are assessed based on the analysis performed in Action C1, where the environmental impact of the project is assessed. The required trend for all indicators is descending.

Table 17: Criteria and indicators in reference to "Environmental factors" category

Category		**Environmental factors**		
ID	**Criterion**	**Indicator**	**Unit**	**Way of data gathering**
B.10.1	Fuel efficiency	Amount of consumed fuels per travelled kilometers	tns per 10,000 km	Deliverable C1
B.10.2	CO2 efficiency	Amount of CO2 emitted per travelled kilometers	tns per 10,000 km	Deliverable C1
B.10.3	CH4 efficiency	Amount of emitted CH4 per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.4	CO efficiency	Amount of emitted CO per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.5	N2O efficiency	Amount of emitted N2O per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.6	NH3 efficiency	Amount of emitted NH3 per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.7	NOx efficiency	Amount of emitted NOx per travelled kilometers	tns per 10,000 km	Deliverable C1
B.10.8	PM efficiency	Amount of emitted PM per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.9	VOC efficiency	Average amount of emitted VOC per travelled kilometers	kg per 10,000 km	Deliverable C1
B.10.10	SO2 efficiency	Amount of emitted SO2 per travelled kilometers	kg per 10,000 km	Deliverable C1

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3 Data for the socio-economic impact assessment

3.1 Economic impact

In order to measure the economic impact achieved due to the project's implementation, the impact is recorded in reference to:

- Reduction of transport cost;
- Economic efficiency;
- Freight distributors' involvement;
- Improved know–how & Increased competitiveness;
- Employment generation;
- Market Uptake;
- Replication;
- Evaluation of routing plans.

3.1.1 Reduction of transport cost

The project team gathered under the frame of Action C1, 10 daily routing plans per demonstrator on a monthly basis for the period starting from December 2021 to April 2023. These instances were further processed in order to provide information regarding the values of CP2.1 (Baseline scenario) and CP2.2 (the end of the project scenario) of the "Reduction of transport cost category". The data were gathered by the GYR database in a digital format from the project team and the external assistant and the baseline values were assessed after their processing via the simulation tool.

3.1.1.1 A1.1. Empty kilometers

The empty kilometers are the kilometers travelled without carrying any freight. For each demonstrator the arcs traversed without carrying any freight were identified. The total distance of the arcs without any freight and the overall distance travelled were calculated.

Greek demonstrators: a) the total distance travelled by the Greek demonstrators for the assessed instances for CP2.1 was 590,201.63 km and for CP2.2 was 473,041.66 km. The distance travelled without carrying any freight for CP2.1 was 47,864.80159 km and for CP2.2 was 37,495.3921. The Percentage of kilometers that carried no inventory/freight for CP2.1 was 8.11% and for CP2.2 was 7.93%.

CEDA's demonstrator: the total distance travelled by CEDA's demonstrator for the assessed instances for CP2.1 was 1,958,387.77 km and for CP2.2 was 1,723,205.88 km. The distance travelled without carrying any freight for CP2.1 was 1,212,852.562 km and for CP2.2 was 990,668.0135. The Percentage of kilometers that carried no inventory/freight for CP2.1 was 61.93% and for CP2.2 was 57.49%.

ITACA's demonstrator: the total distance travelled by ITACA's demonstrator for the assessed instances for CP2.1 was 207,552.54 km and for CP2.2 was 159,290.54 km. The distance travelled without carrying any freight for CP2.1 was 28808.29 km and for CP2.2 was 12934.39. The Percentage of kilometers that carried no inventory/freight for CP2.1 was 13.88% and for CP2.2 was 8.12%.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

New customers of GYR company (i.e. DIGICOM, YOUTRADESMART, DASCO S.A.): the total distance travelled by the new customers of GYR company for the assessed instances for CP2.1 was 1,162,117.53 km, 755,376.40km, and 842,924.59km for DIGICOM, YOUTRADESMART, and DASCO S.A. respectively. For CP2.2 the total distance travelled was 906,930.92 km, 665,624.19km, and 705,348.38km respectively. The distance travelled without carrying any freight for CP2.1 was 274,724.58 km, 188,390.87km, and 295,891.81 for DIGICOM, YOUTRADESMART and DASCO S.A. respectively. For CP2.2, the distance travelled without carrying any freight was 174,040.04km, 129,996.40km, and 204,198.35km respectively. The percentage of kilometers that carried no inventory/freight for CP2.1 was 23.64%, 24.94%, and 35.10% and for CP2.2 was 19.19%, 19.53%, and 28.95%.

Summarizing, the above data, the average percentage of kilometers that carried no inventory/freight for CP2.1 was 33.52%, and for CP2.2 was 28.24%.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

3.1.1.2 A.1.2 Optimize Load Fulfilment

Optimize Load Fulfilment (OLF) indicates the utilization of the truckload capacity. For each demonstrator it was calculated based on the actual load of each vehicle at each visiting point compared with the overall capacity of the vehicle.

Greek demonstrators: the average percentage of the actual load at each visiting point compared to the standard payload of the utilized vehicle for CP2.1 was 35.20% and for CP2.2 was 39.96%.

CEDA's demonstrator: the average percentage of the actual load at each visiting point compared to the standard payload of the utilized vehicle was 19.03% and for CP2.2 was 21.26%.

ITACA's demonstrator: the average percentage of the actual load at each visiting point compared to the standard payload of the utilized vehicle was 41.52% and for CP2.2 was 45.90%.

New customers of GYR company: the average percentage of the actual load at each visiting point compared to the standard payload of the utilized vehicle was for DIGICOM, YOUTRADESMART and DASCO S.A. 37.25%, 35.49%, and 36.82% and for CP2.2 was 48.62%, 39.15%, and 42.01% respectively.

The average Optimize Load Fulfilment was 41.06% for CP2.1 and for CP2.2 was 47.38%.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

3.1.1.3 A.1.3 Dependence of Trucks

For the calculation of the dependence of trucks, the number of orders performed by each truck for the provided routing plans was calculated and divided by the total number of orders. Then the standard deviation of the calculated values was calculated.

Greek demonstrators: the dependence of trucks for CP2.1 was 1.32% and for CP2.2 was 1.30%.

CEDA's demonstrator: the dependence of trucks for CP2.1 was 0.89% and for CP2.2 was 0.80%.

ITACA's demonstrator: the dependence of trucks for CP2.1 was 4.93% and for CP2.2 was 3.93%.

New customers: the dependence of trucks for CP2.1 for DIGICOM, YOUTRADESMART, and DASCO S.A. was 1.21%, 2.46% and 2.07% and for CP2.2 was 1.14%, 2.09%, and 1.93% respectively.

The average dependence of trucks for CP2.1 was 2.57% and for CP2.2 was 2.24%.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

3.1.2 Economic efficiency

The provided instances by the project team were further processed in order to provide information regarding the baseline values of the "Economic efficiency" combined with data regarding each demonstrators' vehicle fleet.

3.1.2.1 A2.1 Fuel consumption

The fuel consumption criterion is calculated based on the average amount of consumed fuels of each demonstrator's vehicle fleet. The amount of consumed fuels for each vehicle is calculated based on its specifications and its travelled distance for the instances provided. Then the average amount of consumed fuels per vehicle is calculated for each demonstrator.

Greek demonstrators: the average amount of consumed fuels for each truck for CP2.1 was 52.76 lt/100 km and for CP2.2 was 33.06 lt/100 km.

CEDA's demonstrator: the average amount of consumed fuels for each truck for CP2.1 was 90.90 lt/100 km and for CP2.2 was 50.33 lt/100 km.

ITACA's demonstrator: the average amount of consumed fuels for each truck for CP2.1 was 22.35 lt/100 km and for CP2.2 was 18.12 lt/100 km.

New customers: the average amount of consumed fuels for each truck for DIGICOM, YOUTRADESMART, and DASCO S.A. for CP2.1 was 47.37 lt/100 km, 56.02 lt/100 km, 62.09 lt/100 km and for CP2.2 was 29.99 lt/100 km, 38.94 lt/100 km, and 36.01 lt/100 km respectively.

The average amount of consumed fuels for CP2.1 was 66.30 lt/100km and for CP2.2 was 41.29 lt/100 km.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.1.2.2 A2.2 Fuel efficiency

Fuel efficiency is assessed through the fuel usage per ton kilometer travelled. The amount of fuels in liters for each truck as calculated for the assessment of indicator A2.1 Fuel consumption and the total ton kilometers of each truck are taken into account in the calculation.

Greek demonstrators: the fuel usage for each truck was for CP2.1 0.97 lt/tkm and for CP2.2 was 0.34 lt/tkm.

CEDA's demonstrator: the fuel usage for each truck was for CP2.1 0.092 lt/tkm and for CP2.2 was 0.045 lt/tkm.

ITACA's demonstrator: the fuel usage for each truck was for CP2.1 0.56 lt/tkm and for CP2.2 was 0.15 lt/tkm.

New customers: the fuel usage for each truck was for DIGICOM, YOUTRADESMART, and DASCO S.A., for CP2.1 0.10 lt/tkm 0.11 lt/tkm, and 0.16 lt/tkm and for CP2.2 was 0.03 lt/tkm, 0.04 lt/tkm and 0.052 lt/tkm respectively.

The average fuel usage for each truck was for CP2.1 0.396 lt/tkm, and for CP2.2 was 0.133 lt/tkm.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

3.1.2.3 A2.3 Maintenance costs

For assessing the maintenance costs of the demonstrators, a research in the literature was performed regarding the average maintenance costs per vehicle type. These costs include scheduled maintenance, repair, tire change and depreciation costs. The average maintenance costs per vehicle type are summarized in the following table (Barnes and Langworthy 2003).

Table 18: Maintenance costs per vehicle type in €/km

Cost Category	ITACA (i.e. mini-van, Automobile)	ATHINAKI, PLUS KOYKOYZELIS, DIGICOM, YOUTRADESMART, DASCO S.A. (i.e. Pickup/van/SUV)	CEDA (i.e. HDV, Commercial Truck)
Maintenance/Repair	0.01639	0.01895	0.05377
Tires	0.00461	0.00512	0.01792
Depreciation	0.03175	0.03584	0.04096
Total	**0.05274**	**0.05991**	**0.11265**

For the calculation of the average maintenance costs the total distance travelled and the total orders processed by each vehicle was also considered.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Greek demonstrators: the maintenance cost for each order processed for CP2.1 was 0.63€/order and for CP2.2 was 0.50€/order.

CEDA's demonstrator: the maintenance cost for each order processed for CP2.1 was 12.94€/order and for CP2.2 was 11.38€/order.

ITACA's demonstrator: the maintenance cost for each order processed for CP2.1 was 0.45€/order and for CP2.2 was 0.35€/order.

New customers: the maintenance cost for each order processed for DIGICOM, YOUTRADESMART, and DASCO S.A. for CP2.1 was 2.66€/order, 2.21€/order, and 1.69€/order and for CP2.2 was 2.08€/order, 1.95€/order, and 1.41 respectively.

The average maintenance cost for each order processed for CP2.1 was 3.42€/order and for CP2.2 was 2.95€/order.

Note: the CP2.1 corresponds to the use of the simulation tool and the CP2.2 to the actual use of the GYR service both for real life practice period.

3.1.3 Freight distributors' involvement

3.1.3.1 A3.1 Number of demonstrators involved in LIFE GYR

The total number of demonstrators in CP2.1 (M0 of the project) was equal to 0 and the total number of demonstrators at the end of the project (CP2.2) was equal to 10. The total number of demonstrators at CP2.2 corresponds to the 5 demonstrators associated benefiters of the project (i.e. ATHINAIKI, PLUS, KOUKOUZELIS, ITACA and CEDA), to the two customers of ITACA and CEDA using GYR platform and the 3 new customers of GYR company.

3.1.3.2 A3.2 Number of national entities involved in LIFE GYR

3.1.3.3 The total number of national entities involved in LIFE GYR in CP1.1 was equal to 0 and the total number of national entities involved in LIFE GYR at the end of the project (CP2.2) was equal to 65.

3.1.3.4 A3.3 Number of local entities involved in LIFE GYR

The total number of local entities involved in LIFE GYR in CP1.1 was equal to 0 and the total number of local entities involved in LIFE GYR at the end of the project (CP2.2) was equal to 138.

3.1.4 Improved know-how & increased competitiveness

3.1.4.1 A4.1 Number of institutes improved know – how because of LIFE GYR (within consortium)

The number of institutes (within consortium) which improved their know – how because of LIFE GYR is equal to 0 at CP2.1 and equal to 1 (i.e. UTH) at CP2.2.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.1.4.2 A4.2 Number of companies improved know – how because of LIFE GYR (within consortium)

The number of institutes (within consortium) which improved their know – how because of LIFE GYR is equal to 0 at CP2.1 and equal to 6 (i.e. MILITOS, ATHINAIKI, PLUS, KOUKOUZELIS, CEDA, ITACA) at CP2.2.

3.1.4.3 A4.3 Number of persons improved know – how, within consortium

The number of persons (within consortium) improved their know – how, because of LIFE GYR is equal to 0 at CP2.1 and equal to 59 at CP2.2. The number for CP2.2 corresponds to the total permanent and additional staff used for the implementation of LIFE GYR project.

3.1.4.4 A4.4 Number of new products (tools, methods, platforms, etc.)

The number of new products developed in the frame of LIFE GYR is equal to 0 at CP2.1 and equal to 8 at CP2.2. The number for CP2.2 corresponds to the algorithm for the solution of the vehicle routing problem, the emission calculation models, the API algorithm optimization, the API emission calculation models, the API of the GYR web platform, the GYR web application, the iOS GYR mobile application and the Android GYR mobile application.

3.1.5 Employment generation

3.1.5.1 A5.1 Additional regional employment

The number of Man-Months corresponding to the additional regional employment is equal to 0 at CP2.1 and equal to 375.28 at CP2.2. The additional regional employment is equal to increase of workload (see indicator of A.5.3) + new part or full time positions within consortium (see indicator of A.5.2).

3.1.5.2 A5.2 Increased of workload

The number of Man-Months corresponding to the increased of workload is equal to 0 at CP2.1 and equal to 221.04 at CP2.2. The increased of workload is equal to the total hours of permanent staff occupied in LIFE GYR divided by 170 hours per month.

3.1.5.3 A5.3 New part or full time positions

The number of Man-Months corresponding to the new part or full time positions within consortium is equal to 0 at CP2.1 and equal to 596.32 at CP2.2. The new part or full time positions within consortium is equal to the total hours of additional staff occupied in LIFE GYR devided by 170 hours per month.

3.1.6 Market uptake

3.1.6.1 A6.1 Average amount of expected revenues for GYR company per year

The expected revenues (A.6.1) in GYR Company are the average amount of yearly expected revenues of GYR Company. The expected revenue for C2.1 is equal to 0 and for CP2.2 as assessed through the development of GYR Company's business plan is equal to 873,527.50 Euro.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.1.6.2 A6.2 Number of customers using the GYR platform

The customers of GYR company was in CP2.1 0 and in CP2.2 are 63 as assessed through the development of GYR Company's business plan.

3.1.6.3 A6.3 Average amount of expenses for GYR company

The expected expenses (A.6.3) in GYR Company are the average amount of yearly expected expenses of GYR Company. The expected expenses for C2.1 is equal to 0 and for CP2.2 as assessed through the development of GYR Company's business plan is equal to 801,441.50 Euro.

3.1.7 Replication

3.1.7.1 A7.1 Number of new customers contracted

The new customers of GYR company was in CP2.1 0 and in CP2.2 are 5 corresponding to the 5 new customers signed a contract at the end of the project with GYR company.

3.1.7.2 A7.2 Number of institutes improved know – how because of LIFE GYR (beyond consortium)

The number of institutes improved know – how because of LIFE GYR (beyond consortium) was in CP2.1 0 and in CP2.2 are 20 corresponding to the institutes participating to workshops and webinars.

3.1.7.3 A7.3 Number of companies improved know – how because of LIFE GYR (beyond consortium)

The number of companies improved know – how because of LIFE GYR (beyond consortium) was in CP2.1 0 and in CP2.2 are 170 corresponding to the companies participating to workshops and webinars.

3.1.7.4 A7.4 Number of persons improved know – how (beyond consortium)

The number of persons improved know – how because of LIFE GYR (beyond consortium) was in CP2.1 0 and in CP2.2 are 271 corresponding to the persons participating physically or virtually to workshops and webinars.

3.1.8 Evaluation of routing plans

3.1.8.1 A8.1 Average amount of time for calculating the routing solution

The answers of the 1st questioner titled: GreenYourRoute Questionnaire for managers within GYR Consortium (before GYR platform release) was in total 7 (see Annex section 5.1). In the following table the average minutes per order for the preparation of the routing planning is given.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 19: Response time per visiting point

Demonstrator	Average minutes to create routing plans for CP1.1 resulted by the 1st questioner	Average minutes to create routing plans for CP1.2 resulted recorded in GYR database	Average orders per plan	A8.1 index CP1.1	A8.1 index CP1.2
ATHINAIKI, PLUS, KOUKOUZELIS	100	12	159	0.6289	0.07547
CEDA	105	11	48	2.1875	0.22916
ITACA	120	16	81	1.4814	0.19753
			Average	1.4326	0.16739

3.2 Social impact data of LIFE GreenYourROute

In order to measure the social impact achieved due to the project's implementation, LIFE GYR beneficiaries and UTH's external experts are recording the impact in reference to:

- Social responsibility;
- Awareness rising;
- Urban regeneration;
- Networking;
- Training;
- Promotion of environmental friendly distribution of goods;
- LIFE GYR tools acceptance;
- Update of EU policy;
- Environmental factors.

3.2.1 Social responsibility

3.2.1.1 B1.1 Environmental footprint consideration - workshops

The values of the environmental footprint consideration criterion of workshops' and webinars' participants is assessed based on responses received by the "GreenYourRoute Questionnaire for managers beyond GYR Consortium (during workshops and webinars)" (available at the following link) and the "GreenYourRoute Questionnaire for drivers beyond GYR Consortium (during workshops and webinars)" (available at the following link).

More specifically it is based on the following question:

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

- CP1.1 Managers: I would opt in an environmental friendlier routing plan, even if it would take some time longer.
- CP1.1 Drivers: I would follow an environmental friendlier route, even if it would mean travelling some minutes longer
- CP1.2 Managers: I take into account environmental aspects while creating the routing plan.
- CP1.2 Drivers: I take into account environmental aspects while driving

The responses of the questionnaires are assessed below. To total score of each question is calculated by summing the normalized rating score calculated by the percentage of the responders selecting the rating score.

For example, in the case of managers' responses for CP1.1, the formula is as follows:

$$Total\ score = \frac{1}{5} \times \frac{0}{121} + \frac{2}{5} \times \frac{0}{121} + \frac{3}{5} \times \frac{21}{121} + \frac{4}{5} \times \frac{58}{121} + \frac{5}{5} \times \frac{42}{121} = 0.8347$$

A weight is assigned to each score and the final indicator value is assessed.

The same methodology is followed for all "Likert scale-type" questionnaire responses presented in the following indicators.

Table 20: Environmental footprint consideration – real life practice

CP1.1	**Rating**	**1**	**2**	**3**	**4**	**5**	**Total Score**	**Weight**
Managers	Number of answers	0	0	21	58	42	0.8347	50%
	Normalized Score	0	0	0.1041	0.3834	0.3471		
Drivers	Number of answers	2	6	25	28	4	0.68	50%
	Normalized Score	0.0061	0.0369	0.2307	0.3446	0.0615		
Quantified questionnaire responses for CP2.1							**0.7573**	
CP1.2	Rating	1	2	3	4	5	Total Score	Weight
Managers	Number of answers	0	0	5	81	35	0.8495	50%
	Normalized Score	0	0	0.0247	0.5355	0.2892		
Drivers	Number of answers	0	1	18	37	9	0.7661	50%
	Normalized Score	0	0.0061	0.1661	0.4553	0.1384		
Quantified questionnaire responses for CP2.2							**0.8078**	

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.2.1.2 B1.2 Environmental footprint consideration - real life practice

The values of the environmental footprint consideration criterion of real-life practice participants (i.e. demonstrators of the project) is assessed based on responses received by the "GreenYourRoute Questionnaire for managers within GYR Consortium and the "GreenYourRoute Questionnaire for drivers within GYR Consortium.

More specifically it is based on the following question:

- CP1.1 Managers (before real life demonstration): I take into account environmental aspects while creating the routing plan.
- CP1.1 Drivers(before real life demonstration): I would prefer the environmental friendliest route proposed by GYR platform, even if it would mean travelling some minutes longer.
- CP1.2 Managers (during real life demonstration): I take into account environmental aspects while driving.
- CP1.2 Drivers (during real life demonstration): I would follow an environmental friendlier route, even if it would mean that I would travel some minutes longer.

The responses of the questionnaires are assessed below. To total score of each question is calculated by summing the normalized rating score calculated by the percentage of the responders selecting the rating score.

Table 21: Environmental footprint consideration – real life practice

CP1.1	Rating	1	2	3	4	5	Total Score	Weight
Managers	Number of answers	2	1	1	1	2	0.6	50%
	Normalized Score	0.0571	0.0571	0.0857	0.1142	0.2857		
Drivers	Number of answers	2	2	2	1	6	0.7076	50%
	Normalized Score	0.0307	0.0615	0.0923	0.0615	0.4615		
Quantified questionnaire responses for CP2.1							**0.6538**	
CP1.2	**Rating**	**1**	**2**	**3**	**4**	**5**	**Total Score**	**Weight**
Managers	Number of answers	2	2	2	1	6	0.7076	50%
	Normalized Score	0.0307	0.0615	0.0923	0.0615	0.4615		
Drivers	Number of answers	4	1	6	8	4	0.6608	50%
	Normalized Score	0.0347	0.0173	0.1565	0.2782	0.1739		
Quantified questionnaire responses for CP2.2							**0.6842**	

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.2.1.3 B1.3 Entities adopting Green Procurement rules within GYR Consortium

The average number of entities adopting Green Procurement rules (GYR Consortium) is equal to 0 for CP2.1 and equal to 7 for CP2.2.

3.2.1.4 B1.4 Individuals adopting Green Procurement rules within GYR Consortium

The number of individuals adopting Green Procurement rules (GYR Consortium) is equal to 0 for CP2.1 and equal to 59 for CP2.2.

3.2.2 Awareness rising

3.2.2.1 B.2.1 Entities reached/made aware

The entities (B.2.1) reached through LIFE GYR dissemination activities and made aware of LIFE GYR initiatives and objectives are equal to 0 for CP2.1 and 2808 for CP2.2. The values of CP2.2 includes Number of national entities involved in LIFE GYR, Number of local entities involved in LIFE GYR and newsletters recipients.

3.2.2.2 B.2.2 Individuals reached / made aware

The individuals (B.2.2) reached through LIFE GYR dissemination activities and made aware of LIFE GYR initiatives and objectives are equal to 0 for CP2.1 and 18,068 for CP2.2. The values of CP2.2 includes the total views of videos and Facebook posts.

3.2.3 Networking

3.2.3.1 B.3.1 Networking activities

The number of general networking activities (B.3.1) corresponds to the number of workshops organized in the frame of GYR project. For CP2.1 B.3.1 is equal to zero and for CP2.2 is equal to 7.

3.2.3.2 B.3.2 Participation in networking activities

The number of persons participated to the workshops, webinars, conferences, and general networking activities (B.3.2) is equal to zero for CP2.1 and equal 571 for CP2.2.

3.2.3.3 B.3.3 Overall participation on networking activities

The number of groups, organizations and bodies that participated in workshops, webinars, conferences, and general networking activities (B.3.2) is equal to zero for CP2.1 and equal to 388 for CP2.2.

3.2.3.4 B.3.4 LIFE GYR relation to other EU projects and/or similar applications

The number of EU funded projects that joined networking activities with LIFE GYR or projects that LIFE GYR communicated its purposes (B3.4) is recorded in Action D2 and it is equal to zero for CP2.1 and equal to 3 for CP2.2.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

3.2.4 B.4 Training

3.2.4.1 B4.1 Trained users familiar to the web and mobile applications

The number of trained users of GYR web and mobile applications are at CP2.1 0 and at CP2.2 179 (i.e. 29 user in ATHINAKI, 22 user in PLUS, 24 user in KOUKOUZELIS, 33 user in CEDA, 29 user in ITACA, 14 user in DASCO S.A., 12 user in YOUTRADESMART, 16 user in Digicom Systems S.A.).

3.2.4.2 B4.2 Application manuals

The number of individuals to which an application manual was delivered are at CP1.1 0 and at CP1.2 231 (i.e. 41 to ATHINAKI, 29 to PLUS, 37 to KOUKOUZELIS, 38 to CEDA, 30 to ITACA, 16 to DASCO S.A., 18 to YOUTRADESMART, 22 to Digicom Systems S.A.).

3.2.5 B.5 Promotion of env. friendly distribution of goods

For CP2.1 the indicators of this categories are equal to 0. For CP2.2, the values for indicators are presented in the following list:

B.5.1: The number of companies or research institutes that got familiar with LIFE GYR initiative (via mailing lists, conferences, webinars, etc.) are 391.

B.5.2: The news published in LIFE GYR website are 197.

B.5.3: The total people reached through social media are 13,756.

B.5.4: The total number of notice boards is 8.

B.5.5: The total number persons informed through notice boards is 960 (i.e. 120 persons on average per beneficiary).

B.5.6: The total number of poster is 40.

B.5.7: The total number of persons informed though posters 1660 including all the events participating.

B.5.8: The total number of flyers is 10.000.

B.5.9: The total number of persons informed though flyers 9.500.

B.5.10: The total number of videos produced is 5.

B.5.11: The total number of persons informed though videos 4.312 (including YouTube and Facebook views).

B.5.12: The total number of workshops organized is 7.

B.5.13: The total number of persons that participated in workshops is 271.

B.5.14: The total number of organizations that participated in workshops is 152.

B.5.15: The total number of webinars organized is 23.

B.5.16: The total number of persons that participated in webinars 30.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

B.5.17: The total number of number of organizations that participated in webinars is 23.

B.5.18: The total number of reports is 31.

B.5.19: The number of authorities in which paper or electronic version of Layman's report distributed is 47.

B.5.20: The total number of recipients that received the Layman's report electronically is 34.

B.5.21: The total number of newsletter is 11.

B.5.22: The total number of recipients of newsletters 3098.

B.5.23: The total number of hits of the website is 5109.

B.5.24: The total unique visitors of the project's website 3714.

B.5.25: The total number of social media accounts is 3 (i.e. Facebook, YouTube and LinkedIn)

B.5.26: Number of followers in LIFE GYR's Facebook page is 535.

B.5.27: Participation in conferences and /or scientific events is 3.

3.2.6 LIFE GYR tools acceptance

3.2.6.1 B6.1 Total routing requests of LIFE GYR platform

The total number of routing requests of LIFE GYR platform is equal to 0 for CP2.1 and for CP2.2 is equal to 25,114.

3.2.6.2 B6.2 Routing needs coverage within GYR consortium

The average duration of a user utilizing LIFE GYR platform is equal to 0 for CP2.1 and for CP2.2 is equal to 252 minutes.

3.2.6.3 B6.3 Rating score of GYR platform (managers)

The values of the rating score of the application is assessed based on responses received by the GreenYourRoute Questionnaire for managers within GYR Consortium (before GYR platform release) (link) and the GreenYourRoute Questionnaire for managers within GYR Consortium (after GYR platform release) (link).

More specifically it is based on the following question for CP2.1:

- Creation of the daily routing plan;
- Access to the details of an order;
- Access to data on traveling distance and time;
- Access to information on the actual position of a truck;
- Creation of clusters;
- Information and details of an order;
- Information on the progress of each driver's assigned plan;
- Daily reports and statistics on the orders' distribution efficiency;
- Daily reports and statistics on the fleet's efficiency.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

and the following questions for CP2.2

- Modifications in the initial routing plan while it is performed;
- Communication with the depot to retrieve further information on an order;
- Inform the depot for the status of an order;
- Assigned routing plan efficiency;
- Format of the routing plan;
- Information and details for each order;
- Accuracy of the estimated arrival and departure times at the assigned destination points.

The responses of the questionnaires are assessed in the following table. The total score of each question is calculated by summing the normalized rating score calculated by the percentage of the responders selecting the rating score.

Table 22: Environmental footprint consideration – real life practice

CP1.1	Rating	1	2	3	4	5	Total Score	Weight
Managers	Number of answers	10	9	13	22	9	0.6349	100%
	Normalized Score	0.0317	0.0571	0.1238	0.2793	0.1428		
CP1.2	Rating	1	2	3	4	5	Total Score	Weight
Managers	Number of answers	11	13	13	30	24	0.6945	100%
	Normalized Score	0.0241	0.0571	0.0857	0.2637	0.2637		

3.2.6.4 B6.4 Rating score of GYR platform (drivers)

The values of the rating score of the application is assessed based on responses received by the GreenYourRoute Questionnaire for managers within GYR Consortium (before GYR platform release) (link) and the GreenYourRoute Questionnaire for managers within GYR Consortium (after GYR platform release) (link).

More specifically it is based on the following question for CP2.1:

- Modifications in the initial routing plan while it is performed
- Communication with the depot to retrieve further information on an order
- Inform the depot for the status of an order Assigned routing plan efficiency
- Format of the routing plan Information and details for each order
- Accuracy of the estimated arrival and departure times at the assigned destination points

and the following questions for CP2.2

- Modifications in the initial routing plan while it is performed
- Communication with the depot to retrieve further information on an order
- Inform the depot for the status of an order

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

- Assigned routing plan efficiency
- Format of the routing plan
- Information and details for each order
- Accuracy of the estimated arrival and departure times at the assigned destination points
- Quality of the application
- Design of the application
- Ease of use
- Usability of the provided functionalities
- Information provided for the assigned routing plan Information provided for each assigned order
- GYR platform covers my daily routing needs

The responses of the questionnaires are assessed in the following table. The total score of each question is calculated by summing the normalized rating score calculated by the percentage of the responders selecting the rating score.

Table 23: Environmental footprint consideration – real life practice

CP1.1	Rating	1	2	3	4	5	Total Score	Weight
Drivers	Number of answers	11	13	13	30	24	0.6945	100%
	Normalized Score	0.0241	0.0571	0.0857	0.2637	0.2637		
CP1.2	Rating	1	2	3	4	5	Total Score	Weight
Drivers	Number of answers	0	0	3	94	225	0.9378	100%
	Normalized Score	0	0	0.0055	0.2335	0.6987		

3.2.6.5 B6.5 Rating score of GYR platform (policy makers)

The values of the rating score of the application is assessed based on responses received by the GreenYourRoute Questionnaire for policy makers participating in workshops and webinars (link). For CP2.1 the rating score is equal to 0 as the GYR service does not exist before the organization of the workshops and webinars. For CP2.2 the rating score is obtained based on the following questions:

- Quality of the application;
- Design of the application;
- Importance for logistics companies;
- Importance for European Union environmental policies objectives Credibility of the application;
- Sustainability of the application;
- Attractiveness of the application;

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

- GreenYourRoute introduces an innovative policy in the pan-European transport system, based on the environmentally friendliest routing of vehicles, by demonstrating that environmental friendly is also cost saving;
- GreenYourRoute is aligned with the objectives set in the 7th Environment Action Programme;
- GreenYourRoute is aligned with the objectives of the Roadmap to a resource Efficient Europe policy;
- GreenYourRoute contributes to the implementation of EU emission reduction commitments under UNFCCC KyotoProtocol;
- GreenYourRoute supports the implementation of air quality legislation and facilitates compliance with union air quality and related air emissions standards including Directive 2001/81/EC;
- GreenYourRoute implements and updates Decision 93/389/EEC for a monitoring mechanism for Community CO2 and other greenhouse gas emissions and Access to Environmental Information (90/313/EEC);
- GreenYourRoute supports the implementation of Directive 2009/33/EC [12] on the promotion of clean and energy efficient road transport vehicles;
- What is the potential of GreenYourRoute application's contribution in reducing GHG and non-GHG emissions?
- What is the potential of GreenYourRoute application's contribution in introducing an innovative policy in the pan-European transport system?
- Likelihood of recommending GreenYourRoute application;

Table 24: Quality of the apps – Policy makers

CP1.2	Rating	1	2	3	4	5	Total Score	Weight
Policy Makers	Number of answers	39	25	67	212	411	0.8469	100%
	Normalized Score	0.0103	0.0132	0.0533	0.2249	0.5450		

3.2.6.6 B6.6 Number of drivers using the LIFE GYR smartphone application and the number of managers using web application

The number of users of GYR mobile applications are at CP1.1 0 and at CP1.2 149 (i.e. 22 for ATHINAKI, 18 PLUS, 21 KOUKOUZELIS, 29 CEDA, 24 ITACA, 11 DASCO S.A., 11 YOUTRADESMART, 13 Digicom Systems S.A.).

3.2.7 Update of EU policy

For the indicators of this category the value of each one of the indicators for CP2.1 is equal to 0 as the application is not available at the CP2.1. In the following subsection the value of CP2.2 is defined.

3.2.7.1 B7.1 Number of policy makers invited in workshops

The number of policy makers invited to the workshops organized in the frame of the project is equal to 64.

3.2.7.2 B7.2 Average number of policy makers participated in workshops

The number of policy makers participated in workshops is equal to 46.

3.2.7.3 B7.3 Number of travels for meeting policy makers

The number of travels for meeting policy makers for CP2.1 was equal to 4 and the number of travels for meeting policy makers after the release of the application (for CP2.2) was equal to 6.

3.2.7.4 B7.4 Number of policy makers contacted during networking activities aiming to update EU policy

The number of policy makers contacted during networking activities aiming to update EU policy was equal to 62.

3.2.7.5 B7.5 Number of policy makers to which an electronic version of the report including the potential updating of EU policy and legislation sent

The number of policy makers to which an electronic version of the report including the potential updating of EU policy and legislation was sent is equal to 73.

3.2.7.6 B7.6 Project contribution to the environmental objectives of the EU

The project's contribution to the environmental objectives of the EU is presented in the following table and is assessed based on responses received by the "GreenYourRoute Questionnaire for policy makers" available at link.

Table 25: Contribution to EU green objectives

CP1.2	Rating	1	2	3	4	5	Total Score	Weight
Policy Makers	Number of answers	0	6	42	111	99	0.8348	100%
	Normalized Score	0	0.0093	0.0976	0.3441	0.3837		

3.2.8 Environmental factors

The following table (presented also in Deliverable C1) presents the fuel consummated and emissions emitted at CP2.1 and CP2.2. The fuel consumed and emission emitted at CP2.1 correspond to the values obtained using the simulation tool developed in the frame of Action C3 and the fuel consumed and emission emitted at CP2.2 correspond to the values obtained by the actual implementation of the routing plan obtained by GYR service and implemented during real life demonstration.

Table 26: Environmental factors

Indicator	Fuel & pollutants	Actual	Simulated
Average amount of consumed fuels per travelled kilometers	FC tns per 10,000 km	3.380656	5.687700
Amount of CO2 emitted per travelled kilometers	CO2 tns per 10,000 km	10.537582	17.850422

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Amount of emitted CH4 per travelled kilometers	CH4 kg per 10,000 km	0.373407	0.599850
Amount of emitted CO per travelled kilometers	CO kg per 10,000 km	39.821721	66.566873
Amount of emitted N2O per travelled kilometers	N2O kg per 10,000 km	0.211316	0.355646
Amount of emitted NH3 per travelled kilometers	NH3 kg per 10,000 km	0.069601	0.115998
Amount of emitted NOx per travelled kilometers	NOx tns per 10,000 km	0.086294	0.143383
Amount of emitted PM per travelled kilometers	PM kg per 10,000 km	1.123208	1.816518
Amount of emitted VOC per travelled kilometers	VOC kg per 10,000 km	4.656690	7.557140
Amount of emitted SO2 per travelled kilometers	SO2 kg per 10,000 km	0.218388	0.367526

4 Results of the model

The results of the model will be the numeric values for the data gathered and their comparative analysis of the different CPs.

This is an example of the criteria related to Improved know–how & Increased competitiveness in the economic sector. The values set in Figure 3 are only test values. These tables will be generated for all the criteria.

Figure 3: Example of data gathered – values for Improved know–how & Increased competitiveness

Type	Economic	
Category	A.4 Improved know–how & Increased competitiveness	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Know-how improvement within LIFE GYR - institutes	1	2
Know-how improvement within LIFE GYR - companies	3	7
Know-how improvement within LIFE GYR - persons	20	30
New products (tools, methods, platforms, software, etc)	1	5
Grand Total	**25**	**44**

In Figure 4 the values per CP are depicted in a pivot chart to enable the user to get a quick understanding of the increase of the Improved know–how & Increased competitiveness during LIFE GYR lifetime. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 4: Pivot Chart of exemplary data for Improved know-how & Increased competitiveness

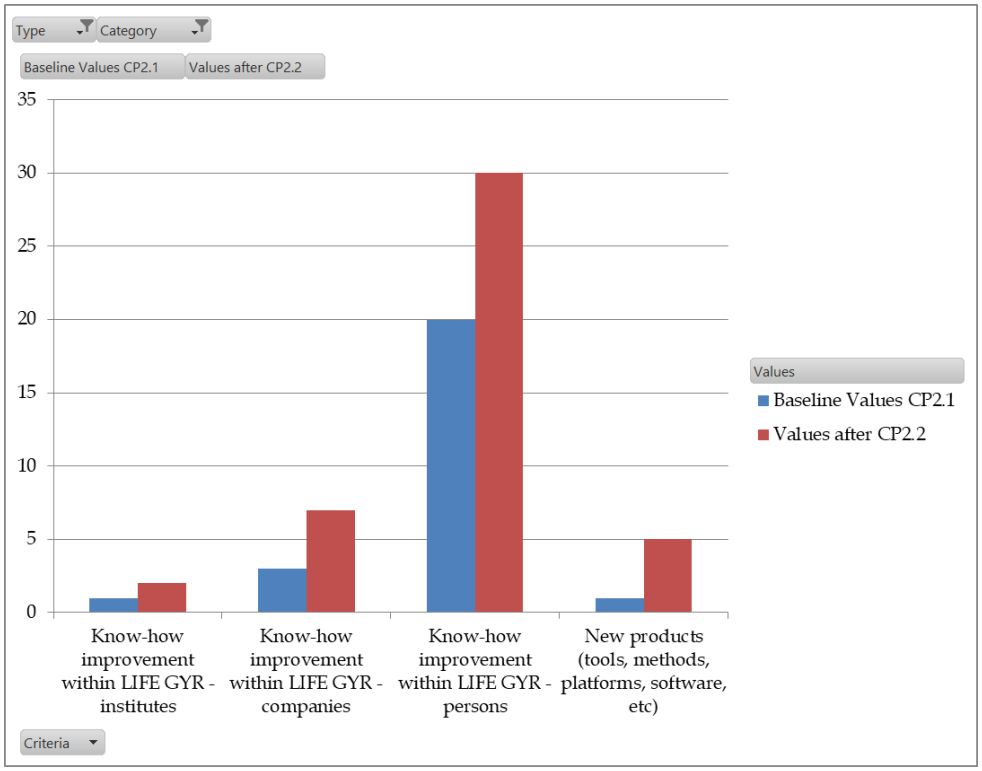


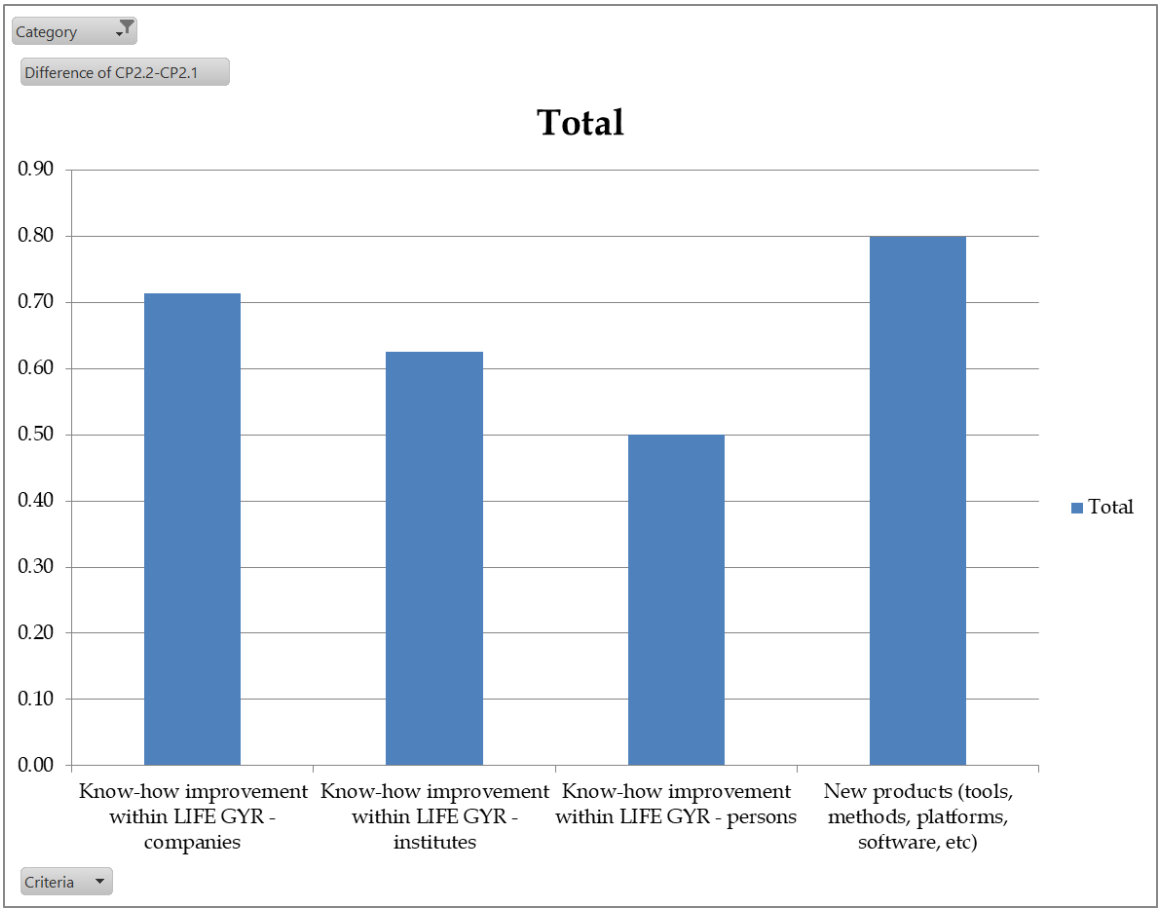
Figure 5 and Figure 6 indicate the increase of Improved know-how & Increased competitiveness based on the difference of the values gathered at every CP.

Figure 5: Increase of Improved know-how & Increased competitiveness per CP

Category	A.4 Improved know-how & Increased competitiveness
Criteria	**Difference of CP2.2-CP2.1**
Know-how improvement within LIFE GYR - companies	0.71
Know-how improvement within LIFE GYR - institutes	0.63
Know-how improvement within LIFE GYR - persons	0.50
New products (tools, methods, platforms, software, etc)	0.80
Grand Total	**2.64**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 6: Pivot chart of the increase of Improved know-how & Increased competitiveness per CP



Given that all necessary data at all CPs are gathered, the model is able to depict the increase of each grouped category (or individual criteria) and their difference among CPs.

4.1 A1 Reduction of transport cost

The category "A1 Reduction of transport cost" in the economic sector includes 3 criteria: 1) A1.1 Empty kilometers, 2) A1.2 Optimize Load Fulfilment and 3) A1.3 Dependence of Trucks. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

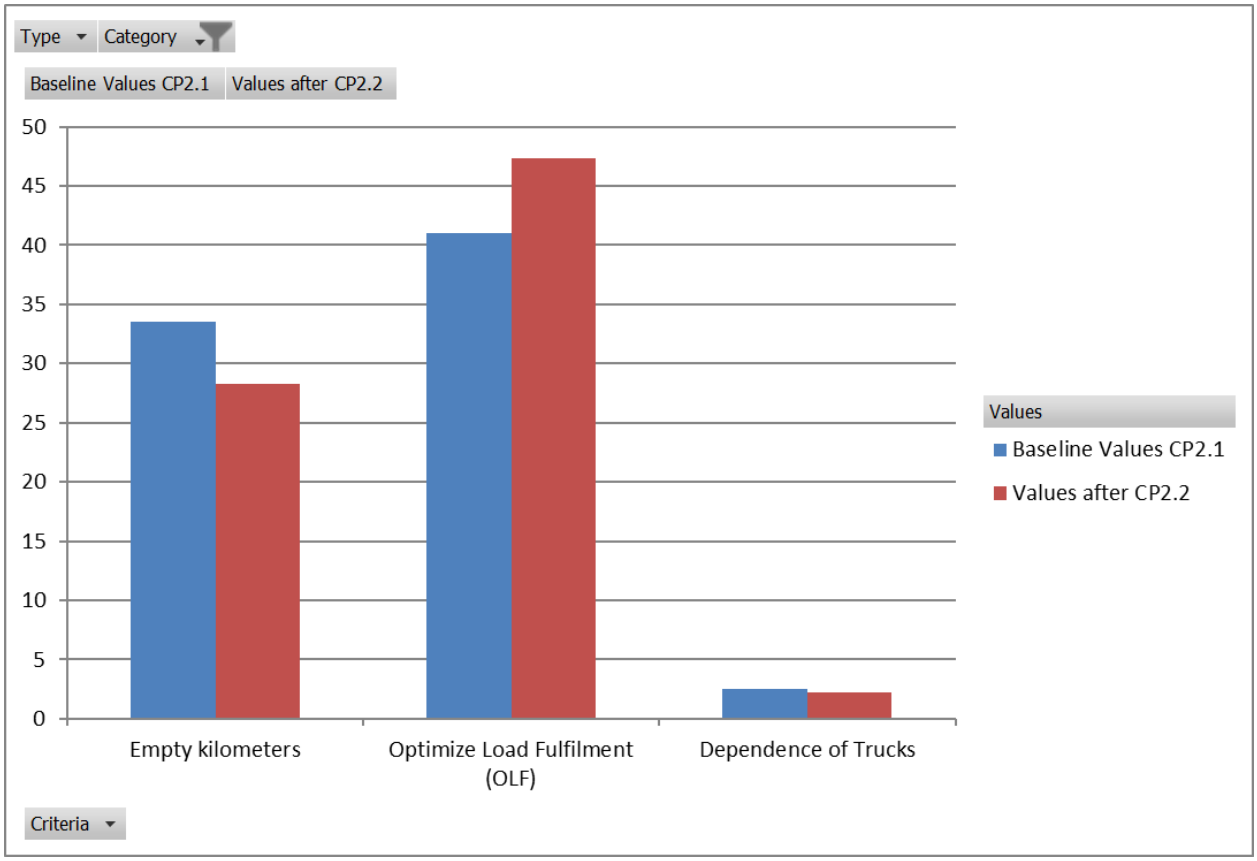
Figure 7: Data gathered for the criteria of the category "A1 Reduction of transport cost"

Category	A.1 Reduction of transport cost	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Empty kilometers	33.52	28.24
Optimize Load Fulfilment (OLF)	41.06	47.38
Dependence of Trucks	2.52	2.24
Grand Total	**77.1**	**77.86**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 8: Pivot Chart of the data for the criteria of the category "A1 Reduction of transport cost"



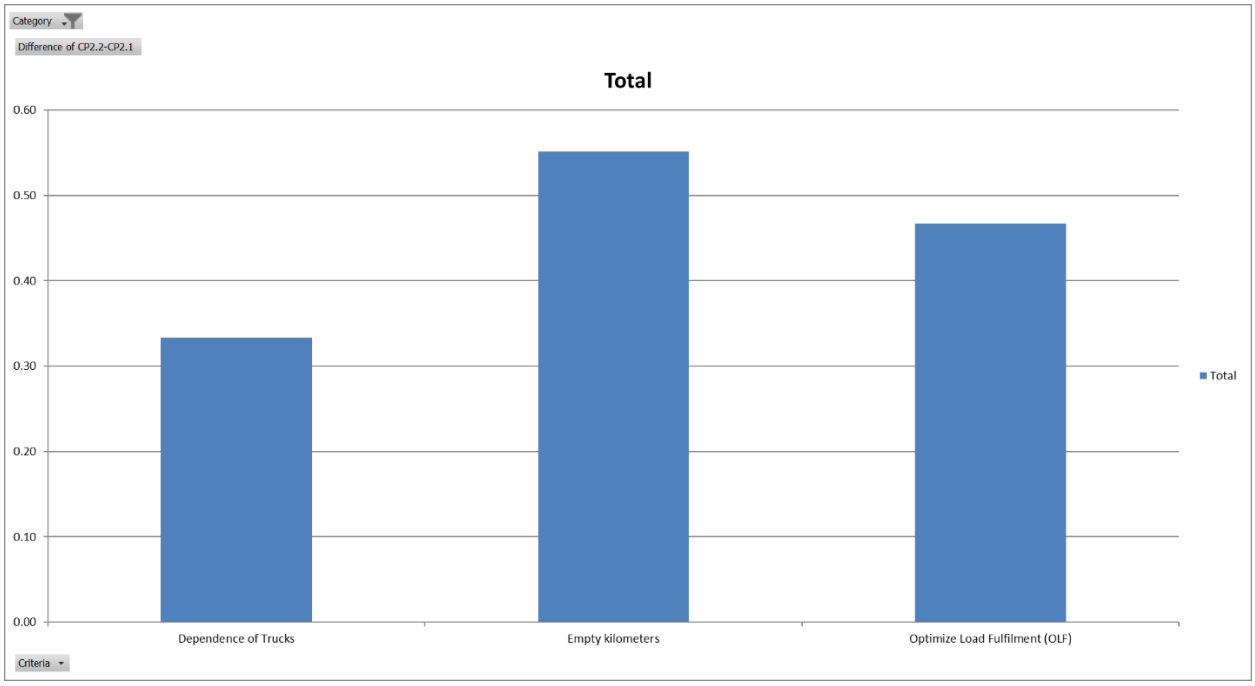
In the following two figures the improvement of the criteria of category "A1 Reduction of transport cost" based on the difference of the values gathered at every CP is presented.

Figure 9: Improve of the criteria of the category "A1 Reduction of transport cost" per CP

Category	A.1 Reduction of transport cost
Criteria	**Difference of CP2.2-CP2.1**
Dependence of Trucks	0.33
Empty kilometers	0.55
Optimize Load Fulfilment (OLF)	0.47
Grand Total	**1.35**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 10: Pivot chart of the improvement of the criteria of the category "A1 Reduction of transport cost" per CP



The empty kilometers criterion is the most improved cretierio due to the use of GYR service. The empty kilometers at CP2.1 are the 33.68% of the total kilometers traveled and at CP2.2 during real life practice of GYR service are the 28.24% of the total kilometers.

4.2 A2 Economic efficiency

The category "A2 Economic efficiency" in the economic sector includes 3 criteria: 1) A2.1 Fuel consumption, 2) A2.2 Fuel efficiency and 3) A2.3 Maintenance costs. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

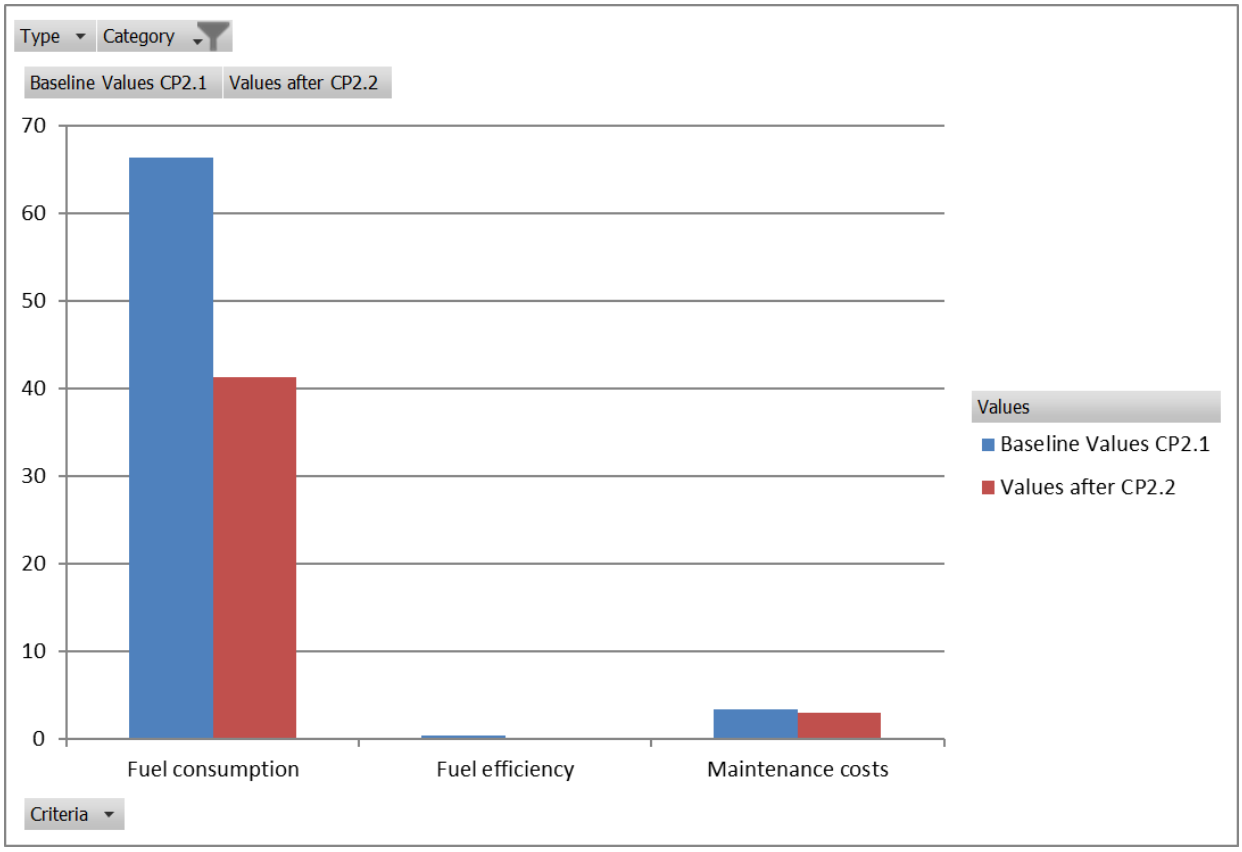
Figure 11: Data gathered for the criteria of the category "A2 Economic efficiency"

Category	A.2 Economic efficiency	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Fuel consumption	66.3	41.29
Fuel efficiency	0.396	0.133
Maintenance costs	3.42	2.95
Grand Total	**70.116**	**44.373**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 12: Pivot Chart of the data for the criteria of the category "2 Economic efficiency"



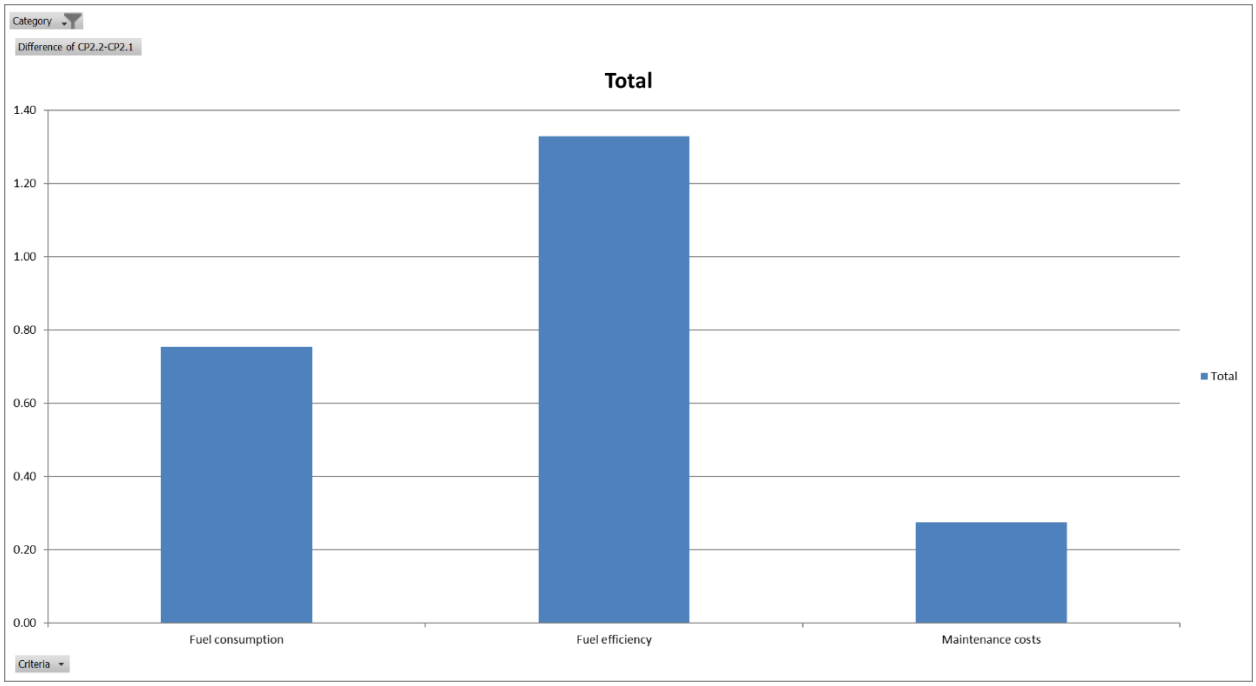
In the following two figures the improvement of the criteria of category "A2 Economic efficiency" based on the difference of the values gathered at every CP is presented.

Figure 13: Improve of the criteria of the category "A2 Economic efficiency" per CP

Category	A.2 Economic efficiency
Criteria	**Difference of CP2.2-CP2.1**
Fuel consumption	0.75
Fuel efficiency	1.33
Maintenance costs	0.27
Grand Total	**2.36**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 14: Pivot chart of the improvement of the criteria of the category "A2 Economic efficiency" per CP



The figures above show that the fuel efficiency criterion which shows the lt/tkm has been improved the most by the use of GYR service. The improvement of the fuel efficiency is followed also by the improvement of fuel consumption which is translated to fuel consumed per 100km.

4.3 A3. Freight distributors' involvement

The category "A3. Freight distributors' involvement" in the economic sector includes 3 criteria: 1) A3.1 Number of demonstrators involved in LIFE GYR, 2) A3.2 Number of national entities involved in LIFE GYR, 3) A3.3 Number of local entities involved in LIFE GYR. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

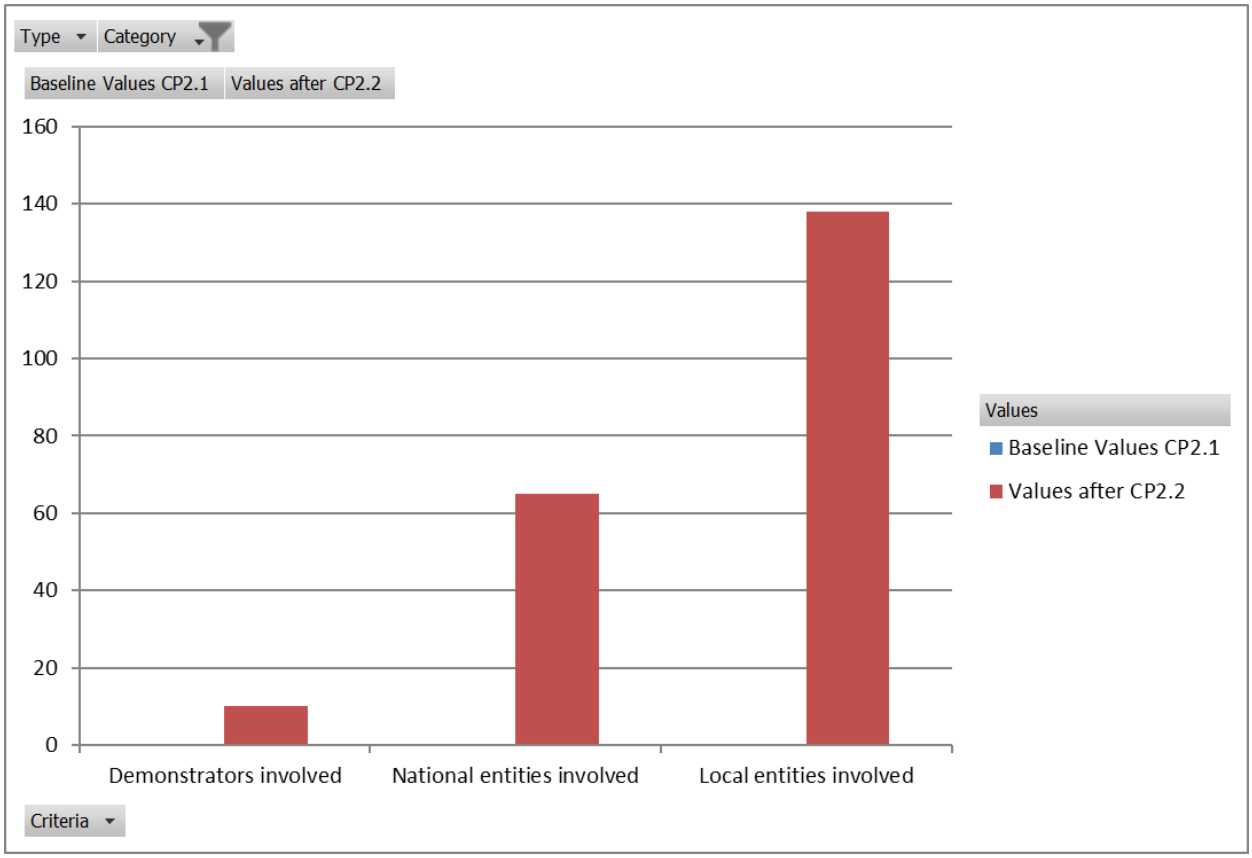
Figure 15: Data gathered for the criteria of the category "A3. Freight distributors' involvement"

Category	A.3 Freight distributors' involvement	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Demonstrators involved	0	10
National entities involved	0	65
Local entities involved	0	138
Grand Total	**0**	**213**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 16: Pivot Chart of the data for the criteria of the category "A3. Freight distributors' involvement"

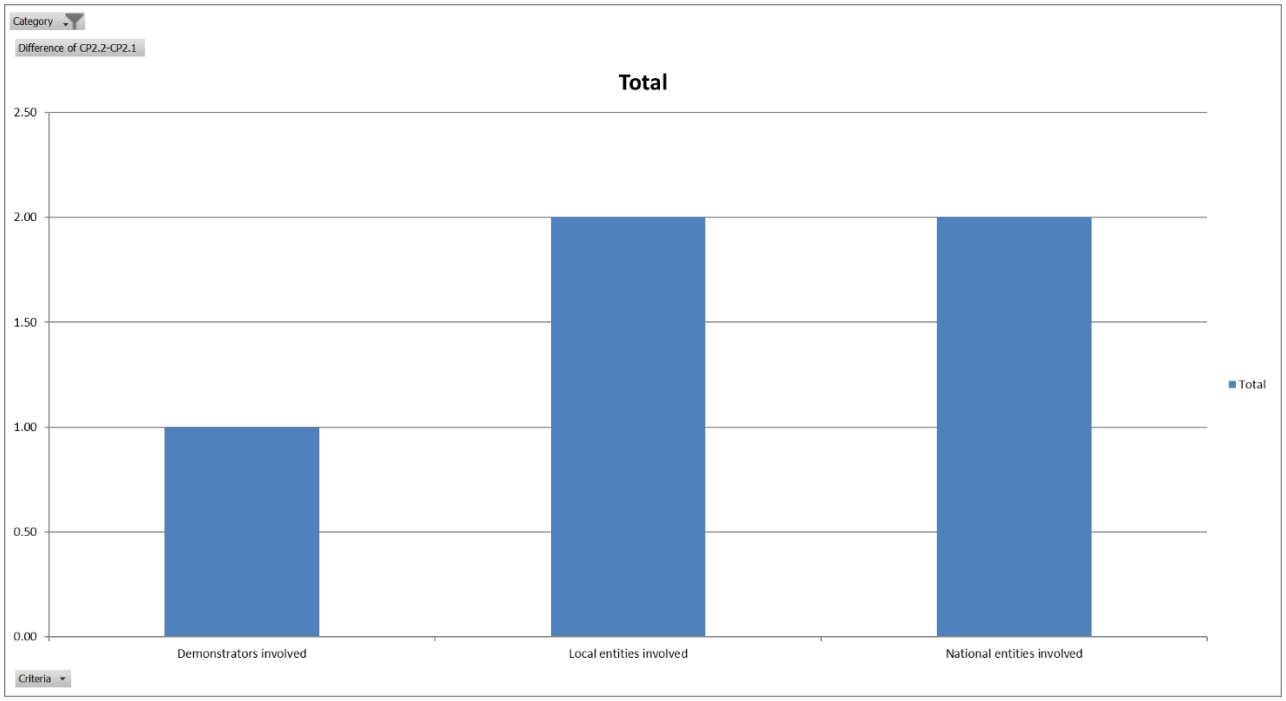


In the following two figures, the improvement of the criteria of category A3. Freight distributors' involvement based on the difference of the values gathered at every CP is presented.

Figure 17: Improve of the criteria of the category "A3. Freight distributors' involvement" per CP

Category	A.3 Freight distributors' involvement
Criteria	**Difference of CP2.2-CP2.1**
Demonstrators involved	1.00
Local entities involved	2.00
National entities involved	2.00
Grand Total	**5.00**

Figure 18: Pivot chart of the improvement of the criteria of the category "A3. Freight distributors' involvement" per CP



The above numbers show an important involvement of local and national entities into the LIFE GYR project. In total, 65 and 135 national and local entities respectively were involved into the project with their participation to workshops, webinars and conferences organized by UTH, MILITO, CEDA and ITACA.

4.4 A4 Improved know-how & increased competitiveness

The category "A4 Improved know–how & Increased competitiveness" in the economic sector includes 4 criteria: 1) A4.1 Number of institutes improved know – how because of LIFE GYR (within consortium), 2) A4.2 Number of companies improved know – how because of LIFE GYR (within consortium), 3) A4.3 Number of persons improved know – how, within consortium and 4) A4.4 Number of new products (tools, methods, platforms, etc.). The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

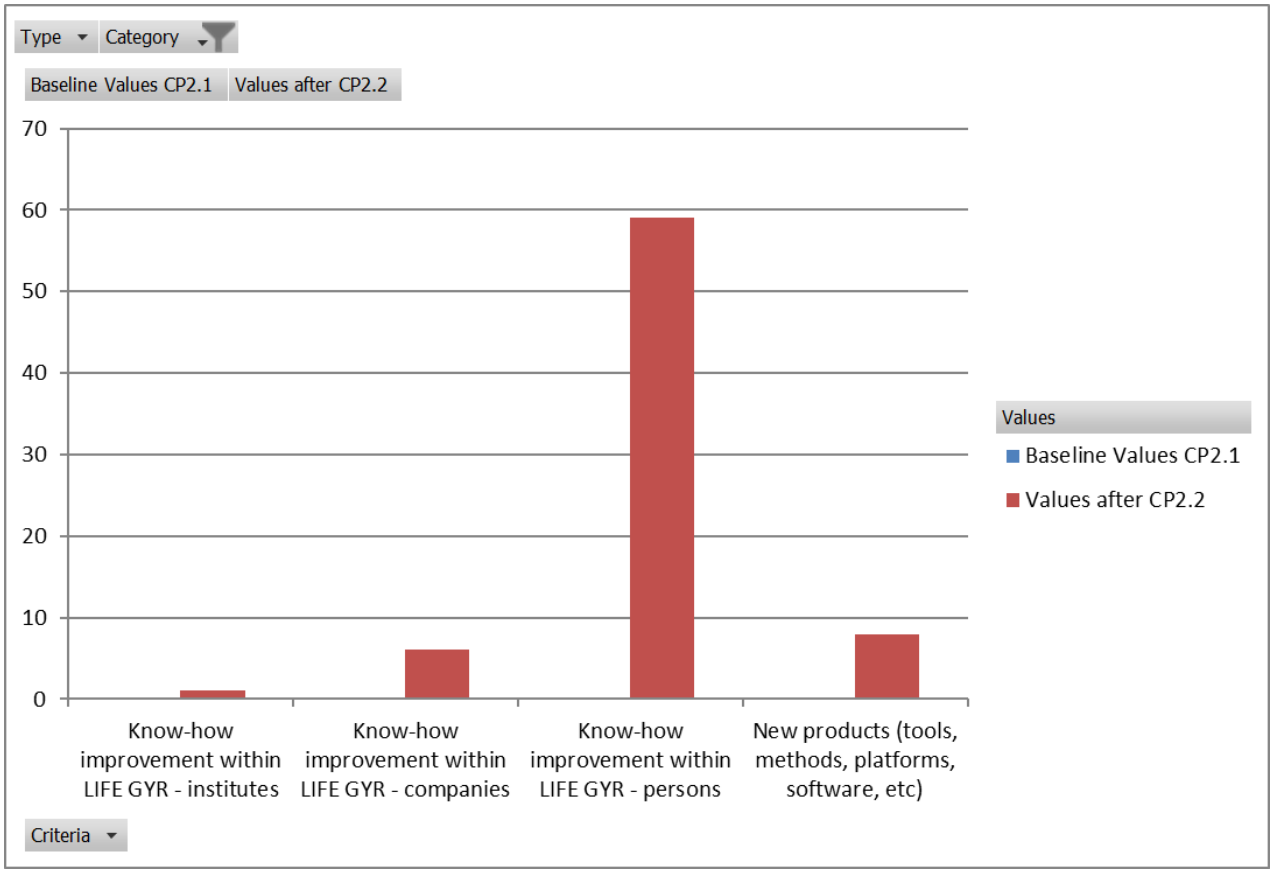
Figure 19: Data gathered for the criteria of the category "A4 Improved know–how & Increased competitiveness"

Category	A.4 Improved know–how & Increased competitiveness	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Know-how improvement within LIFE GYR - institutes	0	1
Know-how improvement within LIFE GYR - companies	0	6
Know-how improvement within LIFE GYR - persons	0	59
New products (tools, methods, platforms, software, etc)	0	8
Grand Total	**0**	**74**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 20: Pivot Chart of the data for the criteria of the category "A4 Improved know–how & Increased competitiveness"



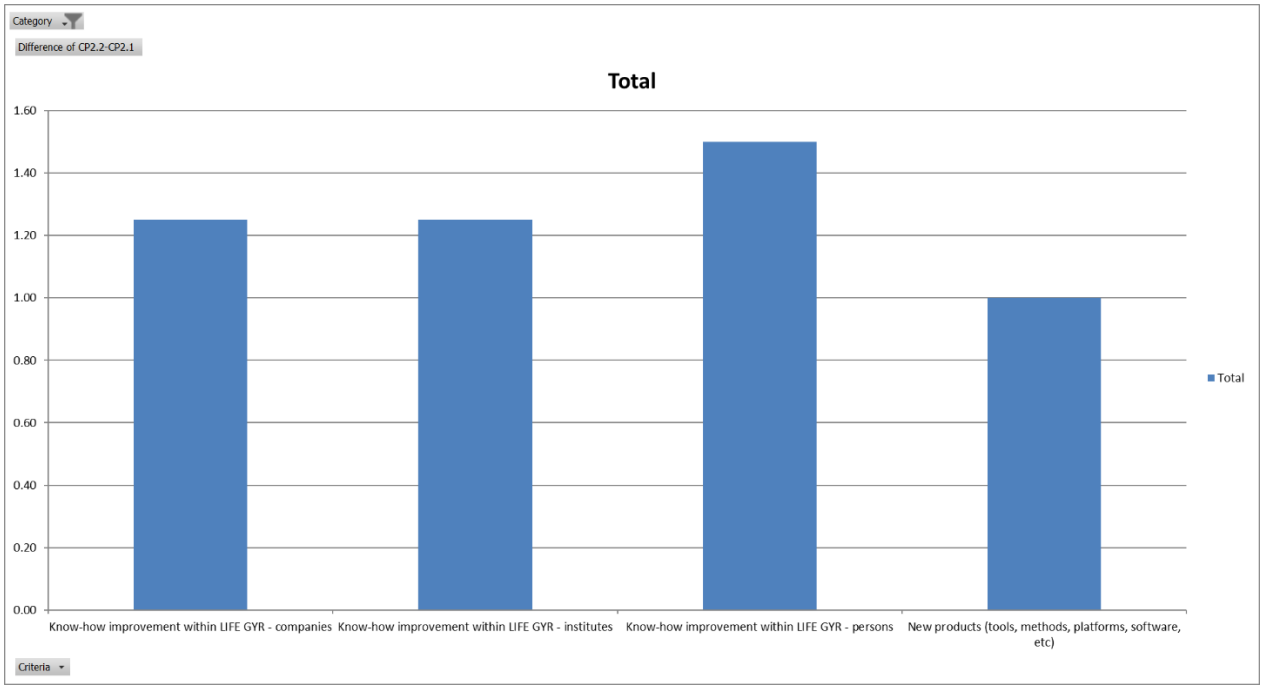
In the following two figures the improvement of the criteria of category "A4 Improved know–how & Increased competitiveness" based on the difference of the values gathered at every CP is presented.

Figure 21: Improve of the criteria of the category "A4 Improved know–how & Increased competitiveness" per CP

Category	A.4 Improved know–how & Increased competitiveness
Criteria	**Difference of CP2.2-CP2.1**
Know-how improvement within LIFE GYR - companies	1.25
Know-how improvement within LIFE GYR - institutes	1.25
Know-how improvement within LIFE GYR - persons	1.50
New products (tools, methods, platforms, software, etc)	1.00
Grand Total	**5.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 22: Pivot chart of the improvement of the criteria of the category "A4 Improved know–how & Increased competitiveness" per CP



The above figures show that the highest impact of the "A4 Improved know–how & Increased competitiveness" category corresponds to the Know-how improvement of individuals including 59 persons. In addition, it is shown that the know-how improvement of companies and institute is the same.

4.5 A5 Employment generation

The category "A5 Employment generation" in the economic sector includes 3 criteria: 1) A5.1 Additional regional employment, 2) A5.2 Increased of workload, 3) A5.3 New part or full time positions. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

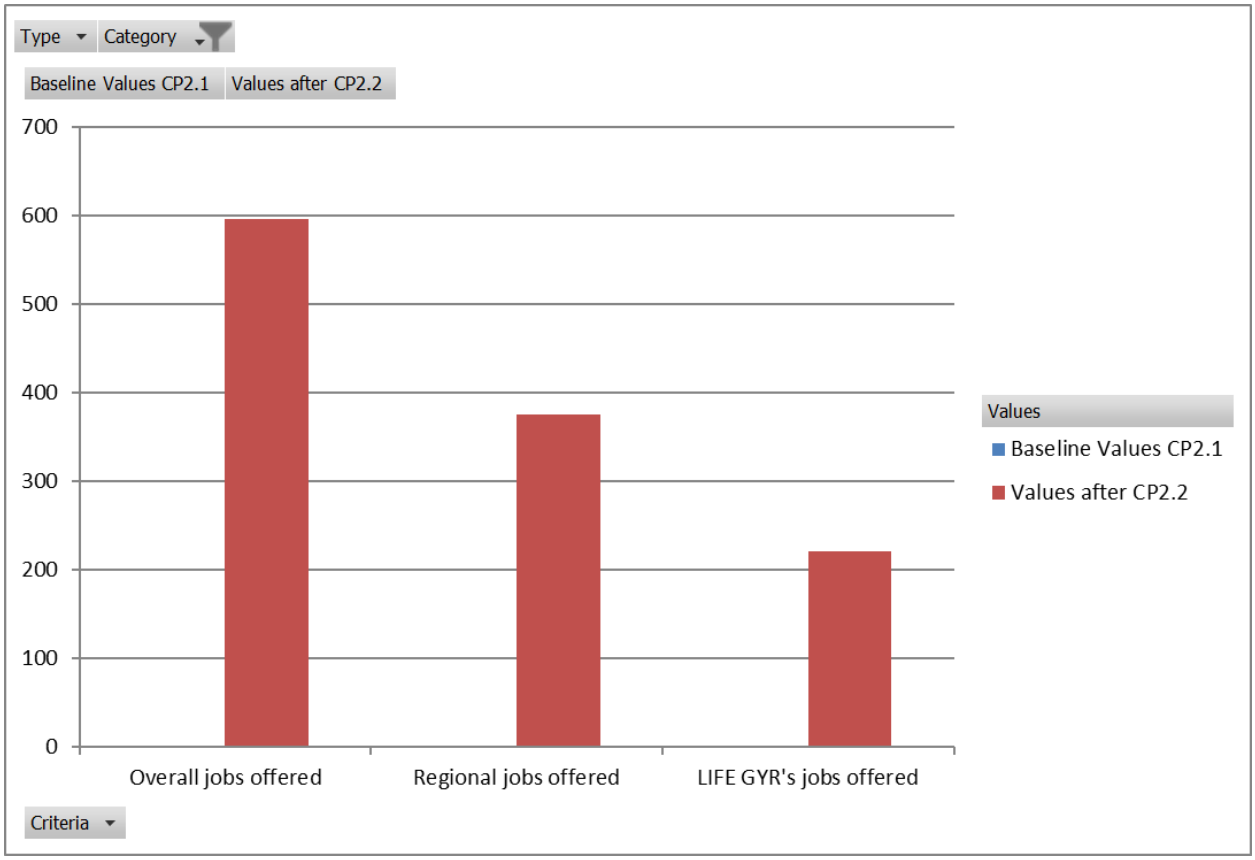
Figure 23: Data gathered for the criteria of the category "A5 Employment generation"

Category	A.5 Employment generation	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Overall jobs offered	0	596.32
Regional jobs offered	0	375.28
LIFE GYR's jobs offered	0	221.04
Grand Total	**0**	**1192.64**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 24: Pivot Chart of the data for the criteria of the category "A5 Employment generation"



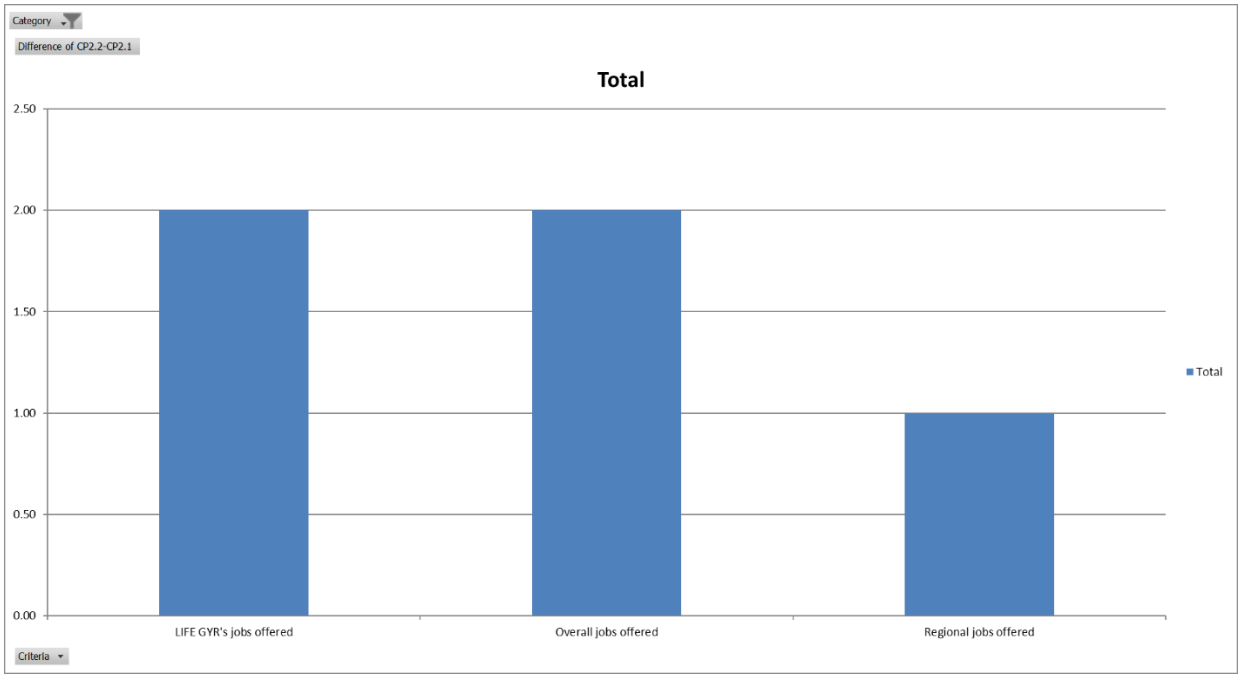
In the following two figures the improvement of the criteria of category A5 Employment generation based on the difference of the values gathered at every CP is presented.

Figure 25: Improve of the criteria of the category "A5 Employment generation" per CP

Category	A.5 Employment generation
Criteria	**Difference of CP2.2-CP2.1**
LIFE GYR's jobs offered	2.00
Overall jobs offered	2.00
Regional jobs offered	1.00
Grand Total	**5.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 26: Pivot chart of the improvement of the criteria of the category A5 Employment generation per CP



The LIFE GYR's job offered and the overall jobs offered are both equally significant affected by the implementation of the LIFE GYR project.

4.6 A6 Market uptake

The category "A6 Market uptake" in the economic sector includes 3 criteria: 1) A6.1 Average amount of expected revenues for GYR company per year, 2) A6.2 Number of customers using the GYR platform, 3) A6.3 Average amount of expenses for GYR company. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

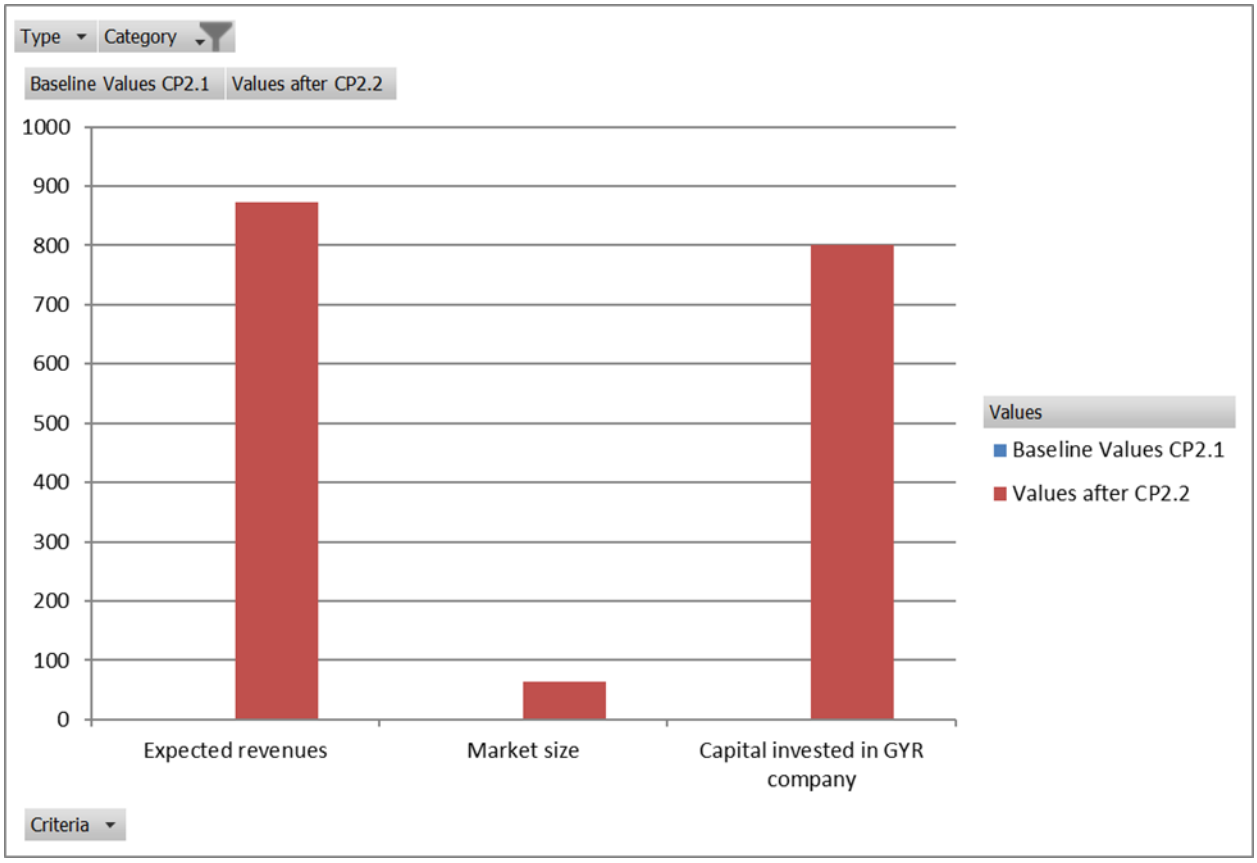
Figure 27: Data gathered for the criteria of the category "A6 Market uptake"

Category	A.6 Market Uptake	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Expected revenues	0	873.527
Market size	0	63
Capital invested in GYR company	0	801.441
Grand Total	**0**	**1737.968**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 28: Pivot Chart of the data for the criteria of the category "A6 Market uptake"



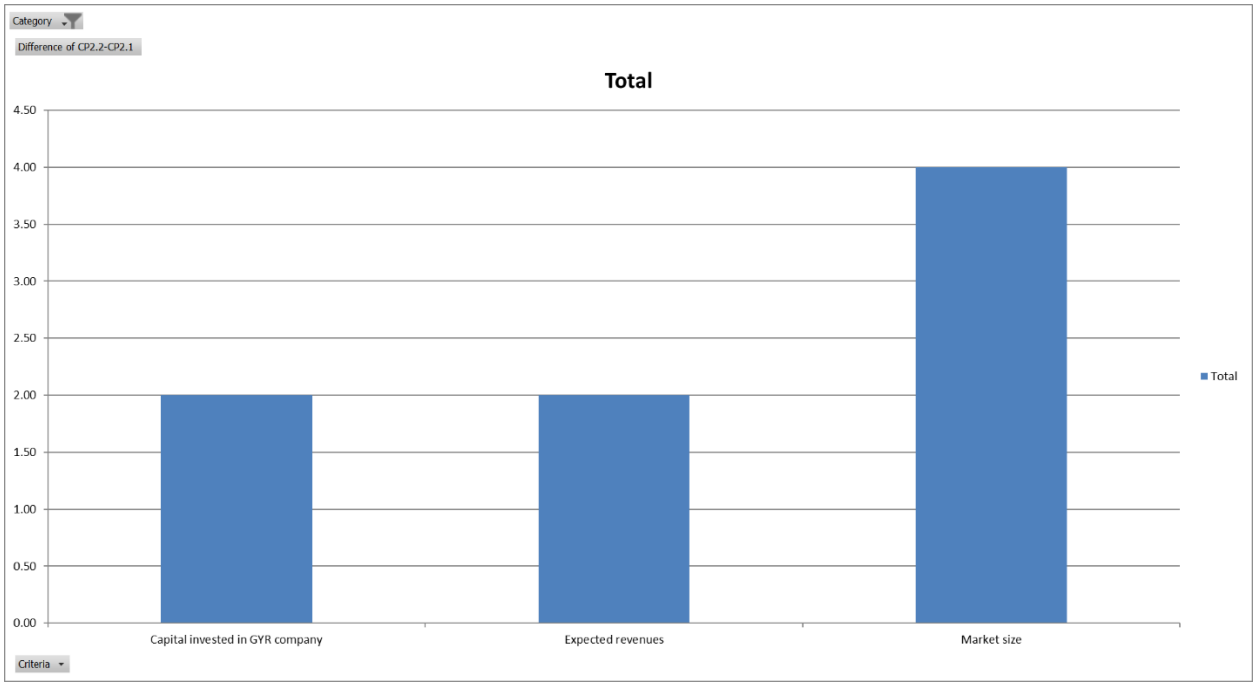
In the following two figures the improvement of the criteria of category "A6 Market uptake" based on the difference of the values gathered at every CP is presented.

Figure 29: Improve of the criteria of the category A6 Market uptake per CP

Category	A.6 Market Uptake
Criteria	**Difference of CP2.2-CP2.1**
Capital invested in GYR company	2.00
Expected revenues	2.00
Market size	4.00
Grand Total	**8.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 30: Pivot chart of the improvement of the criteria of the category "A6 Market uptake" per CP



Based on the business plan developed in the frame of the project for the GYR company, the average amount of expected revenues for GYR company per year and the number of customers using the GYR platform have equal impact to the category "A6 Market uptake" and the average amount of expenses for GYR company has double impact compared to them.

4.7 A7 Replication

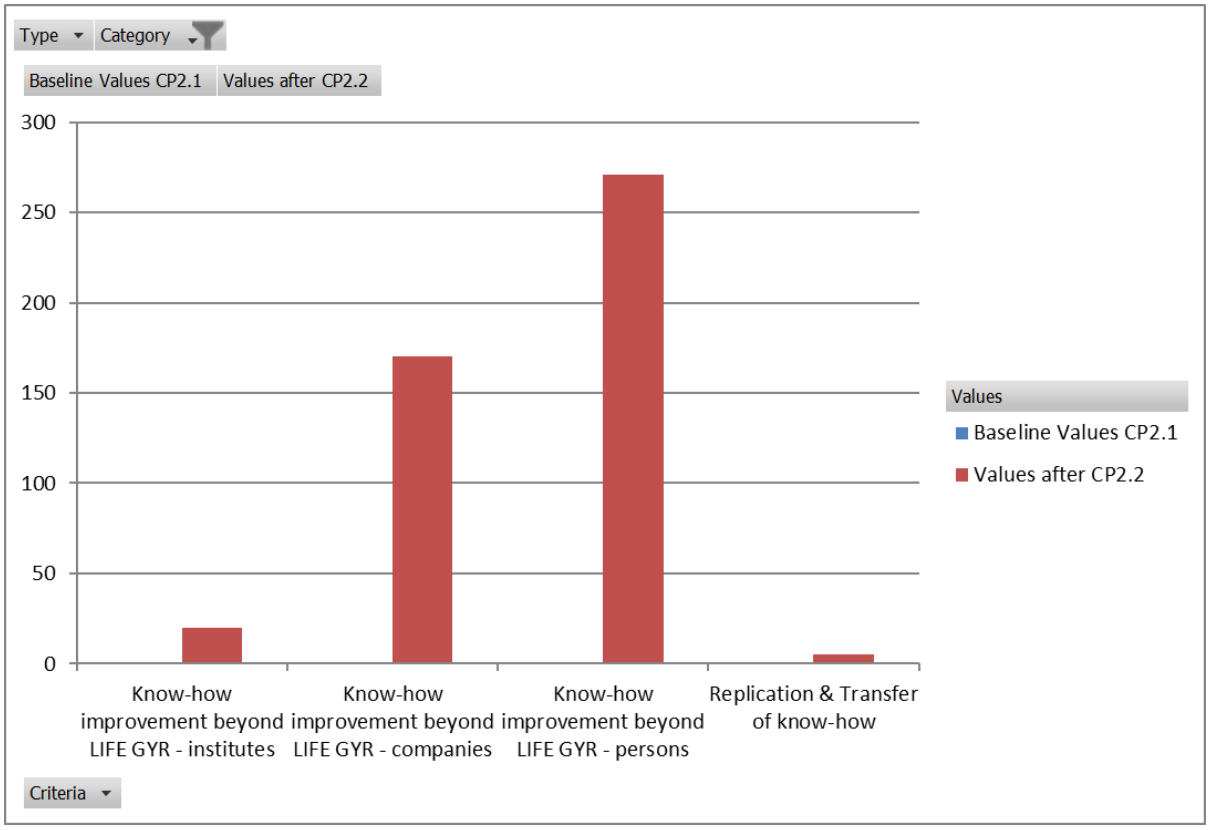
The category "A7 Replication" in the economic sector includes 4 criteria: 1) A7.1 Number of new customers contracted, 2) A7.2 Number of institutes improved know – how because of LIFE GYR (beyond consortium), 3) A7.3 Number of companies improved know – how because of LIFE GYR (beyond consortium), 4) A7.4 Number of persons improved know – how (beyond consortium). The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

Figure 31: Data gathered for the criteria of the category "A7 Replication"

Category	A.7 Replication	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Know-how improvement beyond LIFE GYR - institutes	0	20
Know-how improvement beyond LIFE GYR - companies	0	170
Know-how improvement beyond LIFE GYR - persons	0	271
Replication & Transfer of know-how	0	5
Grand Total	**0**	**466**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 32: Pivot Chart of the data for the criteria of the category "A7 Replication"



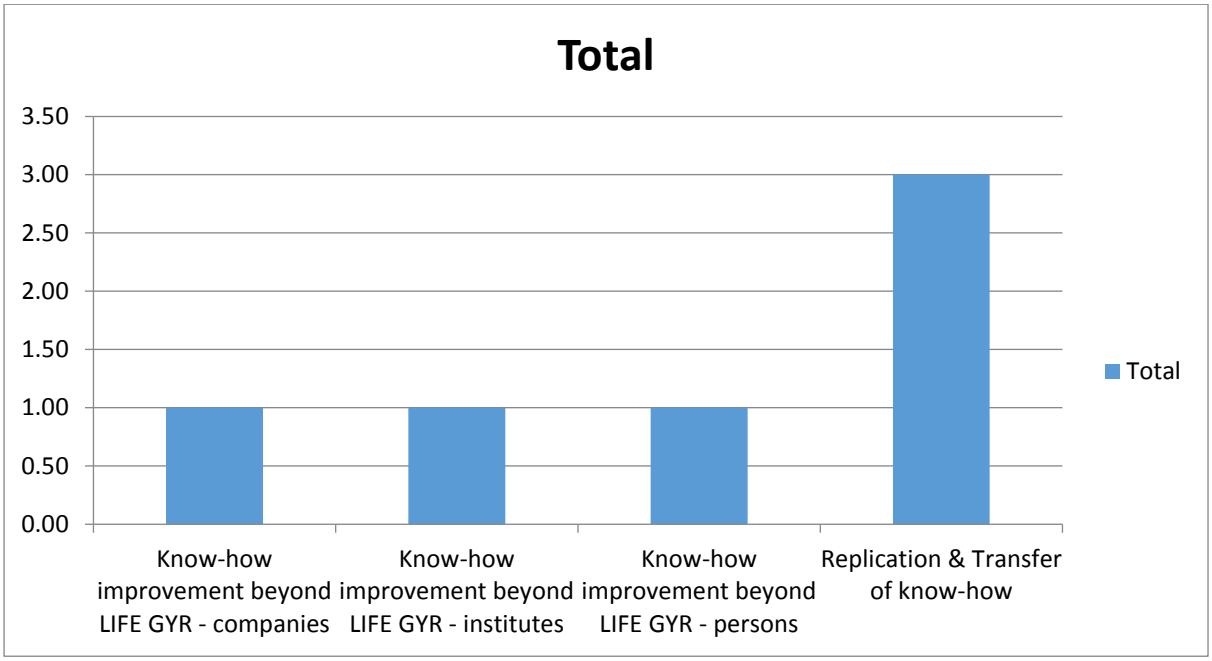
In the following two figures the improvement of the criteria of category "A7 Replication" based on the difference of the values gathered at every CP is presented.

Figure 33: Improve of the criteria of the category "A7 Replication" per CP

Category	A.7 Replication
Criteria	**Difference of CP2.2-CP2.1**
Know-how improvement beyond LIFE GYR - companies	1.00
Know-how improvement beyond LIFE GYR - institutes	1.00
Know-how improvement beyond LIFE GYR - persons	1.00
Replication & Transfer of know-how	3.00
Grand Total	**6.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 34: Pivot chart of the improvement of the criteria of the category "A7 Replication" per CP



The above numbers shown that the most important impact of this category was the replication & transfer of Know-how, which was expressed by the signature of 5 new contracts with 5 SMEs.

4.8 A8 Evaluation of routing plans

The category "A8 Evaluation of routing plans" in the economic sector includes 1 criterion i.e. A8.1 Average amount of time for calculating the routing solution. The values set for this criterion are presented in the following figure. These values are also included in the Annex of this deliverable.

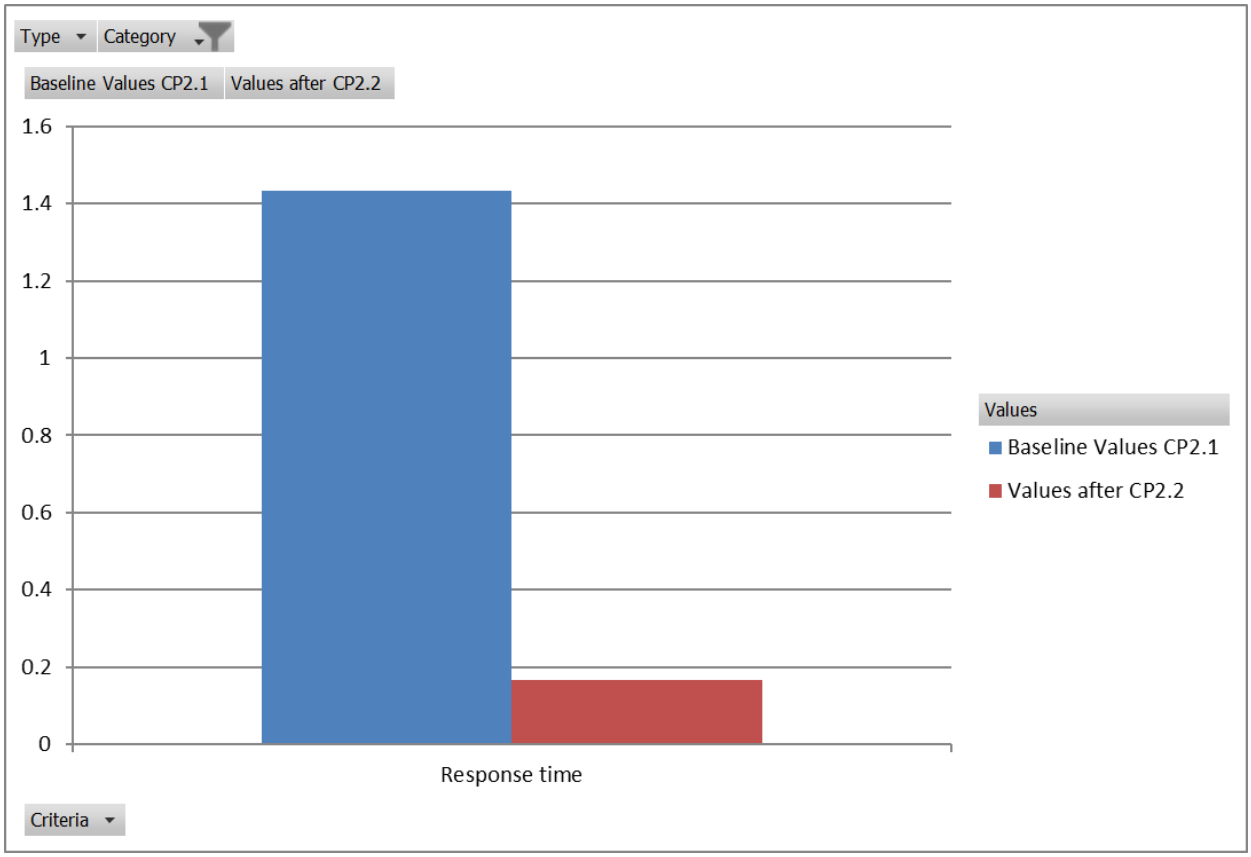
Figure 35: Data gathered for the criteria of the category A8 Evaluation of routing plans

Category	A.8 Evaluation of routing plans	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Response time	1.432637	0.16739
Grand Total	**1.432637**	**0.16739**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 36: Pivot Chart of the data for the criteria of the category "A8 Evaluation of routing plans"



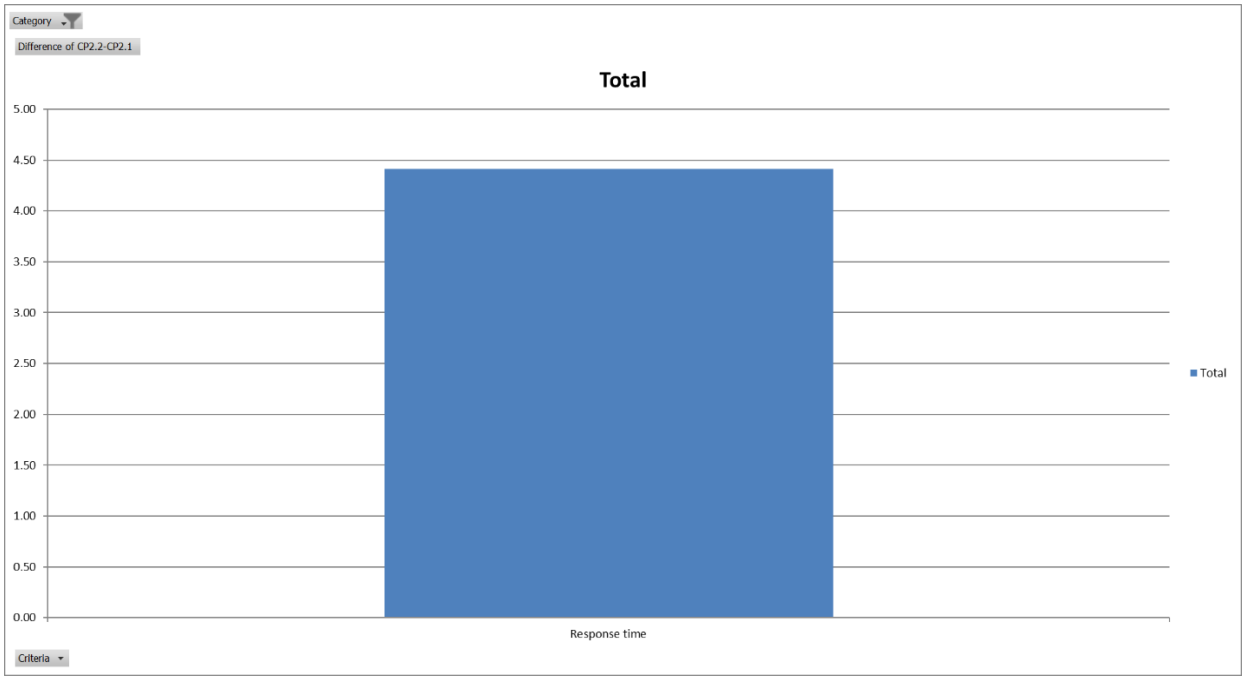
In the following two figures the improvement of the criteria of category "A8 Evaluation of routing plans" based on the difference of the values gathered at every CP is presented.

Figure 37: Improve of the criteria of the category "A8 Evaluation of routing plans" per CP

Category	A.8 Evaluation of routing plans
Criteria	**Difference of CP2.2-CP2.1**
Response time	4.42
Grand Total	**4.42**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 38: Pivot chart of the improvement of the criteria of the category "A8 Evaluation of routing plans" per CP



4.9 B1 Social responsibility

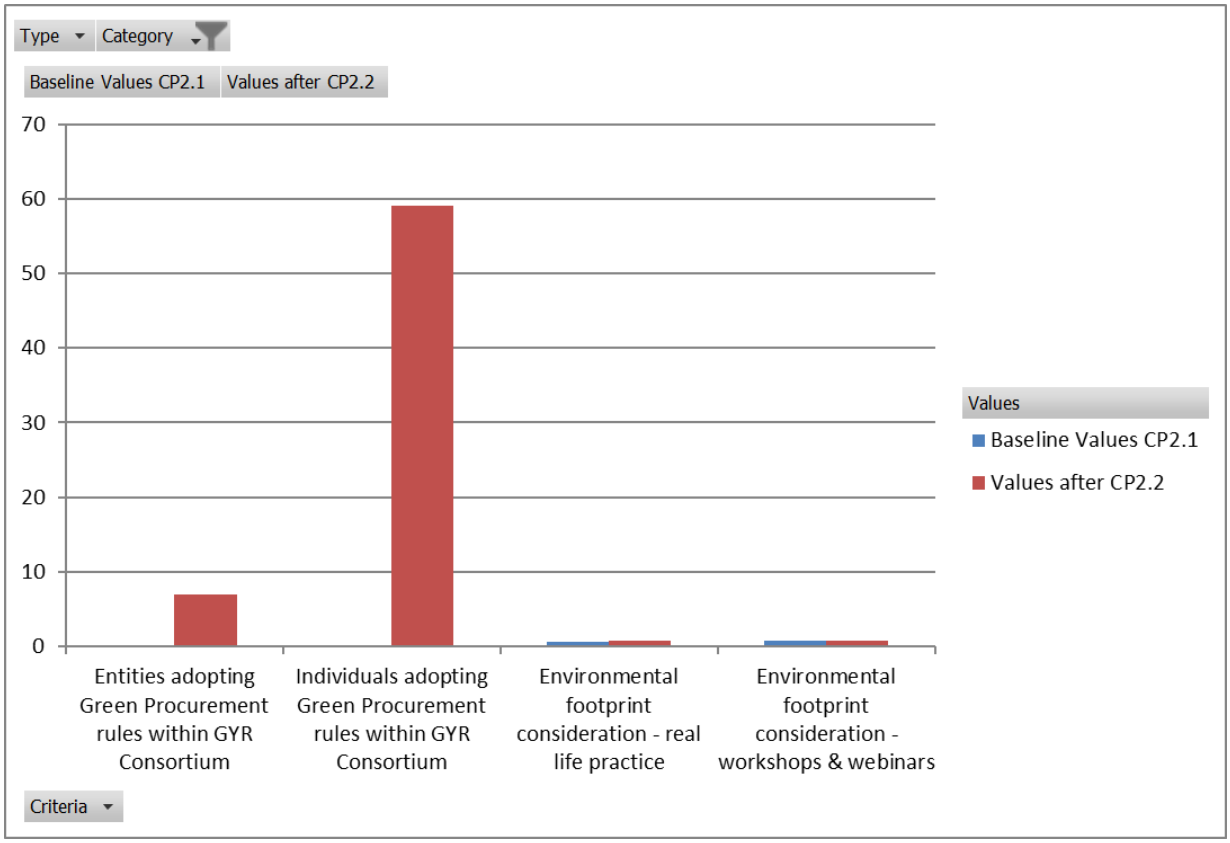
The category "B1 Social responsibility" in the social sector includes 4 criteria: 1) B1.1 Environmental footprint consideration – workshops & webinars, 2) B1.2 Environmental footprint consideration - real life practice, 3) B1.3 Entities adopting Green Procurement rules within GYR Consortium, 4) B1.4 Individuals adopting Green Procurement rules within GYR Consortium. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

Figure 39: Data gathered for the criteria of the category "B1 Social responsibility"

Category	B.1 Social responsibility	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Entities adopting Green Procurement rules within GYR Consortium	0	7
Individuals adopting Green Procurement rules within GYR Consortium	0	59
Environmental footprint consideration - real life practice	0.6538	0.6842
Environmental footprint consideration - workshops & webinars	0.7573	0.8078
Grand Total	**1.4111**	**67.492**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 40: Pivot Chart of the data for the criteria of the category B1 Social responsibility



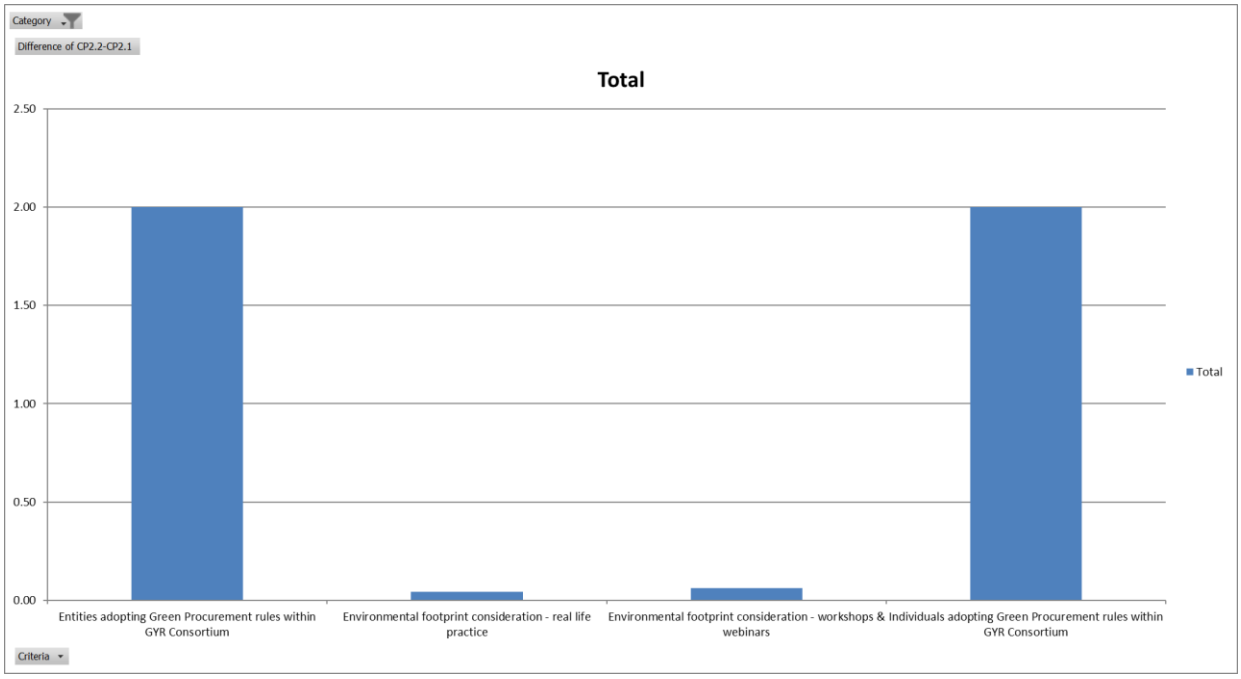
In the following two figures, the improvement of the criteria of category "B1 Social responsibility" based on the difference of the values gathered at every CP is presented.

Figure 41: Improve of the criteria of the category "B1 Social responsibility" per CP

Category	B.1 Social responsibility
Criteria	**Difference of CP2.2-CP2.1**
Entities adopting Green Procurement rules within GYR Cc	2.00
Environmental footprint consideration - real life practice	0.04
Environmental footprint consideration - workshops & we	0.06
Individuals adopting Green Procurement rules within GYI	2.00
Grand Total	**4.11**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 42: Pivot chart of the improvement of the criteria of the category "B1 Social responsibility" per CP



The highest impact of this category (i.e. "B1 Social responsibility") as presented in the figures above, resulted by the entities and individuals within the consortium adopting green procurement rules.

4.10 B2 Awareness rising

The category "B2 Awareness rising" in the social impact includes 2 criteria: 1) B2.1 Entities reached/made aware, 2) B2.2 Individuals reached / made aware. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

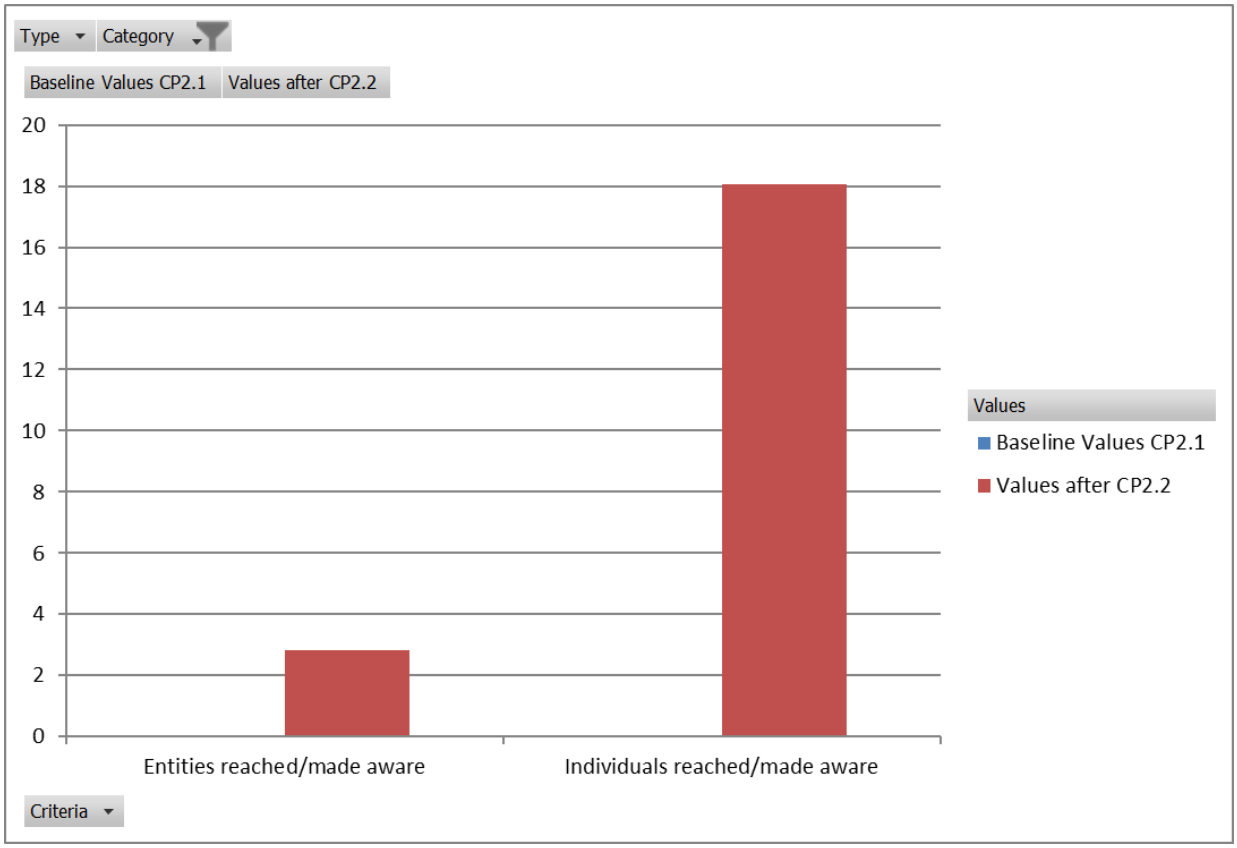
Figure 43: Data gathered for the criteria of the category "B2 Awareness rising"

Category	B.2 Awareness rising	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Entities reached/made aware	0	2.808
Individuals reached/made aware	0	18.068
Grand Total	**0**	**20.876**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 44: Pivot Chart of the data for the criteria of the category "B2 Awareness rising"



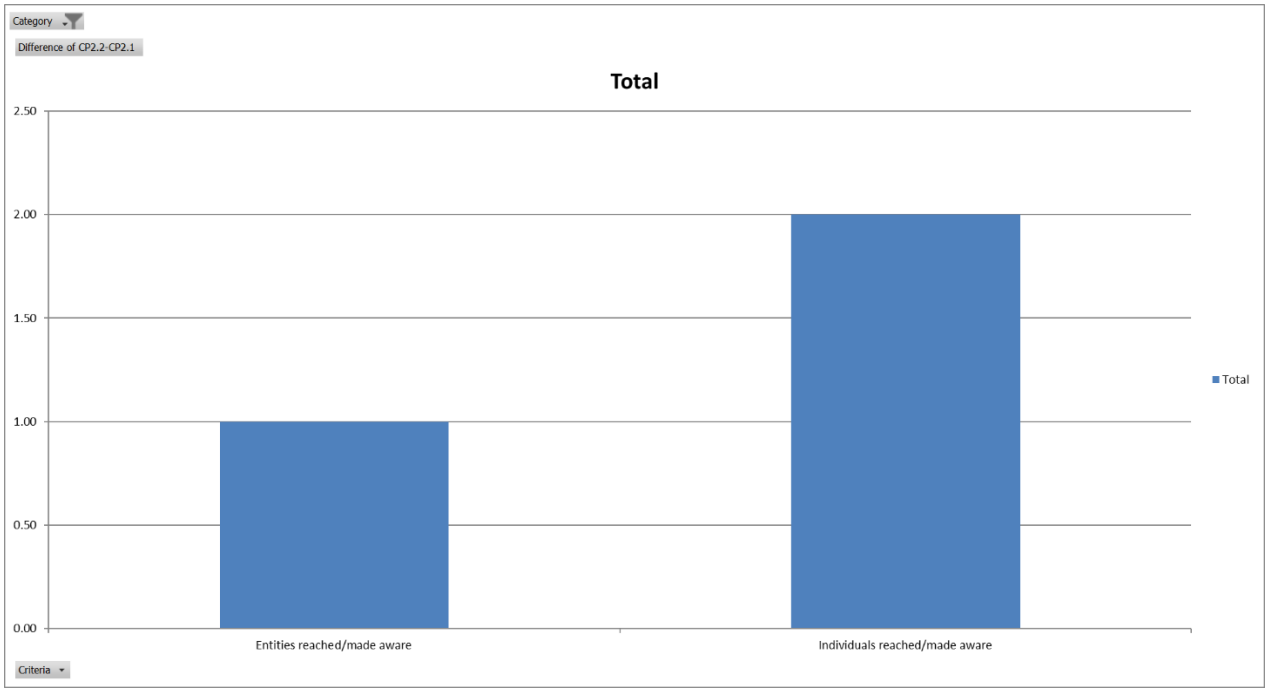
In the following two figures the improvement of the criteria of category "B2 Awareness rising" based on the difference of the values gathered at every CP is presented.

Figure 45: Improve of the criteria of the category B2 Awareness rising per CP

Category	B.2 Awareness rising
Criteria	**Difference of CP2.2-CP2.1**
Entities reached/made aware	1.00
Individuals reached/made aware	2.00
Grand Total	**3.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 46: Pivot chart of the improvement of the criteria of the category B2 Awareness rising per CP



More than 2800 entities and more than 18,000 individuals were awarded of LIFE GYR project. The impact of the criterion "B2.2 Individuals reached / made aware" was twice higher than the impact of the criterion "B2.1 Entities reached/made aware".

4.11 B3 Networking

The category "B3 Networking" in the social sector includes 4 criteria: 1) B3.1 Networking activities, 2) B3.2 Participation in networking activities, 3) B3.3 Overall participation on networking activities, 4) B3.4 LIFE GYR relation to other EU projects and/or similar applications. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

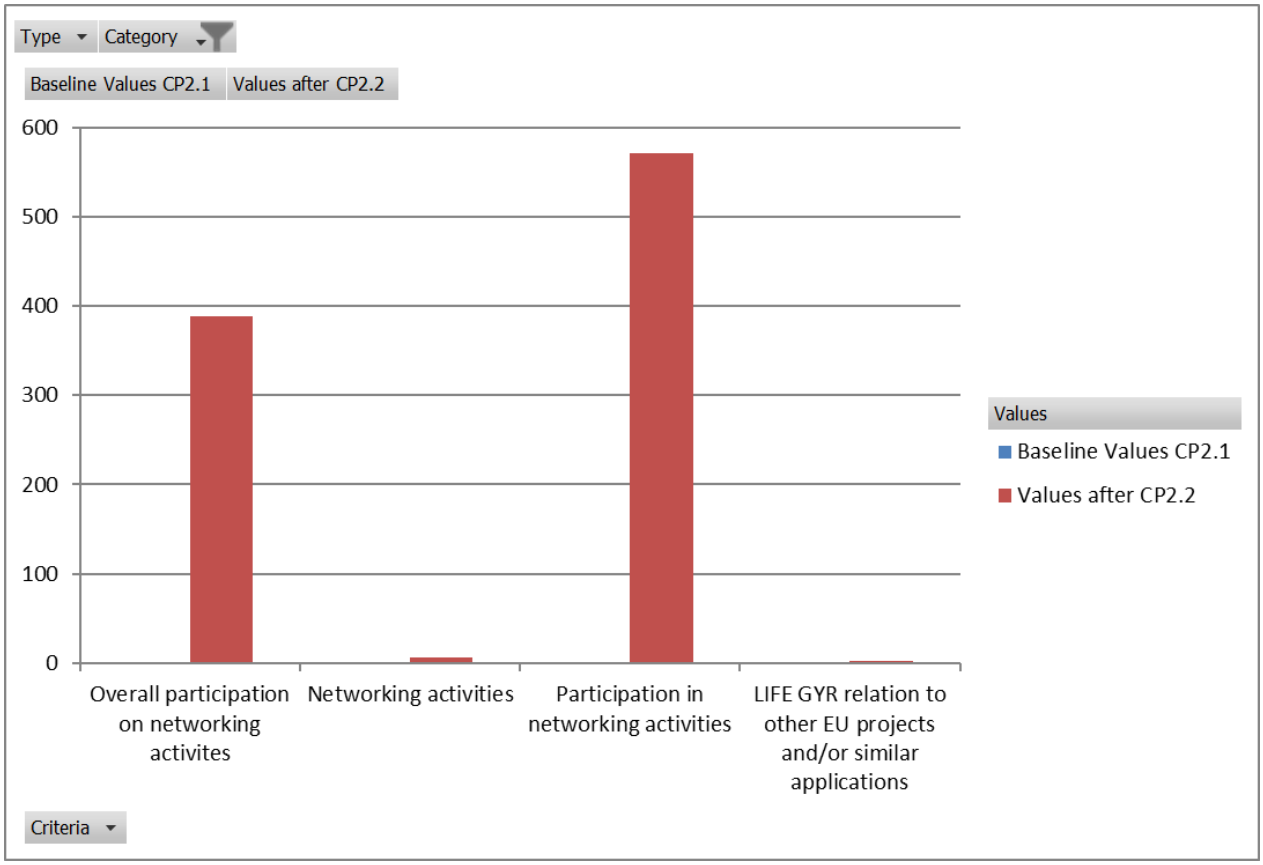
Figure 47: Data gathered for the criteria of the category "B3 Networking"

Category	B.3 Networking	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Overall participation on networking activites	0	388
Networking activities	0	7
Participation in networking activities	0	571
LIFE GYR relation to other EU projects and/or similar applications	0	3
Grand Total	**0**	**969**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 48: Pivot Chart of the data for the criteria of the category "B3 Networking"



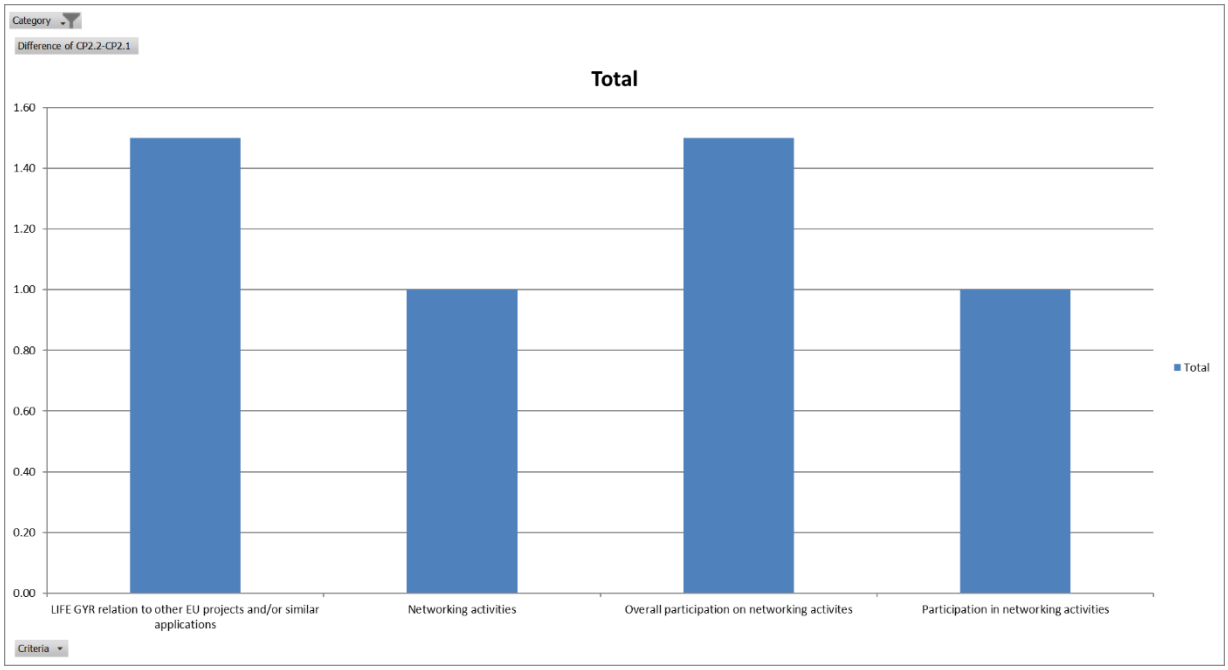
In the following two figures, the improvement of the criteria of category "B3 Networking" based on the difference of the values gathered at every CP is presented.

Figure 49: Improve of the criteria of the category "B3 Networking" per CP

Category	B.3 Networking
Criteria	**Difference of CP2.2-CP2.1**
LIFE GYR relation to other EU projects and/or similar app	1.50
Networking activities	1.00
Overall participation on networking activites	1.50
Participation in networking activities	1.00
Grand Total	**5.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 50: Pivot chart of the improvement of the criteria of the category "B3 Networking" per CP



The above figures show that the criterion "B3.1 Networking activities" and the criterion "B3.2 Participation in networking activities" have equally important impact and the criterion "B3.3 Overall participation on networking activities and the criterion "B3.4 LIFE GYR relation to other EU projects and/or similar applications" have also equally important but higher impact compared to them.

4.12 B4 Training

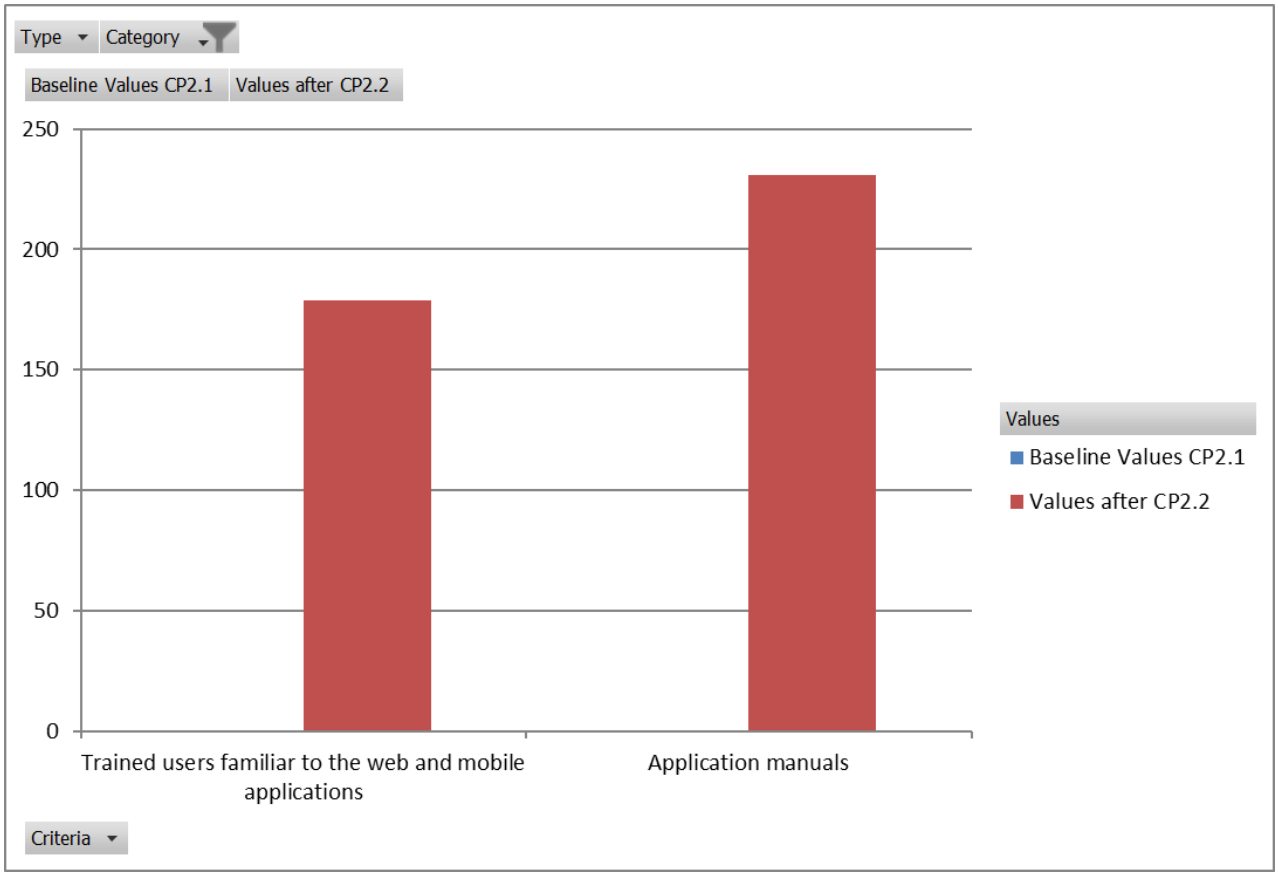
The category "B4 Training" cost in the social sector includes 2 criteria: 1) B4.1 Trained users familiar to the web and mobile applications and 2) B4.2 Application manuals. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

Figure 51: Data gathered for the criteria of the category "B4 Training"

Category	B.4 Training	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Trained users familiar to the web and mobile applications	0	179
Application manuals	0	231
Grand Total	**0**	**410**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 52: Pivot Chart of the data for the criteria of the category "B4 Training"



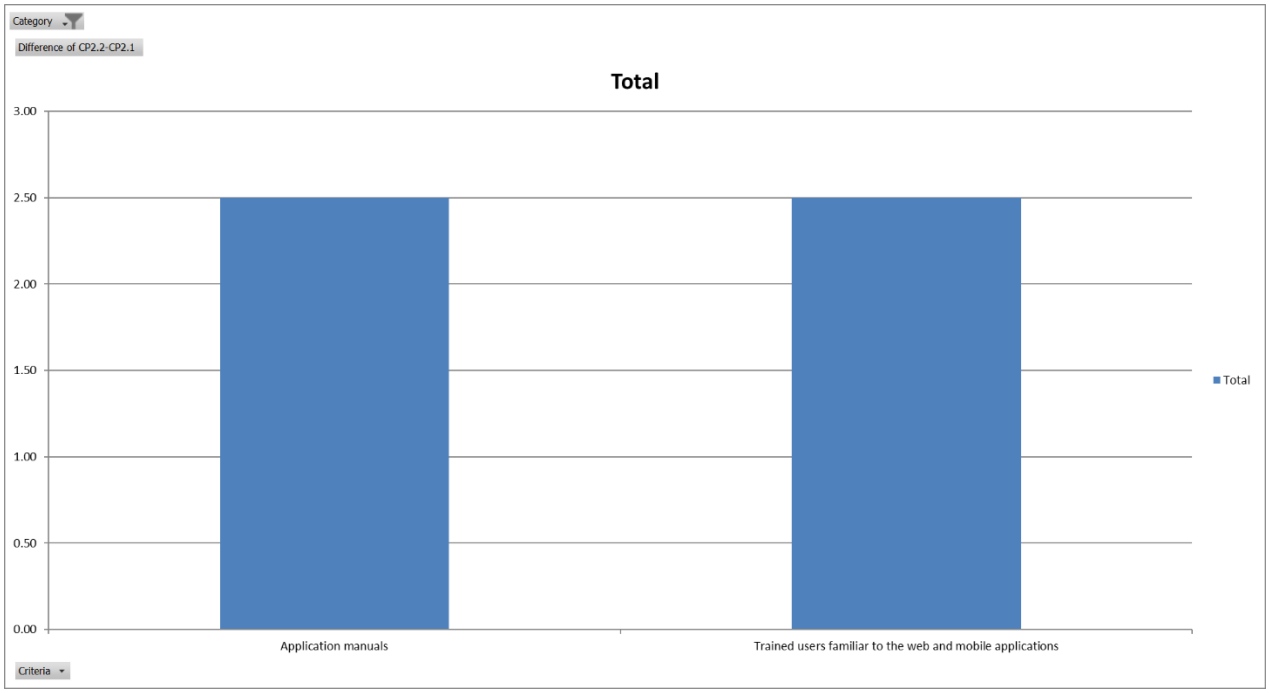
In the following two figures, the improvement of the criteria of category "B4 Training" based on the difference of the values gathered at every CP is presented.

Figure 53: Improve of the criteria of the category "B4 Training" per CP

Category	B.4 Training
Criteria	**Difference of CP2.2-CP2.1**
Application manuals	2.50
Trained users familiar to the web and mobile application	2.50
Grand Total	**5.00**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 54: Pivot chart of the improvement of the criteria of the category "B4 Training" per CP



The impact of both criterion was equally important as it is presented in the figures above.

4.13 B5 Promotion of environmental friendly distribution of goods

The category "B5 Promotion of environmental friendly distribution of goods" in the social sector includes 27 criteria: 1) B5.1 Promotion at EU level, Number of companies across the EU, Research community, 2) B5.2 Promotion by news, Number of news, 3) B5.3 Promotion by news, Persons informed through monthly news (i.e. number of 100 persons), 4) B5.4 Promotion by notice boards, Number of notice boards, 5) B5.5 Promotion by notice boards, Persons informed through notice boards, 6) B5.6 Promotion by posters, Number of posters, 7) B5.7 Promotion by posters, Persons informed through posters (number of 10 persons), 8) B5.8 Promotion by flyers, Number of flyers (i.e. number of 100 flyers), 9) B5.9 Promotion by flyers, Persons informed through flyers (i.e. number of 100 persons), 10) B5.10 Video impressions, Number of videos, 11) B5.11 Video impressions, Number of views of produced video (i.e. number of 10 impressions), 12) B5.12 Workshop organization, Number of workshops organized, 13) B5.13 Workshop participation, Number of persons that participated in workshops, 14) B5.14 Workshop participation, Number of organizations that participated in workshops, 15) B5.15 Webinar organization, Number of webinars organized, 16) B5.16 Webinar participation, Number of persons that participated in webinars, 17) B5.17 Webinar participation, Number of organizations that participated in webinars, 18) B5.18 Number of reports, Number of reports (project, monthly, Layman's), 19) B5.19 Layman's report distribution per authority, Number of authorities in which paper or electronic version of Layman's report distributed, 20) B5.20 Layman's report recipients, Number of recipients that received the Layman's report electronically, 21) B5.21 Newsletters, Total number of newsletters, 22) B5.22 Newsletter recipients, Total recipients of newsletters (number of 1000

recipients), 23) B5.23 Website acceptance, Total hits of website (number of 10 hits**)**, 24) B5.24 Website acceptance, Unique visitors of the project's website (i.e. number of 10 unique visitors), 25) B5.25 Social media dissemination, Number of social media accounts, 26) B5.26 Social media dissemination, Number of followers in LIFE GYR's Facebook page, 27) B5.27 Scientific conferences, Participation in conferences and /or scientific events. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

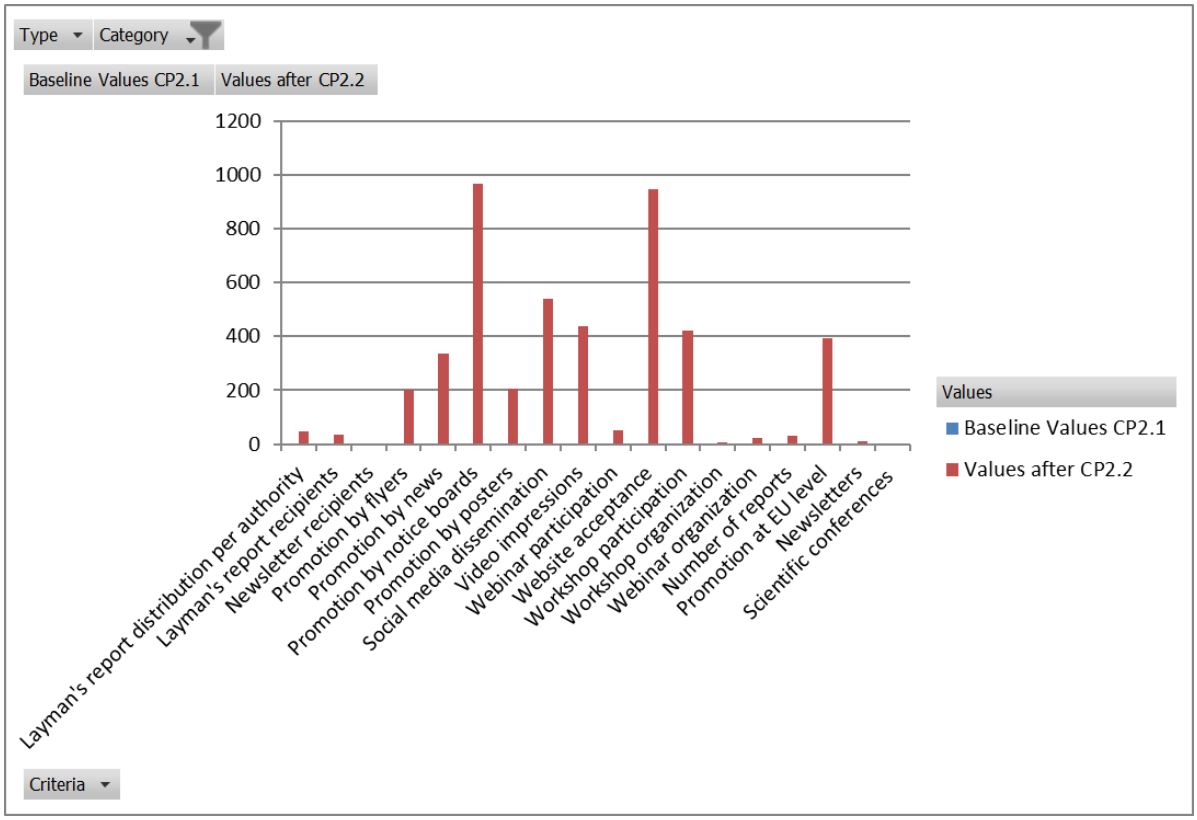
Figure 55: Data gathered for the criteria of the category "B5 Promotion of environmental friendly distribution of goods"

Category	B.5 Promotion of env.friendly distribution of goods	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Layman's report distribution per authority	0	47
Layman's report recipients	0	34
Newsletter recipients	0	3.098
Promotion by flyers	0	200
Promotion by news	0	334.56
Promotion by notice boards	0	968
Promotion by posters	0	206
Social media dissemination	0	538
Video impressions	0	436.2
Webinar participation	0	53
Website acceptance	0	947.4
Workshop participation	0	420
Workshop organization	0	7
Webinar organization	0	23
Number of reports	0	31
Promotion at EU level	0	391
Newsletters	0	11
Scientific conferences	0	3
Grand Total	**0**	**4653.258**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 56: Pivot Chart of the data for the criteria of the category "B5 Promotion of environmental friendly distribution of goods"

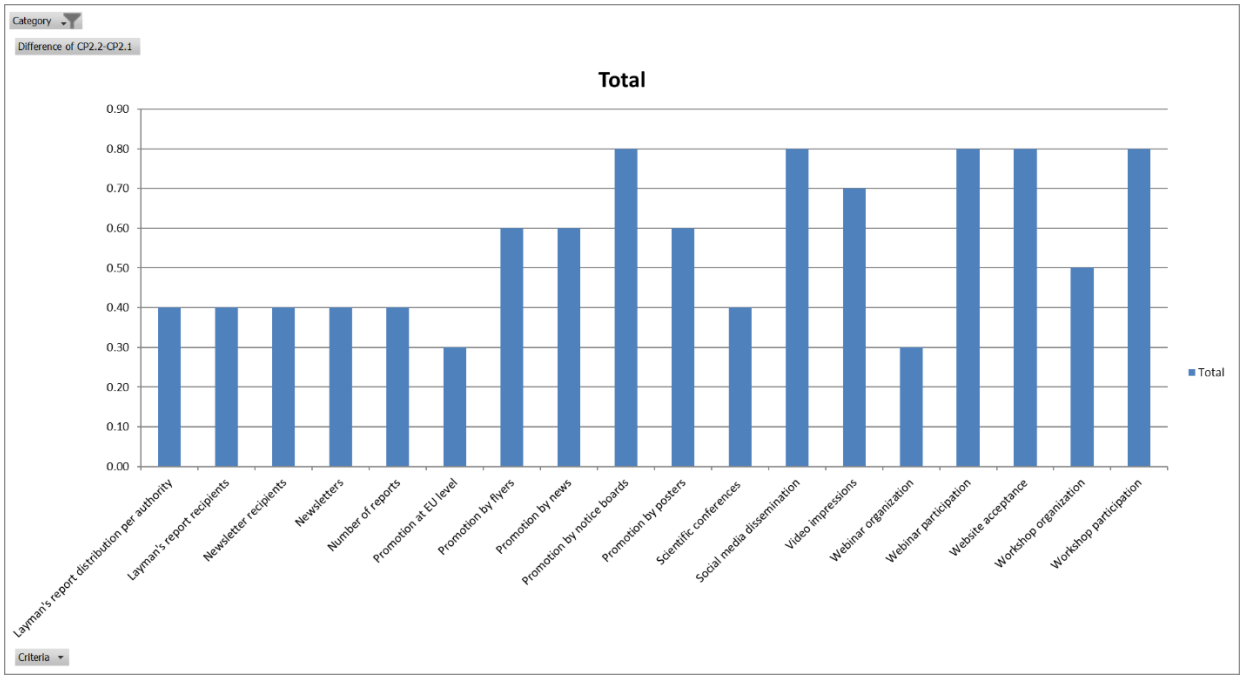


In the following two figures, the improvement of the criteria of category "B5 Promotion of environmental friendly distribution of goods" based on the difference of the values gathered at every CP is presented.

Figure 57: Improve of the criteria of the category "B5 Promotion of environmental friendly distribution of goods" per CP

Category	B.5 Promotion of env.friendly distribution of goods
Criteria	**Difference of CP2.2-CP2.1**
Layman's report distribution per authority	0.40
Layman's report recipients	0.40
Newsletter recipients	0.40
Newsletters	0.40
Number of reports	0.40
Promotion at EU level	0.30
Promotion by flyers	0.60
Promotion by news	0.60
Promotion by notice boards	0.80
Promotion by posters	0.60
Scientific conferences	0.40
Social media dissemination	0.80
Video impressions	0.70
Webinar organization	0.30
Webinar participation	0.80
Website acceptance	0.80
Workshop organization	0.50
Workshop participation	0.80
Grand Total	**10.00**

Figure 58: Pivot chart of the improvement of the criteria of the category "B5 Promotion of environmental friendly distribution of goods" per CP



The highest impact of this category resulted by the promotion of the LIFE GYR project via the notice boards, social media, webinars & workshops participants and website unique visitors. Additionally, the impact of flyers, news and videos resulted also a significant impact as well.

4.14 B6 LIFE GYR tools acceptance

The category "B6 LIFE GYR tools acceptance" in the social sector includes 6 criteria: 1) B6.1 Total routing requests of LIFE GYR platform, 2) B6.2 Routing needs coverage within GYR consortium, 3) B6.3 Rating score of GYR platform (managers), 4) B6.4 Rating score of GYR platform (drivers), 5) B6.5 Rating score of GYR platform (policy makers), 6) B6.6 Number of drivers using the LIFE GYR smartphone application and the number of managers using web application. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

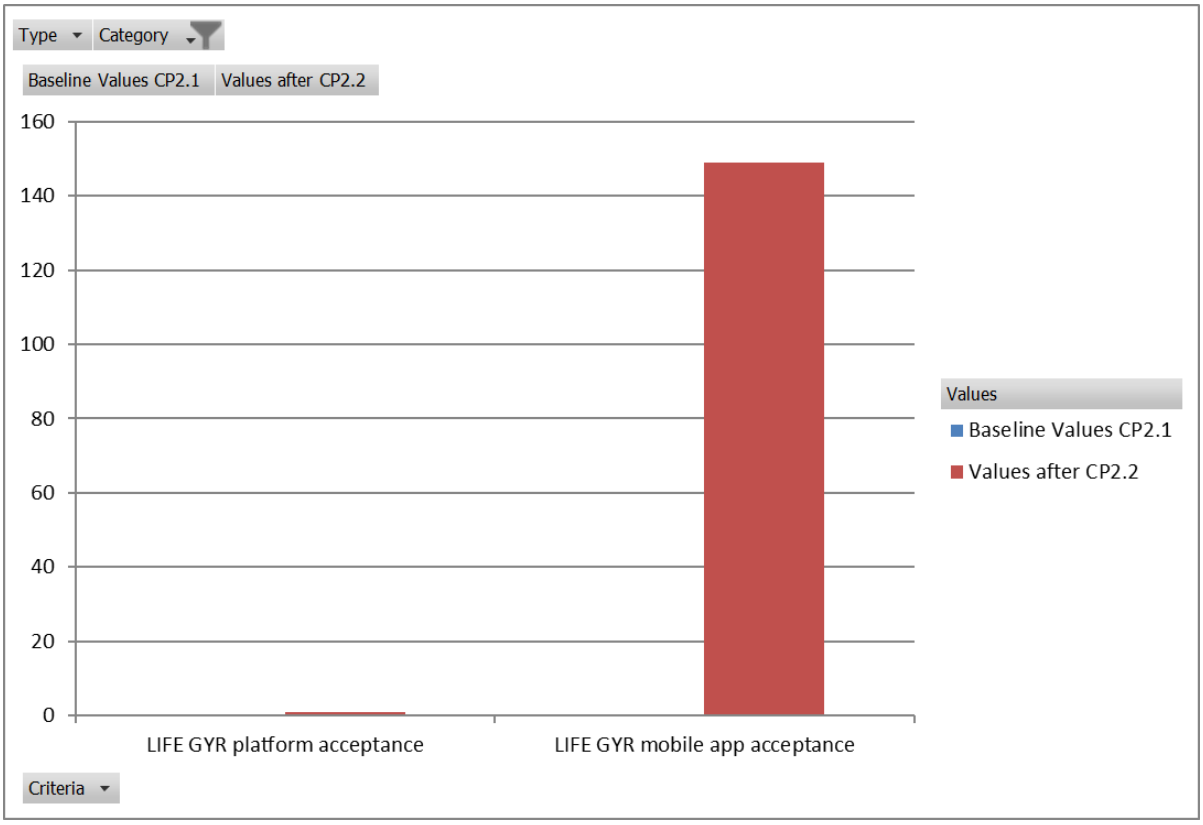
Figure 59: Data gathered for the criteria of the category "B6 LIFE GYR tools acceptance"

Category	B.6 LIFE GYR tools acceptance	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
LIFE GYR platform acceptance	0	1
LIFE GYR mobile app acceptance	0	149
Grand Total	**0**	**150**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 60: Pivot Chart of the data for the criteria of the category "B6 LIFE GYR tools acceptance"



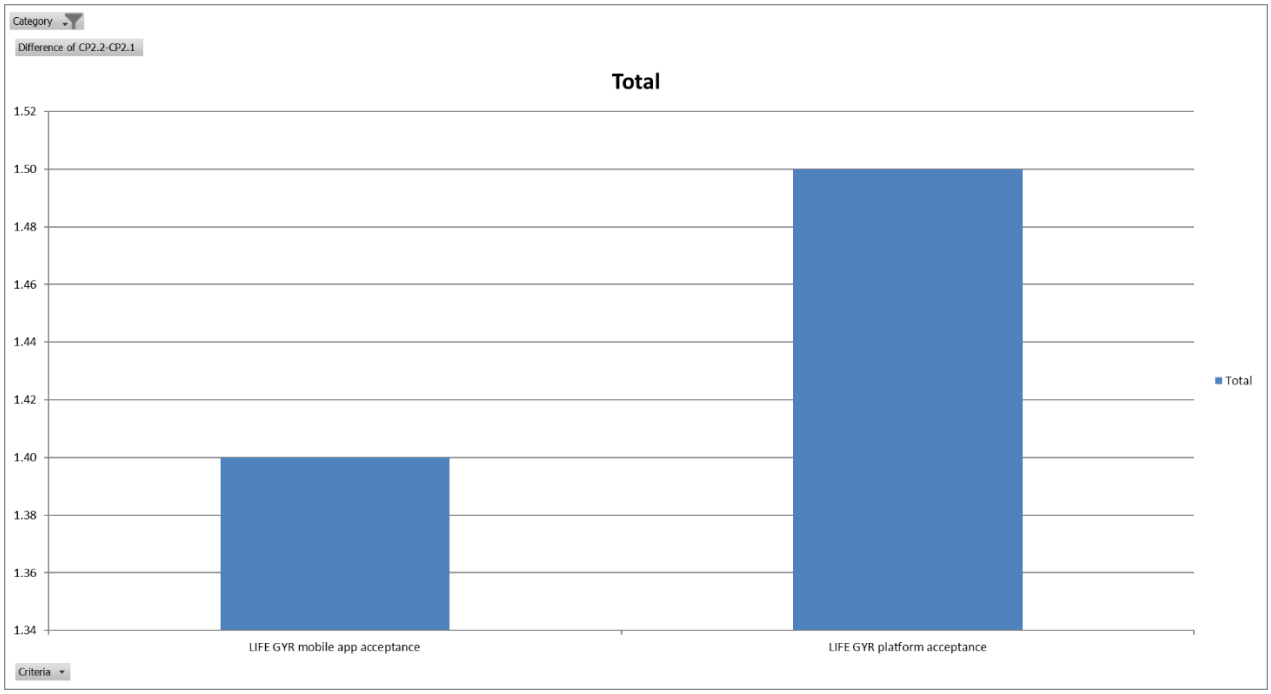
In the following two figures, the improvement of the criteria of category "B6 LIFE GYR tools acceptance" based on the difference of the values gathered at every CP is presented.

Figure 61: Improve of the criteria of the category "B6 LIFE GYR tools acceptance" per CP

Category	B.6 LIFE GYR tools acceptance
Criteria	**Difference of CP2.2-CP2.1**
LIFE GYR mobile app acceptance	1.40
LIFE GYR platform acceptance	1.50
Grand Total	**2.90**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 62: Pivot chart of the improvement of the criteria of the category "B6 LIFE GYR tools acceptance" per CP



As it was expected, the impact of the LIFE GYR platform (i.e. web application) had higher impact than the mobile apps as it is the application, which creates the daily green vehicle routing plan of the users demonstrating it.

4.15 B7 Update of EU policy

The category "B7 Update of EU policy" in the social sector includes 6 criteria: 1) B7.1 Number of policy makers invited in workshops, 2) B7.2 Average number of policy makers participated in workshops, 3) B7.3 Number of travels for meeting policy makers , 4)B7.4 Number of policy makers contacted during networking activities aiming to update EU policy 5) B7.5 Number of policy makers to which an electronic version of the report including the potential updating of EU policy and legislation sent, 6) B7.6 Project contribution to the environmental objectives of the EU. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

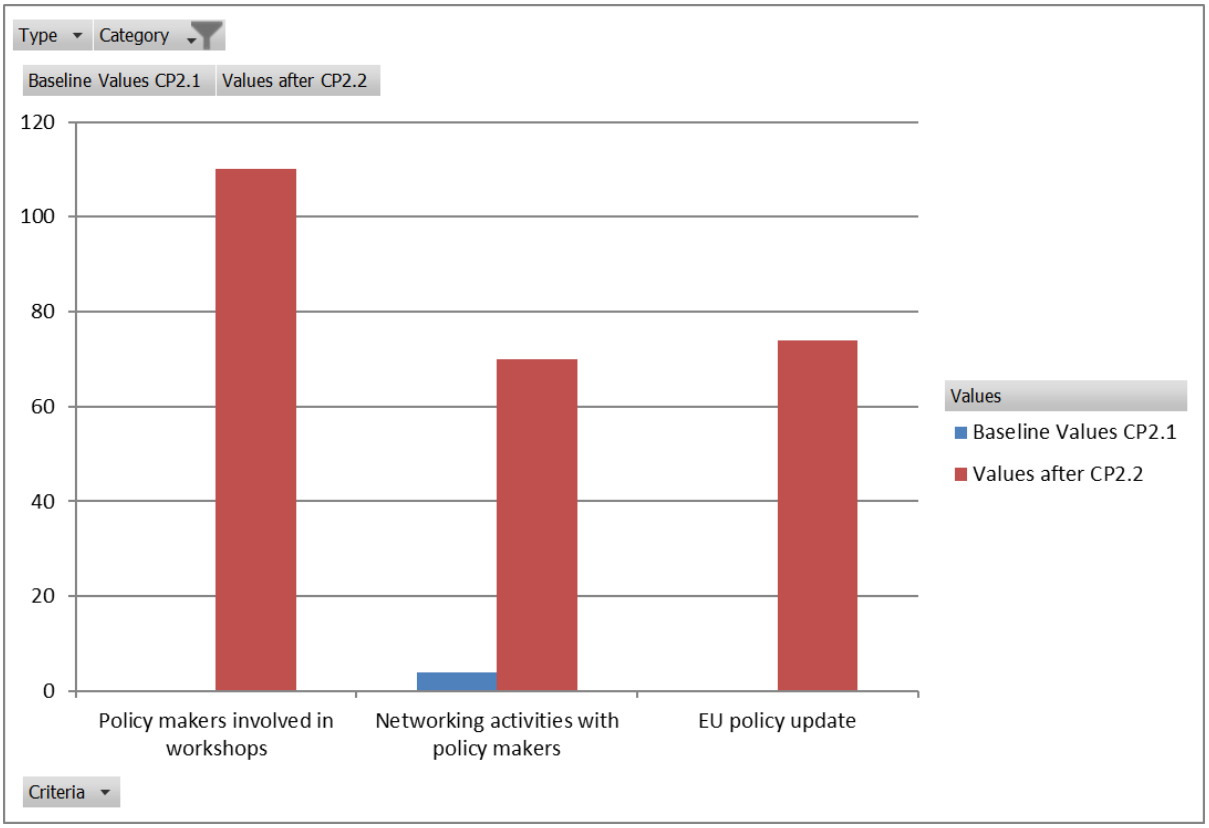
Figure 63: Data gathered for the criteria of the category "B7 Update of EU policy"

Category	B.7 Update of EU policy	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Policy makers involved in workshops	0	110
Networking activities with policy makers	4	70
EU policy update	0	73.8348
Grand Total	**4**	**253.8348**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 64: Pivot Chart of the data for the criteria of the category "B7 Update of EU policy"



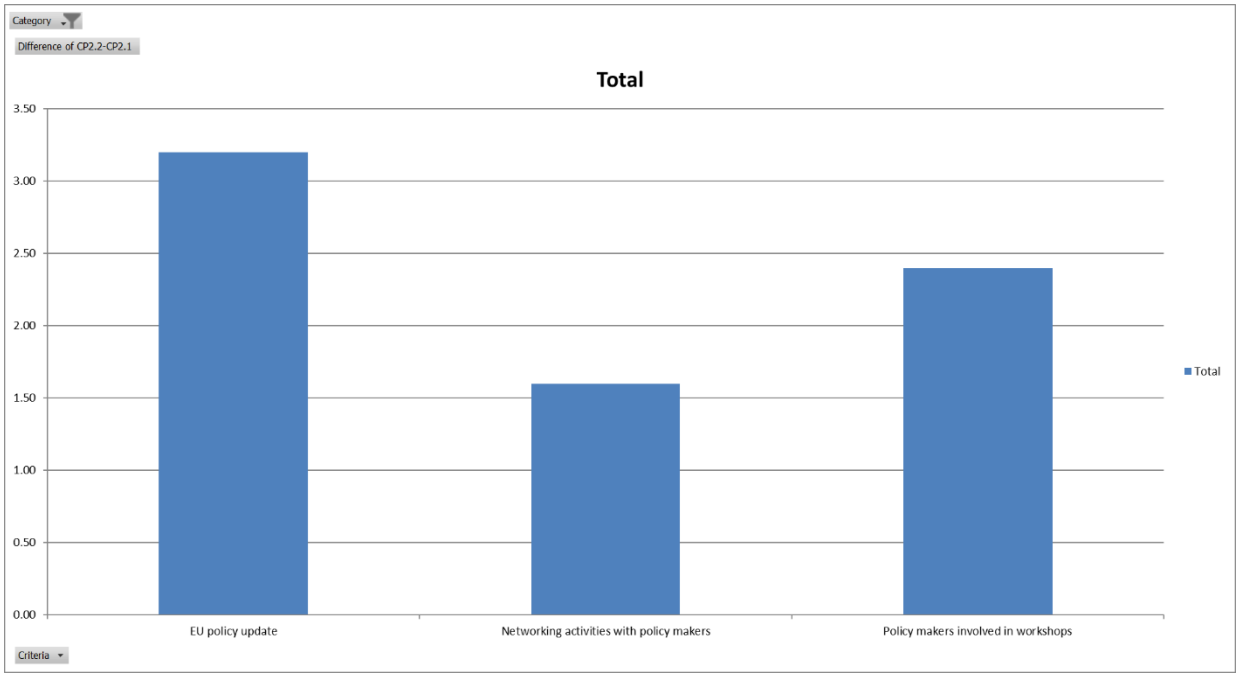
In the following two figures, the improvement of the criteria of category "B7 Update of EU policy" based on the difference of the values gathered at every CP is presented.

Figure 65: Improve of the criteria of the category "B7 Update of EU policy" per CP

Category	B.7 Update of EU policy
Criteria	**Difference of CP2.2-CP2.1**
EU policy update	3.20
Networking activities with policy makers	1.60
Policy makers involved in workshops	2.40
Grand Total	**7.20**

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 66: Pivot chart of the improvement of the criteria of the category "B7 Update of EU policy" per CP



The update of the Greek legislation due to the new law for Green logistics resulted the highest impact as it is shown in the above figures.

4.16 B8 Environmental factors

The category "B8 Environmental factors" in the social sectors includes 10 criteria: 1) Average amount of consumed fuels per travelled kilometers, 2) Amount of CO2 emitted per travelled kilometers, 3) Amount of emitted CH4 per travelled kilometers, 4) Amount of emitted CO per travelled kilometers, 5) Amount of emitted N2O per travelled kilometers, 6) Amount of emitted NH3 per travelled kilometers, 7) Amount of emitted NOx per travelled kilometers, 8) Amount of emitted PM per travelled kilometers, 9) Amount of emitted VOC per travelled kilometers, 10) Amount of emitted SO2 per travelled kilometers. The values set for these criteria are presented in the following figure. These values are also included in the Annex of this deliverable.

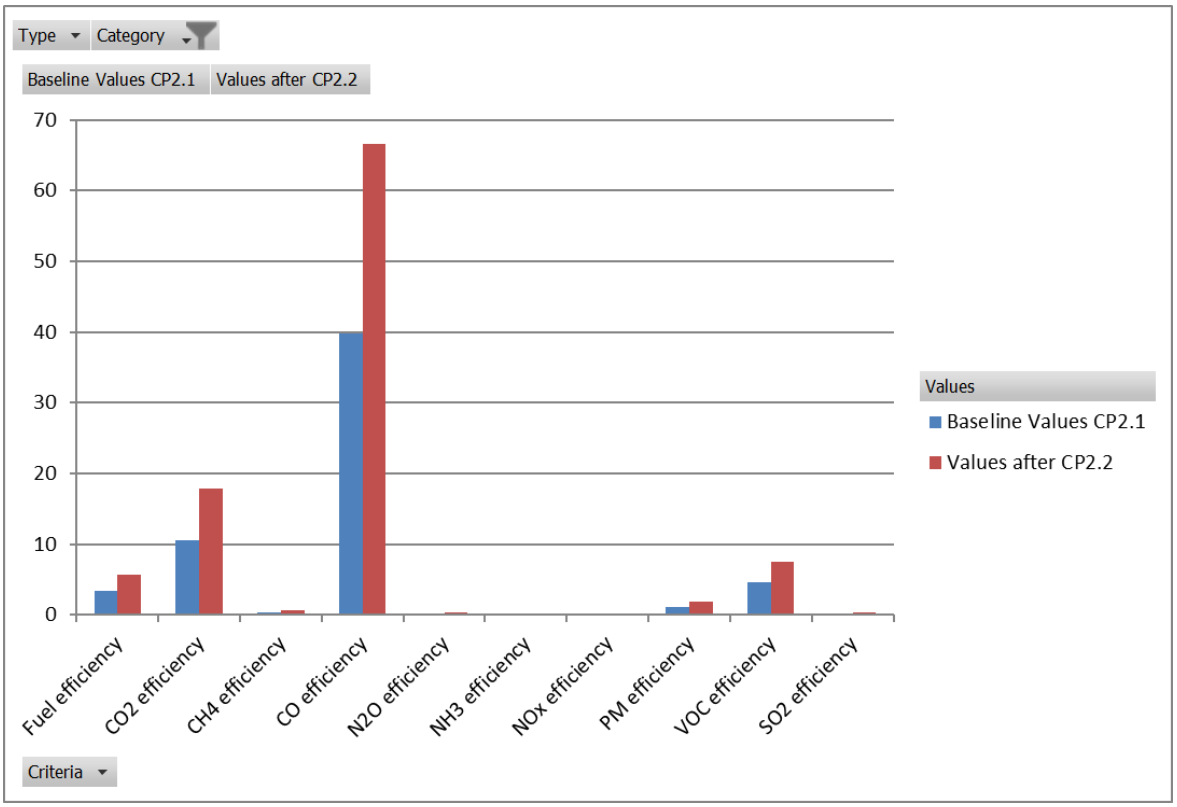
With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 67: Data gathered for the criteria of the category "B8 Environmental factors"

Category	B.8 Enviromental factors	
Row Labels	**Baseline Values CP2.1**	**Values after CP2.2**
Fuel efficiency	3.380655552	5.687699842
CO2 efficiency	10.53758187	17.85042163
CH4 efficiency	0.373407104	0.59985022
CO efficiency	39.82172146	66.5668732
N2O efficiency	0.211315926	0.355645518
NH3 efficiency	0.069600532	0.115998004
NOx efficiency	0.086294387	0.143382821
PM efficiency	1.123208291	1.816517754
VOC efficiency	4.656689769	7.557140065
SO2 efficiency	0.218388423	0.367526109
Grand Total	**60.47886332**	**101.0610552**

In the following figure, the values per CP are depicted in a pivot chart to enable the reader to get an understanding of the improvement of the criteria. Such pivot figures are produced for all the criteria in every CP.

Figure 68: Pivot Chart of the data for the criteria of the category "B8 Environmental factors"



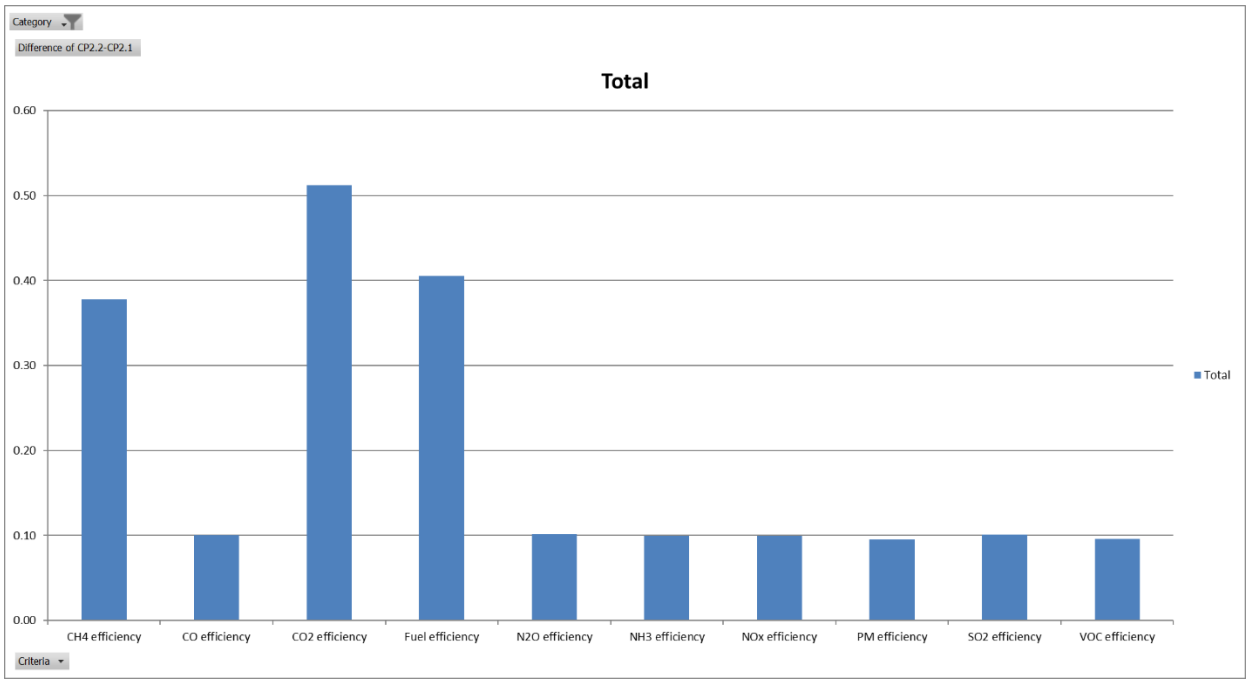
In the following two figures, the improvement of the criteria of category "B8 Environmental factors" based on the difference of the values gathered at every CP is presented.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Figure 69: Improve of the criteria of the category "B8 Environmental factors" per CP

Category	B.8 Enviromental factors
Criteria	**Difference of CP2.2-CP2.1**
CH4 efficiency	0.38
CO efficiency	0.10
CO2 efficiency	0.51
Fuel efficiency	0.41
N2O efficiency	0.10
NH3 efficiency	0.10
NOx efficiency	0.10
PM efficiency	0.10
SO2 efficiency	0.10
VOC efficiency	0.10
Grand Total	**1.99**

Figure 70: Pivot chart of the improvement of the criteria of the category "B8 Environmental factors" per CP



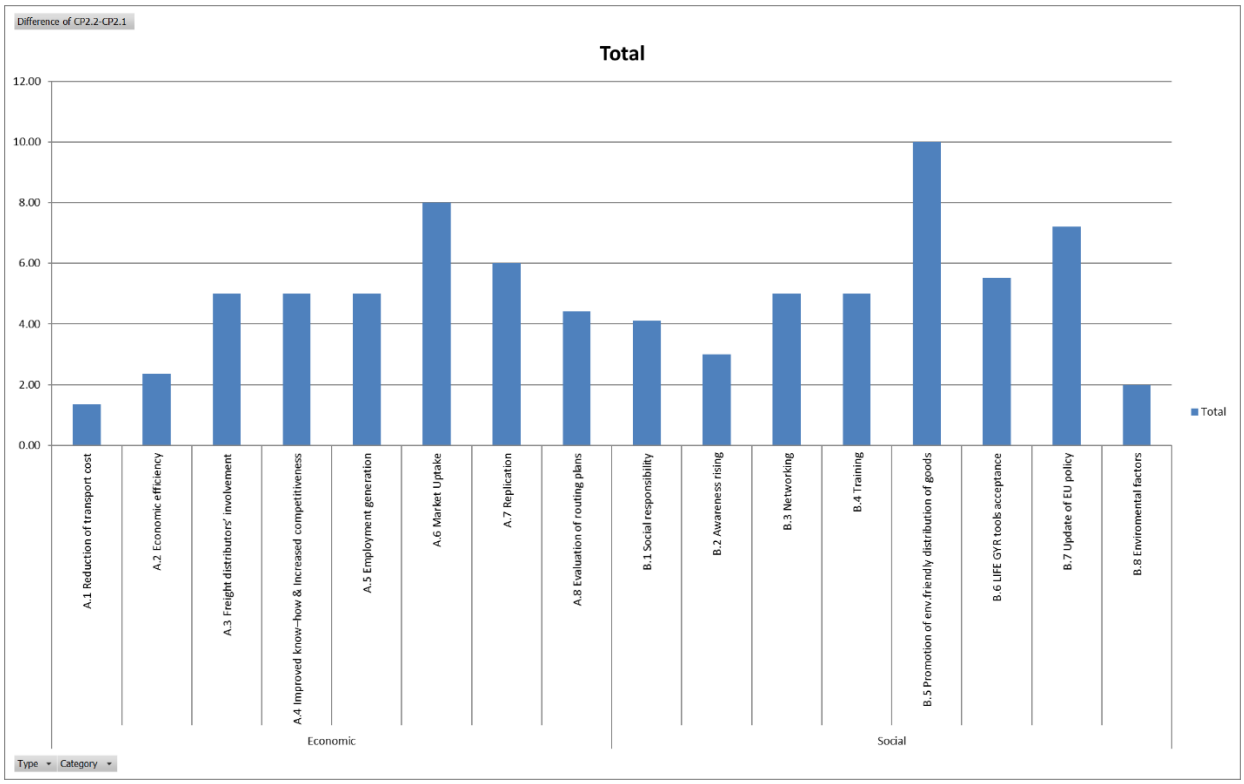
The above figures show that the highest impact of this category resulted by the CO2 efficiency, the fuel efficiency and the CH4 efficiency. All the other criteria, had equally important impact.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

5 Conclusion

The overall socio-economic impact of the project is presented in the following figure.

Figure 71: Overall impact of the project



Finally, the 3 categories with the highest socio-economic impact of the project are:

1. The promotion of environmental friendly distribution of goods through the news, the newsletters, the notice boards, the posters, flyers, videos, workshops, conference, webinars, reports, social media and the website had the highest socio-economic impact.
2. The market uptake had the second highest socio-economic impact.
3. The update of EU policy had the third highest socio-economic impact.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

6 Annexes

6.1 GreenYourRoute Questionnaire for managers within GYR Consortium (before GYR platform release)

In the current section, the questionnaire addressed to managers within GYR Consortium ran through a Google form (link) and the results from the responses received will be presented. In total, 7 persons answered the questionnaire.

6.1.1 The questionnaire questions

The questionnaire consisted of 16 questions and the average response time was estimated to 6 minutes. It was divided into four sections. The first three sections of the questionnaire were concerned with routing process management, while the last section was concerned with the environmental thinking of the responders.

6.1.2 Responses received

The questionnaire was sent to the project demonstrators in January 2021 and was concluded in February 2021. The following responses were requested and received:

Table 27: GreenYourRoute Questionnaire for managers within GYR Consortium (before GYR platform release) responses received

Demonstrator	Responses requested	Responses received
Greek demonstrators	1-3	3
CEDA's demonstrator	1-2	2
ITACA's demonstrator	1-2	2
Total		**7**

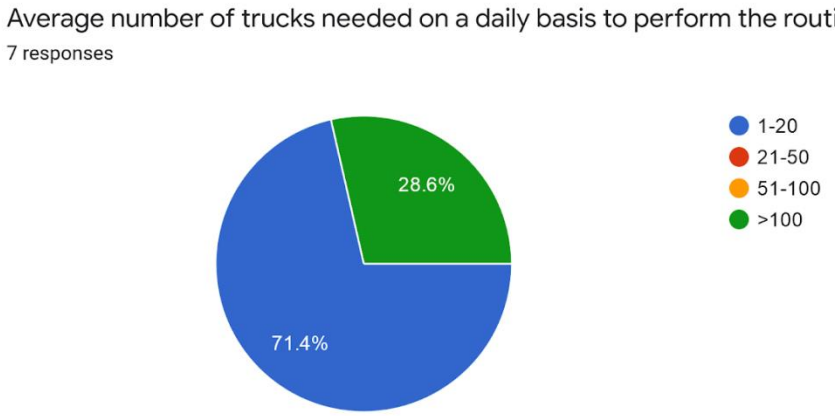
6.1.3 Responses analysis

7 Routing Process Management – First section

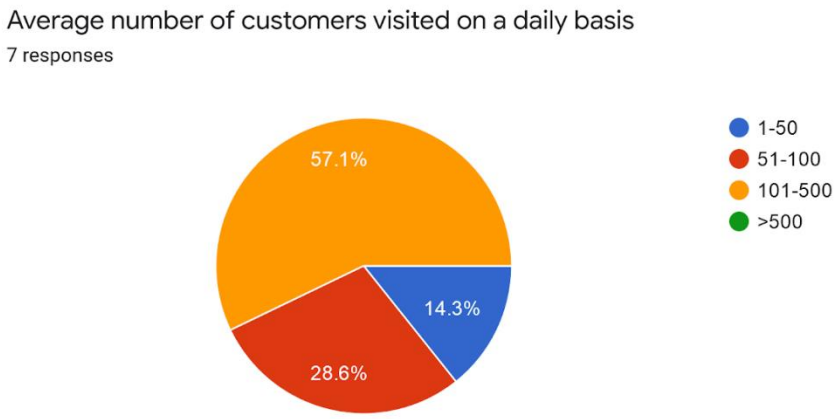
The questionnaire participants were requested to provide information regarding their routing process. To this scope, multiple choice questions were addressed to the participants. The responses received are presented in Graph 1 to Graph 6.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

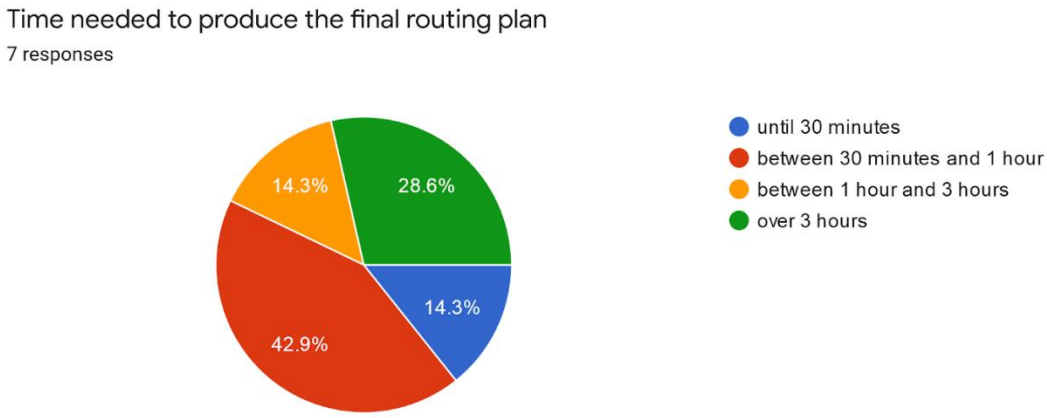
Graph 1: Managers - Average number of trucks needed on a daily basis to perform the routing plan



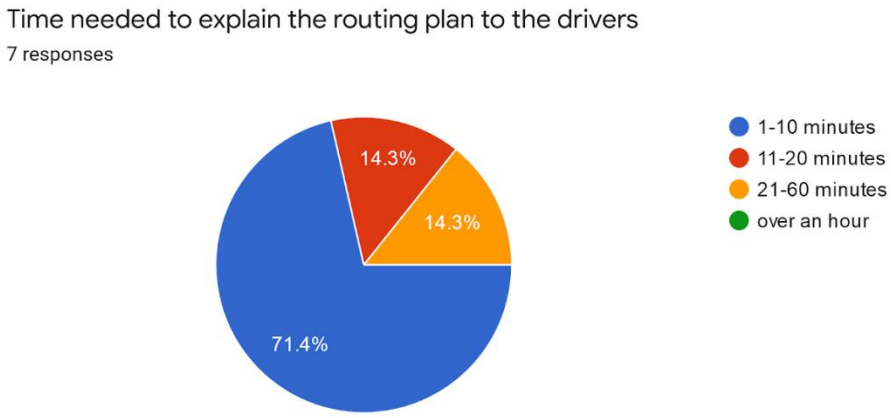
Graph 2: Managers - Average number of customers visited on a daily basis



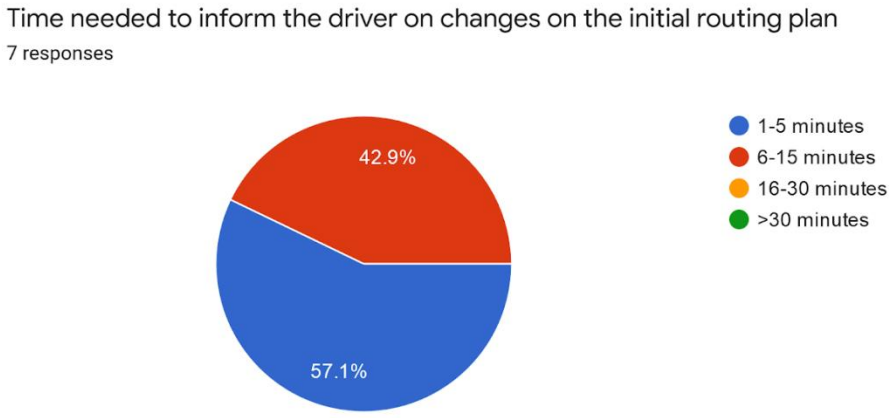
Graph 3: Managers - Time needed to produce the final routing plan



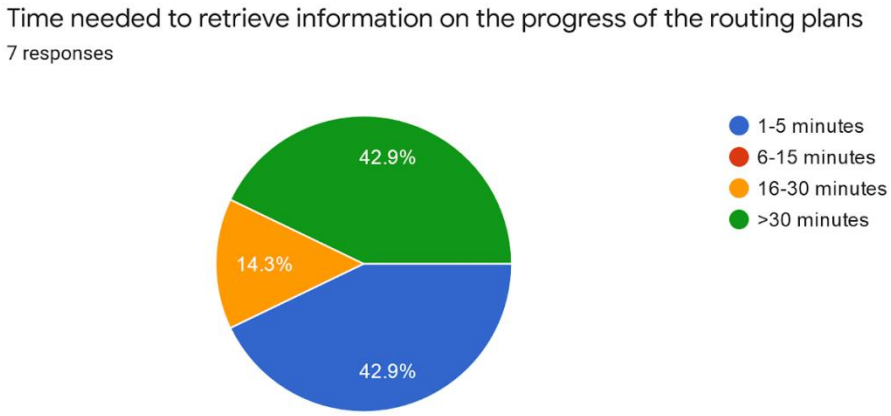
Graph 4: Managers - Time needed to explain the routing plan to the drivers



Graph 5: Managers - Time needed to inform the driver on changes on the initial routing plan



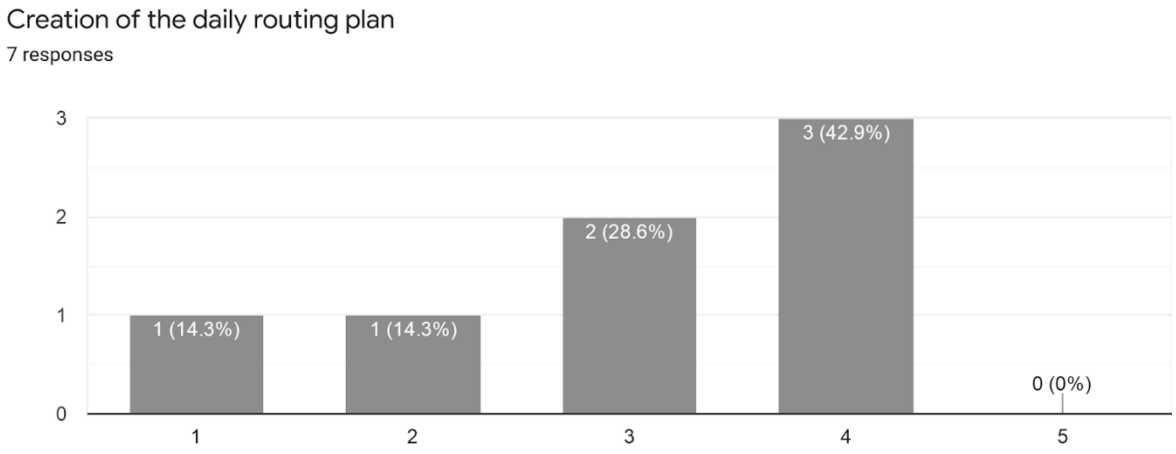
Graph 6: Managers - Time needed to retrieve information on the progress of the routing plans



8 Routing Process Management – Second section

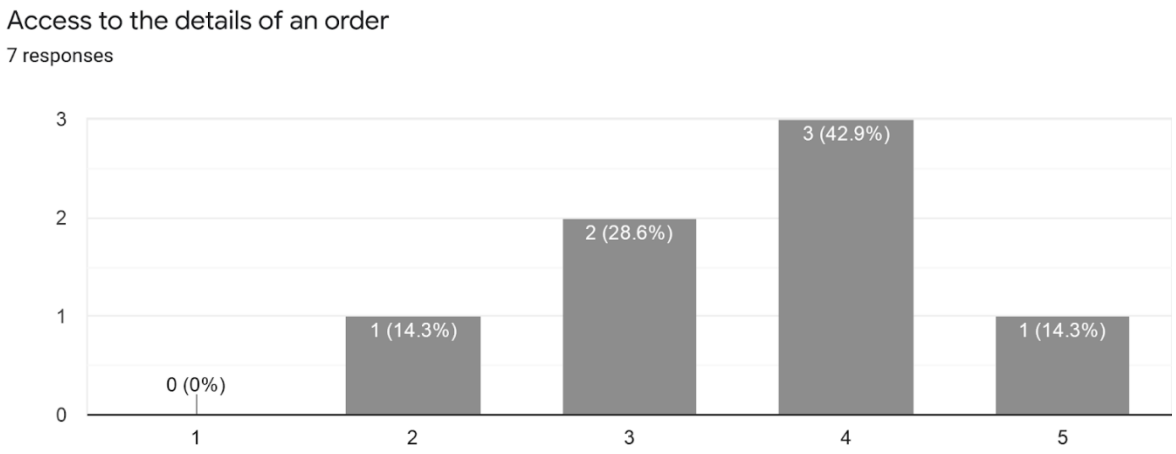
The questionnaire participants were requested to rate the effort required to perform their usual daily tasks. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very demanding" and 5 to "Very easy", were addressed to the participants. The responses received are presented in **Graph 7** to **Graph 11**.

Graph 7: Managers - Creation of the daily routing plan

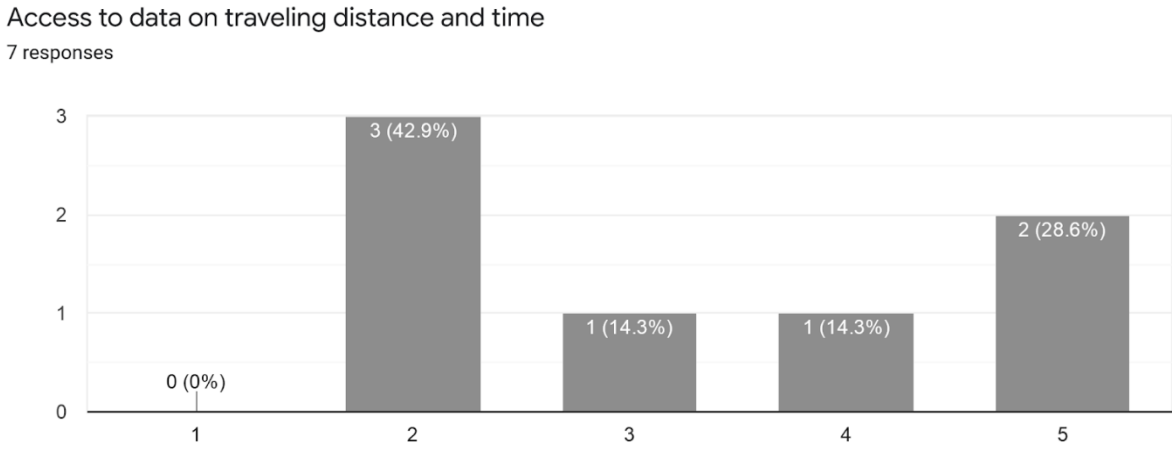


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

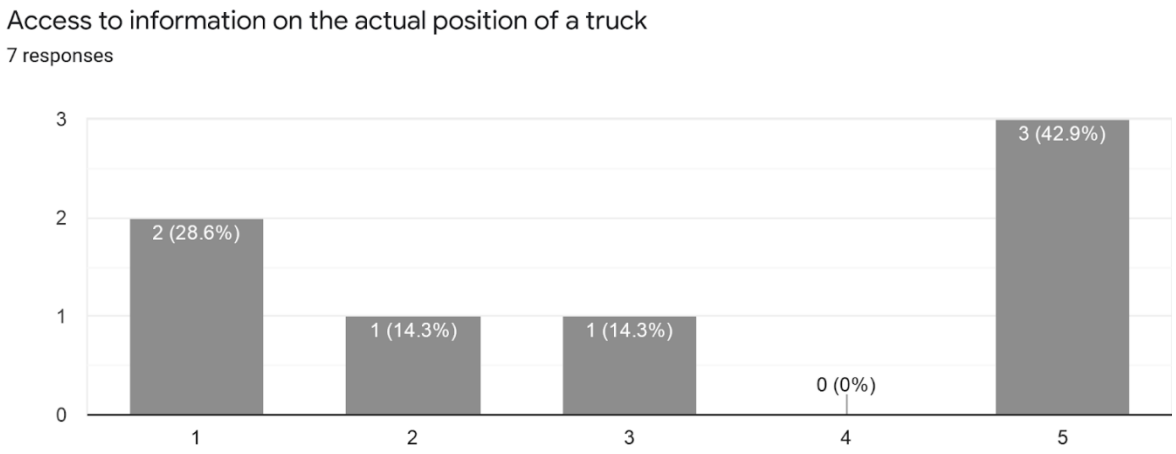
Graph 8: Managers - Access to the details of an order



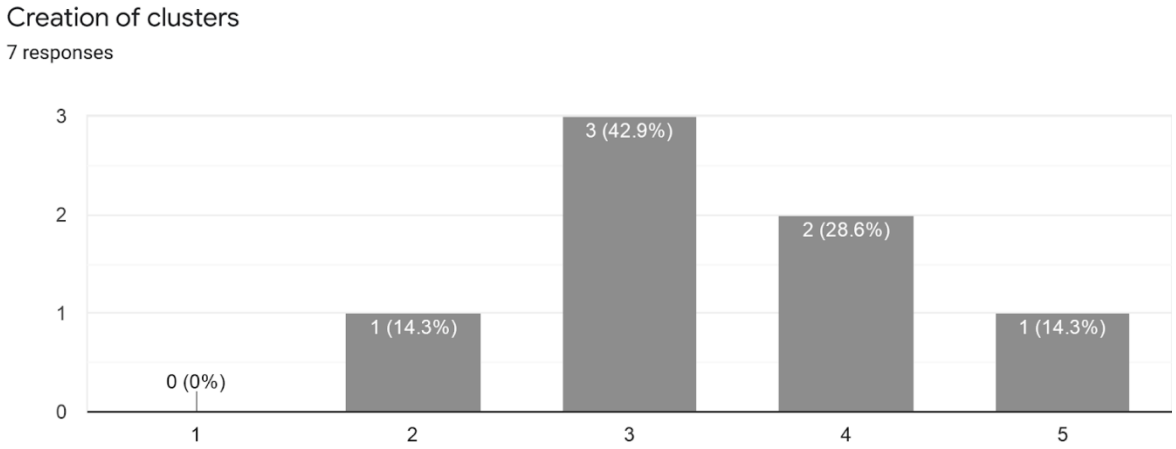
Graph 9: Managers - Access to data on traveling distance and time



Graph 10: Managers - Access to information on the actual position of a truck



Graph 11: Managers - Creation of clusters

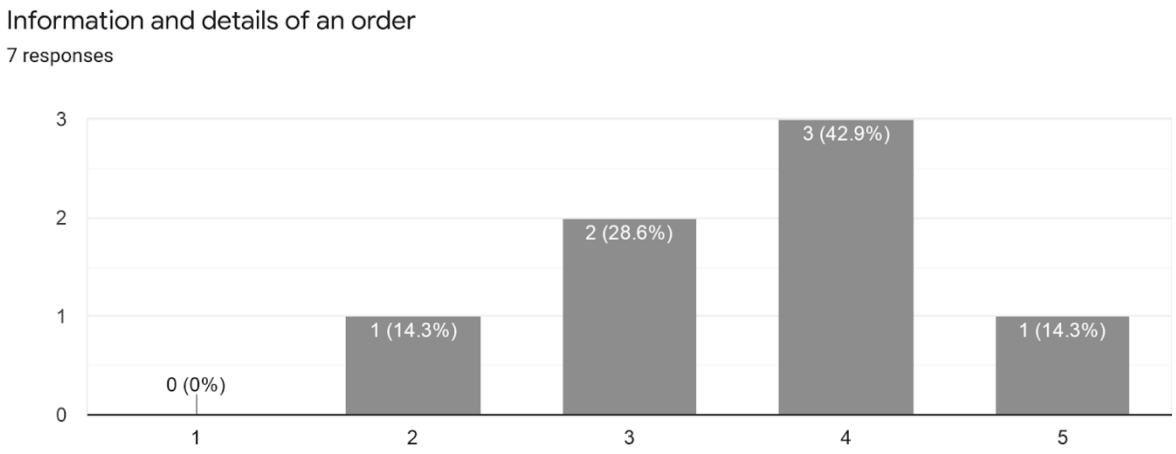


9 Routing Process Management – Third section

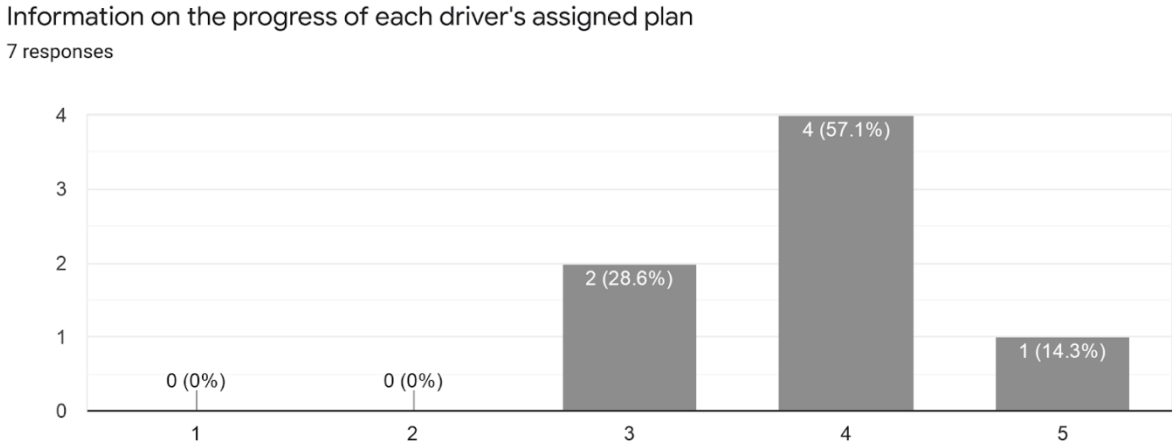
The questionnaire participants were requested to rate the quality of their current tools and functionalities. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in Graph 12 to Graph 15.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

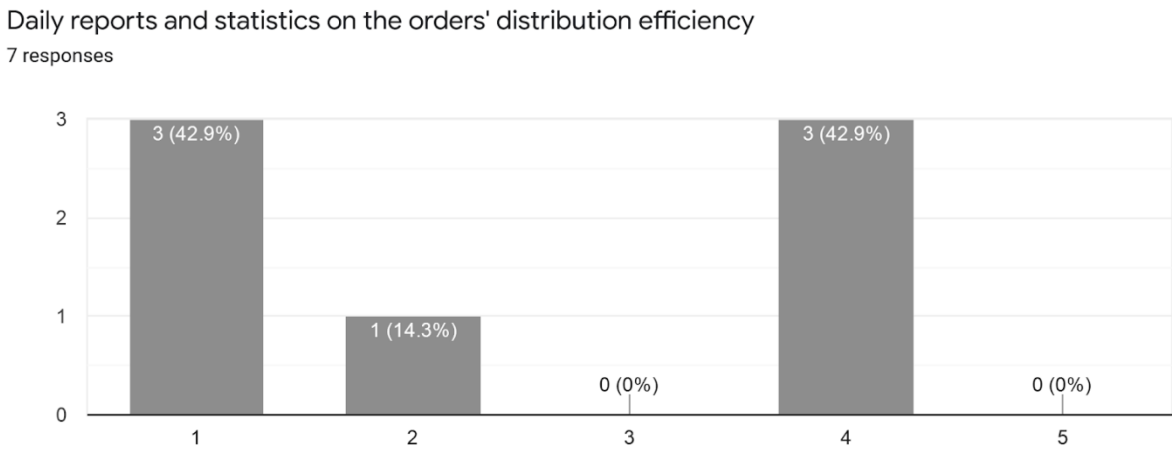
Graph 12: Managers - Information and details of an order



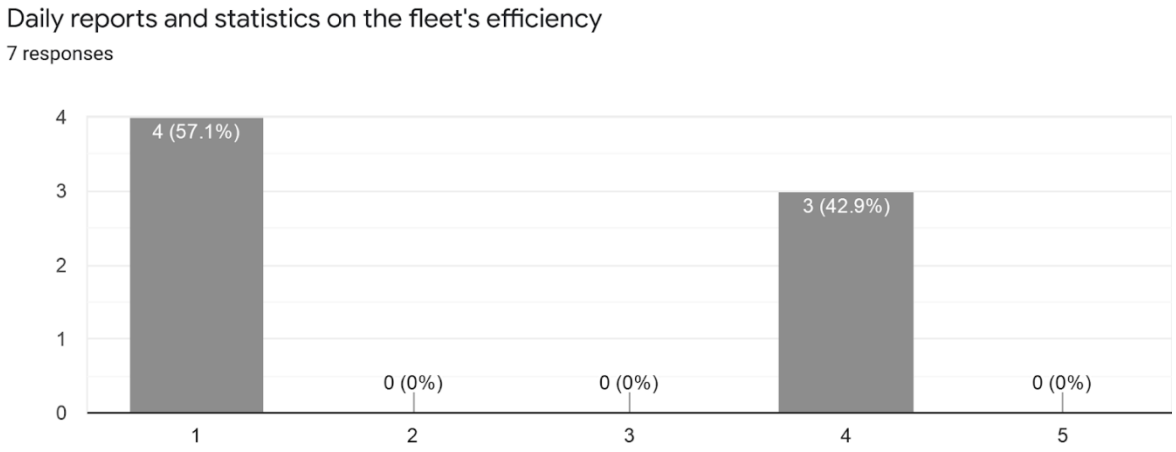
Graph 13: Managers - Information on the progress of each driver's assigned plan



Graph 14: Managers - Daily reports and statistics on the orders' distribution efficiency



Graph 15: Managers - Daily reports and statistics on the fleet's efficiency

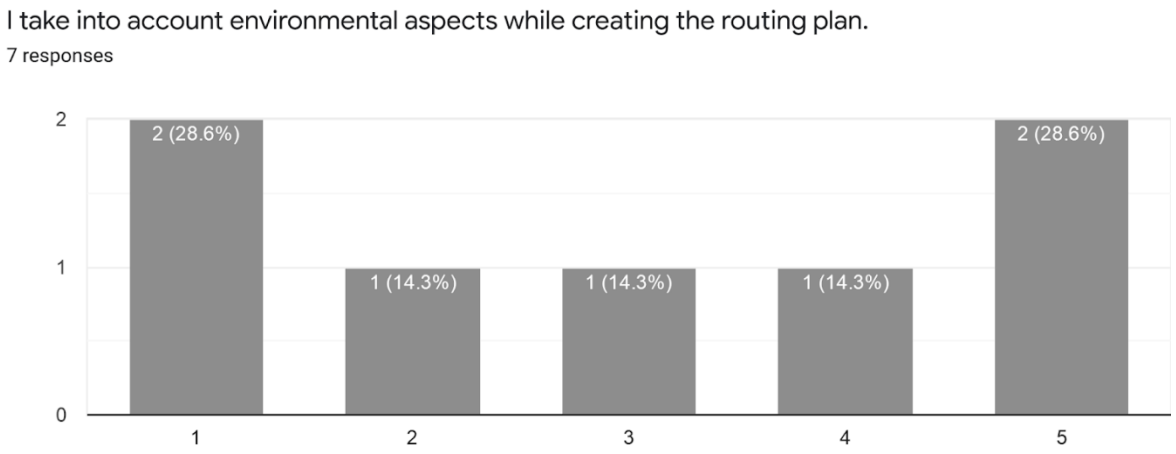


10 Environmental thinking

The questionnaire participants were requested to evaluate the extent to which they take environmental aspects into account while creating the routing plan. To this scope, they stated their attitude towards environmental aspects consideration while creating the routing plan under a 5-point Likert scale, where 1 corresponds to "Totally disagree" and 5 to "Totally agree", were addressed to the participants. The responses received are presented in **Graph 16**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 16: Managers – Environmental aspects consideration while creating the routing plan



10.1 GreenYourRoute Questionnaire for drivers within GYR Consortium (before GYR platform release)

In the current section, the questionnaire addressed to drivers within GYR Consortium ran through a Google form (link) and the results from the responses received will be presented. This questionnaire was also distributed in the demonstrator's native language, i.e. in Greek (link), Czech (link) and Italian (link). In total, 13 individuals answered the questionnaire.

10.1.1 The questionnaire questions

The questionnaire consisted of 10 questions and the average response time was estimated to 4 minutes. It was divided into four sections. The first three sections of the questionnaire were concerned with routing process performance, while the last section was concerned with the environmental thinking of the responders.

10.1.2 Responses received

The questionnaire was sent to the project demonstrators in January 2021 and was concluded in February 2021. The following responses were requested and received:

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Table 28: GreenYourRoute Questionnaire for drivers within GYR Consortium (before GYR platform release) responses received

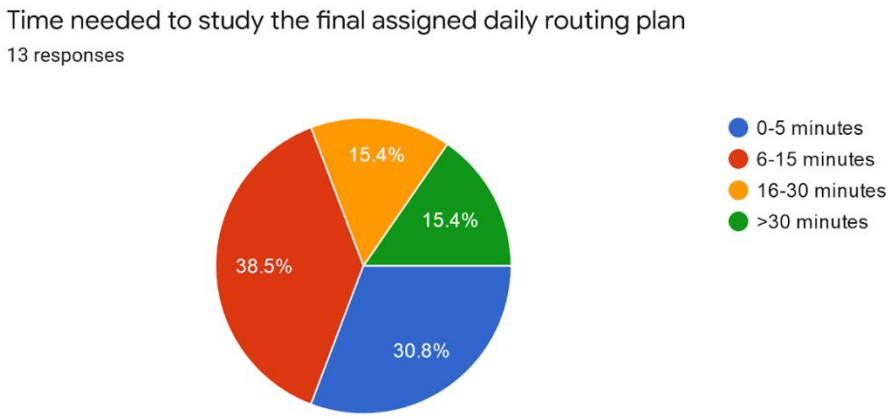
Demonstrator	Responses requested	Responses received
Greek demonstrators	3-6	6
CEDA's demonstrator	2-4	4
ITACA's demonstrator	2-4	3
Total		**13**

10.1.3 Responses analysis

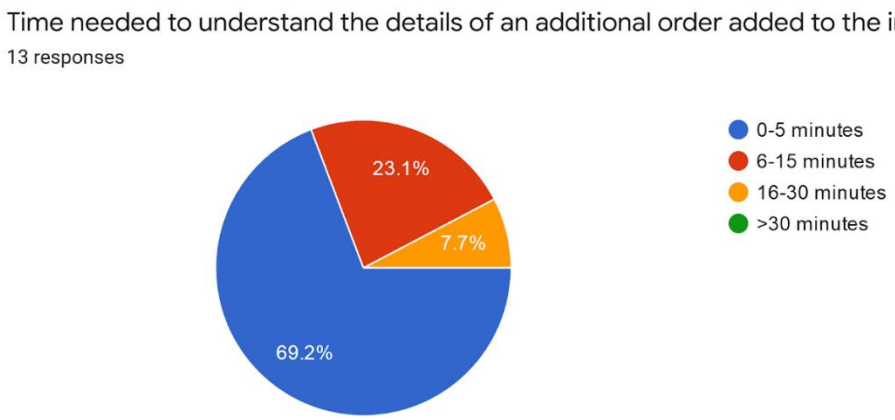
11 Routing Process Performance – First section

The questionnaire participants were requested to provide information regarding their routing performance. To this scope, multiple choice questions were addressed to the participants. The responses received are presented in Graph 17 to Graph 18.

Graph 17: Drivers - Time needed to study the final assigned daily routing plan



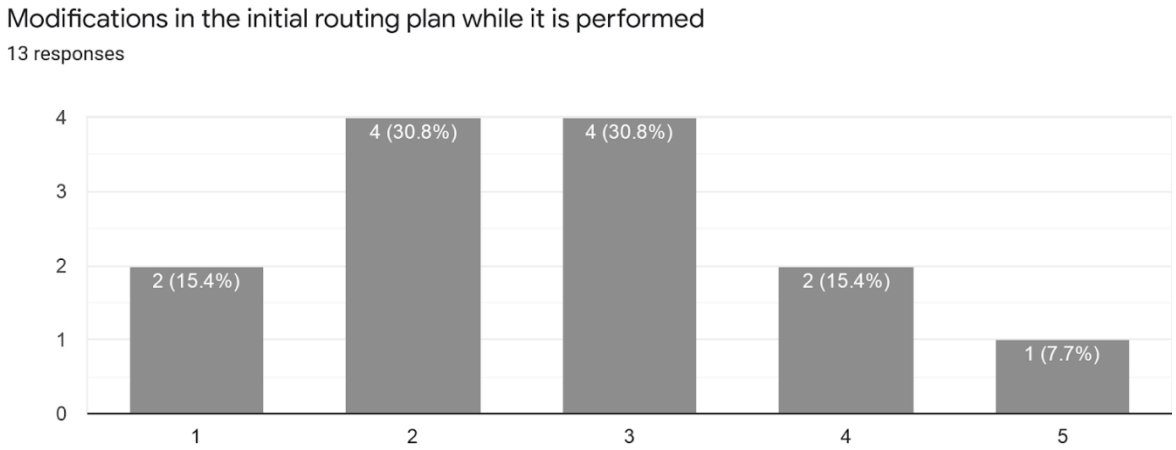
Graph 18: Drivers - Time needed to understand the details of an additional order added to the initial routing plan



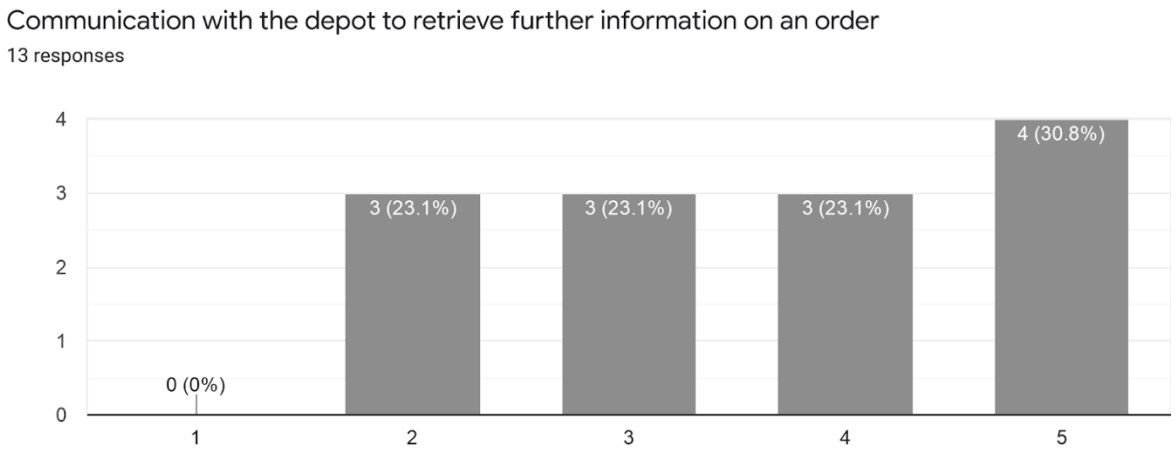
12 Routing Process Performance – Second section

The questionnaire participants were requested to rate the effort required to perform their usual daily tasks. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very demanding" and 5 to "Very easy", were addressed to the participants. The responses received are presented in **Graph 19** to **Graph 21**.

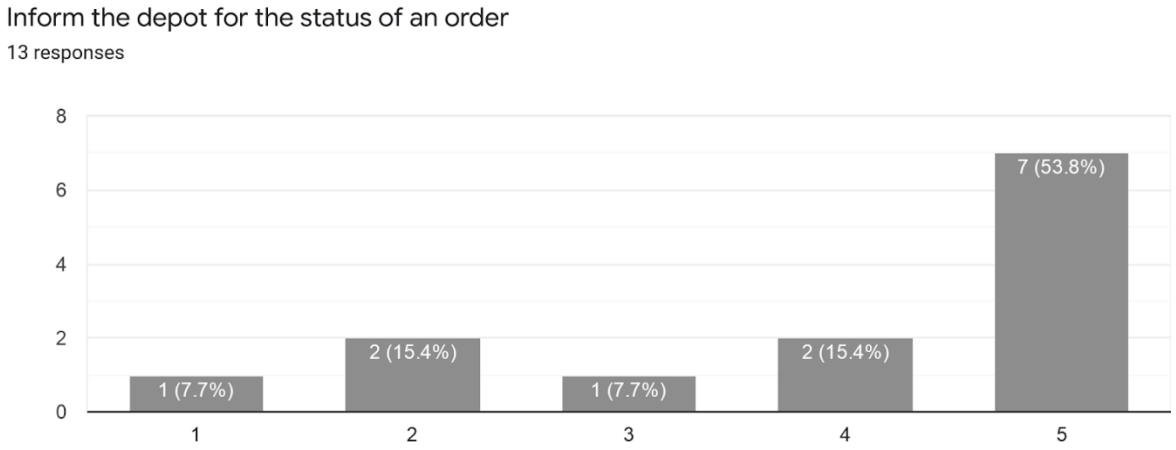
Graph 19: Drivers - Modifications in the initial routing plan while it is performed



Graph 20: Drivers - Communication with the depot to retrieve further information on an order



Graph 21: Drivers - Inform the depot for the status of an order

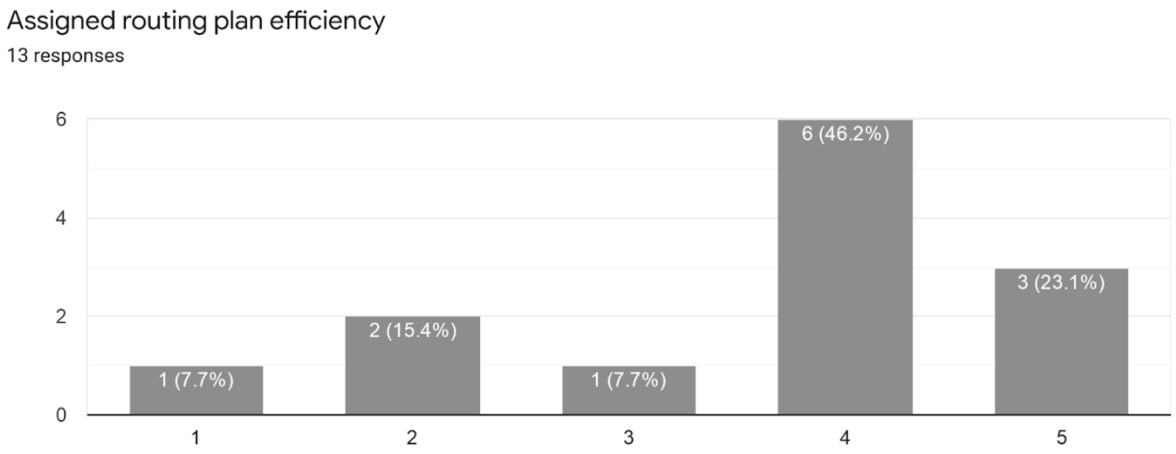


13 Routing Process Performance a– Third section

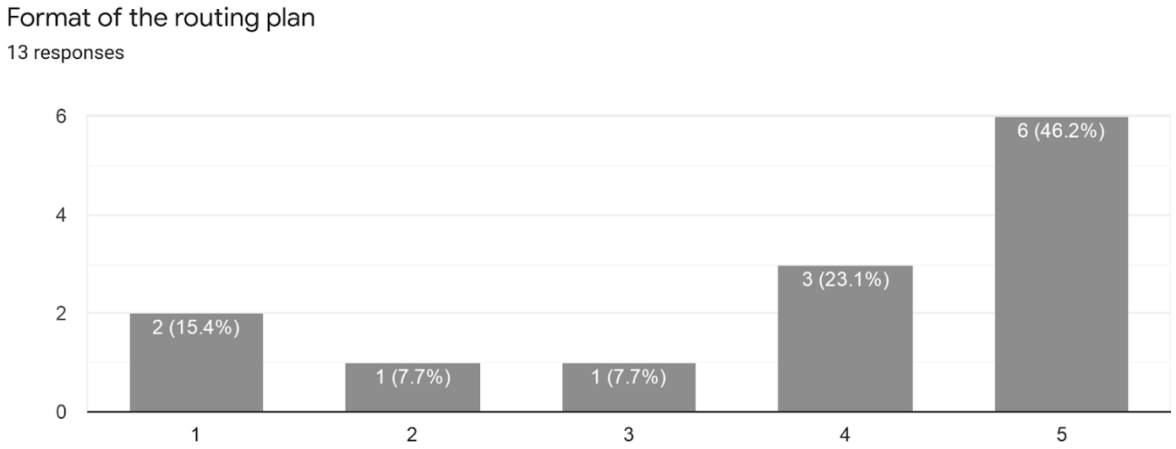
The questionnaire participants were requested to rate the quality of their current tools and functionalities. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

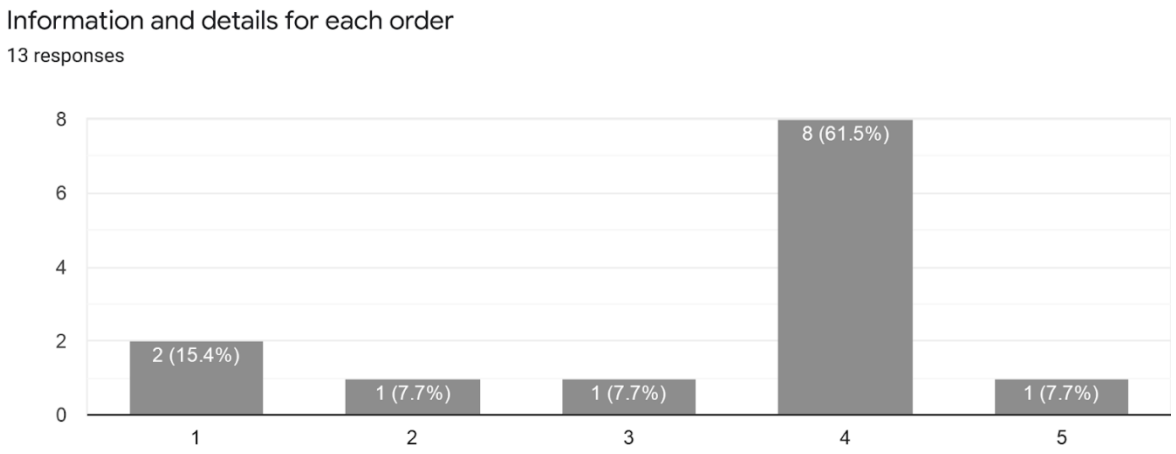
Graph 22: Drivers - Assigned routing plan efficiency



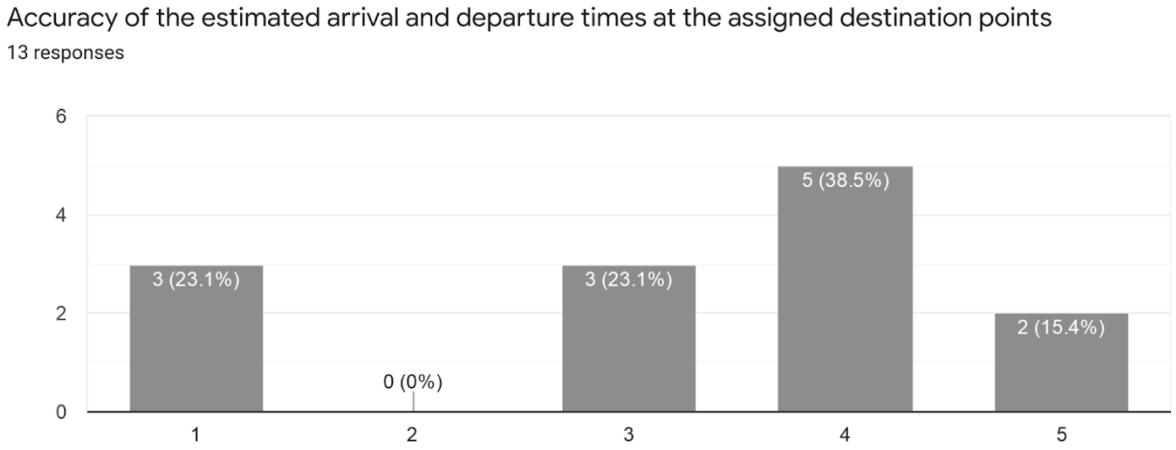
Graph 23: Drivers - Format of the routing plan



Graph 24: Drivers - Information and details for each order



Graph 25: Drivers - Accuracy of the estimated arrival and departure times at the assigned destination points

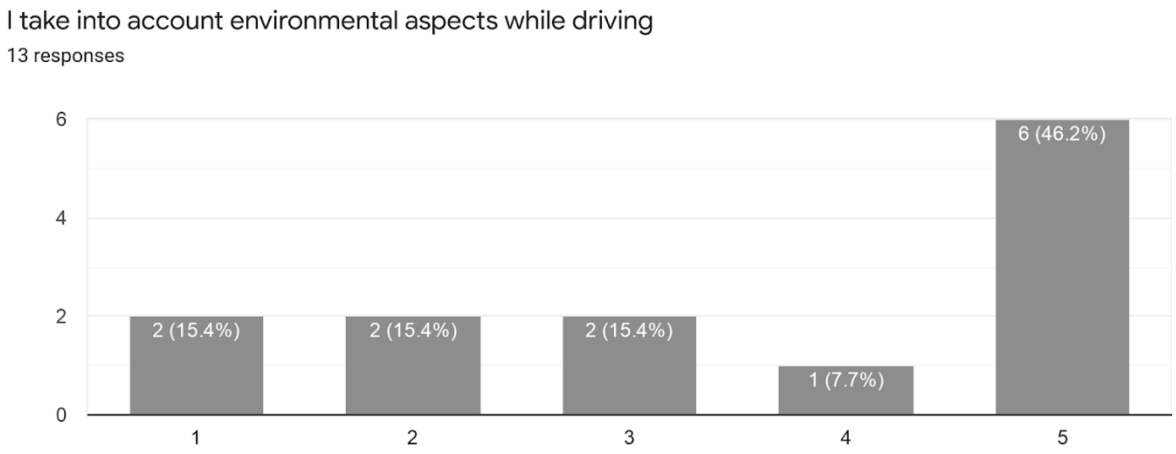


14 Environmental thinking

The questionnaire participants were requested to evaluate the extent to which they take environmental aspects into account while creating the routing plan. To this scope, they stated their attitude towards environmental aspects consideration while creating the routing plan under a 5-point Likert scale, where 1 corresponds to "Totally disagree" and 5 to "Totally agree", were addressed to the participants. The responses received are presented in **Graph 26**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 26: Drivers – Environmental aspects consideration while driving



14.1 GreenYourRoute Questionnaire for managers within GYR Consortium (6 months after GYR platform release and demonstration)

In the current section, the questionnaire addressed to managers within GYR Consortium ran through a Google form (link) and the results from the responses received will be presented. In total, 20 persons answered the questionnaire.

14.1.1 The questionnaire questions

The questionnaire consisted of 19 questions and the average response time was estimated to 7 minutes. It was divided into four sections. The first two sections of the questionnaire were concerned with the quality of GYR application, while the last two sections were concerned with the contribution of GYR platform to the environmental objectives of EU.

14.1.2 Responses received

The questionnaire was sent to the project demonstrators in September 2022 and was concluded in December 2022. The following responses were requested and received:

Table 29: GreenYourRoute Questionnaire for managers within GYR Consortium (6 months after GYR platform release and demonstration) responses received

Demonstrator	Responses requested	Responses received
Greek demonstrators	8-10	10
CEDA's demonstrator	4-5	5

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

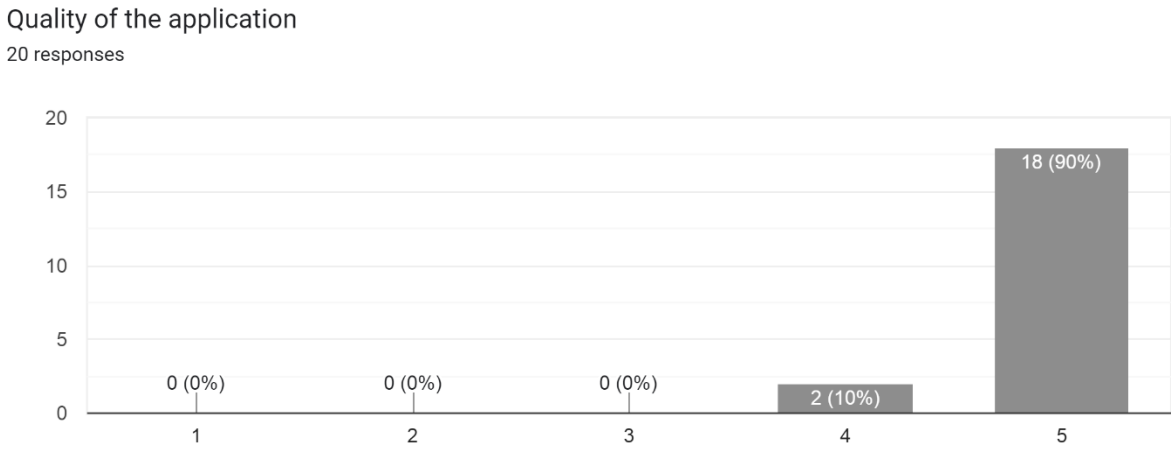
Demonstrator	Responses requested	Responses received
ITACA's demonstrator	4-5	5
Total		**20**

14.1.3 Responses analysis

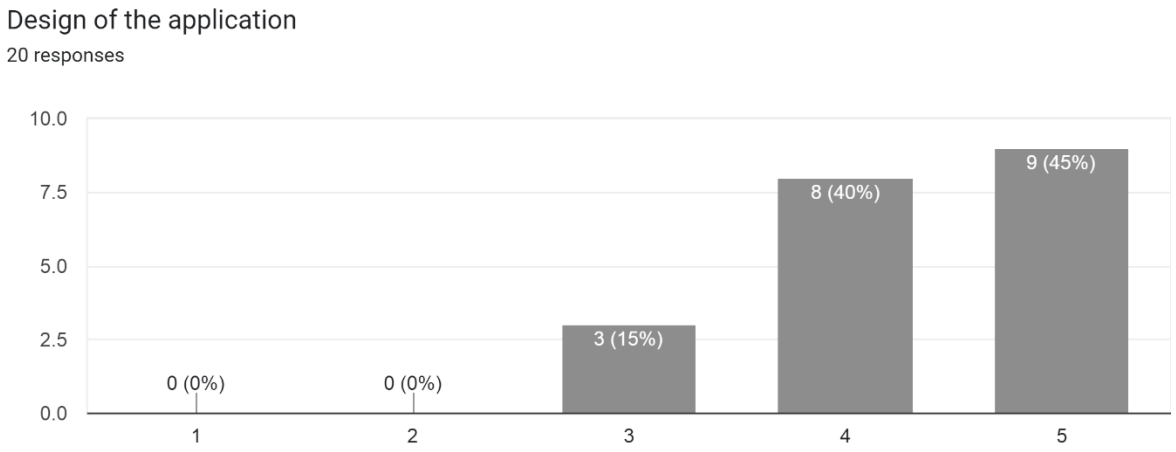
GreenYourRoute application – First section

The questionnaire participants were requested to provide information regarding the quality of GYR application. To this scope, multiple choice questions were addressed to the participants. The responses received are presented in Graph 1 to Graph 6.

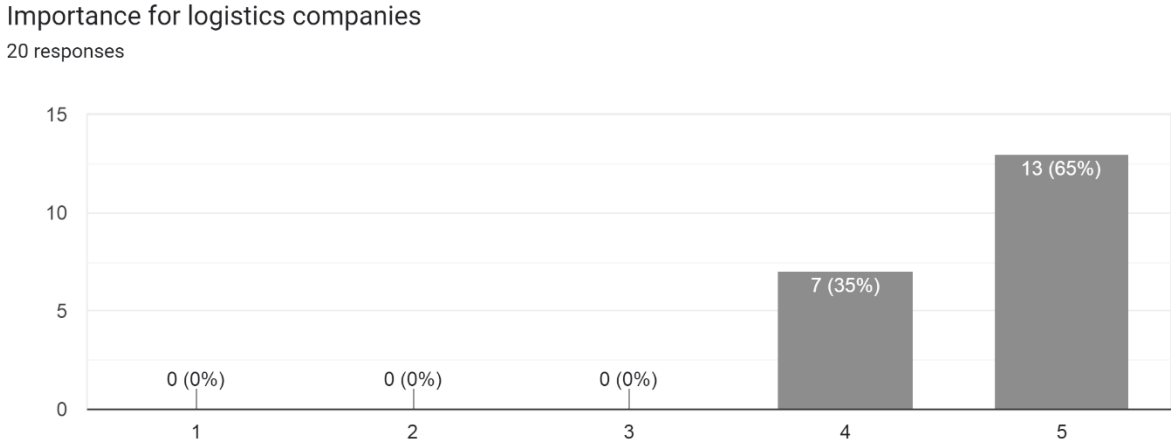
Graph 27: Managers – Quality of the application



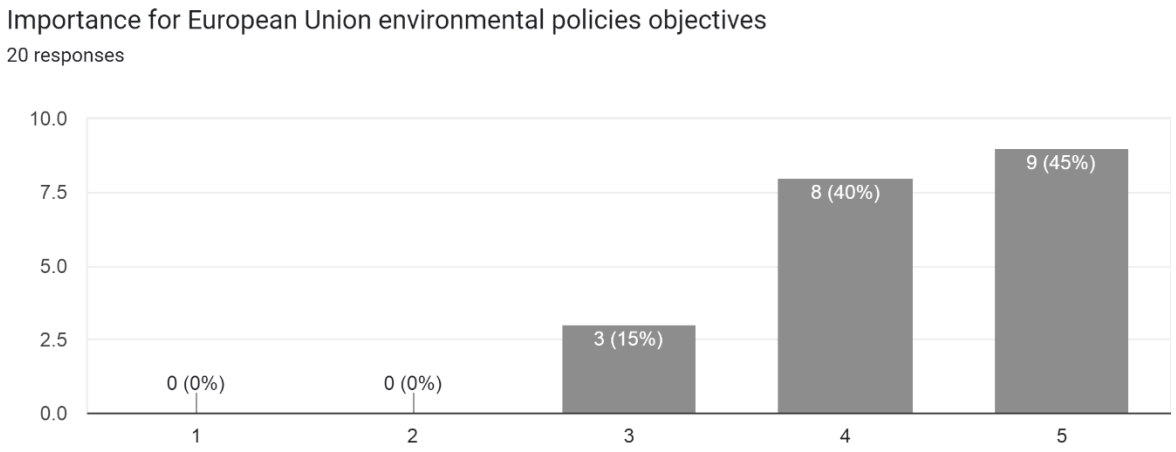
Graph 28: Managers – Design of the application



Graph 29: Managers – Importance of the application for logistic companies



Graph 30: Managers - Importance for European Union environmental policies objectives



The participants recommended some additional services that they consider important to be added in the future into GreenYourRoute application. The recommendations coreposnds to the 65% of the participants (the rest 35% did not suggest any additional service) and they include:

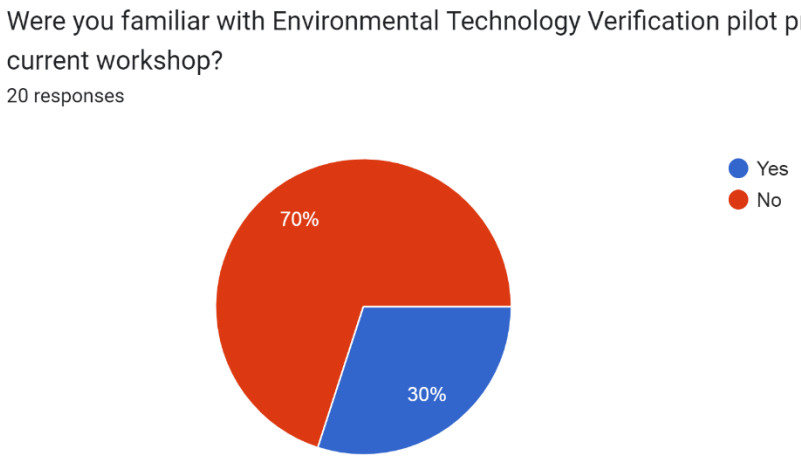
- The automatic production of an annual report concering the emissions generated.
- The development of a software to transform data of ERP systems to the necessary format for GYR platform.
- The development of a software to valid routing data.
- The flexibility to drivers to take their own decision on real time when a plan is implemented.
- The flexibility for revision to the suggested routing plans by GYR platform.

GreenYourRoute application – second section

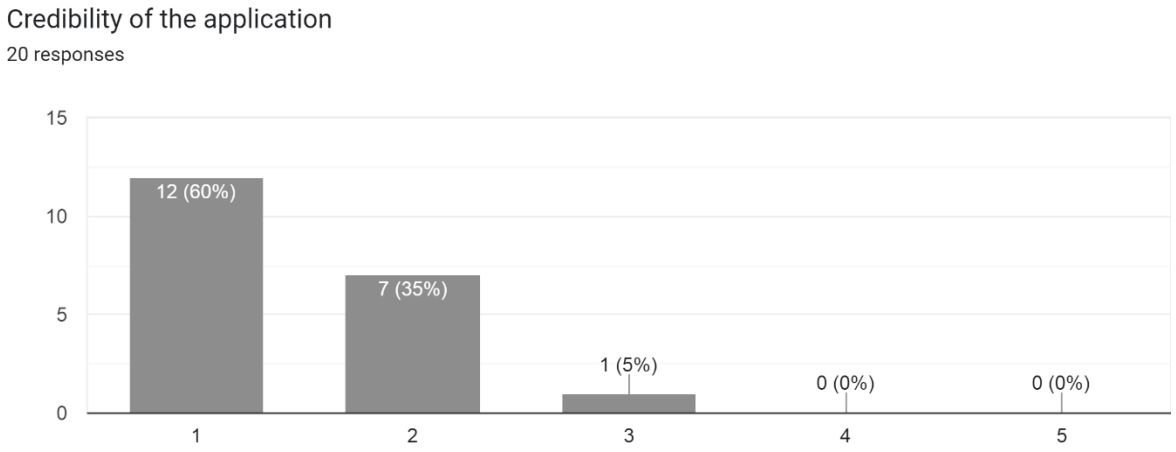
The questionnaire participants were requested to rate the importance of ETV for GYR platform. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "unimportant" and 5 to "Very important", were addressed to the participants. The responses received are presented in Graph 7 to Graph 11.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

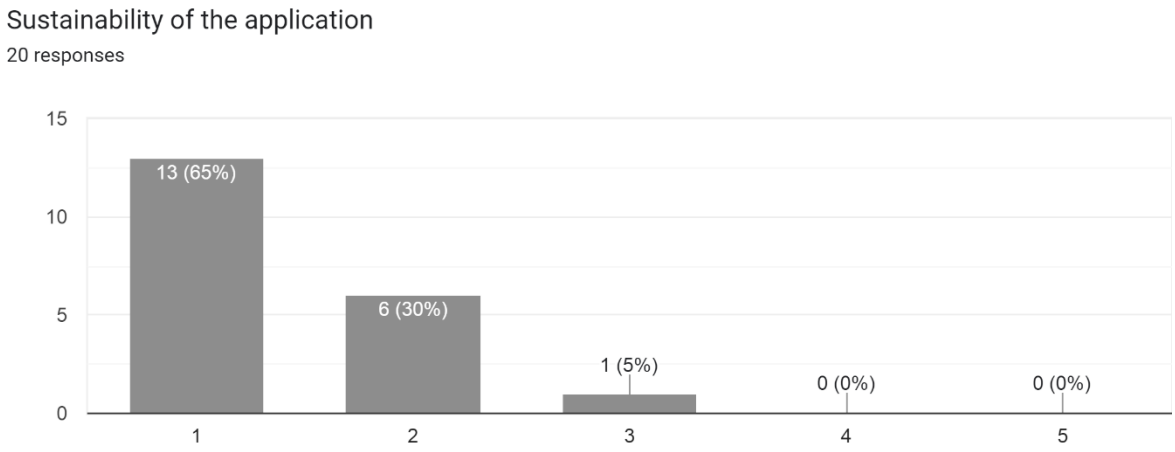
Graph 31: Managers - ETV



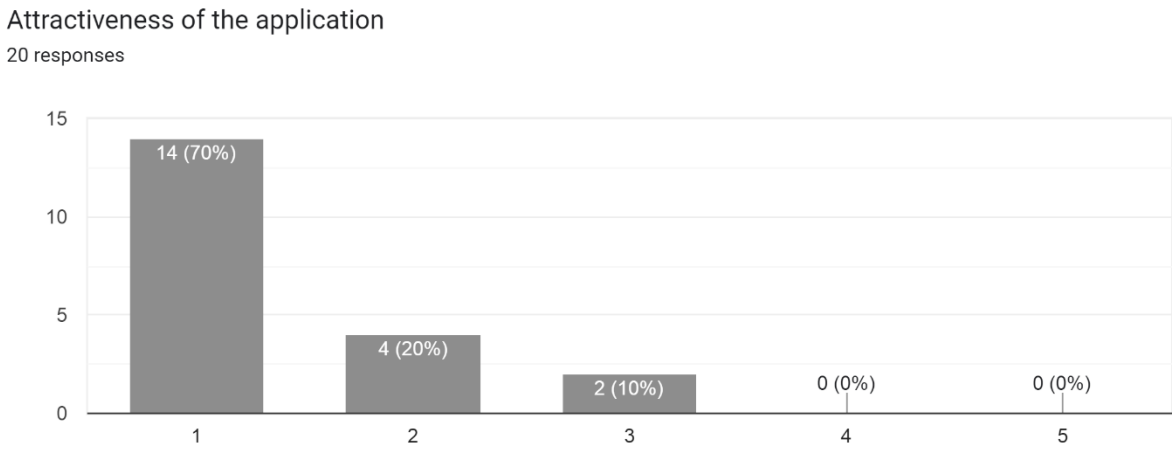
Graph 32: Managers – ETV and credibility of GYR application



Graph 33: Managers – ETV and sustainability of GYR application



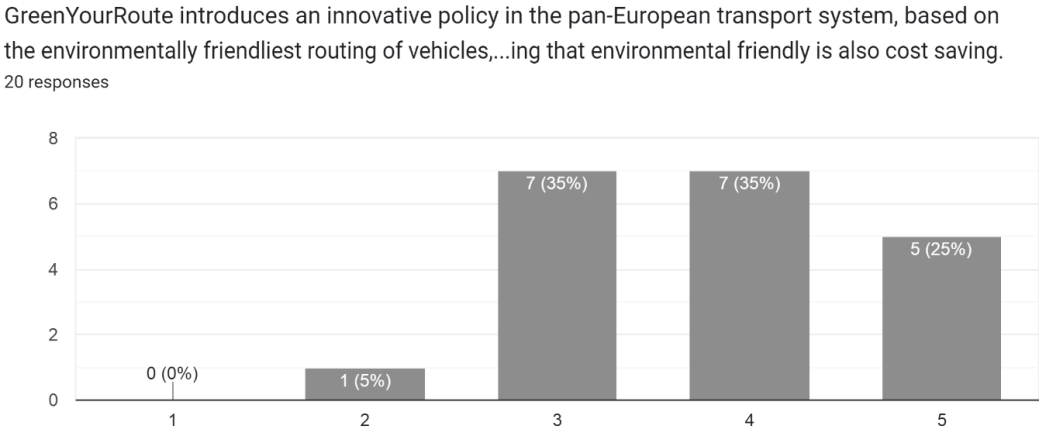
Graph 34: Managers – ETV and attractiveness of GYR application



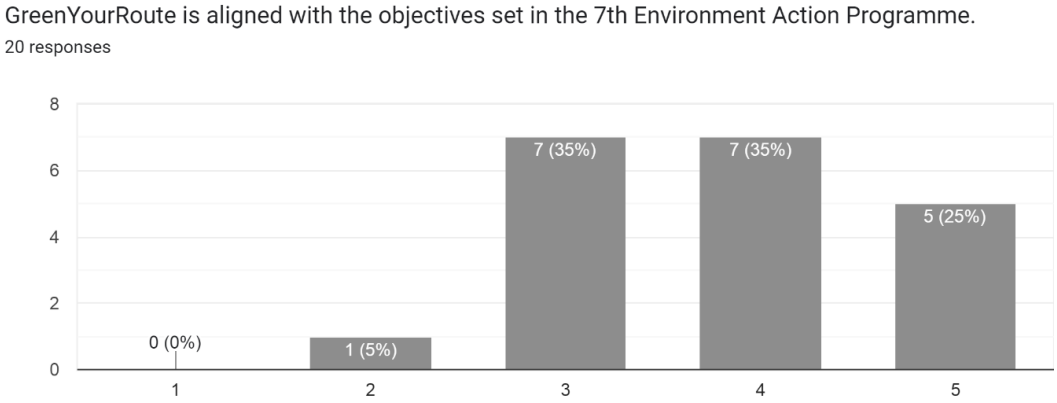
GreenYourRoute application – third section

The questionnaire participants were requested to rate the contribution of GYR application to the environmental objectives of EU. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree", were addressed to the participants. The responses received are presented in **Graph 7** to **Graph 11**.

Graph 35: Managers –Does GYR application introduce an innovative policy in the pan-European transport system

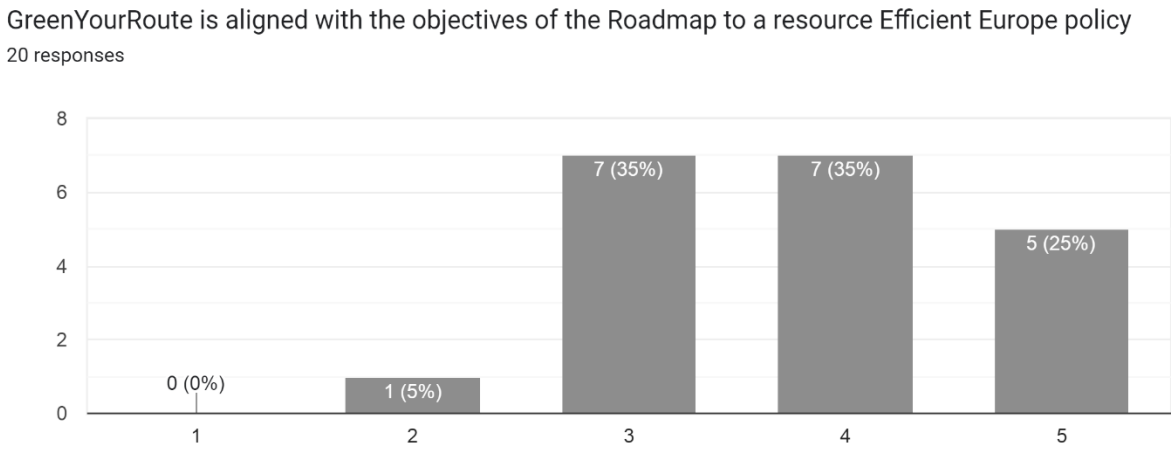


Graph 36: Managers – Is GYR application aligned with the objectives set in the 7th Environment Action Programme.

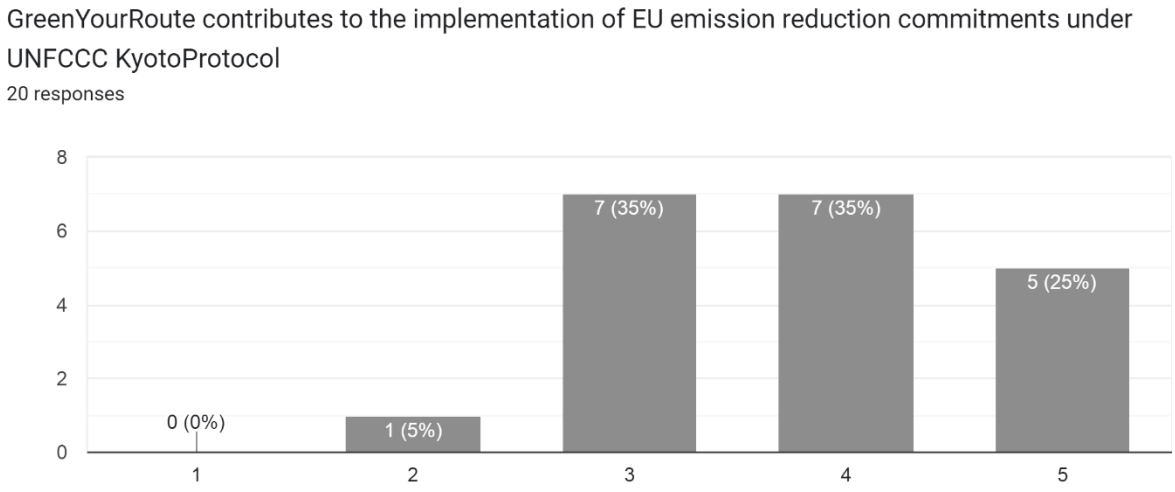


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

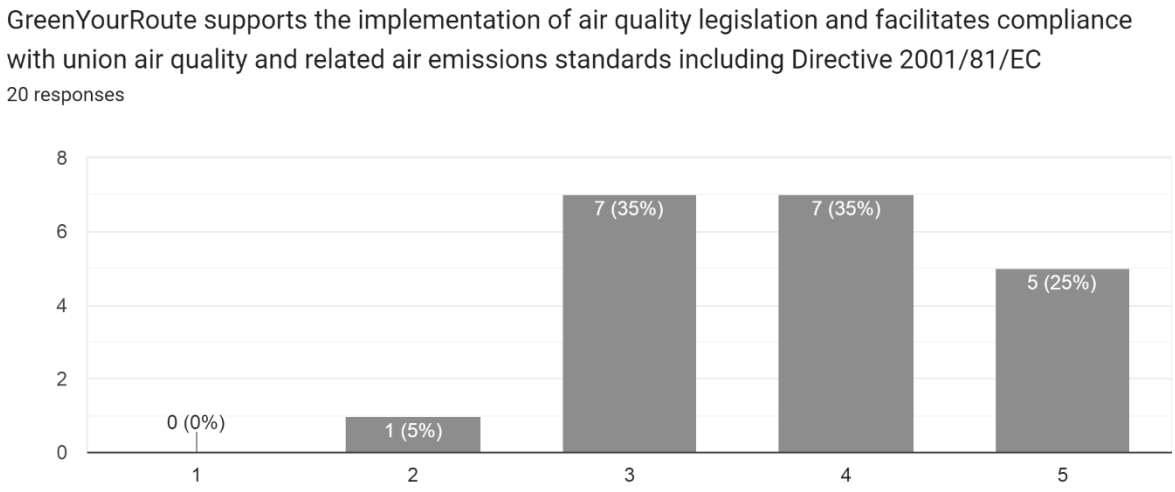
Graph 37: Managers – Is GYR application GreenYourRoute aligned with the objectives of the Roadmap to a resource Efficient Europe policy



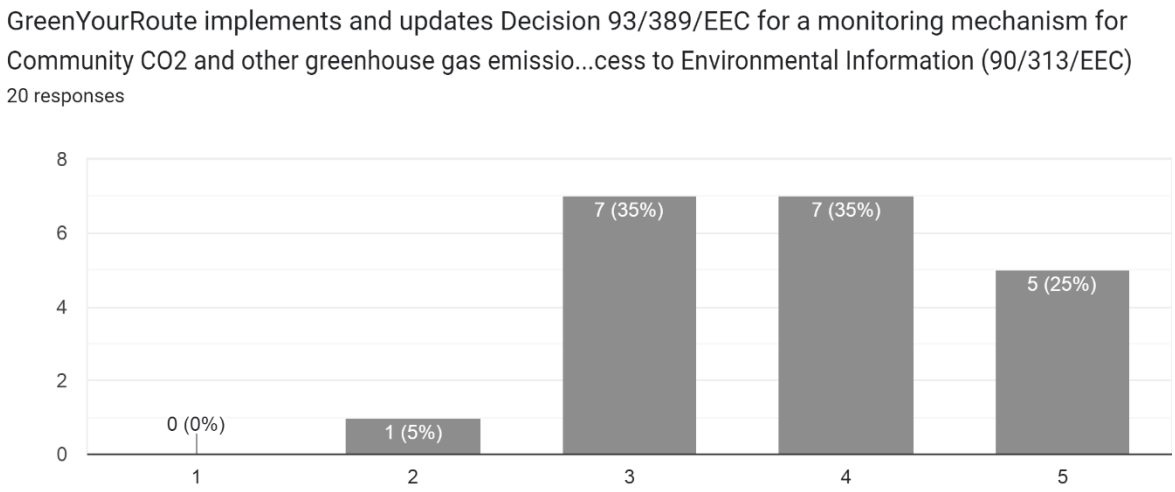
Graph 38: Managers – Does GYR application contribute to the implementation of EU emission reduction commitments under UNFCCC KyotoProtocol



Graph 39: Managers – Does GYR application support the implementation of air quality legislation and facilitate compliance with union air quality and related air emissions standards including Directive 2001/81/EC

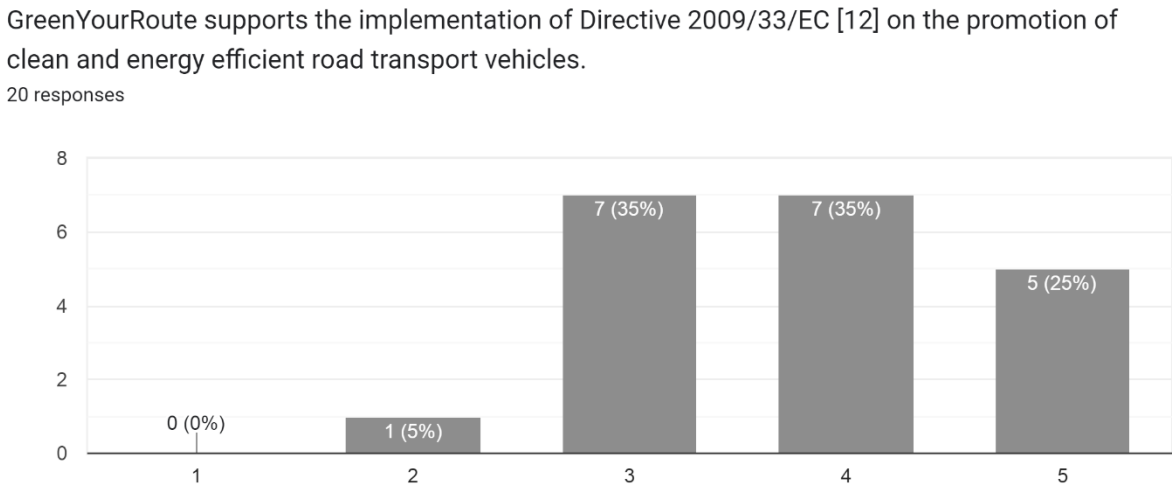


Graph 40: Managers – Does GYR application implement and update Decision 93/389/EEC for a monitoring mechanism for Community CO2 and other greenhouse gas emissions and Access to Environmental Information (90/313/EEC)



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

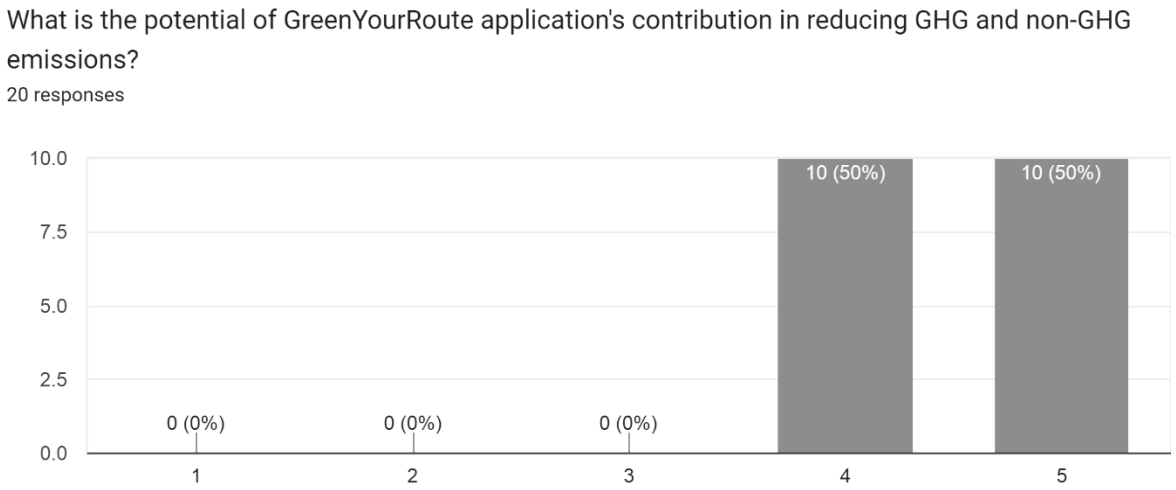
Graph 41: Managers – Does GYR application support the implementation of Directive 2009/33/EC on the promotion of clean and energy efficient road transport vehicles



GreenYourRoute application – fourth section

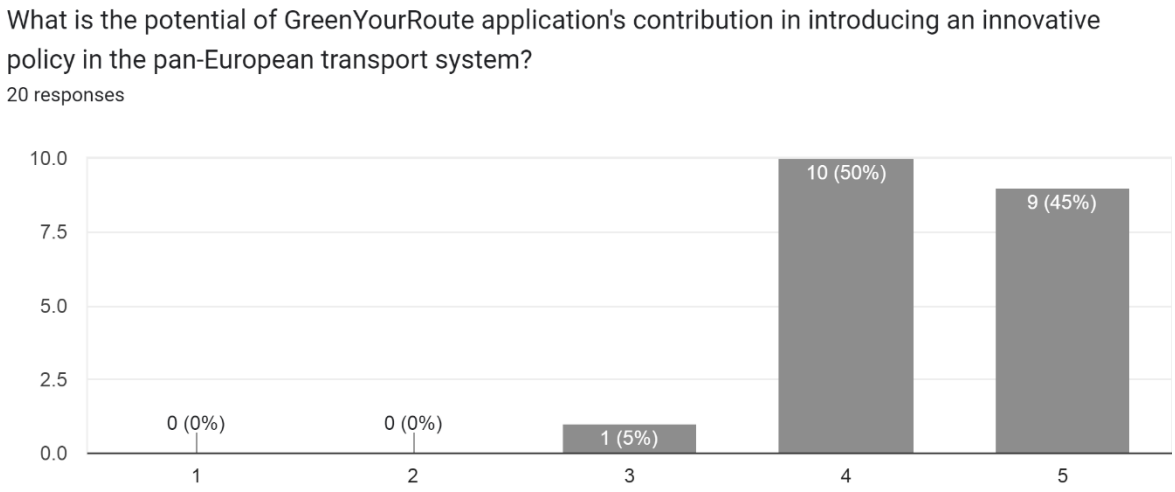
The questionnaire participants were requested to rate the potential of GYR application to the reduction of emissions. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree", were addressed to the participants. The responses received are presented in **Graph 7** to **Graph 11**.

Graph 42: Managers – What is the potential of GreenYourRoute application's contribution in reducing GHG and non-GHG emissions?

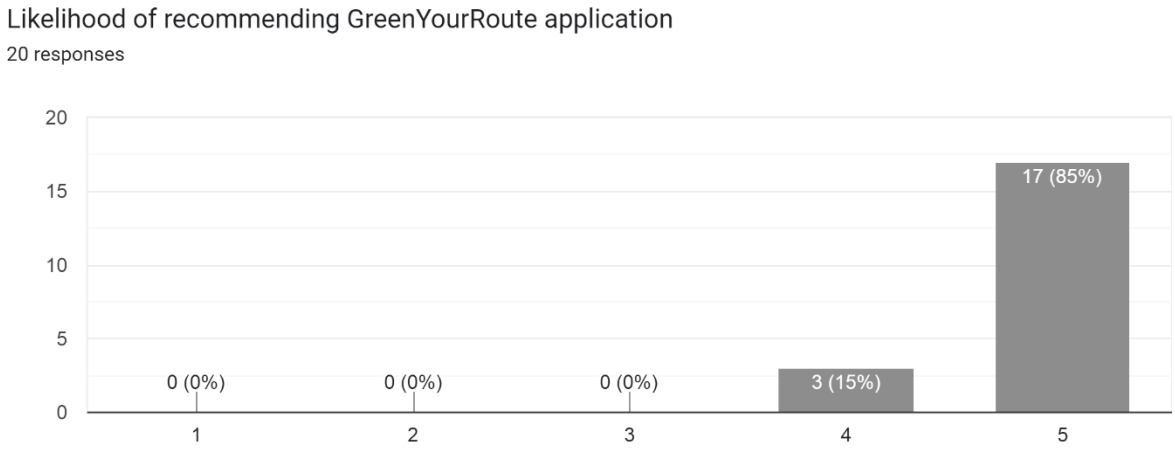


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 43: Managers – What is the potential of GreenYourRoute application's contribution in introducing an innovative policy in the pan-European transport system?



Graph 44: Managers – Likelihood of recommending GYR application



14.2 GreenYourRoute Questionnaire for drivers within GYR Consortium (6 months after GYR platform release and demonstration)

In the current section, the questionnaire addressed to drivers within GYR Consortium ran through a Google form (link) and the results from the responses received will be presented. In total, 23 persons answered the questionnaire.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

14.2.1 The questionnaire questions

The questionnaire consisted of 17 questions and the average response time was estimated to 8 minutes. It was divided into five sections. The first three sections of the questionnaire were concerned with the routing process performance, while the third and fourth section were concerned with the users' experience of the GYR application and the environmental thinking of the drivers.

14.2.2 Responses received

The questionnaire was sent to the project demonstrators in September 2022 and was concluded in December 2022. The following responses were requested and received:

Table 30: GreenYourRoute Questionnaire for managers within GYR Consortium (6 months after GYR platform release and demonstration) responses received

Demonstrator	Responses requested	Responses received
Greek demonstrators	8-10	12
CEDA's demonstrator	4-5	5
ITACA's demonstrator	4-5	6
Total		**23**

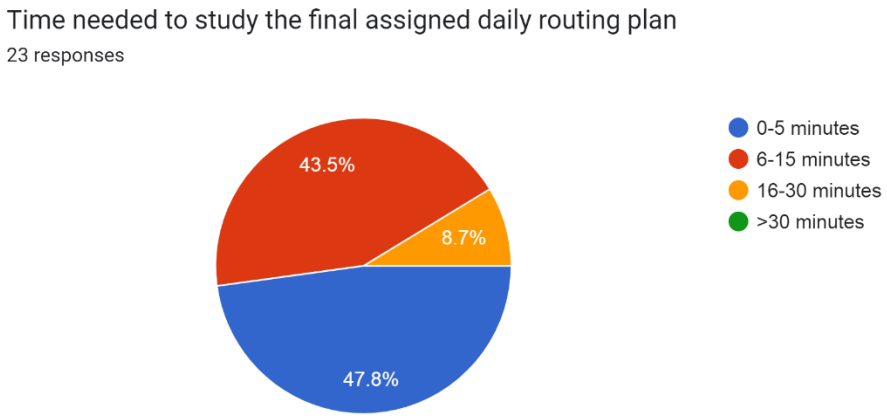
14.2.3 Responses analysis

Routing performance – First section

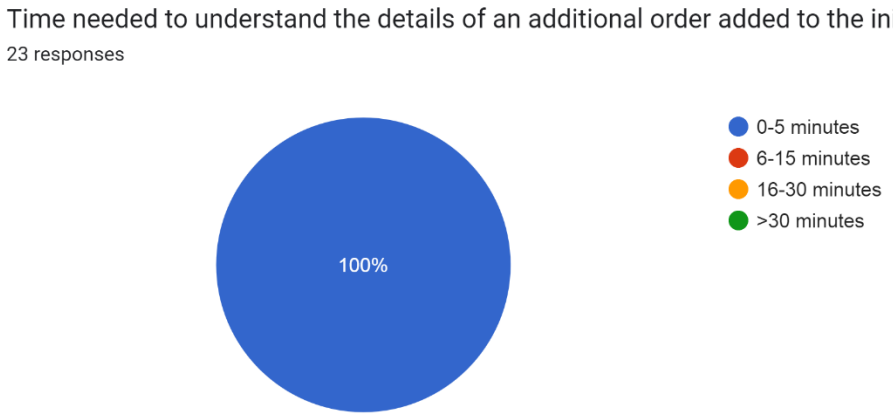
The questionnaire participants were requested to provide information regarding their time spent studying the suggested routing plan and the time spent to understand the details of the plan. The responses received are presented in Graph 17 to Graph 18.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 45: Drivers - Time needed to study the final assigned daily routing plan



Graph 46: Drivers - Time needed to understand the details of an additional order added to the initial routing plan

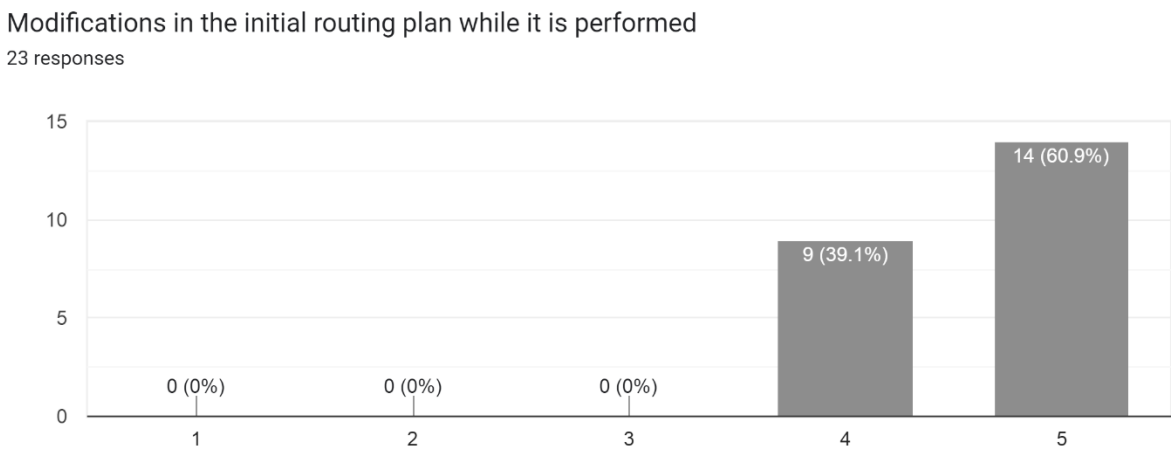


Routing performance – Second section

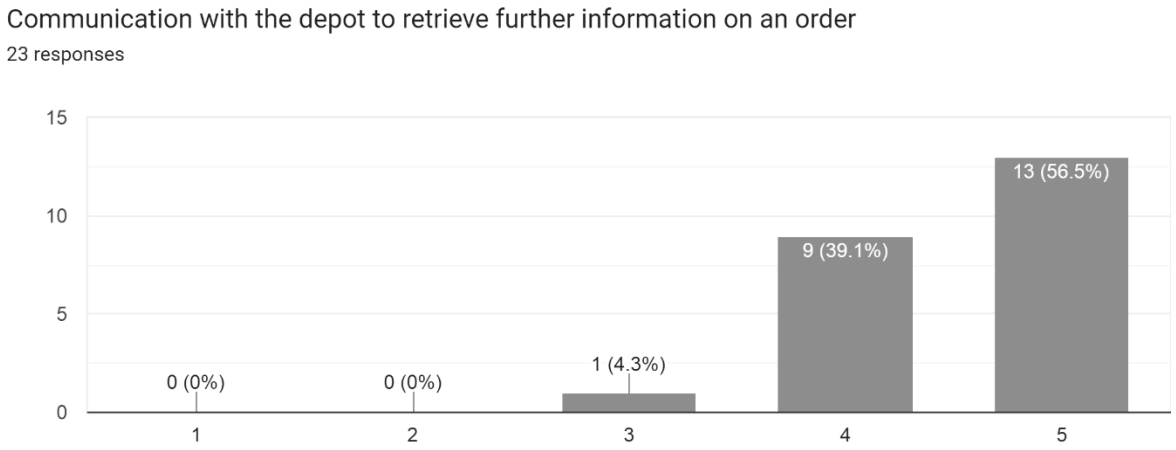
The questionnaire participants were requested to rate again the routing process performance concering the communication with the depot and potential modification to the suggested routing plan. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very demanding" and 5 to "Very easy", were addressed to the participants. The responses received are presented in **Graph 19** to **Graph 21**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 47: Drivers - Modifications in the initial routing plan while it is performed

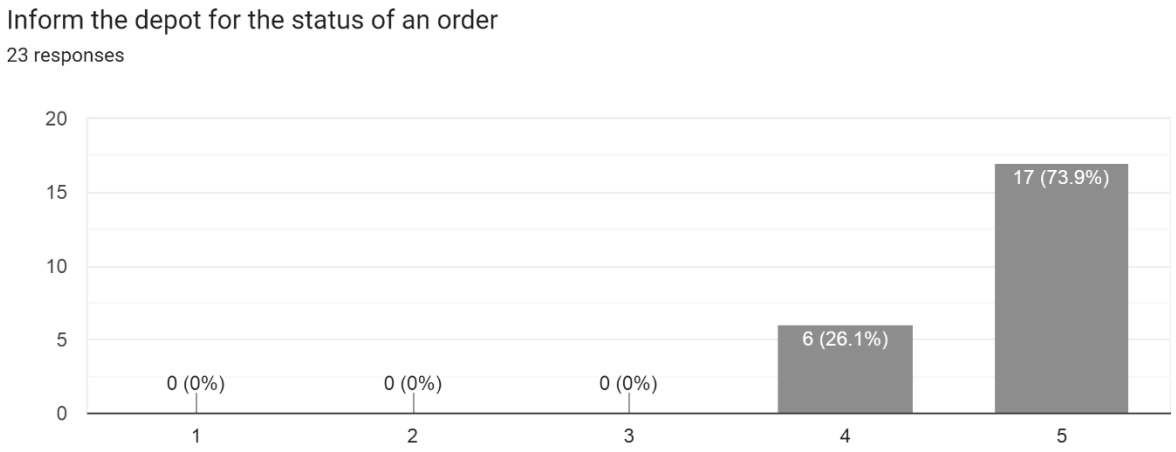


Graph 48: Drivers - Communication with the depot to retrieve further information on an order



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

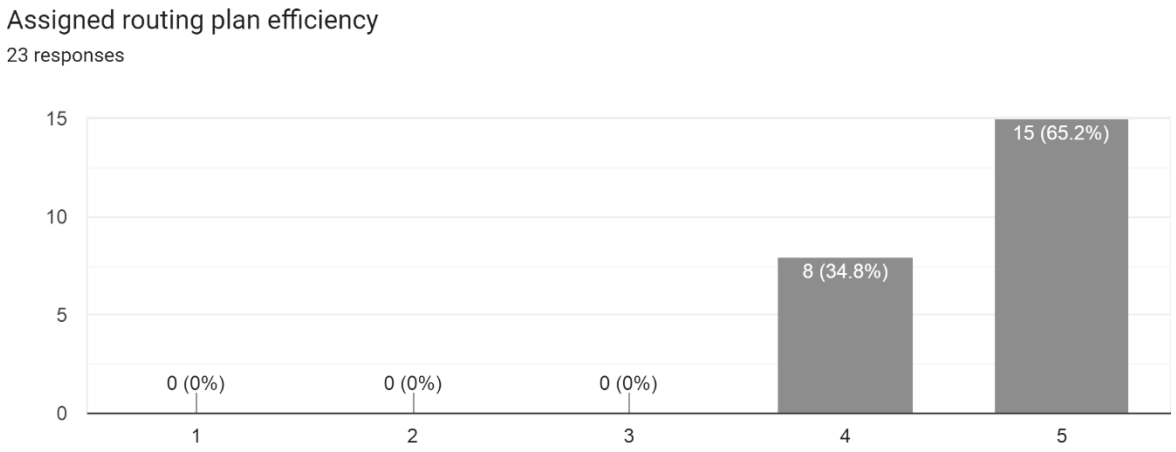
Graph 49: Drivers - Inform the depot for the status of an order



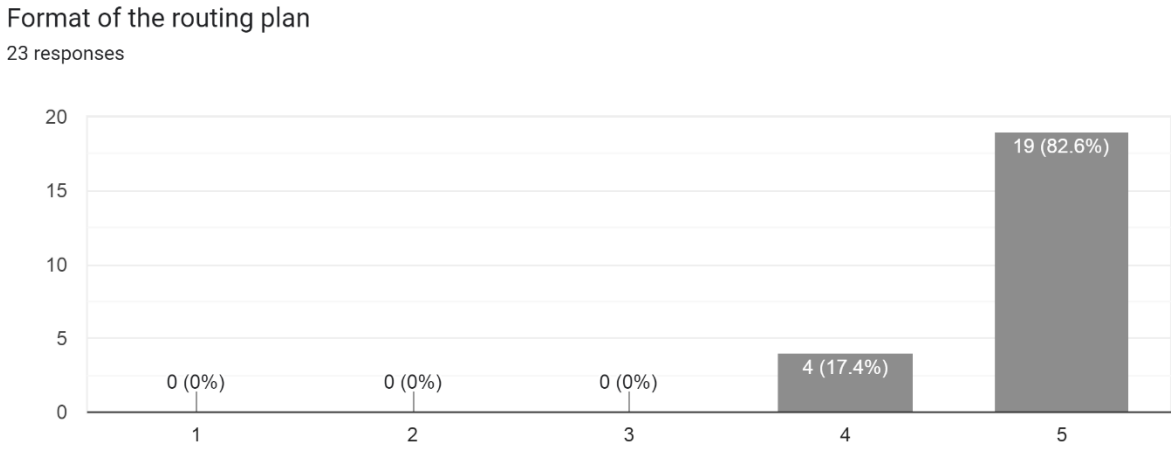
Routing Process Performance – Third section

The questionnaire participants were requested to rate the efficiency of the routing plan. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

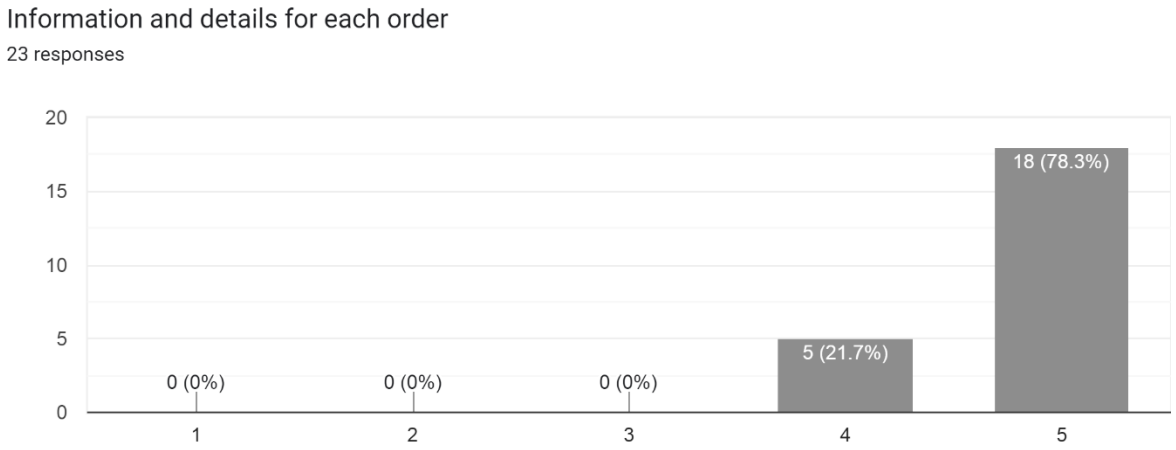
Graph 50: Drivers - Assigned routing plan efficiency



Graph 51: Drivers - Format of the routing plan

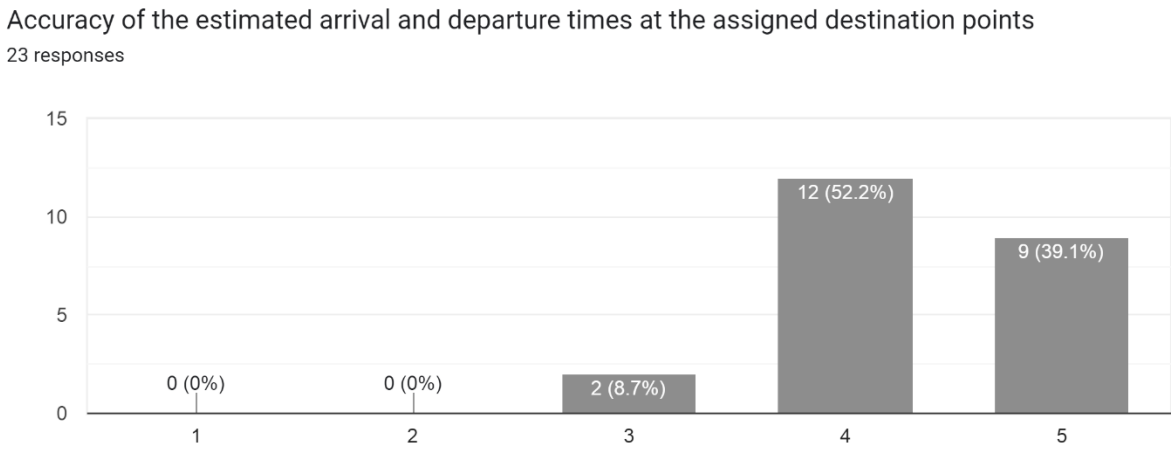


Graph 52: Drivers - Information and details for each order



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 53: Drivers - Accuracy of the estimated arrival and departure times at the assigned destination points

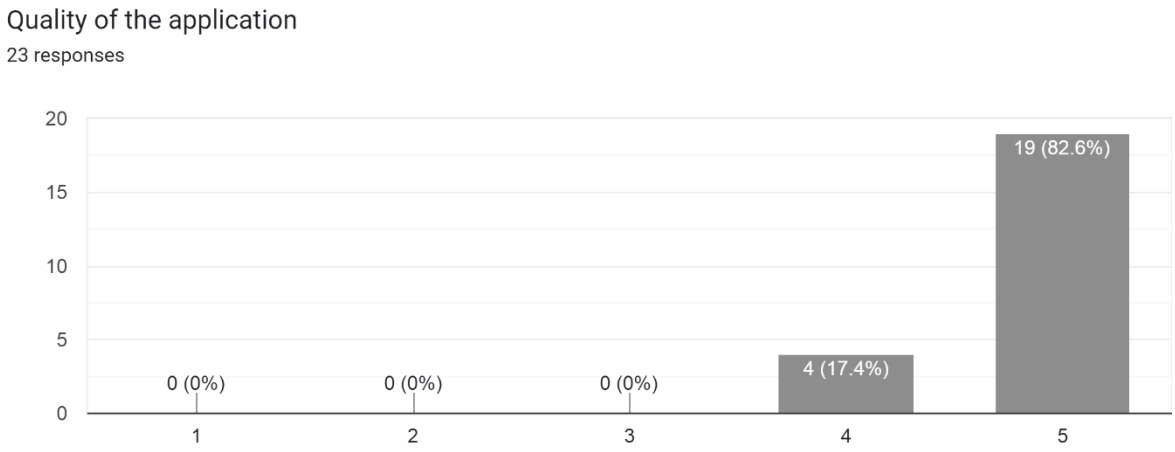


GRP application quality – Third section

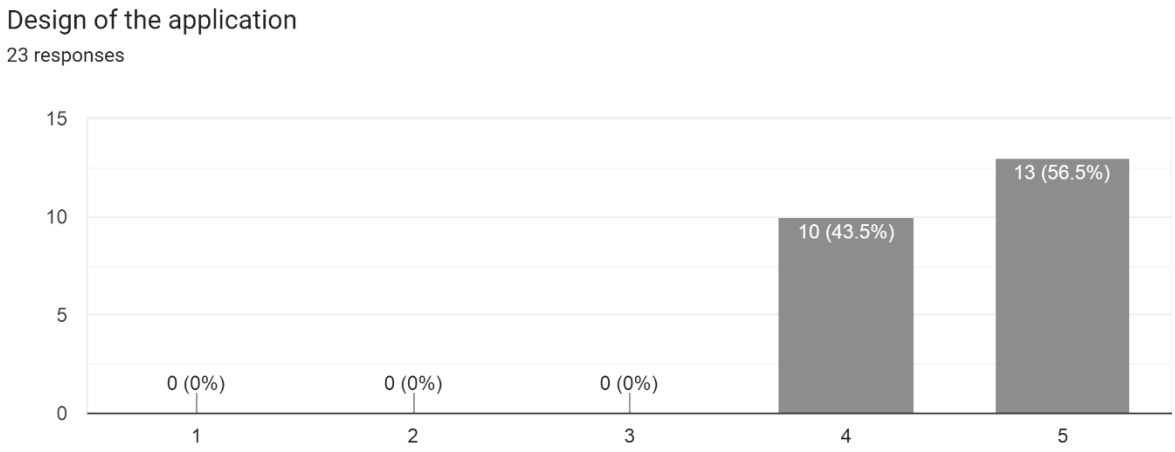
The questionnaire participants were requested to rate the quality of the GYR application. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

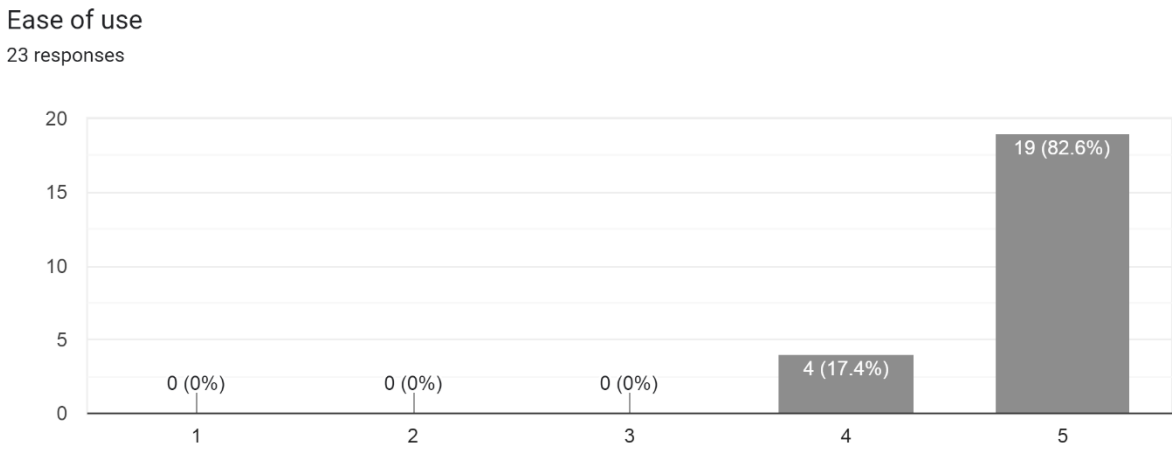
Graph 54: Drivers – Quality of the application



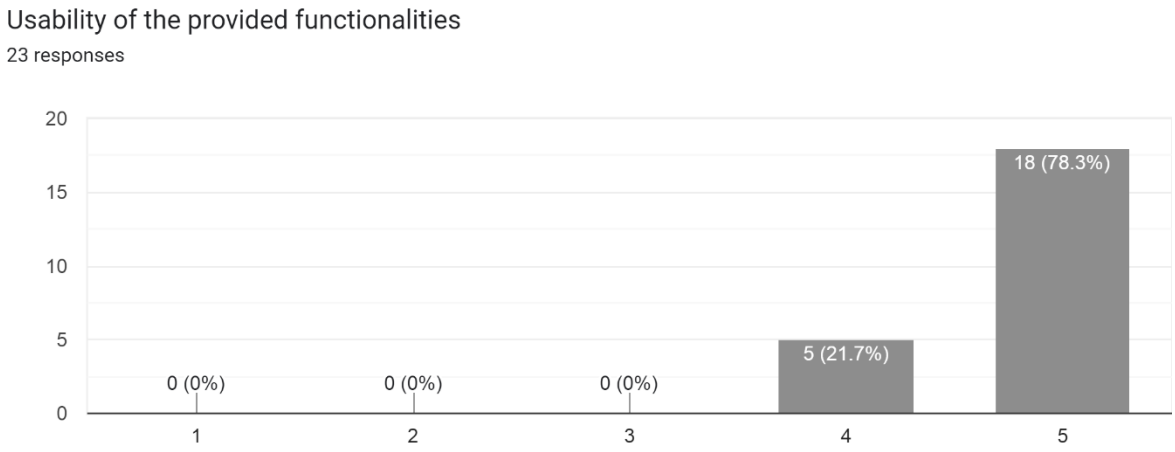
Graph 55: Drivers – Design of the application



Graph 56: Drivers – Ease of use

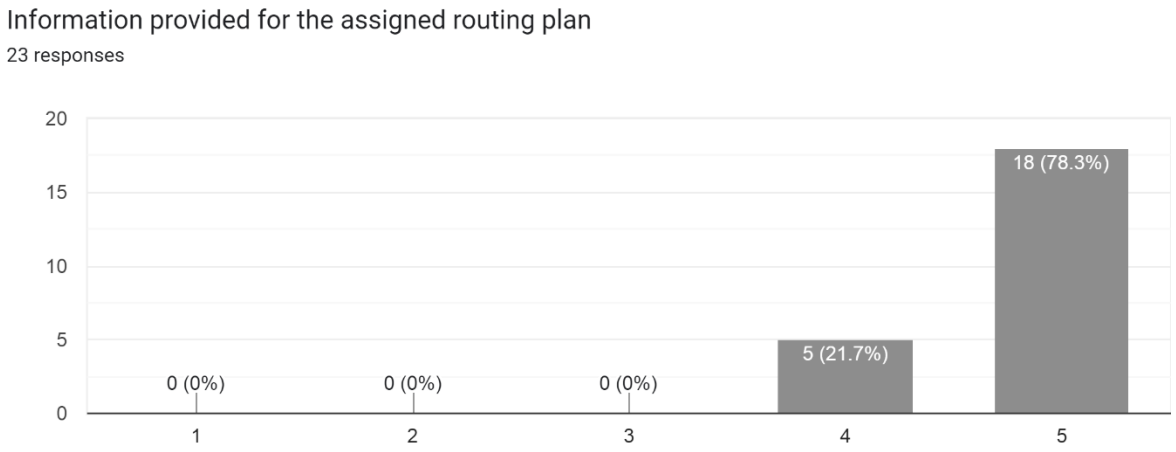


Graph 57: Drivers – Usability of the provided functionalities

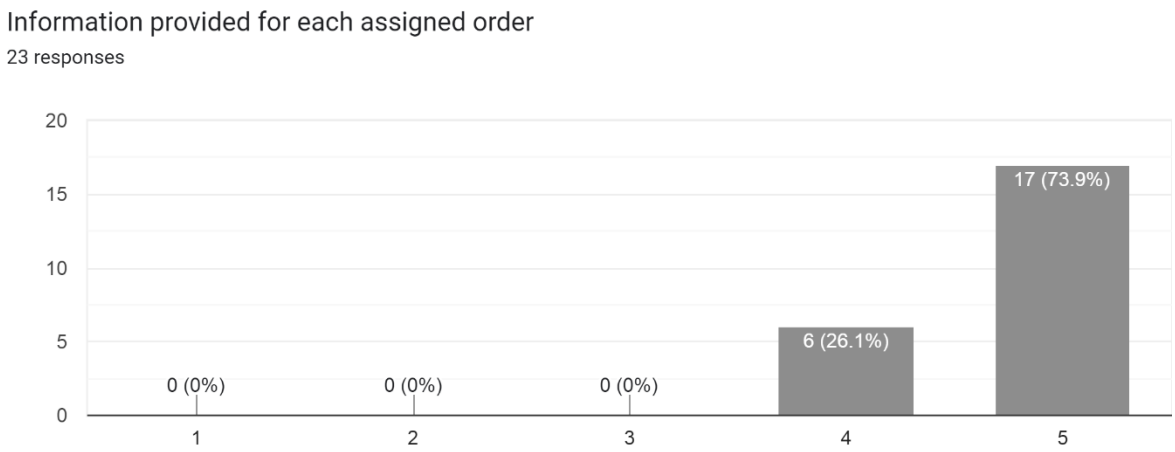


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 58: Drivers – Information provided for the assigned routing plan

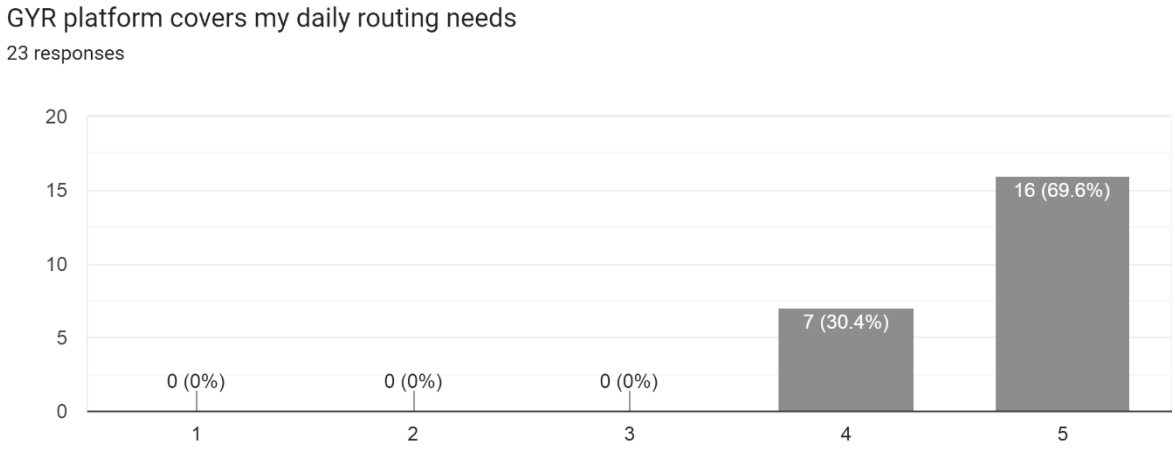


Graph 59: Drivers – Information provided for each assigned order



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

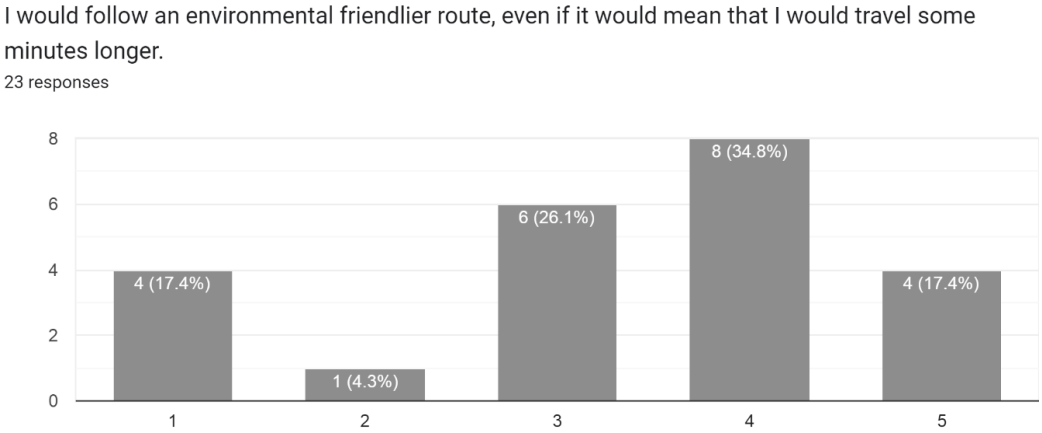
Graph 60: Drivers - GYR platform covers the daily routing needs



Environmental thinking – fourth section

The questionnaire participants were requested to evaluate the extent to which they take environmental aspects into account while creating the routing plan. To this scope, they stated their attitude towards environmental aspects consideration while implementing the routing plan under a 5-point Likert scale, where 1 corresponds to "Totally disagree" and 5 to "Totally agree", were addressed to the participants. The responses received are presented in **Graph 26**.

Graph 61: Drivers – Environmental aspects consideration while driving



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

14.3 GreenYourRoute Questionnaire for managers beyond GYR Consortium (during workshops)

In the current section, the questionnaire addressed to managers beyond GYR Consortium participating to GYR workshops ran through a Google form (link) and the results from the responses received will be presented. In total, 121 persons answered the questionnaire.

14.3.1 The questionnaire questions

The questionnaire consisted of 25 questions and the average response time was estimated to 11 minutes. It was divided into five sections. The first section of the questionnaire was concerned with the quality of GYR application and the second section with the Environmental Technology Verification program, the credibility, sustainability and attractiveness of the application. The third section and the forth were concerned with the routing process performance and the fifth with the environmental thinking of the managers.

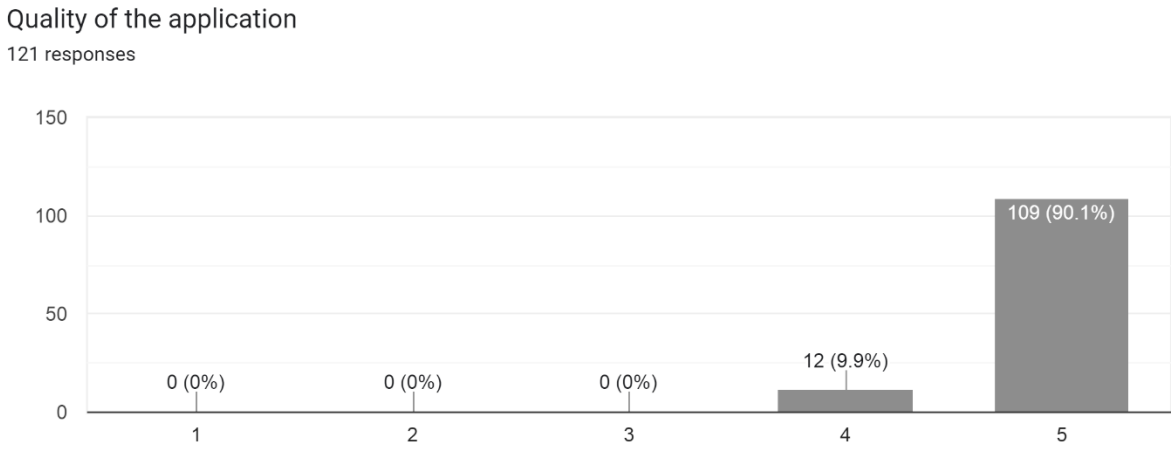
14.3.2 Responses analysis

The questionnaire was delivered to the workshops' participants in March and April 2023. The following responses were requested and received:

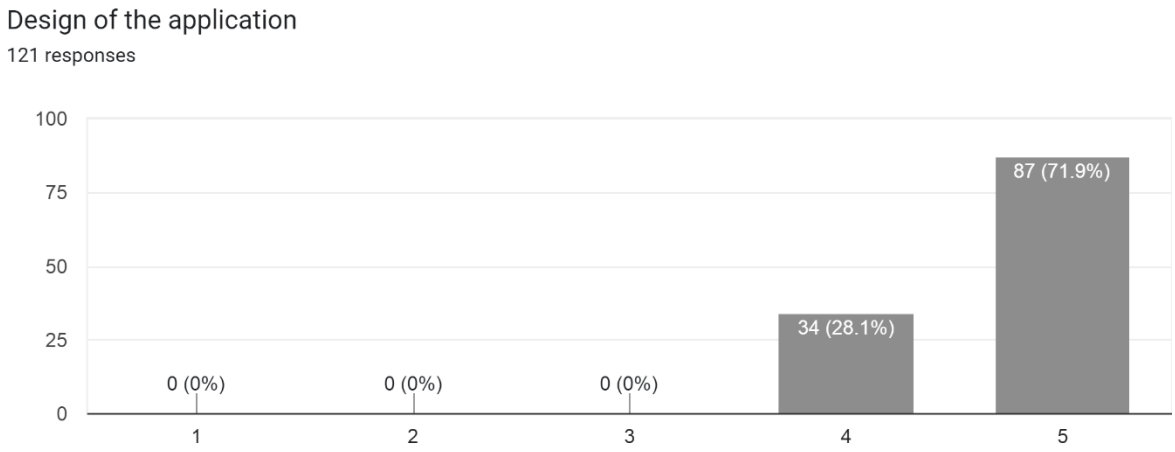
GreenYourRoute application – First section

The questionnaire participants were requested to provide information regarding the Quality of the application, the design of the application, the ease of use, the ease of routing plan creation, the quality of the information provided for the orders, the quality of the information provided for the routing plan, the quality of the tracking information, the coverage of their daily routing needs, and finally to recommend any services that they consider important to be added in GreenYourRoute application. The responses received are presented in **Graph 62** to **Graph 18**.

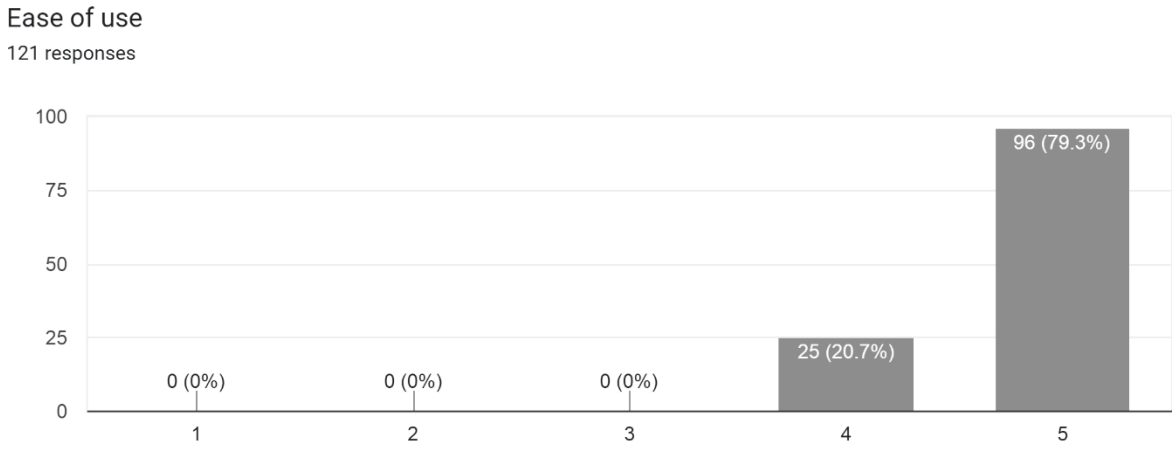
Graph 63: Managers (workshops) – Quality of the application



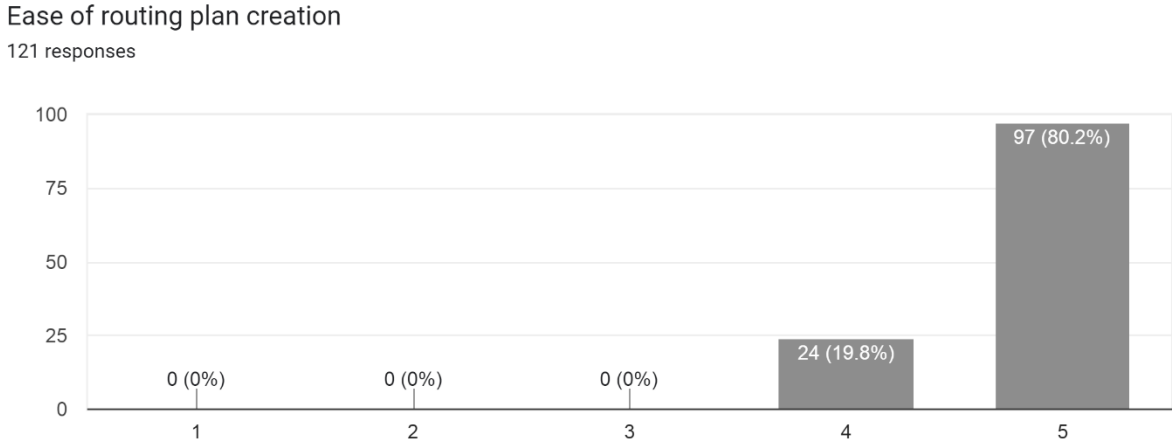
Graph 64: Managers (workshops) – Design of the application



Graph 65: Managers (workshops) – Ease of use

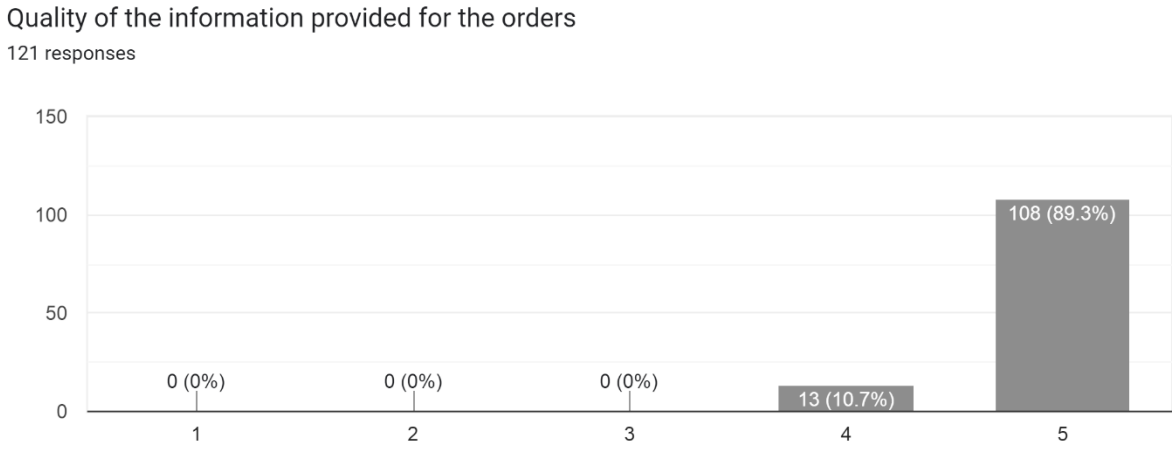


Graph 66: Managers (workshops) – Ease of routing plan creation

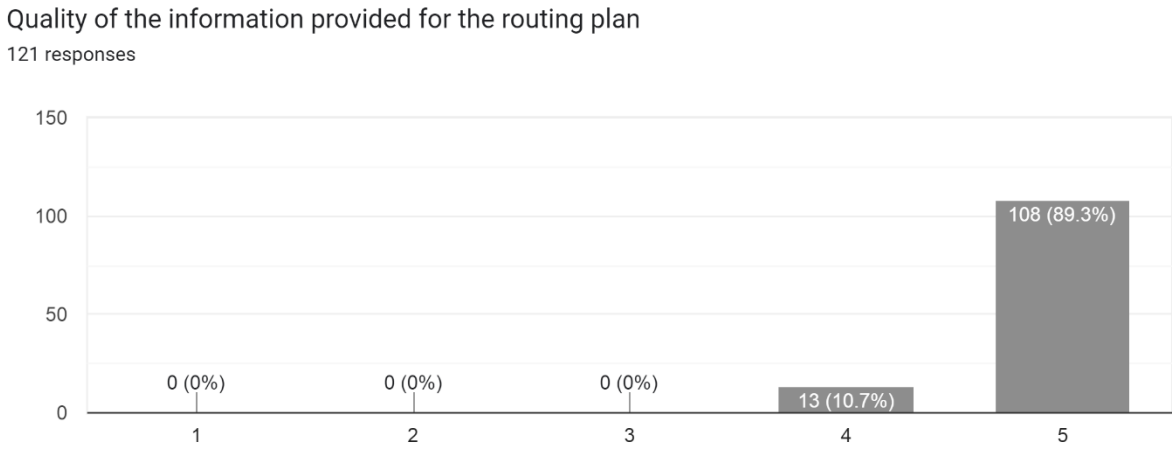


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

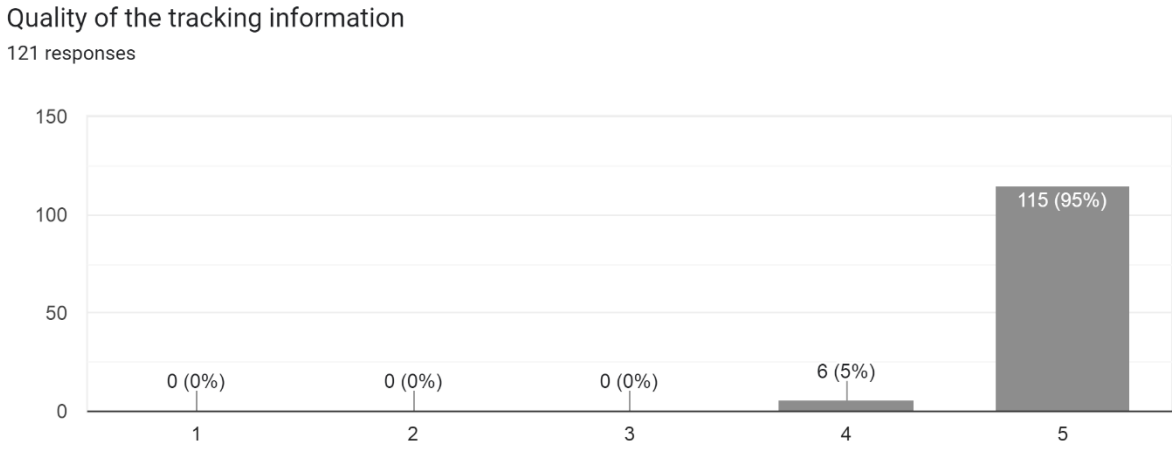
Graph 67: Managers (workshops) – Quality of the information provided for the orders



Graph 68: Managers (workshops) – Quality of the information provided for the routing plan

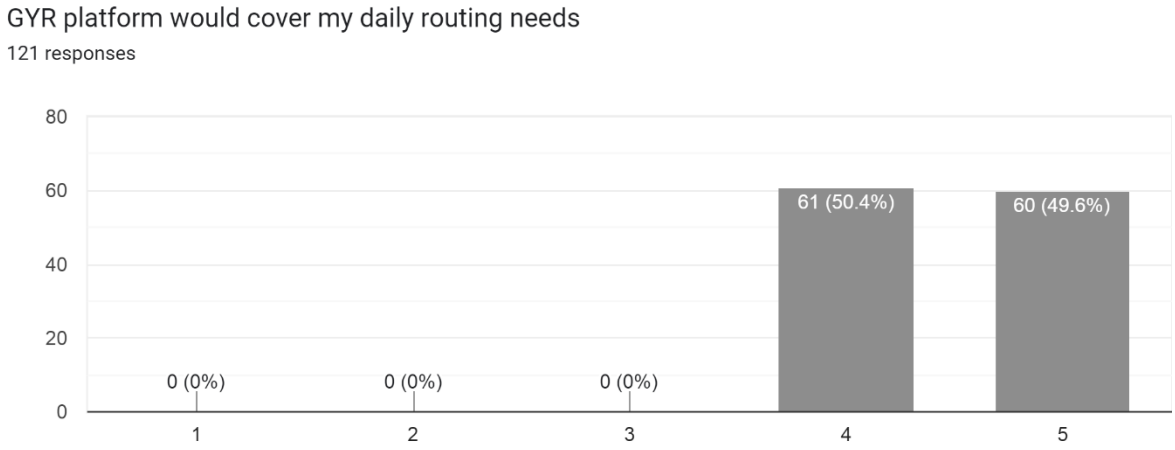


Graph 69: Managers (workshops) – Quality of the tracking information



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

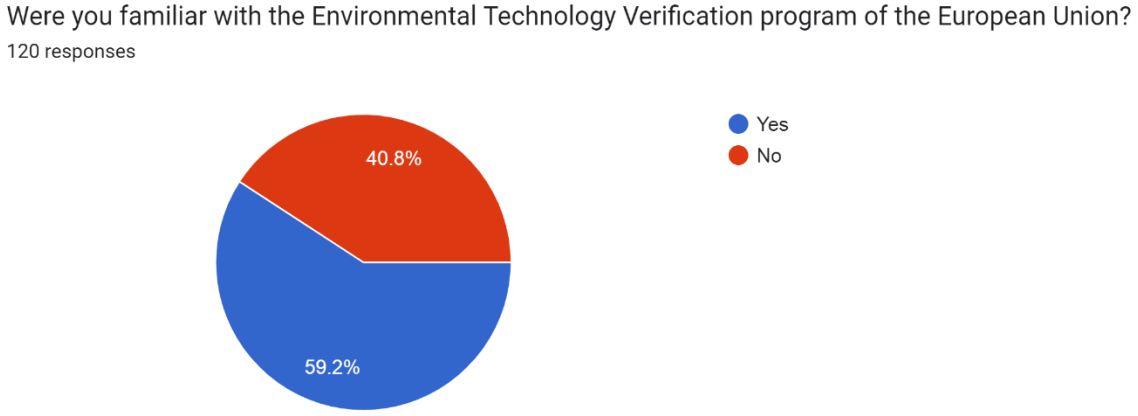
Graph 70: Managers (workshops) – Coverage of routing daily needs



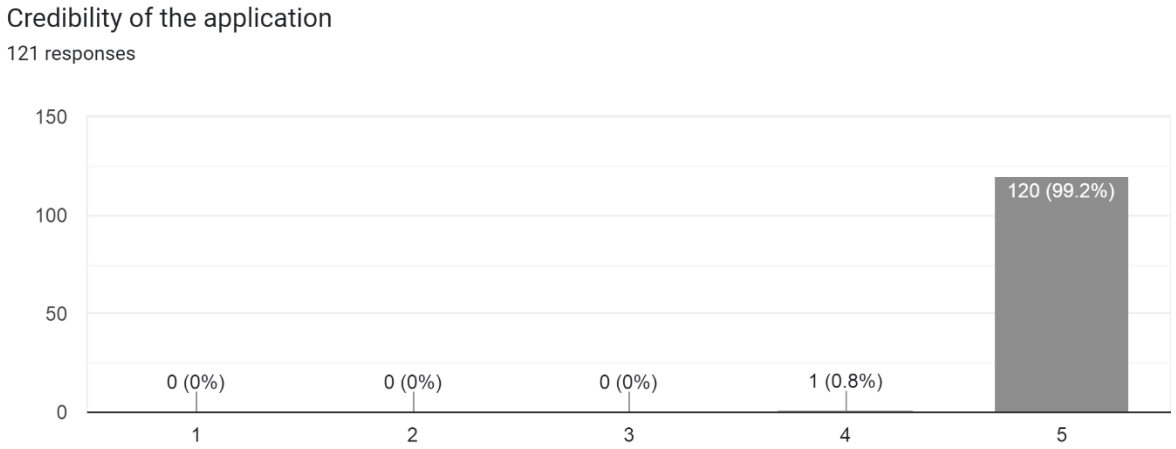
Environmental Technology Verification program, the credibility, sustainability and attractiveness of the application – Second section

The questionnaire participants were requested first to explain if they are familiar or note with the ETV program. Then, they were requested to rate the credibility, sustainability and attractiveness of the application. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree", were addressed to the participants. The responses received are presented in Graph 19 to Graph 21.

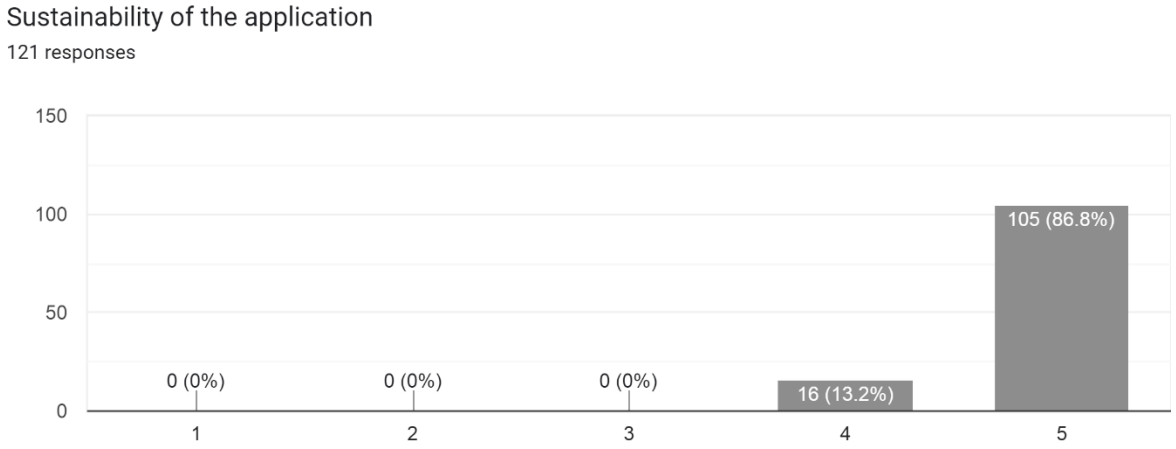
Graph 71: Managers (workshops) - ETV



Graph 72: Managers (workshops) – Credibility of GYR application

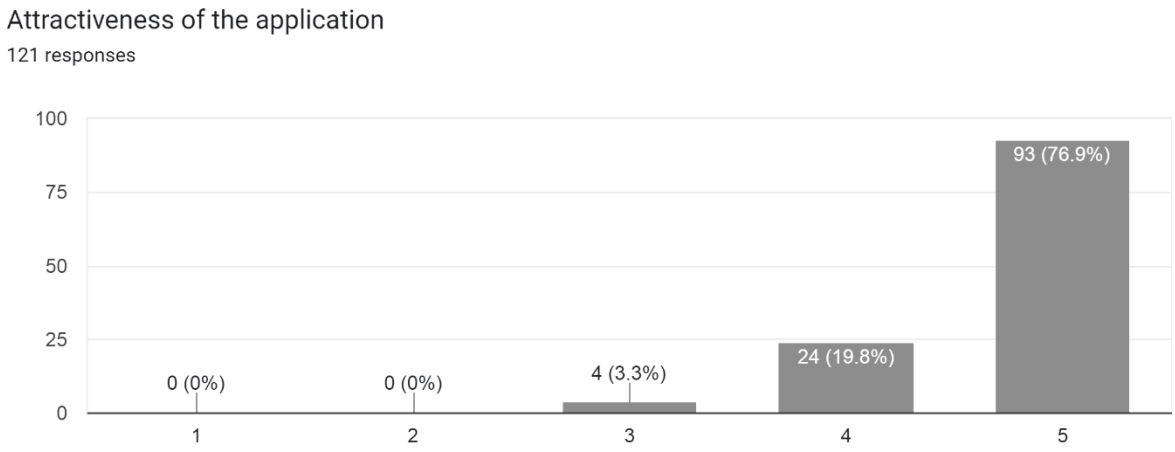


Graph 73: Managers (workshops) – Sustainability of GYR application



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

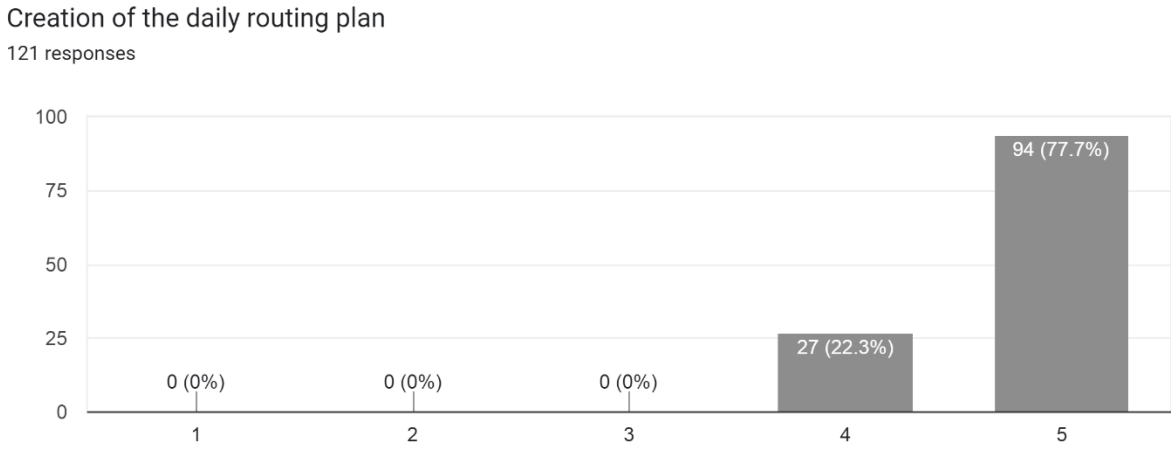
Graph 74: Managers (workshops) – Attractiveness of GYR application



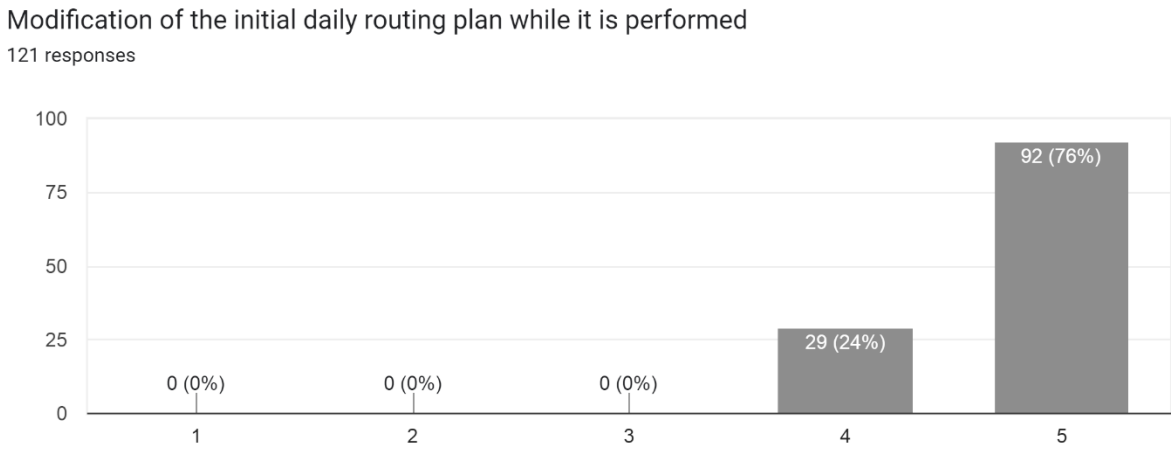
Routing process performance – Third section

The questionnaire participants were requested to rate the efficiency of the routing plan. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in Graph 22 to Graph 25.

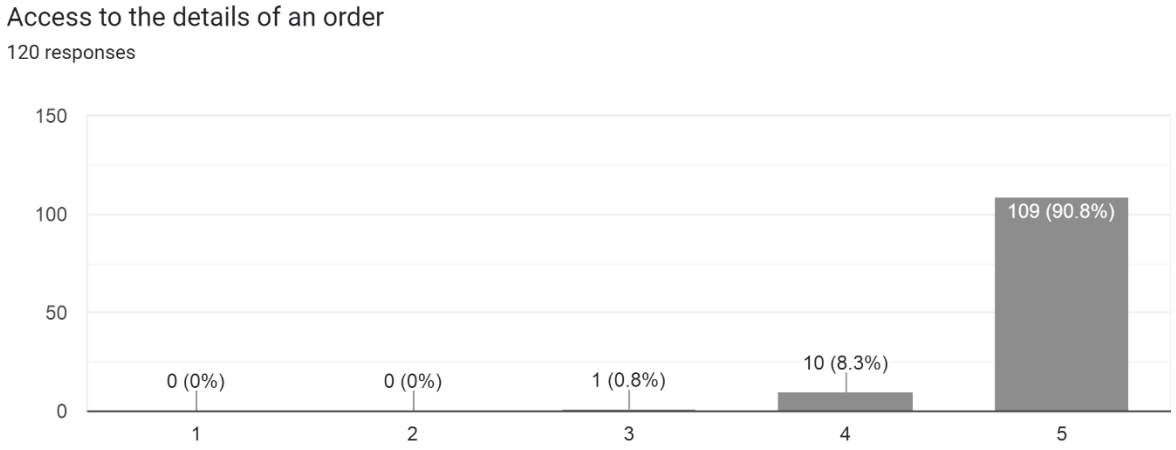
Graph 75: Managers (workshops) – Creation of the daily routing plan



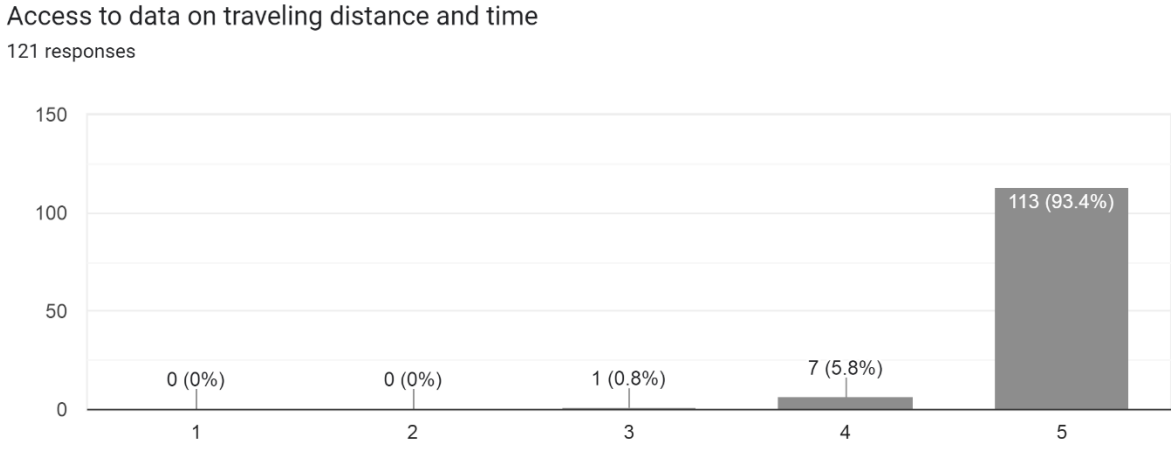
Graph 76: Managers (workshops) – Revision of the daily routing plan



Graph 77: Managers (workshops) – Accessibility of the details of orders

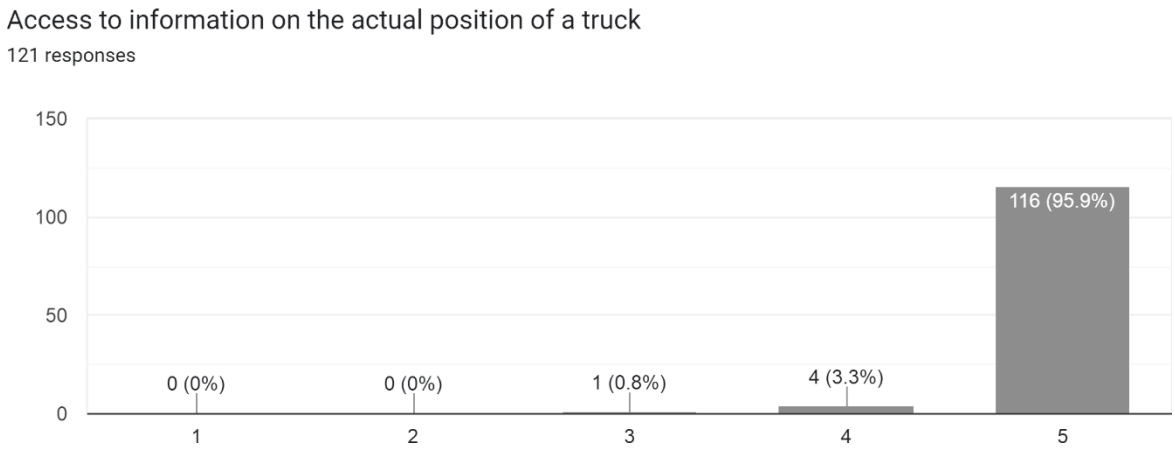


Graph 78: Managers (workshops) – Access to travelled distance and time

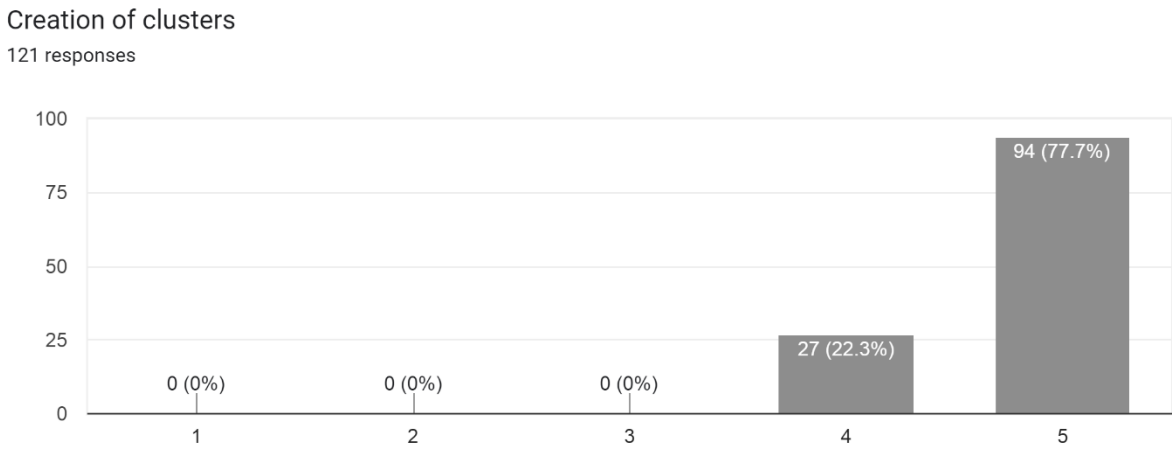


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 79: Managers (workshops) – Position of trucks



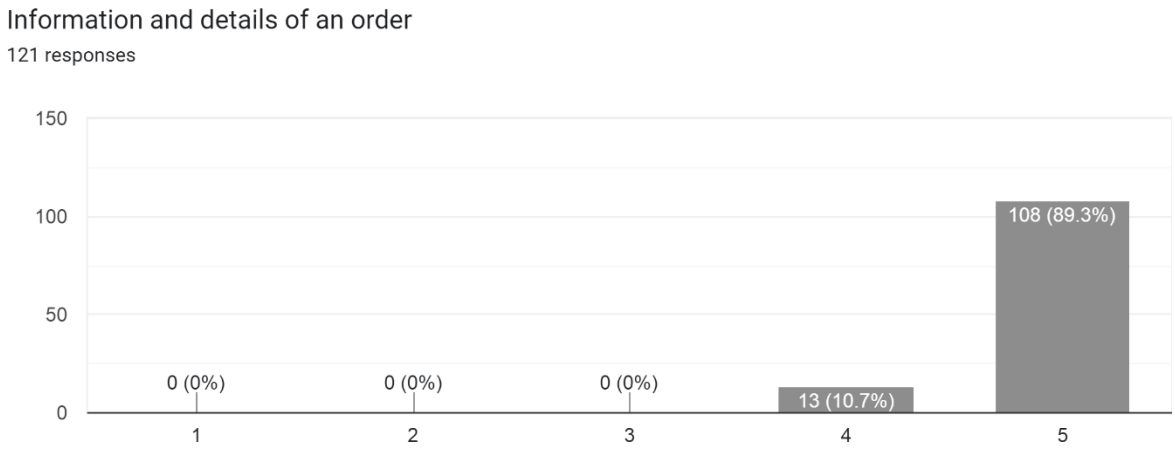
Graph 80: Managers (workshops) – Creation of clusters



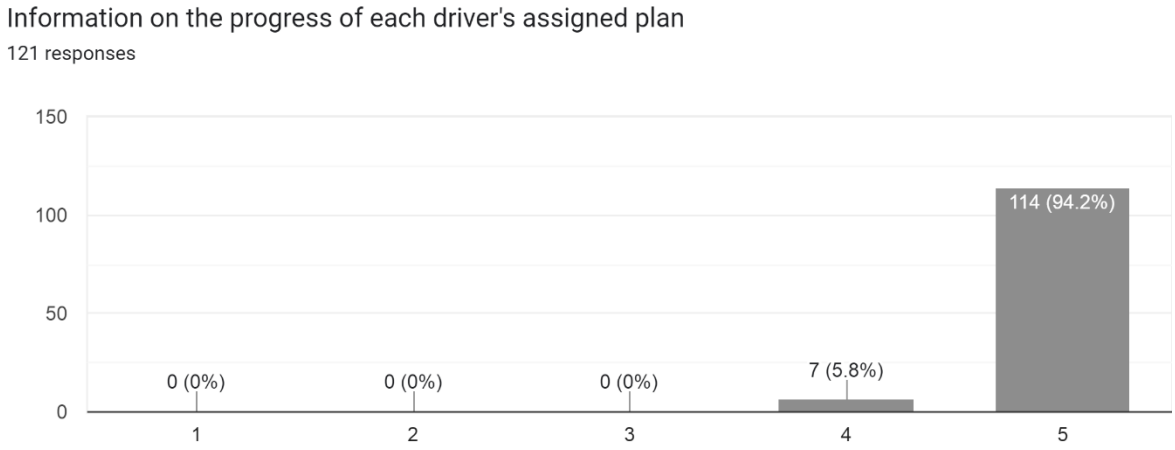
Routing process management – forth section

The questionnaire participants were requested to rate the routing process management. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

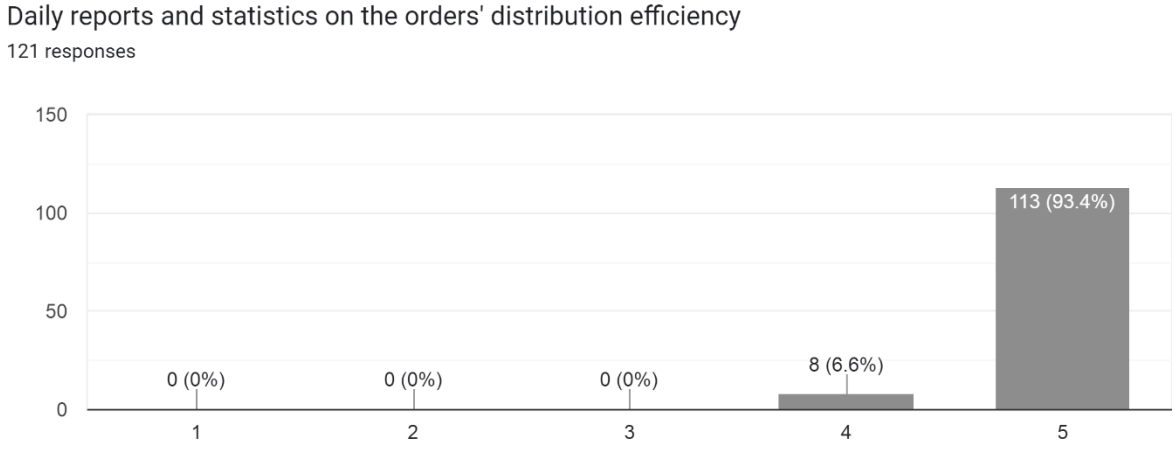
Graph 81: Managers (workshops) – Information and details of orders



Graph 82: Managers (workshops) – Routing plan implementation

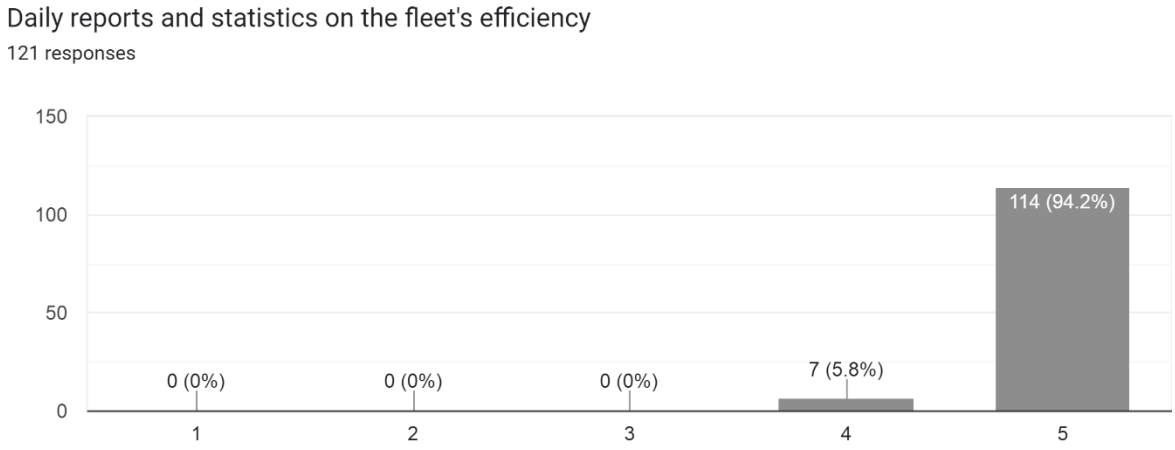


Graph 83: Managers (workshops) – Statistics of routing plan implementation



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

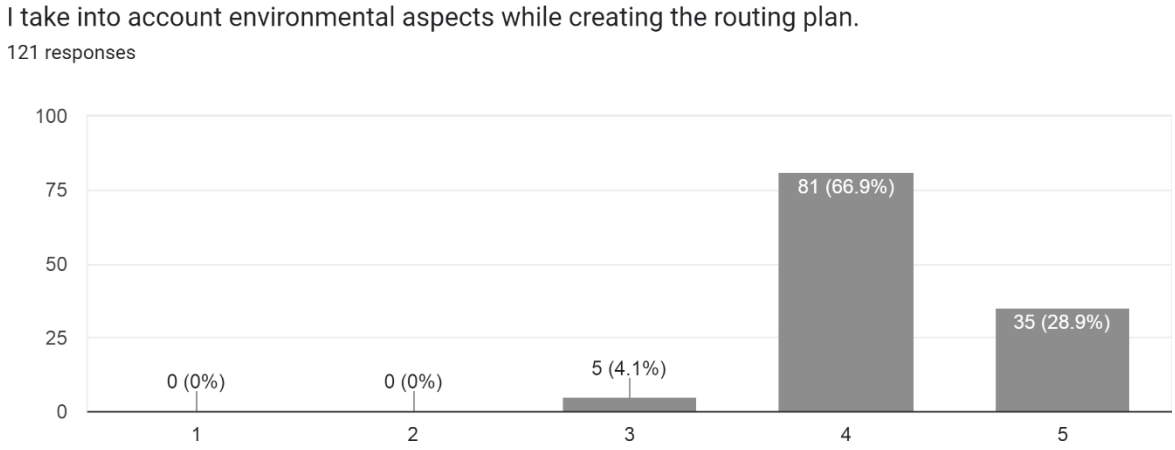
Graph 84: Managers (workshops) – Fleet efficiency



Environmental thinking – fifth section

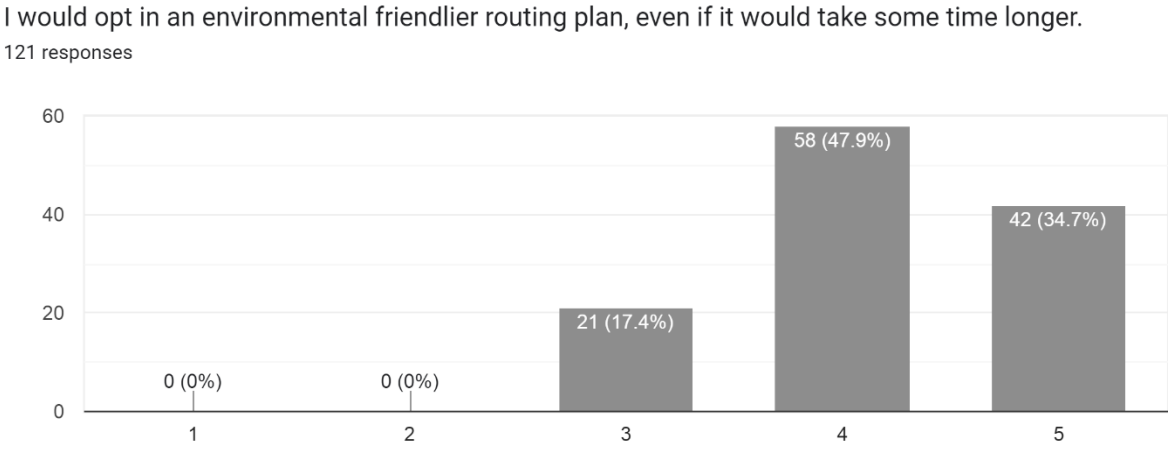
The questionnaire participants were requested to evaluate the extent to which they take environmental aspects into account while creating the routing plan. To this scope, they stated their attitude towards environmental aspects consideration while implementing the routing plan under a 5-point Likert scale, where 1 corresponds to "Totally disagree" and 5 to "Totally agree", were addressed to the participants. The responses received are presented in **Graph 26** and **Graph 26**.

Graph 85: Managers (workshops) – Environmental routing planning



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 86: Managers (workshops) – Cost for environmental routing planning



14.4 GreenYourRoute Questionnaire for drivers beyond GYR Consortium (during workshops)

In the current section, the questionnaire addressed to drivers beyond GYR Consortium participating to GYR workshops ran through a Google form (link) and the results from the responses received will be presented. In total, 65 persons answered the questionnaire.

14.4.1 The questionnaire questions

The questionnaire consisted of 17 questions and the average response time was estimated to 9 minutes. It was divided into five sections. The first three sections of the questionnaire were concerned with the routing process performance, the forth with the GYR mobile application and the fifth with the environmental thinking of the drivers.

14.4.2 Responses analysis

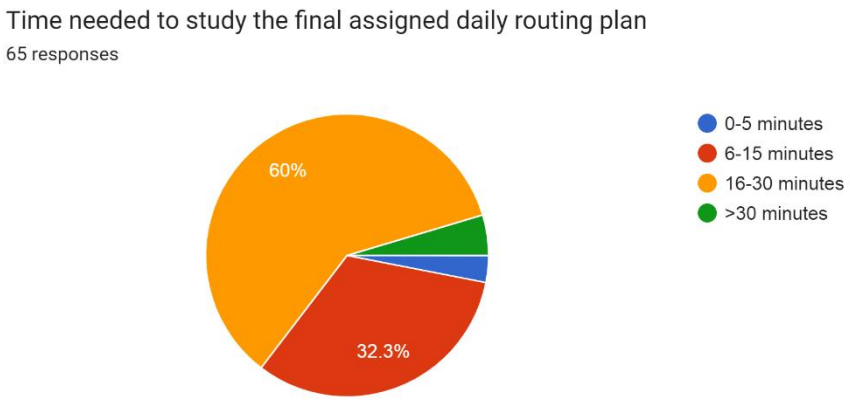
The questionnaire was delivered to the workshops' participants in March and April 2023. The following responses were requested and received:

Routing performance – First section

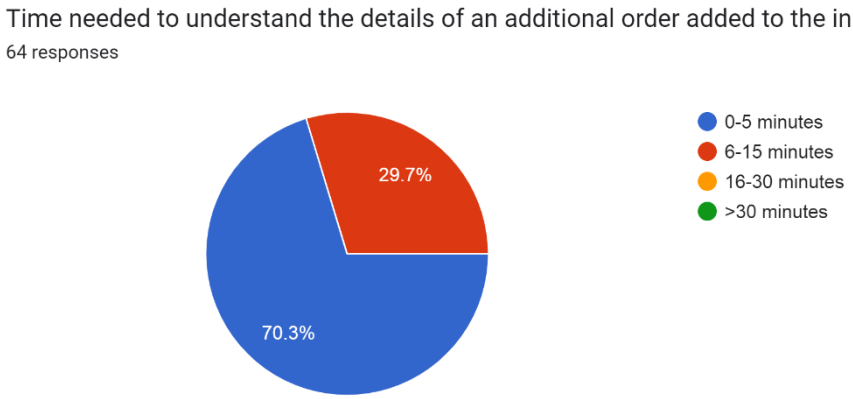
The questionnaire participants were requested to provide information regarding their time spent studying the suggested routing plan and the time spent to understand the details of an additional order added to the initial routing plan. The responses received are presented in Graph 17 to Graph 18.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 87: Drivers (workshops) - Time needed to study the final assigned daily routing plan



Graph 88: Drivers (workshops) - Time needed to understand the details of an additional order added to the initial routing plan

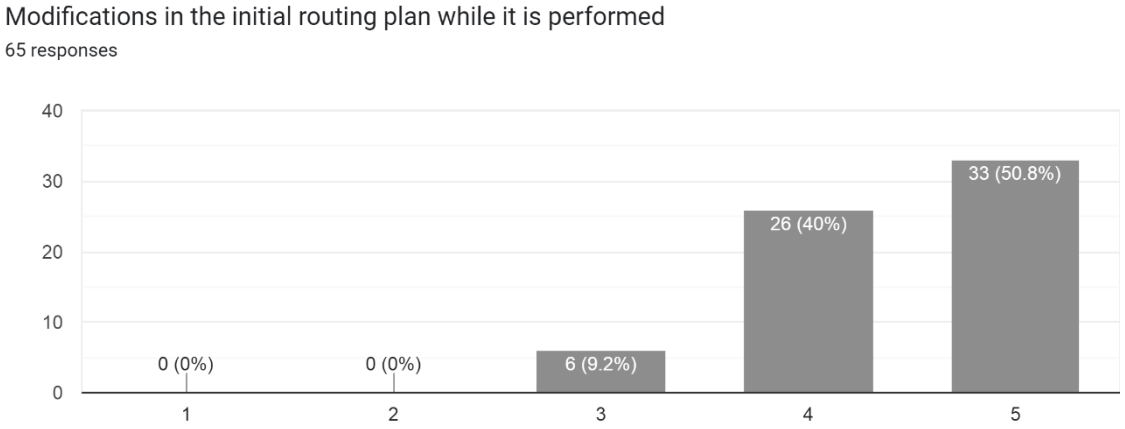


Routing performance – Second section

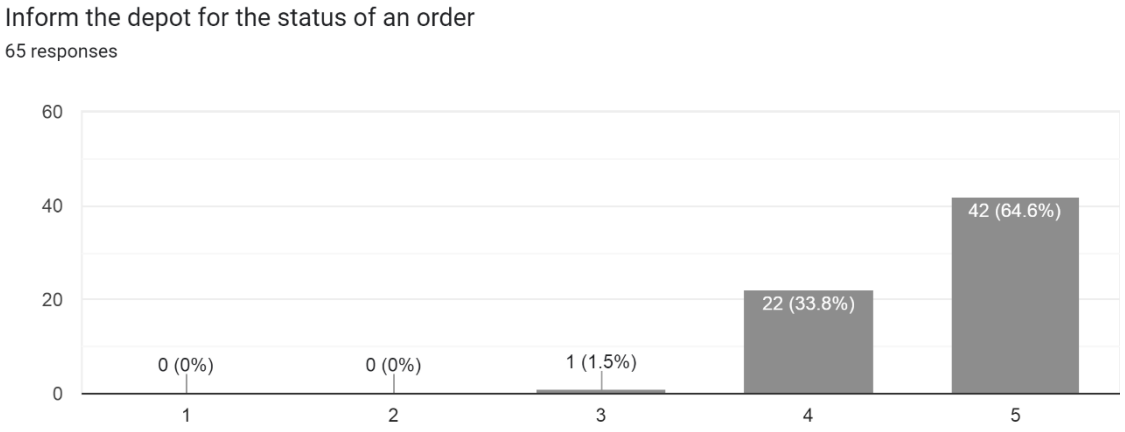
The questionnaire participants were requested to rate again the routing process performance concering the communication with the depot and potential modification to the suggested routing plan. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very demanding" and 5 to "Very easy", were addressed to the participants. The responses received are presented in **Graph 19** to **Graph 21**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 89: Drivers (workshops) - Modifications in the initial routing plan while it is performed



Graph 90: Drivers (workshops) - Inform the depot for the status of an order

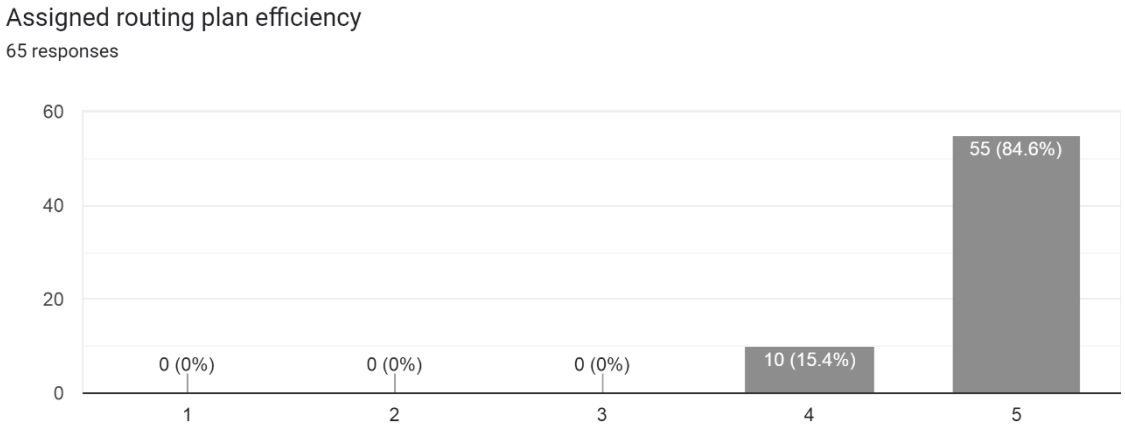


Routing Process Performance – Third section

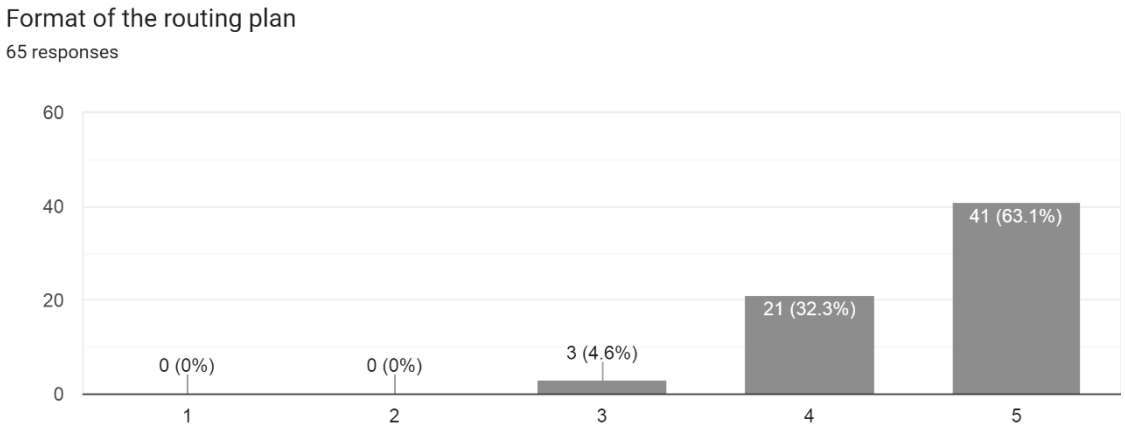
The questionnaire participants were requested to rate the efficiency of the routing plan. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

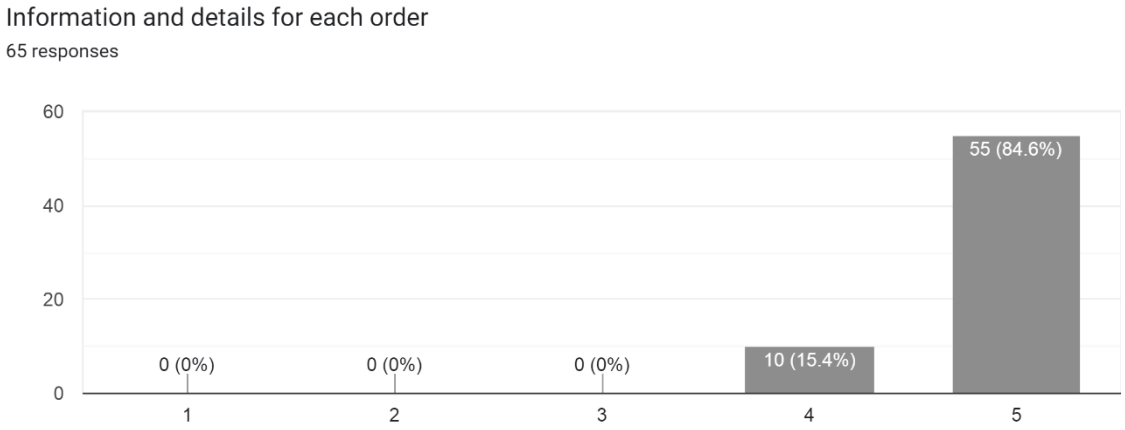
Graph 91: Drivers - Assigned routing plan efficiency



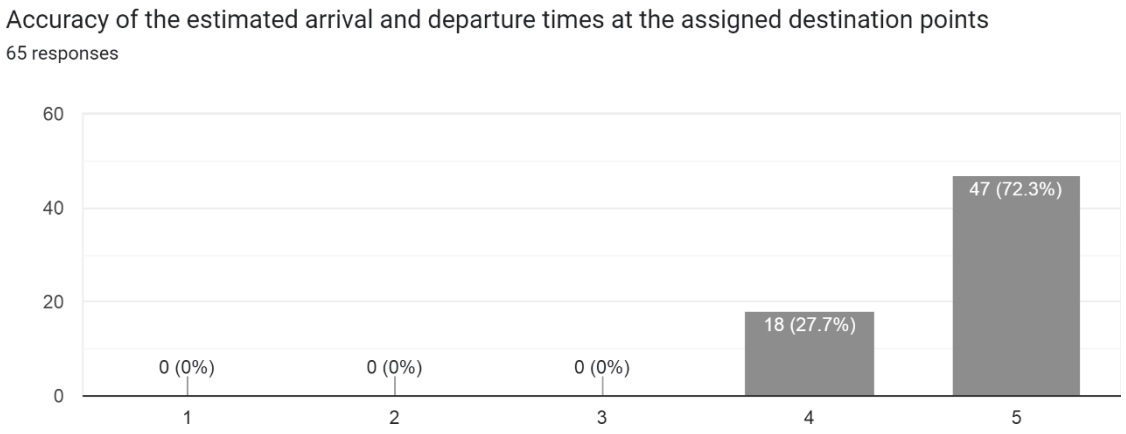
Graph 92: Drivers - Format of the routing plan



Graph 93: Drivers - Information and details for each order



Graph 94: Drivers - Accuracy of the estimated arrival and departure times at the assigned destination points

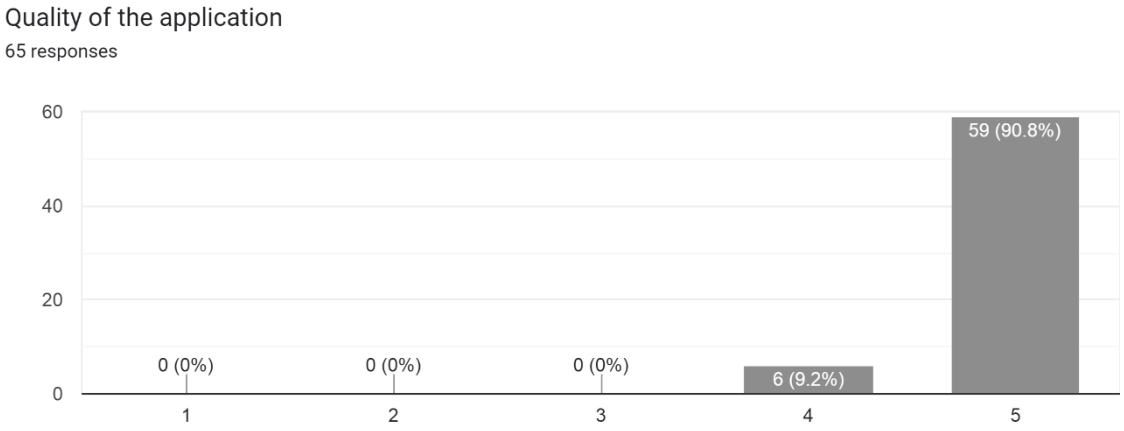


GRP application quality – forth section

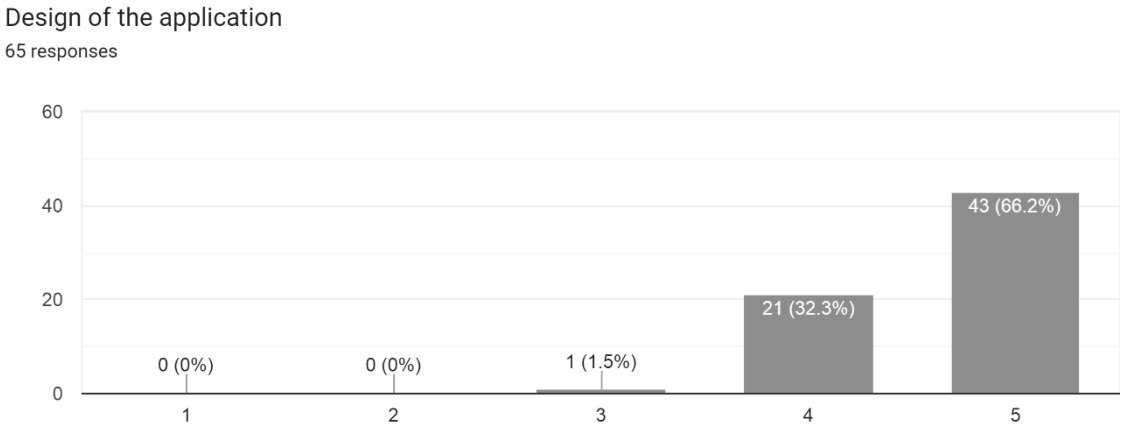
The questionnaire participants were requested to rate the quality of the GYR application. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Very poor" and 5 to "Excellent", were addressed to the participants. The responses received are presented in **Graph 22** to **Graph 25**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

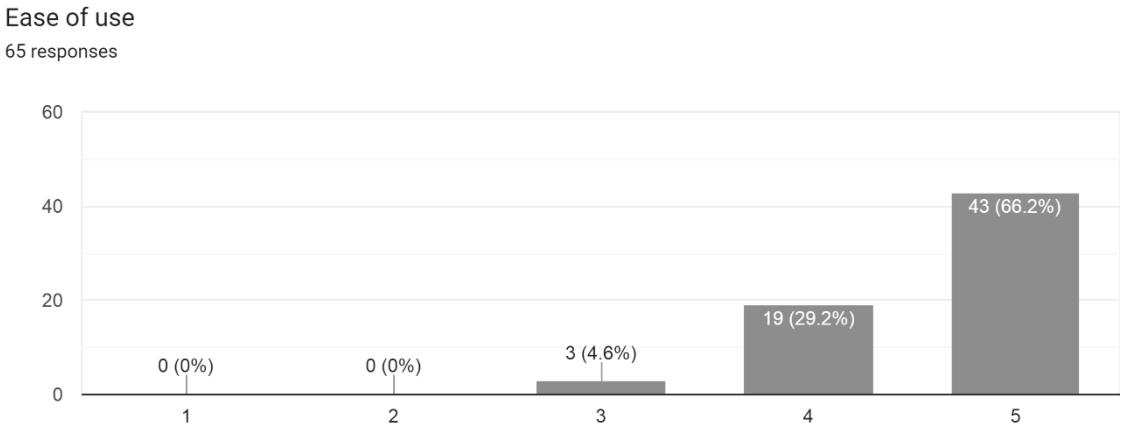
Graph 95: Drivers – Quality of the application



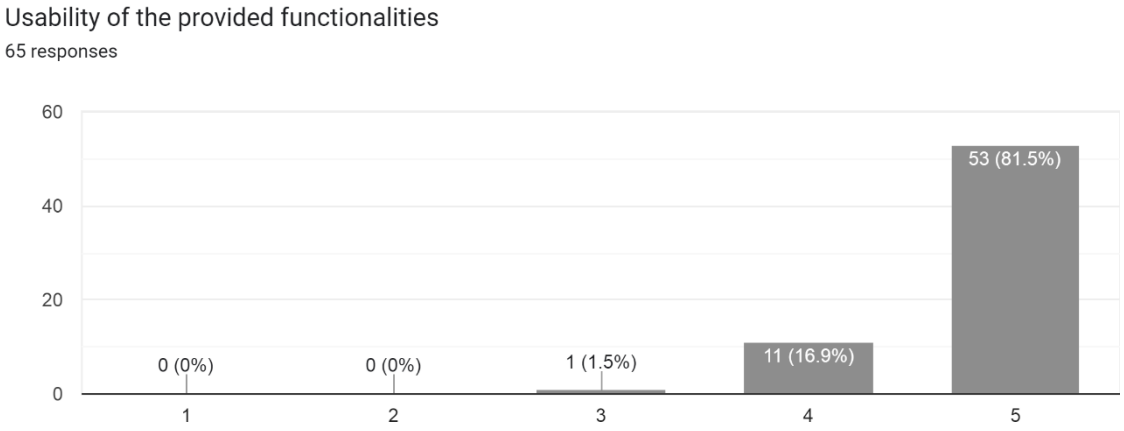
Graph 96: Drivers – Design of the application



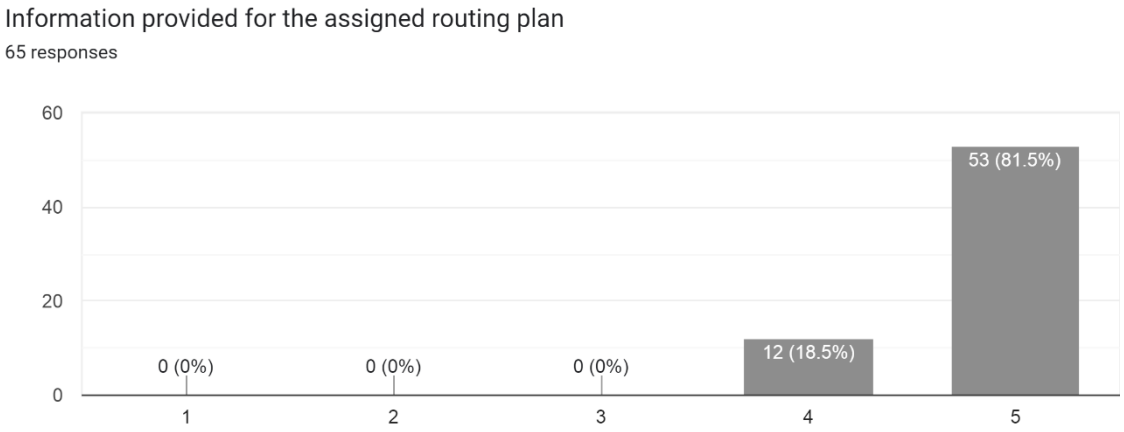
Graph 97: Drivers – Ease of use



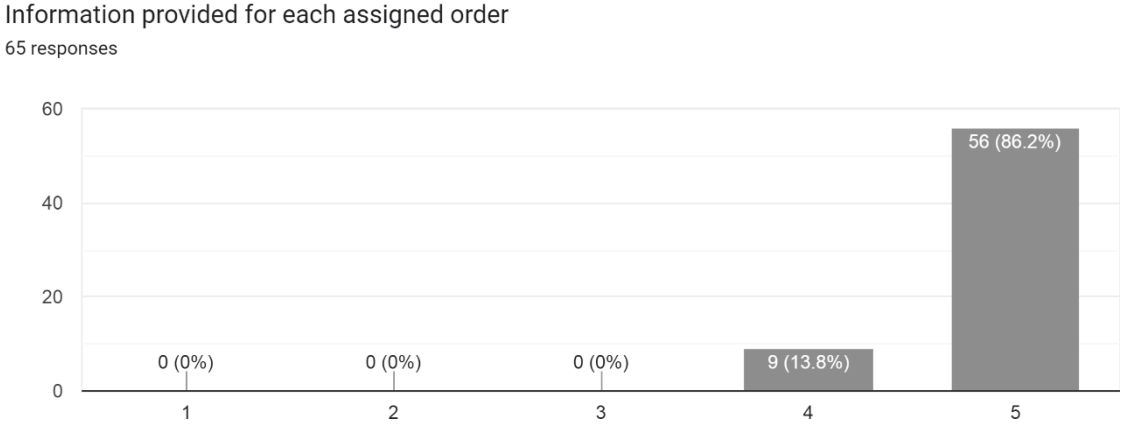
Graph 98: Drivers – Usability of the provided functionalities



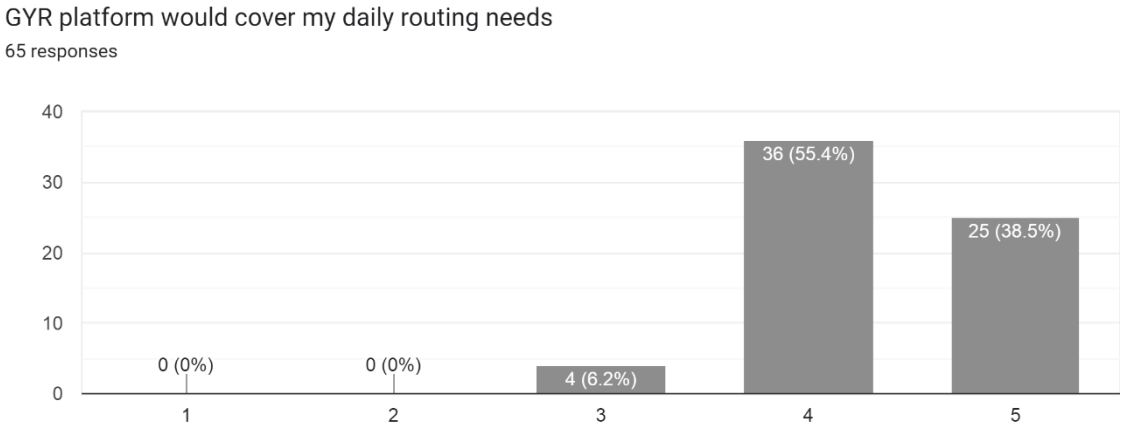
Graph 99: Drivers – Information provided for the assigned routing plan



Graph 100: Drivers – Information provided for each assigned order



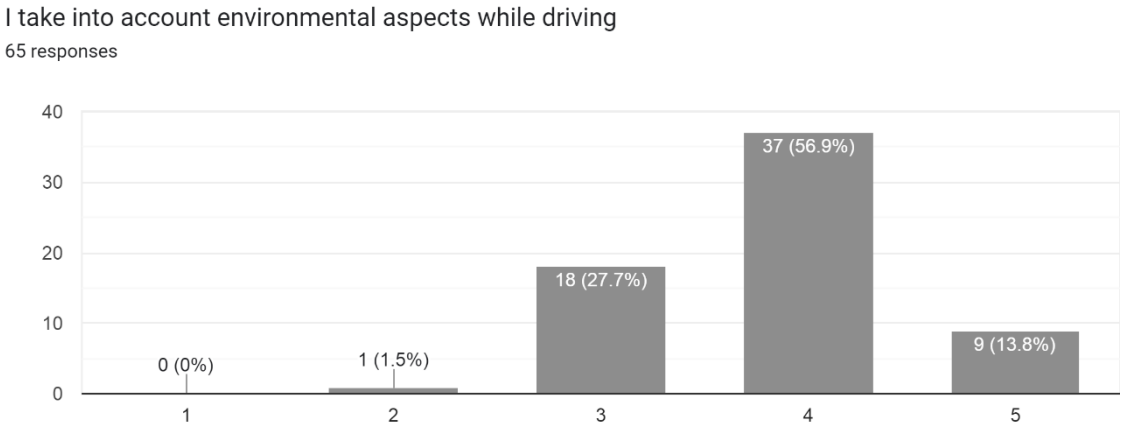
Graph 101: Drivers – Coverage of the daily routing needs



Environmental thinking – fifth section

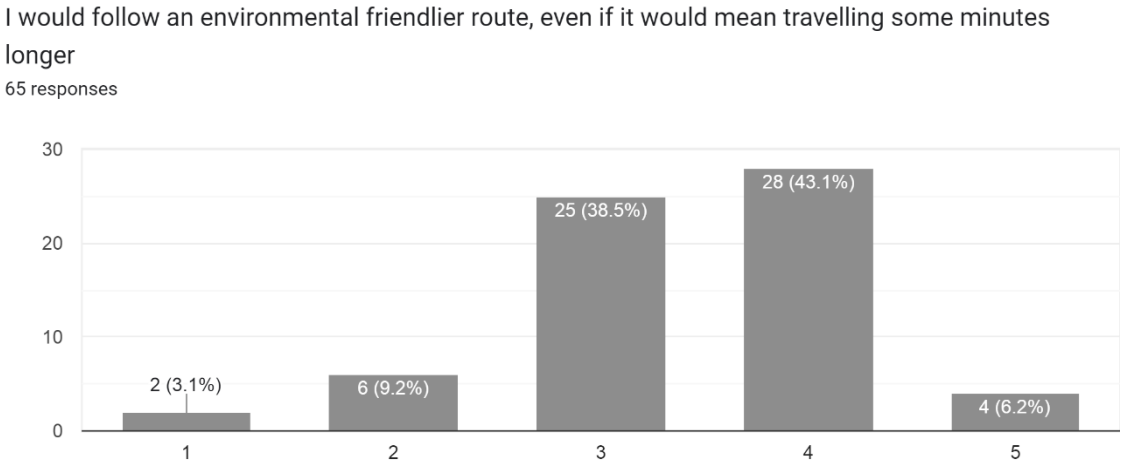
The questionnaire participants were requested to evaluate the extent to which they take environmental aspects into account while creating the routing plan and if they could consider a longer trip in order to decrease emissions. To this scope, they stated their attitude towards environmental aspects consideration while implementing the routing plan under a 5-point Likert scale, where 1 corresponds to "Totally disagree" and 5 to "Totally agree", were addressed to the participants. The responses received are presented in **Graph 26**.

Graph 102: Drivers – Environmental aspects consideration while driving



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 103: Drivers – Ready to pay an extract for environmental routing



14.5 GreenYourRoute Questionnaire for policy makers

In the current section, the questionnaire addressed to policy makers ran through a Google form (link) and the results from the responses received will be presented. In total, 43 persons answered the questionnaire.

14.5.1 The questionnaire questions

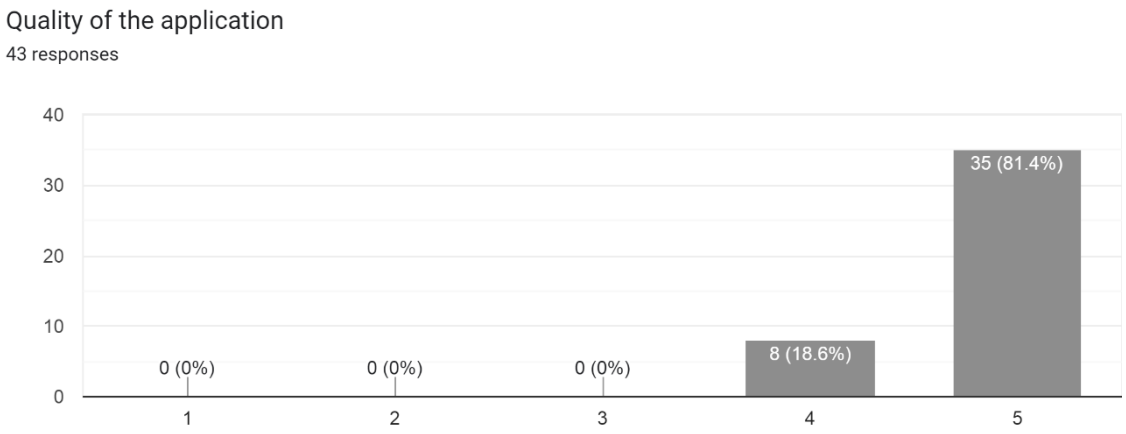
The questionnaire consisted of 19 questions and the average response time was estimated to 7 minutes. It was divided into four sections. The first two sections of the questionnaire were concerned with the GYR application, while the last two sections were concerned with the contribution of GYR platform to the environmental objectives of EU and the potential of GYR platfrom.

14.5.2 Responses analysis

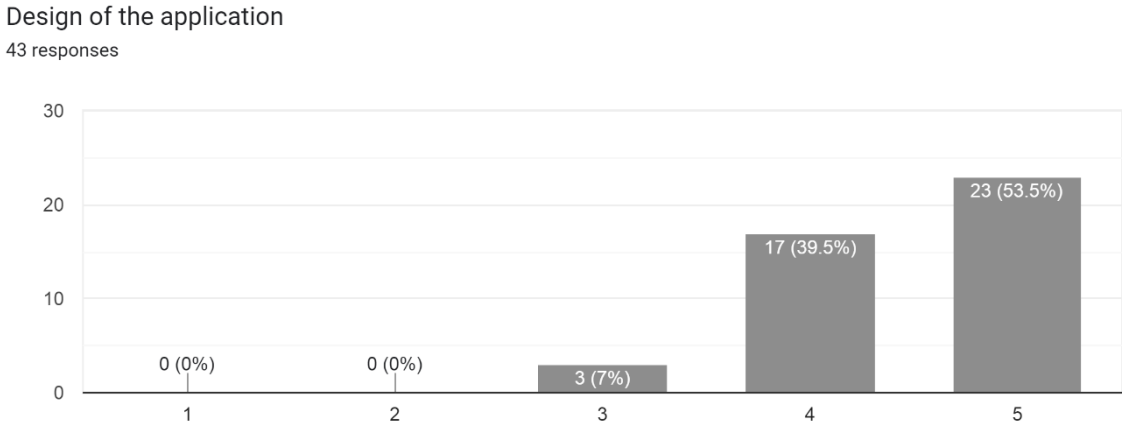
GreenYourRoute application – First section

The questionnaire participants were requested to provide information regarding the quality of GYR application. To this scope, multiple choice questions were addressed to the participants. The responses received are presented in **Graph 1** to **Graph 6**.

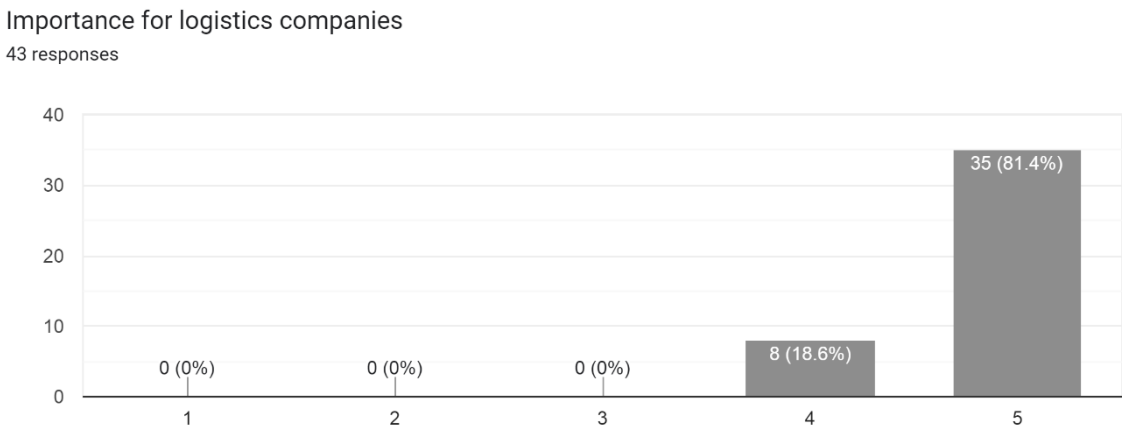
Graph 104: Policy makers – Quality of the application



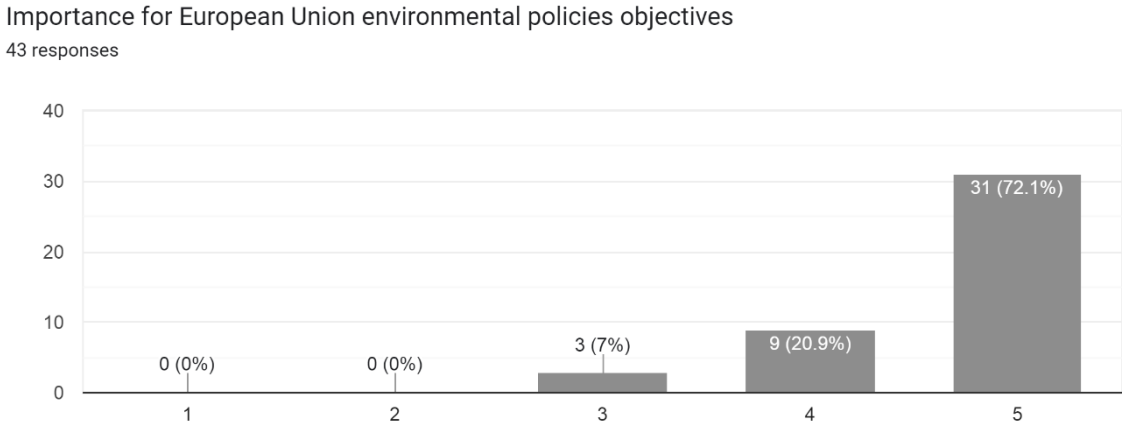
Graph 105: Policy makers – Design of the application



Graph 106: Policy makers – Importance of the application for logistic companies



Graph 107: Policy makers - Importance for European Union environmental policies objectives

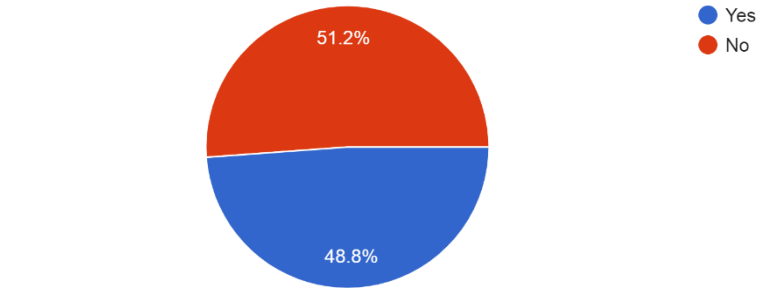


The participants recommended some additional services that they consider important to be added in the future into GreenYourRoute application. The recommendations corresponds to the 61.6% of the participants (the rest 38.4% did not suggest any additional service) and they include:

- The automatic production of an annual report concerning the emissions generated.
- The development of a software to transform data of ERP systems to the necessary format for GYR platform.
- The development of a software to implement the geo-coding when an error is found.
- The flexibility to drivers to take their own decision on real time when a plan is implemented.
- The flexibility for revision to the suggested routing plans by GYR platform.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

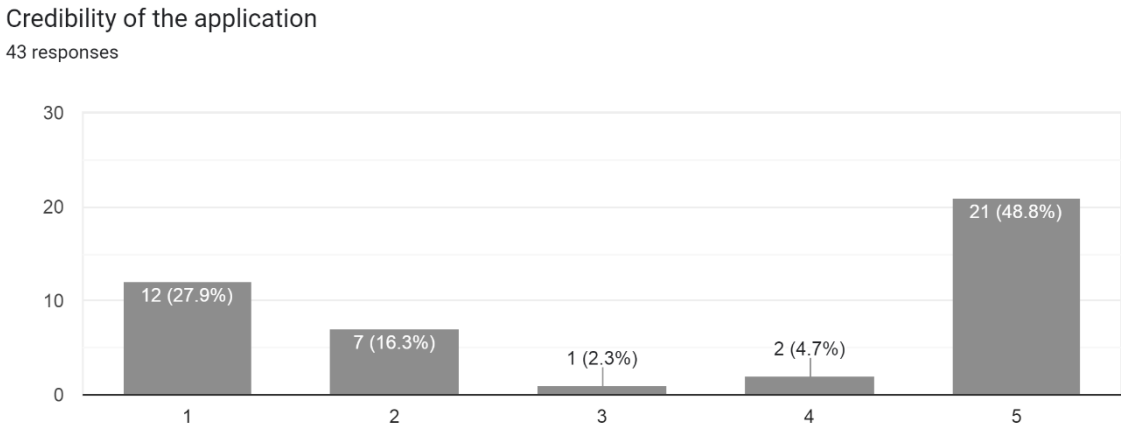
Graph 108: Policy makers – ETV program



GreenYourRoute application – second section

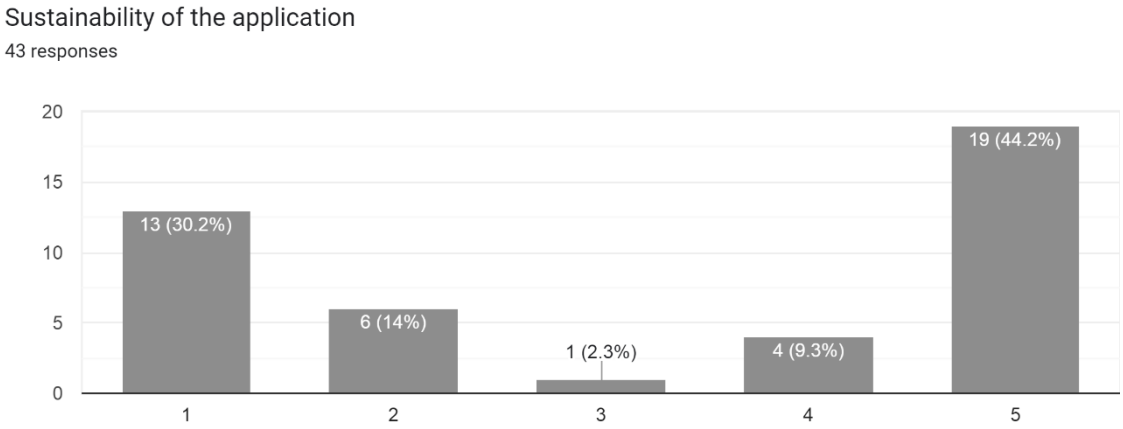
The questionnaire participants were requested to rate the importance of ETV for GYR platform. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "unimportant" and 5 to "Very important", were addressed to the participants. The responses received are presented in Graph 7 to Graph 11.

Graph 109: Policy makers –Credibility of GYR application

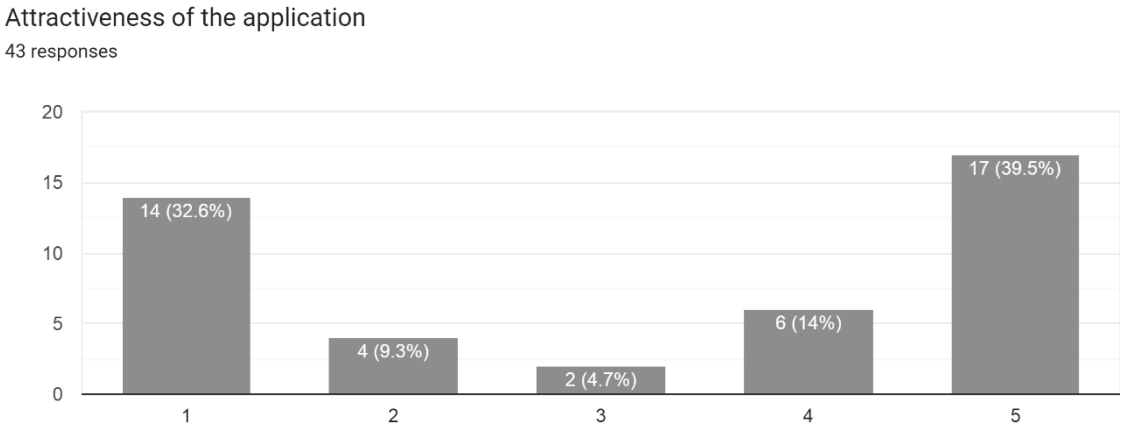


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 110: Policy makers –Sustainability of GYR application



Graph 111: Policy makers – Attractiveness of GYR application

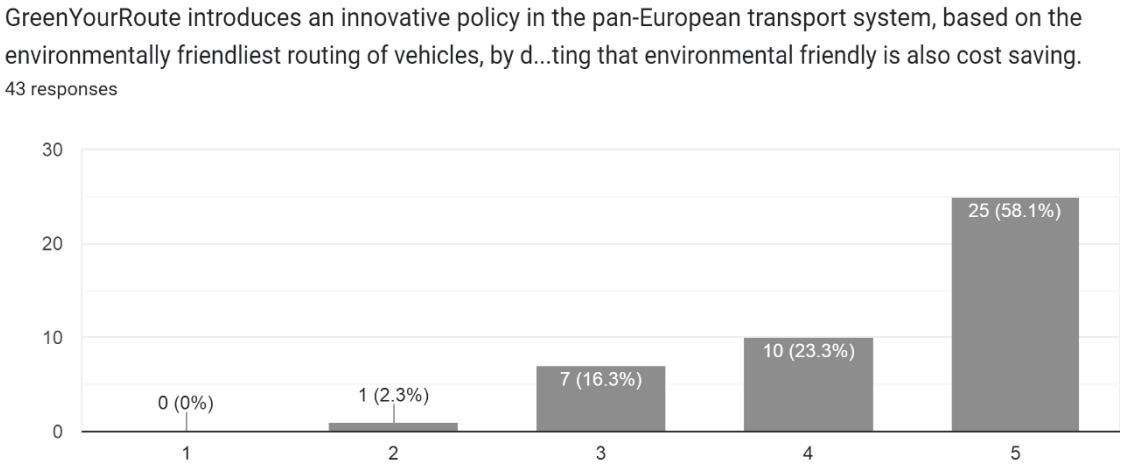


GreenYourRoute application – third section

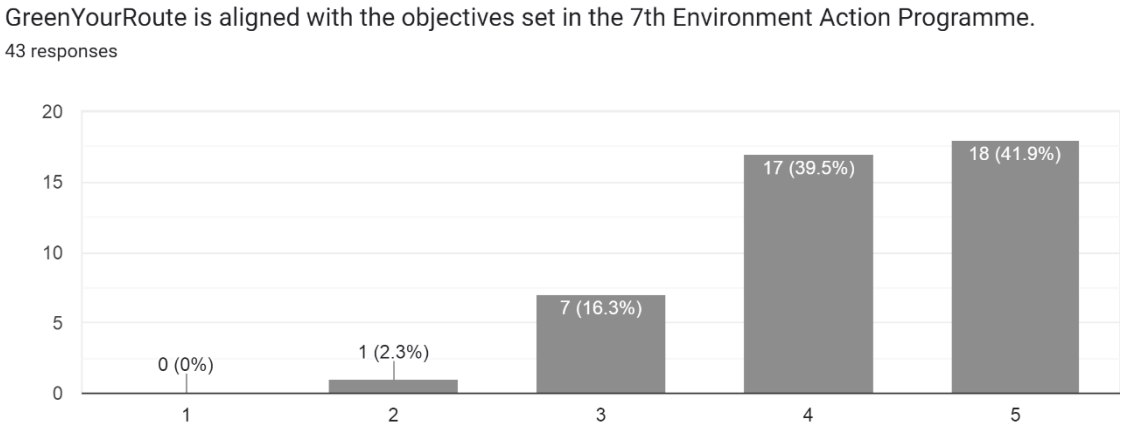
The questionnaire participants were requested to rate the contribution of GYR application to the environmental objectives of EU. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree", were addressed to the participants. The responses received are presented in **Graph 7** to **Graph 11**.

With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

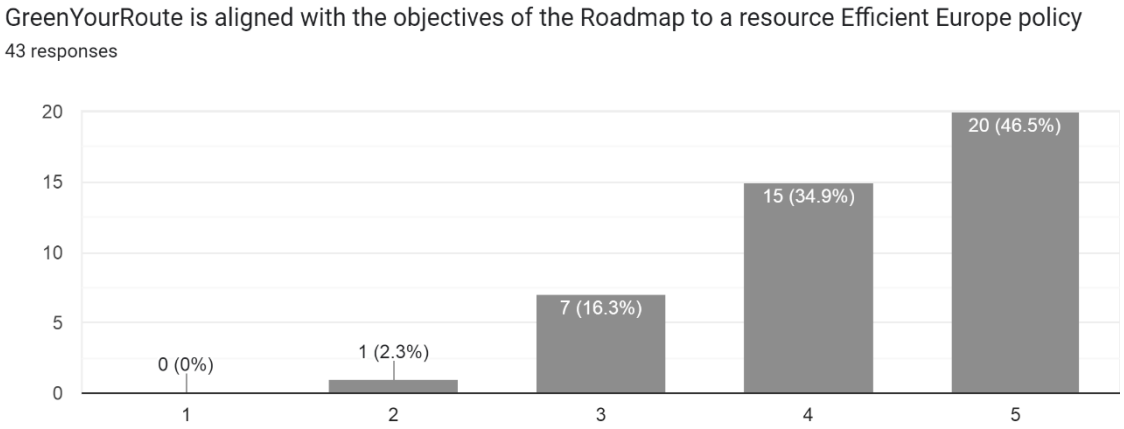
Graph 112: Policy makers –Does GYR application introduce an innovative policy in the pan-European transport system



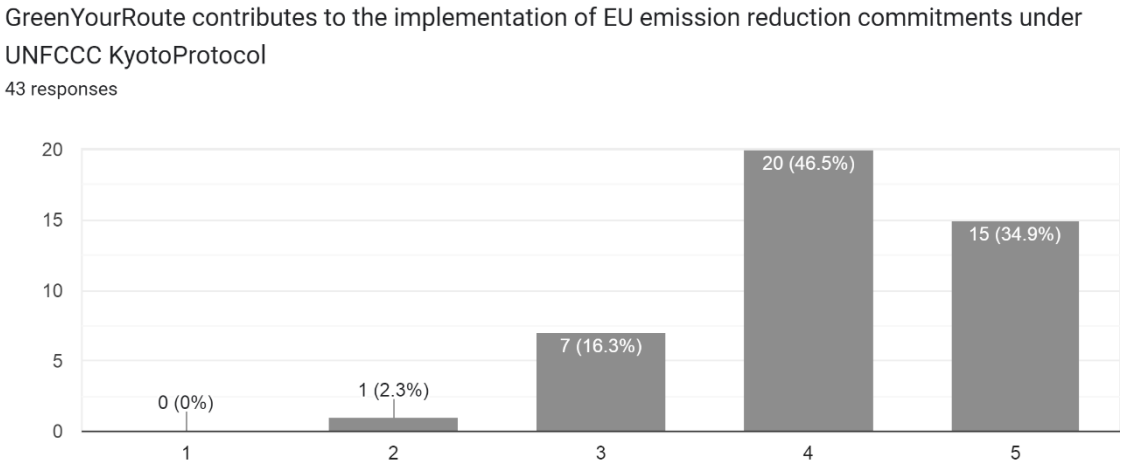
Graph 113: Policy makers – Is GYR application aligned with the objectives set in the 7th Environment Action Programme.



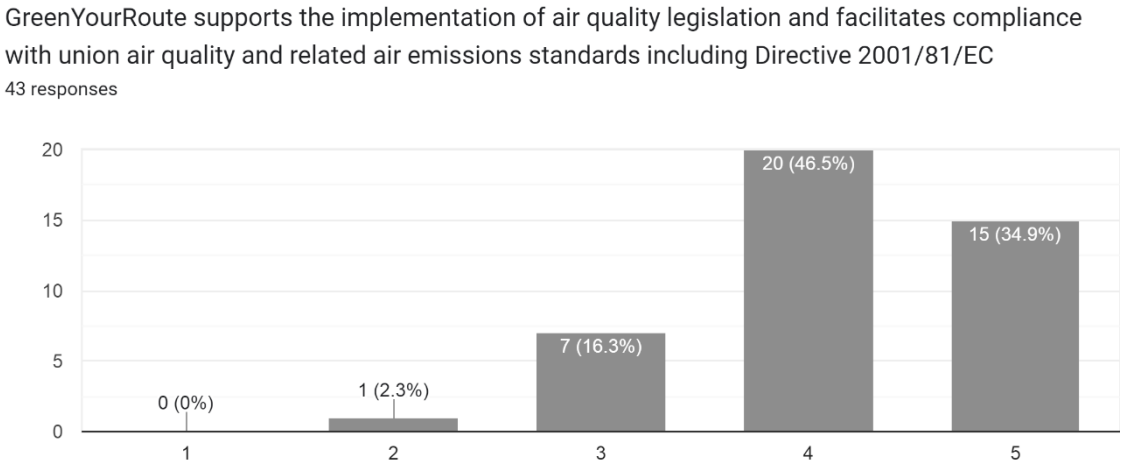
Graph 114: Policy makers – Is GYR application GreenYourRoute aligned with the objectives of the Roadmap to a resource Efficient Europe policy



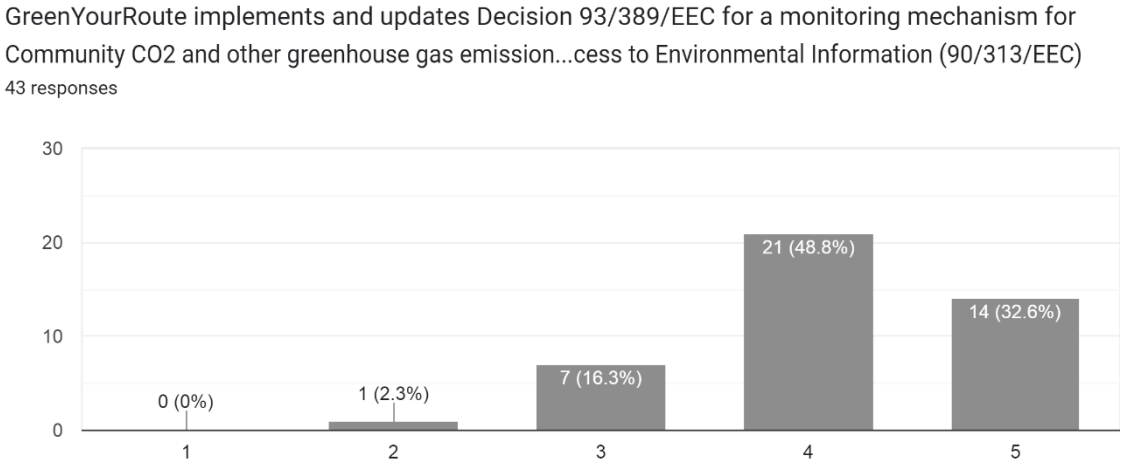
Graph 115: Policy makers – Does GYR application contribute to the implementation of EU emission reduction commitments under UNFCCC KyotoProtocol



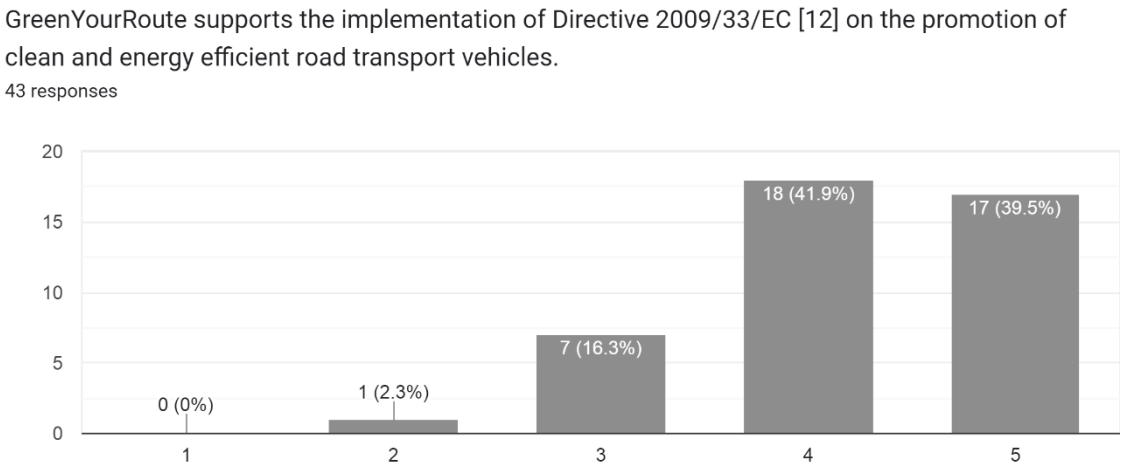
Graph 116: Policy makers – Does GYR application support the implementation of air quality legislation and facilitate compliance with union air quality and related air emissions standards including Directive 2001/81/EC



Graph 117: Policy makers – Does GYR application implement and update Decision 93/389/EEC for a monitoring mechanism for Community CO2 and other greenhouse gas emissions and Access to Environmental Information (90/313/EEC)



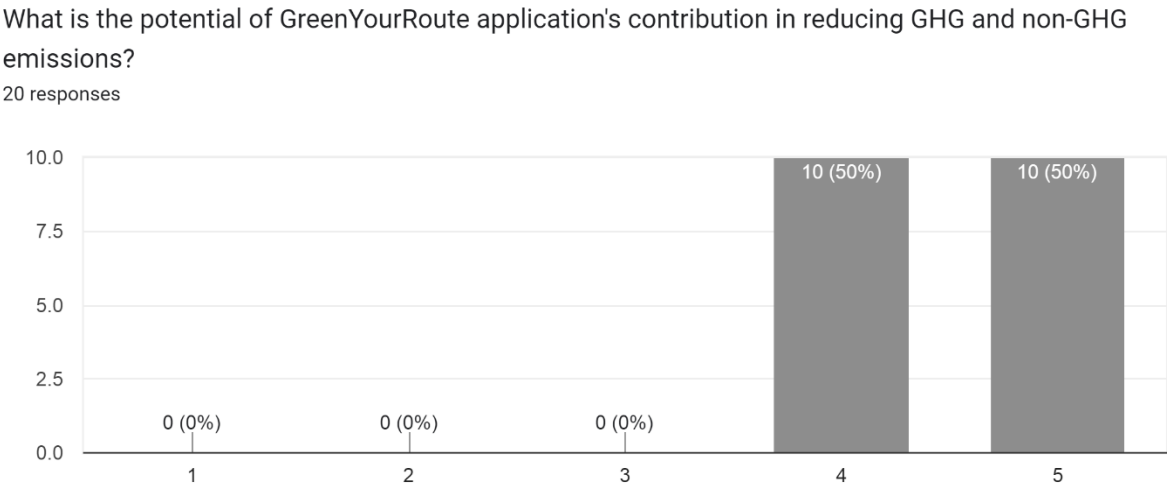
Graph 118: Policy makers – Does GYR application support the implementation of Directive 2009/33/EC on the promotion of clean and energy efficient road transport vehicles



GreenYourRoute application – forth section

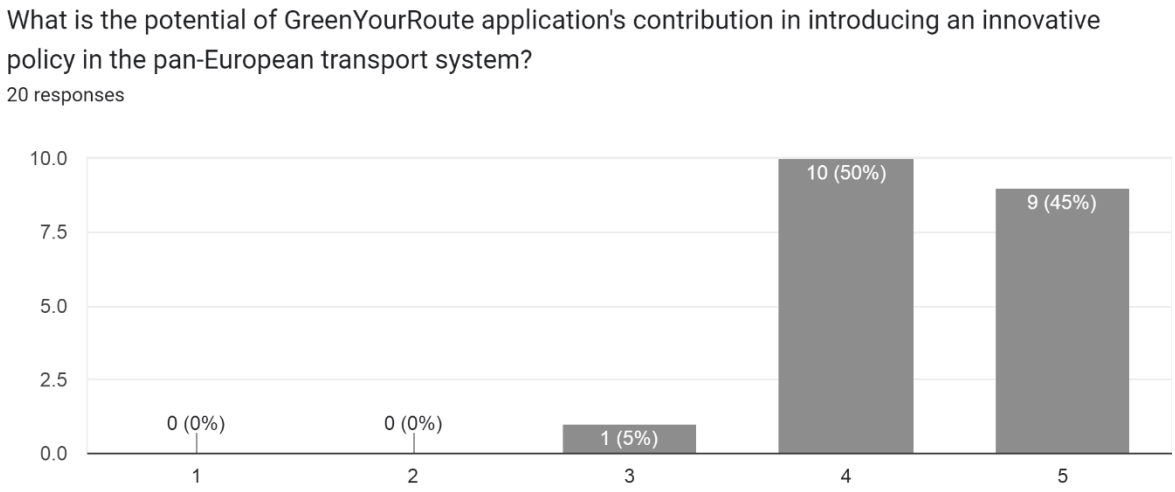
The questionnaire participants were requested to rate the potential of GYR application to the reduction of emissions. To this scope, questions under a 5-point Likert scale, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree", were addressed to the participants. The responses received are presented in **Graph 7** to **Graph 11**.

Graph 119: Policy makers – What is the potential of GreenYourRoute application's contribution in reducing GHG and non-GHG emissions?

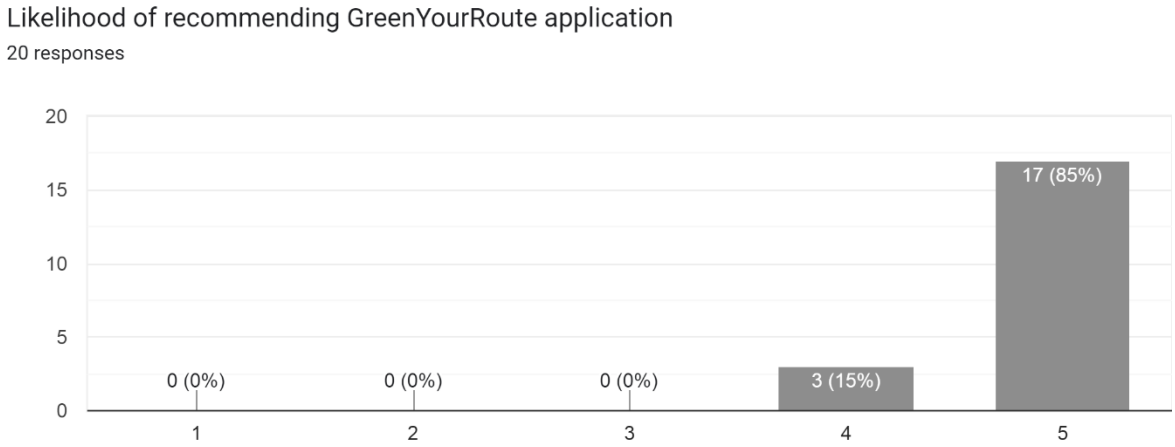


With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

Graph 120: Policy makers – What is the potential of GreenYourRoute application's contribution in introducing an innovative policy in the pan-European transport system?



Graph 121: Policy makers – Likelihood of recommending GYR application



With the contribution of the LIFE programme of the European Union and the co-financing of Green Fund, Greece

15 Bibliography

[1] L. W. Canter, S. F. Atkinson and F. L. Leistritz, Impact of Growth: A Guide for Socio-Economic Impact Assessment and Planning, Chelsea: Lewis Publishers, 1985.

[2] G. Sammer, R. Klementschitz and O. Roider , "TRANSECON, deliverable 7 - Final report," Institute for Transport Studies – University for Bodenkultur, Vienna, 2003.

[3] E. Musso, S. Sanguineti and C. Sillig, "Socio-economic impact of transport policies: an institutional approach," in *Transport project evalutation: extending for social cost-benefit approach*, Massachusetts, Edward Elgar Publishing Inc., 2007, p. 227.