

Final Event
24-25th of May 2022

Global Vision

Carbon care of PANDA project



Powerful **A**dvanced **N**-Level **D**igital **A**rchitecture
for models of electrified vehicles and their components

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ULille







www.project-panda.eu



Content



-  **Carbon care: definitions & usual method**
-  **Proposed method for a research project**
-  **Assessment results**
-  **Mitigation action**

Carbon care: definitions & usual method

Carbon care: definitions



🐼 Definitions:

Carbon care

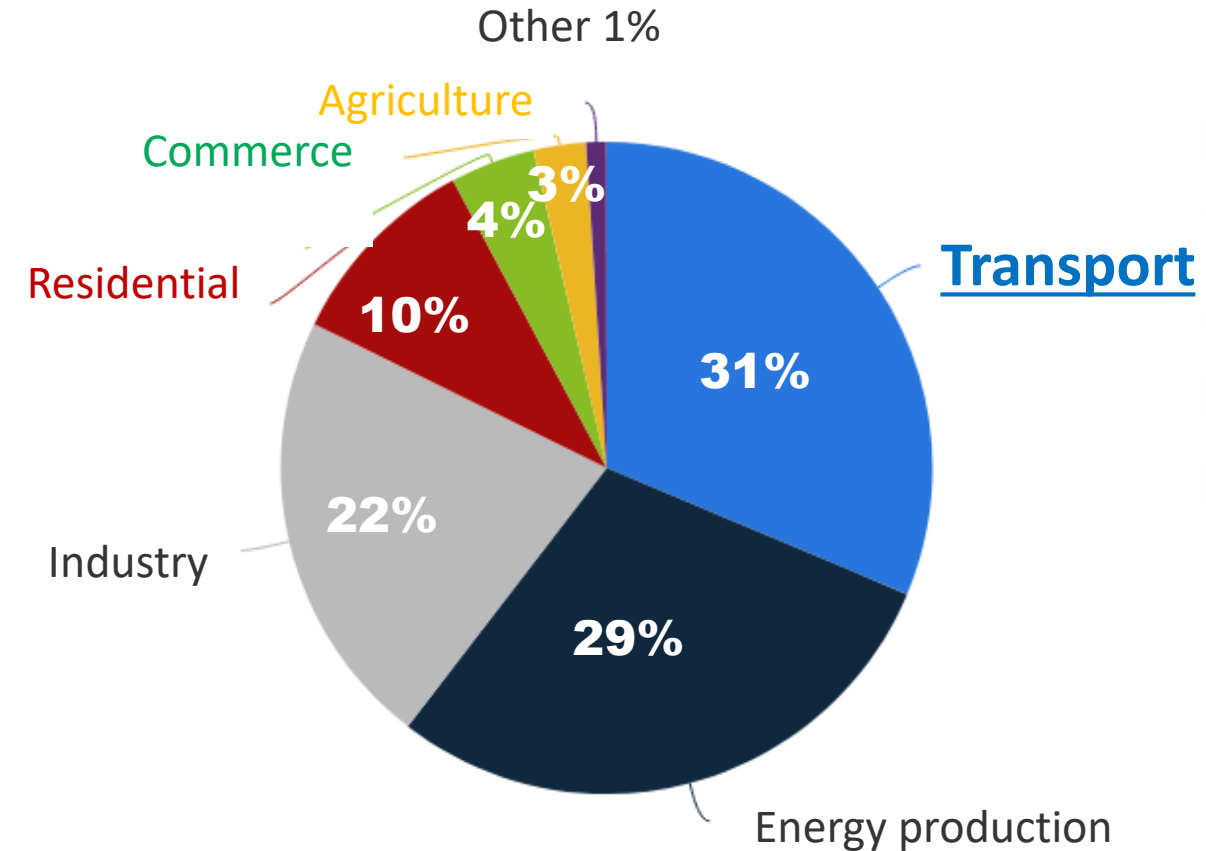
An effort in tackling climate change by measuring, reducing and mitigating carbon footprint.

Anthropogenic emissions

human activities



- increase of average surface air temperature
- melting of glaciers and ice sheets
- sea-level rise
- changes in precipitation patterns
- And other...



Distribution of carbon dioxide emissions in the European Union in 2019 by sector (Statista 2022)

Carbon care: definitions



 Definitions:

Carbon care

An effort in tackling climate change by measuring, reducing and mitigate carbon footprint.

Anthropogenic emissions

human activities



- increase of average surface air temperature
- melting of glaciers and ice sheets
- sea-level rise
- changes in precipitation patterns

Initiatives such as Paris agreement (in 2015, COP21) to face global warming



Carbon Care is a way to contribute by:

- **Identifying elements to improve**
- **Acting by changing things at a lower scale**

Usual method for carbon assessment/care



Scope of the study (perimeters ×3)

Temporal: duration

Organizational : sites

Operational : emissions due to direct or indirect activity

Data collection

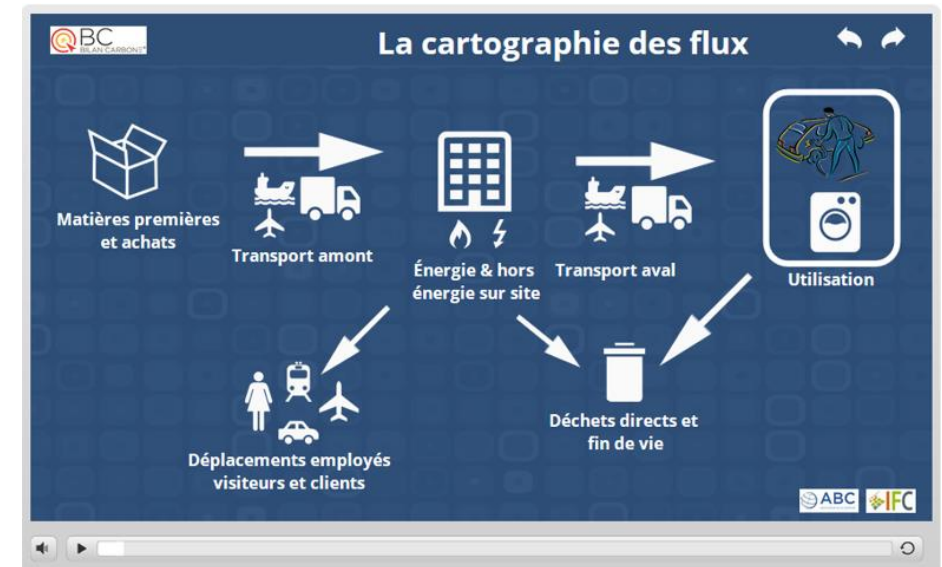
Estimate

ADEME database for example



Mitigation

According to budget and objectives



Proposed method for a research project

Previous experiences



🐼 Since **2010**, L2EP carbon care approach in **4 phases** :

- awareness to ecological footprint
- reduction of greenhouse gases (GHG) emissions
- GHG assessment
- GHG mitigation

🐼 Application to international conferences organized by L2EP:

- IEEE-VPPC'10
- EPE'13 ECCE Europe

🐼 Since **2015**, extension to L2EP major projects:

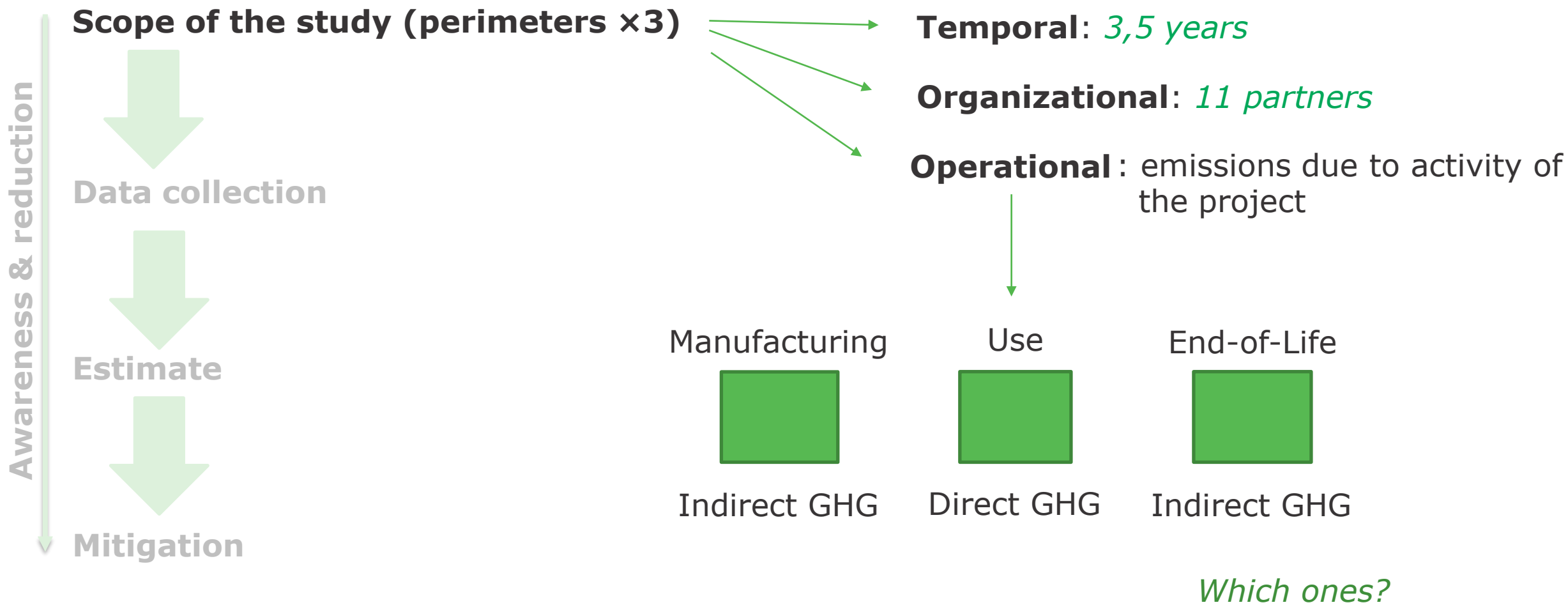


green vehicles
carbon care

(see <http://l2ep.univ-lille.fr/laboratoire/carbon-care>).

L2EP approach consists in **learning from experiences** and **accumulate knowledge**.

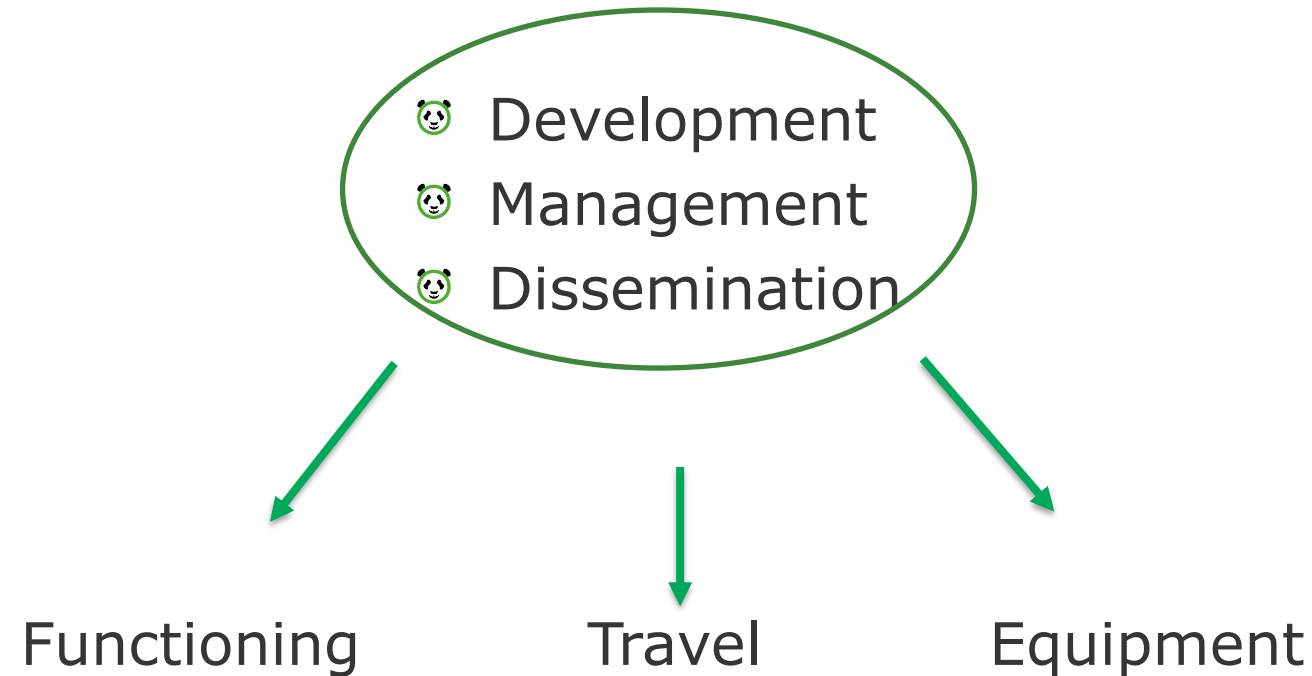
Proposed method for a research project



Proposed method for a research project



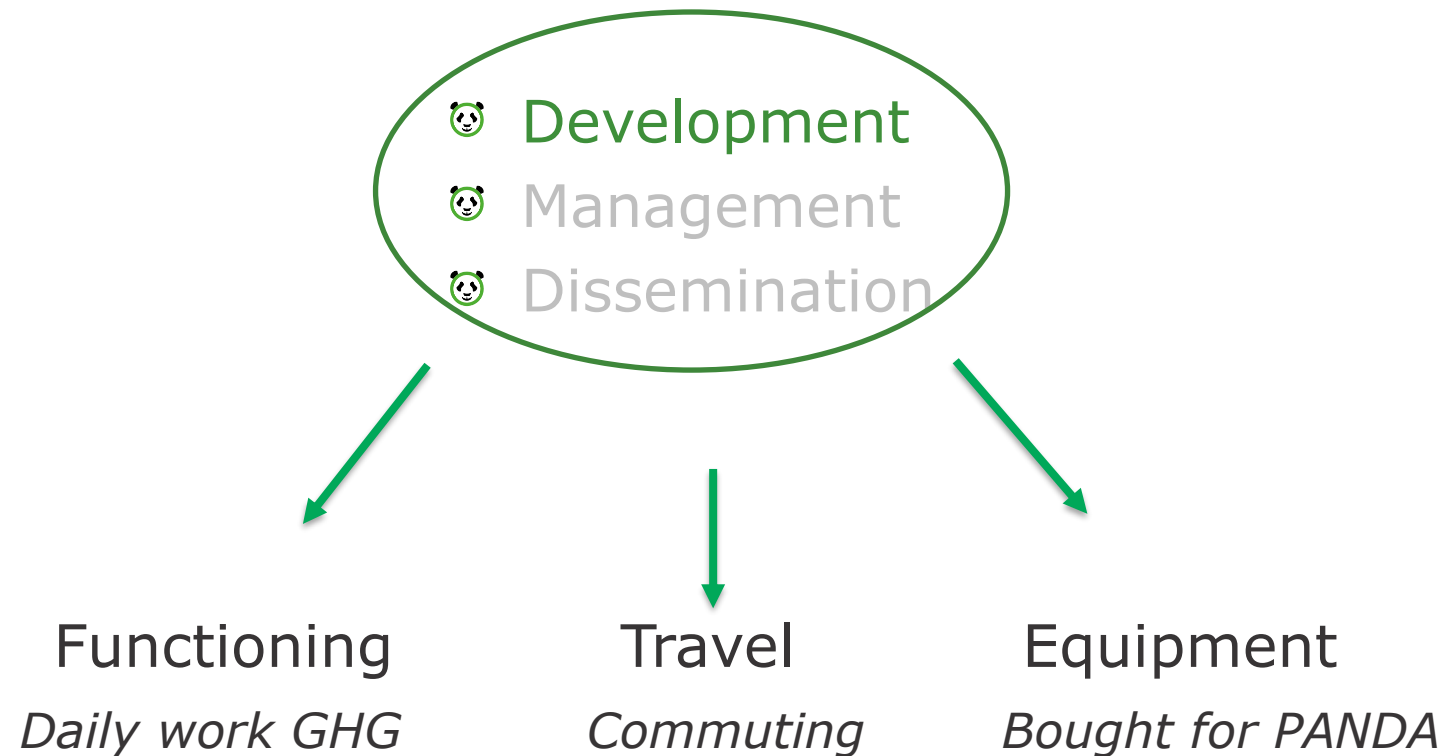
PANDA proposed scheme:



Proposed method for a research project



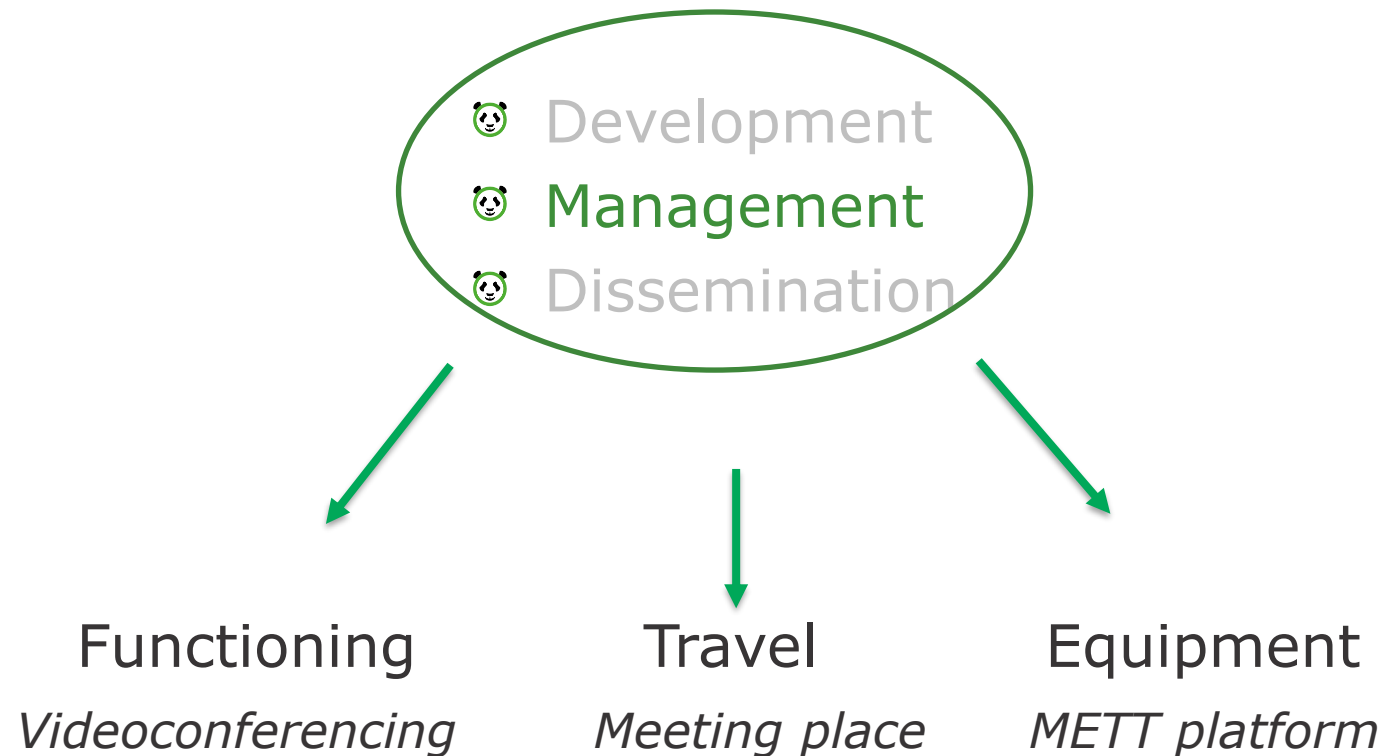
PANDA proposed scheme:



Proposed method for a research project



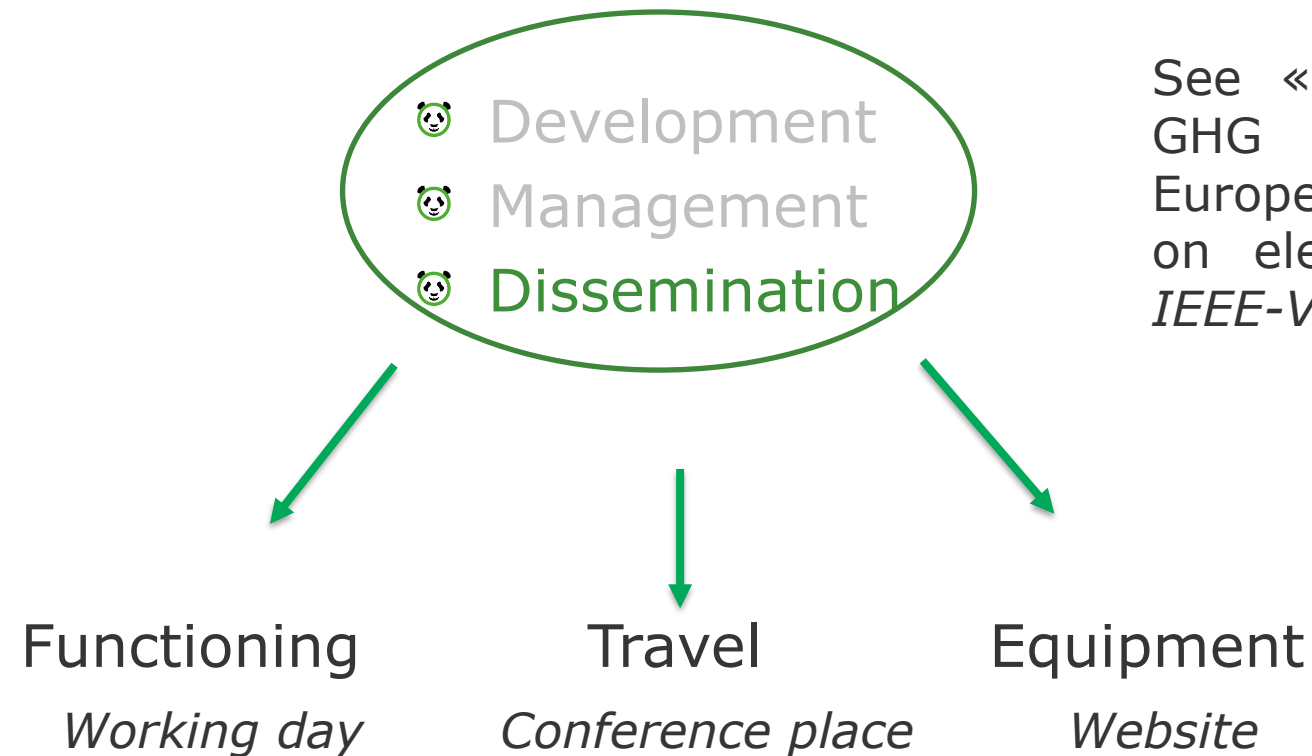
PANDA proposed scheme:



Proposed method for a research project



PANDA proposed scheme:



See « Calculation of the GHG emissions of a European research project on electrified vehicles », *IEEE-VPPC 2021*.

Example of commuting



🐼 Thanks to carbon referent of each partner who gather information every year:

Person	Vehicle	km/day	PANDA km	Factor (ADEME)	kg CO ₂ -eq PANDA
1	electric vehicle	10.4	520	0.095	50

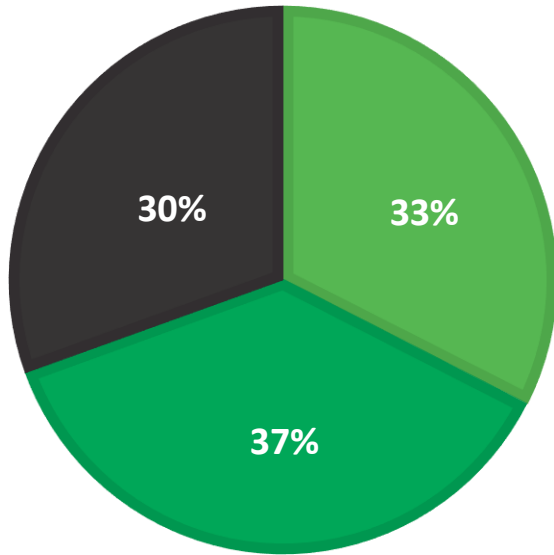
Assessment results

Assessment results (PANDA GHG emissions)



- Project equipment 2020-2021
- No travel during COVID period

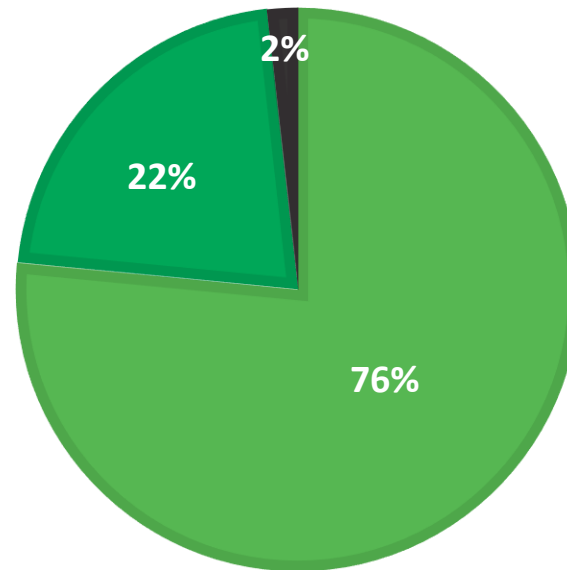
2019



80.38 t CO₂eq

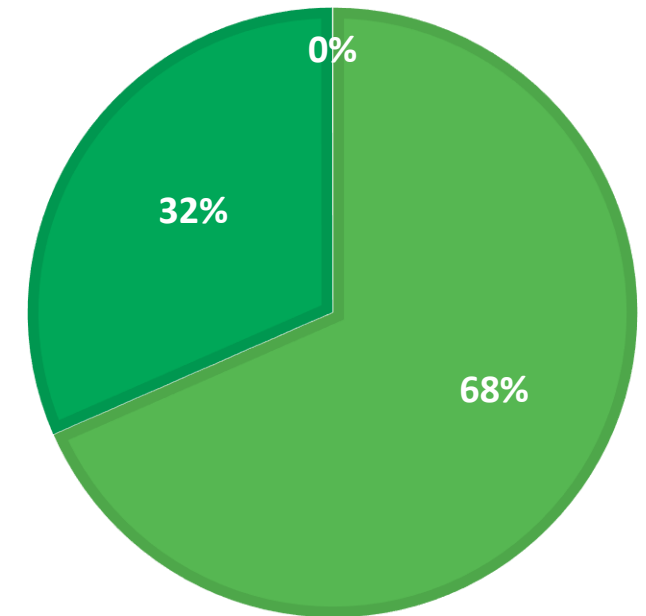


2020



87.53 t CO₂eq

2021 + ½ 2022



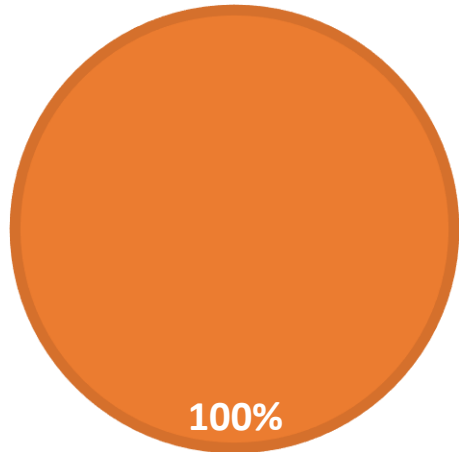
41.36 t CO₂eq

Assessment results

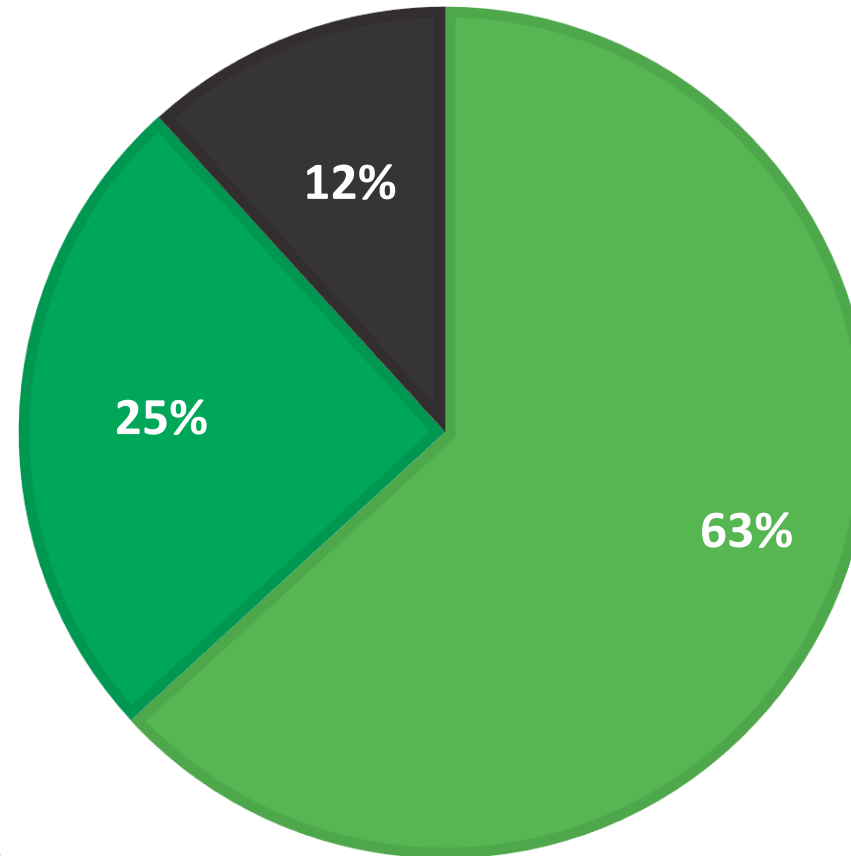
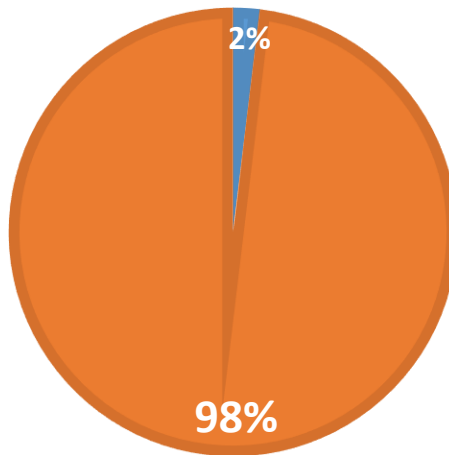
PANDA GHG EMISSIONS



DISSEMINATION



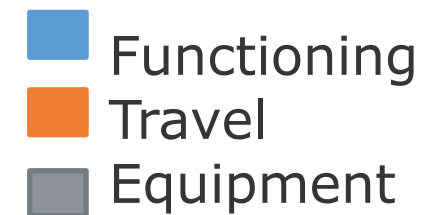
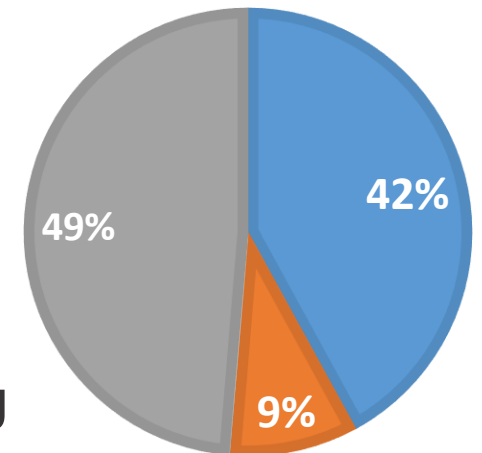
MANAGEMENT



209.27 t CO₂eq +/- 35% uncertainty



DEVELOPMENT



GHG distribution

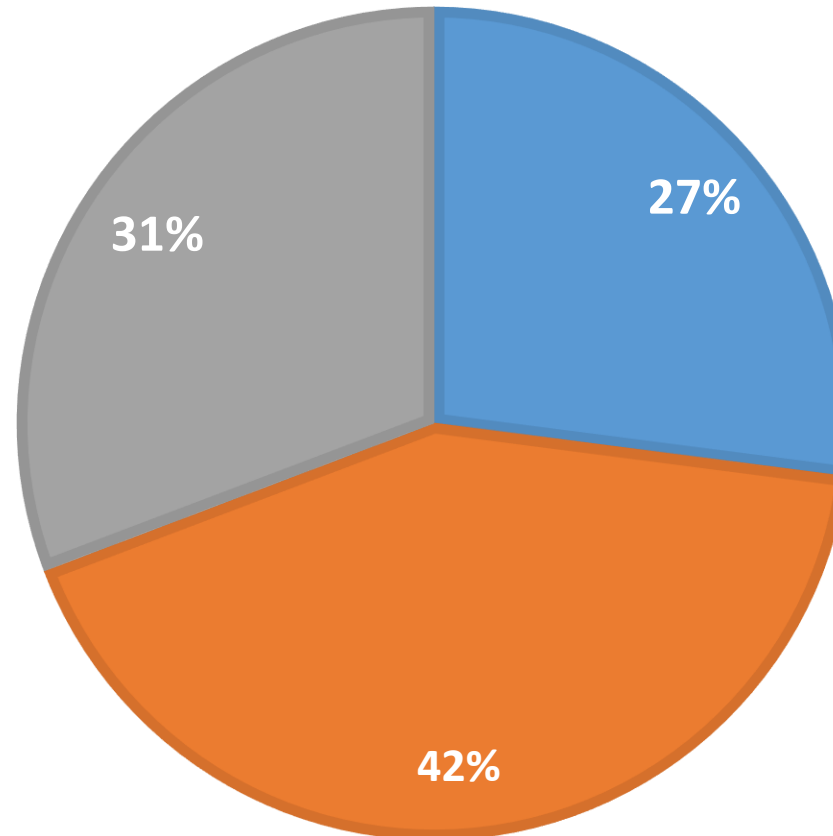
Even with limited travel (COVID),
travel = 42% of GHG emissions

transportation = important share
in GHG emissions

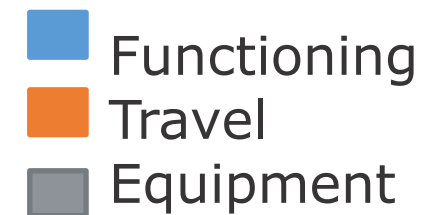


importance of
development of
greener vehicles

DISTRIBUTION 2019-2022



209.27 t CO₂eq +/- 35% uncertainty



Mitigation action

Cost of CO₂eq

🐼 **209 t CO₂eq**

🐼 **1 t CO₂eq = 1 Paris-NY round trip**

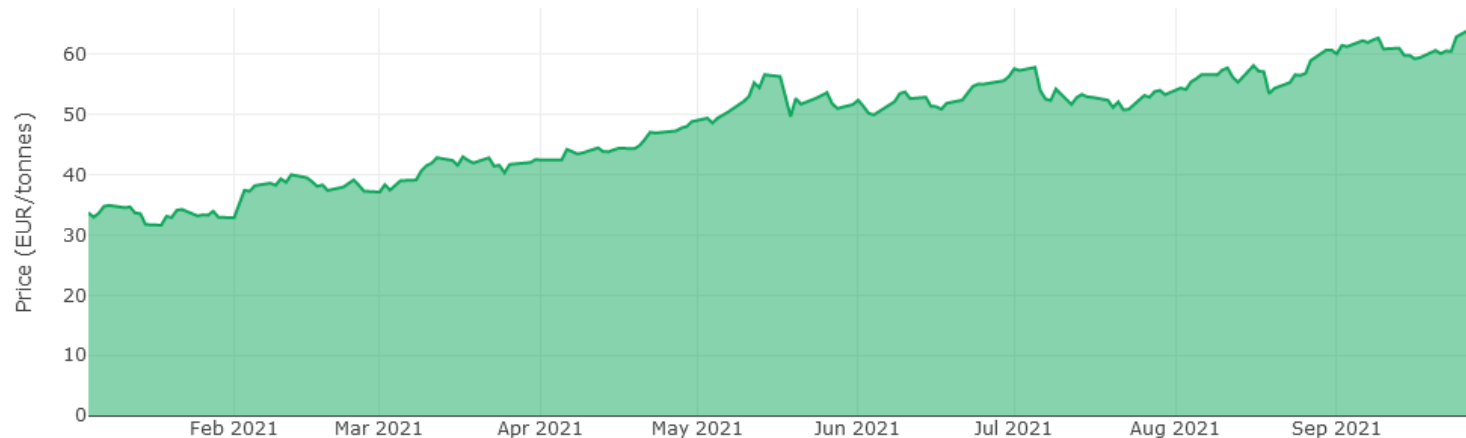
Daily Carbon Prices

Built with  anvil

Build web apps for free with Anvil



EUA (EU ETS) Futures Prices



- Average of carbon price from the beginning of the project: 50 €/t

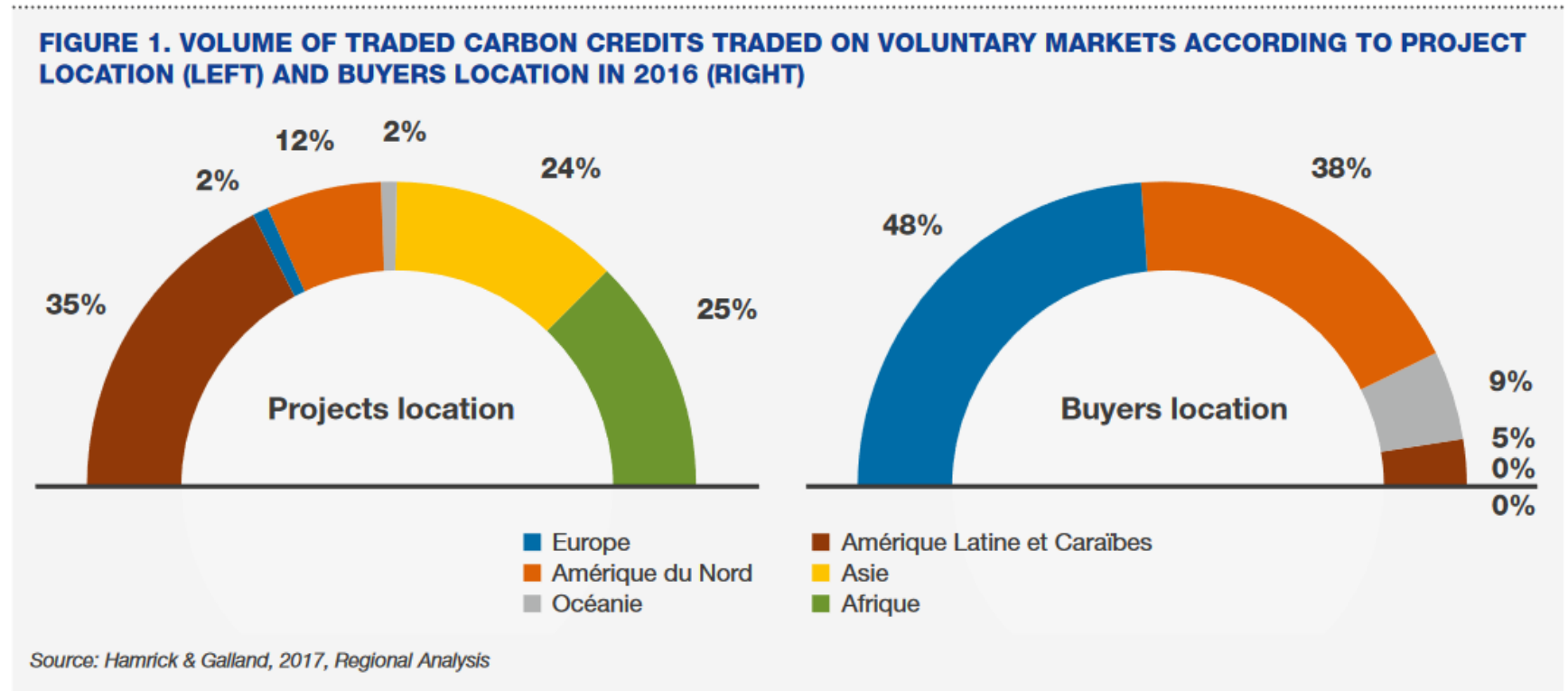
Mitigation budget about 10 k€ for the whole project

Mitigation actions

Most of the time, take place in developing countries:

- waste recycling
- Biogas digester
- Forest conservation
- Improved stoves

Projects that benefit local population, more vulnerable and the most affected by the consequences of climate change



Selected mitigation action

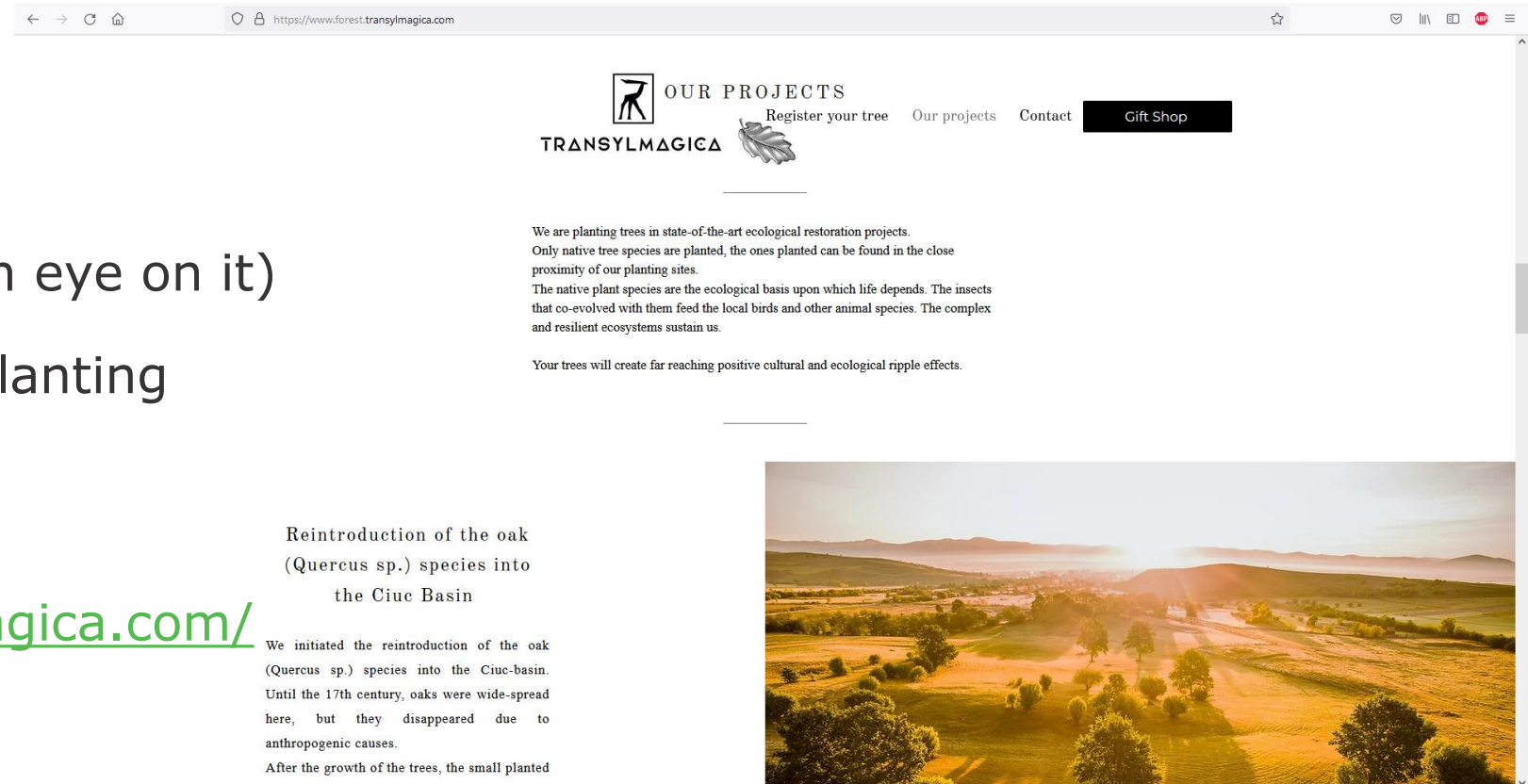


- 🐼 A global action
- 🐼 A European project
- 🐼 Located in Romania

(3 partners able to keep an eye on it)

- 🐼 Possibility to take part in planting campaigns

<https://www.forest.transylmagica.com/>

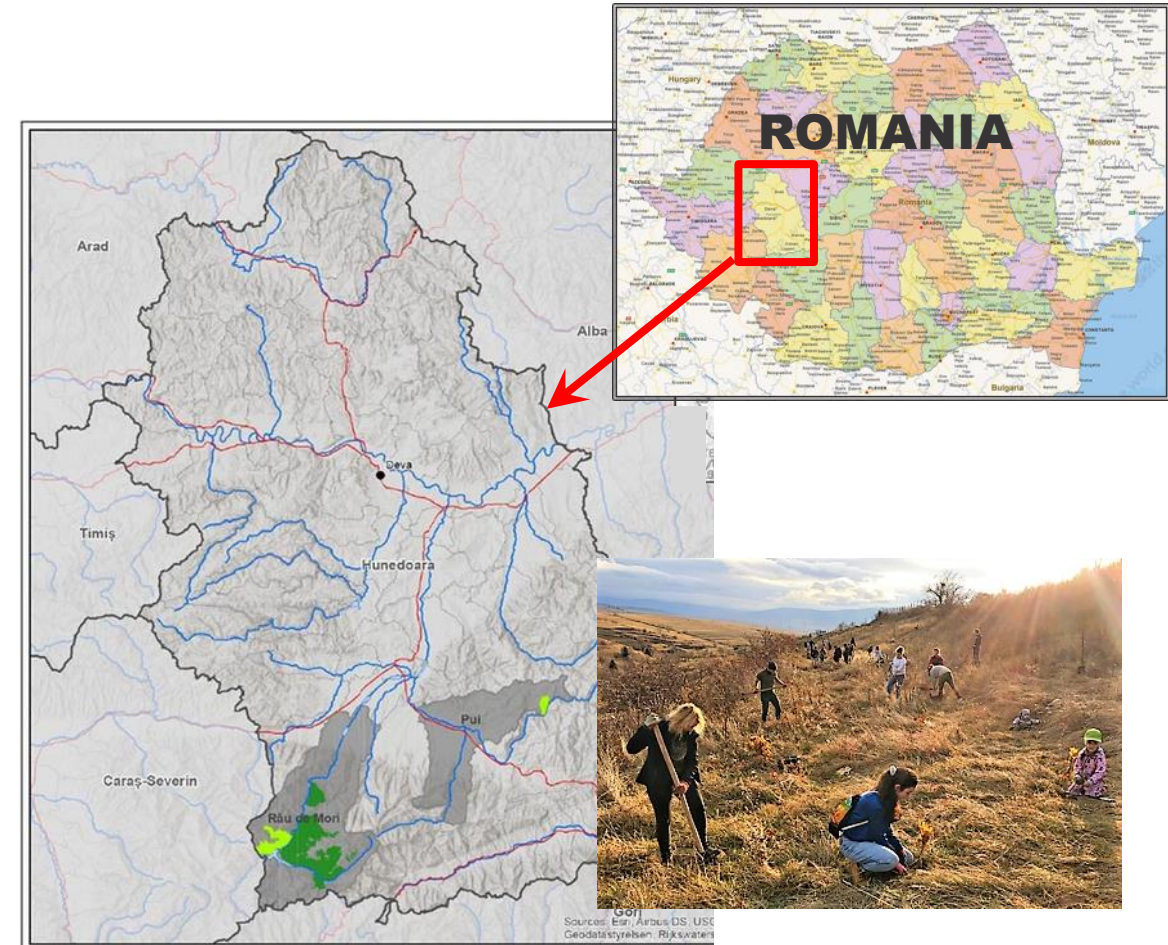


Selected mitigation action



- 🐼 *The planting site near "Rau de Mori" village*
- 🐼 The original vegetation removed during the construction of the "Gura Apelor" dam (largest rock dam with a clay core in Europe) in 1975.
- 🐼 Project = to plant original tree species which covered the surface before the dam construction

<https://www.forest.transylmagica.com/ecological-restoration-of-a-hill>



Conclusion on PANDA Carbon care



PANDA inputs:

- New decomposition of the carbon care method
- A strong organization with a carbon referent for each partner
- A regular update of all GHG all along the project

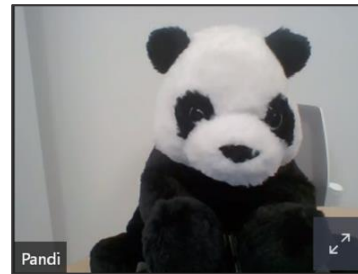


Carbon care action leads to:

- Aware contributors ("Climate Fresk" workshop)
- Estimate the GHG of all activities
- Mitigate the GHG emissions



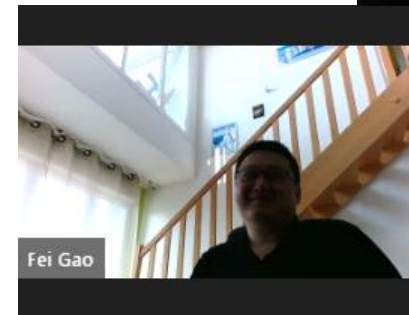
PANDA will be a carbon neutral project !



Thanks for your attention!


www.project-panda.eu

Carbon care team





Annexes



[Collectif](#)
[Recherches](#)
[Vidéos](#)
[Outils](#)
[Ressources](#)
[Actualités](#)

Synthèse du fichier templateBiensetsServices-3.tsv

Montant total

169 200 €

Lignes valides

6 / 6

Autres modules

2

Téléverser un fichier (.tsv)

LES RÉSULTATS

[Le bilan réglementaire](#)

[Empreinte carbone & soumission](#)

Validité	Module	Code NACRES	Intitulé NACRES	Montant en euros
Valide	Achats	TA05	Cartes électroniques (realisation et cablage de)	39 800 €
Valide	Achats	TA05	Cartes électroniques (realisation et cablage de)	39 800 €
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Valide	Achats	TA05	Cartes électroniques (realisation et cablage de)	39 800 €
Valide	Achats	TB11	Energie : materiel d'alimentation (alim., ampli., onduleurs,)	5 000 €
Valide	Achats	TB11	Energie : materiel d'alimentation (alim., ampli., onduleurs,)	5 000 €
Valide	Matériel informatique	IA33	Serveurs pour le calcul ou l'exploitation de donnees scientifiques	4 400.5 €
Valide	Matériel informatique	IA33	Serveurs pour le calcul ou l'exploitation de donnees scientifiques	346.5 €

1

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LA DOCUMENTATION

La méthodologie

Aide

Protection des données

L'équipe GES 1point5

LES DONNÉES

Introduction

Le périmètre

Les bâtiments

Les Achats

Accès anticipé

Matériel informatique

Les véhicules

Les missions

Dpts domicile / travail

LES RÉSULTATS

Le bilan réglementaire

Empreinte carbone & soumission

EMPREINTE CARBONE DU LABORATOIRE

55.54 ± 8.80 t eCO2

EMPREINTE CARBONE PER CAPITA

2 136 ± 338 kg eCO2

INTENSITÉ CARBONE

56 ± 9 g eCO2 / €

Empreinte carbone	Emissions en t eCO2	Part de l'empreinte totale
Empreinte carbone des bâtiments	0.00 ± 0.00	0 %
- Chauffage	0.00 ± 0.00	0 %
- Électricité	0.00 ± 0.00	0 %
- Fluides frigorigènes	0.00 ± 0.00	0 %
Empreinte carbone du matériel informatique	0.00 ± 0.00	0 %
Empreinte carbone des achats	55.54 ± 8.79	100 %
Empreinte carbone des déplacements	0.00 ± 0.00	0 %
- Déplacements domicile-travail	0.00 ± 0.00	0 %
- Déplacements professionnels	0.00 ± 0.00	0 %
- Les véhicules	0.00 ± 0.00	0 %
- Les missions	0.00 ± 0.00	0 %
Empreinte carbone totale	55.54 ± 8.79	100 %