



A 3-30-300



# CASE STUDY

Assessing the **3-30-300** rule  
in the Královo Pole District, Brno

**ASITIS** Ready for  
climate change

2024

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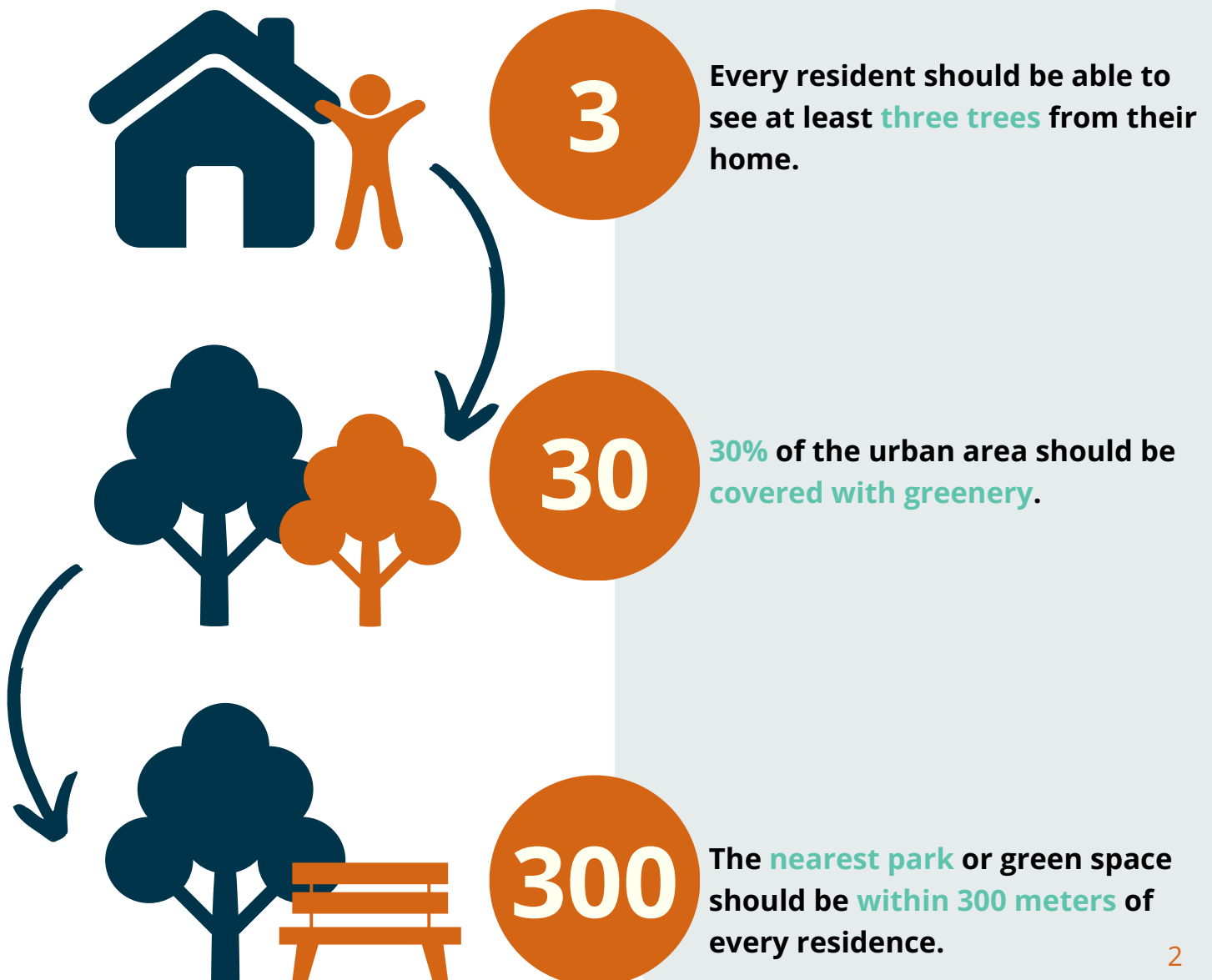
# INTRODUCING...

ASITIS recently conducted an evaluation of the 3-30-300 rule in the Královo Pole district of Brno, aiming to assess the impact of urban greenery on the quality of life for city residents.

The objective of this case study was to assess the applicability of this concept in the urban landscape of Brno and to evaluate the benefits it could bring to the residents of the Královo Pole district.

## ... THE RULE 3-30-300

The 3-30-300 rule, developed by urban greening expert Cecil Konijnendijk, provides a framework for enhancing urban environments through greenery (Konijnendijk C., 2022 nad 2023). The rule proposes three key conditions for improving the urban living experience:

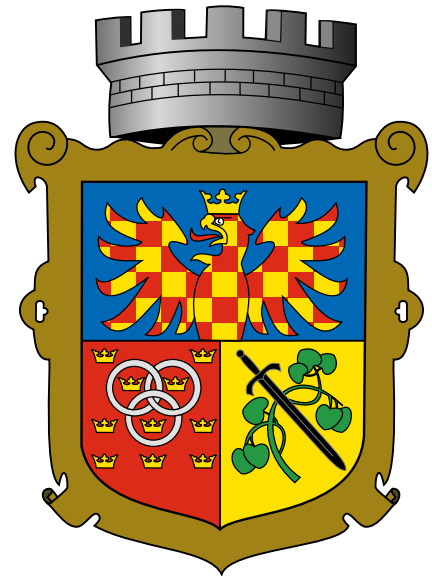


## ... THE HEALTH BENEFITS OF 3-30-300

Following the 3-30-300 rule has significant mental health benefits, as evidenced by the study conducted in Barcelona (Nieuwenhuijsen et al., 2022). The study found that individuals who met the 3-30-300 criteria reported better mental health, reduced use of antidepressants and sedatives, and fewer visits to psychologists or psychiatrists. Specifically, the presence of surrounding greenness (serving as a surrogate for the 30% tree canopy cover) was strongly associated with these positive outcomes. Although only a small percentage of people in Barcelona fully met the 3-30-300 criteria, those who did experienced notable health benefits, underlining the importance of integrating green spaces into urban planning to promote mental well-being



An orthophoto image of Královo Pole.



## ... THE BACKGROUND OF KRÁLOVO POLE

Královo Pole is one of the largest districts in Brno, characterized by a mix of residential, commercial, and industrial areas. The district is home to a diverse population, including families, students, and professionals, due to its proximity to several universities and business centers. While the district benefits from existing green spaces such as parks and tree-lined streets, rapid urban development in recent years has posed challenges to maintaining and expanding these green areas. As urbanization continues, there is a pressing need to assess the district's compliance with the 3-30-300 rule to ensure that residents continue to benefit from accessible and sufficient urban greenery.

# METHODOLOGY

The evaluation process was meticulously structured into several phases to ensure a comprehensive analysis. **Geographic Information Systems (GIS)** and **ortophoto data** were used to assess the state of green spaces.

1

The first step involved mapping the green spaces within Královo Pole and identifying areas where trees were visible from residential windows.

2

Next, the total area of greenery was measured and analyzed. This included public parks, private gardens, tree-lined streets, and other vegetative areas.

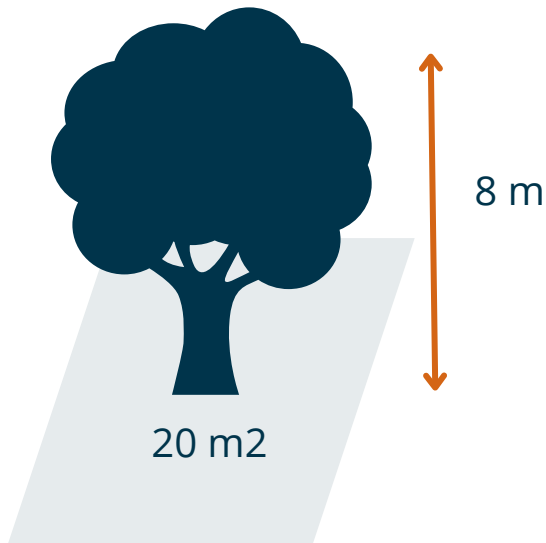
3

The final step was to assess the proximity of parks and green spaces to residential areas.

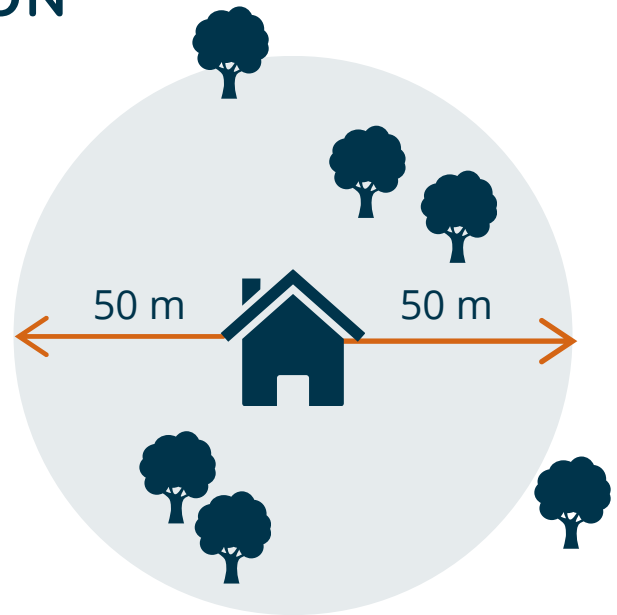
## TREE VISIBILITY ASSESSMENT (RULE 3)

The first component of the 3-30-300 rule requires that every individual should be able to see at least three large trees from their residence, workplace, or school. A large tree is defined as one that is at least 8 meters in height or covers an area of at least 20 square meters (5m in diameter). To assess this, the analysis was conducted on a per-building basis, focusing on trees within a 50-meter radius. This distance was chosen to include trees from nearby forests or parks that are visible from the building, while excluding those blocked by other structures.

# TREE AND AREA DEFINITION



The big tree is defined as at least 8 m high or at least 20 m<sup>2</sup> in area (5 m diameter).



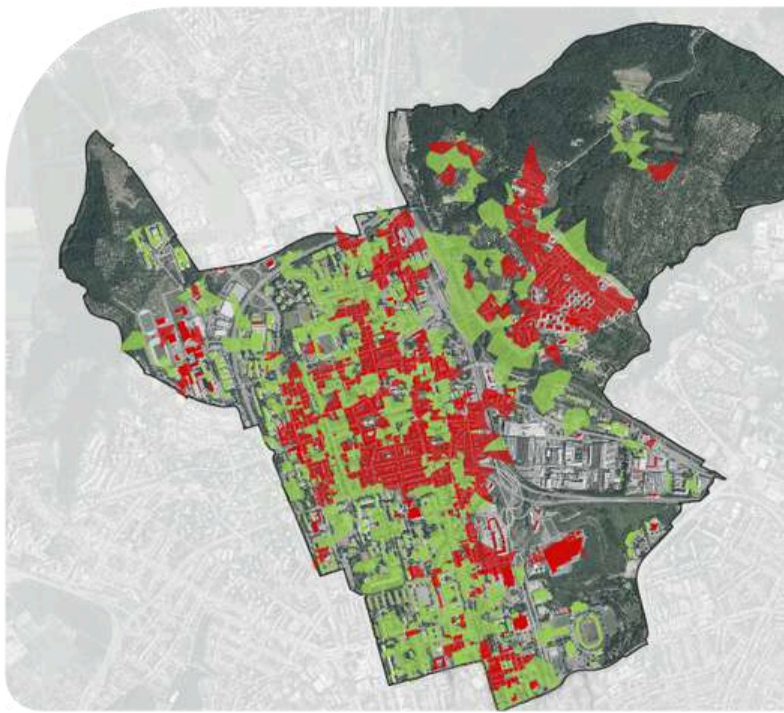
Rule is computed per building - how many trees are within the 50 m radius around the building, considering obstacles in the view.

## OUTPUTS RULE 3

The result of this analysis was a map layer that showed buildings with a binary attribute (yes/no) indicating whether they meet the tree visibility requirement.



A map layer of buildings with attributed yes/no values for rule 3.



### Outputs rule 3 summary:

- map layer of buildings with the attribute of value (yes/no),
- aggregated polygon layer of yes/no values showing areas where the rule is fulfilled,
- aggregated polygon layer per district containing percentage of houses served by 3 rule,
- 300 x 300 m grid layer containing percentage of houses served by 3 rule (visualized by 5 categories with 20 percent step)

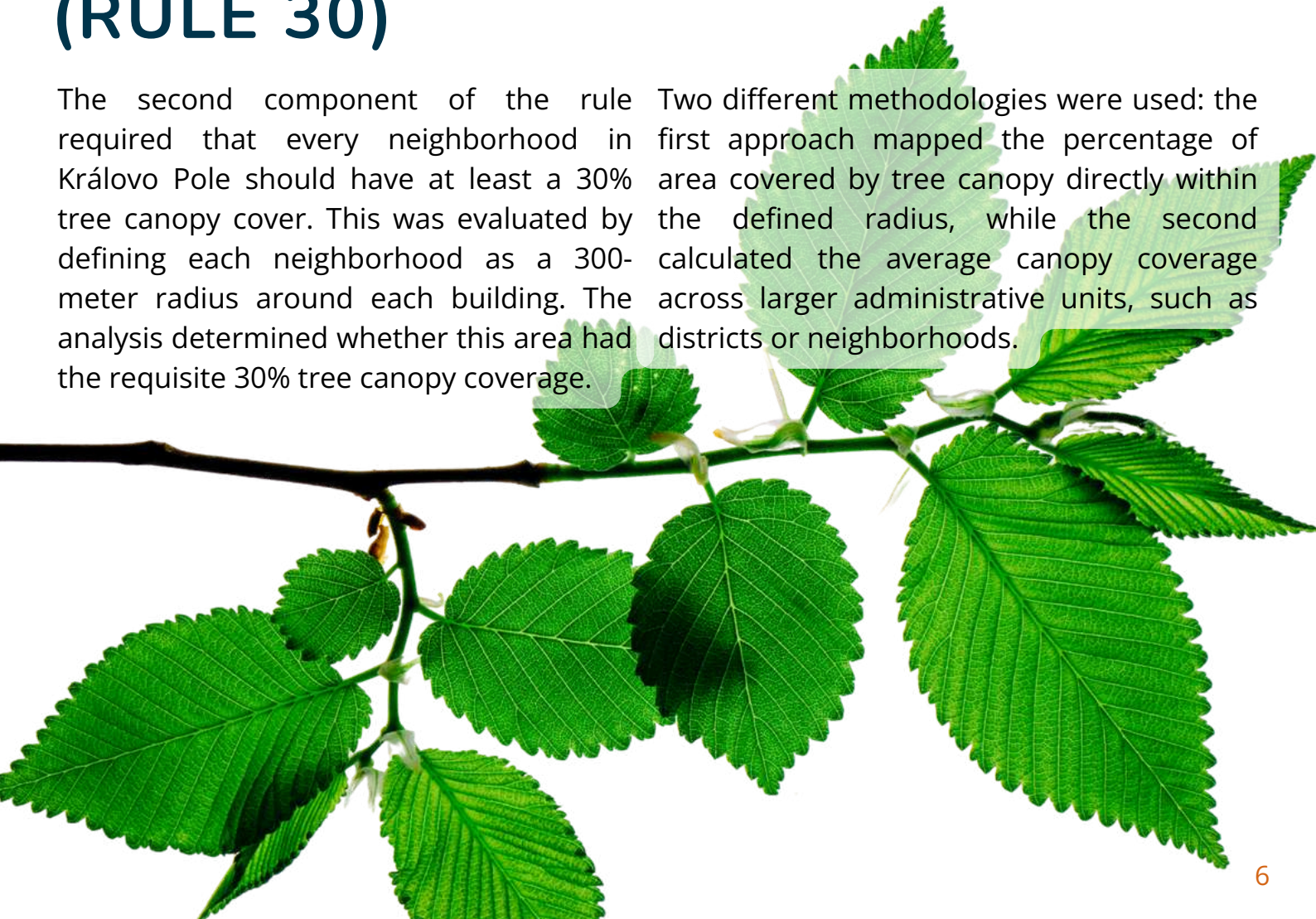
An aggregated polygon layer of yes/no values for rule 3

Additionally, an aggregated polygon layer was developed to illustrate areas where the rule is fulfilled, highlighting regions where tree visibility is sufficient.

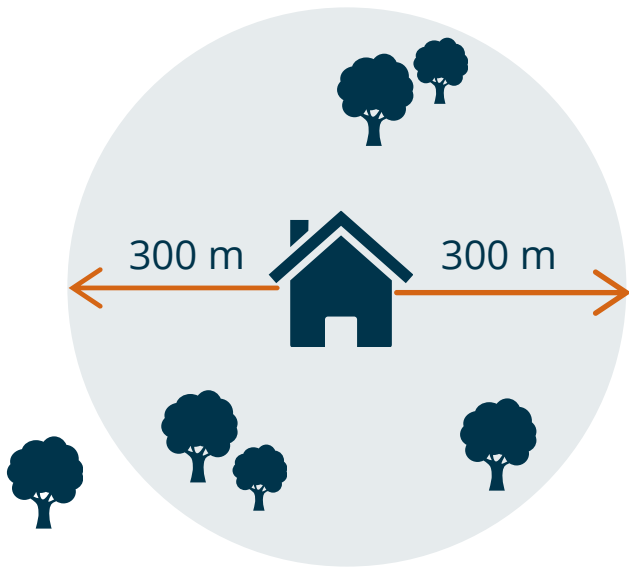
## TREE CANOPY COVERAGE (RULE 30)

The second component of the rule required that every neighborhood in Královo Pole should have at least a 30% tree canopy cover. This was evaluated by defining each neighborhood as a 300-meter radius around each building. The analysis determined whether this area had the requisite 30% tree canopy coverage.

Two different methodologies were used: the first approach mapped the percentage of area covered by tree canopy directly within the defined radius, while the second calculated the average canopy coverage across larger administrative units, such as districts or neighborhoods.



# NEIGHBORHOOD DEFINITION



“Neighborhood” is computed as a 300 m radius area around each building. In this case, tree is defined as a canopy taller than 5m with no area limitation.

## OUTPUTS RULE 30

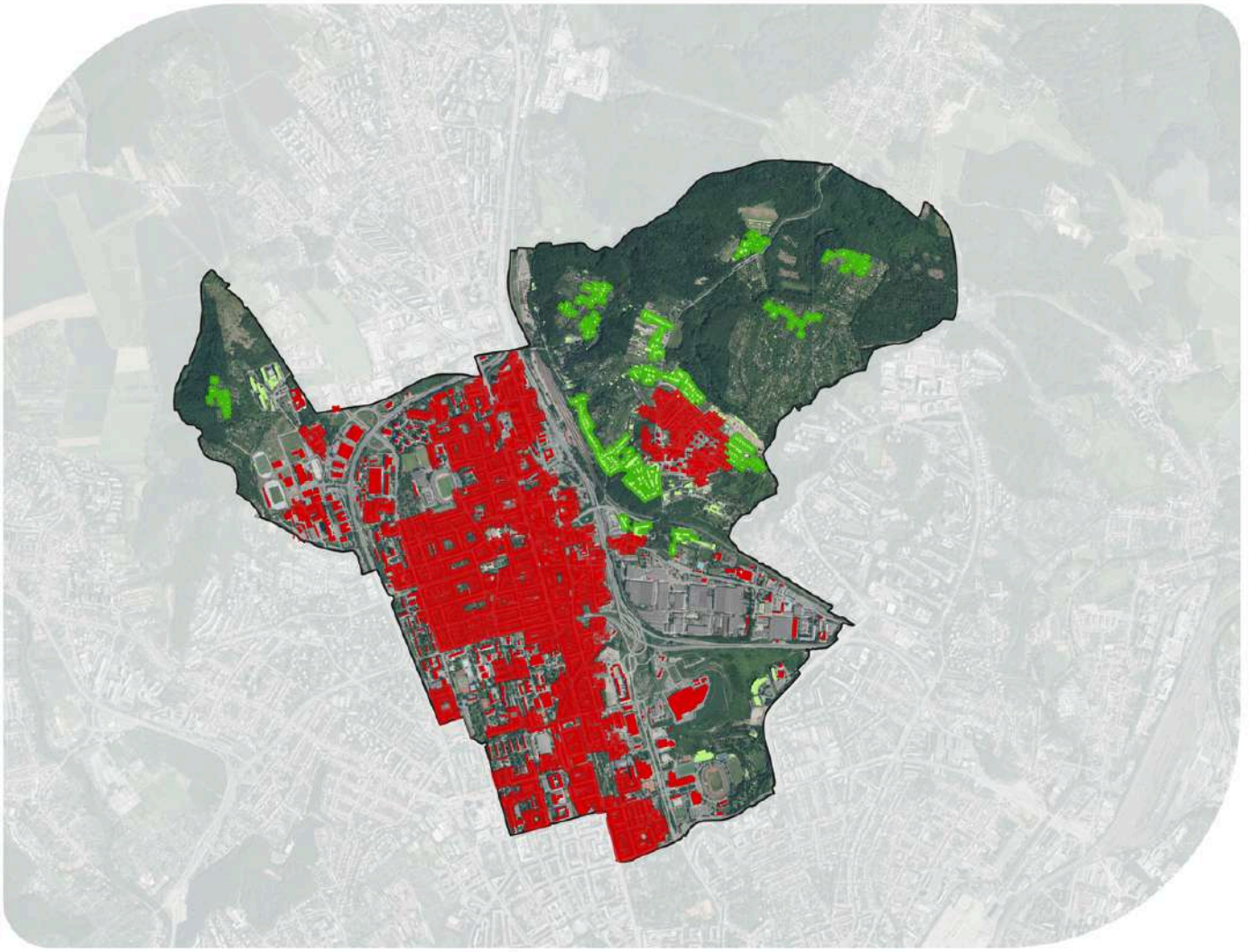
The resulting outputs included a map layer displaying areas categorized by tree canopy coverage and an alternative map representing administrative units with assigned average canopy coverage values.

### Outputs rule 30 summary:

- yes/no per building
- polygon layer with yes/no value
- aggregated layer of an administrative unit where the coverage is within a certain % category
  - 0-10 %, 10-20 %, 20-30 %, 30-40 %, >40 %, + the exact value
- 300 x 300 m grid layer containing percentage of houses served by 30 rule
  - visualized by 5 categories with 20 percent step



Rule 30 layer displaying yes/no values per building



Rule 30 polygon layer with yes/no value

***“The 300-meter rule proved to be the most challenging for us to define, as we were uncertain whether to calculate the distance to the nearest park using a straight-line measurement or the actual walking distance. We ultimately chose to use walking distance, as residents might see the park from their window, but the length of time it takes to reach it plays a critical role in their decision-making process.”***

***Miloslav Kaláb  
Climate Resilience Specialist. ASITIS***

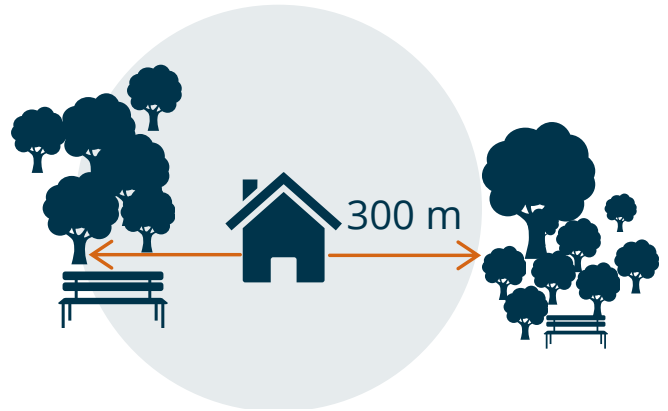
# PROXIMITY TO GREEN SPACES (RULE 300)

The third rule stipulates that every resident should live within 300 meters of a high-quality green space. These green spaces must be at least 0.5 hectares in size and at least 20 meters wide. To assess this, satellite data was used to identify qualifying green spaces, and each building's proximity to these spaces was analyzed.

## OUTPUTS RULE 300

The outputs included a map layer for each building, indicating whether it is within 300 meters of a qualifying green space, and another map layer classifying buildings based on their distance to the nearest green space.

## GREEN SPACE DEFINITION



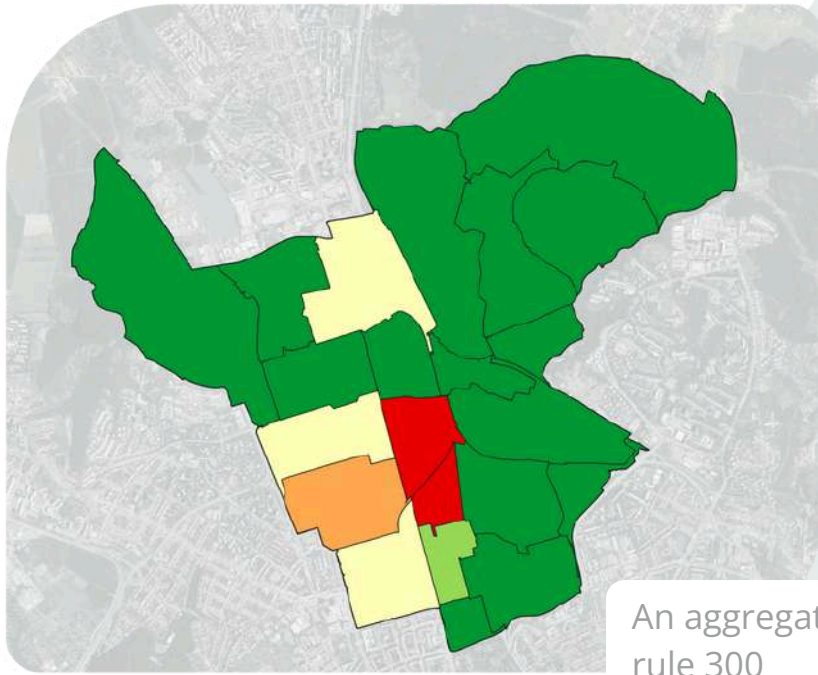
We check each building if there is any green area accessible within the 300 m walking distance



Areas that can be considered as a green space (area of at least 0.5 ha, width at least 20 m to exclude long narrow alleys)



Map layer of buildings with an assigned yes/no value (rule 300)



An aggregated polygon layer displaying rule 300

### Outputs rule 300 overview:

- map layer of buildings, each assigned the yes/no value
- map layer of buildings giving the distance category to nearest park
  - <300 m, 300-600 m, >600 m
- aggregated polygon layer per district containing percentage of houses served by 300 rule

## OVERALL SYNTHESIS

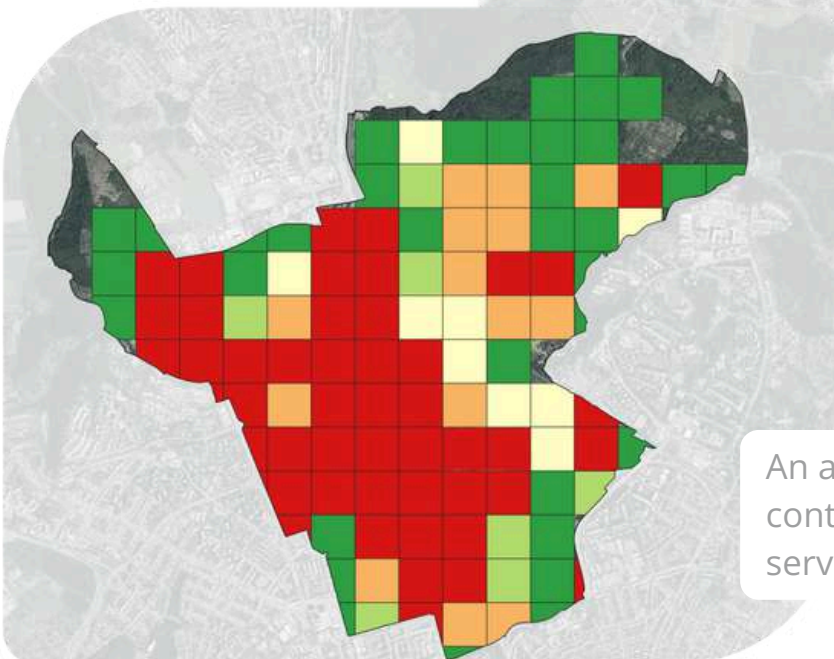
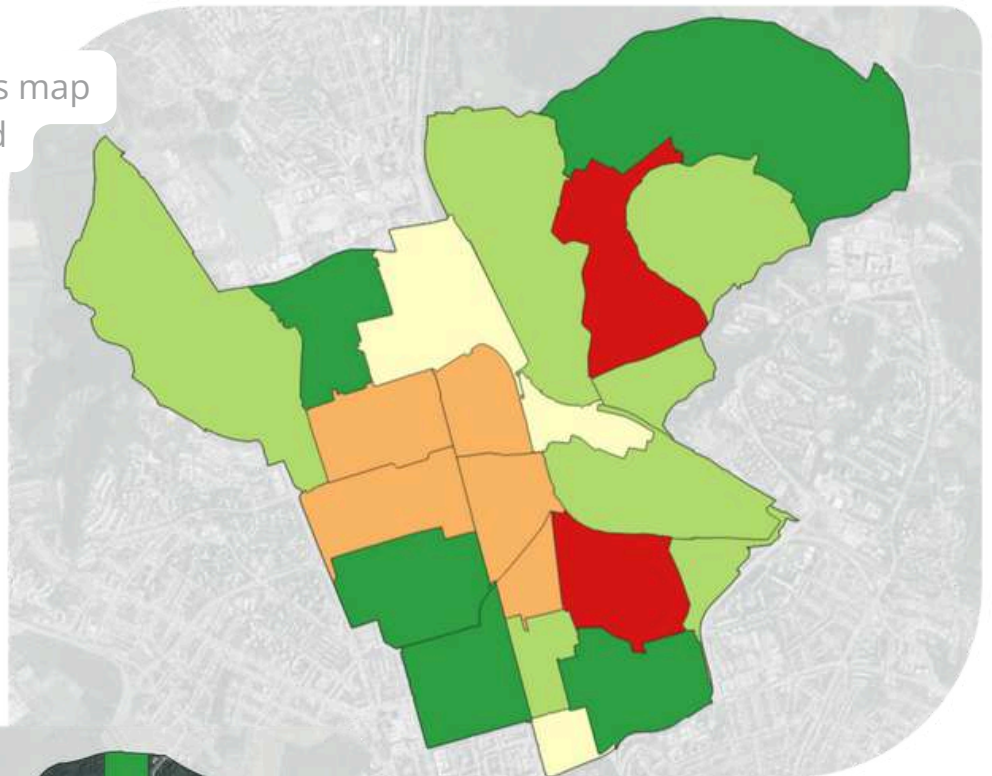


Overall 3-30-300 synthesis map per building

## Overall outputs :

- synthesis map per-building, each assigned one of the four categories
  - 0 rules met, 1 met, 2 met, 3 met
- synthesis map (clustering) layer of polygons (not) fulfilling the rule in 4 categories
  - 0 rules met, 1 met, 2 met, 3 met
- 300 x 300 m grid layer containing percentage of houses served by 3-30-300 rules
  - 4 categories : 0 rules met, 1 met, 2 met, 3 met
- synthesis map per-district, each assigned percentage value
  - how many buildings are served by the rule
- infographics showing problematic areas, areas of special interest, or other based on the stakeholders' requirements
- report document containing all results together with interpretation

Overall 3-30-300 synthesis map per-district, each assigned percentage value



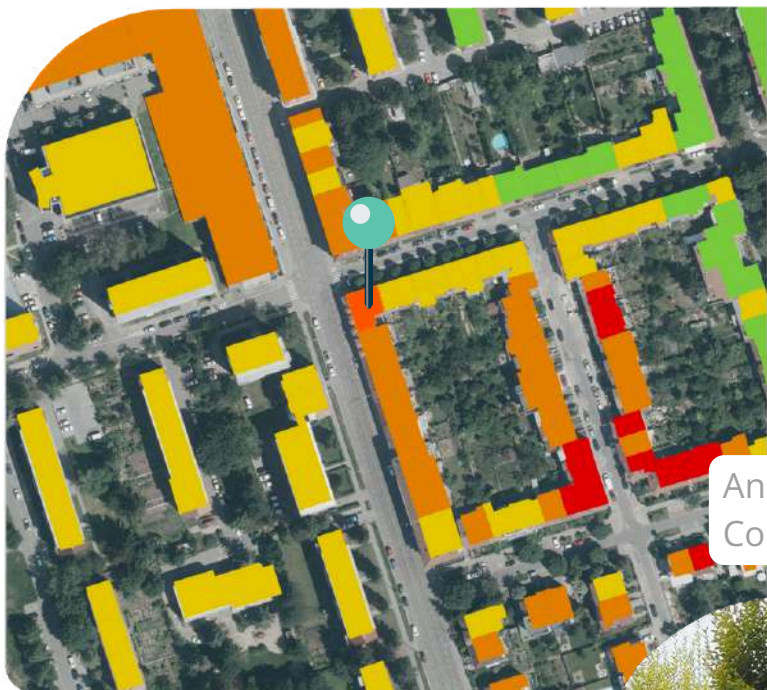
An aggregated 300 x 300 m grid layer containing percentage of houses served by rule 300

# RESULTS

## Tree Visibility (Rule 3)

85%

The analysis revealed that 85% of buildings in the Královo Pole district met the tree visibility requirement. These buildings had at least three large trees (with a minimum height of 8 meters or a canopy coverage of 20 square meters) within a 50-meter radius. However, 15% of the buildings failed to meet this criterion, especially in areas with dense commercial or industrial development where green spaces are sparse.

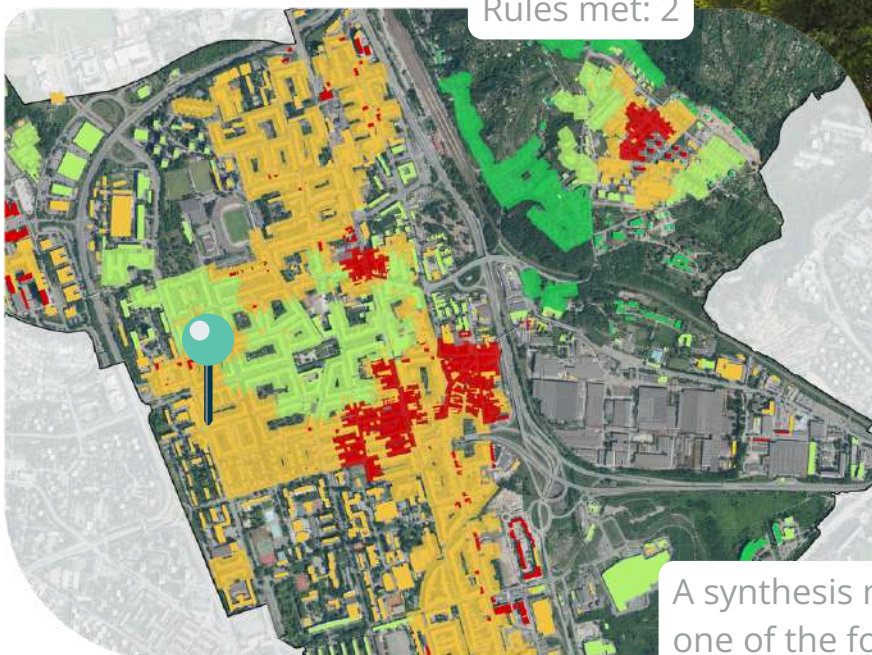


Feature	Value
new_buildings_5514_aggregated — Agg	
name	NULL
(Derived)	
(Actions)	
fid	2943
osm_id	50786199
code	1500
fclass	building
name	NULL
type	apartments
Mean	1,3333333333333333
Weighted_mean	1,392646502427004
3_Condition	1
30_condition	1
300_condition	0
Condition_SUM	2

An aggregated layer showing overall rules met. Condition 3: yes

Location: Svatopluka Čecha 95

Rules met: 2



A synthesis map per-building, each assigned one of the four categories.

## Tree Canopy Coverage (Rule 30)

17.8%

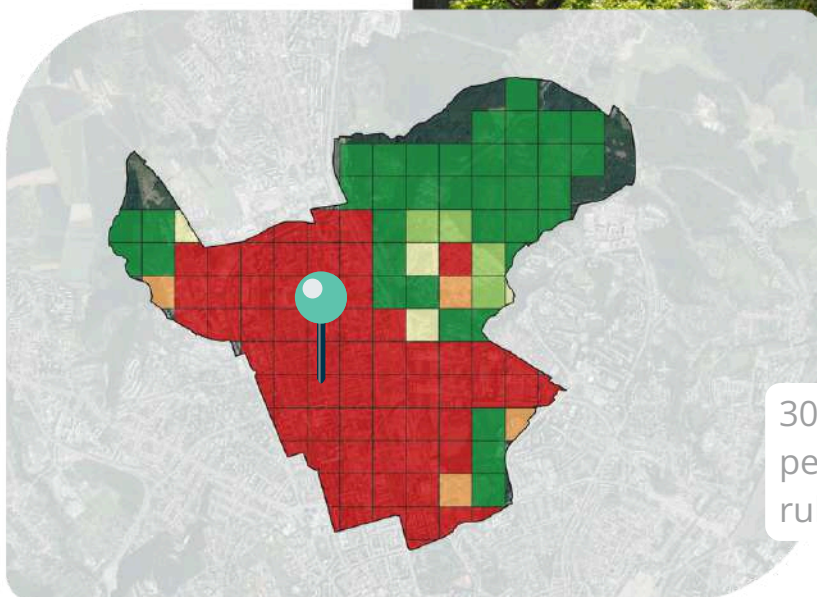
Our recent findings show that only 17.8% of buildings meet the recommended 30% tree canopy coverage within a 300-meter radius, as outlined in the 3-30-300 rule. Public parks and tree-lined streets play a key role in achieving this coverage, but many areas—especially those in newer urban developments—fall short, with up to 82.2% of neighborhoods lacking adequate canopy.



Feature	Value
new_buildings_5514_aggregated - Agg	
name	NULL
(Derived)	
(Actions)	
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osm_id	50783286
code	1500
fclass	building
name	NULL
type	residential
Mean	4,666666666666667
Weighted_mean	4,905033416483519
3_Condition	1
30_condition	1
300_condition	1
Condition_SUM	3

An aggregated layer showing overall rules met.  
Condition 30: yes

Location: Vodova 5  
Rules met: 3



300 x 300 m grid layer containing percentage of houses served by 30 rule

## Proximity to Green Spaces (Rule 300)

40.9%

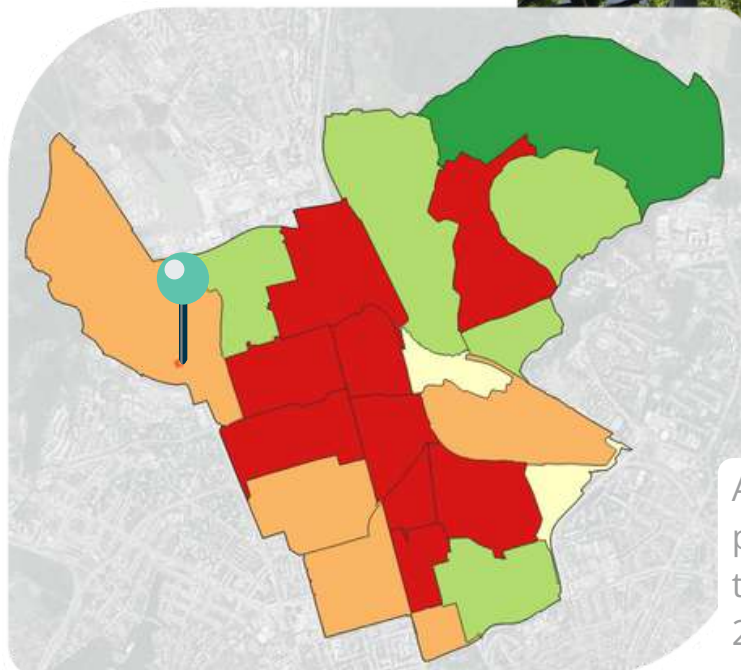
The proximity analysis showed that 40.9% of the district's buildings were within 300 meters of a qualifying green space (at least 0.5 hectares in size and 20 meters wide). Nevertheless, a majority of the buildings, exactly 59.1% were beyond the 300-meter range, with 640 buildings more than 600 meters away from the nearest park. These buildings were predominantly located in high-density residential zones or near industrial complexes.



Feature	Value
▼ new_buildings_5514_aggregated — Agg	
▼ name	IBM centre BC
▶ (Derived)	
▶ (Actions)	
fid	2273
osm_id	32456133
code	1500
fclass	building
name	IBM centre BC
type	office
Mean	3,3846153846153846
Weighted_mean	3,5129754849575434
3_Condition	1
30_Condition	0
300_Condition	1
Condition_SUM	2

Agregated layer showing overall rules met.  
Condition 300: yes

Location: Technická 3013/14  
Rules met: 2



A synthesis map per-district: The percentage of buildings that meet all three rules in this case ranges between 20-40%.

## Overall Rule Compliance

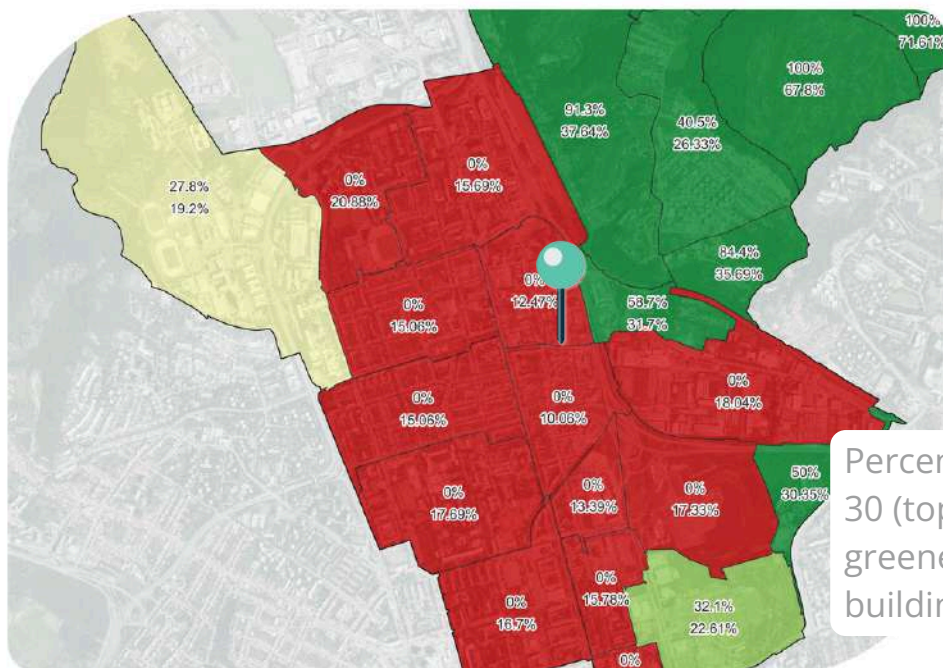
15.7%

The synthesis of all three criteria revealed that only 15.7% of the buildings in Královo Pole satisfied all three rules. Conversely, 9.3% of the buildings did not meet any of the criteria. Most buildings (75%) met one or two of the rules, with tree visibility being the most commonly fulfilled condition, followed by proximity to green spaces, while tree canopy coverage was the least fulfilled.



Aggregated layer showing overall rules met.  
Nr.of rules met: 0

Location:  
ASITIS office  
Chaloupkova 3



Percentage of buildings meeting rule 30 (top number) and average greenery coverage around the building (bottom number).

# AREAS NOT MEETING ANY RULES

The evaluation in Královo Pole revealed several streets and neighborhoods lacking sufficient green infrastructure, leading to notable deficiencies in environmental quality and public health benefits for residents. These areas, particularly dense residential and industrial zones, are in urgent need of attention.

Notable streets where green space is minimal include Kyselkova, Chaloupkova, Škárova, and sections of Vackova.

## Examples of streets, where no rules were met:

- Kyselkova
- Moskalykova
- Firkušného
- Jarmyly Kurandové
- Chaloupkova
- Škárova
- Košínova
- Vackova

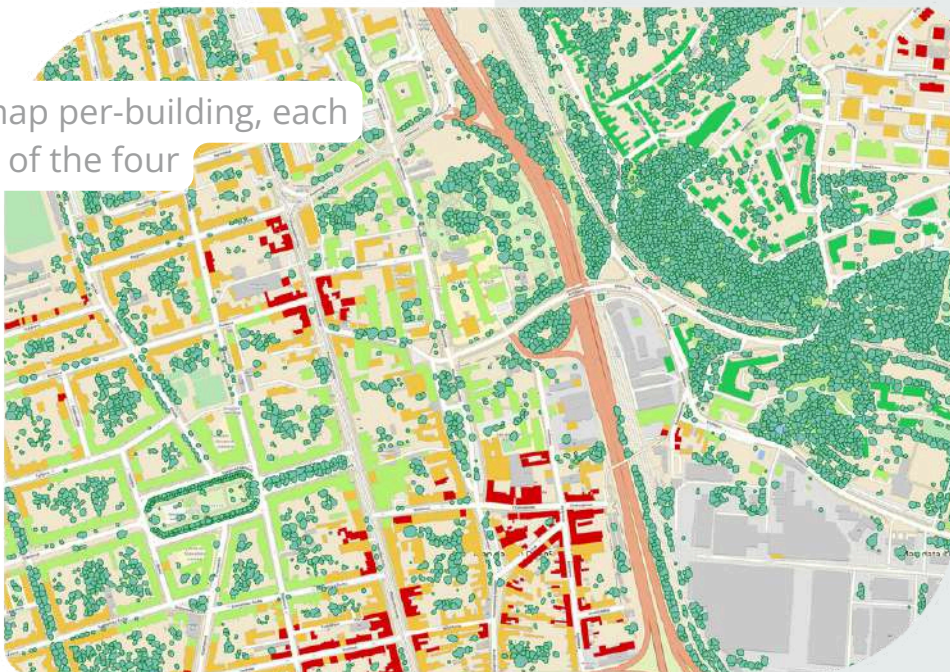
# AREAS MEETING ALL RULES

The assessment of the 3-30-300 rule in the Královo Pole district identified several streets and neighborhoods where all three rules (tree visibility, tree canopy coverage, and proximity to green spaces) are fully met. These areas provide exemplary cases of urban planning that prioritize greenery, offering both environmental and health benefits to the residents.

## Examples of streets, where all rules were met:

- Kolejní
- Mojžíšova
- Žleb
- Fibichova
- Myslínova
- Psotova
- Ondřeje Sekory
- Moskalykova
- Hogrova
- Zaječí hora
- Křížíkova

A synthesis map per-building, each assigned one of the four categories



# DISCUSSION

The assessment of the 3-30-300 rule in the Královo Pole district of Brno reveals both promising aspects and areas for improvement in urban green space planning and management. This discussion will analyze the results for each component of the rule and their implications for urban development and residents' quality of life. The findings are critical in light of global and European studies showing the numerous contributions of urban green spaces to public health, climate adaptation, pollution reduction, biodiversity conservation, and water regulation (Dobbs et al. 2017). Increasing urban greenery, specifically tree coverage, can reduce negative health outcomes such as those linked to the urban heat island (UHI) effect and are associated with reduced stress, improved concentration and lower levels of depression (Xiao et al., 2022). Urban green spaces play a crucial role in delivering ecosystem services and enhancing biodiversity (WHO, 2016 and 2017).

## Tree Visibility (Rule 3)

The evaluation showed that 85% of buildings in Královo Pole met the tree visibility requirement, demonstrating relatively strong performance in this area. In comparison to other European cities, this figure is notably higher than the average, where studies have shown that only about 60-70% of urban residents typically have access to visible trees from their homes. For instance, a similar assessment conducted in Barcelona reported tree visibility compliance at just 43%, highlighting Královo Pole's success in ensuring that the majority of its residents benefit from urban greenery ((Nieuwenhuijsen, M. J. et al, 2022).

As documented in studies from Barcelona, visible green spaces from windows have been associated with improved mental health, especially during stressful periods like the COVID-19 pandemic (Nieuwenhuijsen, M. J. et al, 2022; Xiao et al. 2022). Ensuring that more residents can benefit from visible greenery could help reduce anxiety and promote better mental well-being.



Technology park  
Královo Pole



Purkyňova street

### Tree Canopy Coverage (Rule 30)

The assessment in Královo Pole revealed that only 17.8% of buildings meet the 30% tree canopy coverage requirement. While this may seem like a shortfall, it reflects a common challenge faced by most urban areas across Europe. Achieving 30% canopy coverage in densely built environments is an ambitious goal, often difficult to realize due to spatial constraints, existing infrastructure, and competing land-use needs. While public parks and tree-lined streets contribute significantly to areas meeting this standard, the disparity in coverage indicates uneven distribution of green spaces across the district. This presents an opportunity for urban planners to focus on increasing tree canopy in undercovered areas, particularly in newer urban developments. Strategies could include implementing stricter green space requirements for new constructions, incentivizing the preservation of existing trees, and launching community tree-planting programs. The benefits of increasing tree coverage are far-reaching, as demonstrated by recent research estimating that expanding tree coverage to 30% in European cities could reduce premature deaths related to the UHI effect by up to 1.8% during the summer months (Nieuwenhuijsen, M. J. et al, 2022)



Božetěchův sad

### Proximity to Green Spaces (Rule 300)

The analysis of Rule 300 in Královo Pole revealed that 40.9% of buildings are within 300 meters of a qualifying green space. While this is a positive result, it means that the majority of buildings (59.1%) still lack easy access to nearby parks or green areas. What sets this assessment apart is the use of walking distance, rather than a simple aerial or straight-line measurement. This approach better reflects residents' real-world experience, as walking routes often differ significantly from direct distances due to infrastructure, obstacles, or access points. By focusing on walking distance, the results provide a more accurate picture of accessibility to green spaces, highlighting areas where residents may face difficulties reaching parks. The 640 buildings that fall over 600 meters from a green space present a key opportunity for urban planners to create new parks or enhance green corridors to ensure more equitable access for all residents.

# CONCLUSION

## Overall Rule Compliance

The synthesis of all three rules revealed that only 15.7% of buildings in Královo Pole met all three criteria—tree visibility, tree canopy coverage, and proximity to green spaces. Streets such as Kolejní, Mojžíšova, and Fibichova stand out as examples where all three rules are successfully met. These areas benefit from a well-balanced distribution of greenery, contributing to a higher quality of life for residents, with easy access to parks, tree-lined streets, and visual exposure to greenery from homes.

Conversely, 9.3% of the district's buildings failed to meet any of the three rules. Streets like Kyselkova, Chaloupkova, and parts of Škárova are examples of areas where no green infrastructure is present. These neighborhoods suffer from a lack of tree coverage, limited proximity to green spaces, and no visible trees from residents' homes. The absence of greenery in these areas underscores the need for targeted urban greening efforts, such as tree-planting initiatives and the creation of new parks or green corridors to improve the environmental quality and public health benefits for these underserved locations.

The fact that 75% of buildings met one or two of the rules suggests a strong foundation of green infrastructure in Královo Pole, but also reveals key areas where further investment is needed to enhance compliance and deliver a more equitable distribution of urban greenery.

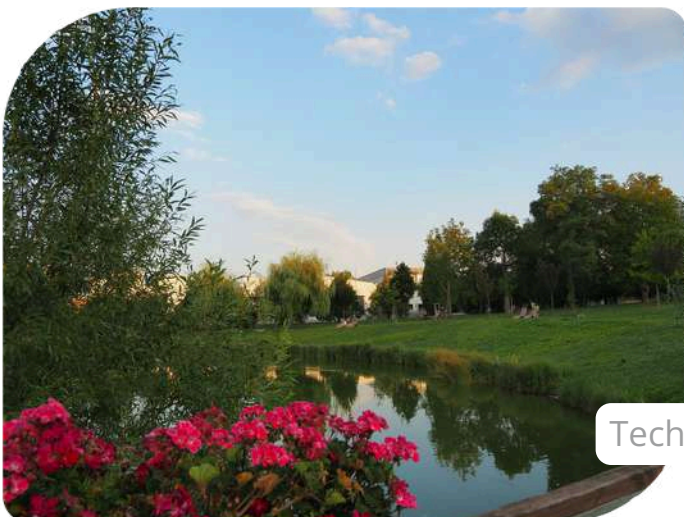
The case study on the application of the 3-30-300 rule in Královo Pole, Brno demonstrates both the potential and the challenges of enhancing urban greenery in this district. The 3-30-300 rule, aimed at improving urban livability through greenery, sets clear targets for tree visibility, canopy coverage, and proximity to green spaces.

Key findings revealed that:

- A promising 85% of buildings met the tree visibility rule, suggesting a success in providing residents with visible access to greenery from their homes.
- Only 17.8% of the area met the 30% canopy coverage requirement, indicating a significant shortfall in ensuring sufficient greenery in many neighborhoods.
- 40.9% of buildings were within 300 meters of a qualifying green space.

Overall, only 15,7% of buildings met all three criteria, highlighting the need for further urban greening efforts, particularly in areas of industrial and dense residential development.

In conclusion, while Královo Pole has made strides in providing green spaces, the study underscores the need for strategic initiatives to increase tree canopy coverage and ensure equitable access to green spaces. Implementing the 3-30-300 rule more fully could significantly enhance the district's urban resilience, public health, and residents' quality of life.



Technology museum park

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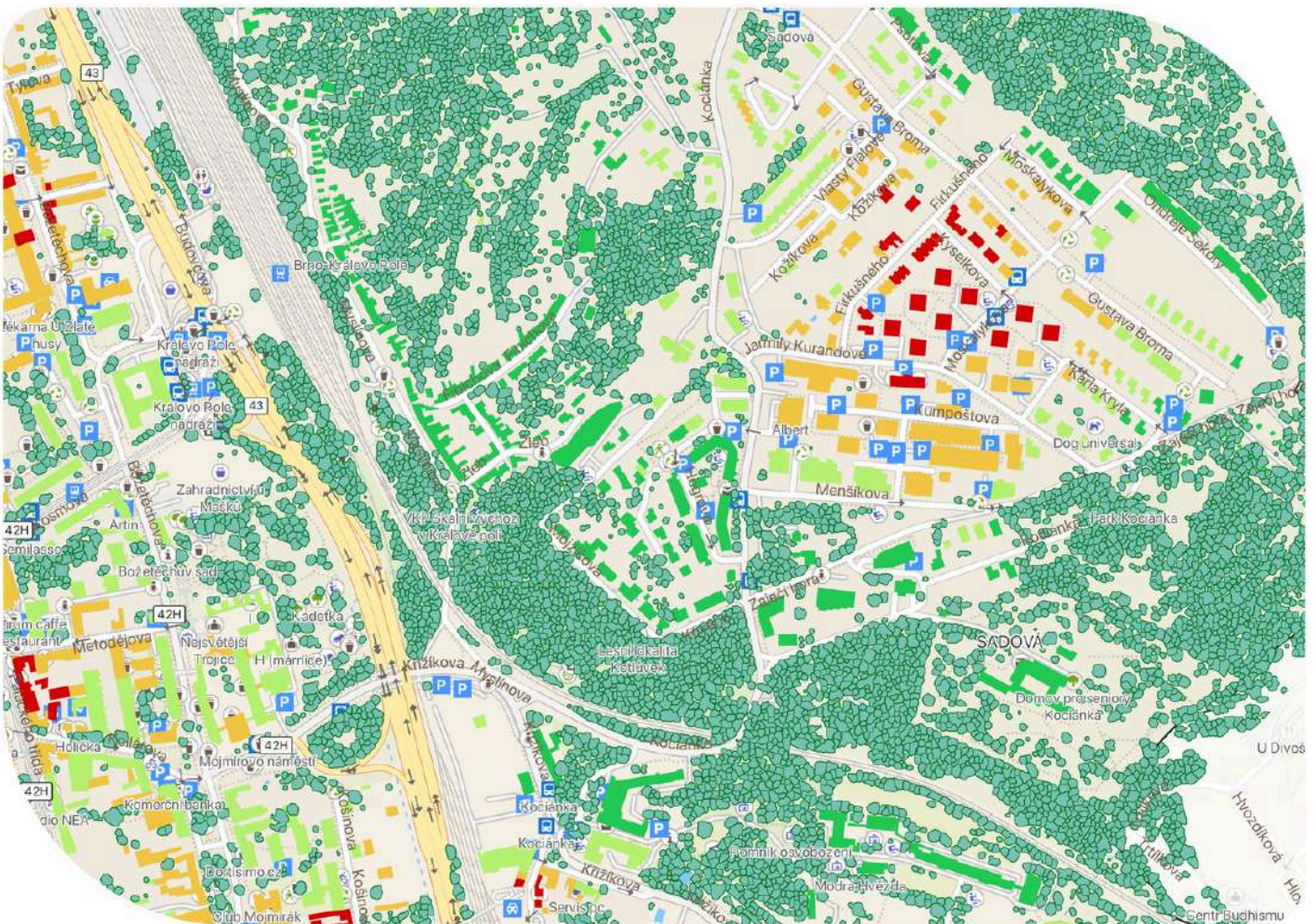
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A synthesis map per-building, each assigned one of the four categories

Ready  
thanks to  
**ASITIS**

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