D9.6 – Carbon footprint initial report

WP9 – Task 9.2

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Abbreviations and acronyms

Acronym	Description
ADEME	Agence de l'environnement et de la maîtrise de l'énergie
(Kg)CO2(e)	Carbon dioxide (equivalent in Kilograms)
DGAC	Direction générale de l'aviation civile
GHG	Greenhouse gases
GT	Giga ton
GWP	Global-warming potential
HBEFA	Handbook Emission Factors for Road Transport
MWh	Megawatt hour
IPCC	Intergovernmental Panel on Climate Change
WP(L)	Work package (lead)

Summary

This deliverable aims at creating a detailed plan defining the implemented measures to reduce the project carbon footprint. Reporting on project carbon footprint will be done in each technical reporting. This deliverable is connected to Task 9.2

1 Context

1.1 Definitions

Several definitions are worth being reminded at this point:

Carbon footprint: Carbon footprint can be understood as the total amount of greenhouse gases (including carbon dioxide and methane) that are generated as a result of the activities of a particular individual, organisation or community[1].

Transport, food, consumption of goods and services, accommodation, etc. shall therefore be considered in the carbon footprint calculation.

Carbon offset: Carbon offset is a measure of reduction or removal of emissions of carbon dioxide or other greenhouse gases made by an individual or company in order to compensate for emissions made elsewhere[2].

Intergovernmental Panel on Climate Change (IPCC): Created in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), the objective of the IPCC is to provide governments at all levels with scientific information that they can use to develop climate policies[3].

Greenhouse Gas (GHG): any gas that has the property of absorbing infrared radiation (net heat energy) emitted from Earth's surface and reradiating it back to Earth's surface, thus contributing to the greenhouse effect. Carbon dioxide, methane, and water vapour are the most important greenhouse gases[4]

1.2 Scope

In this deliverable, only the emissions related to the partners' travel and the hotel rooms they occupy are considered. Thus, we do not take into account the emissions related to food consumption, although the project endeavours to contract as much as possible with local producers providing low-carbon food.

We therefore choose to restrict our scope to only two components of the carbon footprint – Transport and accommodation – considering on the one hand, that these two are the easiest to measure and monitor, and that on the other hand, the two combined are the biggest greenhouse gas emitters of the project – transport especially.

As there is no significant subcontracting throughout the project it is not necessary to identify a process that would have favoured subcontractors with strong carbon reduction credentials.

1.3 Initial list of P2R expected travelling.

Although a very high number of meetings within WPs and at a consortium level takes place online (see D9.4 Project Quality Plan), several trips are expected as part of the work-packages mentioned below. **Below, the term "trip" refers to a round trip travel made by one person.**

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[1] (The Nature Conservancy, 2022)

[2] (Collins Dictionary, 2022)

[3] (IPCC, 2022)

[4] (Britannica, 2022)

- WP1 Impact Framework and MEL

In total **8 (eight) trips** were budgeted as part of WP1. Partners have provisions to travel to specific work package meetings.

- WP5 – Support services to bridge the Adaptation Climate gap

Meetings with financial stakeholders are budgeted for the WP5. In total **26 (twenty-six) trips** are budgeted. Five (5) partners will participate in such meetings.

- WP8 Communication, Dissemination and Exploitation

All partners have a provision of 1000 euros to travel to conference and regional events. Approximately **48 (forty-eight) trips** can be done with this provision, envisioning that each partner will travel to 2 (two) events in the course of the 5 (five) years of the project.

- WP9 – Project Management

One (1) project meeting (linked with project conferences when possible) is expected per year over the course of the project, which means six (6) project meetings in total. **Twenty-eight (28) onsite participants** are envisaged on average for each physical project meeting (6).

The table below presents the total number of envisaged trips, one hundred and sixty-eight (**160) trips**.

WP	Number of round trips
1	8
5	26
8	48
9	28
Total	**110**

Table 1: Synthesis of trips as part of P2R project per WP

2 Carbon footprint methodology for P2R

2.1 Data collection methodology

2.1.1 Project meetings (WP9)

For full consortium meetings, the data collection methodology is the following: the Project Management Office (PMO) circulates questionnaires among physical participants in order to retrieve basic information on departing city, all transportation modes taken, number of days onsite, accommodation, in order to be able to calculate the carbon footprint associated to the meeting. If it turns out the form was not properly filled in, missing elements are then collected via SharePoint after the meeting is over.

In the worst-case scenario, if it is not possible to get the questionnaire filled in by all physical participants, an approximation is made based on reasonable assumptions on the different variables of the questionnaire (mode of transportation, city of departure, mode of transportation used, etc.) An example of the questionnaire is provided in the annexes of this deliverable.

2.1.2 Other meetings (WP1, WP5, WP8)

For meetings and events related to WP1, 5, 8, WP leaders that monitor the related travel provisions are also expected to fill in the carbon footprint table in order for LGI to be able to calculate the carbon footprint associated to each event.

In practice, each WPL will have a dedicated follow-up table with one sheet per event. This table will be properly updated shortly after each meeting / event.

2.2 Carbon footprint calculation methodology

To make calculations, the resource centre for greenhouse gas accounting from ADEME was used.

2.2.1 Air transport

Mode of transportation	KgCO2e/passager.km	Source
Short haul flight (01000km)	0,258	Ecocalculateur DGAC (Base Ademe)
Medium-haul flight (1000-3500km)	0,187	Ecocalculateur DGAC (Base Ademe)
Long-haul flight (>3500km)	0,152	Ecocalculateur DGAC (Base Ademe)

Table 2: CO_2 per Passenger for air transport

This data considers contrails in its calculation. In our calculation, we will assume two flights (roundtrip) were taken for everyone who flew.

Layovers: When participants had a layover, two flights were accounted. For example, if a participant flew from Warsaw to Frankfurt, and from Frankfurt to Brussels, one trip was accounted as 2 short haul flights, the round trip was accounted as 4 short haul flights.

2.2.2 Train

Country	KgCO2e/passager.km	Source
Germany	0.0668	Base Ademe (calculation made by using the GWP of the 5th IPCC report from 2013 and GT Transport Base Carbone for France)
Sweden	0.0129	
Italy	0.0317	
Netherlands	0.0763	
Spain	0.0514	
Austria	0.0235	
UK	0.075	
France	0.00236 for high-speed trains	
Belgium	0.0484	

Table 3: Passenger transport - Train

Cross-border journeys: the country coefficient used will be that of the country where the greatest distance is covered (example: Hamburg- Brussels => Germany's coefficient shall be used).

2.2.3 Travel by private car

Car	KgCO2e/passager. km	Source	Date
Average car	0.0218	Base ADEME via HBEFA, Comptes des transports	2020

Table 4: Passenger transport – Car

This data, valid in France, will be extrapolated to all cars in Europe.

2.2.4 Taxi

The hypothesis was made that the taxi was equivalent to having 2 people in the same car.

Taxi	KgCO2e/passager. km	Source	Date

Taxi	0.0218 / 2 = 0.0109	Hypothese made from LGI based on the average car from Base ADEME via	2020
		HBEFA, Comptes des transports	

Table 5: Passenger transport - Taxi

2.2.5 Public transportation

Transportation mode	KgCO2e/ passager. km	Source	Date
Walk or Bike	0		
Subway	0.00274	Base ADEME via GT Transport Base Carbone	2020
Bus (urban area > 250 000 inhabitants)	0.151	Base ADEME via GT Transport Base Carbone	2020
Tram (ref : Ile de France)	0.00268	Base ADEME via GT Transport Base Carbone	2020

Table 6: Passenger transport - Public transportation (France)

As values are low, and distances are not very long, public transportation was neglected.

2.2.6 Hotel room (world)

One night stay at a hotel generates CO2 emissions due to the facilities (reception, restaurant, meeting room, laundry, …), the energy and water consumption, furniture and inroom textiles, electronic equipment.

Hotel Stay, one night, 3 stars hotel	Kg CO2e/person	Source	Date
Belgium	10	Hotel footprinting tool[5]	2021

Table 7: Hotel carbon footprint

2.3 Methodology limitations

Our proposed methodology includes the following limitations:

-   Approximation from one airplane category to another (especially between shorthaul and medium-haul)
-   Approximation for travels by train when a boundary is crossed (cf. carbon / MWh approximation used for the longer part)
-   Approximation for cars (average car)
-   Approximation for taxi (taxis make short trips that consume more CO2/km)

[5] (Greenview, 2022)

2.4   Application during project periodic reporting

The main challenge associated to the application of this methodology concerns the collection of travel data from the various stakeholders (beneficiaries, cities, experts, etc.) travelling for the purposes of the project as part of WP1, 3, 5, 8, 9 as explained in Section 1.3. For each meeting or event, participants will be asked to fill in the form available in Annex.

Responsibilities for making sure that travel data is made available differ from one WP to another:

- For WP9 project meetings, LGI will distribute printed copies of the form to onsite participants, and whenever possible ask participants to fill in the SharePoint file in order to avoid printing paper.
- For other WPs (WP1, WP5, WP8), the PMO and coordinator will emphasise and remind to take measures for carbon footprint reduction and coordinate the data collection, but it will be up to the organisations that manage travel provisions as part of these WPs to keep track of the travel data. This is all the more relevant since in any case, these organisations will have to follow-up the utilisation of this provision and get the receipts from the participants.

In addition, emissions avoided by videoconferencing will be calculated whenever possible.

3   Strategy for carbon footprint reduction

3.1   Travel policy

First, in line with the recommendations of JPI climate[6] and Tyndall Centre[7], P2R endeavours to limit its GHG emissions related to travels as much as possible, using the following principles:

- **Virtual meetings will be the norm**. Even though the project recognises the need for significant interactions between consortium partners and with city officials, face to-face meetings will be organised only when strictly beneficial / necessary.[8]
- **Train and public transportation will be preferred** over other means of transport.
- When flying is unavoidable, **no-connection air travel will be recommended**. In addition, biofuel flights or flights with energy efficient aircraft will be preferred whenever possible.

3.2   Other recommendations

The consortium strives to apply the following good practices:

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[6] (JPI Climate, 2014)

[7] (Corinne Le Quéré, 2015)

[8] Despite the growing concerns about the impacts of digitalisation over the climate crisis, the project is unable to consider the direct or indirect GHG emissions derived from an increased use of internet nor the environmental impacts of the videoconferencing value chain (including the manufacturing of IT equipment, operation of servers, etc). See, for instance, Best, Diaz Lopez, et al (2020)

- **Catering:** Vegetarian meals and local production are preferred. When this is difficult, eating chicken (1.35 kgCO2/meal)[9] rather than beef (6.29 kgCO2/meal)[10] is favoured.
- **Videoconference:** Microsoft Teams is recommended as it is practical and in the top 3 of the less emitting videoconference tools. When appropriate, switching off cameras could help decrease data consumption by 92%[11].
- **Data management:** Emails without attached documents (and a SharePoint in Teams) will be preferred, as an email with attached document is emitting 0,035 kgCO2, as opposed to 0,004kgCO2 for an email without attachment.[12]
- **Research navigator:** Strive to use online search engines that benefit the environment (e.g. Ecosia).

3.3 Potential options for an offsetting strategy

When travel will not be avoidable, offsetting options may be considered. Before laying out P2R specific offsetting options, we detail in the next section the general offsetting possibilities:

3.3.1 Offsetting possibilities in general

Offsetting possibilities can be multiple:

- **Avoided emissions:** "Avoided emissions are emission reductions that occur outside of a product's life cycle or value chain, but as a result of the use of that product. Examples of products (goods and services) that avoid emissions include low temperature detergents, fuel-saving tires, energy-efficient ball-bearings, and the use phase of teleconferencing services. Other terms used to describe avoided emissions include climate positive, net-positive accounting, and scope 4.[13]".

- **Direct carbon offset:** The amount of carbon absorbed annually by a project, or a region can be accounted as a carbon offset. The calculation of direct carbon offsets related to solutions implemented in the project does not fall within the scope of this deliverable .
- **Indirect carbon offset:** Purchasing "carbon credits" on the voluntary market (VCM) and retiring them is possible. These carbon credits are a tangible proof of the robustness of the carbon project, and of the reality of the financial contribution.

Certifications can come from:

- Voluntary international labels: Gold Standard, Verra, Plan Vivo
- National labels: Label Bas Carbone, FES-CO2, Woodland Carbon Code, etc.

Another option could be to contract with sequestration projects that have not been specifically labelled by an existing standard, but whose robustness has been certified by a third-party organization according to a recognized methodology.

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[9] (ADEME, 2022)

[10] (ADEME, 2022)

[11] (Derrudder, 2021)

[12] (ADEME, 2022)

[13] (Draucker, 2013)

3.3.2 Offsetting options in P2R context

There are two main offsetting options in our context:

- **Collective option:** The project partners may decide to use potentially non-used provisions detailed in Section 1.3 to purchase carbon credits. In that case, LGI would be in charge of purchasing and monitoring carbon credits. In the galaxy of carbon offsetting, Verra & Plan Vivo are considered to be the most appropriate options.
- **Individual option:** If at the end of the project, partners have underspent their travel budget, and if their personnel costs budget covered the actual personnel costs, we will recommend using this unspent travel budget to purchase carbon credits. In that case, the easiest option for them is to buy them on the Gold Standard's MarketPlace. Carbon offsets are about 10-30 dollars per ton of CO_2.

This remains to be confirmed based on the eligibility of carbon credits costs according to the European Commission rules. Any decision on this will anyhow be taken in collaboration with the European Commission and consortium partners and potential progress will be reported during regular project reporting to the European Commission.

As a result, this entire Section 4.3 may then be revised during the course of the project.

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Annexes

Organisation & GA number	Name & Surname	Departure Location	Transportation mode from your home city to the GA meeting place	Number of days onsite	If you took the plane, did you have a layover? If so, where?	Any other comments (ex: not a roundtrip journey)

Table 8: Carbon footprint