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CUMIN - SARA

Integrating bottom-up approaches in energy transition:

Assessing the social acceptability of e-mobility on a university campus

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Presentation outline

1. Introduction : Context, introducing SARA and our approach.
2. First step : Mapping : Assessing spatiotemporal accessibility of the Cite Scientifique campus.
3. Second step : Survey : Aligning the hypothesized commuting habits with the staff and students actual commuting habits. Collect data about the campus users' representation and opinion about e-mobility. Identify an action lever in promoting carbon-neautral cars.
4. Third step : Data analysis and results
5. Conclusions

1. Introduction

A few facts about Cite Scientifique's GHG emissions

50,7% of mobility GHG emissions of Lille University are due to commuting (travels to and from campus) [1]

The amount of thermal car users is higher among Cité Scientifique's students and staff than it is for other campuses of Lille University's staff and students (23% against 21% according to the latest survey) [2]

GHG emissions steming from thermal car usage are **higher** than the average GHG emissions of Lille University : +267kg eq CO2/year for students and + 168.5kg eq CO2/year for staff. [2]

1 BEGES – U Lille – Année 2020 : Ademe.fr

2 Direction du Développement Durable et de la Responsabilité Sociale – U Lille – Enquête de Mobilité 2023

About SARA…..

Social

Acceptability

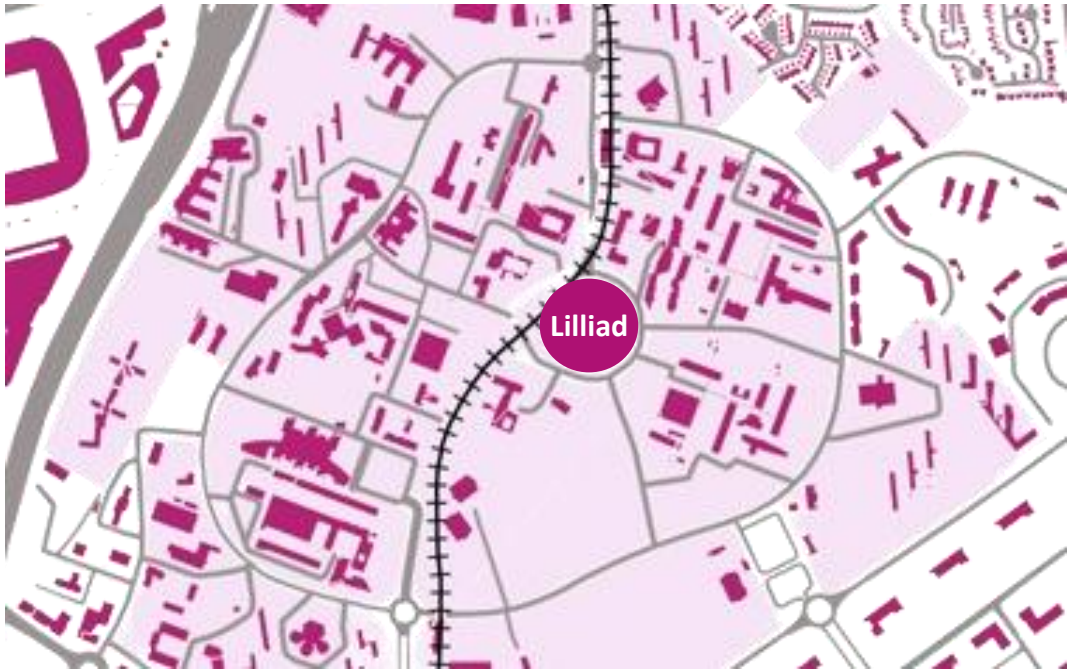
of electric vehicles in

Restricted

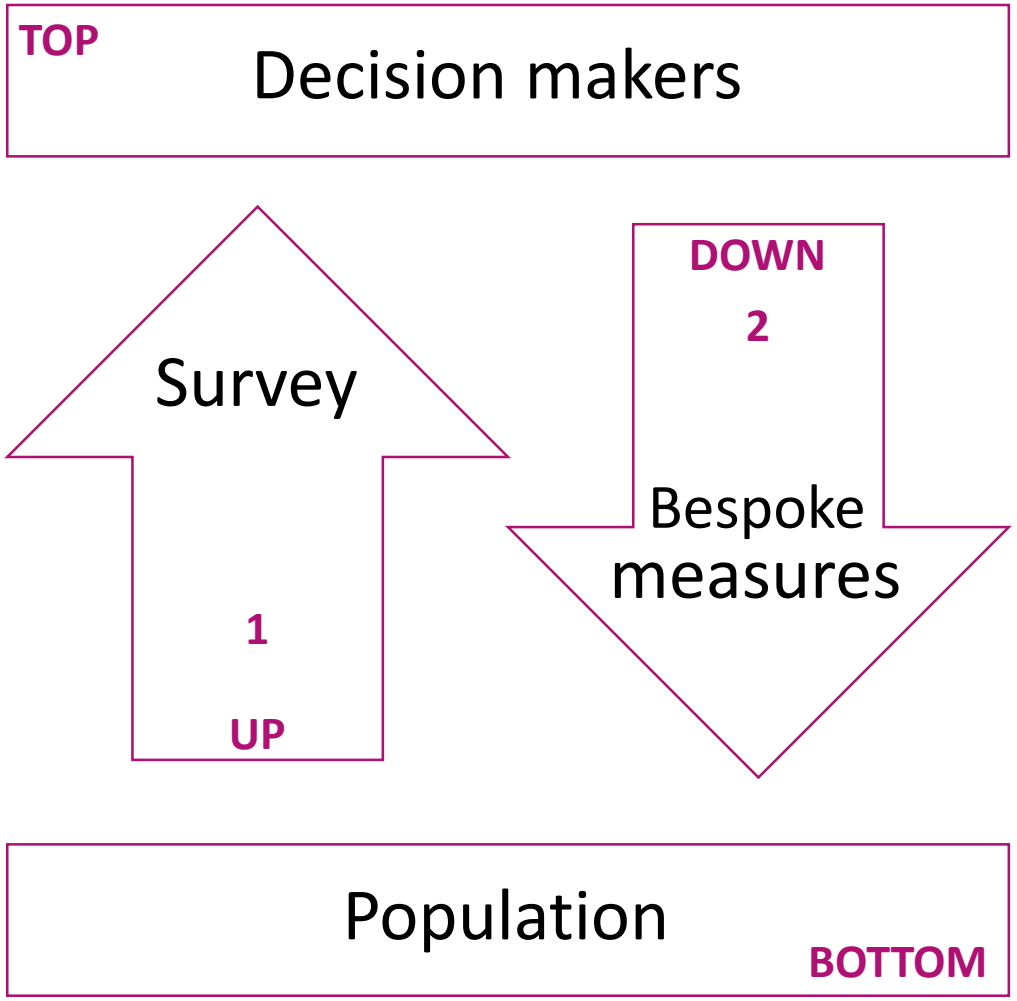
Areas

DEF: *Social acceptability refers to the **level of approval a project or decision gets from a population**. It is based on the collective belief that the proposed option is preferable to alternatives, including the status quo. This concept includes **legislative, economic, environmental, and social dimensions**, reflecting the **community's consensus** on the merits of the undertaking.*

In our case, the campus :



Defining : Integrating top-down and bottom-up approaches into energy transition



Assessing the social acceptability of e-mobility as part of the energy transition

Collect feedback from the people concerned

Made-to-measure actions

More sustainable changes in mobility behaviours

Objectives

Identify levers for action to decarbonize commuting trips

Collecting information on the mobility habits of campus users

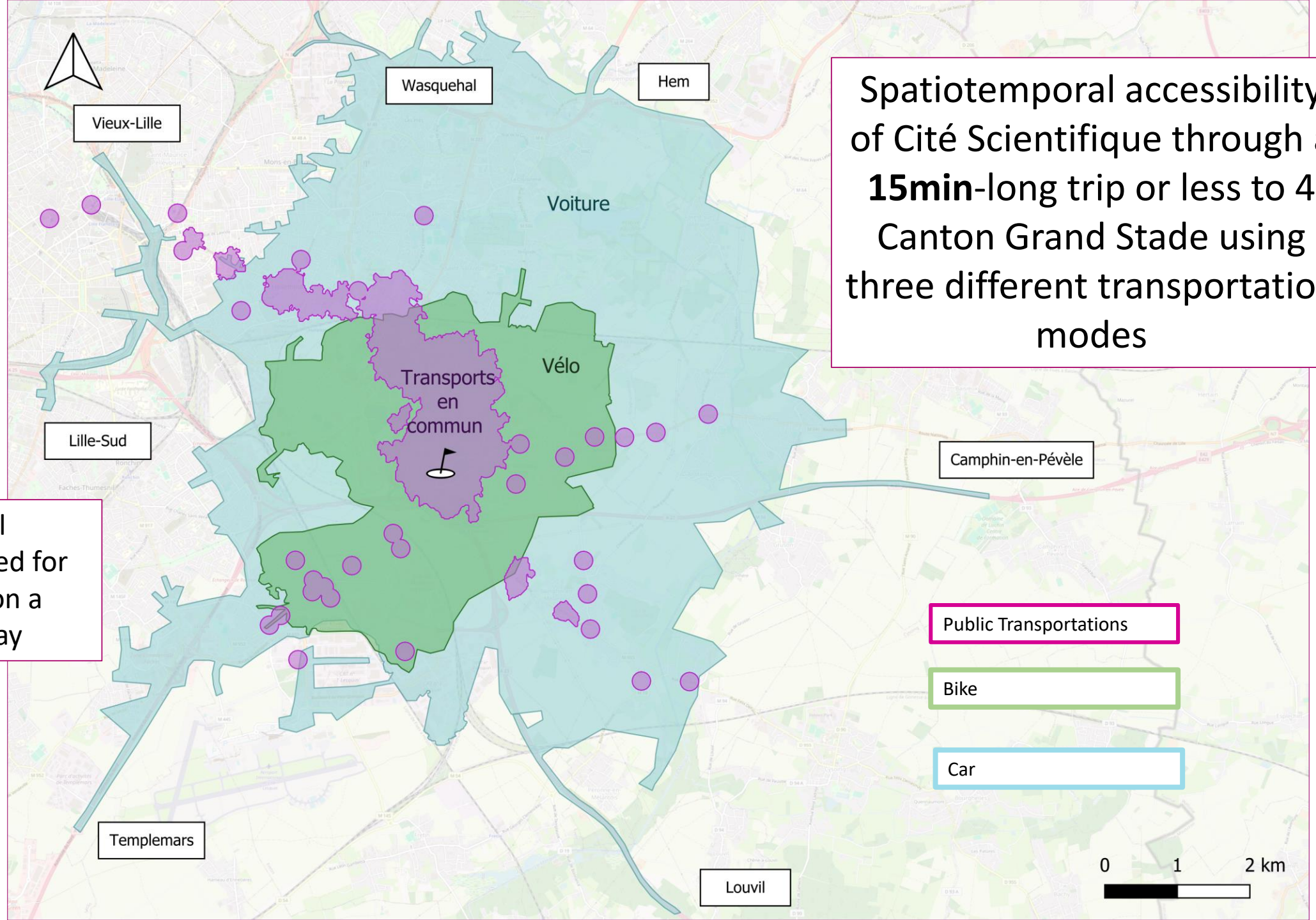
Identify obstacles and think about planning solutions that encourage the use of sustainable mobility

2. Assessing the spatiotemporal accessibility of the campus through isochronous mapping

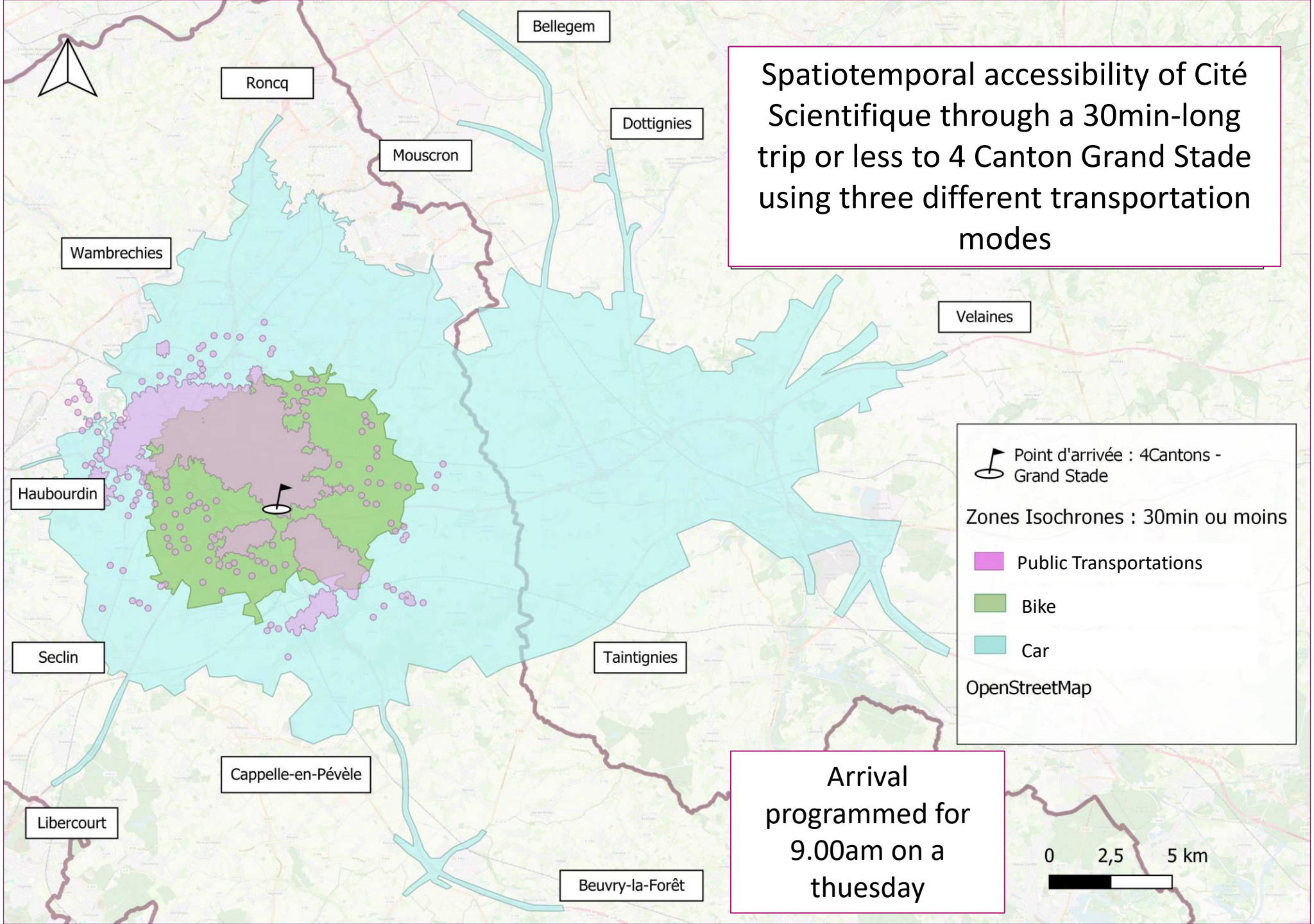
What is isochronous mapping ?

This concept refers to the creation of maps that depict **areas accessible within the same amount of time from/to a specific point**. Isochrones are lines or curves on these maps connecting locations that can be reached in an equal duration, considering factors such as travel time, transportation modes, or other relevant parameters. These maps are valuable in urban planning, transportation analysis, and decision-making processes where understanding temporal accessibility is crucial for efficient resource allocation and spatial planning.

Spatiotemporal accessibility of Cité Scientifique through a **15min**-long trip or less to 4 Canton Grand Stade using three different transportation modes



Arrival programmed for 9.00am on a thuesday


Spatiotemporal accessibility of Cité Scientifique through a 30min-long trip or less to 4 Canton Grand Stade using three different transportation modes
Bellegem
Roncq
Dottignies
Mouscron
Wambrechies
Velaines
Haubourdin
Seclin
Taintignies
Cappelle-en-Pévèle
Libercourt
Beuvry-la-Forêt
Point d'arrivée : 4Cantons - Grand Stade
Zones Isochrones : 30min ou moins
Public Transportations
Bike
Car
OpenStreetMap
Arrival programmed for 9.00am on a thuesday
0
2,5
5 km

3. Surveying the campus’ students and staff

First survey phase : March 2023

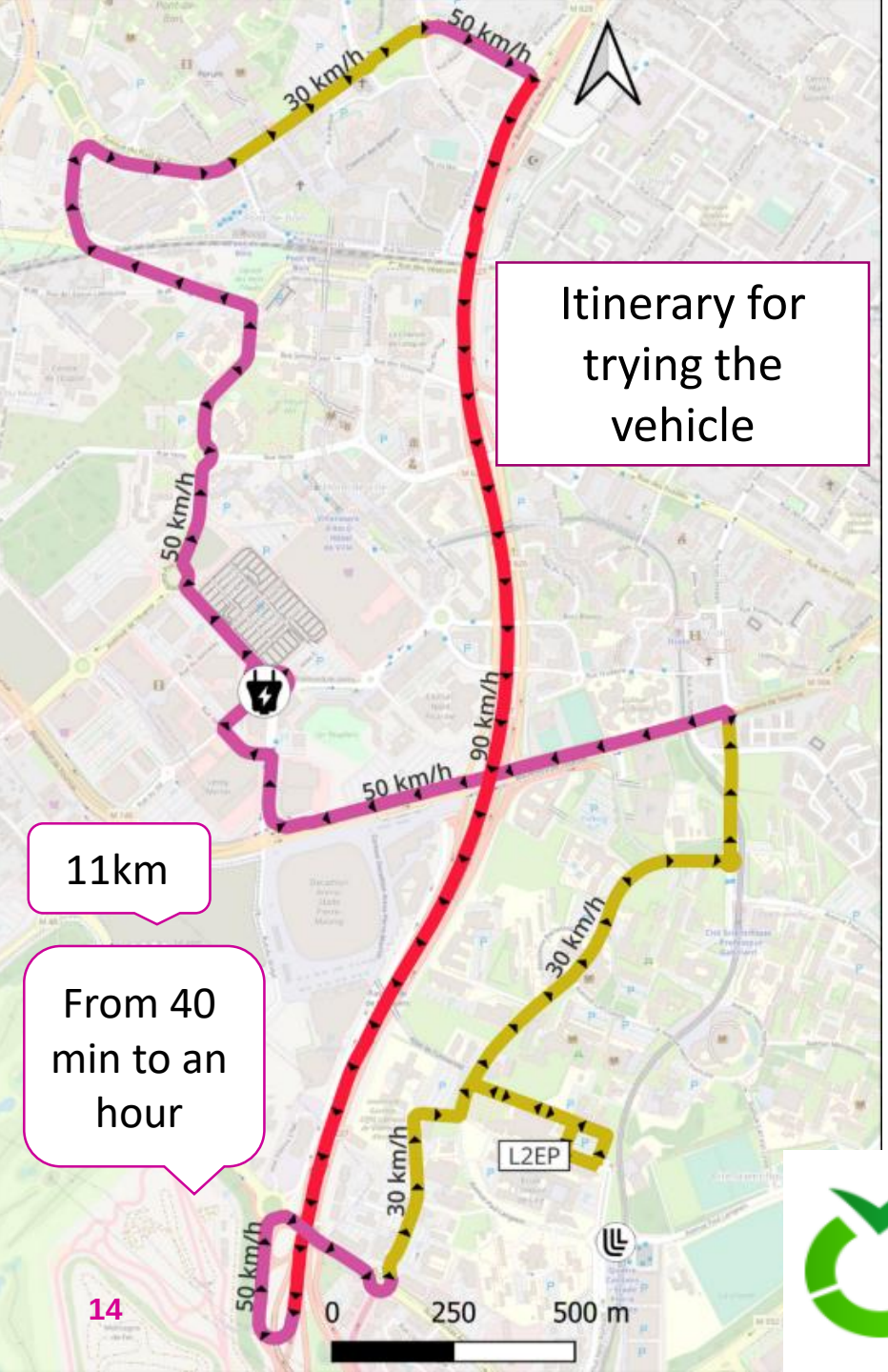
Figure 8 : Photographie de l'enquêté dans le VE, Source : Licence professionnelle 2022-2023

- From March 13th to March 16th 2023
- 11 inteviewees
- 4 students of professional bachelor's degree in mapping, topography, and GIS

Acknowledging potential improvements and recommendations

TVES Contribution

Second phase of the survey



Itinerary for trying the vehicle

11km

From 40 min to an hour

Second survey phase : June and July 2023

LimeSurvey

Source : Enquête de perception du véhicule électrique menée dans le projet CUMIN - Juillet 2023

4. Results and data analysis

Hypotheses and statistical approach

Hypothesis 1: There are disparities in knowledge of electromobility on campus, as well as in the ability and willingness to access electric vehicles (or plug-in hybrid vehicles)

Students are the most likely to be unable to access EVs

The majority of respondents are unaware of the extent of the supply of charging stations on campus

The majority of respondents want to access EVs but are unable to

A qualitative dataset

Descriptive statistics

Two qualitative datasets

Contingency Tables and Chi2 Correlation Test

Hypotheses and statistical approach

Hypothesis 2: Trying an electric vehicle can encourage campus users to adopt an electric vehicle

Two qualitative datasets

Perception of the different characteristics of the EV at N0

Perception of the different characteristics of the N2 EV

Contingency Tables and Chi2 Correlation Test

Hypotheses and statistical approach

Hypothesis 3:
The results of the survey make it possible to target categories of campus users and to develop strategies to encourage the use of sustainable mobility specific to each category.

Older campus users have less sustainable mobility practices

Two qualitative datasets

Age//Main transport mode

Educational attainment//Opinion on the EV ‘s environmental footprint

The higher the educational attainment of campus users, the more skeptical they are of the environmental benefits of P-HEV

Contingency Tables and Chi2 Correlation Test

Results

- **49%** are unaware of the on-campus electric vehicle charging stations' offer
- **82%** are in favor of adopting an EV
- **47%** are in favor of adopting an but can't
- **51%** consider cost to be their first hurdle

There is a proven correlation between:

Status → Ability to access an EV

Age → Sustainability of mobility practices

Educational Attainment → Perception of the EV's carbon footprint

Trying an EV → Representation and opinion of the EV

Conclusions

Conclusions

Implement a communication strategy

- Locate and inform about access to the EV infrastructures on campus
- Respond to the obstacles and reluctance identified by the survey
- Comparing the costs and savings associated with adopting an EV or P-HEV

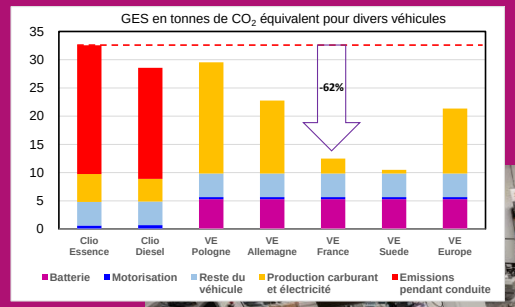
Use the lever of action identified in this study

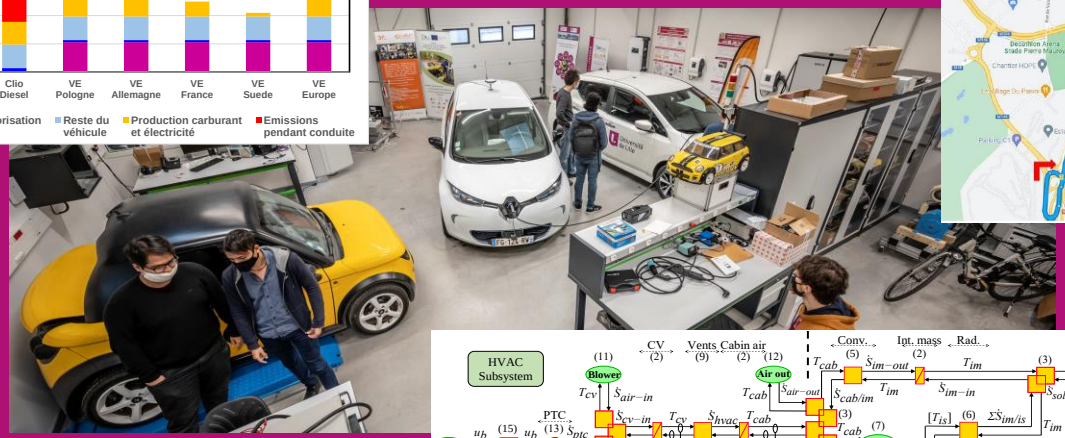
- Implement more testing of the Nissan Leaf and as part of commuting trips
- Target users identified as more reluctant.
- Continue statistical processing of results (ACM and CAH)

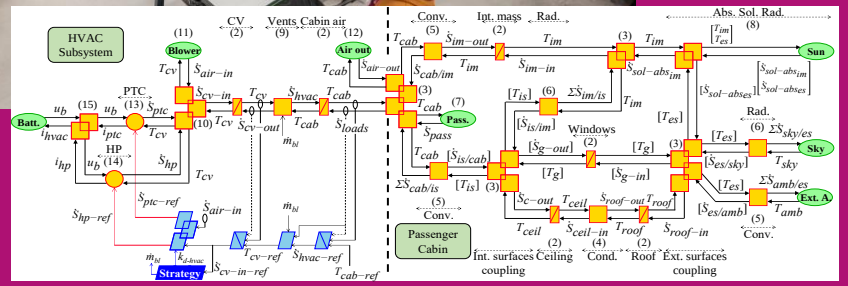
If you'd like to contribute to our research and try out an electric vehicle, you can reach out to me at : lucie.juncker@univ-lille.fr

(A valid driving license is mandatory)

https://cumin.univ-lille.fr/







Our university as an exciting living lab towards eco-cities through an innovative transdisciplinary framework !

If you're interested in trying out an EV, you can reach out at :

lucie.juncker@univ-lille.fr