Local Authorities Involvement in Resilince Challenge

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City of Warsaw in numbers

517 km²
administrative area

1.775 million
inhabitants within this area
4.4% population of Poland

3.3 million
inhabitants within agglomeration
8.6% population of Poland

€ 4.7 billion
budget expenditures for 2020

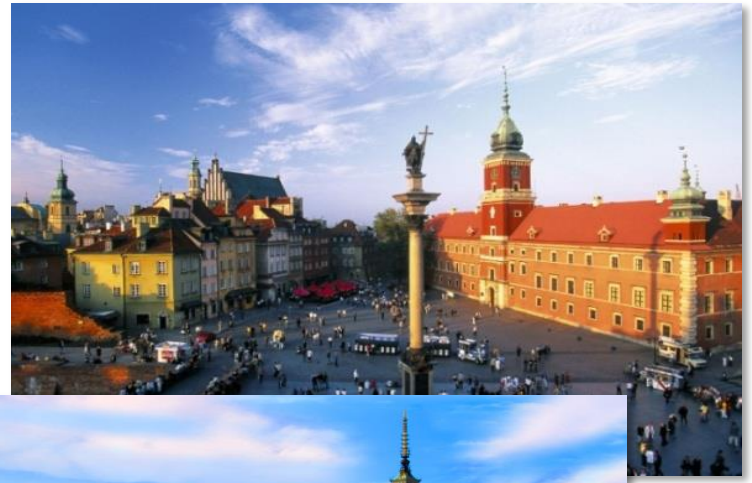
1.3%
unemployment rate
5.5% - Poland

224745 students
18% of students in Poland

1.576 million
registered vehicles
5.1% of registered vehicles in Poland

433 823
registered enterprises
5.6% of registered enterprises in Poland

40%
green space



Key climate risks in Warsaw

Drought in years 2011, 2013-2020

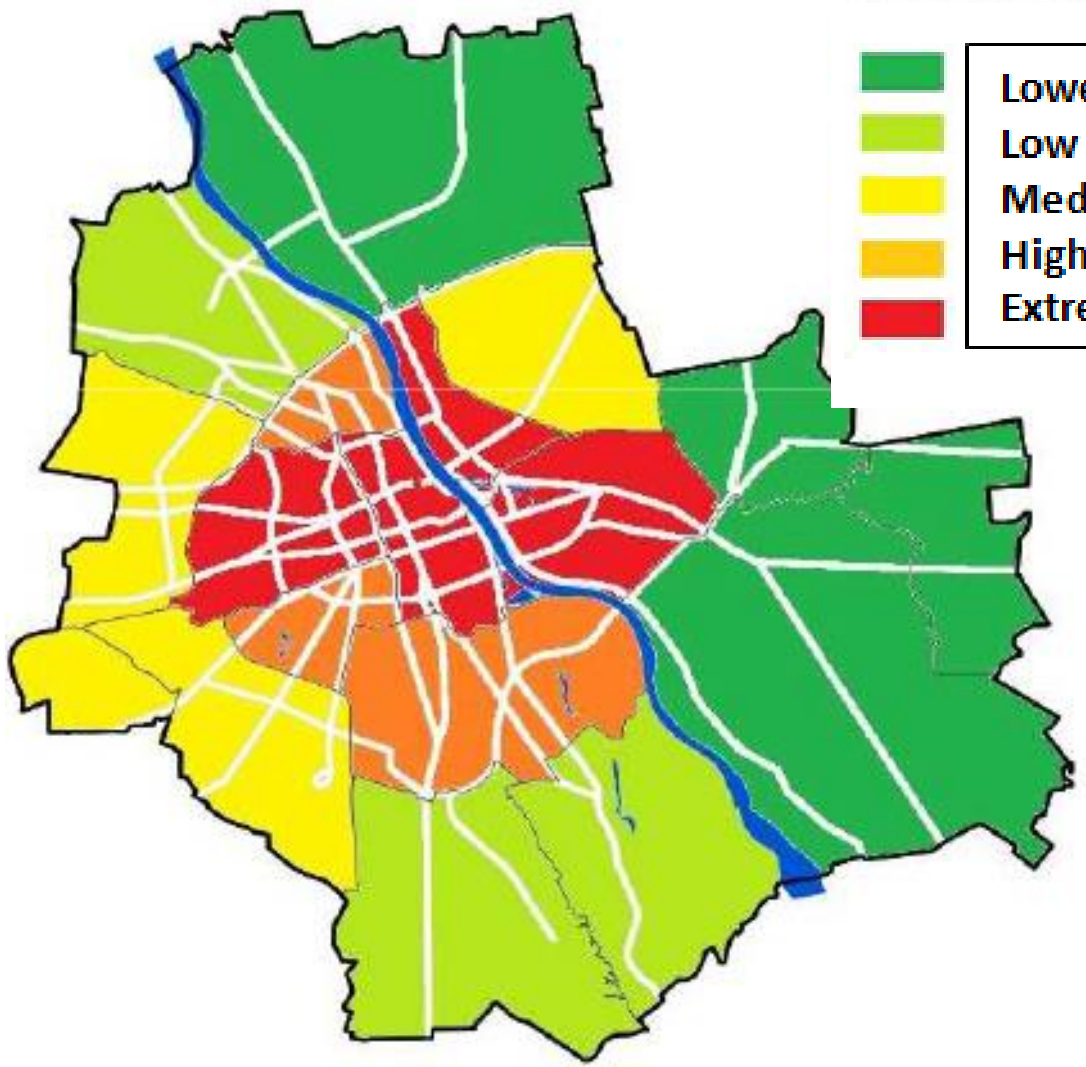
Heat waves in years 2002, 2006, 2010, 2015, 2017, 2018, 2019

Flooding

Floods in years 2010, 2012

Storms, winds

Synthetic assessment of climate risk in Warsaw districts



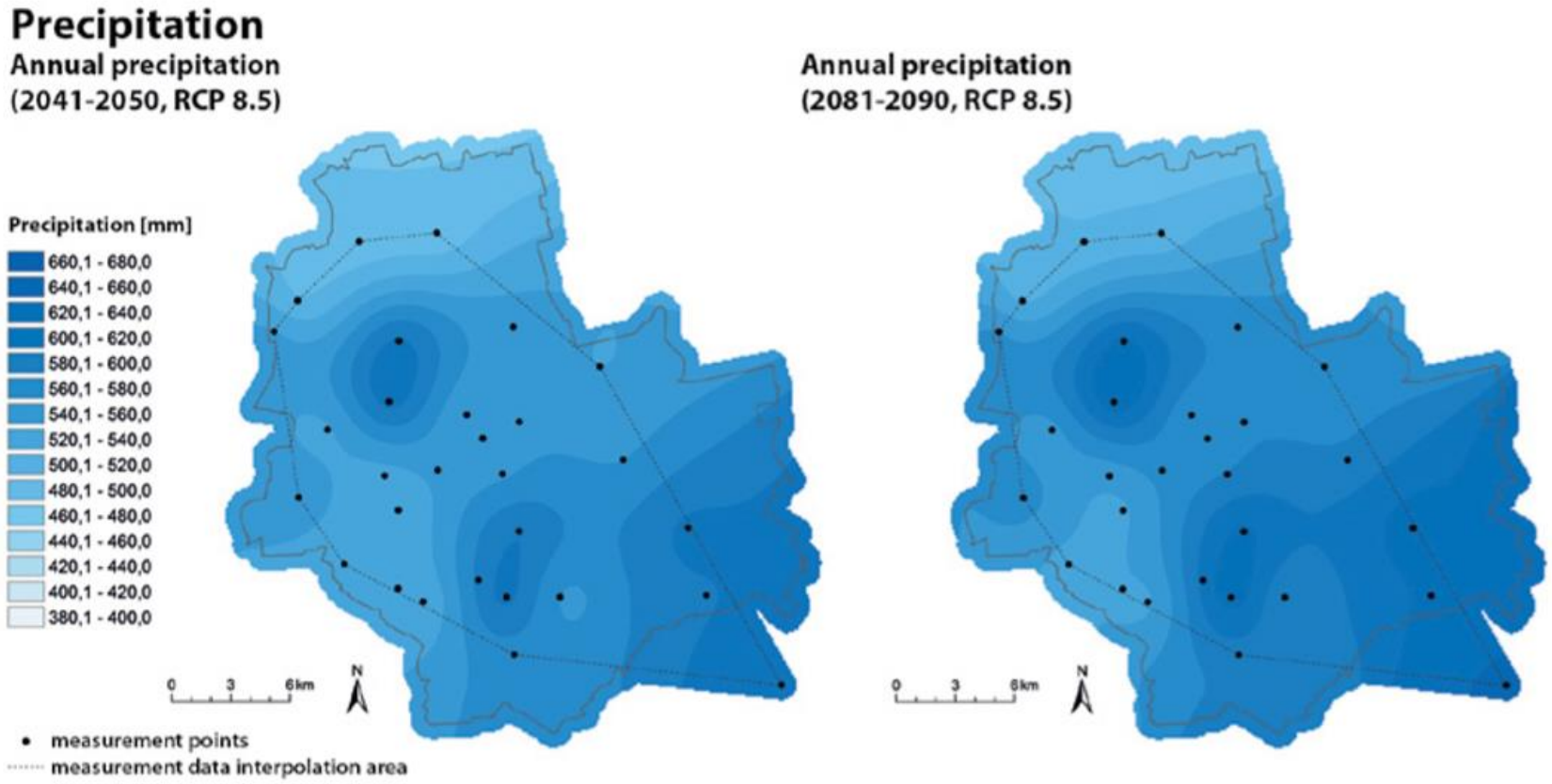
Lowest climate risk	194.6 km^2 - 37.6%
Low climate risk	111.2 km^2 - 21.8%
Medium climate risk	87.2 km^2 - 11.9%
High climate risk	53.6 km^2 - 10.4%
Extreme high climate risk	68.7 km^2 - 13.3%

Climate of Warsaw and its expected changes

Expected changes:

Increase in the frequency and intensity of precipitation causing local flooding

- increase of days with high precipitation (above 10 mm of water/m2)
- growing single rainfall levels (over 90 mm of water /m2)



Adaptation Strategy to climate change for Warsaw

Strategy motto:

Warsaw – a community acting responsibly in the face of climate change

Strategy priority:

to prepare Warsaw to climate change, mainly by mitigating the effects and ensuring smooth functioning of the city with acceptable costs for economy, society and nature.

Adaptation Strategy to climate change for Warsaw

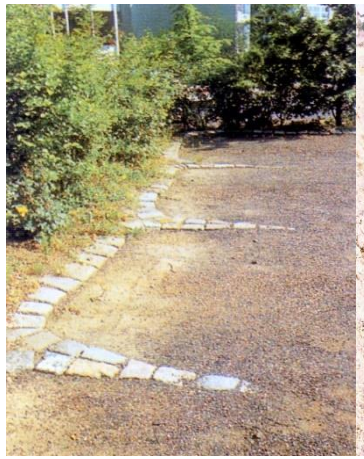
Adaptation to climate change:

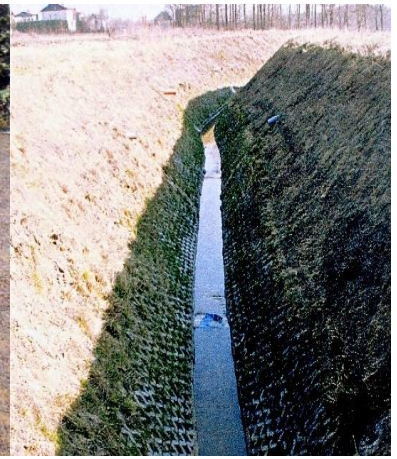
- enhances the competitiveness of the city,
- improves the quality of life and healthcare,
- helps create attractive and safe spaces,
- improves the level of environmental protection,
- creates demand for modern technologies and jobs.

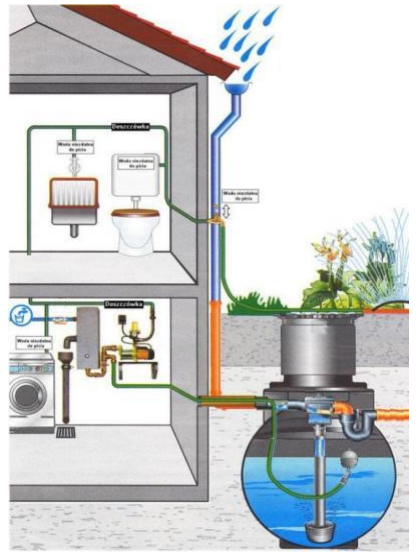
Rainwater management

Rainwater management

- infiltration
- retention
- collection and use



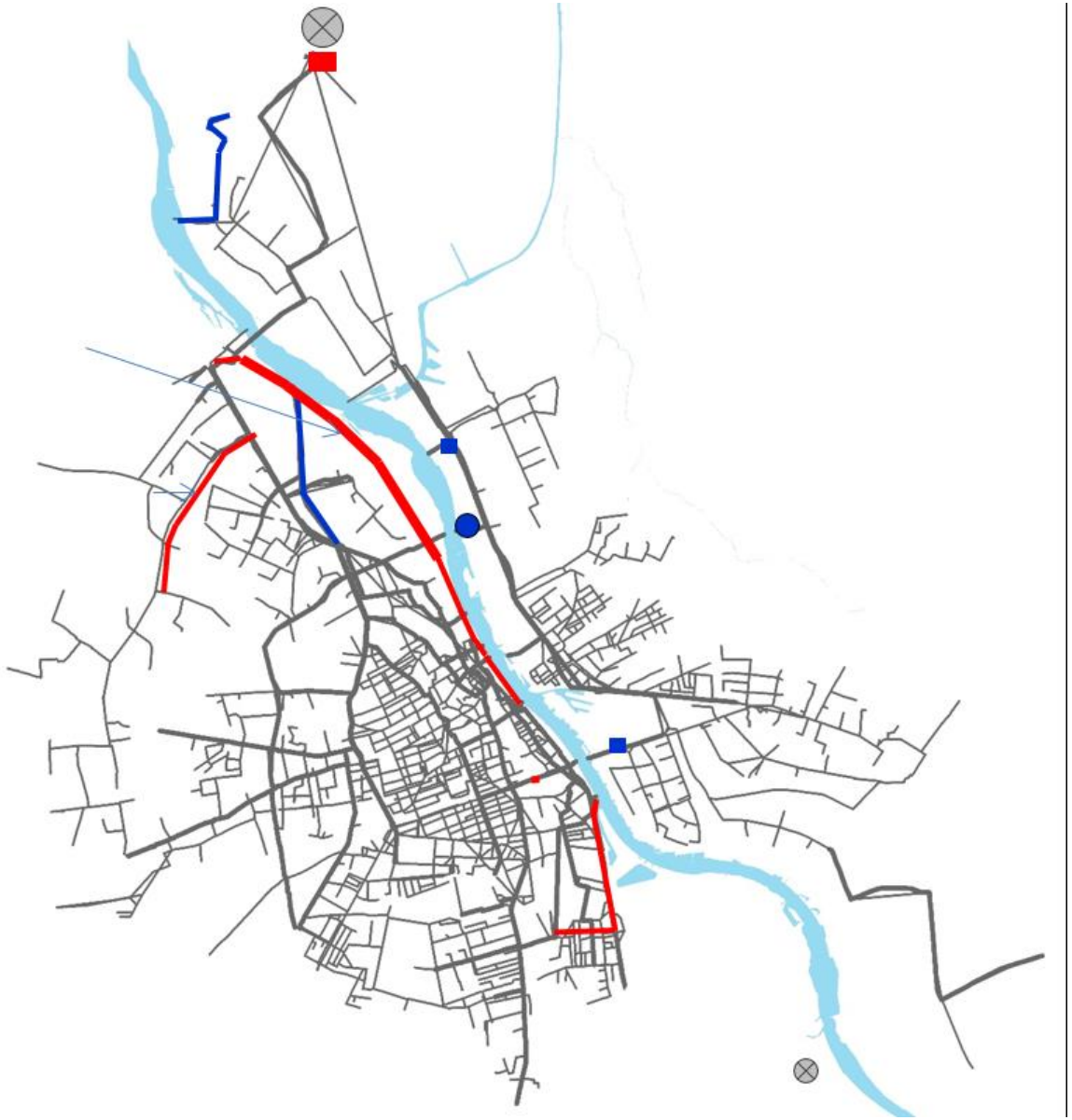




Retention tanks

- Retention tank at Czajka WWTP with capacity 78 000 m^3
- This action reduce to minimum the number of overflows from combined system to the Vistula River when heavy rain occurs
- Construction of 3 line tanks:

✓ Wiślany 9,5 km length , 3,2 m diameter
✓ Linde Bis 4,7 km length, 1,8 m diameter
✓ Mokotowski Bis 4,0 km length 2,8 m diameter



Retention tank at Czajka WWTP

Nature-based solutions

multi-functionality: NBS can improve air quality (environmental benefit), which allows a decrease of diseases related to air pollution (health benefit), which in turn allows savings in healthcare (economic benefit).

local benefits for climate change **adaptation** and **regional-global** benefits for climate change **mitigation**

multiple stakeholders: NBS need to involve a wide spectra of stakeholders and this requires extensive consultation

Revitalization of the area of Służewiecki pond

- restoration of the retention function,
- islands for waterfowl,
- observation platform,
- small hydro power plant,
- 2 new parks,
- educational path on adaptation to climate change

Protecting trees during drought

Water Bag System

- newly planted trees are more susceptible to drought damage than established trees
- water bag system apply water close to the trunk which works for a new or small tree
- citizens can inform through 19115 Call Center System about trees that need watering
- water bag are fill in twice a week

Drinking fountain

Warsaw Catch Water

- workshops during which Varsovians together created green and water-friendly places
- creation of rain gardens
- creation of basins conducive to retention

Thank you