

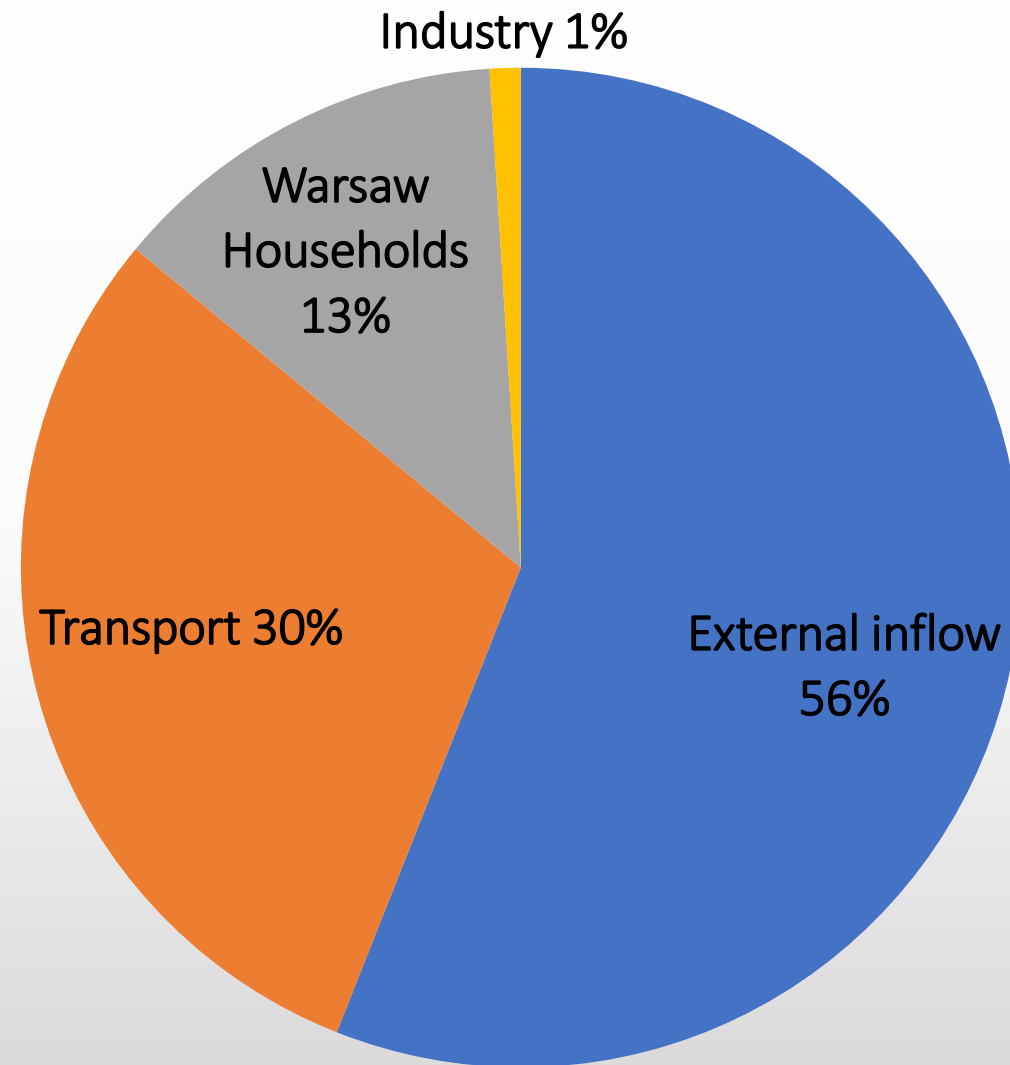


# Actions and challenges in improving air quality in Warsaw





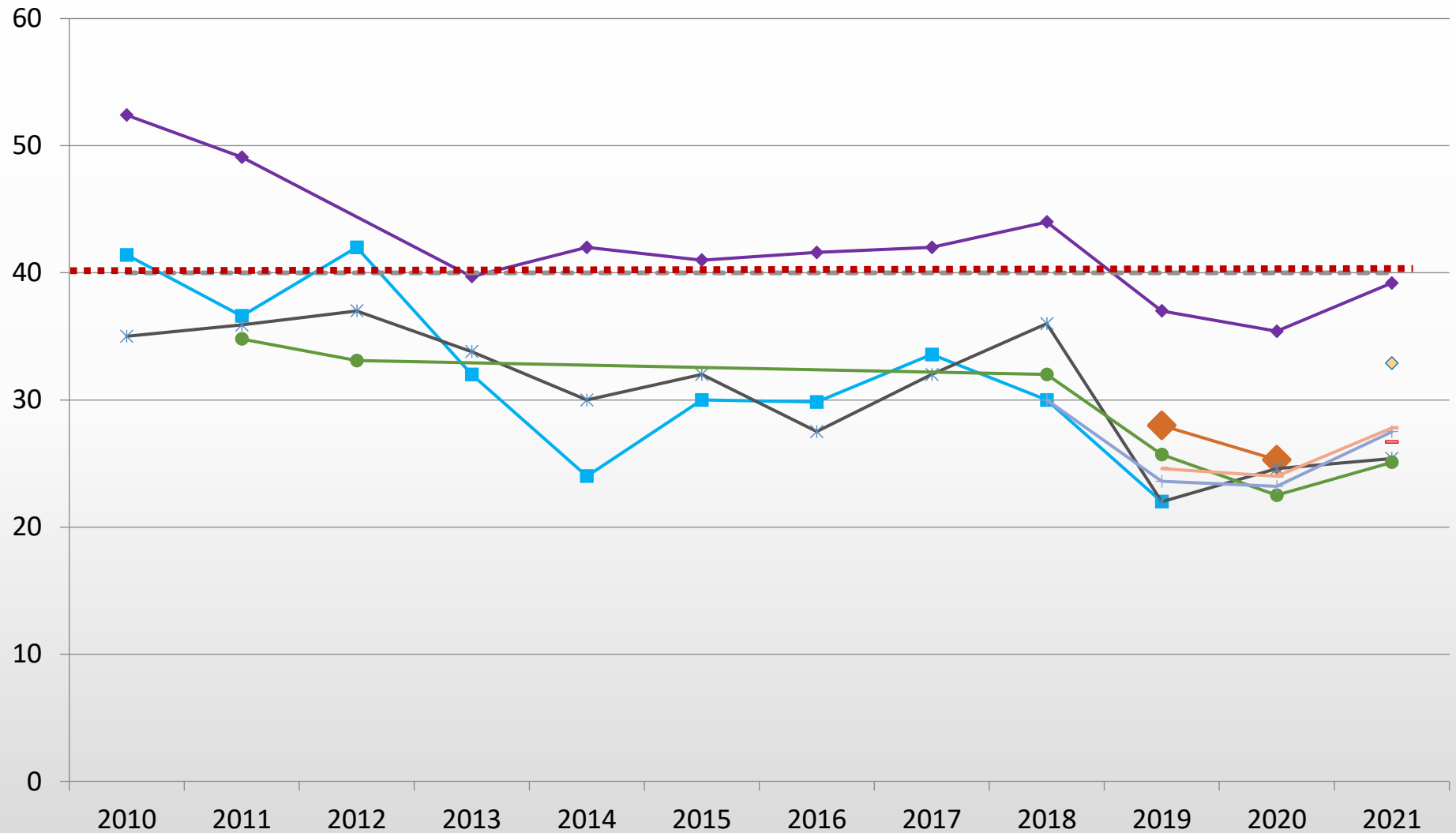
# Air quality in Warsaw – main sources of air pollution





# PM<sub>10</sub> Annual Mean

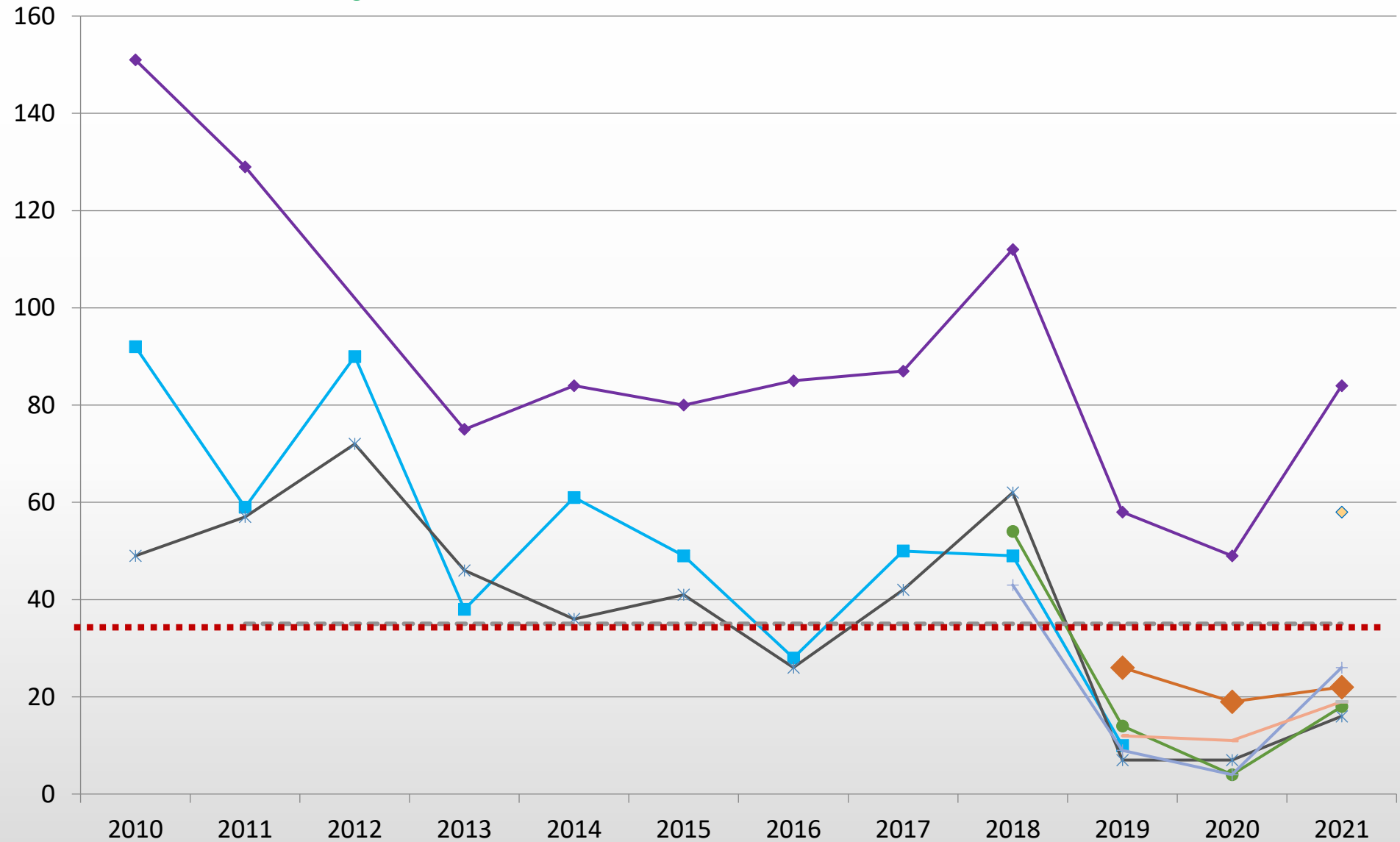
- WAWER ul. Bajkowa
- ŚRÓDMIEŚCIE/OCHOTA al. Niepodległości
- TARGÓWEK ul. Kondratowicza
- URSYNÓW ul. Wokalna
- BEMOWO ul. A. Krzywoń
- BIELANY ul. Tołstoja
- WŁOCHY ul. Chrościckiego
- PRAGA-POŁ. ul. Grochowska
- ŚRÓDMIEŚCIE al. Solidarności
- Limit value: 40 mg/m<sup>3</sup> / year





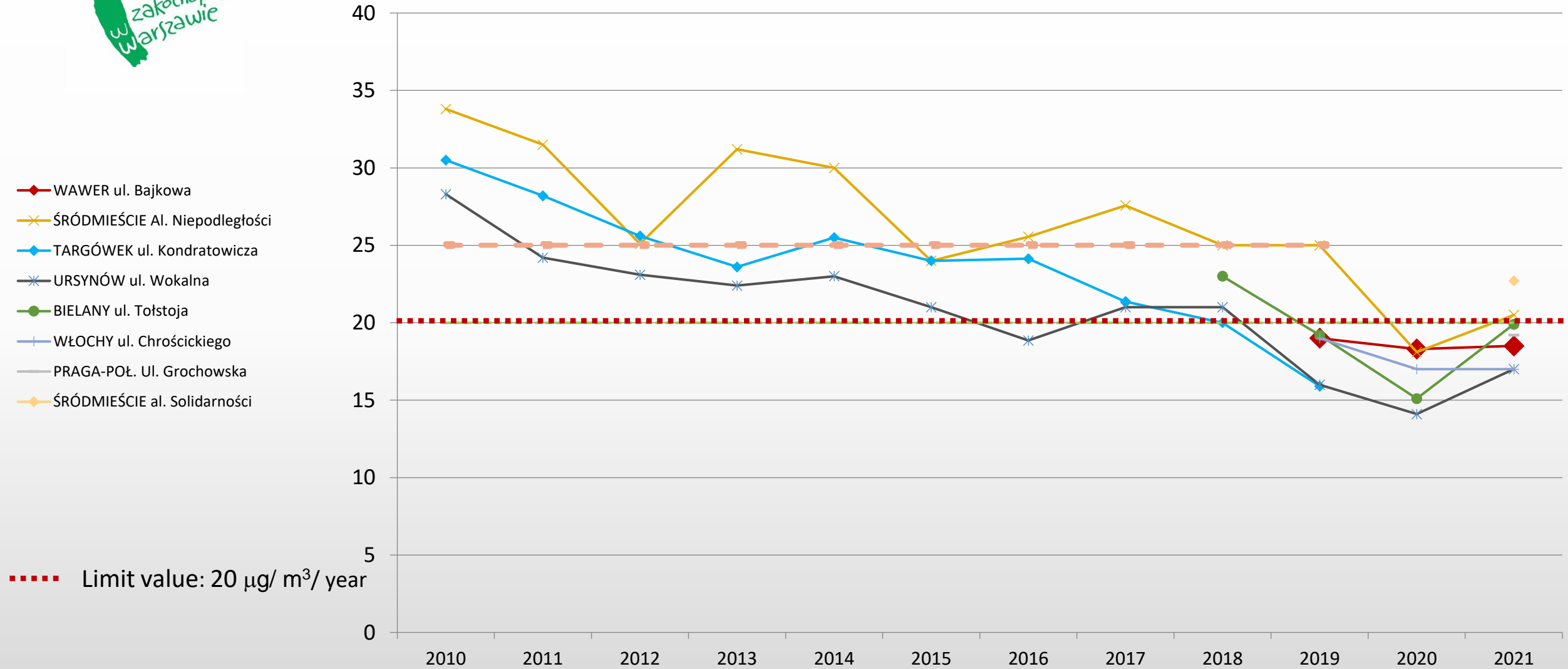
# PM<sub>10</sub> Exceedance days

- WAWER ul. Bajkowa
- ŚRÓDMIEŚCIE/OCHOTA al. Niepodległości
- TARGÓWEK ul. Kondratowicza
- URSYNÓW ul. Wokalna
- BEMOWO ul. A. Krzywoń
- BIELANY ul. Tołstoja
- WŁOCHY ul. Chrościckiego
- PRAGA-POŁ. ul. Grochowska
- ŚRÓDMIEŚCIE al. Solidarności
- Limit value: 35 days / year



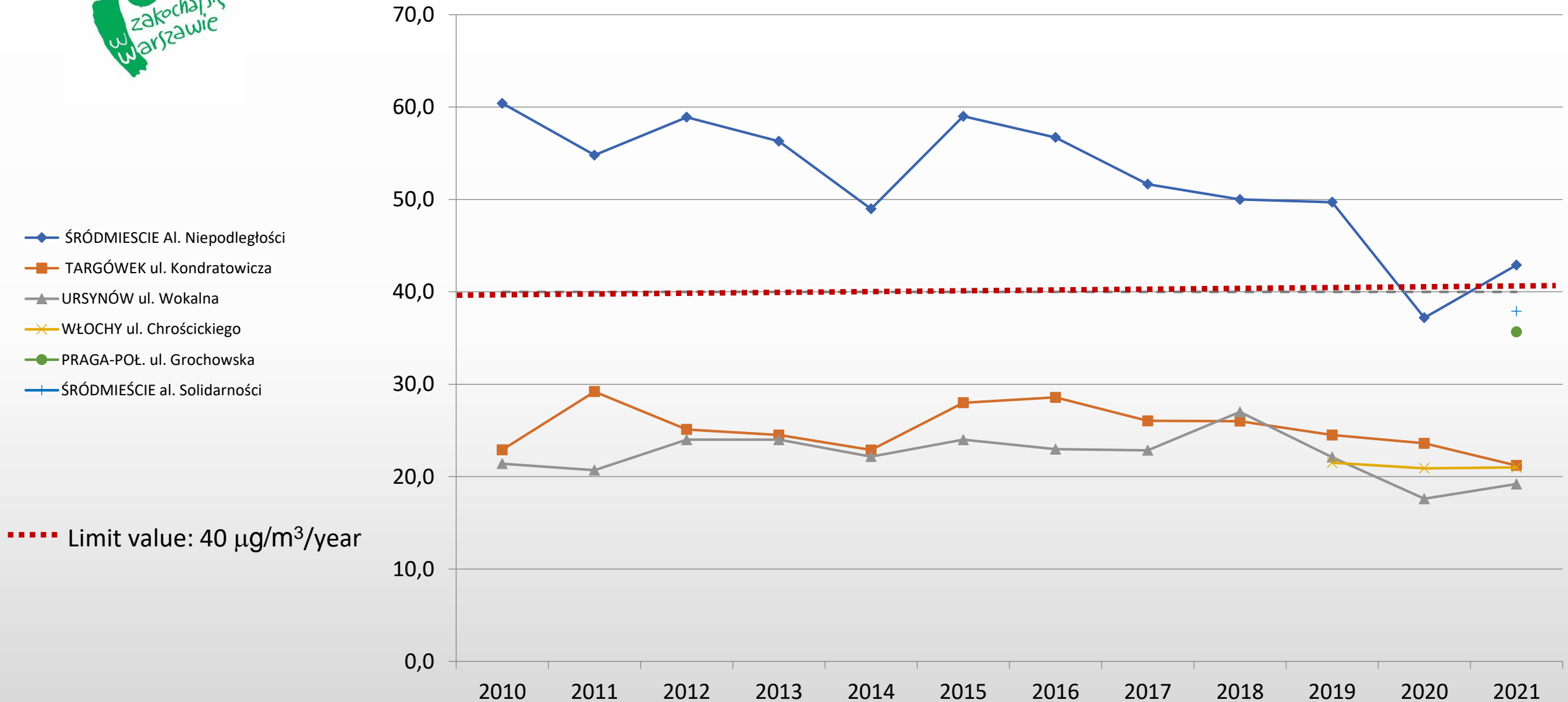


# PM<sub>2.5</sub> Annual Mean



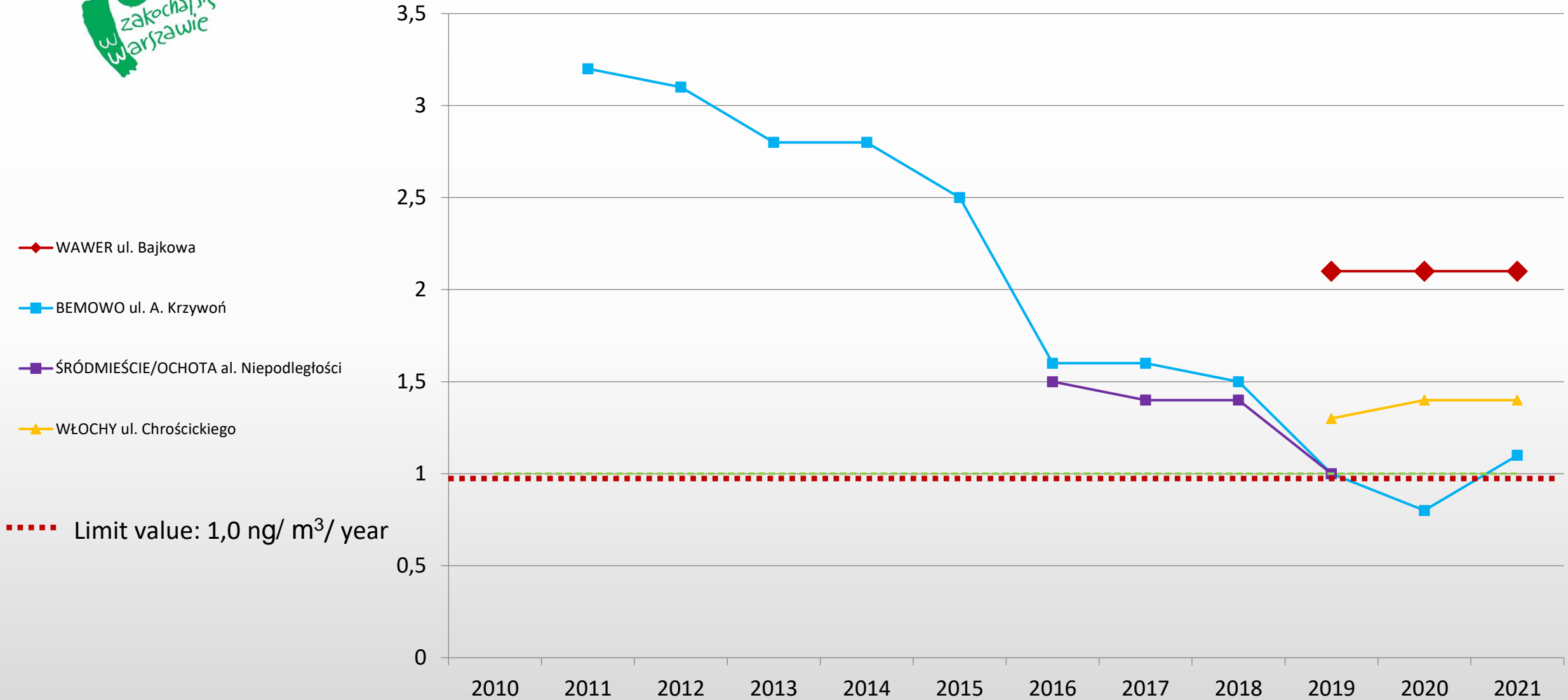


# NO<sub>2</sub> Annual Mean





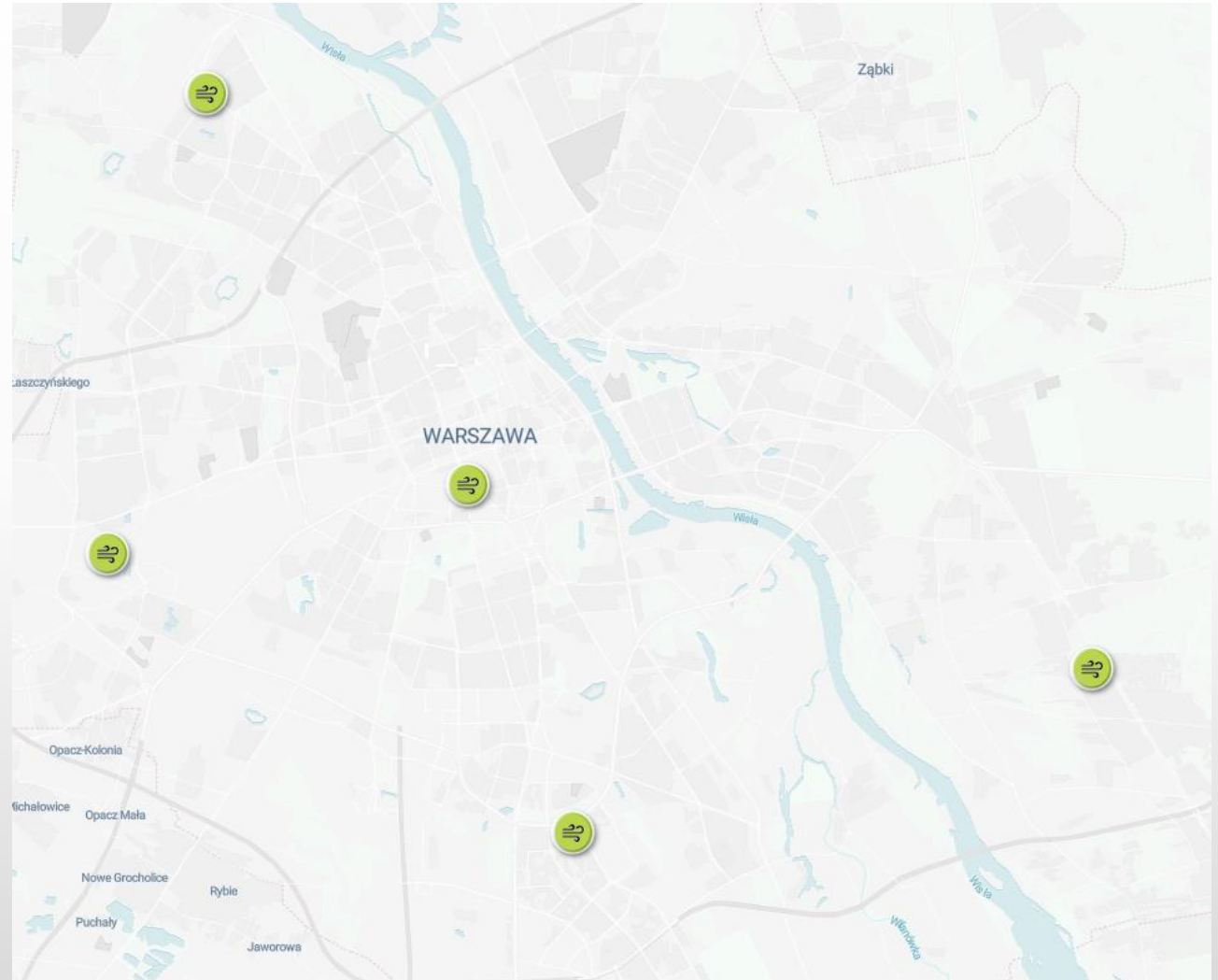
# Benzo(a)pyrene Annual Mean





# Automatic air monitoring stations in Warsaw until 2020

- There are 5 air quality reference measurement stations – owned and operated by government.

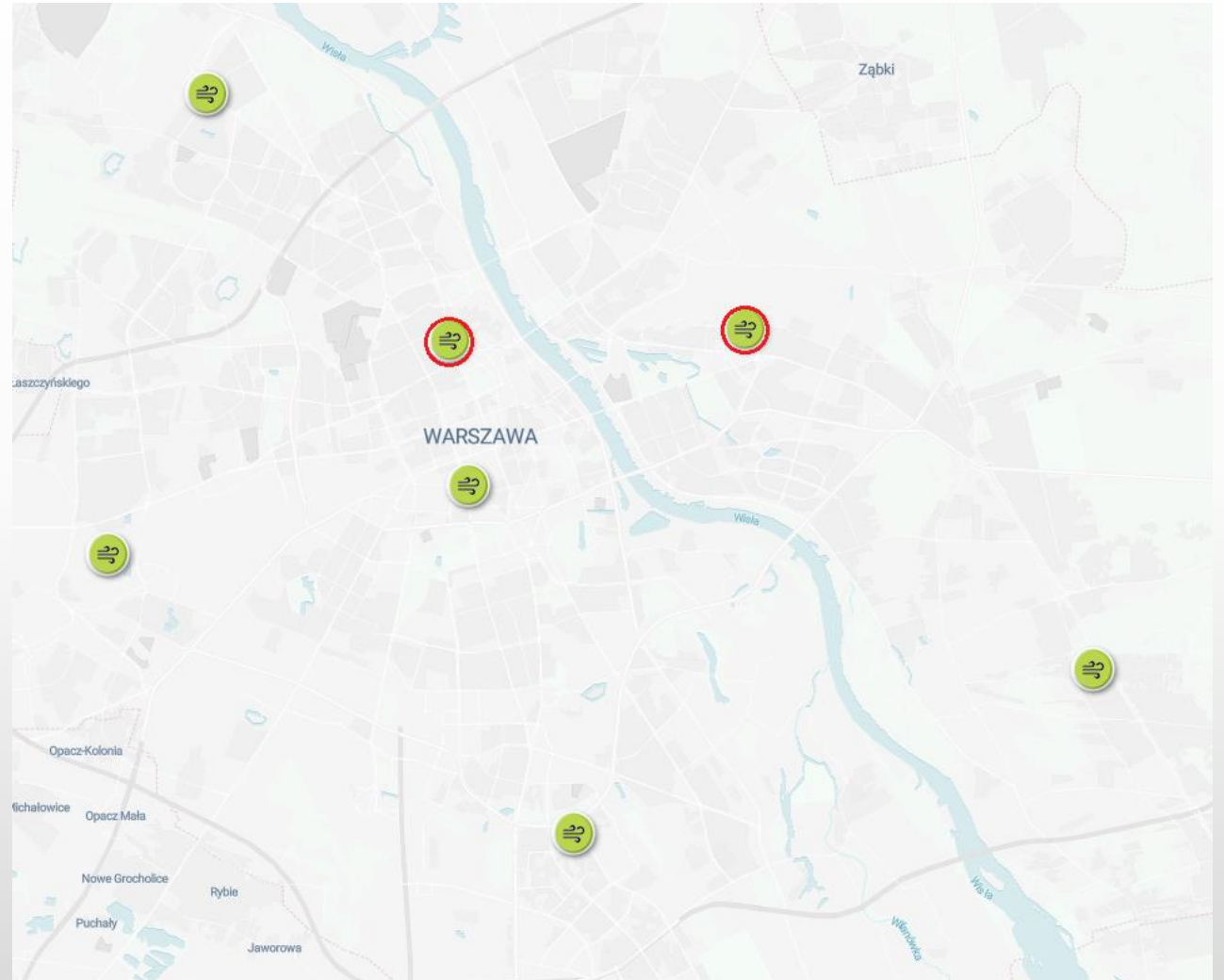






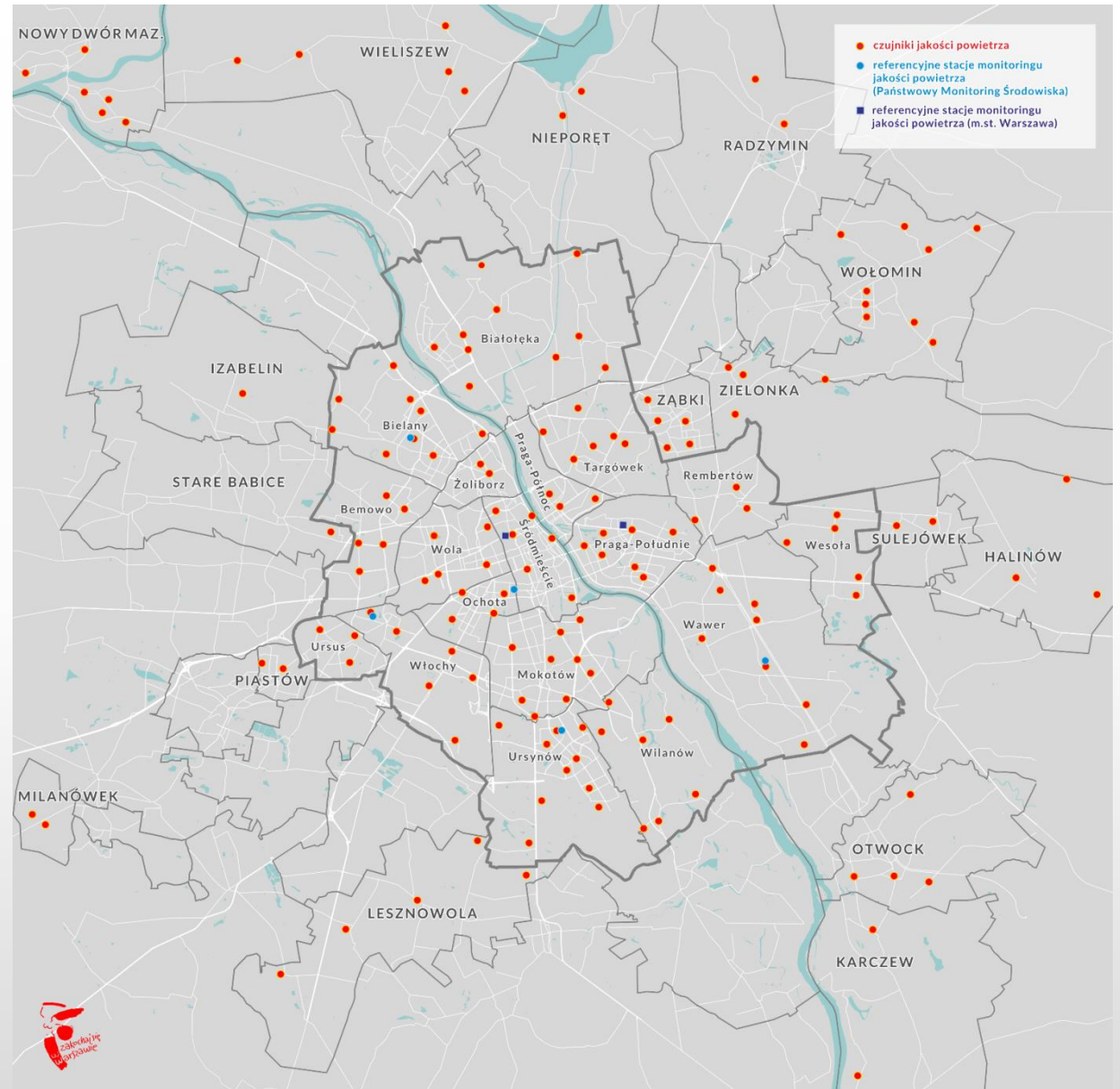
# Automatic air monitoring stations in Warsaw from 2020

- There are 5 air quality measurement stations belonging to the Chief Inspectorate for Environmental Protection.
- And 2 build and financed by the City of Warsaw.



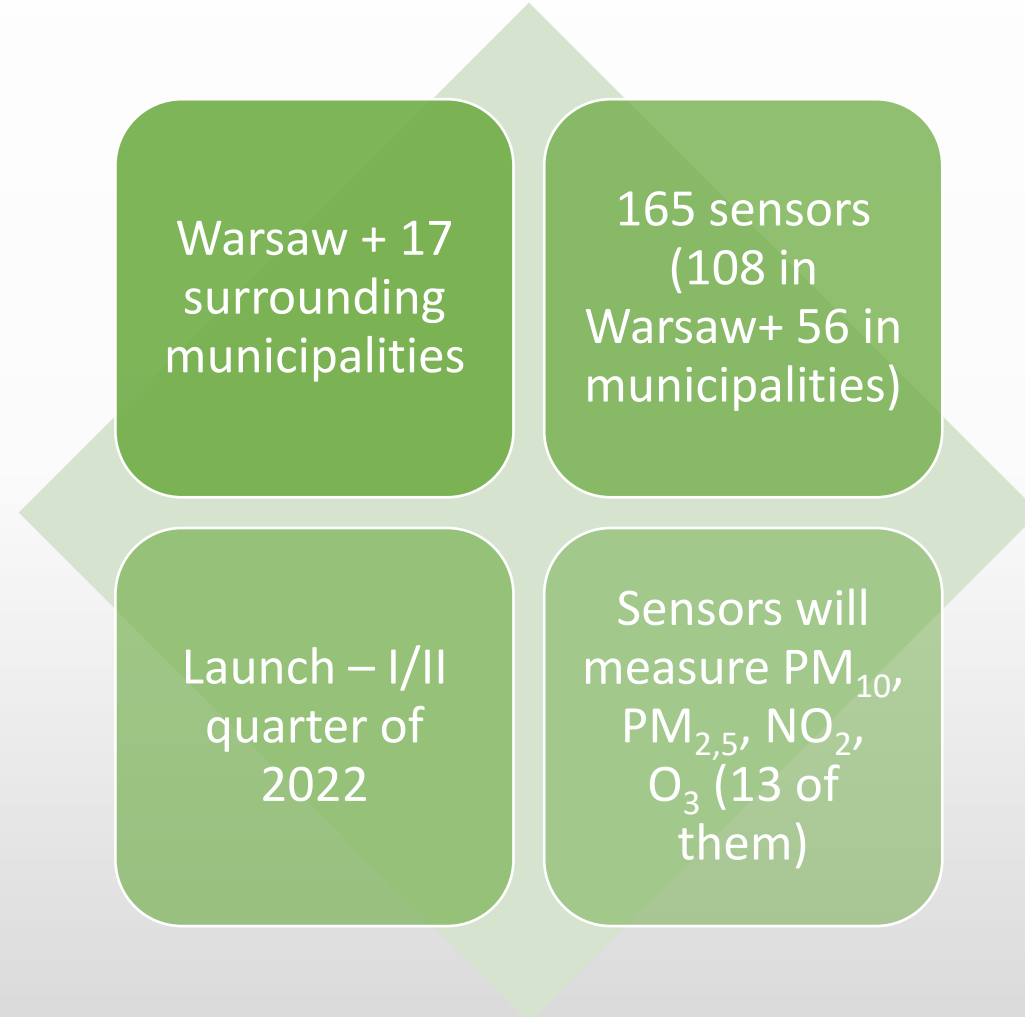


# Network of 165 air quality sensors





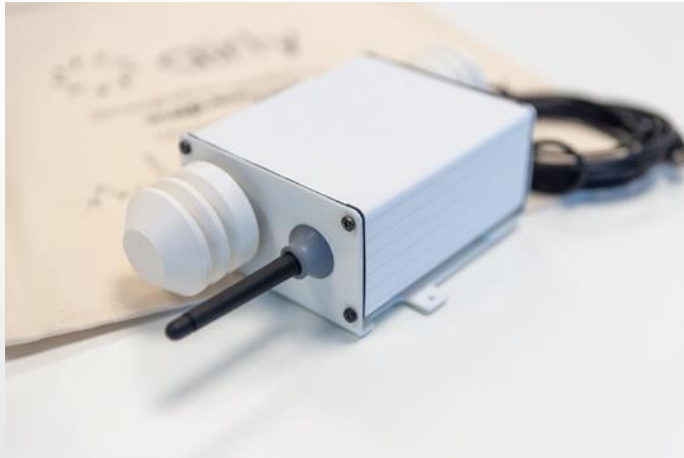
# Network of 165 air quality sensors



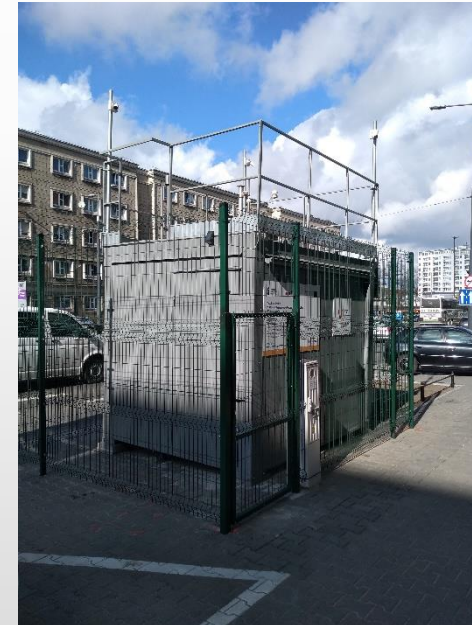


# Warsaw air quality monitoring system

- 165 air quality sensors

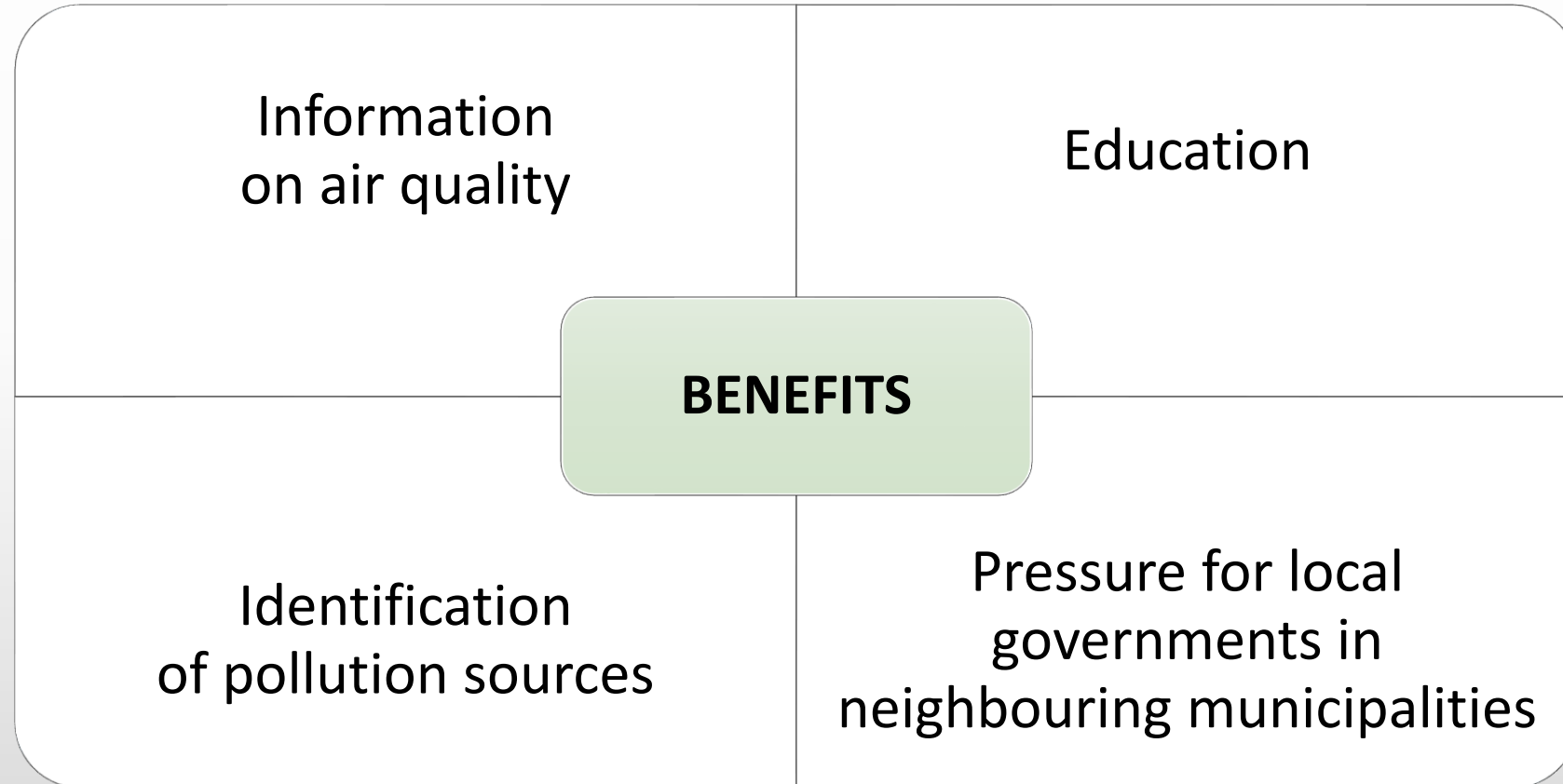


2 automatic, reference air monitoring stations will be used to calibrate air quality sensors





# Warsaw metropolitan area air quality monitoring system





# Coal stoves removal (grants for citizens)

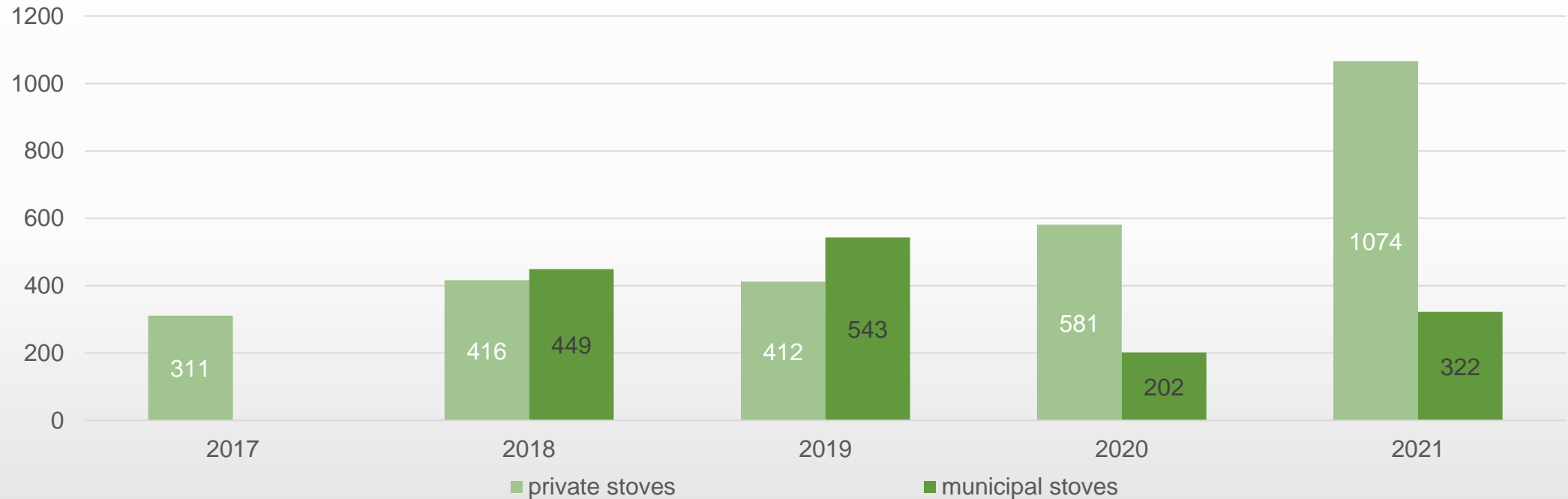
Year	Applications	Number of grants paid	Amount paid (mln PLN)	Number of removed solid fuel furnaces
2017	487	279	2,2	<b>311</b>
2018	481	341	2,9	<b>416</b>
2019	722	387	5,1	<b>412</b>
2020	2 249	532	15,1	<b>581</b>
2021	1 259	943	28,2	<b>1 074</b>
<b>TOTAL</b>	<b>5 198</b>	<b>2 482</b>	<b>53,6</b>	<b>2 786</b>
<b>TOTAL GRANTS for RES (2017-2022)</b>	<b>8 218</b>	<b>4 324</b>	<b>47,2</b>	





# Number of eliminated solid fuel stoves (grants and municipal)

Number of decommissioned solid fuel furnaces 2017-2021



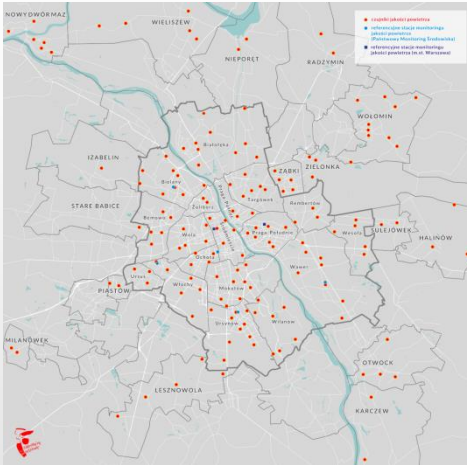
Warsaw removed **4302** stoves – **2786** with grants and **1516** in municipal buildings. There are still **10,855** solid fuel stoves to be replaced, including **479** municipal ones.





# Air actions in Warsaw – overview

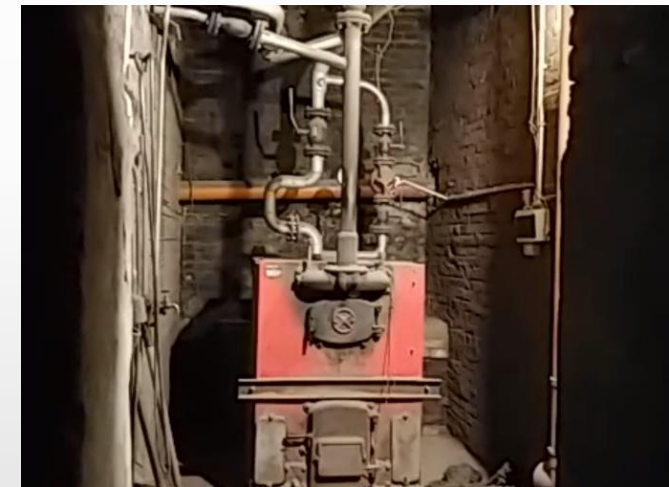
## Air quality monitoring system



## Development of renewable energy sources grants



## Solid fuel stoves removal







# Air actions in Warsaw – overview

Education of children, youth and adults



Developing low-emission urban transport (traffic, metro, electric busses, cycling infrastructure)





# Challenges

## Buildings and heating

Deep thermal efficiency improvement

Replacement of coal stoves with heat pumps



## Transport

Electrification of public transport

Expansion of hydrogen technology

Expansion of other means of public transport and its prioritization in traffic



## Energy

Reduction of consumption

Expansion of renewable energy sources





**Thank you**