How Mobility Can Influence the Carbon Footprint

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Co-funded by the European Union

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Introduction

WP4 main objectives are:

- Analyze and compare how teaching methods influence the carbon footprint, considering students and staff transportation.

- Create a digital platform that relates transportation choices with the carbon footprint. This platform will be built-in software for computing CO_2e based on transport habits.

- Motivate students and staff to use bicycles, public transportation or walking, based on information available on the platform, with some awards for the best practices.

- Motivate city councils to improve public transport access (improving the interconnection network), thus reducing transport fuels and promoting the transition to electric mobility.

- Develop and disseminate a Leading Practice Publication based on the best practices of the four institutions involved in the project.

Mobility survey goals

An online survey has been developed to assess sustainability awareness and mobility practices among students, lecturers, and administrative staff.

WP4 only focus on mobility part of the survey.

Data collected from the survey will inform initiatives to foster sustainable learning. This will be complemented by a curriculum analysis to identify learning gaps and best practices, alongside co-creation workshops involving teachers, academic and industry experts, and practitioners to determine the requisite knowledge and skills for integrating sustainable practices into student curricula.

In the fourth phase, data from the mobility survey will guide decision-making processes in enhancing and promoting sustainable mobility practices at individual campuses. CO_2 prediction software will also be used to simulate future scenarios that analyze and compare teaching methods and carbon footprint.

Mobility survey results

Students that uses car usually

Institution	Average km	% that uses car usually
DHBW – Stuttgart	21.70	35
IPL – Leiria	11.56	87
Metropolia – Helsinki	25.91	42
UPHF – Valenciennes	17.84	65
Total Students	**19.19**	**50**

Mobility survey results

Students that uses fuel car usually

	DHBW – Stuttgart	IPL - Leiria	Metropolia - Helsinki	UPHF - Valenciennes
Mean time driving (min)	21 – 30	11 - 20	21 - 30	11 - 20
Mean distance (km)	33.45	11.19	27.90	15.90
Mean transport stop distance (min)	11 – 20	11 - 20	5 - 10	5 - 10
Median time driving (min)	11 – 20	5 - 10	21 - 30	11 - 20
Median distance (km)	12.00	8.00	19.00	10.00
Median transport stop distance (min)	5 – 10	5 - 10	Less than 5	5 - 10

Mobility survey results

Students that uses public transports

(in minutes)	DHBW - Stuttgart	IPL - Leiria	Metropolia - Helsinki	UPHF - Valenciennes
Mean walk time	11 - 20	21 - 30	11 - 20	11 - 20
Mean time bus	11 - 20	21 - 30	21 - 30	21 - 30
Mean time tram/train	21 - 30	More than 90 (1 person)	21 - 30	21 - 30
Mean transport stop time distance	5 - 10	5 - 10	5 - 10	5 - 10
Median time walk	11 - 20	21 - 30	5 - 10	5 - 10
Median time bus	11 - 20	21 - 30	11 - 20	31 - 40
Median time tram/train	21 - 30	More than 90 (1 person)	21 - 30	21 - 30
Median transport stop time distance	Less than 5	Less than 5	Less than 5	5 - 10

Mobility survey results

Staff that uses car usually

Institution	Average km	% that uses car usually
DHBW - Stuttgart	21.54	48
IPL – Leiria	17.59	96
Metropolia - Helsinki	37.18	77
UPHF - Valenciennes	24.82	85
Total staff	**25.95**	**74**

Leading practice publication draft

Mobility report findings:

The survey results revealed that 80% of students and 70% of staff have a public transport stop within 10 minutes from home, yet over 40% of students and 65% of staff use internal combustion engine vehicles daily.

The most common reason students cited for not using public transport was ‘inconvenient routes/timetable’ across all four institutions.

The mobility report indicates that a majority of students travel less than 5 km to campus, making cycling a viable and sustainable option. Additionally, a lack of secure bicycle parking was identified as a barrier to increased bicycle use.

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Leading practice publication draft

Mobility report findings:

Data shows that over 40% of students and 65% of staff use personal vehicles for commuting, contributing significantly to emissions. Restricting parking for high-emission vehicles can serve as a disincentive.

Mobility as a Service (MaaS) can provide seamless mobility solutions but faces barriers like integration difficulties and low technological affinity among some users.

Survey findings show that inefficient parking management contributes to congestion and increased emissions. Smart parking solutions can improve efficiency and encourage sustainable commuting options.

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Leading practice publication draft

Mobility report findings:

The mobility report indicates that a majority of students travel less than 5 km to campus, making cycling a viable and sustainable option. Additionally, a lack of secure bicycle parking was identified as a barrier to increased bicycle use.

Students living within 5 km of campus could significantly reduce emissions by switching to bicycles or e-scooters.

A 10+10 km (way and return) gasoline/diesel vehicles trip from home to campus emits 5.4 kgCO_2e per day.

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Mobility software for computing CO_2e draft

Built-in software to compute CO2e based on transport habits

Questionnaire for John Smith

How many days in the week do you commute to university?: 5

Which type of car you use ? Diesel

How many km by car? (per trip) 19

Thank you, John Smith for your participation!

Your ecological footprint is:

Per Trip: **5.13** kgCO2e

Per Day: **10.26** kgCO2e

Per Week: **51.3** kgCO2e

Built-in software to compute CO2e based on transport habits

Questionnaire for Amélie Poulain

How many days in the week do you commute to university?: 4

Which type of car you use ? NONE

How many km by car? (per trip)

How many km by motorcycle? (per trip)

How many km by bus? (per trip) 21

Thank you, Amélie Poulain for your participation!

Your ecological footprint is:

Per Trip: **2.1** kgCO2e

Per Day: **4.2** kgCO2e

Per Week: **16.8** kgCO2e

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Mobility software for computing CO_2e draft

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Built-in software to compute CO2e based on transport habits

Questionnaire

A 1 500 km one way plane trip is equivalent to

350 kgCO2e

So, John Smith mobility habits in 7 weeks are equivalent to a medium distance European flight.

In one semester John Smith can go and return.

Thank you, John Smith for your participation!

Your ecological footprint is:

Per Trip: **5.13** kgCO2e

Per Day: **10.26** kgCO2e

Per Week: **51.3** kgCO2e

How many km by motorcycle? (per trip)

How many km by bus? (per trip) 21

Thank you, Amélie Poulain for your participation!

Your ecological footprint is:

Per Trip: **2.1** kgCO2e

Per Day: **4.2** kgCO2e

Per Week: **16.8** kgCO2e

Final remarks

Campus events can create a culture of sustainability.

The EFEU project is providing crucial insights for mobility planning.

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