The Brussels low emission zone
ICCT workshop on remote sensing, 7-8 June 2018, London
Outline

- Brussels and its fleet
- Air quality in Brussels
- The Brussels’ LEZ: how does it work?
- The Brussels’ LEZ: what will it deliver?
- What’s coming up
- A few challenges
Brussels & its fleet

• 1,2 million inhabitants, 161 km\(^2\)
• Around 600 000 vehicles registered in Brussels
  - 80% passenger cars
  - 12% LDVs
  - 6% motorcycles
  - <1% buses & coaches
• Among 500 000 cars, around 37% company cars
• 57% diesel cars, 40% petrol cars (diesel decreases since 2015), alternatives 2%
• Number of registered cars not necessary representative of what circulates in the region
Air quality: evolution of PM$_{10}$ and PM$_{2.5}$ concentrations since 1995

But still above WHO recommended level!
Air quality: evolution of annual NO$_2$ concentrations since 2010

The EU annual limit value (≤ 40 µg/m$^3$) is still breached

! Problem at stations close to traffic!
Background: sources of NO\textsubscript{x} and PM\textsubscript{10} emissions in the Brussels region

**PM\textsubscript{10} emission sources**

- **PM10 en 2016**
  - **Secteur**
    - Transport routier: 35%
    - Résidentiel (combustion): 13%
    - Industrie (process) et utilisations de produits (hors Gaz-F): 11%
    - Tertiaire (combustion): 11%
    - Gestion des déchets (hors valorisation énergétique): 9%
    - Autres modes de transport (ferroviaire, fluvial, offroad, distribution gaz): 9%
    - Production d’énergie (électricité, cogénération, cokerie): 7%
    - Industrie (combustion): 1%

**NOx emission sources**

- **NOx en 2016**
  - **Secteur**
    - Transport routier: 69%
    - Résidentiel (combustion): 13%
    - Tertiaire (combustion): 9%
    - Production d’énergie (électricité, cogénération, cokerie): 4%
    - Industrie (combustion): 3%
    - Autres modes de transport (ferroviaire, fluvial, offroad, distribution gaz): 2%
    - Gestion des déchets (hors valorisation énergétique): 1%

**Diesel cars emit 3 to 20 times more NOx than petrol cars!**

Source: Bruxelles Environnement (2018), emissions inventory for year 2016
The Brussels’ LEZ
How does it work?
Success of a LEZ depends on a number of parameters:

- Geographical coverage
- Timing
- Environmental emission standards
- Vehicles concerned
- Dérogations for certain vehicle concerned
- Mode of control: manual, video or both
- Support for alternatives
- Communication

Air quality impact

Public acceptance + modal shift
Geographical coverage

Whole region except for the ring and a few roads to access 3 transit parkings (Céria, Stalle, Kraaniem)
## Acces criteria - diesel

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## Access criteria – petrol, LPG, CNG

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LEZ - concerned

- Passenger cars
- Buses and coaches
- Vans ≤ 3.5 ton

- Belgian and foreign vehicles

In case of non compliance
- High fine (350€ if car is not compliant)
- Daily pass (35€, max. 8 times per year)
- Use of alternatives
LEZ – exemptions / derogations

- Two-wheeled motor vehicles
- Heavy goods vehicles (>3.5 tonnes)
- Agricultural or forestry tractors (with tracks or wheels)
- Electric and hydrogen-powered vehicles
- "Old-timer" vehicles registered in Belgium
- Priority vehicles
- Vehicles used in emergency situations or rescue operations at the request of the fire brigade, the police, the army, the civil protection force or the highway authorities
- Vehicles of the army

- Vehicles adapted to carry people with disabilities and who own disability card
- Vehicles equipped with a wheelchair lift
- Motorhomes
- "Old-timer" vehicles that are more than 30 years old and that are registered abroad
- Vehicles that are more than 30 years old and for which the "old-timer" form of the vehicles is part of the business concept
- Vehicles specially adapted for markets, fairgrounds, parades, ...
- Vehicles specially equipped for maintenance and control of public interest infrastructures and installations.
- In all other cases, daily pass can be purchased for 35 euro (max 8 per year)
- Administrative derogation also possible

Not concerned = automatic and permanent derogation

Non-automatic derogation (must be requested + accepted) limited to 3 years
Enforcement – Belgian vehicles

• Enforcement via automatic number plate recognition (ANPR)
  One network of video protection for Brussels

• ANPR camera have two purposes:
  ✓ Police (e.g. speed limit control)
  ✓ LEZ

• +/- 200 caméras, half of which are already installed

• Data linked with national database for vehicles (DIV) combined with LEZ databases for registrations, derogations, daily passes, fines

Foreign vehicles = not data! Mandatory registration via LEZ website.
The Brussels’ LEZ

What will it deliver?
Number of vehicles concerned

- 2,344 vehicles (0.5% of the fleet)
- 18,958 vehicles (4.1% of the fleet)
- 65,546 vehicles (14% of the fleet)
- 121,634 vehicles (25.4% of the fleet)
- 160,781 vehicles (32.7% of the fleet)
LEZ - projected emission reduction

Emission from all road transport (also LEZ exclusions e.g. HDV.)
Baseyear 2015

- Biggest impact on NOx & BC emissions
- Baseline scenario (without LEZ) leads to already 22 to 63% emission reductions in 2025 (compared to 2015)
- LEZ speeds up « natural » renewal of the fleet (up to 50% additional gains)
- Expected compliance with NO2 limit value between 2020 and 2025
- New WLTP + RDE test cycles play a key role for effective NOx emission reductions
What’s coming up

• 1st October 2018: first fines
• 1st January 2019: stricter criteria
• July 2019: first data from cameras
• February 2019: publication of first evaluation report
• Diesel ban by 2030, petrol ban to follow
• Upcoming stakeholder consultation on how to implement the ban
A few challenges in relation to existing (and future) LEZ

- Public acceptance, social dimension
- Enforcement of foreign vehicles
- Lack of information about motorcycles
- Euro norm vs. real emissions
- Controlling frauds (DPF removal, urea fraud)
- Future LEZ: diesel/petrol/CNG bans > which timing, derogations, etc.
- Beyond fuel/technology bans: modal shift needed!
Questions?

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