



SOCIAL FACTORS AS THE NATURAL COMPONENT OF THE URBAN CLIMATE VULNERABILITY ASSESSMENT – HEAT WAVES

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About CDI

Carpathian Development Institute (CDI)

*2004

independent, non-governmental, non-profit professional organization

THINK-AND-DO-TANK

focusing on the support of innovative development of regions and municipalities,
acting mainly in SK but also in UA, HU, RO, BG, SRB.

- one of the pioneering organizations in Slovakia and in the Central Europe in the field of climate change adaptation on the local and regional level.
- one of the co-authors of Slovak National Adaptation Strategy. It has authored 2 climate adaptation video spots and several exclusive publications such as : Climate change - challenge for local development in Slovakia, Adaptation to Climate Change - Urgent Task of Cities, Adaptation to Climate Change – Brochure for Those Who Want to Know and Do More, Adaptation to Climate Change in Trnava City - Res Publica, Catalogue of adaptation measures to adverse climate change impacts for the cities and towns.

Climate adaptation in Slovakia

- The pretty new agenda for the national but mainly for local governments
- There is adopted the National adaptation strategy (2014) currently being updated (under the EU pressure)
- Only 6 cities and towns (out of 140) have got the Climate Change Adaptation Strategy, the rest are passive or perform only fragmentary adaptation steps
- The consequences of climate change are already serious in some sectors in Slovakia

Social situation in Slovakia

- The theme “socially just climate change adaptation” is still in its infancy in this part of world, mainly among public authorities’ decision-makers
- Slovakia (in terms of Social Inclusion Monitor Europe (SIM) – Index Report, 2014) is ranking as 17 (out of 28 countries). Indicators: Poverty prevention, Equitable education, Labor market inclusion, Social cohesion and non-discrimination, Health, Intergenerational justice
- This is caused by
 - existence of more than 300 000 people having maximum primary education
 - unequally distributed wealth between regions and by unevenly distributed wealth among different population groups
 - Number of people between 65-79 is 600 000 (11 %) and will be raising until 2035 to more than 850 000 (16 %)

Heat waves situation in Slovakia

- The year of 2018 broke the record for the number of so-called super-tropical days – defined as days with a maximum temperature of at least 35 degrees Celsius – the worst heat waves that Slovakia have hit for at least the last 145 years since meteorological observations have taken place
- Daily 50-100 collapses from heat have been treated by health service
- The vast majority of stricken individuals were seniors, children -4, chronically ill, living in cheap flats without air-conditioning

The "social friendly" CDI approach to climate adaptation

- To see the whole process of climate adaptation through prism of social responsibility (balanced approach to address economic, social and environmental issues in a way that aims to benefit all people, communities and society with special emphasis on the most vulnerable ones)
- To prioritize in the Vulnerability Assessment factors being linked to most vulnerable groups
- To solve in the Adaptation Plan (by adaptation measures) first of all vulnerable groups problems

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- **Adaptation measure on the right place**

Heat waves vulnerability social factors from the city of Kosice (the pilot city borough – West) (1)

- Concentration of people 75+ and -4
- Thermal permeability of prefabricated buildings (cheaper flats mostly inhabited by lower income society)
- Concentration of people living in blocks of flats in underroof floors (cheaper flats mostly inhabited by lower income society)
- Extent of unshielded paved areas (located mainly in front of hospitals, shopping centers and schools, often visited by vulnerable groups)
- The occurrence of risky facilities (hospitals, nurseries, kindergartens, schools, pensioners' houses)

Heat waves vulnerability social factors from the city of Kosice (the pilot city borough – West) (2)

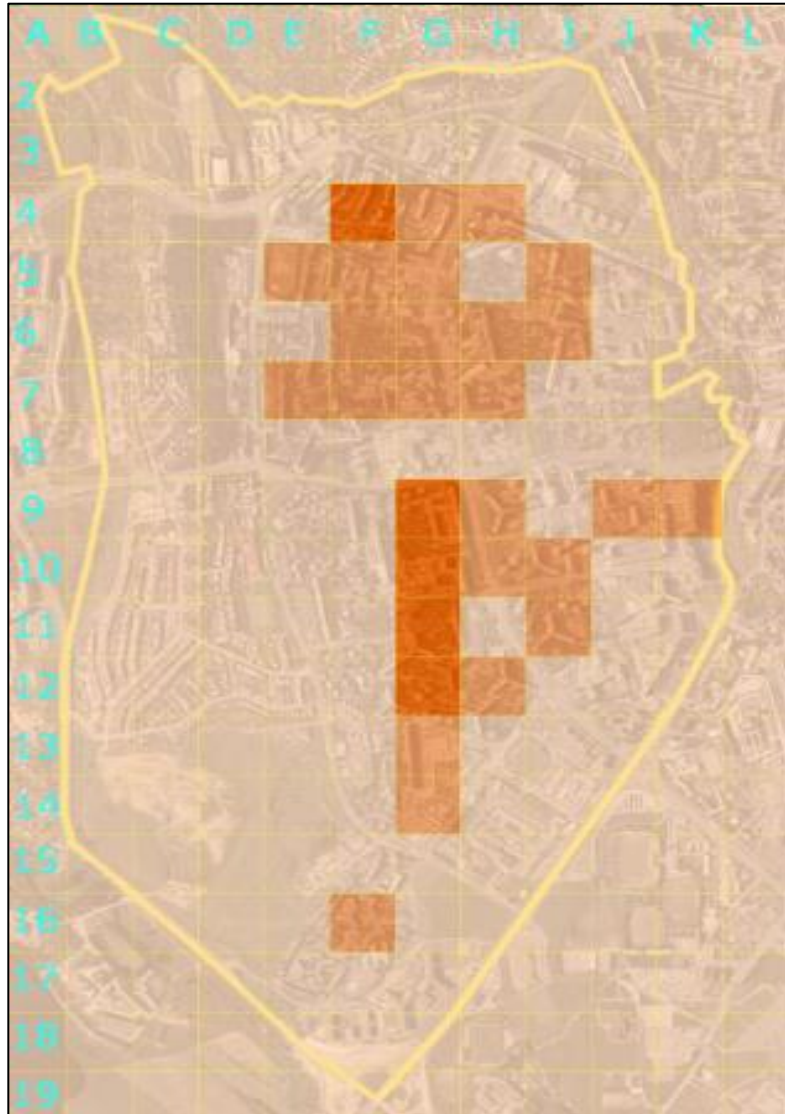
- Availability of green areas with a tree crowns coverage over 60 % and with surface over 2 ha (during heat waves they serve as colder green shelters mainly for pensioners, mothers with little children and often handicapped)
- Level of knowledge about correct patterns of behavior in the case of heat (survey)
- Established air-conditioning in the city public transport (often used mainly by lower income groups and seniors)
- Availability of medical assistance during heatwaves

Heat waves vulnerability social factors from the city of Kosice (the pilot city borough – West) (3)

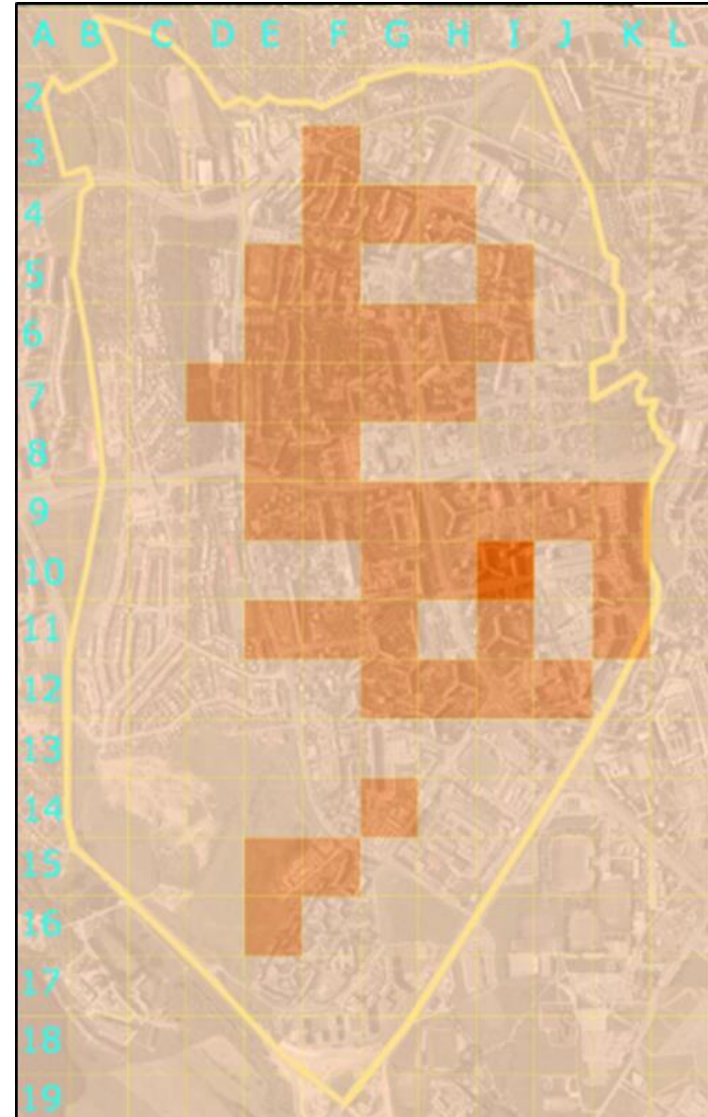
Social factors supplemented by additional data as

- Temperature distribution in single city parts during heat
- Surface roughness (height and orientation of buildings)
- Coverage of green areas
- Circulation of cooling air and katabatic jet streams

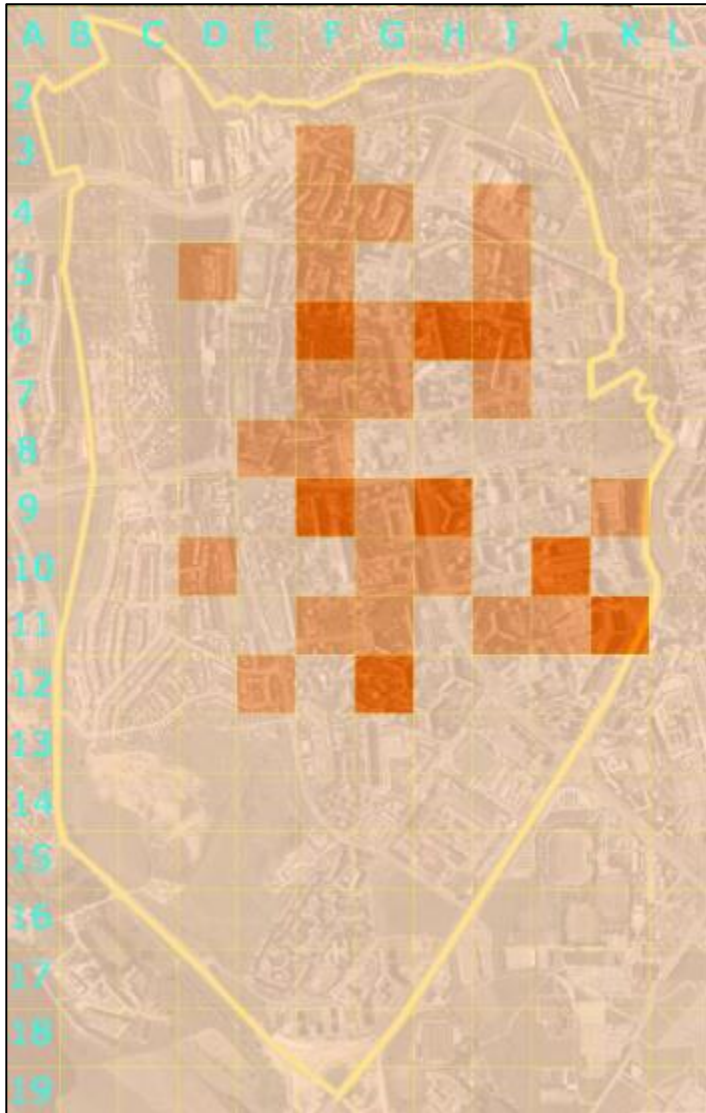
Seniors 75+



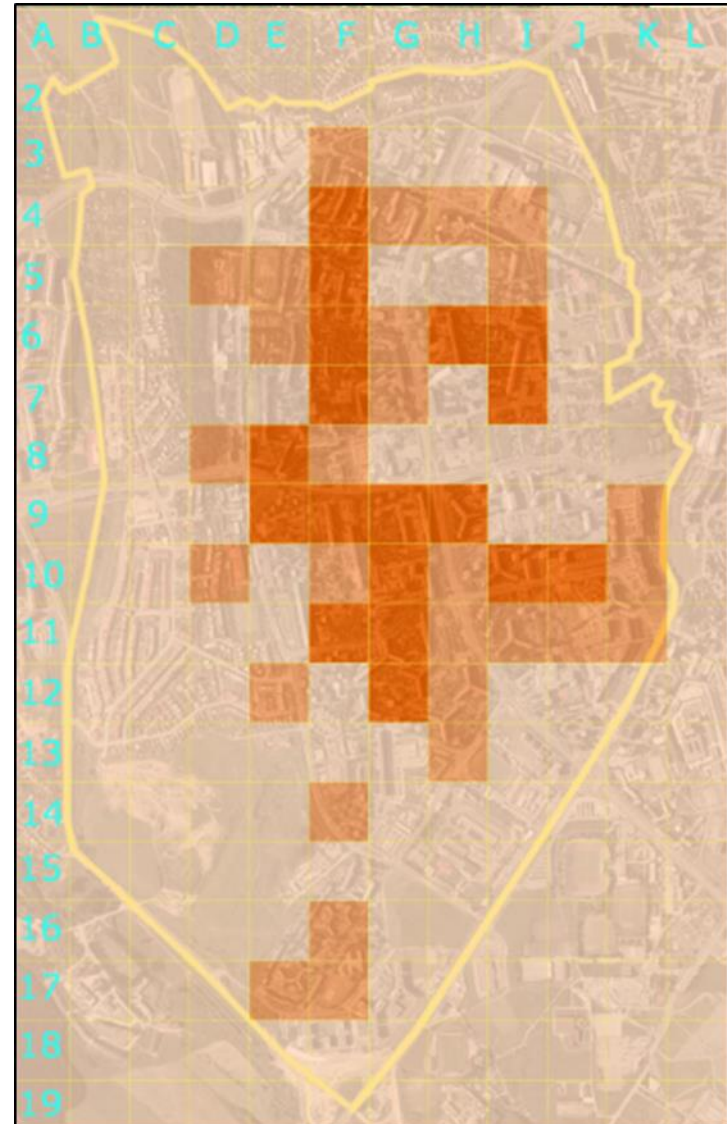
Children -4



Density of people in underroof flats



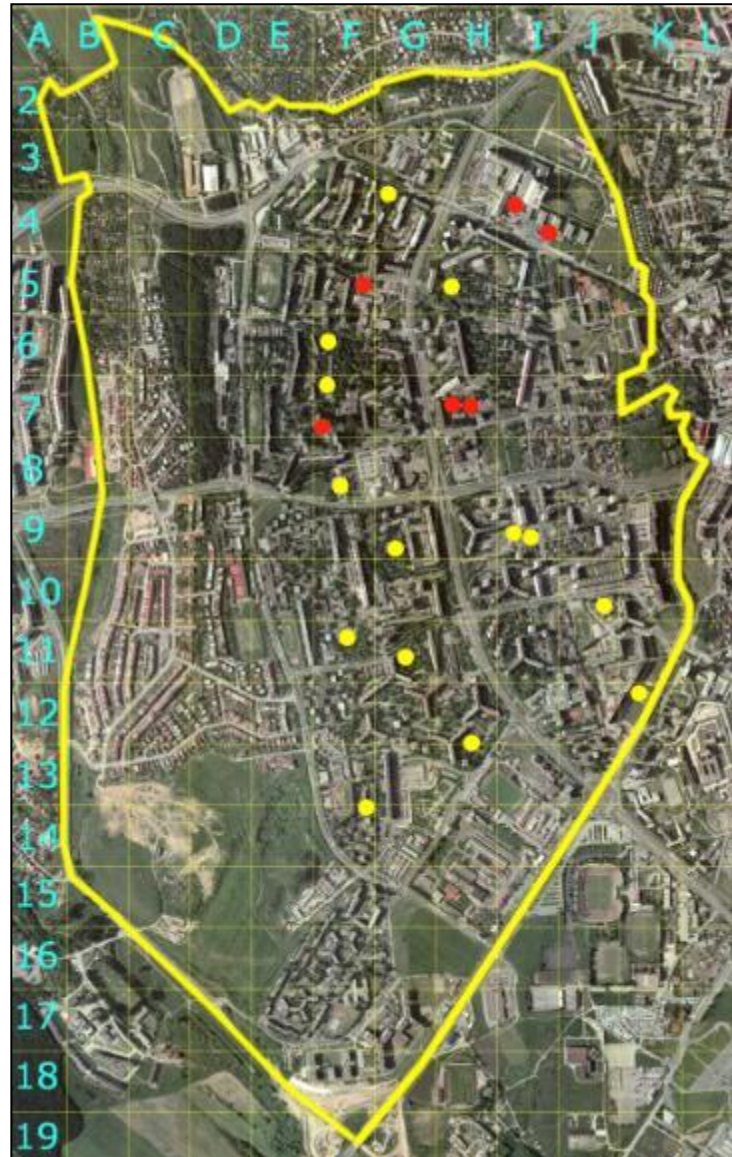
Thermal permeability of blocks of flats



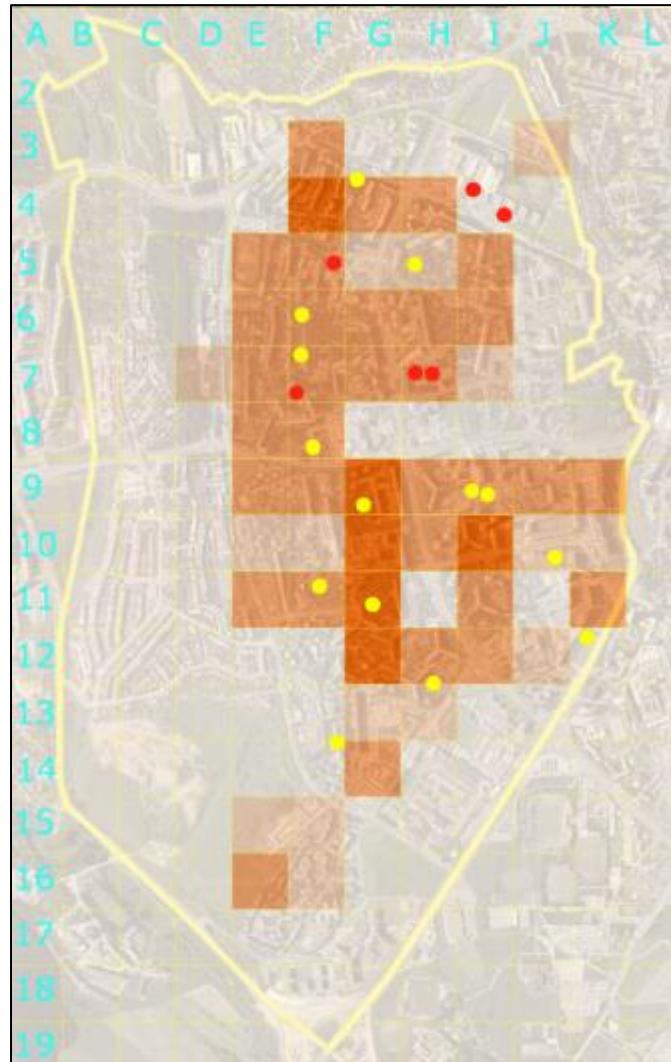
Availability of green shelters



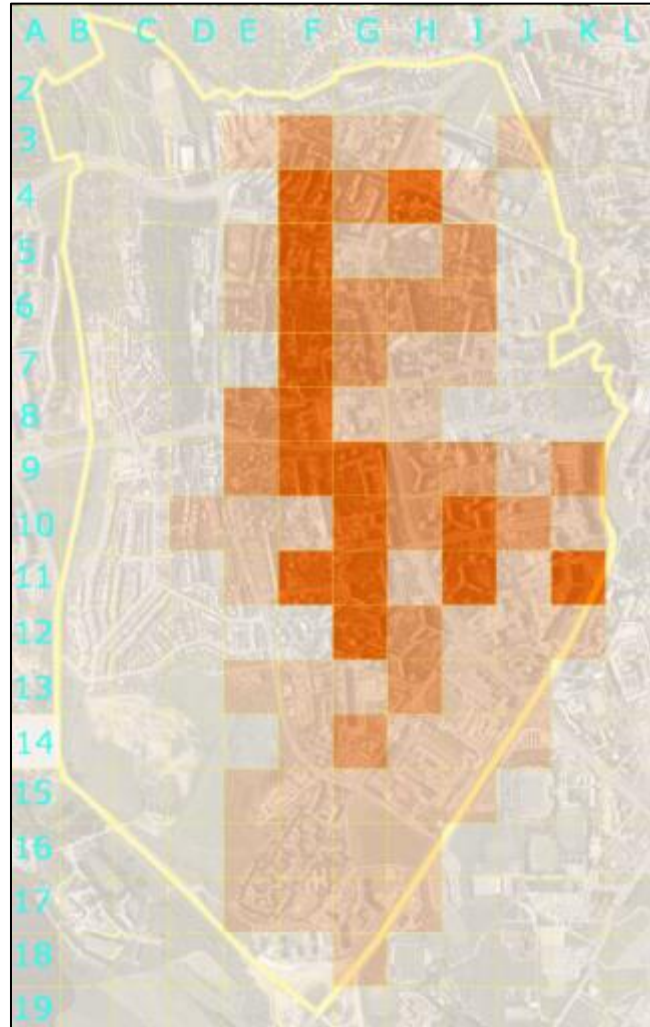
Occurrence of risky facilities



Summary map – concentration of vulnerable people



Summary map of all factors, including priority weights



Programs for reducing sensitivity and increasing adaptive capacity of the Kosice city (pilot borough – West) – heat waves

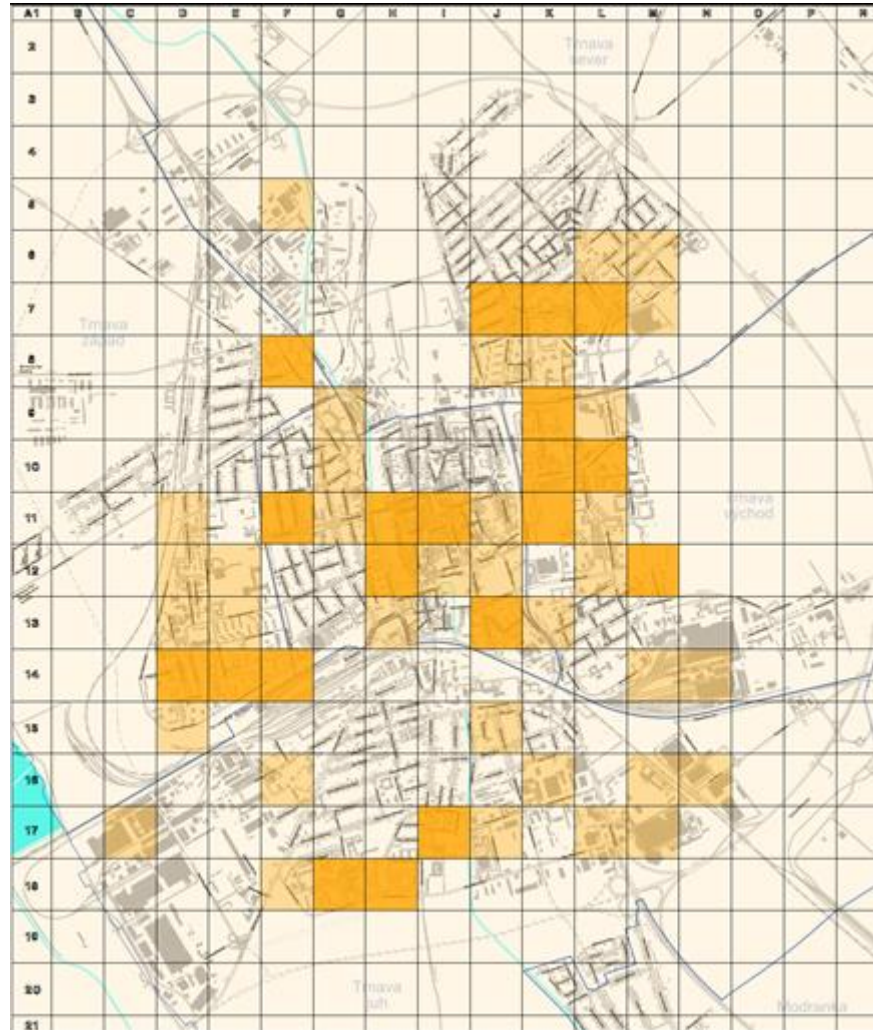
- Program of shielding and cooling of public open spaces
- Program of cooling indoor public spaces
- Program of development of good behavior patterns
- Program of the climate correct decision-making
- Program of citizens' stimulation
- Program for risky facilities

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- **Right adaptation measure**

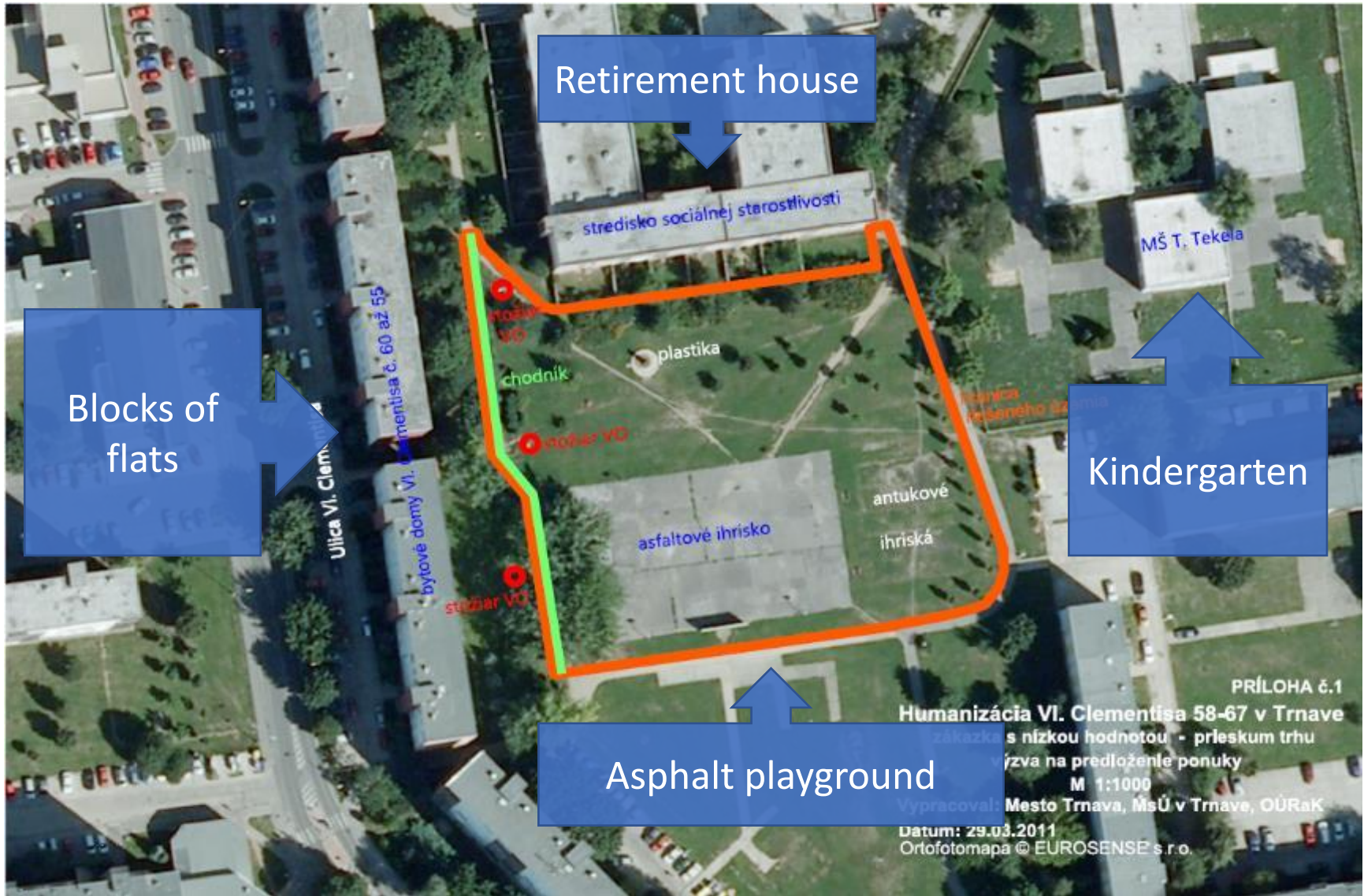
Criteria for prioritizing implementation of adaptation measures

- Location in or in the near vicinity of most vulnerable quadrate
- Housing of large number of people
- High density of vulnerable groups
- Effectivity and efficiency of adaptation measures

Summary map of vulnerability of the Trnava city, 2015 (heatwaves)



Pilot project Trnava city - before



Pilot project Trnava city - before



Pilot project Trnava city - Adaptation measures study



Pilot project Trnava city – now (1)



Pilot project Trnava city – now (2)



Pilot project Trnava city – now (3)



Conclusions

Social justice in Climate Change adaptation (vulnerability assessment and adaptation measures) rests in:

- Preparation of set of vulnerability factors as well as in criteria for adaptation measures selection there is a need to take seriously into account social justice issues
- The basic principle “put the right adaptation measure on the right place” significantly comprises social justice factors
- We can not change vulnerable people we need to change those who make decisions and the system within which the decisions are adopted

**Thank you for paying attention
to this topic**



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