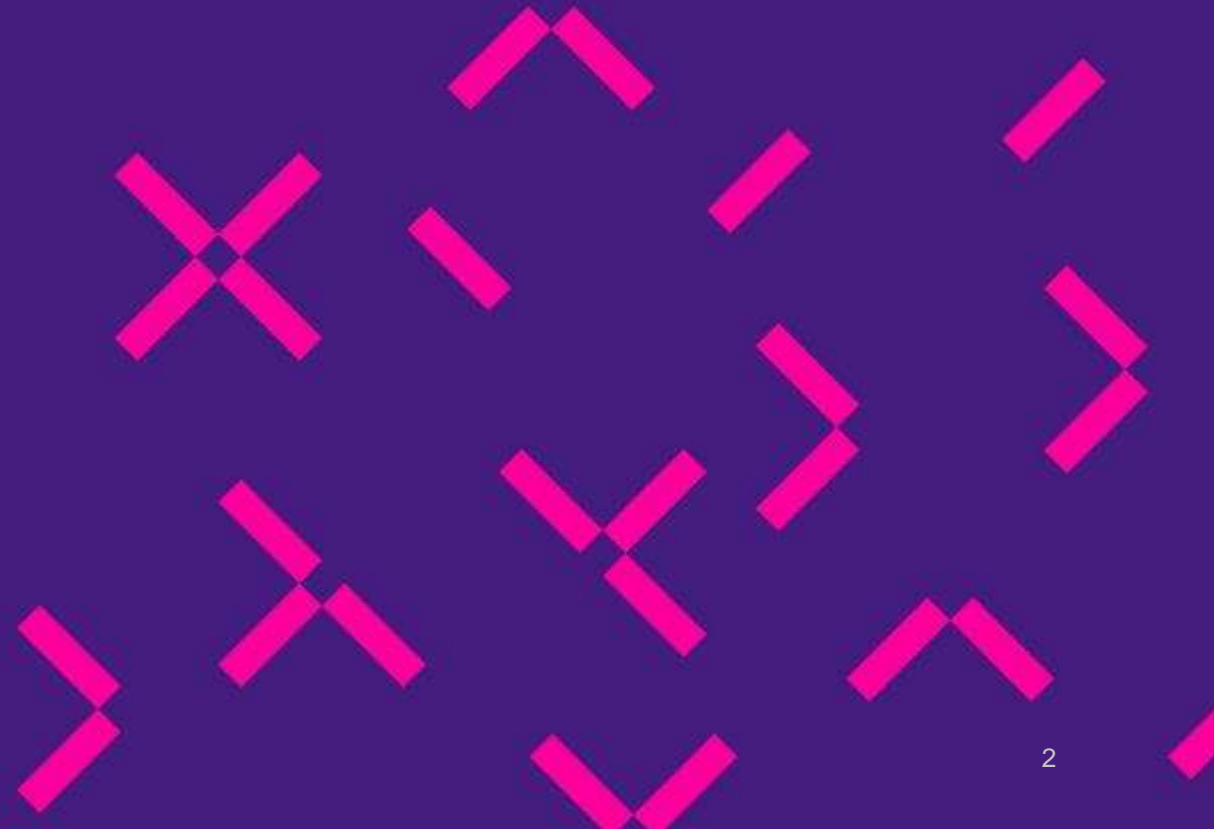# e-Mobility

Alberto Piglia
Bologna 23 Ottobre

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Key concepts
How to dispel fake myths

Myths to dispel
What's the truth?

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1 Range anxiety

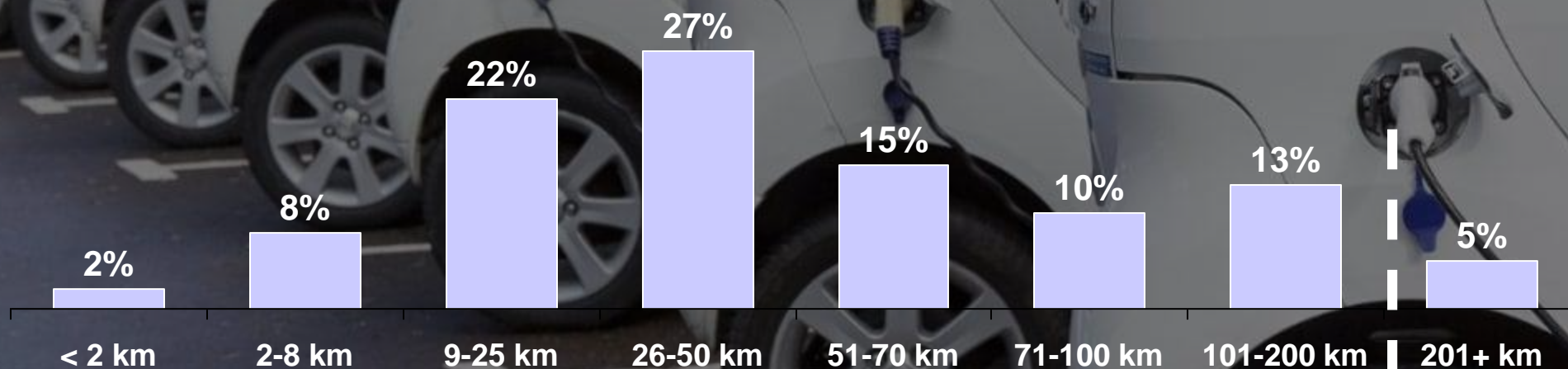**2** Charging points diffusion

3 Numbers of models

4 Price of cars

The low and medium class vechicles already allows the high majority of the travels
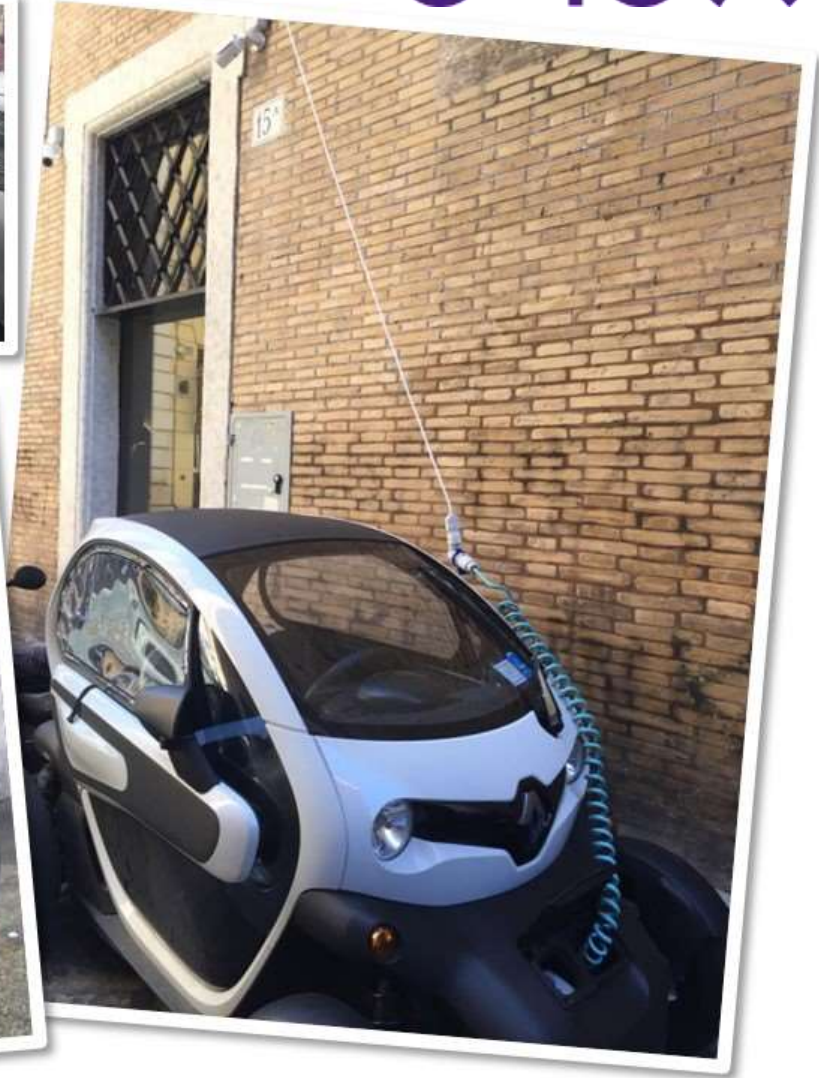
% daily commuting on the base of the km travelled

< 2 km	2-8 km	9-25 km	26-50 km	51-70 km	71-100 km	101-200 km	201+ km
2%	8%	22%	27%	15%	10%	13%	5%

Nissan Leaf, Renault Zoe cover the 95% of the cases

BMW i3, Smart and others have the autonomy to cover 90% of the cases
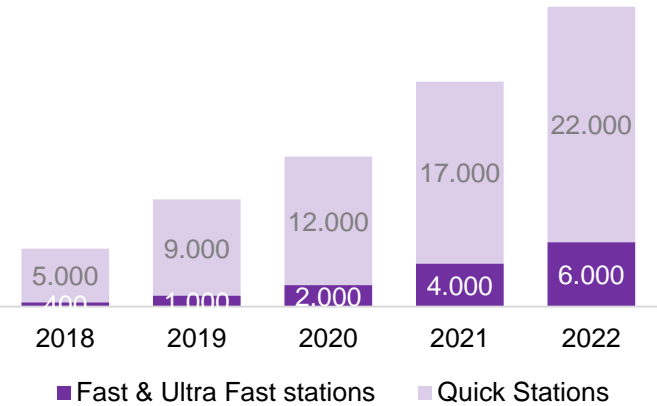
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Desperate charging

Public Infrastructure Plans
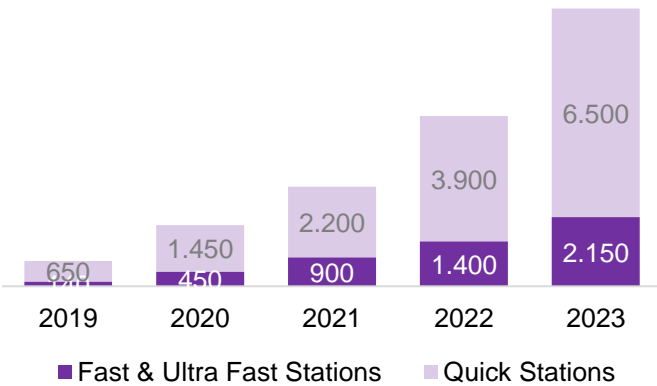
Plans in legacy markets

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Italy: 28.000+ POC by 2022

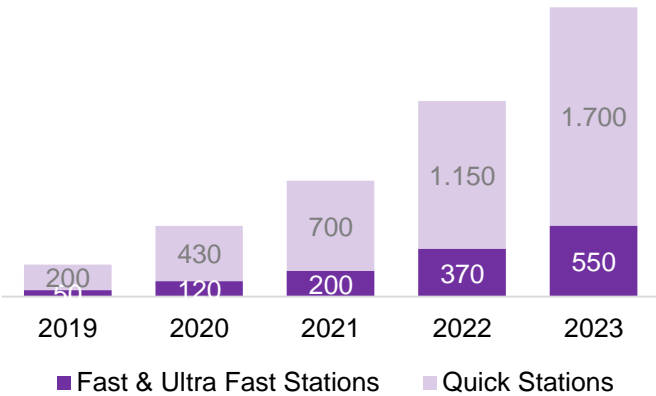14.000 Point Of Charge by 2020
28.000 Point Of Charge by 2022

Year	Fast & Ultra Fast stations	Quick Stations
2018	400	5.000
2019	1.000	9.000
2020	2.000	12.000
2021	4.000	17.000
2022	6.000	22.000

- Fast & Ultra Fast stations
- Quick Stations

Spain: 8.600+ POC by 2023

3.100+ Point Of Charge by 2021
8.600+ Point Of Charge by 2023

Year	Fast & Ultra Fast Stations	Quick Stations
2019	150	650
2020	450	1.450
2021	900	2.200
2022	1.400	3.900
2023	2.150	6.500

- Fast & Ultra Fast Stations
- Quick Stations

Romania: 2.200+ POC by 2023

900+ Point Of Charge by 2021
2.200+ Point Of Charge by 2023

Year	Fast & Ultra Fast Stations	Quick Stations
2019	50	200
2020	120	430
2021	200	700
2022	370	1.150
2023	550	1.700

- Fast & Ultra Fast Stations
- Quick Stations

Number of models

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The automotive brands are part of the game

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Mercedes-Benz
10 new models by 2022

TESLA
5° model of car sold
5000 Model3 built per week

VOLVO
By 2025 the 50% of total revenues made by EVs

FLIXBUS
e-bus test on long distances

BMW
Sales forecasts of 500 000 EV by 2019

PORSCHE
Doubled investments: 6 mld in e-Mobility

FCA
Investments plan of 9 billion

HARLEY-DAVIDSON MOTOR CYCLES
First e-moto presented

Price of cars
Total cost of ownership

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2019 Honda Civic LX (Automatic)

Sticker price - $23,770
Fuel consumption – 7.1 litres per 100 km
Battery capacity – n/a
Range – n/a
Charging time – n/a
Engine size – 2.0 litres, 4 cylinders
Horsepower – 158
Torque – 138 pound-feet
Passenger volume – 2,769 litres
Cargo volume – 428 litres

2019 Nissan LEAF S

Sticker price - $36,798
Fuel consumption – 2.1 eLitres per 100 km
Battery capacity – 40 kWh
Range – 242 km
Charging time – 8 hours (240-volt)
Engine size – 110 kilowatts
Horsepower – 147
Torque – 236 pound-feet
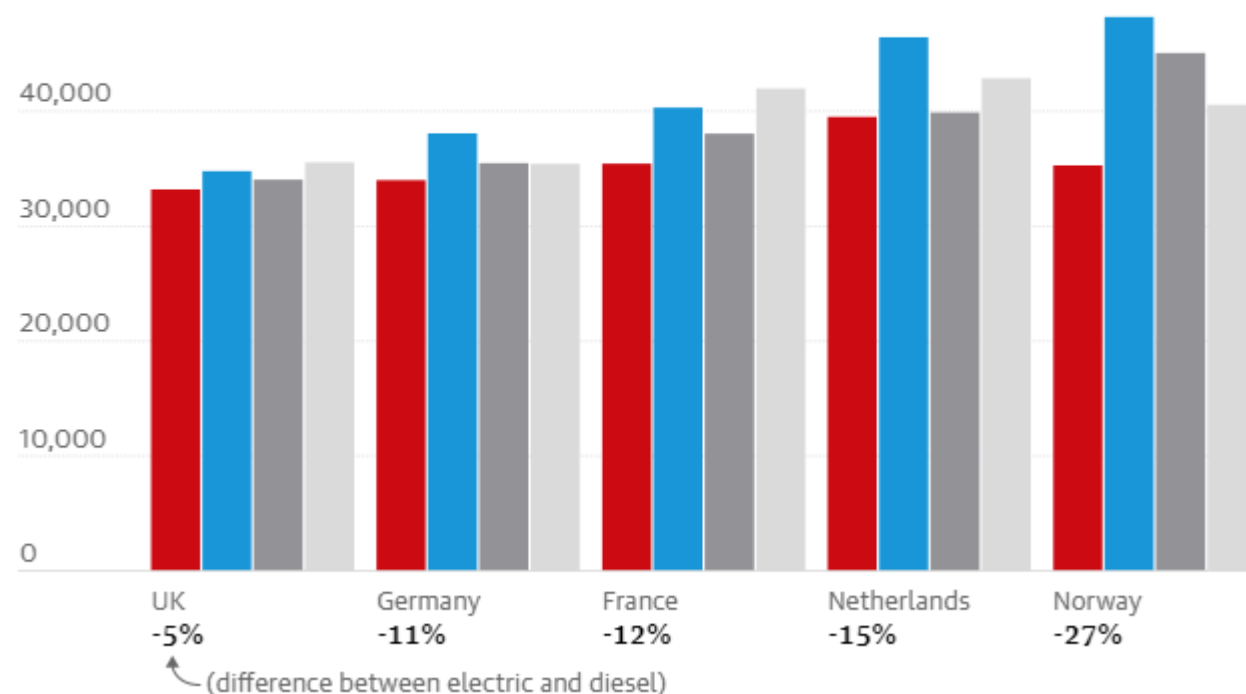Passenger volume – 2,616 litres
Cargo volume – 668 litres

✔ BETTER VALUE

TOTAL COST OF OWNERSHIP
$66,020

TOTAL COST OF OWNERSHIP
$63,815

Electric cars are already cheaper to own and run

Four year costs for VW Golf including purchase, fuel and all taxes (Euros)

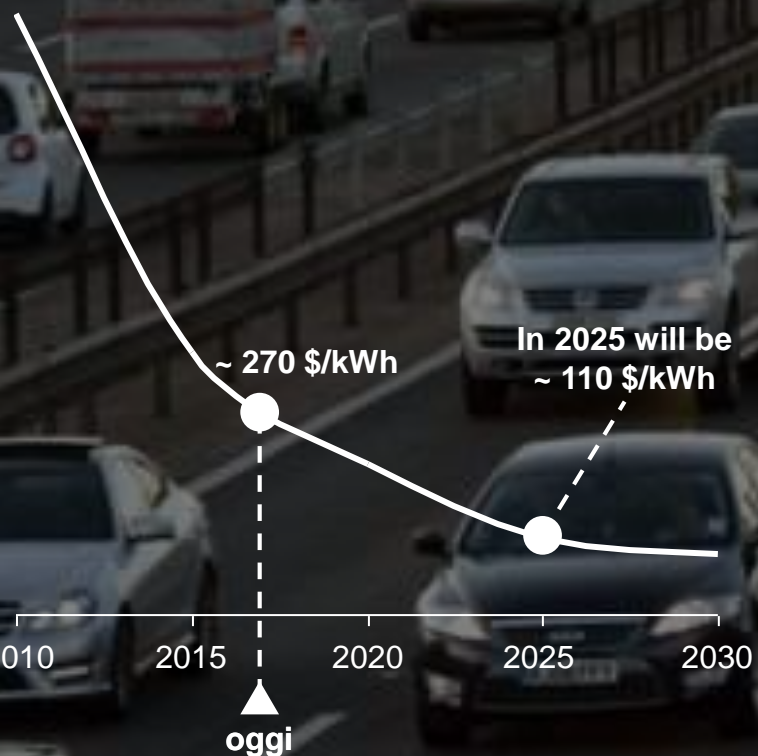● Pure electric ● Diesel ● Petrol ● Plug-in hybrid

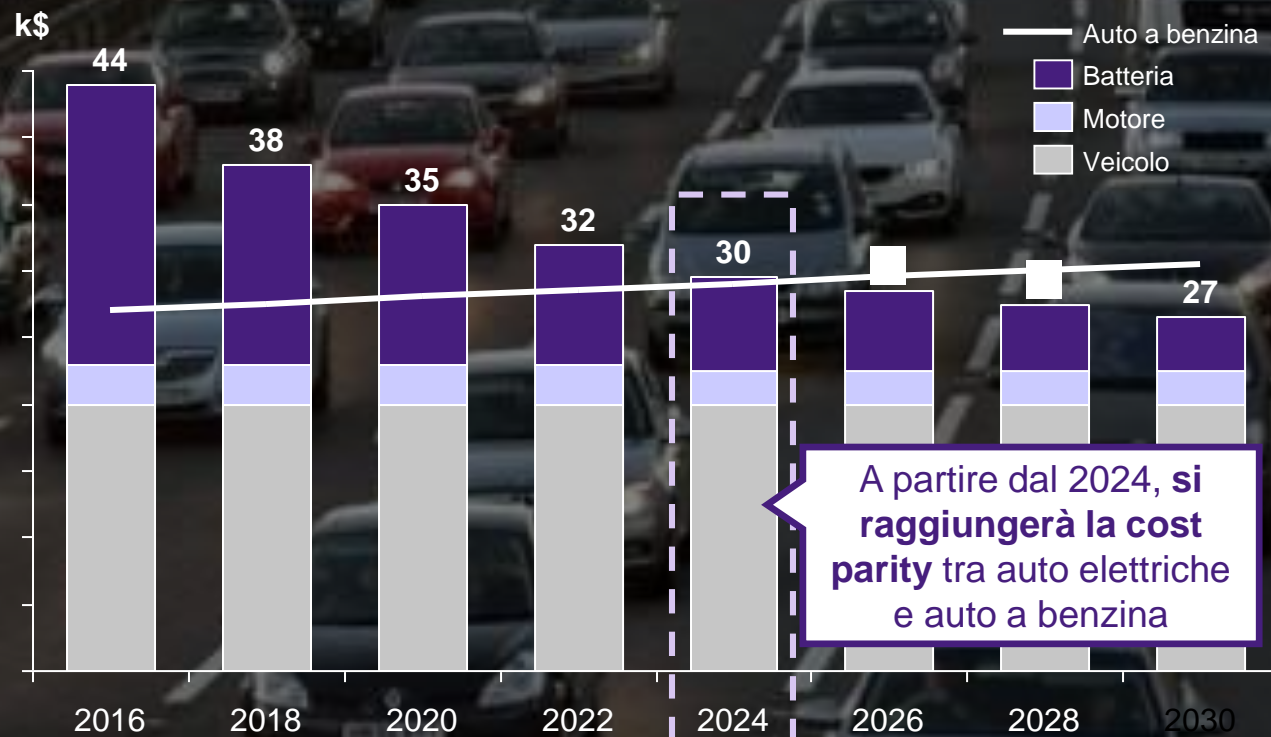| | UK -5% | Germany -11% | France -12% | Netherlands -15% | Norway -27% |

⤹ (difference between electric and diesel)

Guardian graphic. Source: ICCT

Battery costs reduction will contribute in decreasing the car prices

Lithium battery price - $/kWh

~ 270 $/kWh
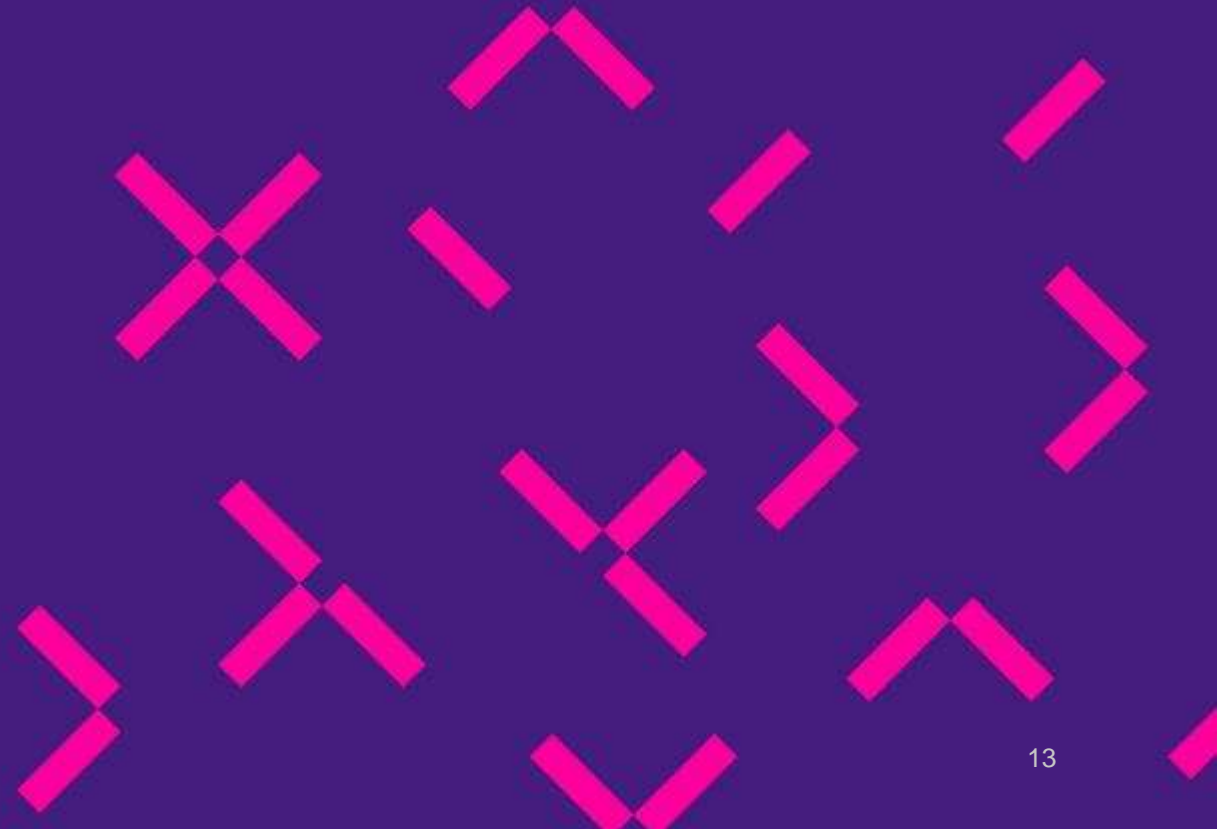
In 2025 will be ~ 110 $/kWh

2010   2015   2020   2025   2030

oggi

Evolution through years of EV cost vs internal combustion engine cars – k$

k$

— Auto a benzina
■ Batteria
■ Motore
■ Veicolo

	2016	2018	2020	2022	2024			2030
	44	38	35	32	30			27

2016   2018   2020   2022   2024   2026   2028   2030

A partire dal 2024, **si raggiungerà la cost parity** tra auto elettriche e auto a benzina

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Focus on fleets

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Corporate e-Mobility
Electric vehicles in companies fleets

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Fleet Magazine has conducted a research on a base of 60 different companies, reaching a total sum of 50.000 corporate vechicles. Here next there are some highlights:

▶ **Growth**

Compared with 2016, the percentage of EVs in companies fleets moved from 0.5% to **1.6%**

▶ **Usage**

Compared with 2016, the percentage of EVs utilized only for trips with a lower range on 100km has diminished from 45% to **35%**

▶ **Type of acquisition**

The **98%** of EVs have been acquired through long term rent

I VANTAGGI DEGLI EV NELLA PERCEZIONE DELLE AZIENDE

Risparmio emissioni — 88%
Ingresso ZTL e altre agevolazioni nella circolazione — 82%
Responsabilità sociale d'impresa — 68%
Risparmio carburante — 67%
Risparmio costi di manutenzione — 47%
Esenzione dal bollo — 45%

e-Mobility revolutions: main elements

Main actors and issues

1 **EV drivers**
- Face the 4 myths about e-Mobility:
    - Range Anxiety
    - Charging points diffusion
    - Number of EV models available
    - Price of cars

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e-Mobility revolutions: main elements

Main actors and issues

2

Fleet Manager

- Charging points management
    - **How many** are needed?
    - Evaluate the **real use**
    - How to manage the **Power**
    - Which **type** of charging points acquire?

- Evaluate the e-Mobility revolution business case
    - Choose the right **vehicles**
    - choose right **software tools** to support he activities

e-Mobility revolutions: main elements
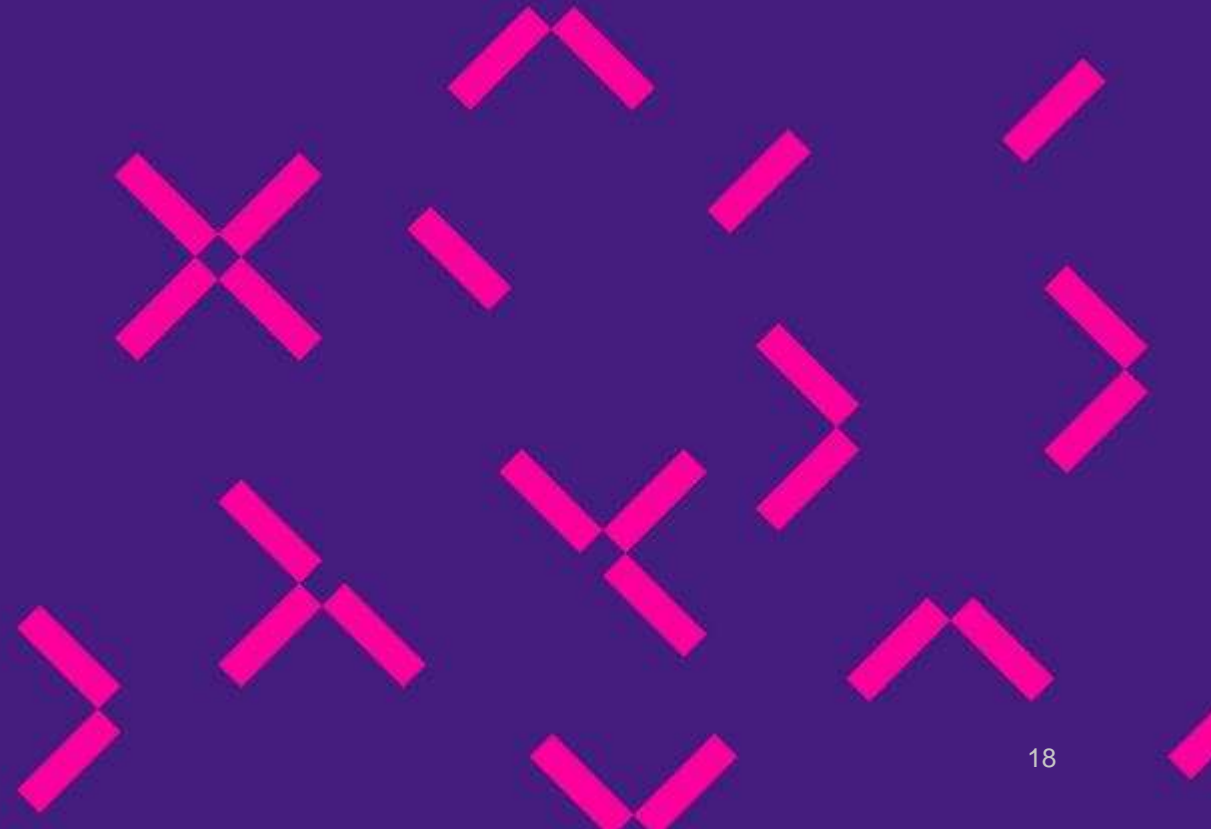
Main actors and issues

3

Company culture

- Manage the cultural change

- **Teach to driver** how to:
  - Use the charging stations
  - Have the best performaces with the new vehicles

- **Top-down decisions**
  - The management needs to understand the cost savings and the environmental value of choose to shift to EV fleets

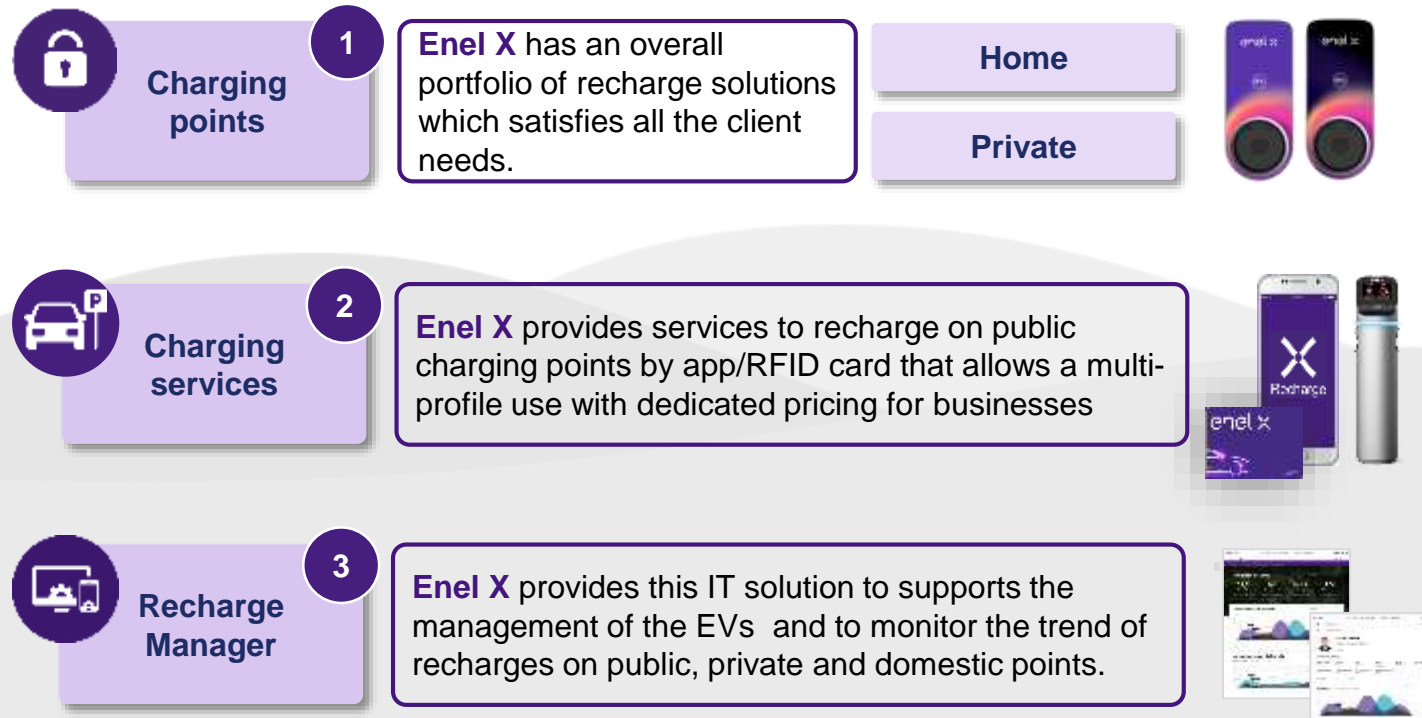enel x

Our solutions for B2B

e-Mobility B2B
Our approach

We start with an *initial consulting approach* suggesting how many EV and charging stations can be introduced based on the ordinary activities.

The commercial offer is based on three pillars:

1 Charging points

Enel X has an overall portfolio of recharge solutions which satisfies all the client needs.

Home

Private

2 Charging services

Enel X provides services to recharge on public charging points by app/RFID card that allows a multi-profile use with dedicated pricing for businesses

3 Recharge Manager

Enel X provides this IT solution to supports the management of the EVs and to monitor the trend of recharges on public, private and domestic points.

Fleet Electrification Management

▶ What

Fleet Electrification Management is a product crafted to create a business case with the goal to identify the modality, timing and transformation costs of shifting to a Evs fleets.

▶ Who

Companies owning a corporate fleet and willing to schift to Evs fleets

▶ How

Looking to the data about movements of the corporate vechicles, we make a proposal regarding:
- Number of charging points to acquire
- Number of vechicles that can be shift to electric
- Charging services

FEM 5 phases

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5. JOIN ENEL X

Customers shift to Evs fleets, charging on public and private Enel X charging points, using a wide range of dedicated services

3. *REPORT*

Enel X shares a full report showing the benefits of shifting to EVs fleets based on the customer data
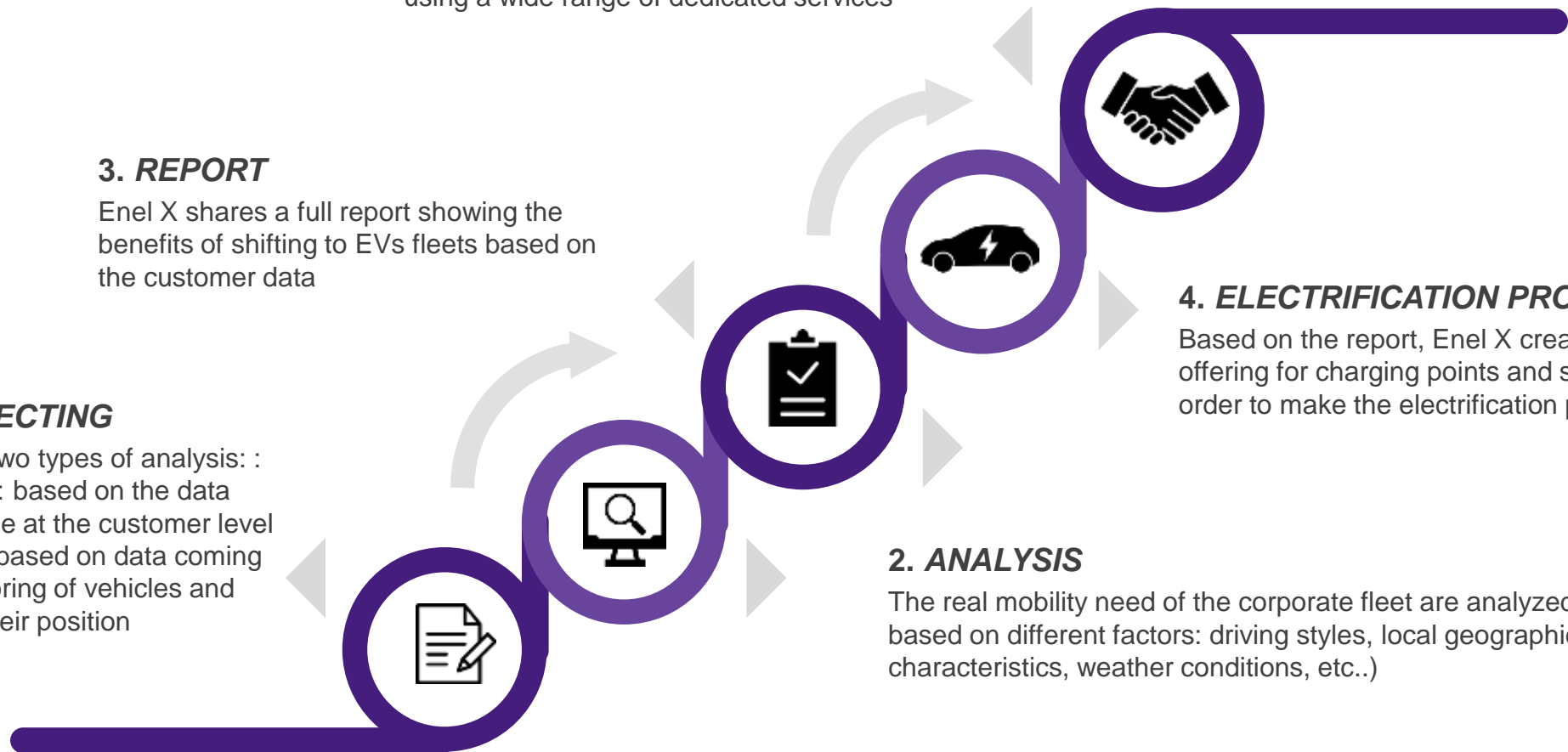
4. *ELECTRIFICATION PROPOSAL*

Based on the report, Enel X creates the offering for charging points and services in order to make the electrification project real.

1. *DATA COLLECTING*

Enel X proposes two types of analysis: :
- **Light Analysis**: based on the data already available at the customer level
- **Full Analysis**: based on data coming from the monitoring of vehicles and geolocalizing their position

2. *ANALYSIS*

The real mobility need of the corporate fleet are analyzed based on different factors: driving styles, local geographical characteristics, weather conditions, etc..)

e-Mobility B2B
Our charging stations

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@WORK

@HOME

JUICEBOX
AC up to 22 kW

JUICEBOXC
AC up to 22 kW

JUICESTATION
AC up to 22 kW

**INTELLIGENT CHARGING
SOLUTIONS**

JUICEPUMP
AC up to 43 kW
DC up to 50 kW

JUICEPOLE
AC up to 22 kW

JUICELAMP
AC up to 22 kW

ON THE ROAD

**All Enel X charging
stations are accessible
via JuicePass app**

JuicePole
Premium technology for public charging

22 kW AC
22 kW AC

CHARGE 2
VEHICLES AT
THE SAME TIME

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ICONIC DESIGN

Recharge Manager
Dashboard for Fleets and Facility Management

Recharge Manager is a **platform** tailored to support users in managing charging points, charging sessions and electric vehicles fleets.

It allows to monitor the use of public, private, domestic charging trends even at the level of a single final users, which can be employees or customers.

- **General indicators** of real time data about the fleets
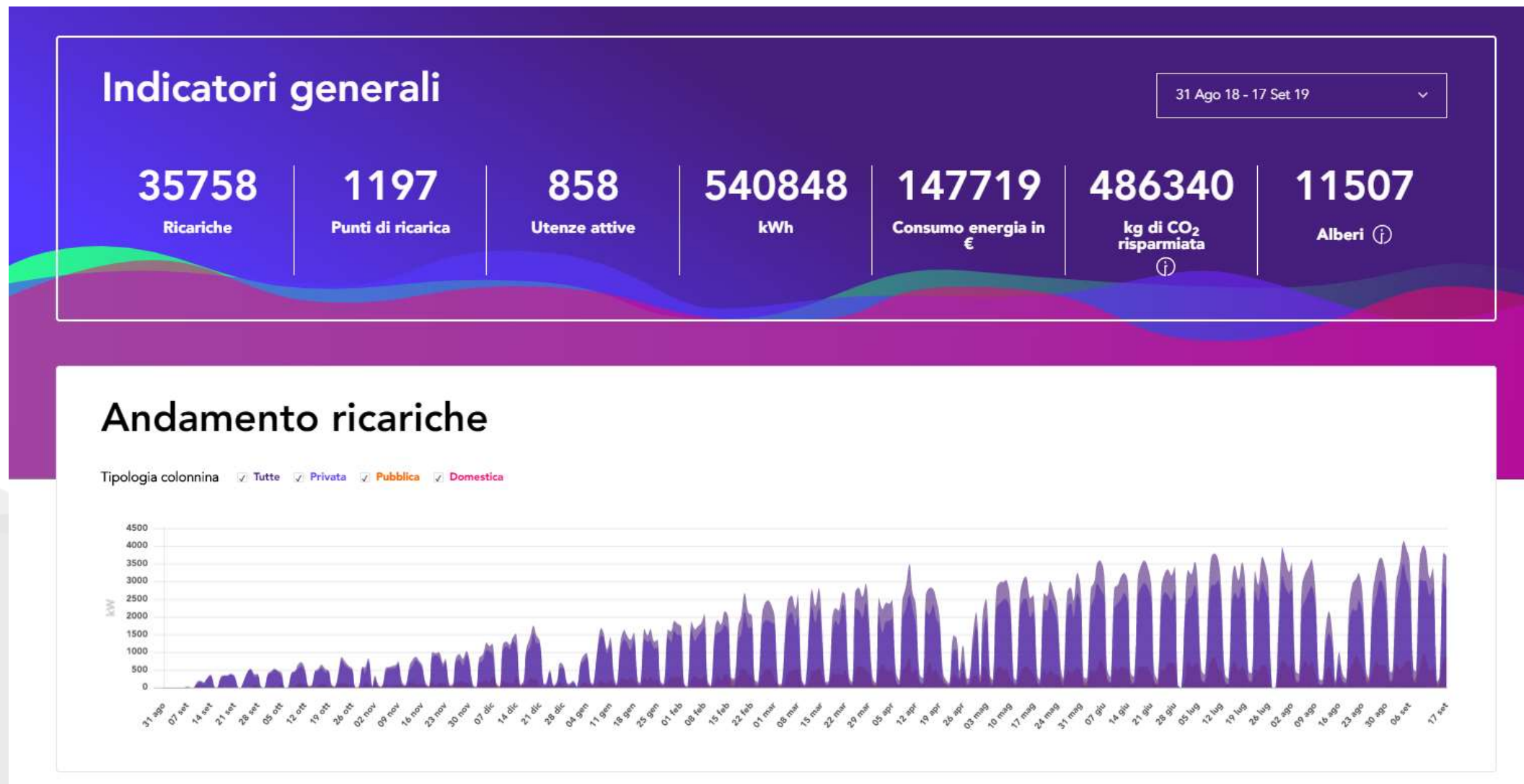
- Public and private **charging points map**

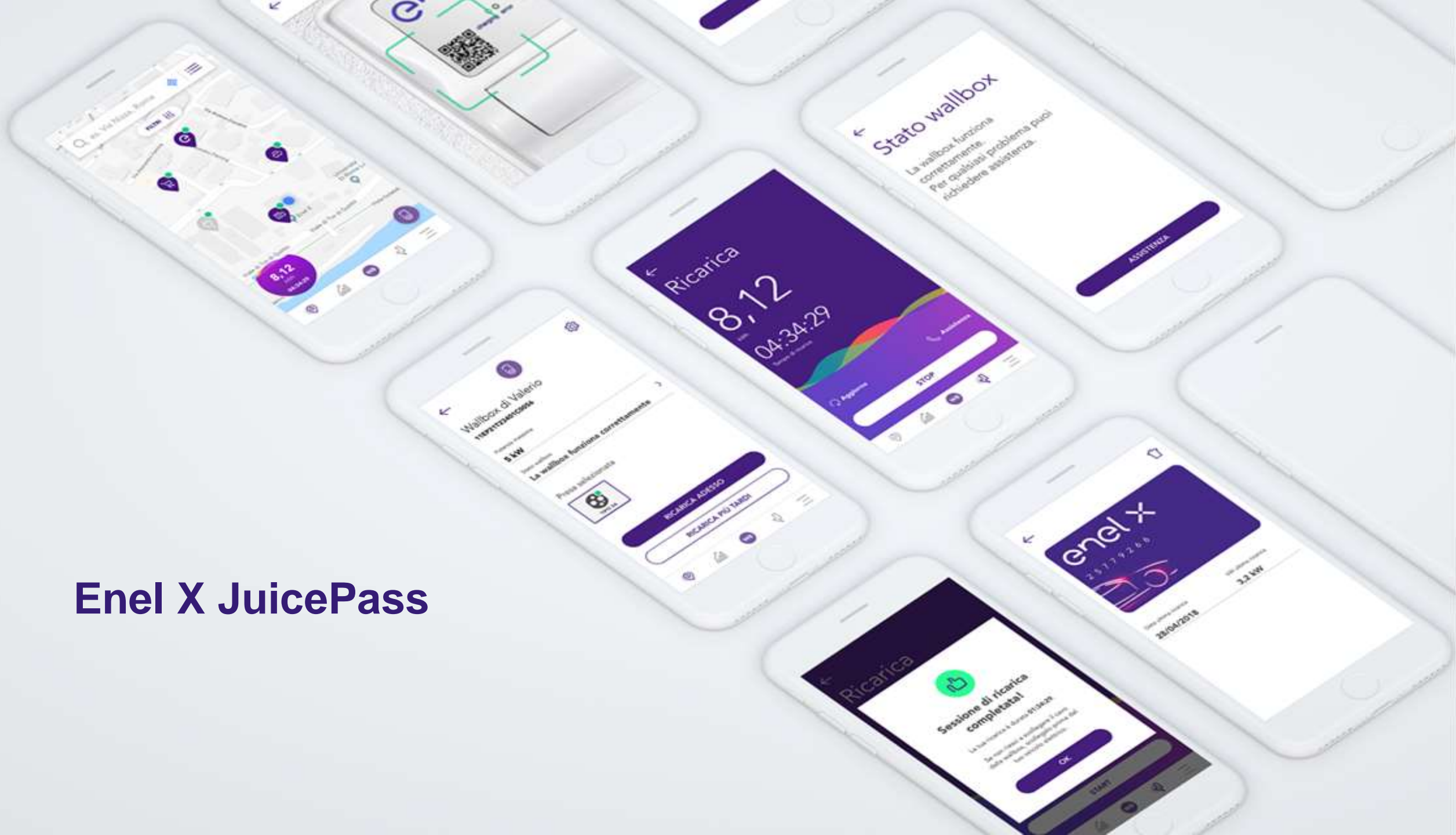- **Acquire final users access** directly from the dashboard

Recharge Manager

Example

Enel X JuicePass

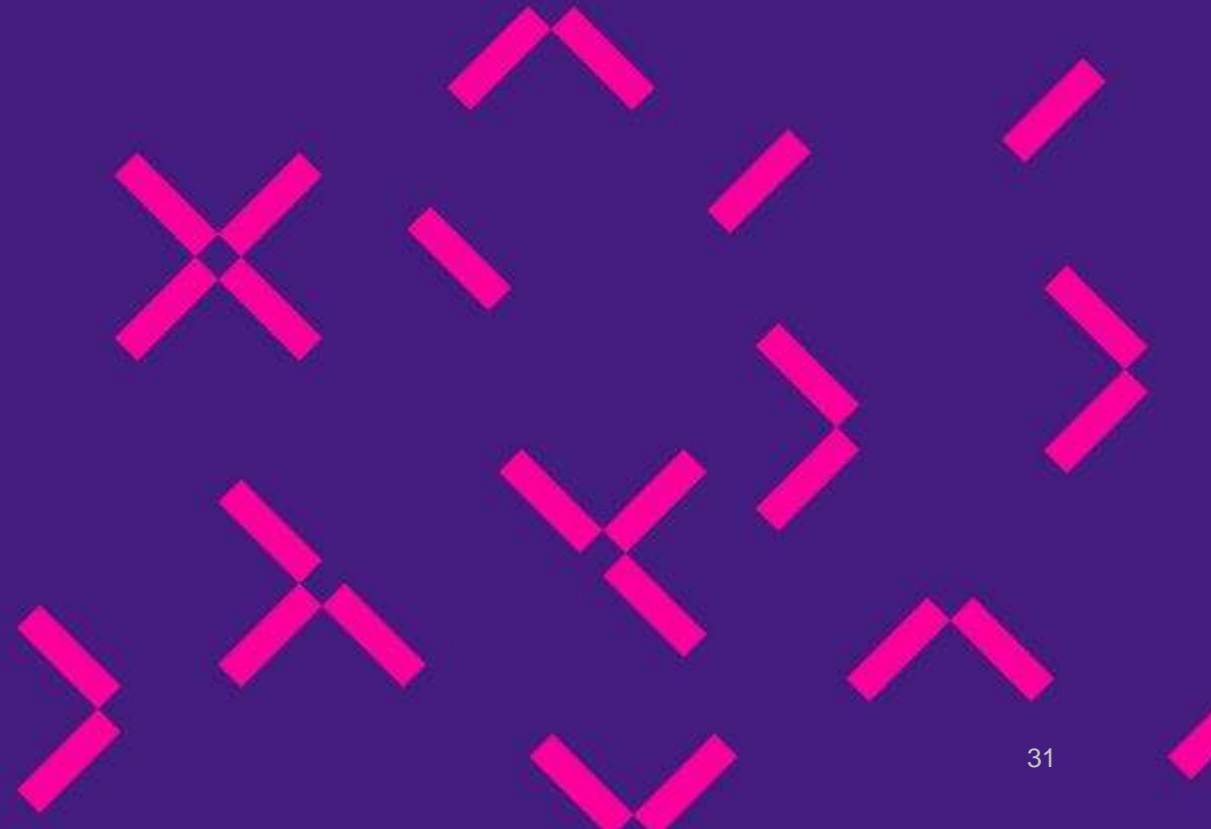# Enel X JuicePass

Main functionalities and network

Corporate profile

- Allows the access to the **corporate network** of charging points

- It helps to track, through Recharge Manager, the driver **energy consumption** on private, public and domestic networks

- **Automatic billing** to the company in case of public charging

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L'esperienza Enel

Enel operational fleet

2018-2019 plan: n.1400 EVs registered at the end of 2019

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2018 Phase

Result: 753 charging points installed

> 1400 EV IN THE FLEET BY END OF 2019

2019 Phase

Goal: Installation of more 706 charging points, end of work december 2019

Next steps

- **One charging point for each vehicles** → having at least 4 in every Enel premises

- **Continuos monitoring of upcoming models** to reach the full e-Mobility transformation of the Enel fleets

Enel car sharing

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1° fase di sperimentazione

Ottobre 2018 – Agosto 2019

Users: 344
Active users*: 160 (47%)
*the ones that have performed at least one ride

ARVAL

Data coming
from Arval

vechicles: 34

rides: 1.361
Average monthly ride: 121
Average km / rides: 51 km

Locations: 9 (4 città)

Roma, Viale Regina Margherita
Roma, Viale Egeo
Roma, Viale Tor di Quinto
Roma, Via Flaminia
Roma, Via Yser
Pisa, Via Pisano
Catania, 3SUN
Catania, Passo Martino
Torino, Corso Regina Margherita

Next steps

Start testing other 200 to increase the number of use cases that can be covered by Evs fleets:
➢ Enel X
➢ Servizi Italia
➢ Enel Produzione*
    ➢ Brindisi
    ➢ La Casella

ℹ️

APP for **Corporate *Car pooling*** – People Care Initiative
Pilot project: Oct.- Dec. 2019
Gifts:
➢ Evs for a weeK or a weekend
➢ Free parking for a week

Assigned cars

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NEW

- *Car list: EVs and hybrid plug-in (possibility to choose thermal vehicles only in case of no available substitutes)*
- *EVS are inserted in all the ADAS systems available, with indication of Euroncap certification*
- *Quality increase of the service with i.e. roadside assistance*
- *Available in 5 countries: Brasile, Cile, Perù, Colombia, Romania*

Green incentives

- *From 1 Luglio 2019, the contribution for assigned EV has been deleted*
- *Free installation for the domestic wall box*
- * for dirigenti*
- *Reserved parking lot with an available charging point*

Next step
Under discussion the possibility to extend to Manager and sales teams

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Thanks!