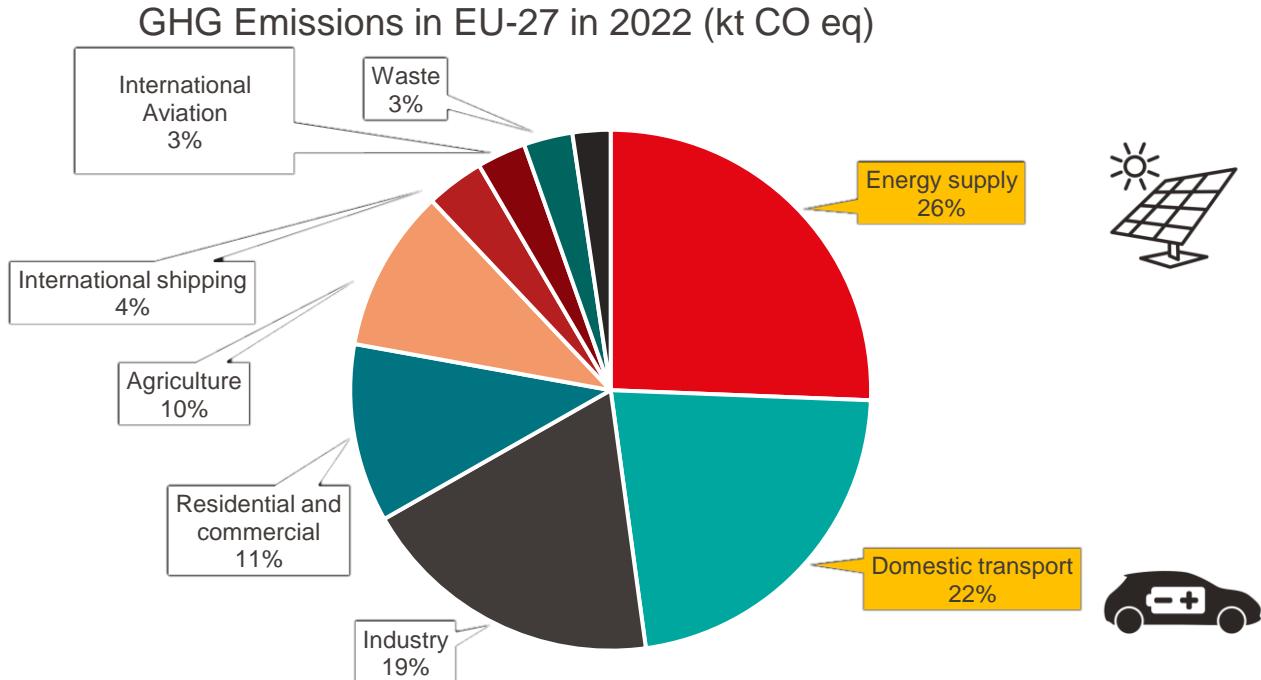




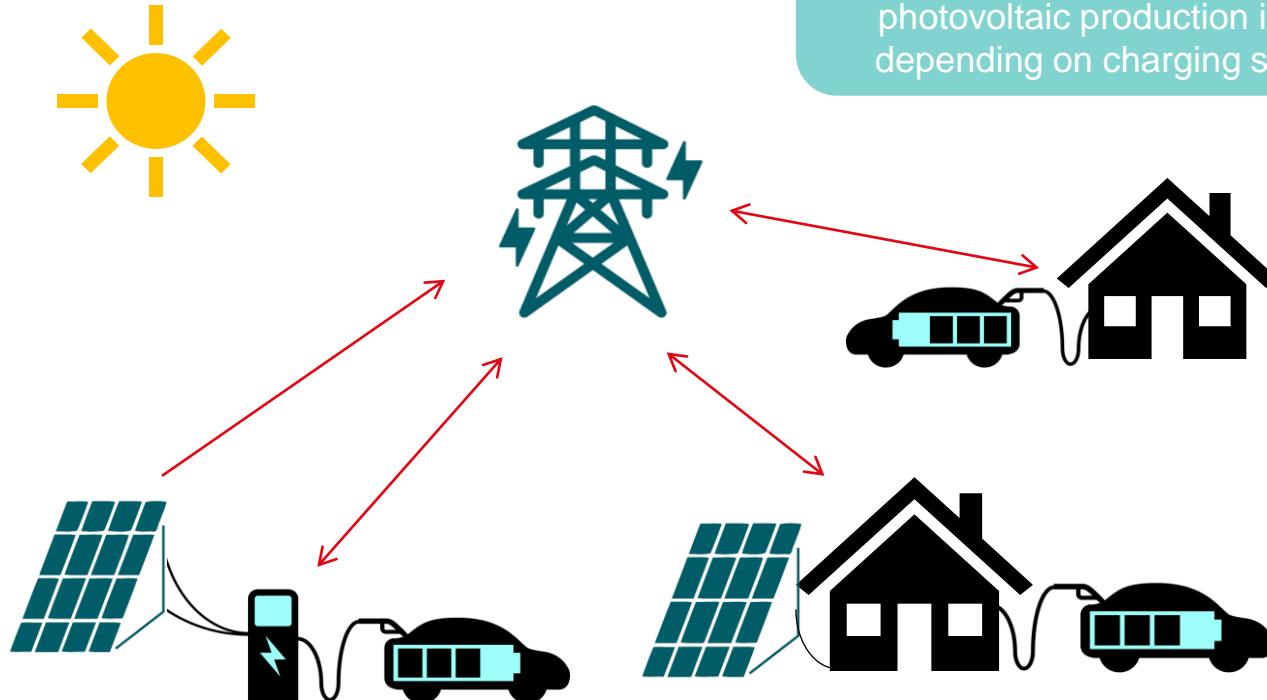
Noémie Jeannin,
noemie.jeannin@epfl.ch

Coupling electric vehicle charging with solar electricity generation: An online tool for the energy transition

3.12.2024



EV-PV coupling



Sources:
thenounproject.com
Wikimedia commons

Objectives:

Quantify the potential of coupling electric vehicle charging with photovoltaic production in Europe depending on charging scenarios.

Scenarios for EV charge

For everyday:



At home: *sleep & charge*

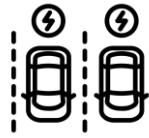


At work: *work & charge*



At points of interest: shops,
restaurants...

shop & charge, coffee & charge

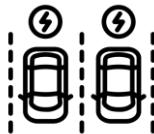


At public parking

During trips:



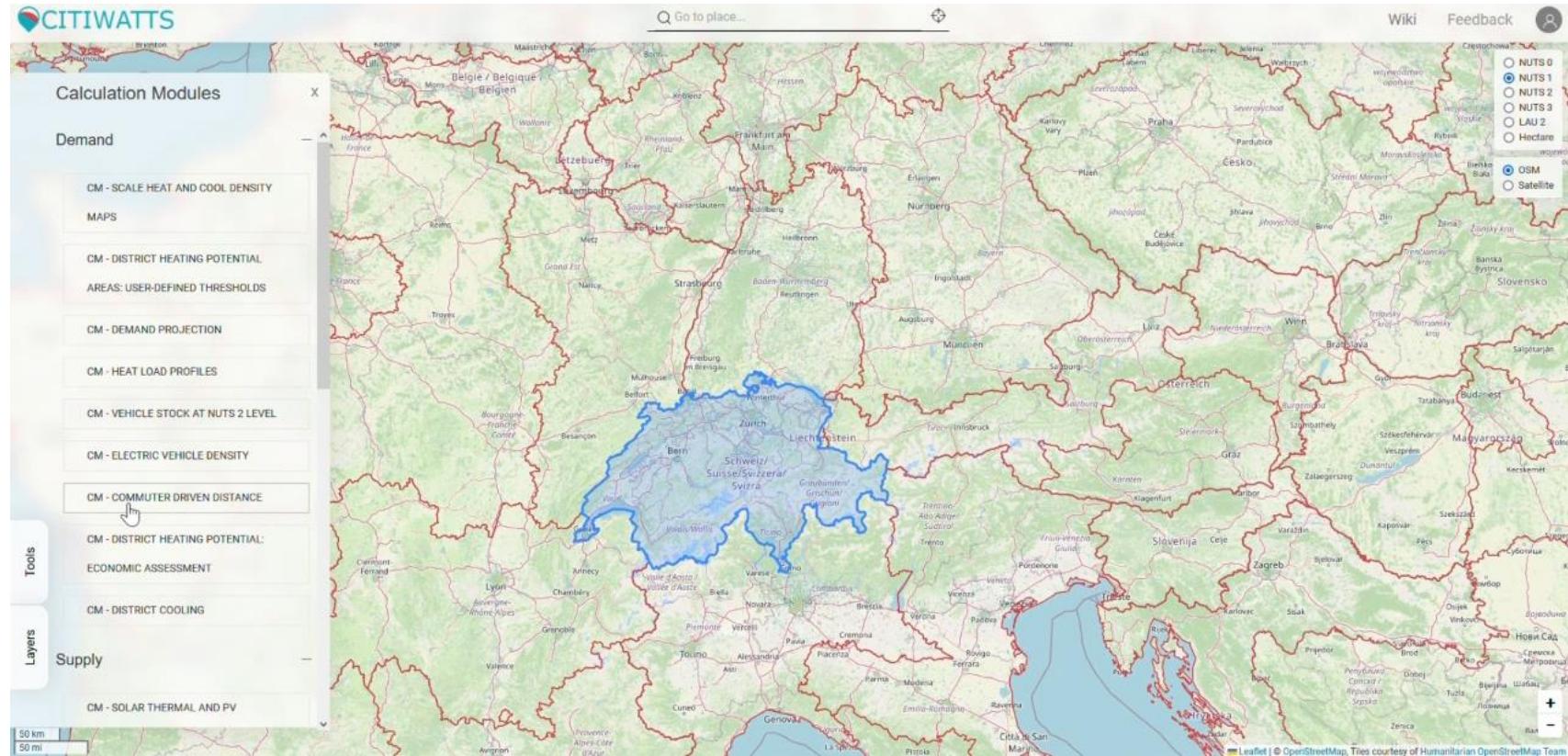
On highways: *expresso & charge*



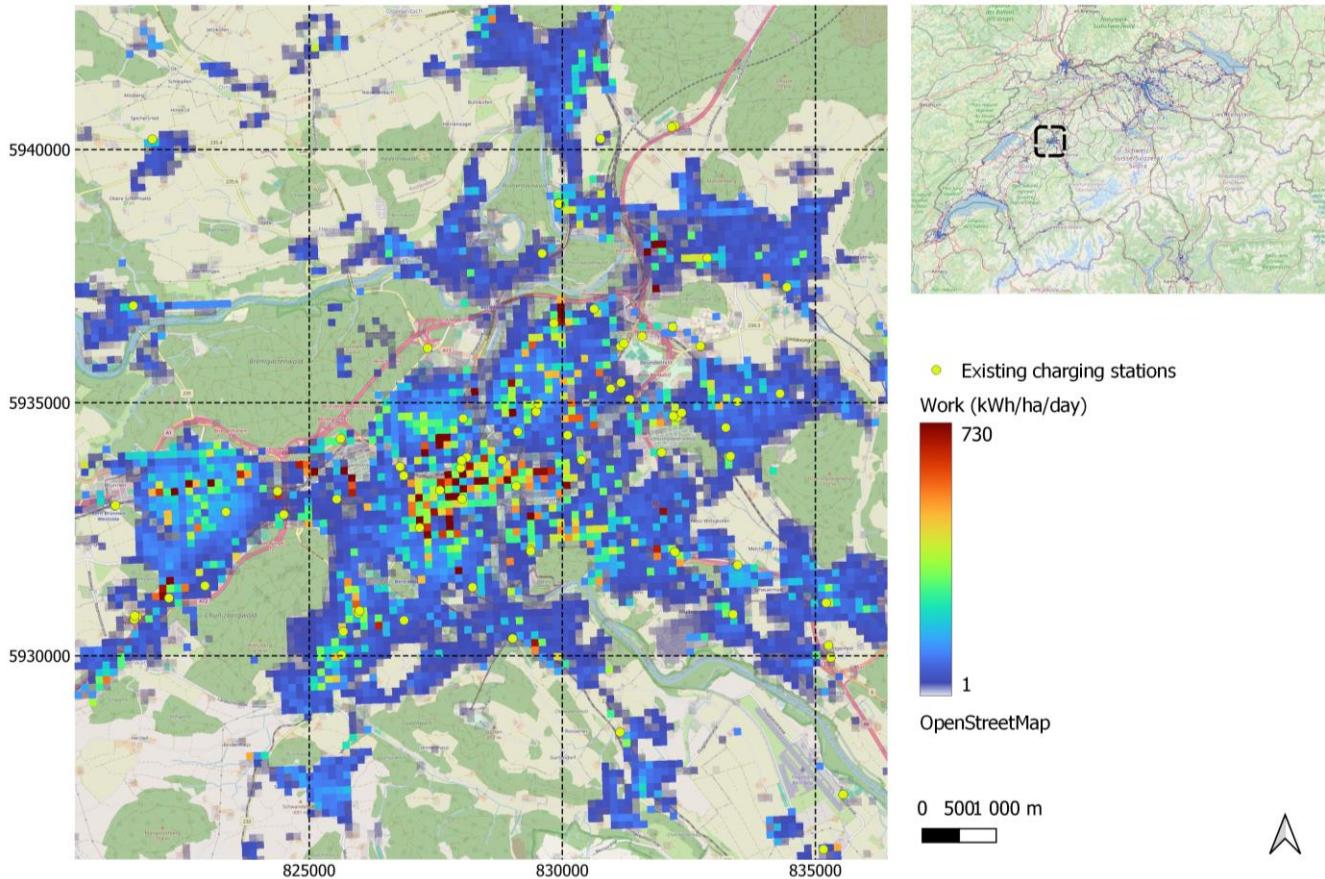
At public parking



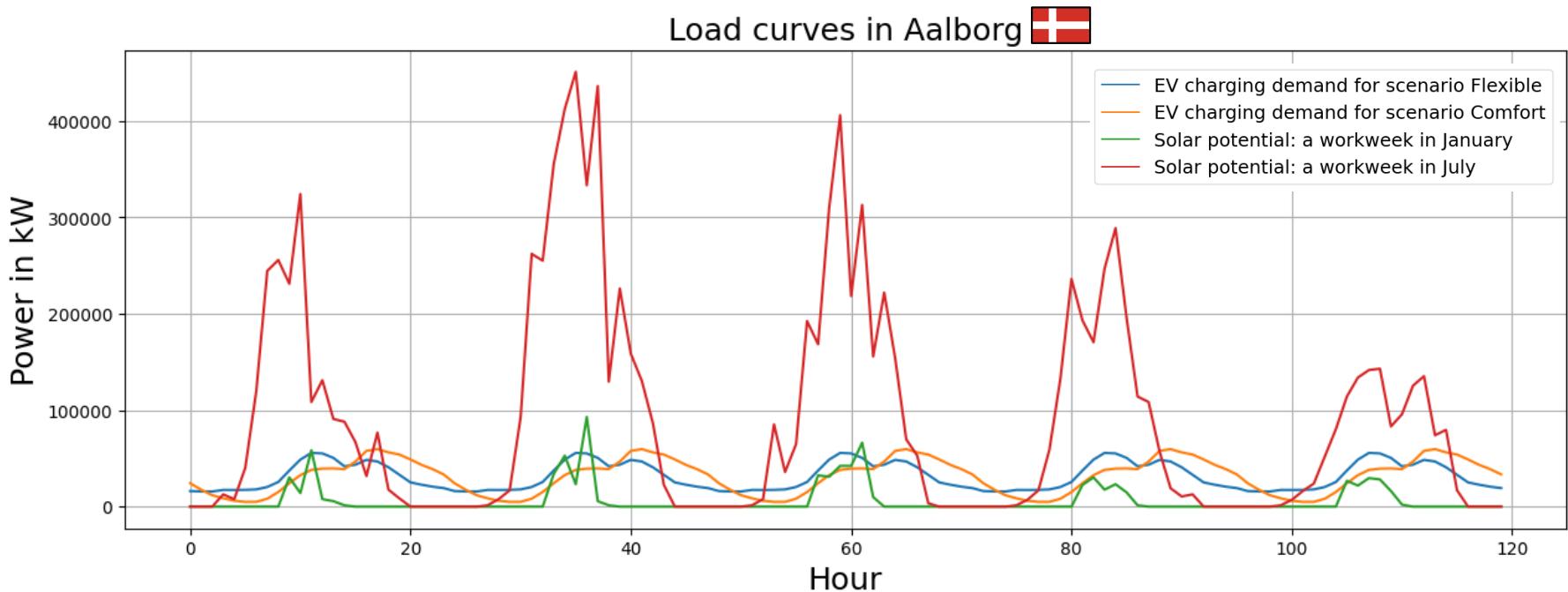
Demonstration of the tool



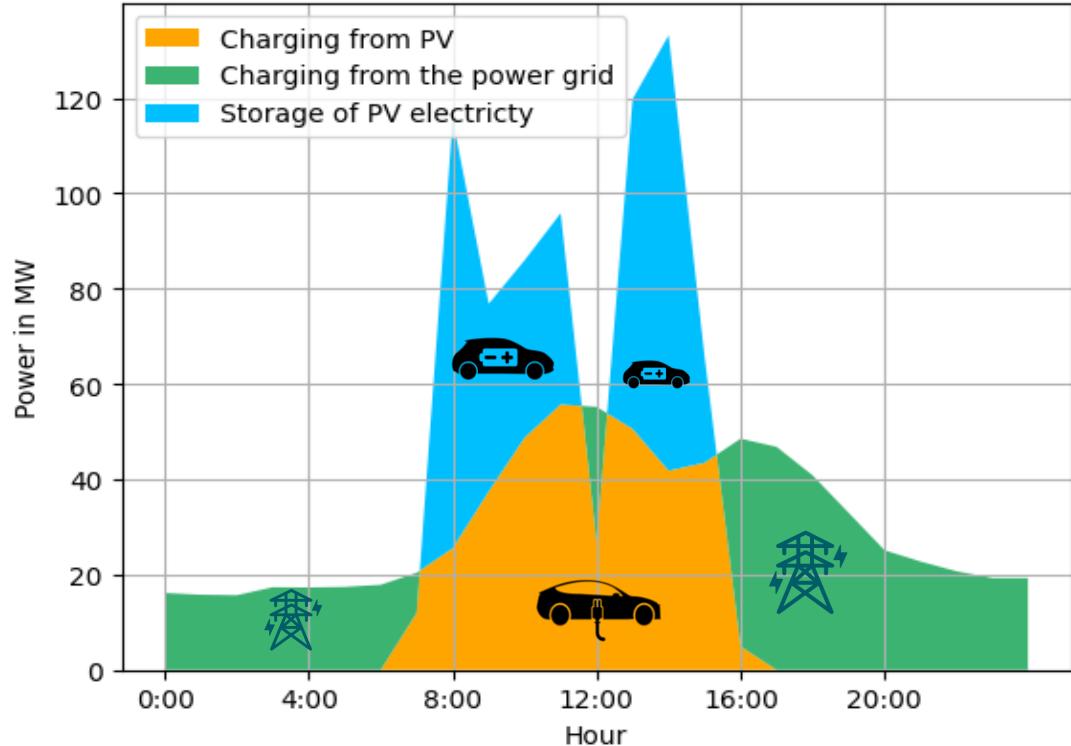
Charging infrastructure planning



Charging demand and PV production

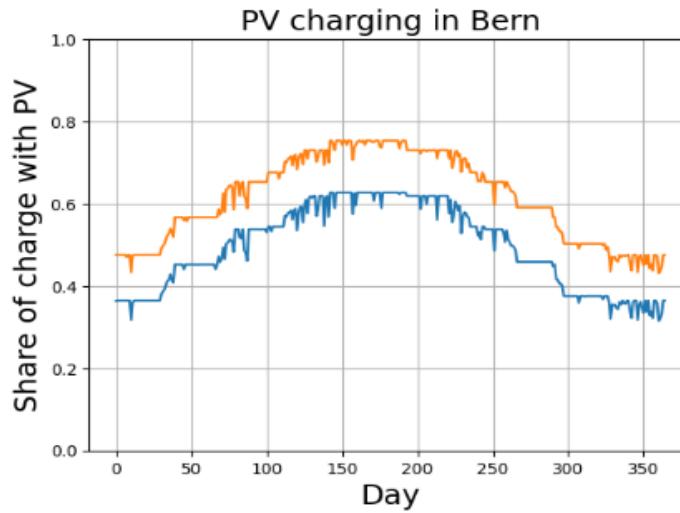
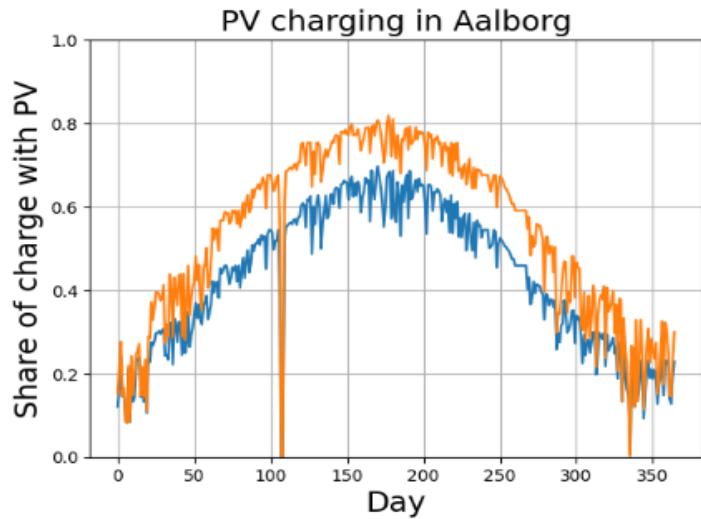


Electric vehicles as daily storage



- Cars are charging from solar electricity when available
- Charge from the grid otherwise
- If too much solar electricity is produced, it is stored in the batteries

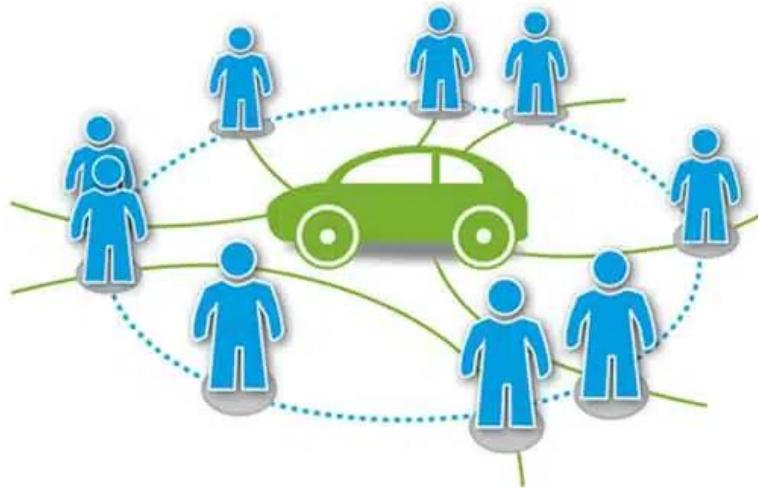
Charging from solar electricity



- The photovoltaic production varies through the year, so the amount of charging is not the same every day.

Shared mobility

- Advantages:
 - Reduces the number of cars
 - Cheaper than owning a car
 - Save space for parking
- Rural areas:
 - More kilometers driven
 - Difficult to implement an efficient public transportation system
- Difficulties:
 - The pattern of use of the vehicles is different, so we need to check if it is possible





**Thank you for your
attention!**