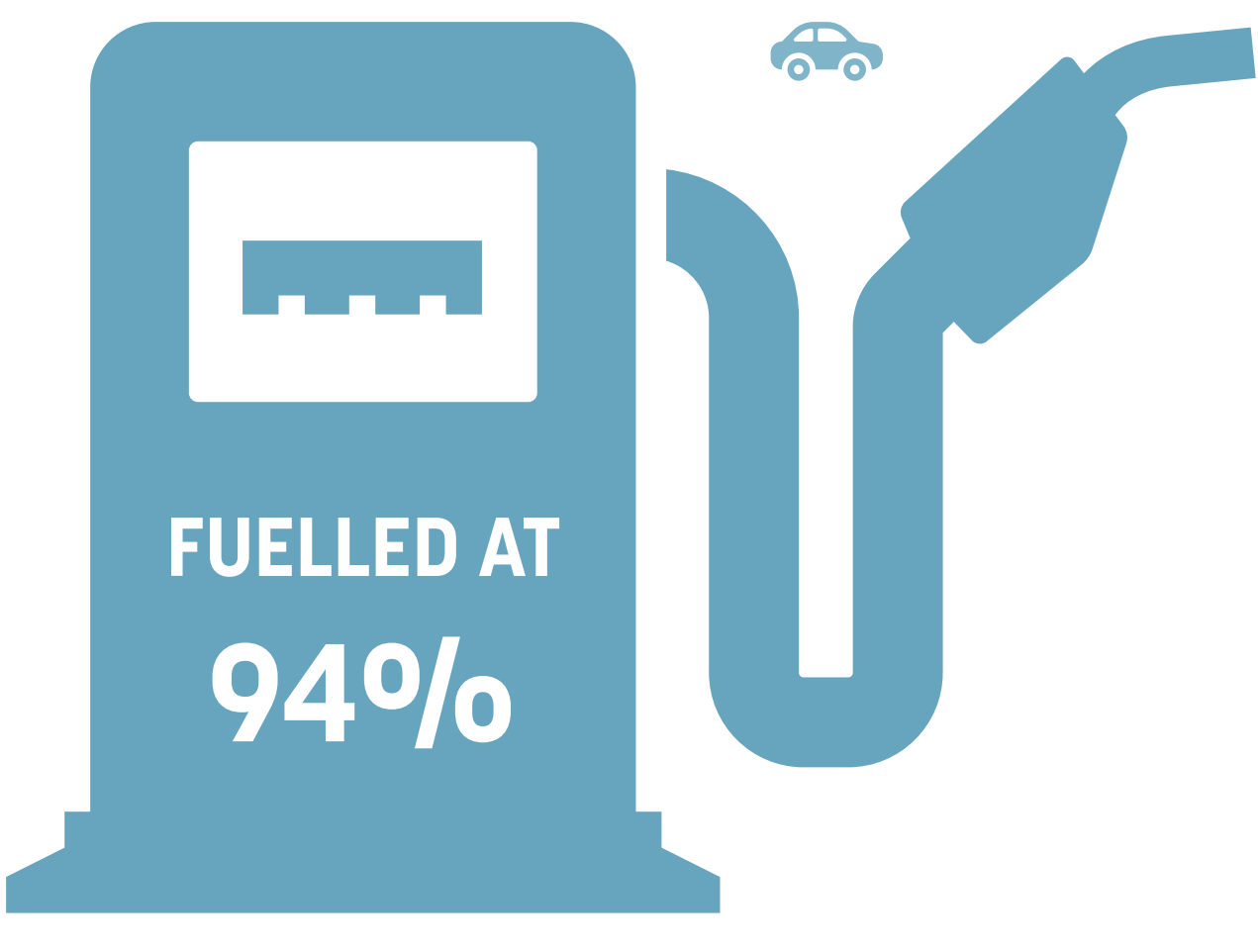
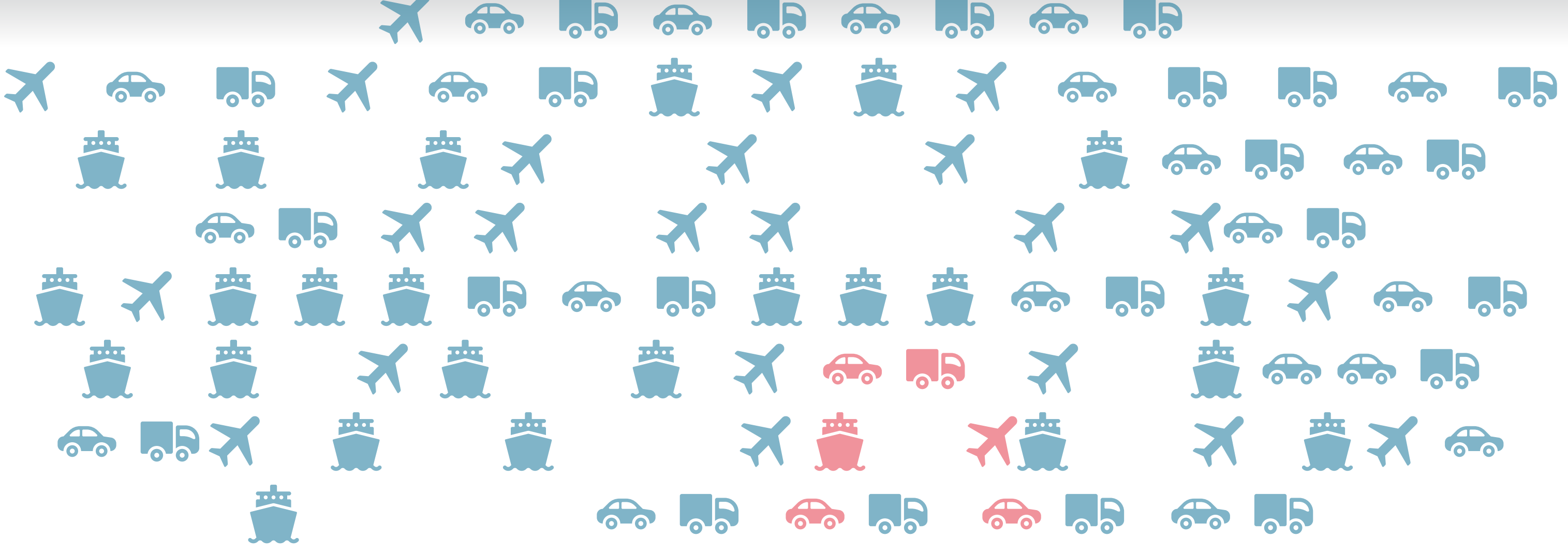


# PETROLEUM SECTOR CHALLENGES

94% of the transport sector in Europe is fueled by oil refined liquid fuels.

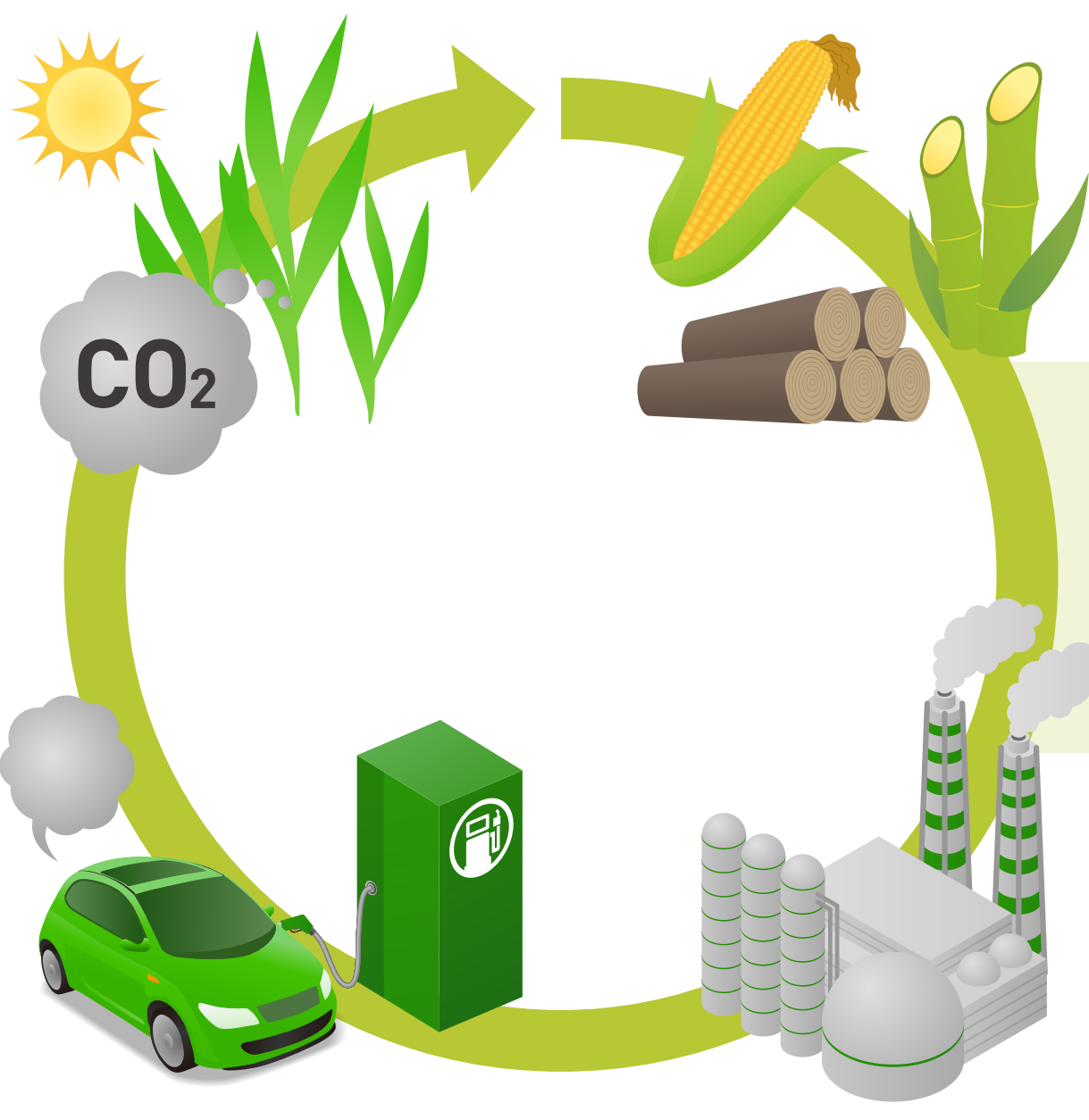


Refined petroleum fuels are - and will remain for many years - the prominent energy source.

- superior energy density
- easier transportability/storability
- established infrastructure
- comparatively lower cost

## CHALLENGES FOR THE EUROPEAN REFINING SECTOR

### REDUCTION OF TRANSPORT GREENHOUSE GAS EMISSIONS



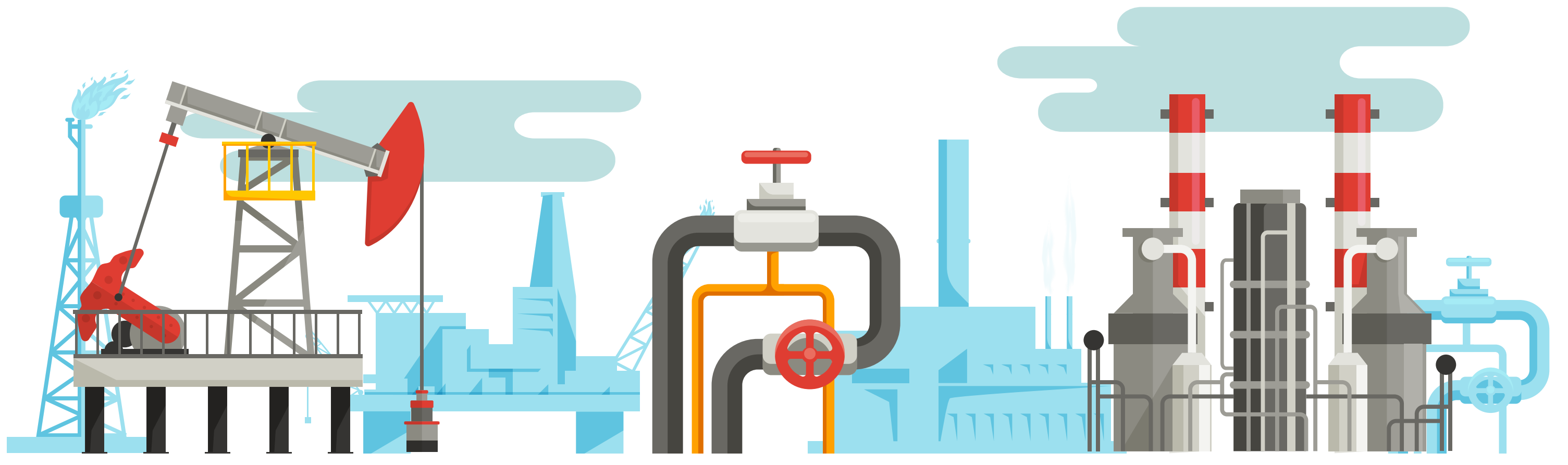
Refining sector R&D investment in new high-performance fuel and biofuels.

### IMPROVING URBAN AIR QUALITY



## REFINING SECTOR MEETING THE CHALLENGES

### REFINERY MODERNISATION - INVESTING IN GREENER FUELS & DEVELOPING BIOFUEL LINES



Petrotel LUKOIL will invest in their refinery in Romania over USD 30 million by 2020, improving its environmental footprint. Investment of nearly USD 26 million will lead to zero sulfur oxides emissions.

### REFINING SECTOR CONTRIBUTING TO EU COMMITMENT TO SHIFT TO MODERN DIESEL AND PETROL FUELS - EURO 6 / EURO 6D



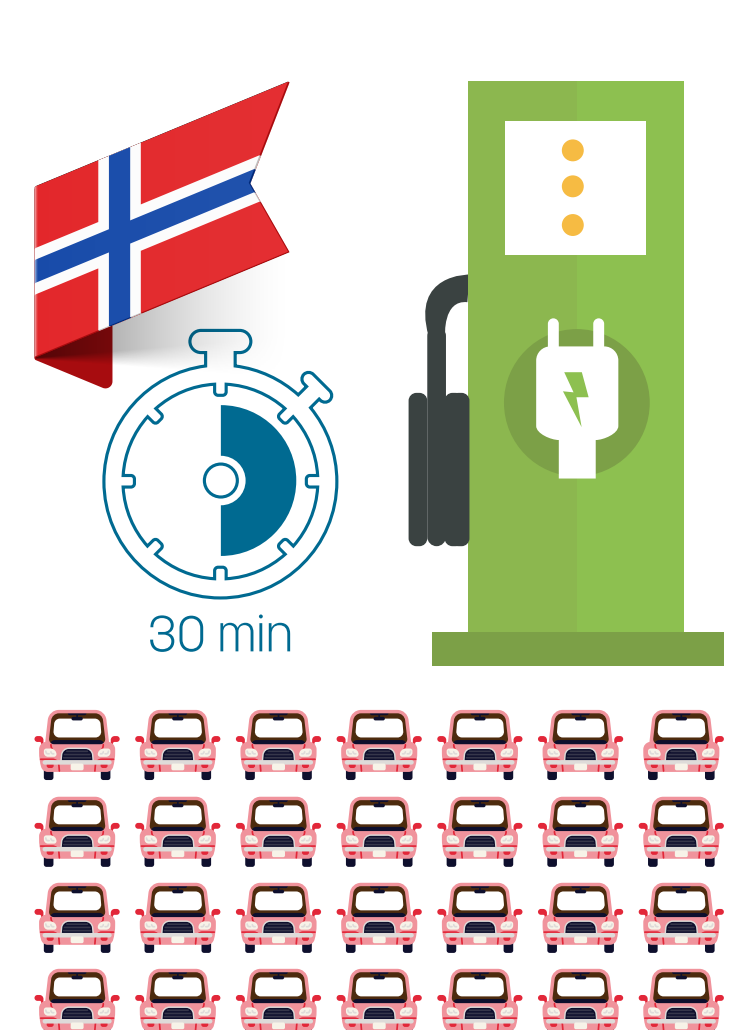
## EUROPEAN CITIES IMPOSING MEASURES TO ENCOURAGE SHIFT TO CLEANER FUELS



London - From April 2019, an ultra-low emission zone will double the 'congestion charge' payable to drive into the centre for any but the very newest, Euro 6, diesel cars



Paris - 4,000 car-sharing vehicles provide 16,000 rentals per day, with over 100,000 annual subscribers to carpool services



Norway - world's largest fast-charging station, charging up to 28 vehicles every 30 minutes