CHALLENGES

Climathon Bratislava 2025

In the 6th edition of Climathon Bratislava, we have prepared 2 challenges for the participants, who can bring their ideas for solutions:

1. High Schools: Motivate young people in Bratislava to move actively to and from school
2. Urban puzzle: Help Bratislava plan smarter

When approaching all challenges, **keep the implementation of your solution** in mind.

General sources:

SECAP Sustainability Energy and Climate Action Plan

https://cdn-api.bratislava.sk/strapi-homepage/upload/SECAP_akcny_plan_pre_udrzatelnu_energetiku_a_klimu_29_4_2024_pages_63e1bdc9ca.pdf

Climate resistant Bratislava

https://klimatickyodolna.bratislava.sk/wp-content/uploads/2024/05/SECAP-hodnotenie-zranitelnosti.pdf

Bratislava data portal

https://data.bratislava.sk/#home

Challenge 1

High Schools: Motivate young people in Bratislava to move actively to and from school

Challenge vision

Bratislava envisions a future as a **climate-resilient and sustainable city**, where **active mobility is an integral part of everyday life**. This vision is embedded in several key strategic documents: the city's long-term development strategy *Bratislava 2030*, its first comprehensive *Climate Plan (SECAP)*, and the *Action Plan for Safe, Accessible, and Sustainable Urban Mobility*- a city-wide roadmap developed through interdepartmental collaboration to better align planning and investment in transport.

Bratislava is also part of the *EU Mission for 100 Climate-Neutral and Smart Cities* and has recently developed its Climate City Contract (CCC), which outlines the city's pathway toward climate neutrality. A core element of the CCC is its emphasis on inclusive engagement-ensuring that both stakeholders and citizens are actively involved in shaping a participatory and just climate transition.

Bratislava is particularly committed to engaging children and young people, who are among the most affected by climate change. The city sees intergenerational equity as a guiding principle in its transition efforts. To support this, Bratislava wants to leverage its existing participation platforms-such as Climathon and the City for Children project-to make sure that the voices, needs, and perspectives of young people are reflected in its climate policies and projects.

By 2030, the city aims to:

- increase the share of sustainable modes of transport in total mobility (modal split),
- improve traffic safety citywide,
- reduce greenhouse gas emissions from transport,
- improve air quality, and
- reduce noise pollution from traffic.

At the Metropolitan Institute of Bratislava, this vision is supported through projects like **Mesto pre deti (City for Children)**, which implements traffic-calming interventions and redesigns public spaces around schools to make them safer and more child-friendly. While physical improvements to the urban environment are a necessary foundation for active mobility, they are not enough on their own. Shifting the travel habits of parents and motivating children themselves to commute actively and sustainably is equally essential for fulfilling the city's vision.

This Climathon challenge is an opportunity to turn the city's strategic goals into tangible, everyday change in the lives of young people. It seeks solutions that not only enable active mobility, but **make it genuinely attractive by shaping habits, perceptions, and everyday choices**-so that children and students choose to walk, cycle, or take public transport voluntarily, not because they are told to. By focusing on **behavioral and mindset-based solutions**, the challenge supports a broader goal of **raising**

awareness of active mobility as a meaningful climate solution, already embedded in the city's Climate Plan.

Challenge context

Although active mobility has clear benefits for health, well-being, the environment, school performance or daily functioning in cities, still a large portion of primary school students (6 - 15 y.o.) in Bratislava don't commute to school actively, and European trends show that active mobility is generally low among secondary school students (15 - 19 y.o.). Many are driven by car, contributing to congestion and unsafe environments around school entrances especially during morning drop-offs. Parents driving their kids to school creates a vicious circle: more cars = more fear of unsafe space = more kids driven = more cars.

City for Children project has so far worked with 18 primary schools since 2022 (out of 105 primary schools in Bratislava). Through participatory methods, the project engages children, parents, schools, and local communities in age-appropriate ways - from data collection to co-creating interventions and shaping public discourse on urban mobility and well-being. The goal is not only to collect data, but to translate it into targeted, site-specific interventions - such as street redesigns, traffic calming measures, or activations of public space.

Key findings from surveys and observations at schools participating in City for Children include:

- Perceived safety around schools is low. On average, 48% parents rated it "rather" or "completely unsafe".
- Current modal split at participating schools shows 43% children are driven by car, 41% walk to school, 11% use public transport, and 6% cycle/scoot/skate. This is not solely a reflection of individual choices or traffic conditions. Structural factors such as urban sprawl or school zoning policies play a significant role. In contrast, cities like Barcelona report much higher rates of active and sustainable school mobility - 61% of students walk to school and only 10% are driven. This is in part thanks to an education system that promotes proximity, with most public schools located within 700 meters of children's homes.
- Preferred modal split of students shifts towards more active and sustainable modes of travel: walk (32%), public transport (20%), biking/scootering/skating (22%), and only 26% preferred to be driven.
- We found a positive correlation between the proportion of car use and the feeling of unsafety. In general, schools with higher car modal share had more parents identifying the surroundings of the school as unsafe.
- Distance also strongly influences behavior. Only 9% of children living within walking distance up to 5 minutes from school are driven by car, as opposed to 72% of children living 20+ minutes from school. The further a student lives, the more likely the trip to school is by car.
- Only 34% of children go to school completely on their own; 10% go with a peer without adults; 56% are accompanied by an adult.
- On average, children start commuting to school without the company of an adult around 5th grade. Until then, the majority are accompanied by adults.
- Children living within 5 minutes of school are most likely to go independently (39%), compared to just 28% of those living over 20 minutes away.
- Top reasons why parents drive their kids to school include: "It's on my way" (32%), "It's the fastest option" (17%), "We live too far" (16%), followed by concerns about weather, age of the child, unsafe traffic, or lack of good public transport links (multiple responses possible; percentages reflect the share of all selections). Safety around schools is therefore not as strong reason as we might expect.

- Factors that would make parents switch to active modes of transportation for their children include better public transport access (22%), improved traffic safety around school (19%), safe sidewalks (15%), cycling infrastructure near school (10%), and more attractive public space (5%). However, 22% of parents claimed they are not considering changing their current transport habits (multiple responses possible; percentages reflect the share of all selections).
- Recent air quality measurements in front of the Tbiliská primary school in Rača showed that the air inside a car contains 9 to 12 times more particulate matter than the air outside on the street. The same measurements revealed that during the morning rush hour, both children and adults are exposed to air that is 3 times more polluted than during weekends or evening hours. These findings reinforce the importance of reducing car traffic near schools - not only to improve safety, but also to protect children's health.

These data highlight the complexity of the challenge. While proximity and infrastructure matter, the key lies in changing habits and building a culture where active travel is normalized, supported, and seen as both safe and desirable by children and their parents.

Inspirations

Ideas could be based on, but not limited to:

- **Pedestrian Bus** ("Pešibus") is a community-driven initiative launched in Bratislava by the Metropolitan Institute of Bratislava in 2023 as part of the City for Children project. This concept is widespread worldwide, aiming to promote active commuting mainly among primary school children. Groups of children walk to school along designated routes, accompanied by volunteer adult "drivers". These routes have multiple "stops" near children's homes, encouraging participation. https://mestopredeti.sk/en/projekty/pedestrian-bus/ Similar widespread initiative is a **Bike Bus**. https://bikebus.world/ There are also **walking bus apps** developed to enhance communication within the school community for more effective operation, e.g. https://play.google.com/store/apps/details?id=au.com.gnhitsolutions.wsb3.android&pcampaignid=web_share
- **Beat the Street** (UK) is a community-wide, free-to-play walking and cycling game that uses contactless cards and "Beat Boxes" placed across towns to reward participants for tapping as they move between checkpoints. Key to its success is its gamified, inclusive, data-informed design with leaderboards, prizes, and real-time feedback, which creates a fun, social, and habit-forming experience. https://beatthestreet.me/
- **Kids Go Green** (Italy) is an educational mobility game that encourages children to walk or bike to school by converting their daily active kilometers into virtual journeys across the world. The initiative combines environmental education with gamification - students unlock destinations on a digital map, explore cultures and sustainability topics, and compete with other classes or schools through a leaderboard system that adds a fun, competitive element to the experience. https://kidsgogreen.eu/en/
- **Yellow Bike** (Žltý bajk) is a simple Trnava-city bike for long-term rental for only €30 per year, aimed at promoting sustainable mobility. They are intended for everyone who has a permanent or temporary residence in Trnava and is older than 18. Students of Trnava high schools can also rent them through their legal representatives. https://bajkujvmeste.trnava.sk/
- **NUDGD** (Helsingborg, Sweden), the behavioral science startup collaborated with the city to reduce car traffic around schools by encouraging parents to choose more sustainable commuting options. Through personalized digital communication and subtle behavioral

nudges - such as reminders, positive reinforcement, and clear information about alternatives - the project successfully motivated shifts in daily routines. https://youtu.be/k-veByUjCIA
- **Examples of commonly used strategies** to encourage active travel to school: https://www.mav.asn.au/__data/assets/pdf_file/0009/32499/WTS19-LGA-resource-guide.pdf

Challenge owners and beneficiaries

The owners of this challenge are:

- the Metropolitan Institute Bratislava, Participation and Urban Studies Section (City for Children team) Rebeka Petrtýlová
- Mayor's Office, Department of Urban Strategies and Analyses, Climate Office: Soňa Andrášová

Beneficiaries:

Primary beneficiaries: primary (6 - 15 y.o.) and secondary school students (15 - 19 y.o.) in Bratislava - the solution might be aimed at one of the two or at both of the target groups

Secondary beneficiaries: parents, school staff, local residents, city districts, city organizations and departments

Desired solution

We are looking for creative and practical solutions that can meaningfully support a shift toward active mobility among school-aged youth. Solutions should aim to influence real behavior change - specifically, to increase the share of students who regularly walk, cycle, or use other sustainable means to get to school, and help make this a normal and appealing part of their daily routine.

To be successful, the solution should meet the following criteria:

- **Impact on the target group:** It must have the potential to directly influence the everyday mobility choices of children and youth. Solutions that reflect an understanding of young people's motivations, habits, and barriers will be especially valued.
- **User experience:** It should be clear, simple to use, and engaging for young people.
- **Feasibility and testing:** The solution should be easy to pilot in a short time frame (e.g. at one school or in one class) and should not require large-scale or structural urban interventions.
- **Involvement of the school community:** Ideally, but not necessarily, it will also engage parents, school staff, or local neighborhoods to create a broader supportive environment.
- **Compatibility with city initiatives:** The solution should be designed in a way that allows it to be integrated into existing city programs, such as Mesto pre deti (City for Children).
- **Compatibility with the city design system and tech stack**: The solution can be designed in React, Node.js, Next.js, TypeScript, and can be linked to the existing city infrastructure e.g. Bratislava Account, parking app or city-open-code (GitHub).
- **Connecting active mobility to climate impact**: The solution could include a link between how kids get to school and their contribution to climate protection visible and understandable *(this element is not compulsory).*

While many European cities have implemented successful spatial interventions around schools such as school streets (London), safe routes to school and fronts of schools (Ireland), or full pedestrianisation (Paris, Barcelona), these are often already part of the City for Children program in Bratislava. **The Climathon, therefore, seeks solutions that go beyond physical changes and focus instead on how to motivate, inspire, and enable behavior change among children and parents.** We

welcome a variety of solution formats, including, but not excluded to social innovations, communication campaigns, digital tools or apps, gamified systems, peer-to-peer initiatives, school-wide challenges, or micro-interventions in the environment (non-construction-based). The solution should be financially feasible.

Required Skills

- **Data Analysis and Management:** Ability to interpret and process environmental data.
- **UX Design:** Skills in crafting engaging and intuitive user interfaces.
- **Software Development:** Proficiency in developing robust and scalable applications. (JavaScript/TypeScript, React, Next.js, Node.js, REST API/HTTP,, Authentication/OAuth, Basic DevOps|
- **Behavioral design** or **social innovation skills**
- Marketing / gamification / community engagement skills

Note: When you build your team, include people with different backgrounds to design creative and functioning solutions.

Relevant Data

Related strategic documents

- Strategic Plan (Bratislava 2030): https://bratislava2030.sk/
- Climate Plan (SECAP): https://bratislava.sk/zivotne-prostredie-a-vystavba/klima/klimaticky-plan
- Action Plan for Safe, Accessible and Sustainable Urban Mobility

City for Children

- About the project, activities: https://mestopredeti.sk/en/
- Map of participating schools, interventions around schools: https://mestopredeti.sk/mesto-pre-deti-na-mape/
- Survey data from City for Children- provided later

Other relevant data

- Land Use Study of Education in Bratislava: https://mib.sk/studia/uzemna-studia-skolstva/ including a storymap with the most important messages: https://arcg.is/0HbG5r0 and map portal with data about individual schools: https://experience.arcgis.com/experience/e25edd3fc2e94da483798fd5dbf3500e
- Department of Public Transport or DPB data- provided later

Challenge 2
Urban Puzzle: Help Bratislava plan smarter

Challenge vision

In line with the Bratislava 2030 strategy, the city of Bratislava, a modern, resilient and inclusive city, strengthens and **supports urban development through data and evidence**, **transparent and digitally empowered processes**. As real estate prices rise and the city grows rapidly, yet unevenly, also due to external shocks such as the pandemic and refugee inflow, Bratislava is reinforcing its approach to urban planning through better data.

By leveraging digital tools and cross-sector collaboration, we aim to **activate underused land** (especially brownfields), **align developer incentives with public benefit, and provide clear, real-time insights into how our city is growing** - ensuring that every new building contributes to a better quality of life and a more sustainable urban future.

Challenge context

Bratislava is one of the fastest-developing cities in the region. With a growing population and dynamic real estate market, the city is proactively planning for balanced, sustainable, and data-informed urban growth. As the complexity of managing urban growth, infrastructure, housing, mobility, and environmental sustainability is increasing - the analysts at the City Strategic Unit have to take into account plethora of stakeholders (ranging from the State, city boroughs, investors to general public), increasingly condensed traffic situation, changing demography of the City and the real estate market on day to day basis when making decisions regarding city planning and development.

Bratislava is appreciating more and more the value of further **integrating external data sources** into a standardized, well-structured, and accessible format. **We search for creative sources and additional layers of data to enrich the existing schemes.** The ideal (also rather challenging) outcome of the hackathon weekend is the integration of different data sources, data formats and structures would help city officials, planners, and decision-makers become better equipped to make informed decisions, develop effective long-term strategies, and ensure coordination among different sectors and stakeholders involved in the city's development. And this system should be compatible with the existing solutions that the city uses.

A single “source of truth” will not only support growing focus on evidence-based policymaking, but also enhance transparency, efficiency, and adaptability in addressing the city's current and future challenges.

This challenge focuses on **enhancing existing efforts by creating a more connected and accessible view of urban development.** While various institutions collect valuable information, this data is often fragmented, siloed, or not readily available in a form that supports strategic planning and collaboration as well as data integration. The city is creating solutions that build on its current data and seeks to improve its integration and visualization with data from external sources, such as the Statistical Office of Slovak Republic, construction authorities, or developers. The goal is to create a unified data infrastructure that enables better-informed decisions regarding the use of City funds, strategic projects

and goals in City districts and overall, improves coordination across city development initiatives, and supports the creation of long-term, evidence-based strategies. This would help Bratislava respond more effectively to urban challenges and enhance the overall quality of life for its residents.

Some use cases might include:

- Negotiation with stakeholders – the planners and strategists at the City Strategic Unit not only create strategies but also negotiate with stakeholders. Having exact, complex and comprehensive data is crucial for negotiating the best deal for the citizens of Bratislava.
- Analyzing the need for new infrastructure – with new developments the living standard of people already living in the zone should not decline, it should ideally increase which means that with new developments and new inhabitants there might be a bigger demand for transportation, kindergartens, schools, health facilities etc. It is crucial to understand these needs early to manage expectations of the stakeholders.
- Looking for potential sources of funding for the City for major infrastructure projects – the City has currently some tools like Contribution connected with the change of the Masterplan (kontribúcia z nadhodnoty pri zmene územného plánu) and the development fee (poplatok za rozvoj) which the City can use for funding infrastructure in the zone. Other sources of alternative funding are currently in the pipeline as well. For more info: https://bratislava.sk/zivotne-prostredie-a-vystavba/rozvoj-mesta/spoluucast-developerov-na-rozvoji-mesta

The challenge is particularly interested in new data points, data sources or KPIs on urban development to be integrated into the city data ecosystem. Moreover, the solutions may be oriented on providing interesting new interpretations of these data, connecting data and building various KPIs out of available or new data sources. The city's role will be to integrate these solutions into its dashboard and systems for further analytics.

Inspirations

Examples from abroad:

Cushman Wakefield report presents indicators that would be interesting to include in the solution: https://www.cushmanwakefield.com/en/slovakia/insights/slovakia-marketbeat

Dublin has created a similar, highly accessible and user-friendly system - the Dublin Dashboard, which provides citizens and city planners with up-to-date information on what is happening in the city. It uses open data and is oriented towards supporting data-driven decision-making. However, the project was closed in January 2022. https://dashboards.maynoothuniversity.ie/portfolios/digital-planning-platform/

Poland has launched the "Zoom on Kielce" platform to monitor 8 thematic areas (demography, education, environment, planning). It includes interactive maps, graphs, tables and comparisons with other cities. [https://zoom.kielce.eu/zoom-na-kielce]

Amsterdam - Dashboard processes real-time data from multiple fields - energy, environment, traffic (e.g. speed, parking, public transport delays). The goal of the dashboard is to support city and citizen decision making through KPI visualizations. [https://www.geodan.com/knowledge-and-innovation/managing-urban-processes-intelligently-with-the-amsterdam-smart-city-dashboard/]

Helsinki Urban Environment Map Service - Map is linked to building permit and infrastructure databases. Map layers Real Estates, Unseparated Parcels and Buildings shows a possible interface for the challenge solution. It is available in Finnish and English. https://kartta.hel.fi/?setlanguage=en

Challenge owners and beneficiaries

Department of Urban Strategies and Analyses**:** Michal Petrovič, Ivana Borčinová

Other beneficiaries:

Slovak Academy of Sciences - Martin Šveda

Metropolitan institute Bratislava - Adam Juhás

Data Department - Maroš Michalov

Desired solution

Documentation on how to integrate and optimize the use of different data sources and the enrichment of the existing schemes.

Nice to have:

Interactive dashboard - Create a platform that centralizes and visualizes all relevant data or KPIs in one place in a concise way, in a map perhaps.

Main topics of interest are:

- Building permits
- Long-term changes and trends to the housing, retail and admin stock of the city
- Development fee
- Long-term anticipation of development fees in time
- Climate change
- How to communicate it to developers to account for it in their plans?
- Activation of idle land of the city
- Where could solutions for green energy be located? E.g. heat pumps
- Population living habits and how they change over time
- Foreigner inflow and how the Bratislava estate market absorbed steep increase of refugees

Indicators that should/might be included in the solution:

- Pricing maps of apartments
- The number of apartments in Bratislava
- The number of citizens
- Occupancy rate
- Housing affordability ratio
- Land use mix index
- Brownfield vs. greenfield development ratio
- Development fee per m2

- Time-to-Approval
- Heat island index
- Parking spaces per inhabitant
- Migration rate
- Energy use per m2
- Renewable energy share
- Any other indicator that you deem useful for analysis purposes

Must haves

- Functional methodology
- Standardization across data sources
- International comparison (e.g. density of population)
- Dashboard about pipeline of projects
- Pipeline of unpublished projects
- Tracking the status
- Connection to the urban development contribution fee

Required Skills

- **GIS and Data Science:** Skills in handling geographic and predictive data.
- **Urban Planning:** Integration of data insights into city planning.
- **Data Analysis and Management:** Ability to interpret and process development data.
- **UX Design:** Skills in crafting engaging and intuitive user interfaces.
- **Software Development:** Proficiency in developing robust and scalable applications.
- **Data Visualization:** Expertise in presenting complex information graphically.
- Interdisciplinarity would be great (economist, human geographer...).

Relevant Data

Urban Plan - provided later

- Functional Areas (or Zoning Areas)
- Transport Network
- Protection Zones - Transport and Technical Infrastructure (or Utilities)
- Landscape, Landscape Protection - Ecological Stability System (or Territorial System of Ecological Stability), Floodplain (or Inundation), Small-scale and Large-scale Protected Areas
- Soil Ecological Units (system for evaluating agricultural land)

Master Plans, Studies