Carbon footprint assessment

Fédération Française de PENTATHLON MODERNE

By
Guillaume Koudlansky-de Lustrac

Summary

Context

The French Federation of Modern Pentathlon ("Fédération Française de Pentathlon Moderne", hereafter "FFPM" or "Federation") wishes to incorporate the challenges of sustainability into its development strategy.

The aim of this study will be to obtain an overall view of all the greenhouse gas emissions for which the Federation is responsible, including clubs, competitions, the French national teams, its headquarters, General Assembly and different commissions.

Based on this assessment, the Federation will build an ambitious roadmap and action plan to ensure that the challenges of sustainability are fully integrated into the Federation's strategy.

For the Federation, this study represents a true social challenge as well as it also wishes to help its' clubs and members commit to sustainability, in particular by raising awareness and carrying out common actions.

The French Federation of Modern Pentathlon is a sports federation including around 60 clubs and 2500 active members.

Created in 2022, it continues to attract new clubs and members each year.

Carbon footprint assessment - reminders

What is a carbon footprint assessment ?

→ An inventory of all the greenhouse gas emissions, occurring directly or indirectly due to the activities of an organization over a given period of time.

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- HFC/CFC (ex: air conditioners)
- Nitrous oxide (N_2O, ex: fertlizers)

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- Downstream, ex: members' waste, use of sold products and infrastructures

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- "Directly or indirectly" :
  - Upstream, ex: suppliers/service providers and production of purchased goods, transportation and infrastructures
  - Downstream, ex: members' waste, use of sold products and infrastructures
- Over a given period of time : here from January 1, 2022 to December 31, 2022

Carbon footprint assessment - reminders

Methodology

- Each greenhouse gas has a **Global Warming Power ("GWP") :**
  Ex: CO2 : 1 ; Methane : 27,9 ; N2O : 273

- To use a common unit, we convert all these quantities in a single unit called **"kgCO2e"** ("kilo CO2 equivalent", also written "kgCO2eq" or "kgeqCO2")

- *Ex:*
  1 kg of methane : 27,9 kgCO2e
  20 kg of CO2 : 20 kgCO2e
  2 kg of N2O : 2 x 273 = 546
  Total = 27.9 + 20 + 546 = 593.9 kgCO2e

Carbon footprint assessment - reminders

Methodology

GHG emissions (kgCO2e) = Activity data x Emission factor

- **Activity data** describes and quantifies all the Federation's activities that generate GHG (greenhouse gas) emissions.
  Ex: energy consumed (kWh), quantity of goods purchased (kg), freight moved (km, kg), distances covered by the employees by car (km), euros spent on services (€), etc..

- The **emission factors** are used to convert activity data into the corresponding GHG emissions. Their unit is therefore a quantity of GHG emissions per unit of activity data.
  Ex: kgCO2e/kWh of electricity consumed, kgCO2e/km by car, kgCO2e/kg, kgCO2e/€, etc.

Carbon footprint assessment - reminders

Which level of detail ?

Example : logistics

Level 1 → Level 2 → Level 3 → Level 4

Primary data:
GHG emissions or fuel consumption of operated vehicles
(in kgCO2e or liters)

Other available primary data :
Distance travelled, weight of the transported goods, vehicle types and vehicle load factor, etc.
(in tons, km and %)

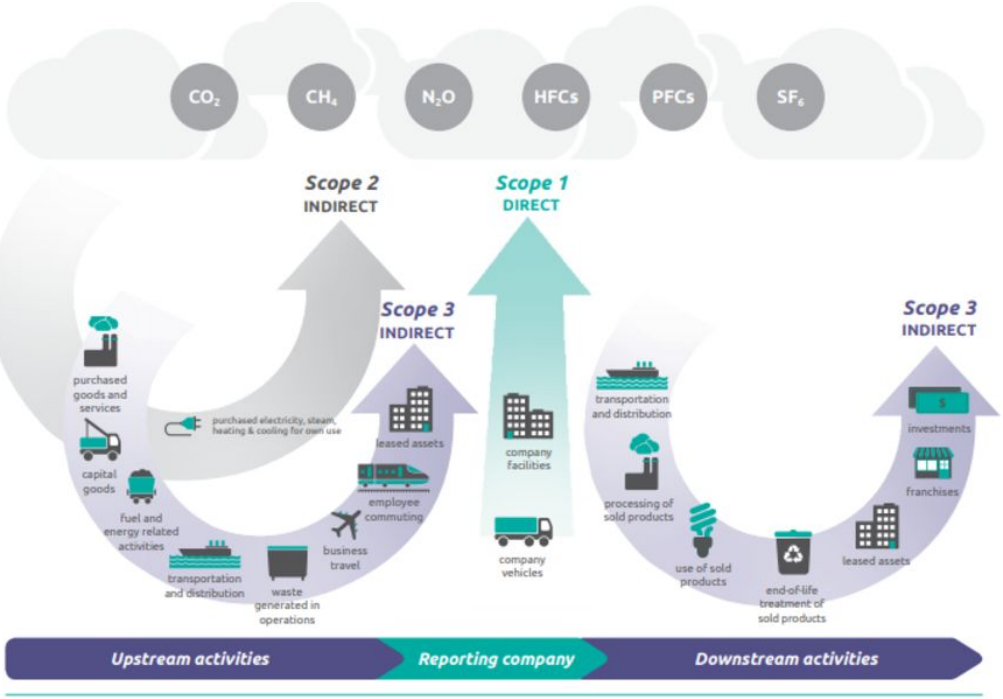
Secondary data : Statistics, publications ,... to estimate the average consumption of fuel for a similar logistics service ; average distances and vehicle load factor, number of annual trips, ...
(in tons and km)

Data extrapolated or approximated :
Estimating the average weight per trip and number of trips (based on past data or estimated) or in "monetary ratios", to be used as a last resort to fill any data gaps
(in € spent)

Carbon footprint assessment - reminders

Which level of detail ?

→ The carbon footprint assessment includes all activities for which an organisation is responsible and without which the organisation cannot fulfill its function.



Carbon footprint assessment - reminders

Goals of a carbon footprint assessment

Yes, it is :

- The first brick in building a low-carbon strategy and action plan
- The pillar of a global, strategic CSR approach
- A continuous, iterative exercice with uncertainties
- A tool for self-assessment and performance monitoring
- A means of engaging the Federation, its employees, members and its entire value chain

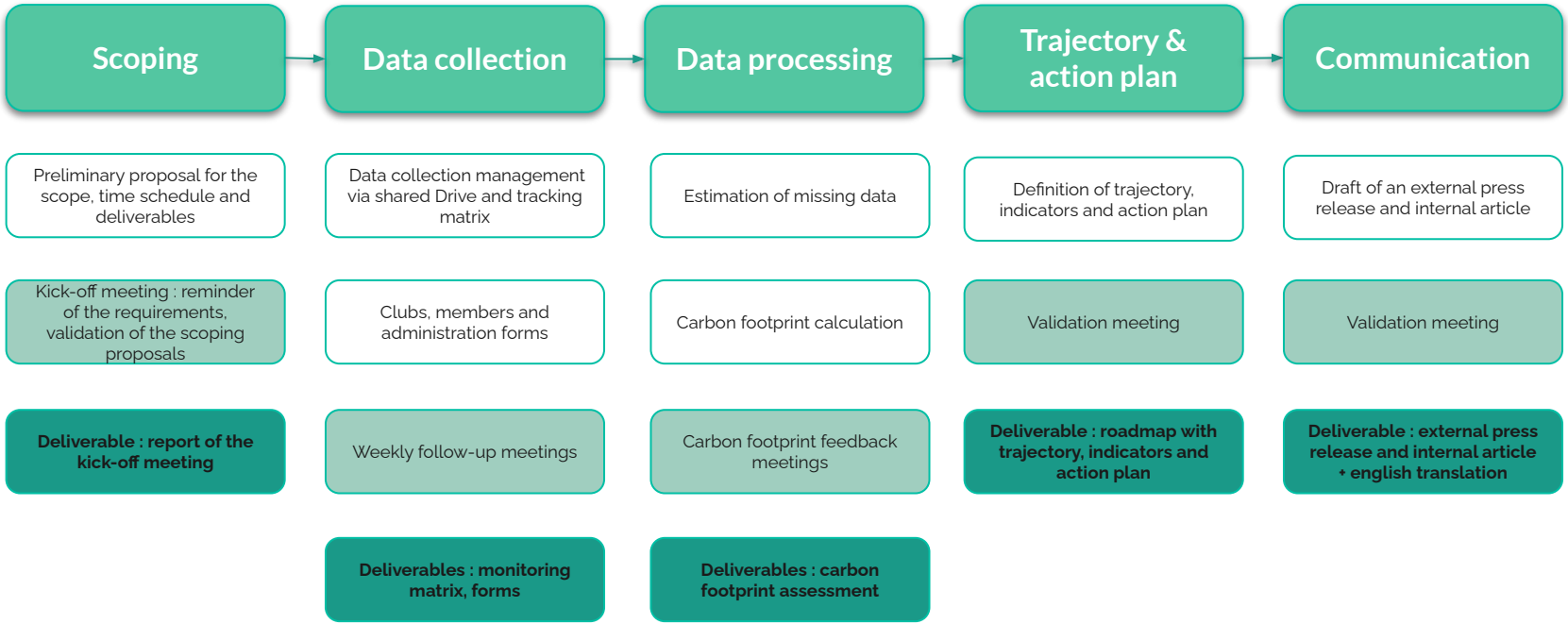
No, it is not :

- A goal in itself or the fulfillment of a sustainability commitment (watch out for greenwashing!)
- A means to compare to other Federations, either directly or with a benchmark
- A "punishment" or disappointment, whatever the results (if transparent on the methodology)
- A Life Cycle Analysis ("LCA")

Carbon footprint assessment - settings

Carbon footprint assessment - settings

Calendar



Project context

- ✓ **The French Modern Pentathlon Federation is a sports federation with 61 clubs and 2500 members.**
- ✓ **Founded in 2002, the Federation welcomes new clubs and members every year.**

Project responsabilities	Name and position	Contact
Carbon footprint assessment manager	Nathalie Denoyes, Chair of the Sustainable Development Commission and carbon footprint pilot	nathalie.denoyes@pasteur.fr
Data collection manager	Gaëtan Robert, civic service	serviceciviqueffpm@gmail.com
Carbon & sustainability consultants	Guillaume de Lustrac	gdelustrac@gmail.com
	Gabriel de Crozals	gabrieldecrozals@gmail.com

Special thanks

Participating clubs :
Pentathlon Moderne Font Romeu, Pentathlon Pennois, Pentathlon Club Gardois, GMBA Pentathlon Moderne, Aix UC Pentathlon, Racing Multi-Athlon Paris

Participating committee :
CD 13

As well as :
Françoise Guende, Treasurer FFPM
Christian Roudaut, DTN FFPM
Eric Michel, CTN FFPM

And for the support and commitment to the project :
Joël Bouzou, President FFPM

And all the members of the sustainability network

Carbon footprint assessment - settings

Carbon footprint scope

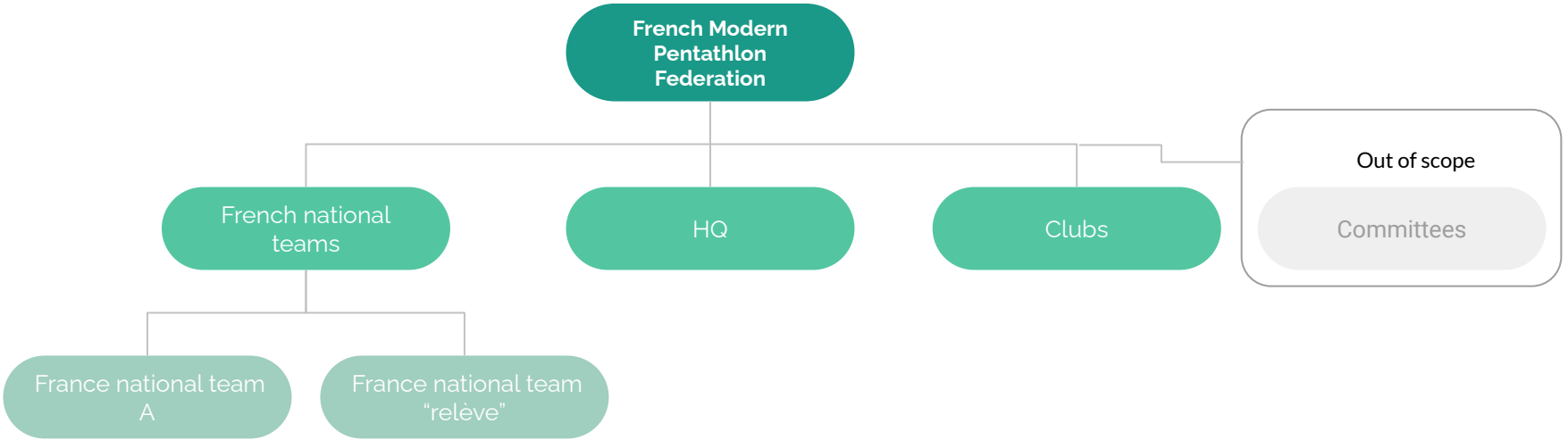
- **Reporting year :** January 1, 2022 - December 31, 2022
- **Reference year :** January 1, 2022 - December 31, 2022

- **Organisational scope :** This report covers all direct emissions (sources controlled by the Federation) and indirect emissions (sources requires for the federation's activities). This excludes :
  - Website emissions (considered marginal)
  - Retransmission-related programs (TV and web)
  - Emissions from the sale of clothing, food and beverages (could be considered in 2023)
  - Emissions linked to horse riding (withdrawn from pentathlon in 2023)
- All additional exclusions, mainly due to the lack of data to date, are justified later.

- **Operational scope :** The control approach chosen is the operational control. The emissions linked to the committees (mostly linked to the training camps) have also been excluded as data could not be collected for this year.

Carbon footprint assessment - settings

Analysis scope



Carbon footprint assessment - settings

Analysis scope

Out of scope

Committees

Suppliers

Purchased goods & services

Other sites

Business trips, commuting, members transportation (training or competitions)

Federation's activities

HQ, clubs and French national teams (training & competitions)

Energy consumption (HQ, swimming pools and gyms)

Fuel consumption

IT inventory

Vehicles inventory

Waste

HQ waste, goods and used waters

Results

> Predictions ?

Results

Key points

The first source of emissions comes from the **transportation** sector and particularly **clubs** and **French national teams** travelling (together, this accounts for 56% of the total emissions).

More specifically, these emissions are linked to the **members travelling to competitions** and **flights** for the French national teams (73% of the emissions of the French national teams' transport emissions).

Amongst other significant items, emissions linked to **energy consumption** (mainly related to **swimming pool** use) are estimated to account for 32% of total emissions.

Lastly, the emissions linked to **expenses** and in particular **pensions** of the French national teams represent an important source of emissions (4% of the total emissions).

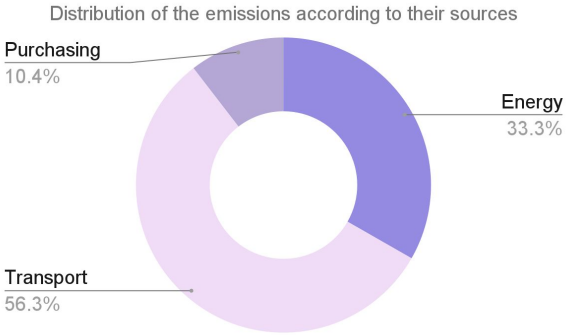
The above-mentioned items account for around **90% of total emissions.**

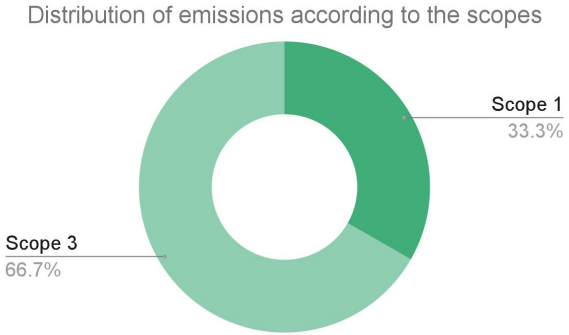
The emissions (in particular the ones due to the members) must be qualified with the **over-representation of the French team** in relation to the total number of members.

Results

Overall results

	Total	Scope 1	Scope 2	Scope 3	Avoided emissions
GHG emissions (tCO2e)	1 621.16	539.33	0.00	1 081.83	-0.19
Share of the total (%)	100%	33%	0%	67%	

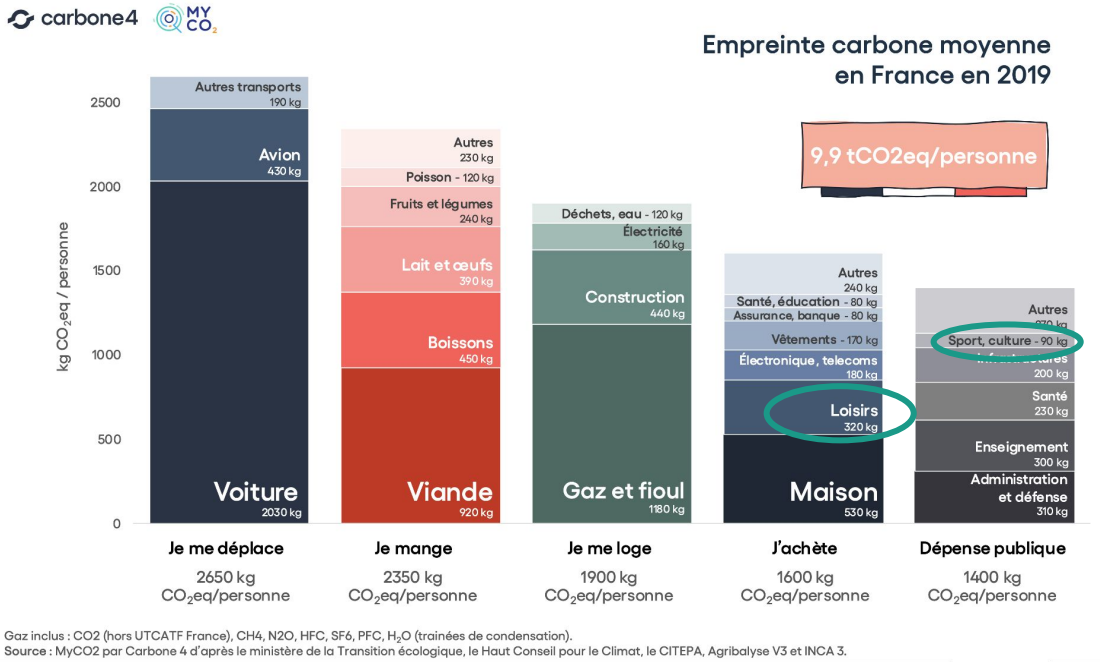




Results

Results per members

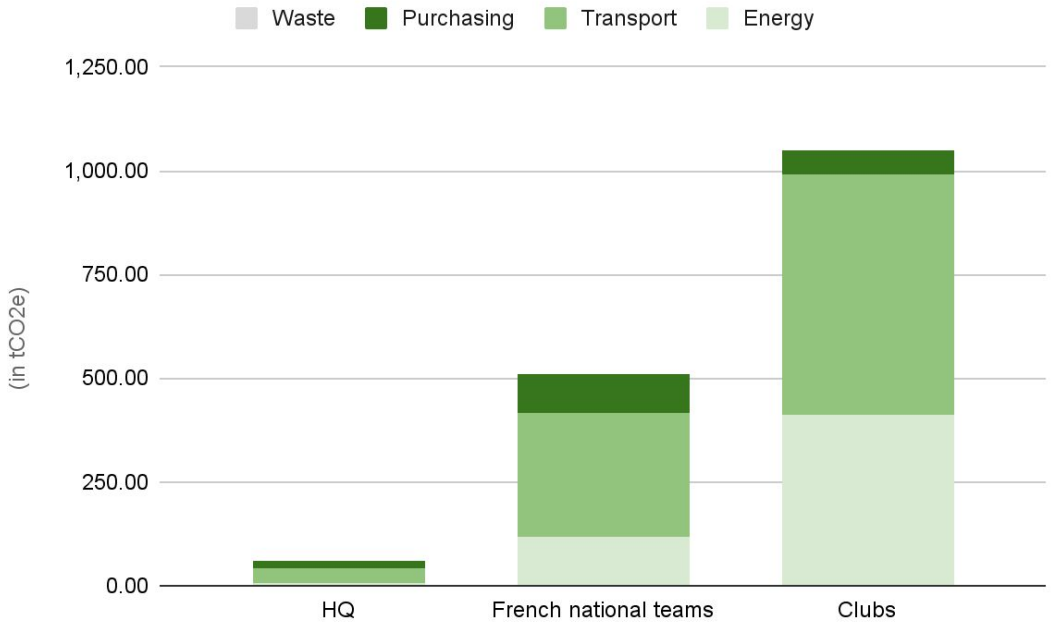
	Total
GHG emissions (tCO2e)	1 621.16
Number of members	2 500
Emissions per members (tCO2e)	0.64
Average carbone footprint of a French today (tCO2e)	10
CO2 budget for 2050 (tCO2e)	2
Share of the CO2 budget today	6%
Share of the CO2 budget in 2050	31%



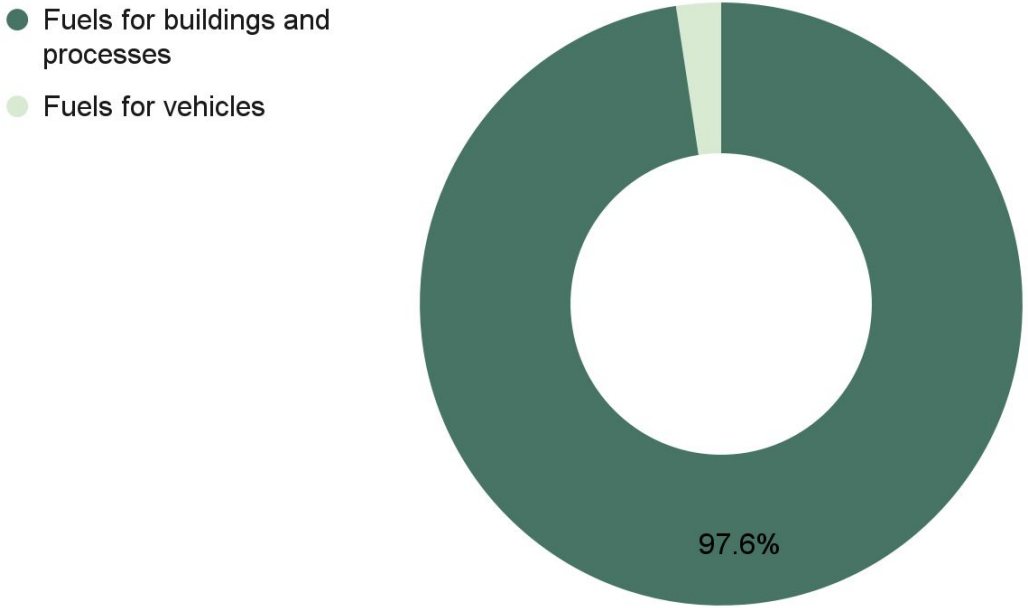
Gaz inclus : CO2 (hors UTCATF France), CH4, N2O, HFC, SF6, PFC, H_2O (traînées de condensation).
Source : MyCO2 par Carbone 4 d'après le ministère de la Transition écologique, le Haut Conseil pour le Climat, le CITEPA, Agribalyse V3 et INCA 3.

Results

Results per division



Results - Direct emissions (scope 1)



ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**539.33**	**33.3%**

1	Fuels for buildings and processes	526.28	32.5%
2	Fuels for vehicles	13.05	0.8%
3	Process sources	0.00	0.0%
4	Fugitive emissions	0.00	0.0%
5	Agricultural sources	0.00	0.0%

Results - Direct emissions (scope 1)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
1	Fuels for buildings and processes	HQ : estimations based on average office consumptions French teams/clubs : estimations based on average energy consumption in gymnasiums and swimming pools	~ Estimations based on national averages ~ Hypothesis : 100% gas (high range estimation)	✅ Base Carbone	Obtain actual pool consumption and energy source from operators, especially as this is a significant item (no public data available)
2	Fuels for vehicles	Approximations based on expense reports	~ Amounts in € ~ Price averages (€/L, source : Insee)	✅ Base Carbone	
3	Process sources	Not relevant			
4	Fugitive emissions	Not relevant			
5	Agricultural sources	Not relevant (marginal/inexistant)			

Results - Indirect emissions (scope 2)

Not available

ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**0.00**	**0.00%**

6	Electricity	0.00	0.00%
7	Steam networks	0.00	0.00%

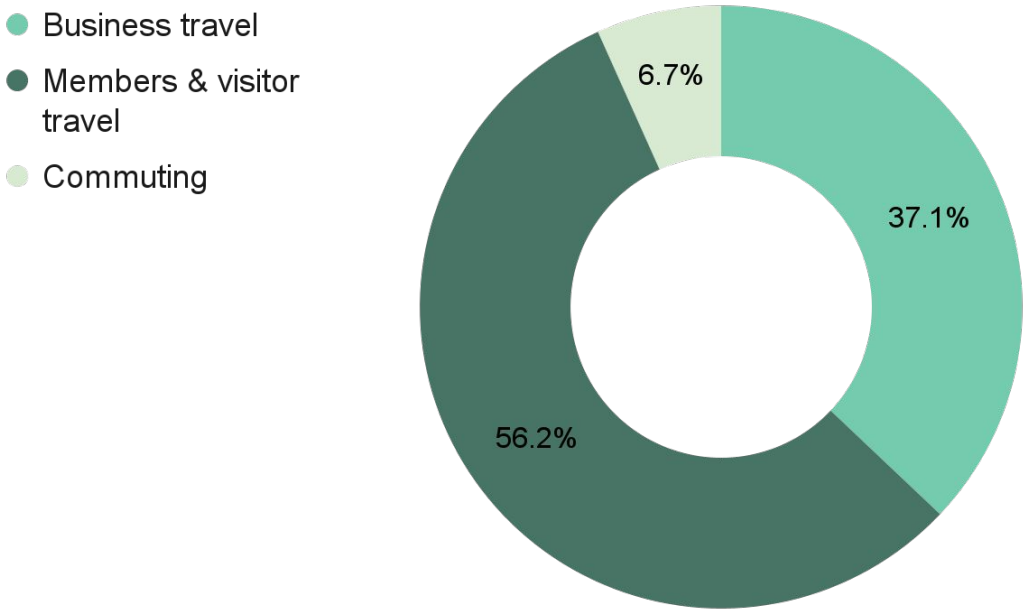
Results - Indirect emissions (scope 2)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
6	Electricity	Not available: in order to estimate based on a higher range, it was assumed that 100% of energy consumption was gas (see previous slides).	❌ Not available		Obtain actual pool consumption and energy source from operators, especially as this is a significant item (no public data available). Obtain emissions linked to the electric gun refills, considered negligible, which have not been taken into account and may be considered in 2023.
7	Steam networks				

⚠️

Emission factor for natural gas (average France mix 2022) : 0.240 kgCO2e/kWh PCI
Emission factor for electricity (average France mix 2022) : 0.052 kgCO2e/kWh PCI
> 4.6x less emissions if all sites are powered by electricity rather than gas

Results - Transport indirect emissions (scope 3)



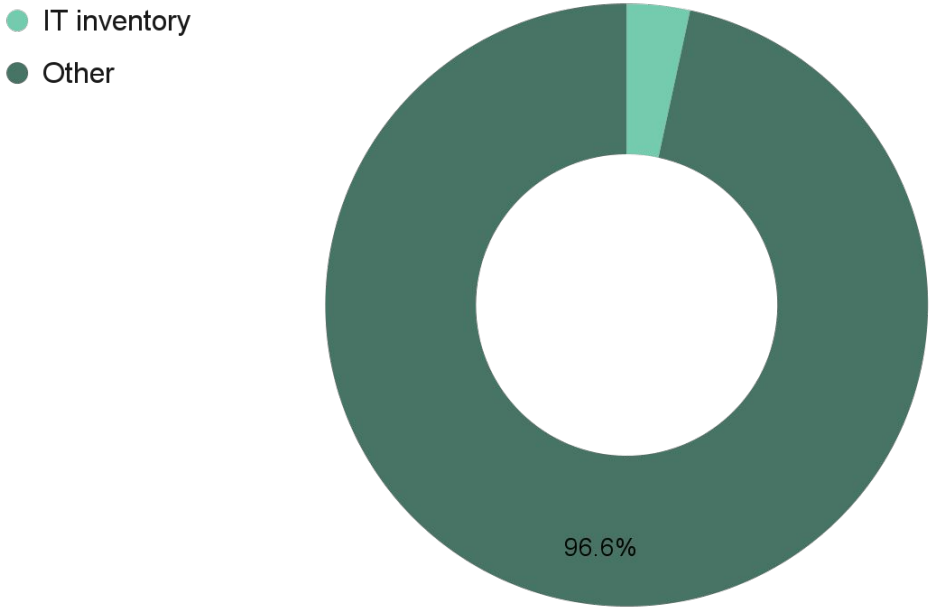
ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**912.42**	**56.3%**

12	Incoming goods transport	0.00	0.00%
17	Outcoming goods transport	0.00	0.00%
13	Business travel	38.12	20.9%
16	Members & visitor travel	513.11	31.7%
22	Commuting	61.19	3.8%

Results - Transport indirect emissions (scope 3)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
12	Incoming goods transport	Not relevant			
17	Outcoming goods transport	Not relevant			
13	Business travel	Ground transportation : approximations based on expense reports Flights : calculations based on average flight prices and estimates	~ Amounts in € ~ Average price per flight	✅ Base Carbone ~ Monetary ratios	Obtain physical quantities rather than monetary ratios, especially as these are the biggest sources of emissions (flights : obtain exact journeys, ground : members survey, focusing on French championships for instance, as pre-identified by the Federation)
16	Members & visitor travels	Estimation of the members' travel to training sessions and competitions	~ Amounts in € ~ Average prices of fuel (€/L, source : Insee)	✅ Base Carbone	
22	Commuting	Distances, frequencies and means of transport in physical quantities	✅ Distances, frequency and means of transport	✅ Base Carbone	

Results - Capital goods indirect emissions (scope 3)



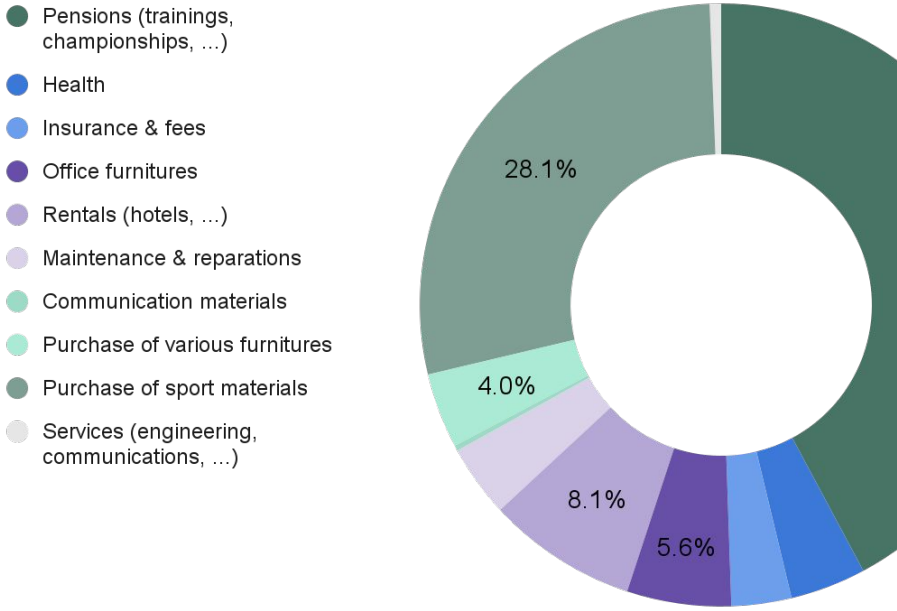
ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**17.74**	**1.1%**

10	Buildings	0.00	0.0%
10	IT inventory	0.6	<0.1%
10	Other	17.14	1.1%

Results - Capital goods indirect emissions (scope 3)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
10	Buildings	HQ : already depreciated (>40 years) Gymnasiums, swimming pools : estimations	✅ HQ : already depreciated ~ Gymnasiums, swimming pools : building size estimates	❌ No data available on emissions from gymnasiums or swimming pool buildings	Obtain data on emissions linked to gymnasiums and swimming pools and affect them pro rata to usage.
10	IT inventory	Exact IT inventory	✅ Exact quantities	✅ Base Carbone	
10	Others	Exact vehicle inventory	✅ Exact quantities	✅ Base Carbone	Eventually obstacle course for committees in 2023

Results - Purchasing indirect emissions (scope 3)



ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**151.34**	**9.34%**

9	Purchase of goods and services	151.34	9.34%

Results - Purchasing indirect emissions (scope 3)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
9	Purchase of goods and services	Processing of accounting entries from HQ and clubs who replied to the surveys (then extrapolation to all clubs on a pro rata basis according to the number of members of each club). Significant items (travel, overnight stays) were then calculated in detail to obtain physical quantities.	~ Amounts in € ~ Estimation of the number of overnight stays (based on estimated average price per night)	✅ Base Carbone ~ Monetary ratios	Given the importance of these emissions, obtain a more representative sample (more clubs responding to the questionnaire). Obtain exact number of overnight stays and exact distinction between HQ and French teams. Obtain physical quantities for other significant items (purchase of sports equipment, etc.)

Results - Waste indirect emissions (scope 3)

ISO	Category	Emissions (tCO2e)	Share (%)
	Sub-total	**0.35**	**<0.1%**
11	Waste collected by the municipality	0.34	<0.1%
11	Waste collected by a private service provider	0.00	0.0%
11	Wastewater	0.01	<0.1%

Results - Waste indirect emissions (scope 3)

ISO	Data section	Documents and hypothesis used	Accuracy		Improvement points
			Data	Emission factor	
11	Waste collected by the municipality	HQ : Estimations based on national averages since no data available Clubs, French teams : not counted due to little available data	~ Estimations based on national average per FTE	✅ Base Carbone	HQ : sufficient data given the low importance of emissions Other : quantification of waste to be requested or estimated
11	Waste collected by a private service provider	Not relevant			
11	Wastewater	HQ : Estimations based on national averages since no data available Clubs, Equipes de France : not counted due to no available data	~ Estimation based on national averages per FTE	✅ Base Carbone	Study the issue of water waste from swimming pool use

Action plan

> Trajectory definition

Action plan

Emission items	Possible reduction actions	Impact	Cost	Difficulty	Comments
Obtain data in physical quantities	Obtain emissions in physical quantities in order to identify sources of the most significant emisison items (e.g. overnight stays : heating ? swimming pools : filters?) and then encourage reductions or chose alternatives. Calculate competition-related emissions : in progress	High	Low	Medium	Depends on the maturity of the different stakeholders to be approached (e.g. gymnasiums and pool operators)
Member travel for training and competitions (413 tCO2e) 13 MESURES RELATIVES À LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES	Encourage rail travel for regional and national competitions by setting up shuttles between stations and competition venues. Implementation of a carpooling policy within each club : practically halves the impact of commuting. Identify emission reductions and alternatives using the Optimouv platform (in progress) Organize an interclub competition during a “soft mobility month”, as this is the main source of emissions.	High	Low	Medium	KPI: emissions per kilometer traveled *e.g.: Paris-Perpignan round trip : 6 kgCO2e by train vs. 352 by plane = -0.35 tCO2e for each journey replaced*

Action plan

Emission items	Possible reduction actions	Impact	Cost	Difficulty	Comments
French national team travel (254 tCO2e) 	Limit flights : - Prohibit training camps requiring air travel (e.g. Tenerife) - Limit flights to European and World championships - Encourage friends and family to attend events closer to home rather than further away. Encourage people to take the train rather than the car.	High	Low	Variable	Raising awareness among all athletes and coaches *e.g.: avoid Paris-Perpignan by plane = -350kgCO2e/round trip* *e.g.: replace training camp in Tenerife by Font Romeu = -2.2tCO2e*
Energy consumption (192 tCO2e)   	Obtain precise consumption figures for aquatic centers and sources of consumption (filters?). Work with gymnasiums and swimming pools to adopt energy efficiency measures (cf. CNOSF)	Medium	Low	Low	*If energy source is electricity instead of gas = -411 tCO2e (-78%)* KPI: energy consumption per member

Action plan

Emission items	Possible reduction actions	Impact	Cost	Difficulty	Comments
Purchasing of goods and services (148 tCO2e) 	Encourage overnight stays and accommodation in low-emission areas (Clef Verte, GreenGo, etc.) Limit material purchases (promote bartering and second-hand goods) : clothing collection (ongoing) In progress : replace emission-intensive purchases with alternatives (e.g. reusable eco-cups, regional products rather than cups, neckwear rather than shirts, etc.): to be structured around a responsible purchasing policy (in the form of a guide for clubs ?).	Medium	Low	Medium	
Transverse 	Present and discuss the Federation's carbon footprint with HQ, clubs, committees and members, to raise their awareness of the issues and make them an active force, in particular through the network of the sustainability ambassadors. Raise awareness with/of sustainability ambassadors and members through "2 tons" workshop to focus on emissions or the "New Stories Collage" workshop to imagine tomorrow's pentathlon.	High	Low	Low	KPI: number of trained members

Action plan

Emission items	Possible reduction actions	Impact	Cost	Difficulty	Comments
Transverse (continued) 	Use available tools to facilitate the calculation of carbon footprints and their reduction during events : in progress with “Optimouv”, “Coach Climat Evénement”, “Collecte ASL”. Report on actions implemented by clubs : in progress with GMBA Laser Run or Masters Argelès. Raise awareness of the 9 planetary borders (through the “Planetary Boundaries Collage”) to take into account all the issues at stake in the ecological crisis and not only climate. Assist other Federations in their transition towards sustainability	High	Low	Low	
Waste (0.35 tCO2e) 	Raising awareness of the 5Rs (refuse, reduce, reuse, repurpose and recycle) : in progress at some competitions with Zero Waste booths.	Low	Low	Low	

Thank you,

Ganbaté Consulting,
at your service

Guillaume Koudlansky - de Lustrac
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Appendix

Your dedicated consultant

Guillaume de Lustrac

- **5 years of experience in sustainability** at GreenFlex, Aktio and as an independent consultant

- **30+ awareness workshops** (for companies, citizens and public organizations)

- **30+ carbon footprint assessments & low carbon strategies** (industry, energy communities, tech, retail, sports, tourism, finance, consulting, health, construction, services …)

- 15+ years abroad (US, Brazil, Slovakia, South Korea, China, Japan, UK, Spain, …)

- Ultra-endurance athlete (world record holder of the marathon backwards, triple-ironman in 68h, ultra-cycling (Top10 Race Across France, PanCeltic Race….))

- Founder of the PocoLoco, sustainable ultra-endurance adventure

Appendix - mandatory regulatory documents

Reporting BEGES - Scope 1

Poste d'émission	Total (tCO2e)
1. Emissions directes des sources fixes de combustion	526.28
2. Emissions directes des sources mobiles de combustion	13.05
3. Emissions directes des procédés hors énergie	0.00
4. Emissions directes fugitives	0.00
5. Emissions issues de la biomasse (sols et forêts)	0.00

Appendix - mandatory regulatory documents

Reporting BEGES - Scope 2

Poste d'émission	Total (tCO2e)
1. Emission indirectes liées à la consommation d'électricité	0.00
2. Emissions indirectes liées à la consommation de vapeur, chaleur ou froid	0.00

Appendix - mandatory regulatory documents

Reporting BEGES - Scope 3

Poste d'émission	Total (tCO2e)
3.1. Transport de marchandise amont	0.0
3.2. Transport de marchandise aval	0.0
3.3 Déplacements domicile-travail	61.2
3.4 Déplacements des licencié·es	513.1
3.5 Déplacements professionnels	338.1
4.1 Achats de biens	57.5
4.2 Immobilisations de biens	17.72
4.3 Gestion des déchets	0.35

Poste d'émission	Total (tCO2e)
4.4 Actifs en leasing amont	0.00
4.5 Achats de services	94.27
5.1 Utilisation des produits vendus	0.00
5.2 Actifs en leasing aval	0.00
5.3 Fin de vie des produits vendus	0.00
5.4 Investissements	0.00
6.1 Autres émissions indirectes	0.00