



LIFE14 GIC/FR/000475 Clim'Foot



Climate Governance: Implementing public policies to calculate and reduce organisations' carbon footprint

LIFE Clim'Foot

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Deliverable C4.1

C4.1. Voluntary program: Calculation of organization's carbon footprint by end-users

Global report





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Preparation of the Voluntary programme

The general aim of the C4.1. voluntary program: “Calculation of organization’s carbon footprint by end-users” was to support end-user’s in carbon footprint calculation.

According to the grant agreement at least 50 organizations (10 from Hungary, 10 from Croatia, 10 from Greece, 20 from Italy) had to calculate their carbon footprints using the Bilan Carbone ® tool and the emission factors calculated according to the methodology defined in Deliverable A2.1.

Two main steps of the calculation were the followings: training session for end-users (C4.1.1.) and implementation by end-users (C4.1.2.).

The general aim of these training sessions for public and private sector was to introduce the participants to the Carbon Footprint and to the methodology of the Carbon Footprint calculation using the Bilan Carbon tool.

1. Training session for end-users (C4.1.1)

1.1. Training session for end-users

9 trainings were organized by the project partners for end-users, 3 courses were held in Hungary, 2 courses per country were organized in the other countries. Usually, the first (in Hungary the first and the second) training was organized for public, and the second training for private sector (in Hungary the third one). The training sessions lasted for two days in each country except in Italy where the second training - organized for the organizations that were unable to attend the first – lasted for one day (Table 1). You can find the technical details of the trainings below, in Table1.

Table 1: Technical details of the trainings for end-users in the partner countries

Country	Organizer	Date	Duration	Type of organizations	Nr. of participants
Croatia	EIHP	23-24 th November 2016	2 days	public sector	11
Croatia	EIHP	29-30 th November 2016	2 days	private sector	16
Greece	CRES	1-2 th December 2016	2 days	public sector	13
Greece	CRES	5-6 th December 2016	2 days	private sector	7
Hungary	HOI	23-24 th November 2016	2 days	public sector	7
Hungary	HOI	1-2 th December 2016	2 days	public sector	11
Hungary	HOI	5-6 th December 2016	2 days	private sector	17
Italy	ENEA + ECOI	24-25 th October 2016	2 days	private + public	19
Italy	ENEA + ECOI	5 th December 2016	1 day	private + public	7



1.2. Description of the end-users trainings

The content and schedule of the training were designed by IFC, the educational plan for calculating the carbon footprint of an organisation with the Bilan Carbone tool was available for all project partners. The document could be modified in each country and all partners had possibility to translate and elaborate new training materials too. The following describes the process of the trainings organized by the partner countries in general (Table 2).

The objective of the training seminars for public and private sector was presenting the participants to the scope and framework of the Carbon Footprint of Organisations and to the methodology of the Carbon Footprint calculation using the Bilan Carbone tool.

The program was divided into four major sequences. The objective of the first part was to introduce the participating organisations, to get information about the hosting institution and the Clim'Foot project and to get the acquired knowledge about climate and energy challenges, the methodological principles and the international and national carbon footprint initiatives. The second major session was aiming at identifying the perimeters and starting the usage of the Bilan Carbone tool. During the third sequence of the training the presentation of the calculator was continued and there was also a part dealing with defining actions based on the result of the calculation. At the end of the training there was an overview about the methodology and steps of a carbon footprint and end-users got information about the upcoming activities, the implementation phase and had possibility to evaluate the effectiveness of the training. The developed materials are available on the project website. At the end of the trainings participants completed evaluation forms, in which expressed their opinion on the seminar content and the trainers. You can find the general educational plan for end-users training below, in Table 2.

In general all the participants were very actively involved in the seminar. They actively participated in discussions, questioning, and giving ideas about the input data for the carbon footprint. They showed high interest and according to the evaluation quiz, the aim of the training seminar was fulfilled. In case of Italy the participants highlighted that the time of the on-site training sessions (2 consecutive days) was probably too short, especially for users who had no information on the topic before. Italian participants also had feedback in connection with the structure of the online training which evaluated too time-consuming and they suggested that the guidance of the online training should much more concise be.

Table 2: Educational plan for end-users training

Time	Sequence	Duration
	1st day of training	
9:00 – 9:30	1 – Introduction and individual presentations	30 min
9:30 – 10:45	2 – Synthesis of main energy – climate challenges	75 min
10:45 – 11:00	Break	15 min
11:00 – 12:15	3 – Methodological principles	75 min
	Lunch	
13:45 – 14:30	4 – Defining perimeter	45 min



14:30 – 14:50	5 – Overview of the Bilan Carbone tool	20 min
14:50 – 17:30	6 – Presentation of the calculator with exercise – Part 1	160 min
2nd day of training		
9:00 – 9:15	Feedback from day 1 + Q&A	15 min
9:15 – 11:15	7 – Presentation of the calculator with exercise – Part 2	120 min
11:15 – 12:15	8 – Defining actions	60 min
Lunch		
13:45 – 14:45	9 – The main steps of a carbon footprint project	60 min
14:45 – 15:45	10 – Overview of international and national regulations	60 min
15:45 – 16:00	Break	15 min
16:00 – 16:45	11 – Organisation of the implementation phase	45 min
16:45 – 17:15	12 – Evaluations	30 min

All project partners had a very similar schedule for the trainings, the detailed program of the training workshops by country can be found in Annex 1.

1.3. End-users' training evaluation

At the end of the course, a training evaluation forms have been submitted to all participants from public and private sector.

The evaluation form is structured in three main sections:

- Quality of the content;
- Expertise of the trainers about the subject;
- Overall evaluation.

Moreover, in Croatia the evaluation form also included a question with an open answer in order to collect information about potential improvements and a feedback on the training course.

Table 3: Answers of the training evaluation forms

Total for the all participants				
<i>Quality of the content</i>	Absolutely	Partially agree	Not really	Not at all
You understand the main principles of the carbon footprint methodology	60	30	4	0
Could you easily list the main steps of a CFO project?	48	40	4	0
You have a clear understanding of the kind of results you'll get at the end of a CFO	52	40	3	0



Could you list the three main categories of actions related to a CFO?	55	32	3	0
You feel comfortable in using the Bilan Carbone spreadsheet	22	49	16	3
You are able to prepare a first CFO for your organisation	20	52	19	1
You have a clear understanding of the pilot phase organisation	62	23	5	0
<i>Expertise of the trainers about the subject</i>	Very good	Good	Medium	Not good
Expertise of the trainers about the subject	65	24	0	0
Pedagogy of the trainers	58	30	2	0
Interest of the exercise to manipulate the spreadsheet	50	33	7	0
Quality of provided documentation		31	4	0
<i>Overall evaluation</i>	Absolutely	Partially agree	Not really	Not at all
Are you satisfied with this training?	64	25	1	0
Did you reach your expectations?	56	28	4	0

2. Experimentation by end-users (C4.1.2.)

2.1. Demonstration phase (according to activity reports)

2.1.1 Actions undertaken by beneficiaries to support end-users

After the seminars held in October, November and December 2016 for private and public organisations, the beneficiaries delivered all the training materials, draft of the Bilan Carbone model and the supporting “shopping list” for data collection to the participants. The Croatian partner, EIHP started the data collection for his own carbon footprint in December covering years 2015 and 2016 in order to have a better picture of the work required for each scope, and finally to better support end users, based on own-experience.

The main task of the experimentation phase for all partner organizations was to regularly contact end-users and support them in the correct performing of the CFO calculation exercise, in the definition of the system boundary for the CFO calculation and in the overall goal of the CFO study, in the selection of proper Emission Factors for their specific situation/activity, in data collection and in calculation, therefore the partner organizations usually contacted them at least once in a month by phone, email, online meeting or in person by answering their questions, sending news related to the CFO and the Clim'Foot project, etc. Partner organizations also checked obtained results and helped them for a correct interpretation, moreover they provided for the final report template in the given national language. The target



group were the participants of the training courses. As soon as the partners could provide for the end-users the Bilan Carbone Clim'Foot Tool in national languages with national EFs, the process of the calculation was boosted.

During the second part of the experimentation phase, after the national language version of the tool was released, partners could organize the onsite visits during the calculation period. HOI visited 5 public and 6 private organisations at the end of 2017 and in January and February 2018 (Table 4). ENEA had 6 face-to-face meeting reaching 10 organizations but, furthermore they had also several skype calls because of the geographical distances. EIHP started the visits in October 2017. The last visit was performed in May 2018, EIHP arranged 11 on-site visits in total (Table 5). CRES organized 4 private and 7 public on-site visits, the first meeting was in May 2017, however, in the course of the project the visited Municipality decided to opt out of the voluntary program. The last Greek on-site visit was almost one year later, in April 2018 (Table 6).

During the visits the state of the project implementation was presented, but the meetings also provided the opportunity to refresh the knowledge of the methodology, answer the questions connected to the calculation or the data collection. The aims were to provide useful advises for organisations and try to give a complete picture of the calculating process and the data collection.

Table 4: Date and place of end-user visits in Hungary

<i>Organisation</i>	<i>Place</i>	<i>Date</i>
Mayor's office of Kaposfő	Kaposfő	17-11-2017
Budapest Business School	Zalaegerszeg	22-11-2017
Robert Bosch Electronic Ltd.	Hatvan	14-12-2017
Robert Bosch Power Tool Ltd.	Miskolc	14-12-2017
Grundfos Hungary	Székesfehérvár	18-12-2017
National University of Public Service	Budapest	10-01-2018
Biofilter Co.	Törökbálint	10-01-2018
Contitech Rubber Industrial Ltd.	Szeged	17-01-2018
Bunge Co.	Martfű	29-01-2018
Lake Balaton Development Coordination Agency	Siófok	31-01-2018
Mayor's office of Nagyvázsony	Nagyvázsony	14-02-2018

**Table 5: Date of end-user visits in Croatia**

<i>Organisation</i>	<i>Date</i>
University of Rijeka Faculty of Economics	10 th October 2017
Croatian Employment Service	27 th November 2017
Zagreb Freight Station	6 th December 2017
Croatian Institute for Public Health	18 th December 2017 and 16 th December 2016
Valamar Riviera	1 st February 2018
Croatian Lottery	7 th February 2018
Faculty of Mechanical Engineering and Naval Architecture	21 st March 2018
Croatian Environmental Agency	26 th March 2018
EKONERG - Energy and Environmental Protection Institute	29 th March 2018
Ericsson Nikola Tesla	11 th May 2018
Končar - Power Transformers Ltd.	22 nd May 2018

Table 6: Date of end-user visits in Greece

<i>Organisation</i>	<i>Date</i>
Municipality of Spata	18 th May 2017
Ellenko S.A.	12 th September 2017
Municipality of Ilioupoli	16 th January 2018
Municipality of Vrilissia	17 th January 2018
Municipality of Petroupoli	18 th January 2018
Municipality of Farsala	15 th February 2018
Del Monte Hellas S.A.	6 th March 2018
Aegean Motorway S.A.	7 th March 2018
Symetal S.A.	17 th April 2018
Municipality of Kimi-Aliveri	18 th April 2018
Municipality of Agios Dimitrios	27 th April 2018

**Table 7: Date of end-user visits in Italy**

Organisation	Date
5 high school of Torino	16 th November 2017
Regional agency for prevention, environment and energy of emilia-romagna - ARPAE	29 th January 2018
School fo Economy and management, University Torino	15 th February 2018
Città Metropolitana di Torino	16 th February 2018
University Roma 3	12 th March 2018
Alma Mater Studiorum, University of Bologna	22 th March 2018

The data collection was the most time-consuming part of the CFO calculation for the organisations, especially for industrial organisations. By EIHP during the calculation period the economic impact assessment and survey were delivered to the end users, thus requiring further efforts in end-users support for data filling and completing. The general experience is that the end-user visits very efficiently facilitated the calculation and it was one of the most important parts of the Voluntary Programme. Unfortunately some of the organizations attended to the training course couldn't continue the participation in the project for various reasons.

2.1.2 Activities realised by end-users

After the trainings organized by the partner countries most of the representatives from organisations have introduced the management and key employees with their role in the project, defined the parameters and started to plan their next steps in the project for calculating the carbon footprint. A significant part of the end-users informed employees about the project and its future steps. After that the mapping of the activities could be started which were specific for the organizations. For private sector end-users overhauled the activities carried out in the given company because its structure is more complex compared to a public organisation such as an university. Then the end-users could define the perimeters of the activities belong to the CFO. These assessment showed the actions they needed to collect data, so the end-users faced the potential data provider of the necessary data.

It is a general experience by each partner that for public sector data collection was usually easier because most of the data was available from the utility bills. For private sector it was more complicated because of the complexity and dissimilarity of the organisations. Data collection was one of the most time-consuming tasks of the voluntary programme for the end-users.

In Hungary the English version of the Bilan Carbone was provided for organisations after the training sessions, so they could practise the usage of the Bilan Carbon and get acquainted with the tool. HOI sent the Hungarian Bilan Carbone Clim'Foot tool to the end-users in October 2017. After end-user visits the organizations got a wider picture about the carbon footprint



calculation and became more active in the project. The most active organizations gave feedbacks and remarks regularly so partners could develop the tool and support further them. In Croatia most of the work undertaken by end-users was performed during the period of on-site organised meetings (December 2017 till August 2018). Some of the Croatian end-users were very active in data collection and calculation, in March 2017 Faculty of Economics from the University of Rijeka has completed its carbon footprint calculation and after that they maintained an extremely high level of interest within the voluntary program later on. ENEA sent the Italian Bilan Carbone in August 2017 and the final version of the Bilan Carbone® tool implemented with the updated version of the EFs database in October, where few refinements were performed. In Italy most of the work undertaken by end-users was performed from October 2017 until May 2018. In general during the spring and summer of 2018 partners got the first result of the calculations from the organizations and usually they sent the final reports as well. Partners revised the Bilan Carbone tables and diagrams and when noticed outstanding vale called the given organization and check the data together. Moreover, most of the organizations in Italy and Hungary identified and included in the report also potential actions to reduce/mitigate their greenhouse gas emissions based on CFO results.

In Greece, end-users remained active and interested in the project throughout the entire duration of the project and most of them managed to provide their feedback according to the timetable provided by CRES during the training sessions. Similarly to the experience in other countries, some of them were more active, while all organisations provided interesting feedback during and after the onsite visits. Moreover, all organisations that completed the reports also reported potential actions to reduce/mitigate their greenhouse gas emissions based on CFO results.

2.1.3 Potential inconsistencies and problems

Almost all actively responding organisations come across difficulties in a process of data collection for the carbon footprint calculation. Most problems are related to difficulties in reaching the required data, lack of time of employees' indispensable for the data.

The key challenge during the implementation was to keep the interest of the end-users during the whole voluntary programme. End-users had to spend several workdays on the data collection and calculation in parallel with their obligatory tasks, some of them decided not to continue the programme, the others had to be pushed in order to finish the calculation. Another main problem was the time between the trainings and the effective starting of the CFO calculation which generated decrease of interest in case of a few organizations in each partner country.

In order to increase the interest of some end-users, ENEA and Ecoinnovazione arranged specific phone calls and meetings. Nevertheless, 4 organizations gave up (2 for Ecoinnovazione and 2 for ENEA) the participation in the voluntary programme, because the expectation on environmental issues in the organizations changed or had no time for CFO. In Croatia private company Ledo (food industry) has abandoned the project because of overcrowd in other activities and Municipal Utility Company Vukovar was unable to implement project tasks due daily business obligations.

Most of the problems have emerged because the data collection process is time consuming for delegated experts, making daily business obligations difficult to arrange with project activities.



In Greece, 9 organisations completed the CFO and provided their reports with the results of their calculation. In most cases project actions proceeded within the accepted time management limitations and according to plan. Several organisations showed that they were active and interested in the project and spent significant time both in data collection and the use of Bilan Carbone®. Due to monthly contacts it appeared that even the organisations that were not very active were compelled to provide some feedback and most of the organisations eventually provided information in order to ensure that they were still within schedule. The organisations that decided to opt out of the project took the decision due to limited time availability and inability to keep up with project activities.

2.1.4 Additional comments

According to a significant part of the volunteers Bilan Carbone is a user-friendly program and easy to understand its operation. Moreover this tool is more complex and detailed than the others on the Internet. In Italy few organizations suggested to prepare a short guide/manual of the tools for improving its usability. Indeed, they found the use of the on-line training too long and complex and they would preferred a shorter downloadable pdf file. A positive impact of the process of data collection and carbon footprint calculation for involved experts in the organisation is to receive a wider picture, which will allow them to become more familiar with emission structure and recognise activities that mostly contribute to the total GHG emissions. Data collection for the carbon footprint calculation has shown to be a good method for awareness raising of all flows of energy, materials and people, necessary for the functioning of the organisation and related impact to carbon footprint.

2.2 Results of the voluntary programme (according to the end-users final reports)

2.2.1 Type of organisations

The final number of organizations who sent the results of the carbon footprint calculating is 50, the number of final reports is 48 in total, for the 4 countries (Table 7). The final number of all organizations is 50 so the target is reached.

Table 8: The number of final reports and different type of organizations in each partner country.

Partner Organization	Number of final reports	Target	Number of public organizations	Number of manufacturing organizations (private)	Number of service companies (private)
<i>HOI</i>	10	10	4	5	1
<i>ENEA</i>	12		10	1	1



ECOINN	7	20	0	4	3
EIHP	10	10	6	1	3
CRES	9	10	6	2	1
Total	48	50	26	13	9

Croatia:

- EIHP possesses 12 carbon footprint calculations in the national Bilan Carbone Clim'Foot tool and 10 final reports. The partners are from the following type of organizations:
 - *Number of public organizations: 8* (Croatian Agency for Environment and Nature – CAEN; Faculty of Economics, University of Rijeka – EFRI; Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb – FSB; Croatian Institute for Public Health – CIPH; Croatian Lottery – CL; Zagreb Freight Station, Zagreb Holding – ZFS (only CF calculation); Croatian Employment Service – CES (only CF calculation); Energy Institute Hrvoje Požar – EIHP)
 - *Number of private organizations: 4* (EKONERG - Energy and Environmental Protection Institute; Ericsson Nikola Tesla – ENT; Končar - Power Transformers – KPT; Valamar Riviera – VR)

EIHP's project target is to implement the national Clim'Foot Bilan Carbone model for carbon footprint calculation on at least 10 organisations from private and public sectors, while the final number of organizations is even larger (12). EIHP decided to implement the calculation of own company in order to provide better practical support to the Croatian end-users.

Greece:

- CRES possesses 9 final reports. The partners are from the following type of organizations:
 - *Number of public organizations: 6* (Municipality of Ilioupolis; Municipality of Vrilissia; Municipality of Petroupoli; Municipality of Farsala; Municipality of Kimi-Aliveri; Municipality of Agios Dimitrios)
 - *Number of private organizations: 3* (Del Monte Hellas S.A.; Aegean Motorway S.A.; Symetal S.A.)

CRES's project target is to implement the national Clim'Foot Bilan Carbone model for carbon footprint calculation on at least 10 organisations from private and public sectors. The final number of organizations is 10 so the original target is not reached.

**Hungary:**

- HOI possesses 10 final reports. The partners are from the following type of organizations:
 - *Number of public organizations: 4* (Budapest Business School; National University of Public Service; Lake Balaton Development Coordination Agency; Herman Otto Institute Nonprofit Ltd.)
 - *Number of manufacturing companies: 5* (Bunge Co.; Contitech Rubber Industrial Ltd.; Grundfos Hungary; Robert Bosch Electronic Ltd.; Robert Bosch Power Tool Ltd.)
 - *Number of service companies: 1* (Biofilter Co.)

HOI's project target is to implement the national Clim'Foot Bilan Carbone model for carbon footprint calculation on at least 10 organisations from private and public sectors. The final number of organizations is 10 so the target is reached. HOI decided to implement the calculation of own company in order to provide better practical support to the Hungarian end-users.

Italy:

- Enea possesses 12 final reports. The partners are from the following type of organizations:
 - *No. of public organisation: 10* (University of Studi Roma Tre (Roma tre), University of Bologna (UniBo), Scuola di economia e management, University of Torino (SME), Città metropolitana di Torino (CMTTo), ARPAE, I.I.S. "Michele Buniva", Liceo Classico "Cavour", I.I.S. "J.C. MAXWELL", Liceo artistico "Primo", Liceo scientifico "Vito Scafidi")
 - *No. of manufacturing companies: 1* (Ratti SpA)
 - *No. of service companies: 1* (Agri 2000 Net Srl)
- Ecoinnovazione possesses 7 final reports. The partners are from the following type of organizations:
 - *No. of manufacturing companies: 4* (Edilteco SpA; Keminova Italiana srl; AGRICOLTURA CAPODARCO; Marchesini Group Spa)
 - *No. of service companies: 3* (ambienteParco impresa sociale srl; Istituto Italiano dei Plastici S.r.l.; Fedabo SpA)

Italy's project target is to implement the national Clim'Foot Bilan Carbone model for carbon footprint calculation on at least 20 organisations from private and public sectors. The final number of organizations is 19. (You can find the justification in the C4.1. Italian National Report point 3.1)

2.2.2 Reporting period



The reporting period covered one year in most cases, related to the year 2016 or 2017 depends on the available data. In Italy, the schools in charge of ENEA used the school year from September 2017 until June 2018 as time period.

2.2.3 Approach

The carbon footprint of organisation was assessed according to ISO14069 standard and GHG Protocol implemented in the Bilan Carbone® tool launched by the French Environment and Energy Agency (ADEME) developed by the Bilan Carbone Association (ABC) and further developed in the framework of Clim'Foot project, translated in the national language and adjusted to a national version, which incorporates the emission factors developed in the context of the project. Most of the organizations performed calculation and reporting according to the GHG Protocol, only 9 organizations selected the ISO 14069 from the organizations in charge of ENEA.

2.2.4 Operational scopes

Most of the organizations in the 4 countries have prepared their calculation for all three scopes, but in some cases the calculation was not complete for scope 3 activities, because some of them would identify critical aspects concerning energy consumption and others have prepared their calculation for scope 1 and scope 2 because of the difficulties of the acquisition of the necessary data. Because of the lack of data the calculation was not always complete neither for scope 3. The general experience is that the most relevant emissions were analysed in scope 3.

2.2.5 Problems and solutions encountered during defining perimeters and data collection process

Most of the companies had similar difficulties in each countries. The main problems encountered were defining perimeters, data collection and emission factors selection are presented below in the list.

- Technical and general problems:
 - There was a long period between the physical trainings and the release of the national language Bilan Carbone Clim'Foot Tool so the end-users forgot much necessary information and knowledge;
 - In case of Croatia representatives of most organizations did not have enough time for web education (online training materials: <https://climfoot-ifc365.talentlms.com/>).
- Data collection:
 - The data collection process is a difficult and time consuming process, especially in the cases where a data collection system is not already available.
 - Lack of data availability in forms compatible with the tool.
 - Difficulties in collecting data, especially for visitors travel and commuting of employees;



- Difficulties in collecting data due to organizational structure. For example the organization of business trips are carried out by the value streams (12 production value stream and the back offices) via external company. Could not find the person who could possibly collect all data together;
 - A similar case occurs in the delivery of the goods. Subcontractors are involved, data could be hardly aggregated;
 - Companies usually have item numbers or order identify numbers and they know the number of ordered packages but they don't know the punctual amount of material composition or material quality, what is needed for the Bilan Carbone method;
 - Problems in defining the perimeters needed for carbon footprint calculation, e.g. defining of input materials and services. Defining the input data: The problem is that you can choose input data in Bilan Carbon Tool by the type of material (plastic, metal, glass, paper etc.) which data are not available for all company. For example Bosch in Hungary uses SAP system where the data are available. The parts which are necessary to assembly one product is described in "stücklist". That is why difficult to estimate the material type because they produce hundreds of products;
 - Problems in estimation or recalculation of input data (e.g. calculation of heat consumption based on share in total heated area of the building, in case of more organisations are in the same building);
 - The structure and query/reporting system of the existing databases does not always make it easy to collect data quickly: Transport km per destinations, vehicle types connecting to destinations. Registry of buildings and other installations;
 - Calculation of GHG emissions from capital goods and amortisation of emissions for depreciation period (e.g. explanation of differences between the ISO 14069 norm and GHG protocol);
 - Classification of waste data into the tool.
- Emission factors
 - Difficulties in finding appropriate emission factors. The main difficulty was the existence of the emission factors. Produce companies have thousands of input materials and most of them are very specific to find emission factors for them;
 - Emission factors were not available for all activities and inputs for manufacturing companies. In these cases organizations tried to choose similar emission factors for the given activity or material. In some cases organizations did not calculate with a given material or pursuit because of the lack of emission factor or similar emission factor.

At general level, most of the end-users reached a good understanding of main issue associated to CFO calculation, especially in relation to the EFs selection for activities under their direct control (e.g. the consumption of purchased electricity) or relevant products/materials used in the production activities.



Ecoinnovazione and ENEA had interesting feedbacks from the experimentation by the organizations, which are significant to improve the DB and mainstream the CFO calculation in the future. Some issues are still:

- The end-of-Life processes in the DB-s. They should be increased in order to cover more situations;
- The availability of emission factors on products, especially chemicals – which are used in all the application when also the scope 3 is covered, both as main materials and as ancillary materials – has been identified as a key aspect on which further activities in the future would be necessary to make the tool fully exploitable by the organizations;
- In addition, the full understanding of methodology aspects by the end-users, e.g. the difference between the operational and financial control in the CFO calculation should be better explained (during the training and in the calculator) as it could not be taken into account.

2.2.6 Results of the calculation of the CFO

In total 50 calculation and 48 final reports has been provided by the partner organizations. In case of HOI 10 final reports were provided, so the target (10) is fulfilled.

In Croatia 12 CF calculations and 10 final reports were provided, so the final number of organizations is even larger than the target (10) is.

In Greece 9 final reports were provided and the target is 10.

In case of Italy, Ecoinnovazione has 7 final reports and ENEA has 12 final reports, so the total number of reports is 19. The target is 20. (You can find the justification in the C4.1. Italian National Report point 3.1)

Public sector:

At general level, energy (including both the direct (from heating and owned transport) and indirect (from electricity)) could be the main emitter according to CFO calculation in the public sector. But in some cases (e.g. in Hungary) data for transporting people were not available so the given organization could collect mostly the data for energy sector. In Hungary according to the feedbacks transporting people data was difficult to obtain and could be estimated very inaccurately in case of some public organization. One of the Hungarian organizations tried to survey the traffic patterns of some of their students by a questionnaire, which made an approximate estimation of the emissions from transporting people. The calculation of certain sectors shouldn't be used in case of public organisations or in case of certain service companies because no emissions are generated in it (for example: Non-energy, Inputs, Future packaging, Freight, Use stages, End-of-Life).

Private sector:

CFO results from private organizations give us a wider picture because private companies are usually manufacturing or service companies that have different working structure. So the main emissions according to the CFO results are depending from the type and rule of the given



organization. The main contributors are the energy and input sectors in general. Emission from energy use is specific based on the area of the companies, but there are different ratios for service organizations and producer companies. Producer organizations consume more energy compared to their area, than the service companies. Inputs and raw materials are very important parts of the CFO emission especially in case of manufacturing companies but the data collection is quite difficult. Moreover, many organizations needed specific EF-s for several raw materials but these EF-s usually missed from the databases so the results should be treated with caution. Transportation is another important part of the CFO calculation results. In some cases (e.g. by BUNGE in Hungary) significant emission is from freight which can be nearly 90% of the total emission of an organization. Some of the Hungarian organizations couldn't collect data from capital goods, or the used equipment are so old that Bilan Carbone tool doesn't count of their emission.

2.2.7. Reduction approach

After finishing the calculations and the final reports organizations had short time for developing action plans. Most of the organizations which performed the CFO and submitted the final report identified potential mitigation strategies and actions. Overall, the strategies/actions run from effective changes such as the substitution of current electricity mix or owned vehicles with green mix or more eco vehicles respectively, to management measures such as the installation of energy meters or awareness actions addressed to employees.

Based on the instructions from ADEME, Energy Institute Hrvoje Požar prepared its action plan in July 2018 and sent to 6 interested organisations. At the beginning of September 2018, two additional organisations provided their action plans: Faculty of Economics in Rijeka and Ericsson Nikola Tesla. In case of HOI the target is providing one action plan which is prepared by Biofilter Co. ENEA presented at their organizations the mitigation programme of the project, showing the main issues on implementation and monitoring of GHG emission reduction action plans. By the end of the Clim'Foot project, one Action Plan was developed by School of Economy and management, University Torino and one Sustainability Report was developed by Ratty S.p.A. The sustainability report presents the policy and actions developed by Ratti group to improve their social and environmental sustainability, including the environmental benefit reached by the organization with the implementation of mitigation actions to reduce the CFO.

Main (mitigation) actions from organizations for reducing carbon footprint are the followings (according to final reports):

- Communication of the carbon footprint results to the given company, several (for example: logistic) departments and suppliers in order to discuss reduction potentials in connection with carbon footprint.
- Increase the use of renewable energy for example in combined heating and electricity system and highlight energy efficiency, updating heating systems.
 - Heat recovery from compressors
 - Installation of LED lighting in production halls
 - Insulation of pipe adapters
 - Insulation of steam-tubes of the humidifiers
 - Take off leakages in compressed air system_18'
 - Installation humidifier with better efficiency



- Installation chiller machine with better efficiency
- Upgrading of the insulation of the roof
- Purchase of solar chargers
- Reorganization and controlling of employee travels, business travels and purchase of new company cars (mostly in case of public sector)
 - purchase of electric or hybrid company cars
 - optimization of car-uses → carpooling system
 - reducing longer airplane travels → online meetings instead of physical meetings
- Reduction of input materials (mostly in public sector)
 - Reduction of paint and paper using
 - Application of electronic accounting systems, paperless administrations

3. Experiences, feedbacks

The end-users found that the 2 days training were very useful, effective and concise. They learned a lot on carbon footprint calculation and reduction process at the training. The trainings were well-structured and information was understandable for end-users. Two days on one hand were too long time to be out of work, some of them couldn't organize the personal substitution just only for one day. From trainers' perspective on the other hand two days were very short time to teach everything deeply.

The voluntary programme has highlighted that the organisations were not able to calculate their CF by themselves: also when the end users already had a good expertise on the topics and clear ideas about their participation to the voluntary programme, the initial training was not sufficient and they needed to be accompanied during the experimentation phase.

Some future developments have been identified for a better usability of the tools (database and calculator), for increasing the coverage of included sectors in the database, for adding new sector in the database.

Currently the EFs are entered manually into the calculator. The implementation of a utility that connects the National DB with the calculator has a twofold aim: i) it would simplify the update of the calculator with the new EFs developed in the DB; ii) the end-users could choose the EFs more easily as they would have access to the description of the data. The involvement of stakeholders such as categories associations, national agencies or networks could support the EFs implementation.

End-users evaluated the Bilan Carbone tool as an easy to handle and easy to learn calculator. Based on end-users feedbacks the examples, case studies used during the trainings were very useful and illustrative.

The one year between the physical trainings and the release of the Bilan Carbon Clim'Foot Tool in the given national language was long and enough to forget what representatives have



learnt on the trainings. In fact, the provision of the final version of the Bilan Carbone tool, translated in the given national language, has registered a renewed interest of the end-users, and their commitment in completing the carbon footprint calculation. It was key important to visit the end-users on-site once, because they needed to refresh their knowledge and get answer for their specific questions. It was also useful for the partners because partner organizations would get better acquainted with the organizations and their problems in the carbon footprint calculation process, and consequently provide them with concrete assistance in solving problems. They could understand their activities more easily to help them fill in the table and develop new emission factors for them.

Annex

Figure1: On-site visits in Croatia



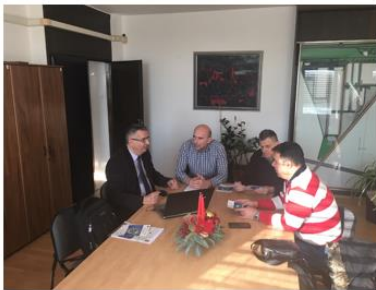
Croatian Institute for Public Health



Faculty of Economics in Rijeka



Croatian Employment Service



Zagreb Freight Station



Valamar Riviera



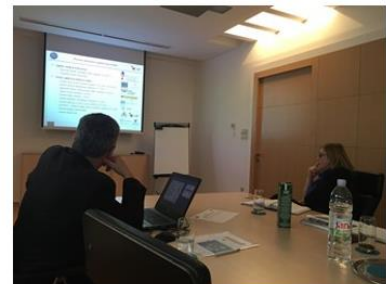
Croatian Lottery



Faculty of Mechanical Engineering



Croatian Environmental Agency



EKONERG



Ericsson Nikola Tesla



Končar - Power Transformers



Figure2: On-site visits in Greece



Municipality of Agios Dimitrios



Ellenko S.A.



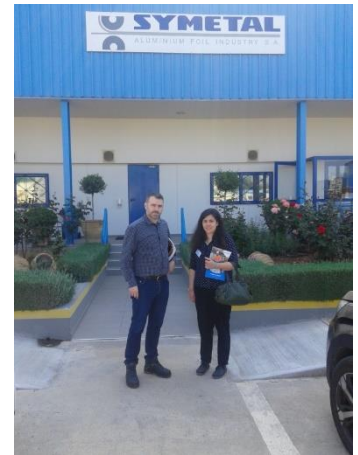
Del Monte Hellas S.A.



Municipality of Kimi-Aliveri



Aegean motorway S.A.



Symetal S.A.



Municipality of Vrissia



Municipality of Ilioupoli



Municipality of Farsala



Municipality of Petroupoli

Figure3: On-site visits in Hungary



Budapest Business School,
Zalaegerszeg



Mayor's office of Kaposfő



Mayor's office of Nagyvázsony



Robert Bosch Power Tool Ltd. and Robert Bosch Electronic Ltd.



Grundfos Hungary



Lake Balaton Development Coordination Agency



Contitech



Bunge Co.