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D.1.3.1 Local plan for the city of Český Krumlov

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Abbreviations

AF	Application form
DRT	Demand-responsive transport
KPI	Key Performance Indicator
PT	Public transport

1. Introduction

This Local Plan has been developed under activity D.1.3.1 of the OPTI-UP project and serves as a methodological and strategic document supporting the optimisation and integration of public transport in the pilot city of Český Krumlov. It is not intended to be a fully autonomous plan but is instead built upon higher-level strategic frameworks at the European, national, and regional levels. Its aim is to ensure that each proposed measure aligns with defined goals, performance indicators, stakeholder engagement, and the principles of sustainable mobility.

The document is based on the findings of the analytical phase (D.1.1.1), updated data on the city's transport system, and the results of a recent public survey. It responds to several identified challenges, including:

- a low share of public transport in overall mobility (14%),
- lack of fare and operational integration between urban and regional services,
- outdated infrastructure at key transfer hubs,
- traffic pressure in the historic city centre driven by tourism,
- uneven access to public transport in peripheral districts (e.g. Vyšný, Slupenec, Nové Spolí).

At the same time, it draws on existing strategies: national mobility objectives (e.g. support for electromobility, digitalisation, transport integration), regional planning in the South Bohemian Region, and the city's own visions for transport and environmental development.

The main outcome of this Local Plan is to establish a practical framework for piloting measures, including:

- an overview of public transport goals and priorities,
- proposals for concrete actions with expected impacts and timelines,
- identification of key stakeholders and cooperation structures,
- performance indicators for monitoring and evaluation,
- recommendations for upscaling and transferability to other cities or cross-border contexts.

The plan provides a solid foundation for implementing and assessing pilot interventions in Český Krumlov and aims to serve as a model for similar towns across Europe. It supports knowledge sharing, cross-sectoral collaboration, and contributes to the goals of long-term regional development.

2. Background and Context

This chapter outlines the background and context in which the Local Plan operates. It summarizes the main findings from the territorial, demographic, and transport analyses—with a specific focus on public transport supply and usage—and provides a review of objectives set by higher-level policies and plans on mobility. Together, these results establish the knowledge base for the strategic choices developed in the following chapters.

2.1. Context overview

The information presented in this chapter constitutes a core set of baseline inputs relevant to the development of the Local Plan and derives from the in-depth analysis carried out by Opti-Up in Deliverable D.1.1.1.

The City of Český Krumlov has long faced specific transport issues stemming from its geographical configuration, the high seasonality of tourism, and insufficient integration of transport systems. The city center is historic, spatially constrained, and burdened by both private vehicle traffic and the movement of tourists.

Currently, public transport in Český Krumlov is provided exclusively by bus services. The city operates two main lines as part of its municipal public transport, while a third line, part of the regional transport system, also runs through the city and partly serves local travel needs. Nevertheless, the network is very compact, with a total of only 150,000 kilometres operated annually and around 510,000 trips served per year. The system shows low economic efficiency: the average cost per bus kilometre is EUR 2.42, while revenue from tickets and passes amounts to only EUR 0.258 per passenger. Moreover, the average fare collected per rider is merely EUR 0.18, indicating the low financial sustainability of the current model.

The transport system is designed to cover regular local needs rather than to accommodate the high tourist flows during peak seasons. Given the historic character of the city centre and its sensitivity to traffic, the absence of electrified lines—although electrification is planned—further constrains the development of sustainable mobility. The low average speed of buses and the limited network coverage reduce the attractiveness of public transport, especially when compared to the convenience of private cars.

Key Findings of Phase 1 Analysis

Low Share of Public Transport in Overall Mobility

Public transport accounts for only around 14% of all trips in Český Krumlov: 8% urban public transport, 5% regional bus services, and just 1% rail use. The railway's limited role is largely due to the inconvenient location of the train station outside the city centre and the absence of connecting transport. As a result, most daily journeys are made by private cars or on foot.

This imbalance significantly affects both the quality of life for residents and the traffic burden on the historic city centre. The low share of public transport also constrains efforts to promote more sustainable mobility modes. Insufficient service frequency, long intervals, and a lack of coordination between urban and regional systems reduce the attractiveness of public transport, especially for commuters and tourists. Given the city's topography and seasonal fluctuations in demand, strengthening public transport represents a major challenge for future mobility planning.

Insufficient Coordination of Transport Systems

Urban public transport, regional bus lines, and rail services in Český Krumlov are neither fare-integrated nor operationally coordinated. The tariff policy and ticket pricing are defined separately and are not part of a unified system. As a result, passengers often have to pay separately for each part of their journey, reducing the overall attractiveness of public transport.

Moreover, the operations of different transport modes are not synchronized. Services overlap without meaningful connections or harmonised schedules, leading to inefficient use of resources and making public transport less competitive compared to private car travel.

Weak Infrastructure and Equipment at Transfer Hubs

Transport infrastructure at transfer hubs in Český Krumlov shows significant weaknesses. Stops, particularly the Špičák bus terminal, lack basic passenger amenities and comfort. The terminal is oversized relative to actual demand and has not undergone substantial modernisation. The equipment and facilities at stops are not centrally managed, and ownership of technical infrastructure is fragmented.

The absence of essential facilities, limited passenger information, and inefficient spatial layout reduce user comfort and contribute to the overall low attractiveness of public transport.

Tourism as a Burden on the Transport System

Tourism imposes a considerable burden on the transport infrastructure of Český Krumlov, particularly during the summer season and on weekends. The historic city centre, which is both spatially constrained and protected, receives a large influx of day-trippers. Although public transport accounts for only a small share of total trips (14%), the transport system is not adequately structured or coordinated to manage seasonal fluctuations in travel demand.

The lack of intermodal connections, low service frequency, and outdated infrastructure at transfer points (such as the Špičák terminal) limit the capacity of public transport to serve as a viable alternative to private cars. As a result, there is increasing pressure on parking near the city centre and on public spaces, where pedestrian flows and service traffic intersect. The document does not reference any systematic regulation of shuttle services, which suggests that their operation—if present—is not formally managed. Without appropriate regulation and coordination, tourist-related traffic continues to complicate everyday mobility for both residents and visitors.

Uneven Accessibility of Public Transport

Public transport accessibility within the city of Český Krumlov is geographically uneven. Outlying districts such as Slupenec, Vyšný, and Nové Spolí—identified in the document as distinct zones—have poorer walking access to municipal public transport stops. These areas lie outside the main corridor served by the two municipal lines and the partially overlapping regional line.

Furthermore, the public transport network does not offer direct connections between several key areas of the city—for example, between Vyšný and the industrial zone at Tovární. This lack of connectivity complicates daily mobility, especially for residents commuting to work, services, or schools, and often forces them to rely on less sustainable modes of transport. Poor access and indirect routes likely contribute to the low use of public transport in these neighborhoods.

2.2. National and regional mobility Plans goals

The goals and measures defined within a local public transport plan should not be developed in isolation. Instead, they must align with the broader strategic objectives established at European, national, regional, and local levels. For small and medium-sized cities, this alignment is especially important: it ensures consistency with overarching policy directions, facilitates access to funding and technical support, and enhances the strategic coherence of local actions.

A comprehensive understanding of these higher-level frameworks allows cities to build their local strategies on a robust foundation, ensuring that local choices actively contribute to shared goals such as climate neutrality, improved public health, digitalization, and social equity in transport systems.

The goals for developing sustainable mobility in the Czech Republic are defined by key national strategic documents that provide a framework for transport planning at both urban and regional levels. The most relevant of these include the Czech Republic 2030 Strategy, the State Environmental Policy, and the National Clean Mobility Action Plan. These documents outline binding and guiding targets in the areas of emission reduction, support for public transport, digitalisation, and transition to alternative fuels.

They also emphasize the importance of public involvement, multi-level governance, and the introduction of intelligent transport systems (ITS) that increase efficiency, reduce environmental impacts, and improve user experience. The Czech Republic 2030 Strategy explicitly calls for a shift from individual car traffic to sustainable modes of transport through integrated planning and coordinated implementation across state and municipal levels.

Municipalities are encouraged to monitor transport-related emissions, energy consumption, and modal split, and to adjust their policies accordingly. Český Krumlov follows this guidance by actively evaluating its vehicle fleet composition, public transport accessibility, and investment priorities in relation to CO_2 reduction targets.

The Ministry of Transport, listed in the document as the national coordinating body, plays a central role in harmonising strategic objectives and supporting their implementation across local levels. In addition, regional and municipal authorities, infrastructure managers, and expert platforms are involved in translating these goals into practical actions.

In the case of Český Krumlov, the Ministry's guidance is implemented through cooperation with the South Bohemian Region, which serves as the main coordinating authority for regional services and transport investment. The city cooperates closely with JIKORD, the regional transport organizer, which oversees service procurement, fare harmonisation, and timetable planning.

The implementation of national objectives is further supported through EU funding mechanisms, including the Operational Programme Transport, the Modernisation Fund, and the Environment Operational Programme. Český Krumlov identifies these sources as critical for its transition to clean vehicle fleets and digital transport services.

The current national frameworks set the following key objectives:

- Reduce greenhouse gas emissions from transport in line with EU climate commitments.
- Support the development of electromobility and alternative fuels (e.g. electric buses, hydrogen, CNG).
- Strengthen public transport as the backbone of mobility, combined with active modes (walking, cycling).
- Improve integration between urban and regional transport, including fare and timetable coordination.
- Promote digitalization in transport (real-time info, smart ticketing, traffic management systems).
- Expand the use of dynamic and data-driven planning tools, such as mobility heatmaps, GIS-based network evaluations, and service demand modeling.
- Ensure transport equity by addressing the needs of vulnerable populations, including seniors, people with disabilities, and residents of low-density peripheral areas. In Český Krumlov, the planned "mobility-on-demand" pilot aims to serve the elderly population in districts such as Slupenec and Horní Brána.

The local mobility goals of the city of Český Krumlov are aligned with regional mobility strategies and the forthcoming Sustainable Urban Mobility Plan (SUMP). Their implementation involves cooperation between the city and the South Bohemian Region, which is explicitly mentioned in the document as a key partner in strategic public transport planning, spatial development, and infrastructure financing.

This cooperation extends to planning of intermodal transport nodes, including the future revitalisation of the main train station and its integration with city buses and pedestrian access routes. In addition, the

city coordinates with regional entities to develop mobility hubs equipped with electric vehicle charging points, bicycle racks, and real-time information panels.

Český Krumlov's public transport vision includes the preparation of new contracts that will define service levels until 2035, with strict ecological standards and obligations for digital service monitoring.

Key local directions include improving public transport coverage, reducing emissions, modernising the vehicle fleet, and ensuring seamless integration with regional systems. For example, the city plans to introduce five electric buses into public transport operations, illustrating the direct application of clean mobility principles at the local level.

The city has already identified suitable routes for electrification based on operational distance, charging time, and elevation gain. Electric buses are intended to replace diesel vehicles on main municipal lines, particularly those connecting residential areas to the town centre and tourist hotspots.

In addition to fleet renewal, the city plans to install three fast-charging stations for municipal vehicles and one multimodal hub with charging infrastructure accessible to the public. These investments are supported by the national Clean Mobility Action Plan, which sets targets for low- and zero-emission public procurement.

Český Krumlov also aims to enhance the user experience through digital journey planners, accessible platforms, and unified branding of public transport services to increase passenger loyalty and public visibility.

Given the city's historic character, strong tourism presence, and dispersed residential districts, the local objectives aim to address specific accessibility, and sustainability needs while remaining compatible with the broader regional mobility framework.

Tourism-related traffic is one of the main challenges for the city, with peak seasonal volumes creating congestion and safety issues, especially around the historical core and the bus terminal. To mitigate this, the city is planning targeted pedestrianisation, traffic calming zones, and remote parking with shuttle services during the summer season.

The transport strategy also includes the creation of "mobility corridors" connecting residential areas (e.g., Nové Spolí, Domoradice, Vyšný) with employment zones and educational institutions. These corridors will prioritize bus lanes, cycling paths, and safe pedestrian crossings.

Urban design measures include the revitalization of public space around main stops and integration of green infrastructure such as trees and rainwater retention systems into transport facilities.

The specific local goals include:

- Improve accessibility of public transport in peripheral and tourist-heavy areas.
- Reduce traffic pressure in the historic city center, especially during peak tourist seasons.
- Promote clean mobility, including testing of electric buses and developing charging infrastructure.
- Increase the attractiveness of public transport for both residents and visitors.
- Enhance integration with the South Bohemian Region's transport services, including coordinated schedules and unified fare systems.
- Establish a unified fare platform that combines city and regional tickets via mobile and smartcard systems.
- Strengthen the role of railway services by improving access to the main station and coordinating local buses with train departures and arrivals.

• Monitor key performance indicators (KPIs) for public transport, including punctuality, ridership levels, emissions, and customer satisfaction, with quarterly evaluations and public reporting.

The strategic orientation of transport policy in the Czech Republic is shaped by national-level frameworks such as the Czech Republic 2030 Strategy, the State Environmental Policy, and the National Clean Mobility Action Plan. Although not named explicitly in the source document, these strategies are represented through the active involvement of national institutions—particularly the Ministry of Transport, which serves as a central coordinating authority.

Key goals include reducing greenhouse gas emissions, promoting electromobility, increasing digitalisation, integrating transport services across different levels, and strengthening public transport alongside active modes of travel such as walking and cycling. These priorities are reflected at the regional and local level—for example, through the planned deployment of electric buses or coordination of services with the South Bohemian Region's fare and timetable systems.

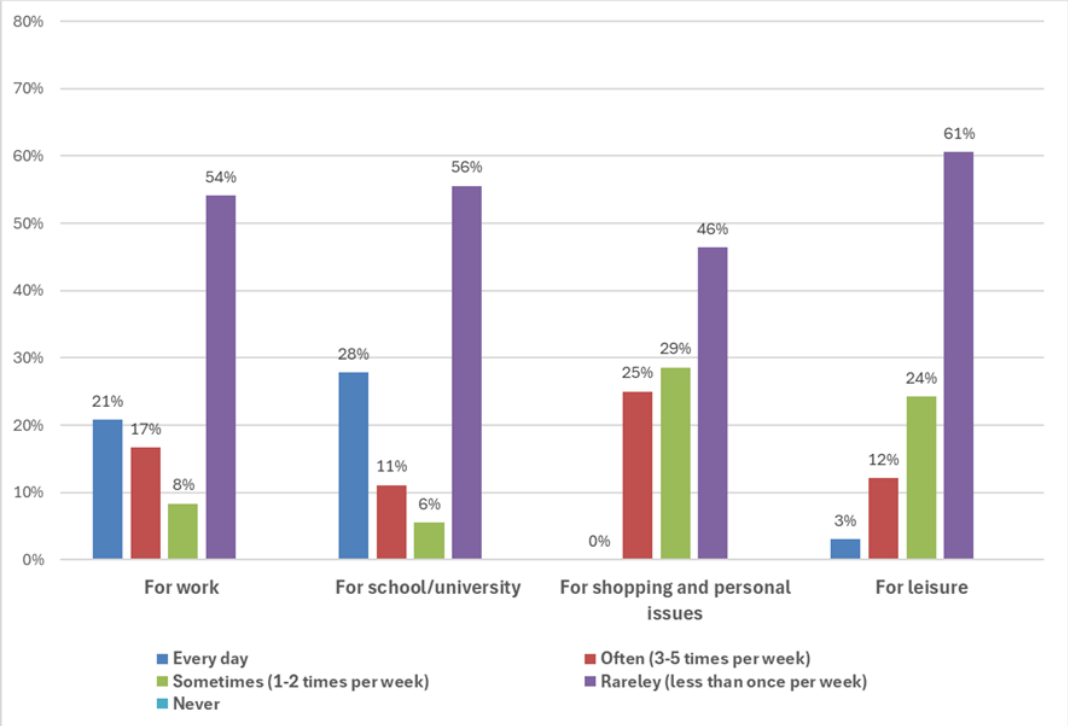
The city of Český Krumlov commits to a 40% reduction in greenhouse gas emissions from transport by 2030 compared to 2020 levels. Achieving this requires a modal shift from cars to public transport, especially in daily commuting patterns.

As part of this strategy, new bike-sharing options, school bus lines, and integration with long-distance coaches are being considered. The city is also working to strengthen institutional capacity in transport planning through staff training and collaboration with universities and research institutions.

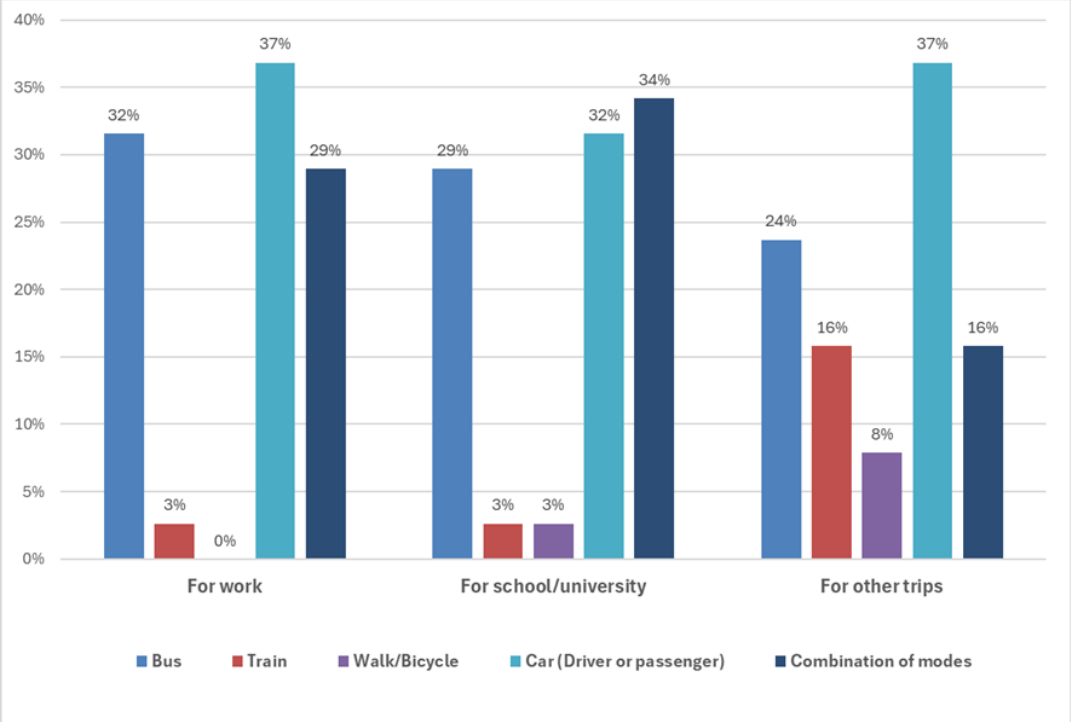
2.3. Results of survey

The goal of the survey is to find out what the current level of citizen satisfaction is, considering various aspects, such as the coverage of the transportation system relative to the city, reliability of schedules, vehicle capacity, and cleanliness, and what can be improved. Users' input can serve Transportation operators as well as the Public Administration or Municipalities, Regions that manage public transportation, as a basis for future improvements and to create a public transportation system that is more efficient, comfortable, accessible for all, and takes into account the real needs of citizens.

How often do you use the Public Transport?

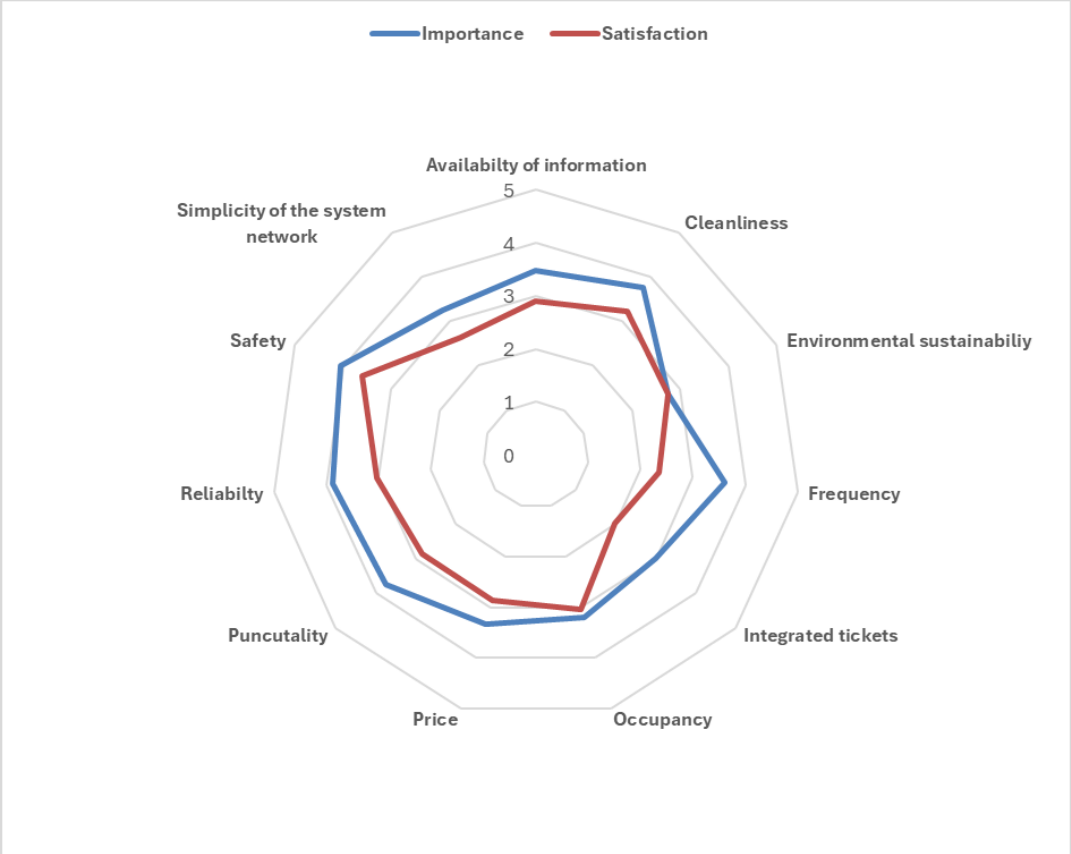


Which mode of transport do you use most often?

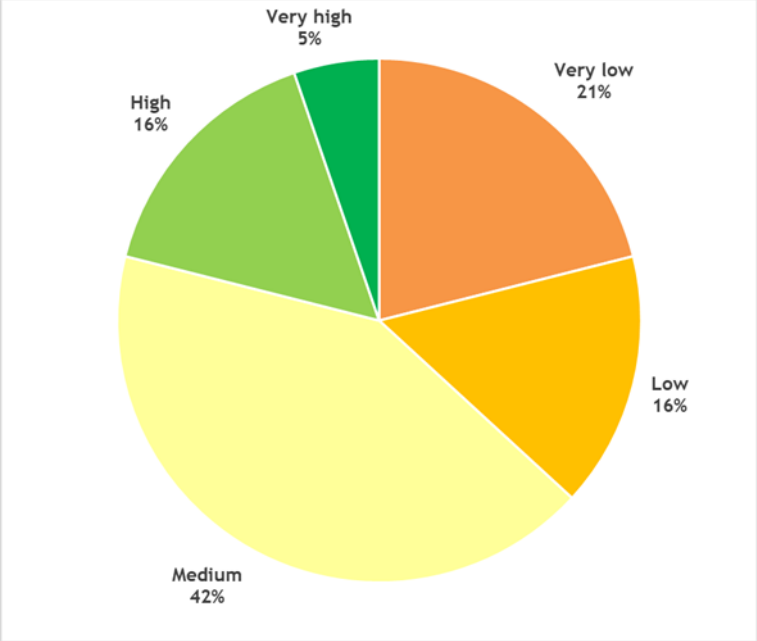


Grade the satisfaction and the importance of the following characteristics about the public transport.

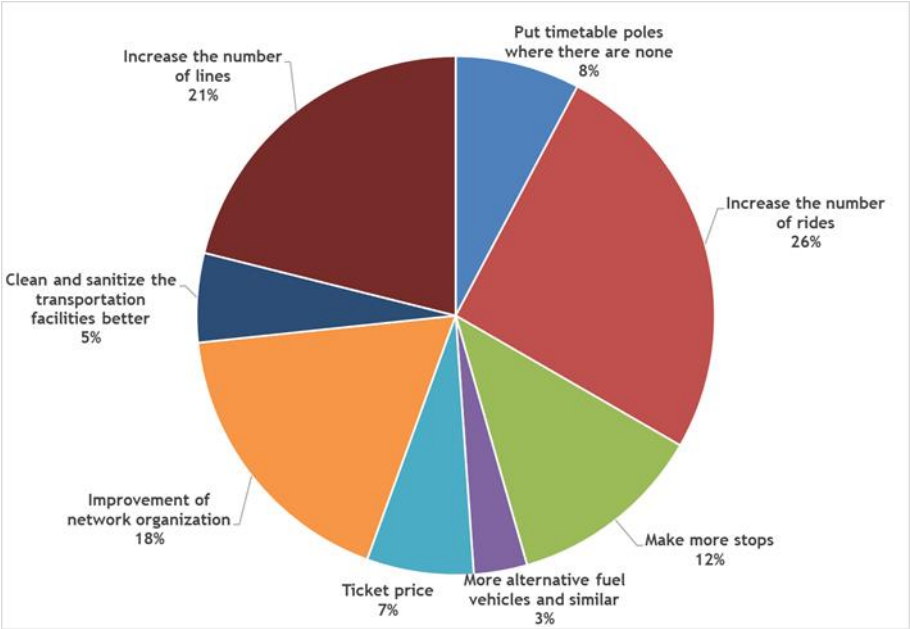
[Grades from 1= very low to 5= very high]



Rate your satisfaction with the public transportation you use most frequently?



What would you suggest improving the public transport? (max 3) *



What improvements would you suggest that were not mentioned in the previous question?

- Introduce or fix **Wi-Fi on buses**.
- **Direct school bus line** between Mír and Plešivec housing estates.
- **Renew the bus fleet** – purchase modern vehicles.
- **Upgrade and build new bus stops**, including better surfaces and shelters.
- **Color-coded lines** and simplified stop names.
- Clearer information system and LED displays.
- **More frequent service**, ideally every 30 minutes in all city areas.
- Better coordination with trains.
- Ticket machines at stops for faster boarding.
- Early morning connection to České Budějovice (arrival before 6:00 a.m.).
- **Make Mír the final stop** for lines 1 and 2 or introduce integrated fares.
- **More accurate timetables**, reduce long idle times.
- Friendlier and more helpful drivers.
- Improved timetable readability, especially for seniors.
- Use smaller buses more often and improve cyclist safety.

The public transport survey in Český Krumlov gathered responses from 38 participants and provided a comprehensive view of how local residents perceive the current state of transportation in the town and its surroundings. The results indicate that public transport plays more of a supplementary role, while individual car use dominates, especially for commuting to work and leisure travel.

In terms of frequency of public transport use, it is most commonly used for personal errands and leisure activities, with most respondents selecting options like "rarely" or "sometimes." Only a minority of respondents regularly use public transport for commuting to work—most either selected "not related to me" or indicated infrequent use. Regarding school travel, 20 respondents stated that the question did not apply to them, but the remaining 18 showed that public transport can be crucial in this context—5 use it daily, and others use it often or sometimes. This suggests that especially the younger population is partially dependent on public transport.

When it comes to the most commonly used means of transport, personal cars clearly dominate—both for commuting and for other trips. For school travel, in addition to cars, buses and combinations of various transport modes are more frequently used, reflecting some variability and dependence on the availability of services. Trains appear only marginally in the responses.

Regarding the evaluation of specific aspects of public transport, most ratings across various characteristics fall in the middle of the scale. Notably, some areas like frequency of services, simplicity of the network and the integrated ticketing system were often rated as very low, highlighting specific weaknesses in the system. On the other hand, aspects such as safety, cleanliness and access to information were rated relatively well.

The main gap between expectation and satisfaction of the users is with the frequency of the LPT

In terms of overall satisfaction with public transport, most people rated it as “medium” (16 out of 38). However, 14 respondents expressed dissatisfaction (6 rated it low, 8 very low), while only 8 people gave a “high” or “very high” rating. This suggests that although public transport is not in crisis, perceptions of quality are often moderate or critical.

A significant part of the survey focused on open suggestions for improvement. The most common proposals included increasing the number of routes and trips, adding more stops, improving access to information (e.g., timetables and signage), better coordination of connections, and improved service to outlying areas. Some respondents also expressed the need for more comfort—such as air conditioning or better-equipped vehicles and shelters. These suggestions offer valuable feedback and clearly highlight where people see room for improvement.

3. SWOT and Best Practice Analysis

The following chapter is structured in two parts: the first regarding the SWOT Analysis and the second one regarding the selection of Best Practices that could be useful for the Local Plan and Pilot Action.

3.4. SWOT Analysis

The SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) is a strategic tool that helps small and medium-sized cities assess their current public transport landscape and develop a forward-looking plan for improvement. This methodology enables the city of Český Krumlov to systematically evaluate its transport systems from economic, environmental, and social perspectives, ensuring a balanced and sustainable approach to future development. The analysis incorporates and summarizes all findings from the previous qualitative and quantitative work and is enhanced by engagement with stakeholders.

Table 1: SWOT definition

Strengths	What is currently working well in your LPT system, or what characteristics of your city support a good LPT service?
Weaknesses	What is NOT working well in your LPT system, or what characteristics of your city make it difficult to provide a good LPT service?
Opportunities	Are there any future developments in your city (not necessarily related to transport) that could improve the LPT service?
Threats	Are there any future developments in your city that could negatively impact the LPT service?

Strengths (S)
Compact urban structure enables efficient service coverage.
Centralization of key services and institutions.
Existing public transport and railway infrastructure.
Well-positioned transfer hub at Špičák supporting access to the historic centre.
Functional municipal bus network connecting key residential, commercial, and industrial zones.
Regular integration of tourism transport into the city's system during high season.
Recent modernization of the rail corridor between České Budějovice and Český Krumlov.
Active cooperation between local and regional transport authorities.
Weaknesses (W)
Low service frequency outside peak hours.
Weak integration with regional transport.
Insufficient service coverage in peripheral areas.
Train station located far from the city centre and major residential zones.
Lack of real-time passenger information and digital ticketing.
Aging fleet and insufficient capacity during peak times.
Limited accessibility and amenities at bus stops, especially in outlying districts.
Overlapping of regional and municipal lines causing inefficiencies.
Opportunities (O)
Possibility to draw financial resources from EU funds.
Public interest in sustainable mobility.
Implementation of DRT (Demand-Responsive Transport) and smart technologies.
Development of integrated ticketing and harmonized timetables across transport modes.
Upgrading the public transport fleet to low-emission or electric vehicles.
Enhanced service coordination with railway connections.
Revitalization of outdated infrastructure, including the central bus terminal.
Increased participation of citizens in transport planning through public surveys.
Threats (T)
Rising operational costs.
Public resistance to change.
Seasonal overloading of infrastructure.
Potential decline in ridership endangering economic sustainability of services.
Tourism-related congestion conflicting with everyday mobility needs.
Uncoordinated development between municipal and regional operators.
Delays in project implementation due to administrative or funding barriers.
Weather extremes affecting service reliability and infrastructure.

3.5. Best Practices

In this section, a selection of best practices is presented. They are the most valuable insights can be drawn in relation to the pilot action planned for this project.

Table 2: Best Practices

Best Practice	City	Relevance to Actions
ShuttleMare - free DRT service for summer season in Rimini	Rimini, Italy	Introduction of DRT
Implementation of an Intermodal Junction in Kaposvár	Kaposvár, Hungary	Installation of digital information boards at bus stops
Pula Public transport new lines	Pula, Croatia	Marketing campaign and education about the benefits of public transport
Public transport reorganization in the city of Šibenik	Šibenik, Croatia	Introduction of preferential zones for public transport in the city center

4. Vision and Goals

The vision represents the overarching, long-term aspiration for the evolution of the local transport system. It provides a unifying direction that guides decision-making and serves as a reference point for all subsequent planning choices. Defining a clear and shared vision helps ensure coherence in the strategy, aligning individual measures with a broader transformative goal.

The goals translate this vision into concrete ambitions, outlining what the local public transport plan aims to achieve through its intervention measures. These goals encompass mobility, social, economic, and environmental aspects. The integration of goals referring to different dimensions is a crucial moment in the planning process, as it is often necessary to pursue conflicting goals simultaneously.

In this chapter the city lists its vision and goals based on:

- The results of the SWOT Analysis
- The results of the survey on LPT
- The political view

4.1. Vision

Over the next ten years, the city of Český Krumlov aims to become a model of sustainable and inclusive mobility among smaller urban centers. Public transport will be accessible, environmentally friendly, efficiently connected with surrounding regions, and adapted to the needs of both residents and visitors. The goal is to create a network of reliable, affordable, and eco-conscious transportation services that enhance quality of life and reduce individual car use. By leveraging digital tools, improving accessibility, and promoting active mobility (walking and cycling), the city seeks to build a resilient transportation system that supports social equity, regional development, and climate responsibility.

4.2. Goals

The following Goals are related to at least one of the four main dimensions:

- Mobility
- Economic
- Social
- Environmental

Table 3: List and descriptions of Local Plan's Goals

Goal	Description
Improve the accessibility and connectivity of local public transport.	Ensuring better connections between parts of the city and the surrounding area, with greater comfort and service accessibility. This includes extending service to underserved areas such as Vyšný, Slupenec, and Nové Dobrkovice, ensuring access to stops within 400 m of residences. Timetables will be restructured for regular intervals and better coordination with train services. New or modified lines may be introduced to improve access to schools, workplaces, and medical services. Transfer points such as Špičák will be upgraded to support intermodal mobility.
Increase the number of public transport passengers on a given line. **(Mobility)**	Increasing the attractiveness of public transport through service modernization and targeted awareness campaigns. This will be supported by a unified visual identity of services, upgraded bus stops, real-time information, and simplified ticketing. Campaigns will highlight environmental and economic benefits of using public transport. The city aims to increase ridership by 15% by 2030, particularly by encouraging commuters and students to shift from cars to buses. Seasonal adjustments will also be made to respond to tourist flows.
Reduce traffic congestion and emissions.	Limit individual car use and promote eco-friendly modes of transportation. Concrete measures include introducing low-emission zones in the city centre, expanding electric bus fleets, and building park-and-ride (P+R) systems on the outskirts. The city targets a 25% reduction in private vehicle

	traffic in the historic core by 2030. Active mobility will be supported through safe pedestrian routes and cycling infrastructure.
Improve on-demand transportation (DRT) in the city center.	Introduce flexible transport for under-served areas. A DRT pilot service will be launched for low-density areas with lower passenger demand. It will feature mobile and telephone booking systems, dynamic scheduling, and connections to fixed lines. The service is primarily aimed at elderly residents, people with limited mobility, and early-morning or late-evening commuters. Its implementation will be guided by data from transport usage surveys and population density maps.
Support digitalization and smart mobility.	Implementation of mobile apps, real-time information, and electronic tools for transportation planning. The city will deploy digital passenger information systems at major stops and onboard vehicles. A unified mobile app will allow real-time tracking, journey planning, and digital ticketing, compatible with regional fare systems. Smart traffic management systems will optimize vehicle flows, and data analytics will support dynamic planning and monitoring of key indicators such as punctuality, ridership, and emissions.

4.3. Goals coherence analysis

The local objectives selected in this section must be consistent with the objectives defined at European level, as well as with national/regional objectives. The following table shows a verification of the consistency of the Local Plan objectives and indicates the level of consistency according to the following scale:

■ ■	Strong Coherence
■	Coherence
□	Weak coherence

Local Plan's Goal	European Strategies Priority	National Strategies on mobility and transport	National Strategies on Energy/Environment	Regional/Local Strategies on mobility and transport	Regional/Local Strategies on Energy/Environment
Improve the accessibility	Priority 1	■ ■	■ ■	■ ■	■ ■

and connectivity of local public transport.					
Increase the number of public transport passengers on a given line (Mobility)	Priority 1 and 2	■■	■	■■	■
Reduce traffic congestion and emissions.	Priority 2	■■	■■	■■	■■
Improve on-demand transportation (DRT) in the city center.	Priority 3	■	■	■■	■
Support digitalization and smart mobility.	Priority 1 and 2	■■	■■	■■	■■

5. Actions

This chapter introduces the first structured outline of possible actions that the city of Český Krumlov may undertake to achieve its vision and goals. These actions are grounded in the results of the SWOT analysis and developed through participatory dialogue involving technical experts, political representatives, citizens, and relevant stakeholders.

At this stage, the actions are presented in a general and strategic form. They represent a preliminary list of intervention measures that address identified needs and opportunities and reflect the city's ambitions in improving its public transport system.

However, these proposed actions are not final. They will undergo a validation process through scenario-based assessments and modelling tools. This process will help refine the actions, add technical and financial detail, and establish a hierarchy of priorities based on impact, feasibility, and consistency with the overall strategy. In this way, the initial list becomes a foundation for informed decision-making in the subsequent phases of the plan.

Table 4: List of actions

Action	Brief description	Goal

Introduction of DRT (demand-responsive transport).	Pilot implementation of on-demand flexible transport service in under-served areas of the city.	4
Installation of digital information boards at bus stops.	Providing real-time information for passengers at main urban transport stops.	5
Marketing campaign and education about the benefits of public transport.	Increasing public awareness and the attractiveness of public transport among residents through targeted communication activities.	2
Introduction of preferential zones for public transport in the city centre.	Traffic calming, limiting individual car use, and increasing the attractiveness of public transport in the central zone.	3
Increasing awareness and attractiveness of public transport among residents through targeted communication activities.	Ensuring connection of services, a unified fare system, and easy transfers between public transport and regional transport.	1

6. Actions and Traffic Models Scenarios

The model scenarios for the city of Český Krumlov were developed based on a combination of transport data, demographic trends, and assumptions regarding environmental and operational impacts. The calculations included a comparison of the current state with alternative public transport options, such as ecological buses, express lines, and increased service frequency. The objective was to identify measures with the highest potential to improve air quality, reduce travel times, and enhance the attractiveness of public transport for various target groups of residents and visitors. The simulation results were then interpreted and summarized in a clear table organized by key measures.

According to data provided by the Department of Transport of the Municipal Office of Český Krumlov, it is estimated that approximately 1,300 passengers use the local public transport (MHD) on weekdays, while on weekends the number drops to around 200 passengers per day. This indicates a significant decrease in public transport demand during weekends, which may be related to different mobility patterns of residents and visitors during non-working days. From a transport planning perspective, it is therefore appropriate to take these variations into account, for example by adjusting weekend timetables or optimizing vehicle capacity accordingly.

The population of Český Krumlov has shown a gradual decline over the past two decades. From a peak of approximately 14,146 residents in 2004, the number has steadily decreased to around 12,797 in 2025. This represents a drop of nearly 10% over 21 years. The most notable decline occurred after 2010, with the population remaining below 13,000 since around 2019.

This downward trend suggests that demand for public transport may be stabilizing or slightly decreasing, particularly for local services. However, Český Krumlov remains a major tourist destination, and while the permanent population is shrinking, seasonal or tourist-related public transport needs may still be high. Public transport planning should therefore balance the needs of residents with the fluctuations caused by tourism, possibly focusing on flexible, scalable services and sustainable transit options.

Table 5: List of actions and models scenario results

Action	Description of model results
Ecological buses	In this scenario the future emission is modelled. There is reduction of the emission of the public transport operation. Replacing a EURO IV diesel bus with an electric bus on two lines saves approx per year: CO_2: 21.1 ton; NO_x: 158.1 kg; PM: 5.3 kg; SO_2: 0.88 kg; CO: 21.1 kg Replacing a CNG bus with an electric bus on two lines saves approx per year: CO_2: 41.0 ton; NO_x: 128.0 kg; PM: 1.02 kg; SO_2: 0.26 kg; CO: 51.2 kg The replacement of the current diesel and CNG-powered buses with electric buses in the city of Český Krumlov offers significant environmental benefits. One of the primary advantages is the substantial reduction in local air pollutant emissions associated with urban public transport. Diesel and CNG vehicles emit various harmful substances, including nitrogen oxides (NO_x), particulate matter (PM), and carbon monoxide (CO), which negatively impact both public health and environmental quality. Transitioning to electric buses eliminates these local emissions, thereby contributing to improved air quality in the city. This change is particularly relevant in densely populated or tourist-heavy areas, where air pollution poses a serious concern. The adoption of electric buses also aligns with broader climate and sustainability goals by reducing dependence on fossil fuels. Although electric buses may still be associated with upstream emissions from electricity production, these are generally lower and can be further minimized by using renewable energy sources. Moreover, electric buses tend to operate more quietly, reducing noise pollution in urban environments. From a long-term perspective, this shift supports the development of a cleaner, more sustainable urban transport system. Overall, the electrification of public transport in Český Krumlov represents a crucial step toward enhancing environmental sustainability and public health outcomes. There is a future potential to introduce the small vehicles (microbuses) in the core of the historical centre, but this option needs to be planned carefully and also discussed with other stakeholders.
Introducing the express line	The primary motivation for implementing the new express line between Plešivec and Mír was to improve the efficiency of public transport by significantly reducing travel times. This initiative was prompted by suggestions from local residents who expressed the need for faster and more direct connections, as existing bus routes currently serve a broad area, resulting in longer journey times. The newly introduced express line is expected to shorten travel by approximately 11 minutes, making public transport more time-efficient and attractive to potential passengers. By offering a quicker alternative, the line is likely to encourage a modal shift from private car use to public transport, thereby contributing to reduced traffic congestion and environmental benefits. Improved

	travel times also enhance the overall user experience and reliability of the public transport system. Furthermore, the express service supports better integration within the transport network, connecting key points in the city more effectively. Such targeted improvements in service design can increase ridership, especially among commuters who prioritize speed and convenience. In the long term, this intervention contributes to making public transport a more competitive and sustainable mobility option. The introduction of the express line thus reflects a demand-driven and strategic enhancement of urban mobility in Český Krumlov. Fig. 6.1 Total passenger flow Fig. 6.2 Passenger flows with particular PT lines. The limits of this plan lays in the requirement of the higher financial sources for public transport. That means the current situation of public transport services reflects the current financial possibilities of the municipality. Moreover, there is a plan to make a new public transport tender which can affect the planned public transport services in Český Krumlov. Potential of introducing the demand responsive public transport services Demand-responsive public transport services in Český Krumlov hold significant potential to enhance urban mobility by providing flexible, efficient, and eco-friendly transit options tailored to residents' needs. By enabling passengers to book rides via a mobile app and utilizing smaller vehicles on-demand, this system can improve coverage in less accessible areas and reduce unnecessary trips, contributing to lower emissions and traffic congestion. Cooperation with the CITYA system brings advanced technology and operational expertise to Český Krumlov, facilitating the implementation of a modern, demand-responsive transport network. This partnership aims to increase public transport attractiveness, better serve peripheral neighbourhoods, and support the city's sustainable mobility goals.
Increasing Public Transport Frequency by Introducing Short Headways	This scenario explores the potential impact of significantly increasing the frequency of public bus services in the city of Český Krumlov by implementing shorter headways, particularly during peak and off-peak hours. The proposed intervention involves increasing the number of daily bus connections from the current 34 to 86, more than doubling the existing service level. This strategic adjustment aims to improve the attractiveness, accessibility, and efficiency of the public transport system and to encourage a modal shift from private vehicles to more sustainable means of transport. The main rationale behind increasing service frequency is to make public transport a more convenient and competitive option for a broader segment of the population. Shorter headways—meaning reduced time intervals between individual bus departures—can significantly decrease waiting times at stops, thereby improving overall travel experience and satisfaction. This measure directly responds to common concerns voiced by residents about infrequent and poorly coordinated services, which currently act as a barrier to public transport use.

Advantages:

• **Increased Attractiveness and Convenience**

By reducing waiting times, frequent services provide greater flexibility and convenience for passengers. This makes public transport a more viable alternative to private cars, cycling, or walking. A higher level of service can also attract new users who may have previously found the system impractical due to long intervals between buses. Our modelling suggests that passenger numbers could theoretically increase by approximately 20% to 30% because of this improvement, depending on other contextual factors such as urban density, ticket pricing, and integration with other transport modes.

• **Attracting New Passenger Segments**

The extension of services into early morning, evening, and weekend hours may reach new user groups such as shift workers, students, and leisure travellers. Furthermore, the increased capacity will reduce overcrowding during peak periods, thereby enhancing comfort and travel quality. These improvements are likely to make the system more appealing not only to existing users but also to residents who have thus far avoided public transport due to its limitations.

• **Reduction in Car Usage**

Increased frequency and reliability of public transport can lead to a significant reduction in the use of private vehicles. When passengers perceive that buses run often and on time, the need to rely on personal cars diminishes. This contributes to decreased traffic congestion mainly during the high-peak tourists' season, reduced greenhouse gas emissions, and lower demand for parking infrastructure. It also supports long-term sustainability goals by shifting urban mobility patterns toward public transport.

• **Improved Accessibility and Regional Integration**

Expanding bus services also offers the opportunity to strengthen links with regional rail and bus networks. Better synchronization of schedules can facilitate smoother transfers to and from Český Krumlov, improving access to employment, education, and essential services. However, it is crucial that the increased local frequency is well integrated with the timetables of regional buses and trains. Without this coordination, passengers may face delays or missed connections, which would reduce the effectiveness and attractiveness of the entire transport network.

Disadvantages

Despite its advantages, this scenario presents several practical and financial challenges:

• **Higher Investment and Operating Costs**

A substantial increase in the number of bus services requires corresponding investment in vehicles, staffing, and maintenance infrastructure. For a municipality like Český Krumlov, operating under budget constraints, this represents a significant financial commitment. The need to procure new vehicles and possibly expand depot capacity may delay implementation or require external funding sources.

The current budget of urban public transport is in 8,1 mil. CZK (330 thousand Euro).

- **Institutional Coordination**

In order to optimize the benefits of increased frequency, particularly regarding regional integration, it is necessary to coordinate timetables and service planning with the regional public transport integrator, JIKORD (South Bohemian Region Transport Integration Authority). Without proper collaboration, efforts to improve connections with regional trains and buses may fall short of their full potential.

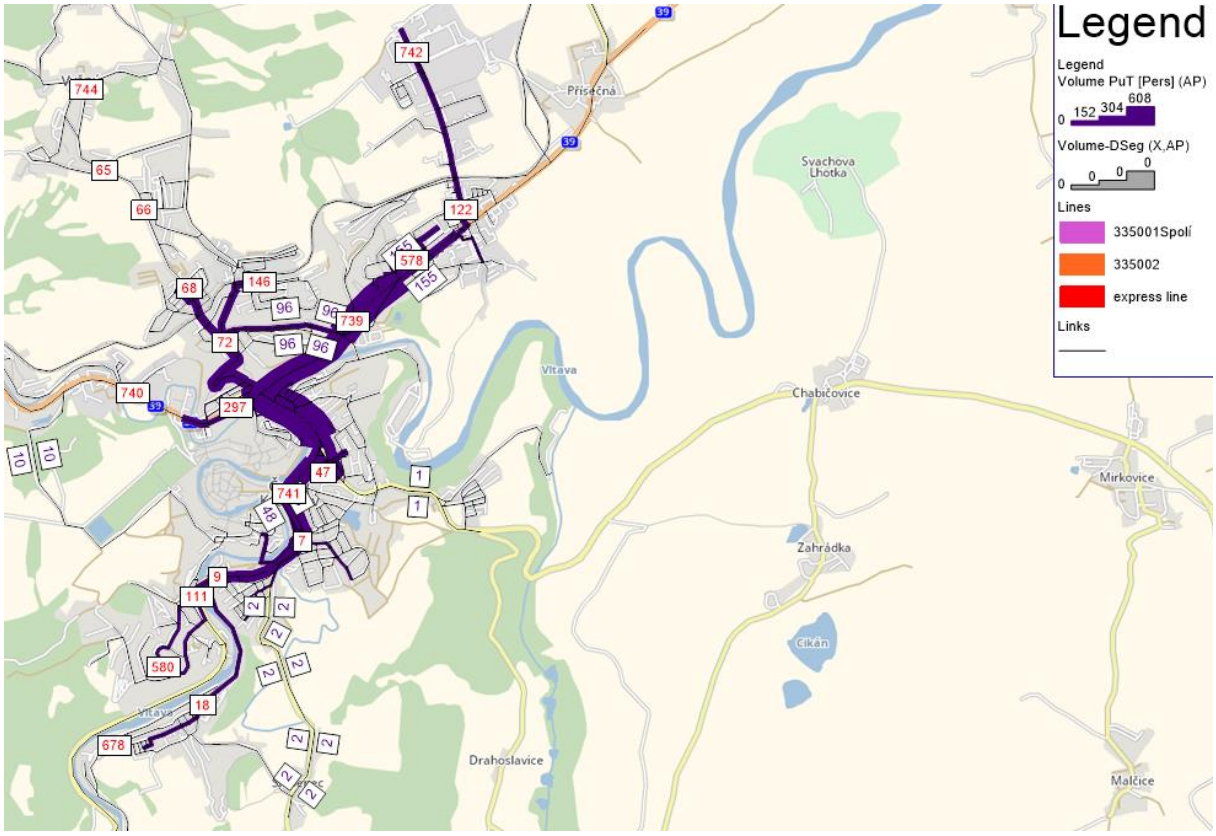


Figure 1: Total passenger flow

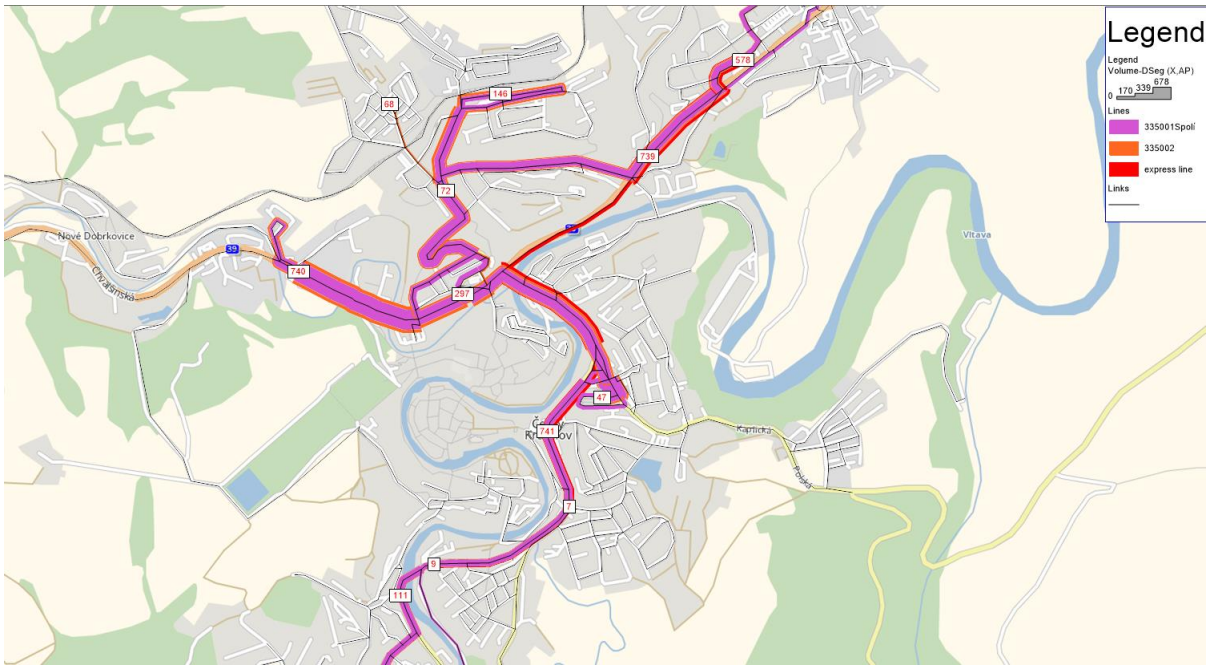


Figure 2: Passenger flows with particular PT lines

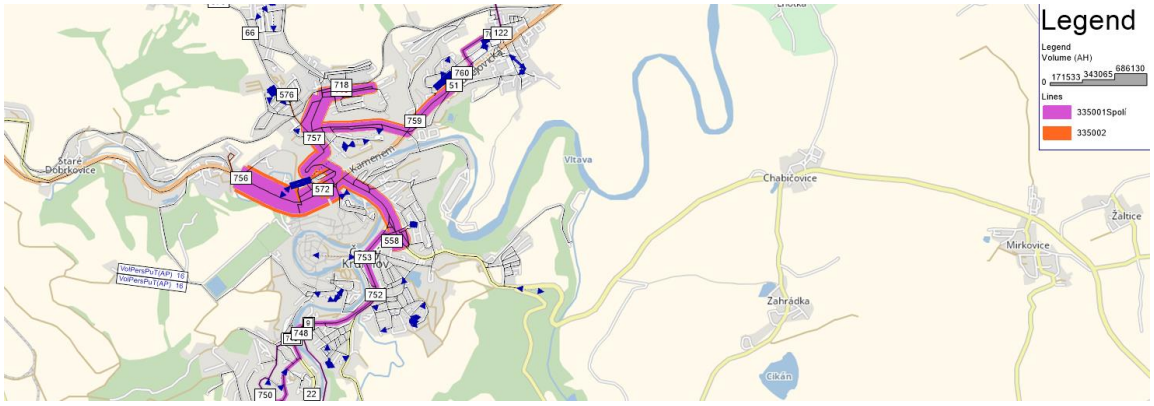


Figure 3: Forecasting the future passenger flow of PT lines

6.4. Overview of scenarios in VISUM

The scenario development for Český Krumlov's public transport was based on a structured process combining data analysis, stakeholder feedback, and local transport priorities. Initial inputs included population trends, current public transport usage, emissions data, and operational characteristics of existing services. Transport demand data indicated a sharp difference between weekday and weekend usage, and a long-term decline in the city's permanent population. However, strong seasonal tourist traffic remained a key consideration.

Three scenarios were selected for modelling:

1. Replacement of diesel and CNG buses with electric buses – aimed at reducing CO_2, NO_x, PM, SO_2, and CO emissions, aligned with the city's sustainability goals.
2. Introduction of an express bus line between Plešivec and Mír – to reduce travel time and improve the attractiveness of public transport.
3. Doubling of service frequency by introducing shorter headways – focused on improving service reliability and reducing waiting times.

These scenarios were chosen based on feasibility, relevance to current transport challenges, and alignment with municipal goals. Other potential concepts, such as fully demand-responsive transport, were considered but not modelled due to insufficient data and unresolved operational requirements. The city is exploring these as future possibilities in cooperation with partners, but they were excluded from the current model scope.

VISUM was used as the modelling tool to simulate and evaluate the impact of proposed scenarios. It supported the calculation of travel times, routing efficiency, passenger flow distribution, and emission reductions. The ecologically-friendly electric bus scenario used emission factors from the European Environment Agency and applied them to current bus fleet data and operational mileage to estimate yearly reductions. For example, switching two diesel buses to electric ones could reduce annual CO_2 emissions by over 165 tons.

The express line scenario used GIS-based planning to design a direct route between two key urban nodes, eliminating low-demand segments and reducing average travel time by approximately 11 minutes. The simulation considered real-world traffic conditions and stop-level passenger volumes.

In the third scenario, service frequency was increased by 92.75%, from 69 to 133 daily trips, improving coverage and reducing waiting times. VISUM helped estimate passenger flow changes and allowed forecasting of potential ridership increases, expected to be in the range of 20–30%.

Scenarios were selected based on their practicality and ability to address core transport issues in Český Krumlov. VISUM enabled precise evaluation of their impacts on emissions, travel times, and user experience. While some ideas were excluded due to current limitations, the chosen scenarios represent actionable steps toward a more efficient and sustainable urban transport system.

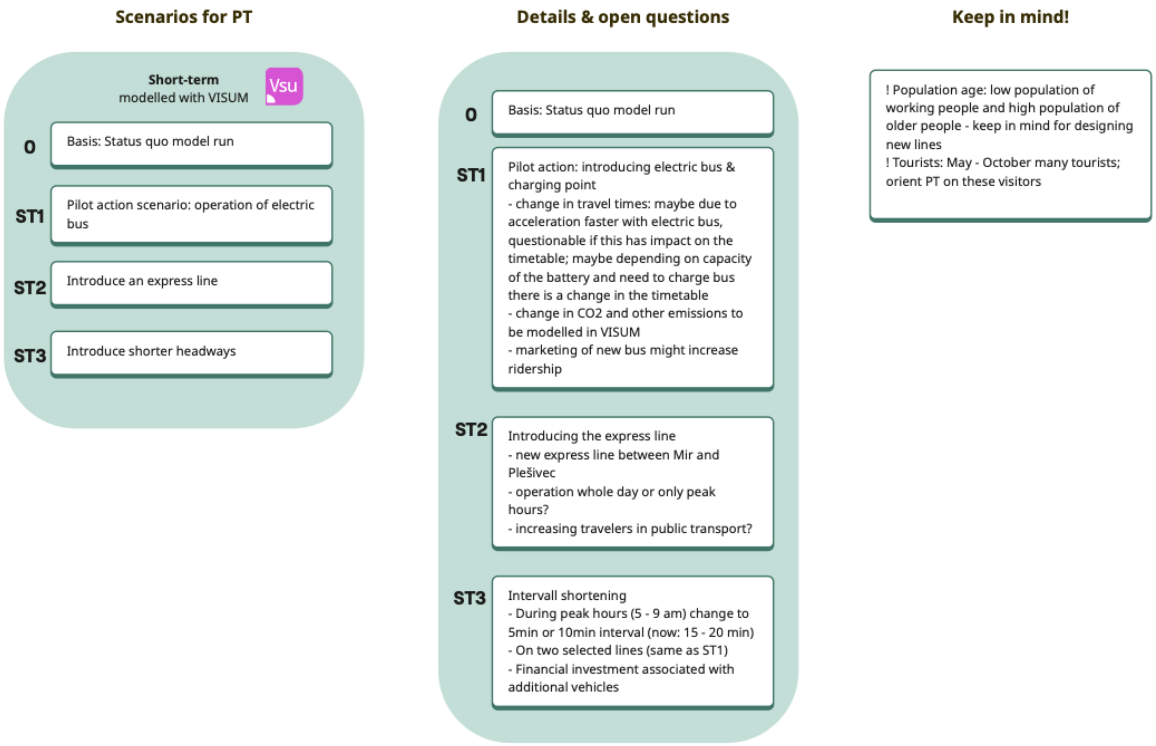


Figure 4: Transport model scenario identification for Český Krumlov.

6.5. VISUM model of short-term scenarios

To support the planning and evaluation of public transport improvements in Český Krumlov, three scenario variants are developed and analysed using the transport modelling tool PTV VISUM. Each scenario addresses different aspects of the urban mobility system, ranging from environmental sustainability to operational efficiency and service attractiveness.

The scenarios were modelled separately and presented in the following sub-sections:

- 6.2.1 focuses on environmental gains from replacing diesel and CNG buses with electric vehicles.
- 6.2.2 evaluates the impact of introducing a new express bus line between Plešivec and Mír.
- 6.2.3 explores the effects of increasing service frequency through reduced headways.

Each sub-section describes the scenario rationale, modelling approach in VISUM, and expected impacts on transport performance, energy consumption, and user experience.

6.5.1. Scenario ST1 – Introducing electric buses (pilot action scenario)

This scenario addresses the replacement of existing EURO IV diesel and CNG-powered buses with electric buses on selected public transport lines in Český Krumlov. The objective is to reduce harmful emissions and contribute to the long-term environmental sustainability of the city's transport system. The focus is on two urban lines where the replacement is expected to deliver the highest emission reduction impact (the purple and orange lines in Figure 5). The future possibility of introducing small electric vehicles (microbuses) in the historical centre is also acknowledged, although it was not modelled.

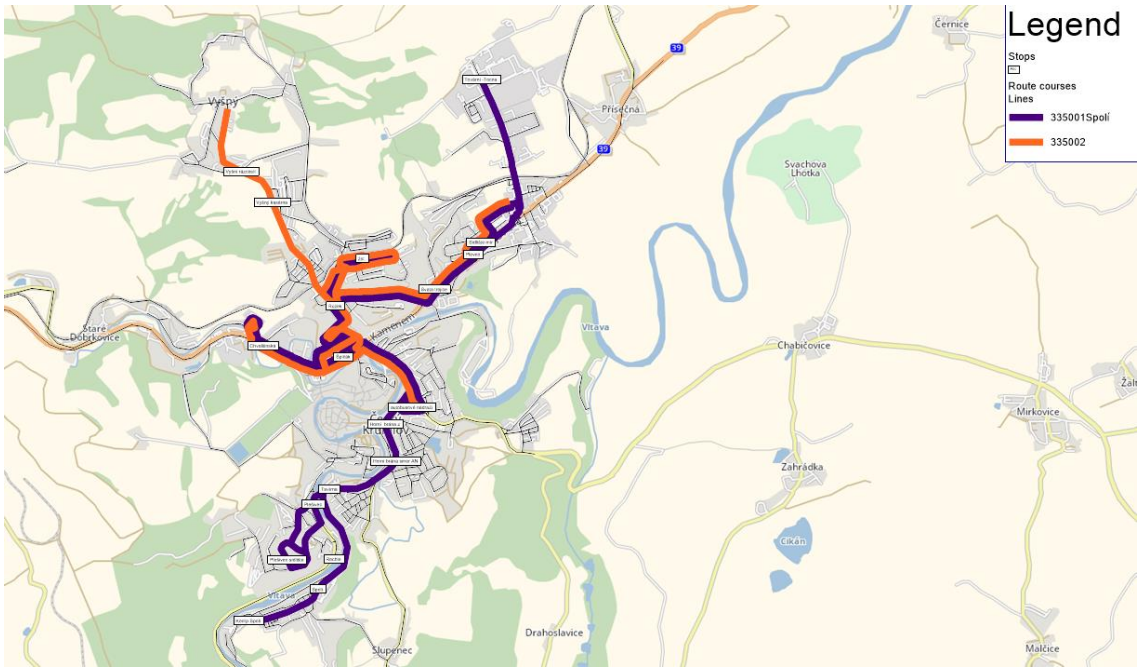


Figure 5: Selected public transport lines replaced by electric buses.

The scenario was implemented in PTV VISUM by adjusting the vehicle fleet data within the public transport assignment model. Diesel EURO IV and CNG buses were replaced with electric vehicles. The emissions calculation module was updated to reflect zero tailpipe emissions for electric vehicles, and additional computation is carried out to estimate the carbon footprint from electricity generation[1]. Operational parameters such as acceleration, dwell times, and energy consumption were adjusted accordingly. Emission outputs were calculated per line and aggregated at city level.

In the current time, there are 2 CNG buses and 1 diesel bus in urban public transport. There is the plan to substitute the vehicles to electric through a pilot action to be implemented in 2026.

Table 6: Comparisons of the fleet electrification with the base scenario

Indicator		Base scenario			ST1: electrification of bus fleets		
		Line 335001	Line 335002	Total	Line 335001	Line 335002	Total
Fleet (number)	Diesel		1	1			
	CNG	2		2			
	Electric				2	1	3
	Diesel		56,977	56,977			
	CNG	75,551		75,551		0	

[1] EEA (2025). Greenhouse gas emission intensity of electricity generation in Europe. https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1

Operational distance (km/year)	Electric				75,551	56,977	132,528
Emissions (kg/year)	CO_2	60,440	45,581	106,022	27,274	20,569	47,843
	NO_x	189	142	331			
	PM	1.511	1.140	2.651			
	SO_2	0.377755	0.284885	0.66264			
	CO	75.551	56.977	132.528			

Note: 361 gCO_2e/kWh is assumed for electricity generation. 1.0 kWh/km is assumed for electric bus operation□.

Based on the modelling of vehicle mileage and 251 operating days per year, the estimated annual variations of emissions from the replacement of diesel and CNG buses with electric buses are given in Table 6.

The results confirm significant environmental benefits from the transition to electric buses, especially in terms of reduced emissions of fossil fuel consumption and road-side emissions. This benefits from the low upstream emissions from electricity generation compared to emissions from diesel and CNG vehicles. Electric buses also help reduce noise levels in the city. The scenario supports the goal of developing a cleaner, more sustainable public transport system in Český Krumlov.

The marketing efforts associated with operating electric buses might attract increased ridership. However, this is unable to be represented in VISUM and will need to be confirmed in the pilot implementation. In addition, the potential introduction of small electric microbuses in the historic city centre is noted as a possible extension of this scenario, but it would require detailed planning and consultation with relevant stakeholders and not tested in current model scenarios.

6.5.2. Scenario ST2 – Introducing the express line

This scenario focuses on the implementation of a new express public transport line between the urban areas of Plešivec and Mír in Český Krumlov (green line in Figure 6). The main objective is to improve the efficiency and competitiveness of public transport by significantly reducing travel time between two key zones. The need for such a line was identified through feedback from residents, who requested faster and more direct connections than the existing routes could provide.

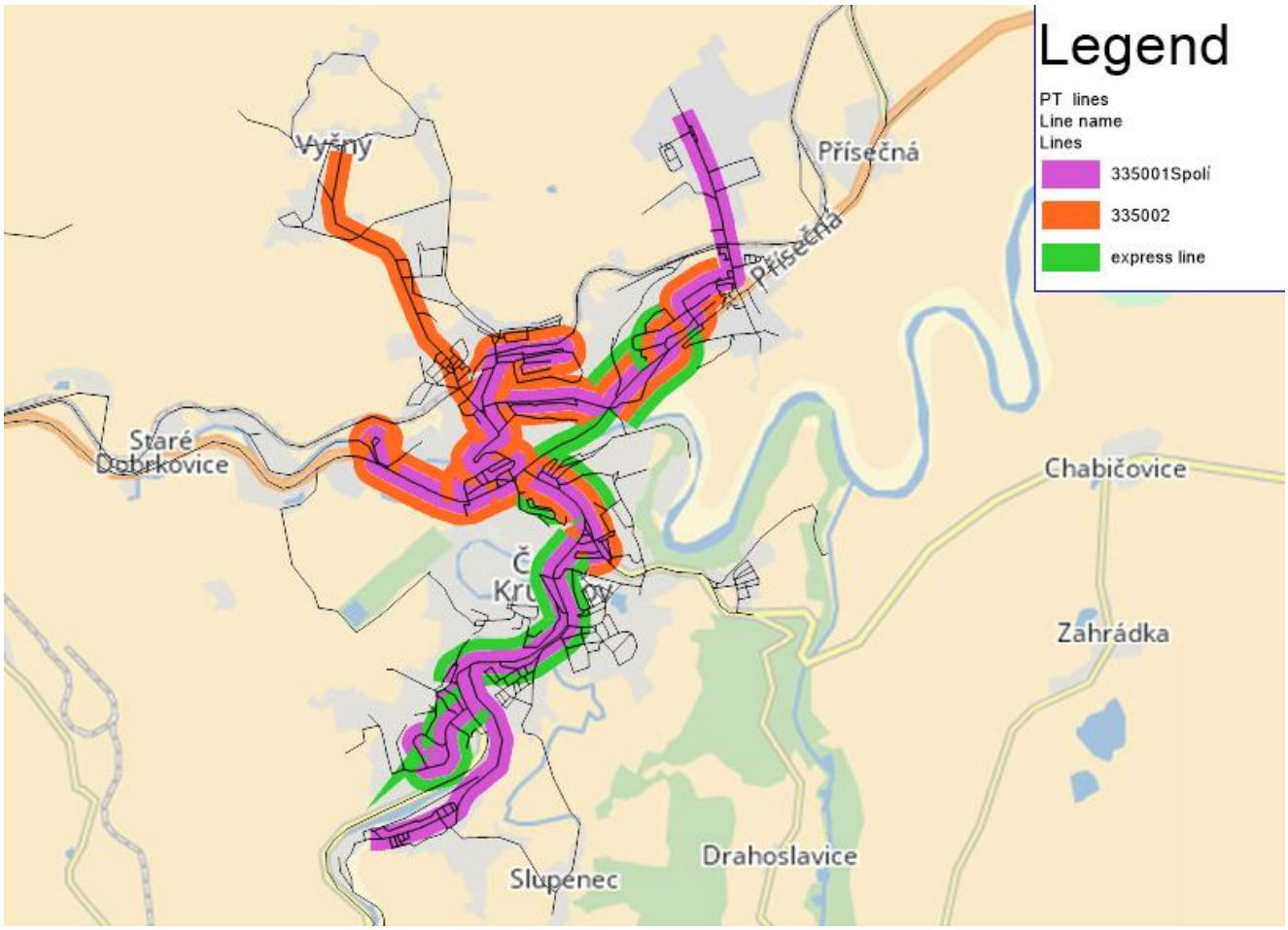


Figure 6: Schematic map of public transport lines with the new express line

A mixed-methods approach was used to assess the scenario, including qualitative analysis of community feedback and quantitative modelling in PTV VISUM. The line was designed to bypass several low-demand areas such as Špičák and the railway station, thus minimizing intermediate stops. Based on timetable simulations and average traffic conditions, the modelled travel time along the route was reduced from the current 20 minutes to approximately 12 minutes.

VISUM was used to evaluate route alignment, operational performance, and passenger flow implications. The express line was integrated into the existing urban transport network to ensure connectivity with other services and lines. The model also allowed testing of route variants, such as optional connections to the main bus station, depending on municipal decisions.

Preliminary modelling results suggest that the introduction of the express line offers the following benefits:

- Travel time reduction of up to 8 minutes on average compared to existing services.
- Increased attractiveness of public transport for current and potential users, as indicated by the high ridership for the express line and the PT system in Table 7.
- Potential modal shift from private cars to public transport, reducing congestion and emissions, as indicated by the changes in mode split in Table 6.2. It should be noted that adding the express line increases the mode share for PT of 2%, reduces the mode share for car by 1%, but also reduces the mode share by walking for 1%.
- Better alignment with peak-hour demand patterns.

Although this scenario will not be piloted during the OPTI-UP project, it is recommended in the future to carry out further tests and post-implementation surveys and interviews are proposed to assess perceived improvements in speed, convenience, and overall service quality.

While this scenario does not directly reduce emissions through vehicle technology, its contribution lies in improving operational efficiency and attracting more users to public transport. In the long term, such measures can support sustainable mobility objectives by reducing car dependency.

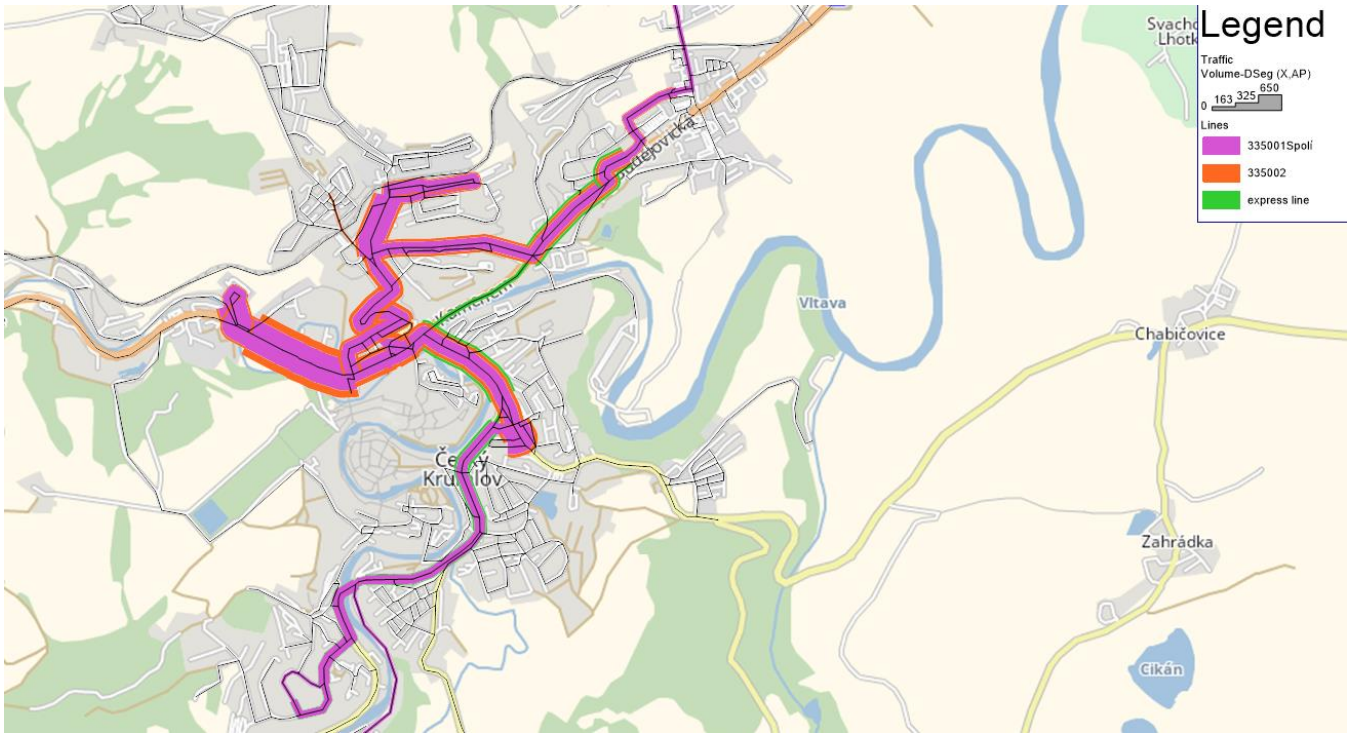


Figure 7: Passenger flow modelling results after implementation of express line Scenario ST2.

Table 7: Comparisons of the express service scenario with the base scenario

Indicator	Base scenario			ST2: add express service			
	Line 335001	Line 335002	Total	Line 335001	Line 335002	Express line	Total
Operational distance (km/day)	102,910	35,140	138,050	102,910	35,140	14,056	152,106
Departures (services/day)	41	28	69	41	28	24	93
Ridership (persons/day)			1,274	151	703	524	1,378
Average travel time by PT (min)	20	19		20	19	12	

Mode split	walking	25 %	24 %
	cycling	1 %	1 %
	PT	14 %	16 %
	car	60 %	59 %

6.5.3. Scenario ST3 – Increasing Public Transport Frequency by Introducing Short Headways

This scenario examines the effects of increasing the frequency of urban public transport services in Český Krumlov by reducing headways, particularly on lines 335001 and 335002. The aim is to improve service availability, reduce waiting times, and enhance the overall attractiveness of public transport. The proposal involves a substantial increase in daily service trips from 69 to 133, representing a 92.75% growth in service provision. This scenario also requires the increasing the number of buses from 3 – 5 or 6.

According to the existing state:

- Line 335001 operates 41 daily trips (with route variations).
- Line 335002 operates 28 daily trips.

The proposed scenario increases this to:

- Line 335001: 80 trips/day.
- Line 335002: 53 trips/day.

The scenario was modelled in PTV VISUM to analyse expected changes in passenger flows, waiting times, and potential modal shift. The increase in service frequency is intended to make public transport more reliable and attractive, especially during peak hours. By offering shorter headways, the scenario directly addresses common passenger concerns regarding irregular or infrequent service.

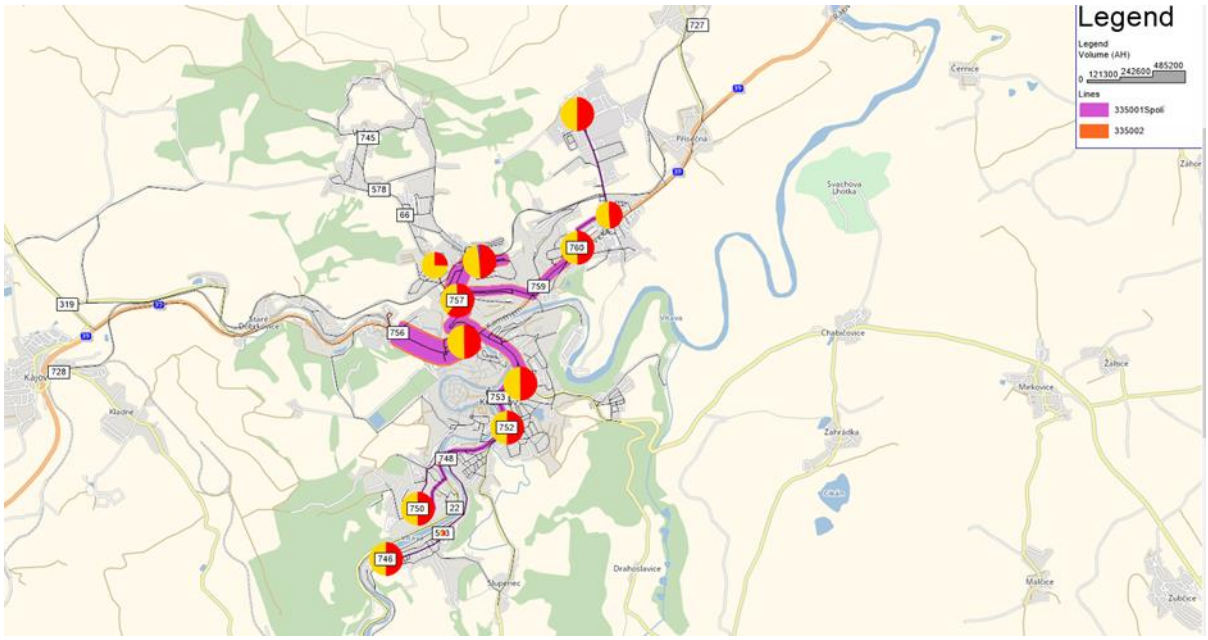


Figure 8: VISUM output showing forecasted passenger flow at each stops (boarding (yellow) vs. aligting (red)) under increased frequency scenario

Expected benefits include:

- Reduction in passenger waiting time.
- Increased comfort due to reduced overcrowding.
- Potential increase in ridership by 20–30% as shown in Table 8. Though this outcome depends on other factors (e.g. ticket pricing, integration with other modes).
- Improved accessibility for shift workers, students, and weekend passengers.

The scenario also has the potential to reduce private car usage by providing a more competitive alternative, especially during the tourist season when road congestion is high. This would contribute indirectly to emission reduction and improved urban mobility.

However, the implementation of this scenario faces several challenges:

- Financial impact: Significant investment is required for additional vehicles, staffing, and operational costs. The current municipal budget for urban public transport is CZK 8.1 million (approx. EUR 330,000).
- Coordination: Synchronization with regional transport services (e.g. JIKORD) is necessary to ensure smooth integration and transfer reliability.
- Complementary measures: To fully realize the benefits of increased frequency, other actions such as parking policies, traffic restrictions, or new mobility services may also be needed.

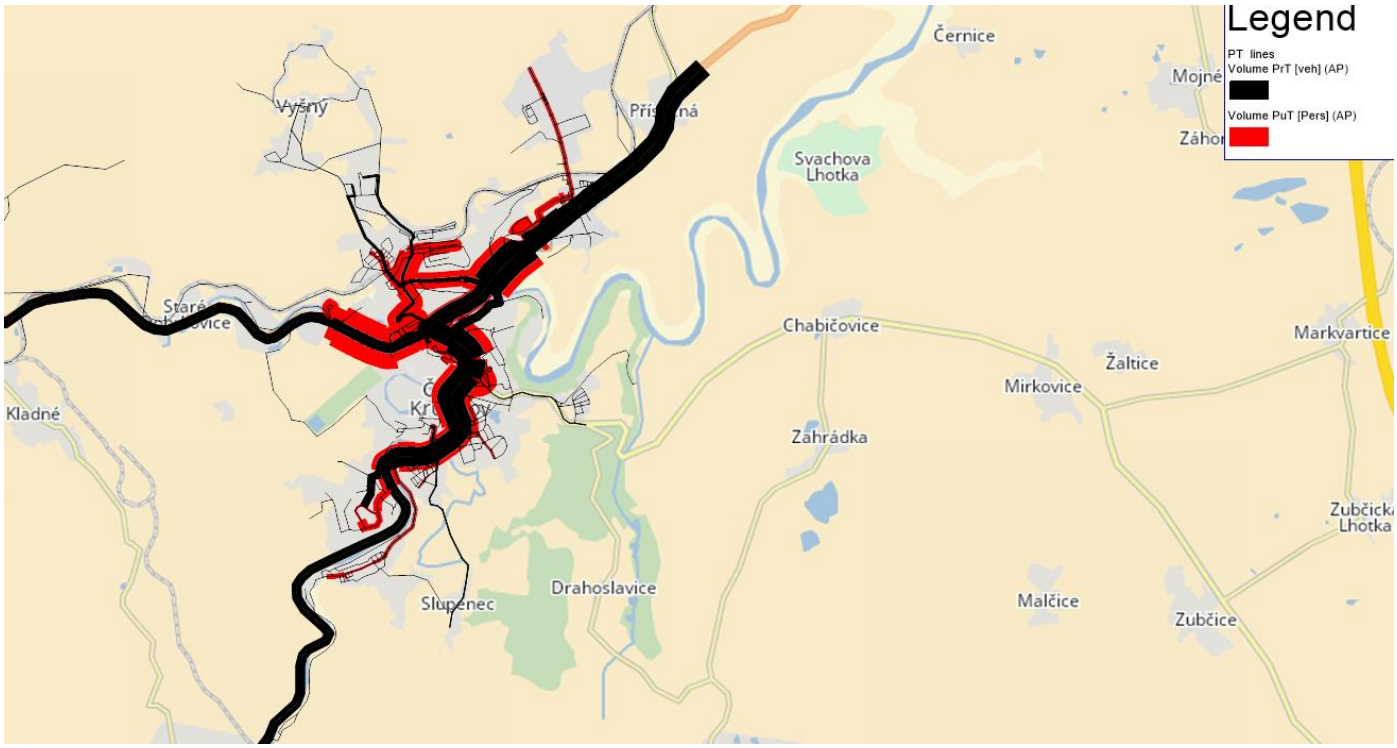


Figure 9: Overall traffic flow comparison: private car (black) vs. public transport (red) after frequency increase

Table 8: Comparisons of the shortened interval scenario with the base scenario

Indicator		Base scenario			ST3: shortened service interval		
		Line 335001	Line 335002	Total	Line 335001	Line 335002	Total
Operational distance (km/day)		102,910	35,140	138,050	247,988	115,285	363,273
Departures (services/day)		41	28	69	80	53	133
Ridership (persons/day)				1,274			1,664
Mode split	walking	25 %			23 %		
	cycling	1 %			1 %		
	PT	14 %			18 %		
	car	60 %			58 %		

In summary, this scenario presents a realistic opportunity to improve the usability and appeal of public transport in Český Krumlov. If supported by proper funding and coordination, it can contribute to a more efficient and sustainable transport system. Despite the increase in public transport frequency, a slight improvement in the modal split from 14 to 18% is expected, as pedestrians and a small part of motorists is expected to shift to use the public transport. This is caused by various reasons. Car use is often deeply ingrained due to personal convenience, flexibility, and habit. People who rely on cars for work or daily errands are generally less willing to switch unless the public transport option offers a clear and significant advantage in terms of travel time, comfort, and directness. For example, a person might use the new, more frequent bus service for a specific leisure trip but continue to use their car for a work commute.

6.6. Conclusion of scenario modelling

Summary of scenario modelling results

Three scenarios were modelled in PTV VISUM to evaluate potential improvements in the urban transport system of Český Krumlov. The first scenario focused on replacing diesel and CNG buses with electric vehicles, resulting in substantial reductions of CO_2, NO_x, PM, SO_2, and CO emissions. The second scenario introduced an express bus line between Plešivec and Mír, reducing travel time by up to 11 minutes. The third scenario increased service frequency by 92.75%, which is expected to lead to a 20–30% increase in ridership and better accessibility. All scenarios addressed key challenges related to operational efficiency and energy reduction.

Connections with Local Goals and Visions set in Chapter 4

The results of the modelled scenarios can be directly linked to the goals defined in Chapter 4. The introduction of electric buses can contribute to achieving environmental objectives, specifically by reducing emissions and noise in sensitive urban areas. The implementation of an express line between Plešivec and Mír supports improved accessibility and connectivity, shortening travel times and increasing the attractiveness of public transport for both residents and visitors. The scenario of increasing service frequency is directly aligned with the goal of raising passenger numbers and making the system more competitive compared to private car use. Together, these measures also create a foundation for the gradual digitalisation of services and better integration with regional transport systems.

Limitations in Scenario Definition, Modelling, and Results Analysis
Key limitations included financial feasibility, limited data on behavioural responses, and the exclusion of unmodelled variants such as demand-responsive transport. Some scenarios were excluded from modelling due to operational complexity or missing inputs. Model outputs can be validated by monitoring the performance of implemented scenarios, such as the express line, and collecting user feedback post-implementation. Further refinement can be achieved through stakeholder engagement and updated data inputs.

How the Modelling Action Informs the Selection of Local Actions
The final selection of local actions was primarily shaped by operational and financial considerations rather than model results alone. By local actions we mean changing vehicles from fossil fuels (CNG, diesel) to electric ones. In the case of electric vehicles, it is more advantageous to introduce higher service intervals, which can make public passenger transport in the city of Český Krumlov more attractive.

However, modelling helped quantify the relative impact of different options and supported evidence-based prioritization. While some scenarios (e.g. demand-responsive transport) were not pursued, modelling showed that express line implementation and frequency increases could deliver high returns in terms of

network optimization and energy efficiency. Thus, modelling served as a decision-support tool to estimate scale, benefits, and trade-offs, even when full implementation was constrained by real-world limitations.

7. Stakeholders

In this chapter were identified key stakeholders from various sectors and regions.

Stakeholder engagement is emphasized through regular meetings, networking opportunities, experience sharing, and study tours, with reports compiled to document best practices and lessons learned.

Table 9: List of stakeholders

Stakeholder	Type	Role	Importance	Influence
The city of Český Krumlov	Public administration	Coordination and approval of measures.	High	High
South Bohemian Region – Department of Transport	Regional administration	Consultation and support for continuity	Medium	Medium
Public transport operators (e.g., GWTR)	Operators	Implementation of transport measures	High	High
Residents and local communities	The public	Service recipients, feedback	High	Medium
Tourist organizations	Business sector	Mediating visitors' needs	Medium	Medium
Schools, hospitals, and offices	Public institutions	Target groups for route planning	Medium	Medium
Regional transport operators (e.g., ČD - Czech Railways)	Transport	Integration of services and timetables	High	Medium

8. Action Plan

For each Action proposed in Chapter 5 and validated by the activities summarized in chapter 6, a table with the following information are defined: Resources, Timeline, Stakeholders, expected impacts, Risks and mitigation.

Table 10: Actions descriptions

Actions	Resources	Timeline	Stakeholders	Expected impact	Risk
Introduction of DRT (demand-	Project team, project budget	Start Q1 2026 - End: Q4 2027	Public transport company, Municipal	Increased connectivity, public satisfaction	Lack of passenger interest, higher costs –

responsive transport)			Office (Department of Transport, Department of Investments), Public transport operator.		integration into transport service plans.
Installation of digital information boards at bus stops	The dispatch centre, telematic systems, coordinator staff (JIKORD) of the Municipal Office, the public transport service budget, and state funds.	Start Q3 2026 - End: Q4 2028	Public transport company, Municipal Office (Department of Transport, Department of Investments), Public transport operator.	Higher passenger awareness, risk of equipment failure or vandalism.	Technical malfunctions of display boards, service contract with the supplier, maintenance plan, high acquisition costs.
Marketing campaign and education about public transport	The project team and the project budget for promotion.	Start Q1/2025 - End Q4/2027	Local media, schools, employers, civil society	Increased awareness, ridership, modal shift	Low engagement → Partner with influencers and community leaders

Preferential zones for PT in the city cenater	The dispatch center, telematic systems, coordinator staff (JIKORD) of the Municipal Office, public transport service budget, and state funds.	Start Q3 2026 - End: Q4 2028	Public transport company, Municipal Office (Department of Transport, Department of Investments)	Shorter travel times, increased attractiveness of public transport, reduction of individual car traffic (IAD), lower emissions.	The character of development in the city center, restrictions on business and housing in the center.
Unified fare and schedule system with regional transport	Coordinator staff (JIKORD) of the Municipal Office, and the public transport service budget	Start Q1 2026 - End: Q4 2028	JIKORD, IDS, public transport company, Municipal Office (Department of Transport, Department of Investments), public transport operator Local media, schools, employers, civil society Public transport company, Municipal Office (Department of Transport, Department of Investments) JIKORD	Increased attractiveness of public transport, a higher number of passengers at the expense of individual car traffic (IAD), better comprehensibility of fare systems, and improved comfort for passengers.	Reluctance of transport operators to adopt a unified fare system, implementation of contracts and involvement of the transport coordinator.

9. Monitoring and KPIs

A constant monitoring is important to ensure that local plans proceed as planned, with predefined reporting deadlines for each action (action proposed in Chapter 5.)

In this chapter a scheme of KPI's and their main features is proposed.

Table 11: Local Plan KPIs

KPI	Brief description	Unit	Target
Average number of passengers per electric vehicle per day	It measures the number of passengers per day.	Passengers/day	135
Average range per electric vehicle per charge	It measures the range per charge.	Km/charge	140
Operational cost savings (fuel and maintenance) per vehicle/month	It measures the cost per vehicle per month in EUR and CZK.	EURO, CZK/vehicle, EURO, CZK/month	Reduction in fuel and maintenance costs 5 %
CO_2 emissions per km travelled per user	It measures CO_2 emissions per kilometre travelled per user	Grams/km/user	Reduction in CO_2 emissions 5 %
Share of kms travelled with zero emission vehicles in total kms travelled	It measures the ratio of zero-emission kilometres to total kilometres travelled.	%	Increase in the number of zero-emission kilometres 5 %

9.7. Description of data sources & tool for KPIs

In this chapter, data, data sources or providers of data as well as tools (measurement or calculation) in order to collect or calculate key performance indicators (KPIs) are identified. Several data may need to be calculated for each KPI.

Table 12: Identification of data sources & tools for KPIs data

KPI	Data list	Methodology	Data source	Data tool

Average number of passengers per electric vehicle per day	Daily Number of Passengers	Total Number of Passengers per Day / Statistical Survey	Carrier, Onboard Passenger Counters	Onboard Counters, Daily Reports
Average range per electric vehicle per charge	Number of Kilometres Driven per Charge, Number of Charges	Total Kilometres Driven Between Charges / Number of Charges	Records from the Vehicle Onboard System	Telematics, GPS System, Operational Logbook
Operational cost savings (fuel and maintenance) per vehicle/month	Monthly Fuel and Maintenance Costs for Electric and Conventional Vehicles	Difference Between Average Monthly Costs of Electric and Conventional Vehicles	Carrier's Accounting, Technical Records of Vehicles	Cost Tables, Accounting Software
CO_2 emissions per km travelled per user	Amount of CO_2 Emissions, Number of Kilometres Driven, Number of Users	Total CO_2 Emissions / (Total Kilometres * Number of Users)	Calculations Based on Consumption and Emission Factors	Excel, Calculations According to Methodology
Share of kms travelled with zero emission vehicles in total kms travelled	Number of Kilometres Driven by Zero-Emission Vehicles, Total Number of Kilometres	(Number of Kilometres Driven by Zero-Emission Vehicles / Total Number of Kilometres) * 100	Records of Vehicles and Routes	Fleet Management Software, Excel