The low emission Bus Strategy City of Warsaw:

Vision and achievements
A European Strategy for Low-Emission Mobility

Assumption: Urban transport is responsible for 23% of EU’s greenhouse gas emissions

- **Link** the transport and energy systems
- **Optimization** of the transport system by Digital technologies
- **Investment** - supporting higher efficiency of the transport system, low- and zero-emissions vehicles.

Goal: Improved efficiency of the transport system and shift to low-emission alternative energy
Reduce congestion and pollution in cities.
Reason's overview

- Pollution
- MOBILITY
- Multimodality
- DECARBONIZATION
- PASSENGER Expectations
- Green environment
- CONGESTION
- BIG DATA MONETIZATION
- MZA SHARE MARKET

PAWEL JANKOWSKI  Member of Executive Board  MZA Sp. z o.o
Investments in public transport are one of the three main topics, which will help to reduced the air pollution in the city.

Public Service Contract - keeping fares affordable for PTA vs LEV investment economy - means loss / less for PTO future OPEX costs! or risk of under - compensation.

Public Transport Operator: ZEV ‘S economy or CNG alternative? (100 in 2019/2020)

Decarbonize the economy:
- End of the fossil fuel subsidies (oil prices vs EURO 6 diesel)
- Who shall pay for LEV investment? Political future decision
- ZEV industry needs cost savings

ZEV fleet – full electrification is not the ultimate goal of PTO, building charging infrastructure, back – end service, the absence of common charging infrastructure !!!!

Digitalization / Impact on cities and their residents / - Big Data, Pay&Go, MaaS, R- Link

LEV – 20% of Total Fleet in 2025
Existing - multimodal transportation system in Warsaw City

![Diagram showing transportation modes and their distribution.]

- **460 milion/year**
  - Miejskie Zakłady Autobusowe: 60%
  - Warszawskie Koleje Dojazdowe: 0.05%
  - Sydney Kolej Miejska: 7%
  - Kolbuszwoj: 2%
  - Pozostały operatorzy autobusów: 11%
  - Linie lokalne: 2%
  - Tramwaje Warszawskie: 23%
  - Metro Warszawskie: 16%
MZA – Municipal Bus Operator (PTO)

Public Service Contract 2018-2027

Employment total 4500

Operations – fleet comprised of 1360 buses

Passenger’s Volume – 460 million per year

Total revenue (2017) 210 M EUR

Total assets (2017) 211 M EUR

IRR (2017) 4.3%


Total investment expenditures 323 M EUR (2018–2027)

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City of Warsaw getting greener.

Multisectoral "Low-Carbon Economy Plan"
adopted by Warsaw City Council in 2015.

Purchase of 130 Zero Emission Buses as part of the greening activities carried out for several years by MZA.
...at the moment MZA operates on **71** Low Carbon Emission (LEV) Buses:

31 Electric Buses (ZEV) + 35 LNG + 5 liquefied natural gas-powered (Hybrid)

**MZA experiences of Low Carbon Emission Busses:**

| **CO2 Emission [g/km]** under KOBIZE standard during August 2015 and January 2016 |
|----------------|----------------|----------------|----------------|
| **ON**         | **ZEV**        | **CO2 reduction** |
| 1163.4         | 836.4          |                 |

**MONETIZATION under Ricardo or KOBIZE standard**

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<tr>
<th></th>
<th>NMHC</th>
<th>NOx</th>
<th>SOx</th>
<th>PM2.5</th>
<th>CO2</th>
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<td><strong>Operating Costs [pln /100 km] under CBA analysis</strong></td>
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**Experiences**

- **CO2 reduction**: 28%
- **Monetization**: 27% cut off
- **OPEX reduction**: 78% cut off

**BUT...... ZEV UNIT PRICE**

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Cohesion Fund under the program "Infrastructure and Environment" 2014-2020, action 6.1. as the development of low-carbon public transport in cities issue.

95.9 M EUR – total project cost, **41,35 M EUR grant funding**, 54,5 M EUR Own contribution

130 units of Low Emission Vehicles (LEV) in the fleet of the Warsaw Municipal Bus Company - MZA, with infrastructure

CEF TEN - T, Blending Call – „Building a charging infrastructure for electric vehicles in order to decarbonize public transport in Warsaw

6 M EUR – total project cost, **1,2 M EUR grant funding**, 2,6 M EUR Own contribution, 2,2 M EUR - investment loan

Depot „Redutowa“+ charging infrastructure

European Investment Bank Loan - 95,3 M EUR Grant Investment Funding

….prospective assumptions to extend greening activities
MZA modern depot „REDUTOWA“ for ZEV and LEV, supported by EU

- Approx. 42 000 sqm
- 450 drivers / period of 24 hour
- 260 busses (LEV)
Funding structure for low emission Bus Strategy

EIB loan

CEF programme

Cohesion Fund
"Infrastructure and Environment"
2014-2020

Compensation led by Warsaw City

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Thank You for attention.

Everyone communicates,
Few connect.....

JOHN. C. MAXWELL

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