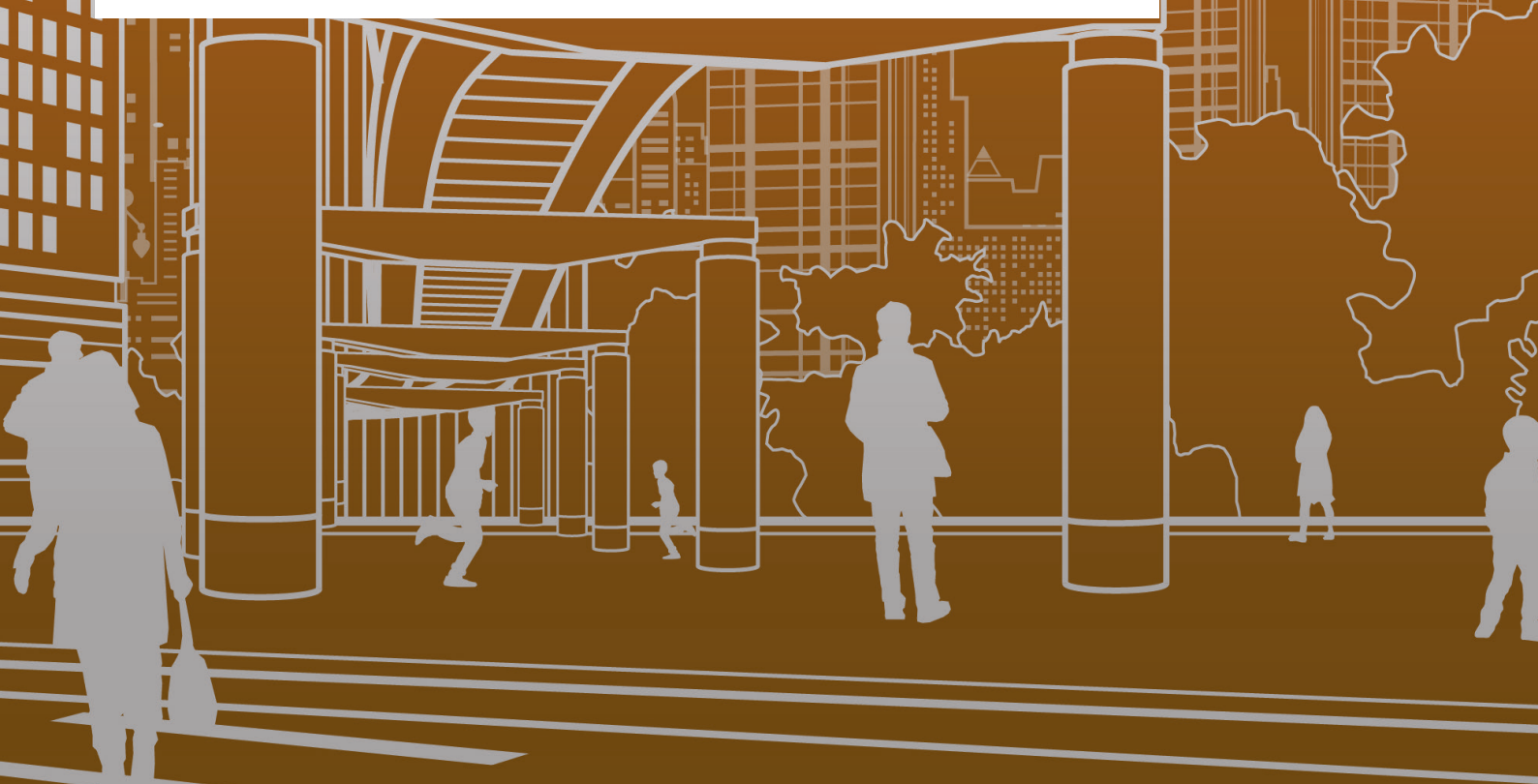




Planning mobility in a fragmented metropolitan area

The case of Prague and its suburbs



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By: Oscar Huerta Melchor and Jared Gars

A common urban mobility plan for Prague and its metropolitan region as well as the creation of an integrated transport system coordinated by a central transport body are the main assets Prague can leverage to enhance accessibility. However, weak links to land use plans, the lack of enforceability of the mobility strategy, the absence of a transport component in the urban renewal strategy, and the high level of administrative fragmentation of the metro area limit the impact of the transport network in facilitating access to jobs and services. This paper aims at drawing policy lessons from Prague's mobility strategy and suggesting recommendations that could improve its effectiveness in enhancing accessibility.

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Keywords: Urban accessibility, transport, mobility, transport planning, metropolitan area

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Executive summary

In the Czech Republic, the metropolitan area of Prague encompasses the 57 boroughs of the City of Prague and the surrounding 435 municipalities located in the Central Bohemian Region. It is a mix of municipalities of all sizes with different economic and institutional capacities. Although the metropolitan area of Prague is the most prosperous region in the country, it is also an area of contrasts. For example, while the City of Prague has high levels of public transport use and coverage, residents of the suburban area rely heavily on private cars for daily commuting. Moreover, the population is growing mostly in the suburbs where house prices are more affordable than those in the City of Prague. Although the suburban area has had an inflow of businesses in recent years, the City of Prague remains the main the country's economic hub.

Urban accessibility (defined as the ease with which people move to access jobs, goods, services and opportunities) is a trade-off exercise between the realities and capacities of the City of Prague and the municipalities in the Central Bohemian Region. Enhancing urban accessibility requires a solid transport policy, holistic strategic planning, and flexible governance arrangements. Meeting these requirements is a challenge for authorities in the metropolitan region due to the absence of a metropolitan planning perspective, limited institutional capacities in most of the municipalities, longstanding underinvestment in public transport infrastructure in the suburban area, the high reliance on central government transfers for investment in infrastructure, the underdevelopment of green mobility options, and the suburbanisation process.

The COVID-19 pandemic has led cities to rediscover the benefits of proximity. Compact and connected cities facilitate access to jobs and services, create support networks to combat social isolation and make use of social infrastructure. Thus, for authorities in the Prague metropolitan region, promoting accessibility rather than just mobility by revisiting public space, urban design and planning would have a positive impact in the recovery efforts from the pandemic.

To enhance urban accessibility, authorities in the metropolitan region need to take stock of the different planning and policy actions carried out in recent years. These actions have the potential to underpin a solid strategy to develop transit-oriented communities where residents can easily access opportunities without long commutes, or even without having to move at all. The metropolitan region of Prague has at least five main assets to advance accessibility:

- The Sustainable Urban Mobility Plan for Prague and its Suburbs provides a medium-term conceptual framework and a strategic solution for the transport system until 2030. It aims to improve accessibility, build better public spaces (liveable short distance city), reduce environmental pollution and improve efficiency in public transport services.
- The Prague integrated public transport system (PID) operates an extensive network of metro, trams, buses, railways, funiculars and ferries across the city and allows modal splits. Prague's rail network has been central in improving mobility in the city and the metro area as the metro and tram networks have been expanded and have been seminal in the high levels of public transport use in the City of Prague. The PID covers the entire City of Prague and some of the municipalities in the Central Bohemian Region.

- The Regional Organiser of Prague Integrated Transport (ROPID) is an agency that coordinates transport operators in Prague and the municipalities of the Central Bohemian Region covered by the PID.
- The Institute for Planning and Development of Prague (IPR Prague) has a vast experience and technical capacity in planning and coordinating the elaboration of strategic documents. Although IPR Prague works only on the City of Prague, it has the capacity to expand its scope of action to cover the entire functional area.
- The City of Prague has extensive experience in planning mobility through participatory processes. Strategic planning and, in particular, mobility planning are conducted with the participation of a large number of stakeholders and civil society. The goal is to harmonise the views of different stakeholders in planning processes, prevent conflict and contribute to a long-term consensus.

Despite these assets, local authorities need to overcome a number of challenges to promote urban accessibility in a more effective and efficient manner. Promoting accessibility is a long-term process that requires coordinating interventions in a number of policy domains. In the case of the metropolitan area of Prague, these actions could focus on at least three domains: transport, urban planning, and governance.

On transport planning, authorities may wish to make the smart mobility plan legally binding for the entire functional area. Currently, it is binding for the City of Prague but only remains a guideline for the suburban municipalities. Developing a strategy for smart mobility initiatives may help leverage digital technologies to deliver more efficient, sustainable and inclusive environments with the participation of the private sector. Shared mobility (i.e. car-sharing, bike-sharing programmes) is an area where progress has been rather slow; authorities may thus wish to explore the potential of shared mobility options in suburban areas to complement traditional public transport. In the same vein, authorities across the metropolitan area may wish to promote micro-mobility (i.e. walking and cycling) to expand the catchment of the public transport network, mostly in suburban areas. The COVID-19 pandemic could be used as a window of opportunity to further promote shared and active mobility options and have the political and social support to invest in the necessary infrastructure for this purpose.

Regarding urban policy and planning, the metropolitan area of Prague needs to adopt a more holistic approach to transport, land use and environment policy as they are currently analysed and planned in isolation. To start, authorities may ensure that land use planning is conducted with a metropolitan view and that there is a clear division of roles and responsibilities for transport, land use planning and environment protection. However, mechanisms need to be put in place to maintain inter-departmental and inter-agency relationships for planning. Moreover, the City of Prague is in a position to shift from a policy oriented towards mobility to one that prioritises accessibility. This shift would require aligning housing, land use, transport and environmental policies to build communities where residents can access opportunities by any means of transportation, including walking. In this sense, it would be necessary to give priority to pedestrians over cars in the use of public space. To promote more compact urban development, local authorities need to make transport an integral part of urban regeneration strategies in central areas to make better use of urban space. This action would require alignment with programmes to promote affordable housing in the central area of Prague.

Finally, on governance, it is recommended to foster metropolitan planning and develop a long-term development vision for the entire metropolitan area. This could guide planning at the right scale and maximise the development potential of all local government units. Subnational authorities, with the support of the central government, may also explore a mixture of financing mechanisms such as user fees and charges, simple property tax systems, land sales, betterment levies, piggy-backed arrangements on income and carbon taxes, and even the creation of public-private partnerships for infrastructure development. To strengthen regional cooperation, the multi-level governance structure must be revitalised to improve coordination and collaboration across levels of government and among local government units. Following the experience of the City of Prague on stakeholder engagement, this practice could be rolled

out to the rest of the municipalities in the metropolitan area to ensure a more inclusive dialogue that involves all segments of society in urban planning.

What lessons can be drawn from the experience of Prague on accessibility?

- Developing a common vision and building synergies across administrative borders is essential to promote seamless mobility and underpin public transport effectiveness
- Preparing a sound mobility plan accepted by a wide range of stakeholders including citizens is a long process that requires, extensive consultation, negotiation, planning, technical knowledge, and political buy-in.
- An integrated transport system (physical, operational and managerial) is essential to increase the efficiency of the service, promote public transport use, and make the most of available infrastructure.
- Active cooperation among city authorities, the private sector and citizens from the very early stages of the planning process is essential to ensure consensus and buy-in.
- Having a central planning authority facilitates communication and coordination of the planning work in a fragmented metropolitan area.

1 Introduction

The outbreak of the COVID-19 pandemic has stunted the Czech Republic's economic growth. According to OECD projections, GDP is projected to decrease 13.2% in 2020 and recover only partially by 2021.¹ The state of emergency decreed by the national government from mid-March to mid-May 2020 affected many sectors of the economy such as the public transport sector. Preliminary data suggests that at national level rail passenger transport decreased 20% in the first quarter of 2020, while the number of bus passengers dropped 17% in the same period.² Although it has not been possible to have access to statistics related to the effects of COVID-19 on public transport in the capital city, Prague, it may be assumed that the trend is similar to the one at national level. Two months of lockdown and a slow recovery of economic activity would necessarily represent a decrease in the number of passengers using the public transport network in the city and a growth in the use of private cars. Moreover, teleworking, which is expected to remain a permanent feature of the future working environment³, will also have an effect in the level of use of public transport and people's mobility needs.

Like for many other European cities, Prague and its metropolitan area need to ensure that public transport investment continues to underpin environmental policy objectives and economic growth. Economic recovery from the COVID-19 pandemic will largely depend on investment in urban transport infrastructure as it facilitates a wider range of social and economic interactions than would otherwise be possible. Local authorities would need to provide and improve access to a quality public transport network in a way that rebuilds trust. Transport investment will have to be targeted, as any investment in the sector will have to be justified in a context of lower demand. Moreover, authorities in Prague and its metro area need to design policies to ensure that residents can easily access jobs, goods and services at a low cost and minimal impact to the environment. Therefore, transport investments in Prague and its metropolitan area will need to be accompanied by broader urban development policies aimed at preparing the city for future health or natural crises such as COVID-19, ensuring access to opportunities at the neighbourhood level –probably without even having to take public transport.

OECD research has shown that COVID-19 offers a window of opportunity to shift from mobility policies to policies that enhance accessibility by revisiting public space, urban design and planning (OECD, 2020_[1]). Urban accessibility, which refers to how easily residents can reach local services and jobs either on foot, bicycle or using public transport, is an integral part of building compact, connected, clean and inclusive cities (OECD, 2012_[2]). Despite the debate around the vulnerability of densely-populated cities and their likelihood to spread viruses such as COVID-19, the experience from the current pandemic has shown that it is not density alone that makes cities vulnerable to COVID-19. It is also the structural economic and social conditions specific to the area that make a city less or more vulnerable (OECD, 2020_[1]). Fostering urban accessibility in cities and metropolitan areas like Prague is likely to have a positive impact on the resilience and preparedness for similar events in the future.

Thus, this working paper presents the experience of Prague and its metropolitan area in enhancing accessibility through public transport investment. The aim is to draw policy lessons that could be a source of inspiration for other EU cities in planning mobility in a fragmented metropolitan area and in contributing to accessibility. The working paper begins with an overview of the main socio-economic features of Prague's metropolitan area. It then describes and assesses the transport planning framework that governs transport investment in the metropolitan area. It then moves on to discuss the governance framework of the public transport sector highlighting the role of the central transport body. The working paper ends with a series of policy recommendations for enhancing accessibility in Prague's metropolitan area as well as the main lessons that could be drawn from this experience.

2 An overview of the Prague metropolitan area

Prague's strong economic base but with considerable urban challenges

Prague (Praha) is the capital city of the Czech Republic. It is by far the largest city in the country, accommodating 1.3 million inhabitants in 2019, which represents 12% of the country's population.⁴ Including the metropolitan area, the population increases to 2.2 million inhabitants. Prague produced 24.4% of the country's GDP alone in 2015,⁵ and the disposable income of households per capita (CZK 273 250 equivalent to USD 11 800) is 29% higher than the national average. This ranks Prague among the 12 richest regions in the European Union.⁶ Its economy is dominated by the service sector, which accounts for 80% of its economic base (Czech Statistical Office, 2015). Unemployment levels in Prague fell from 3.9% in 2004 to 2.2% in 2019, very similar to the 2.1% national unemployment rate registered in January 2020.⁷

Prague has the highest population density in the country, but the density level is lower than in cities in neighbouring countries such as Poland and Slovakia. The city covers 49 613 hectares, that makes an average of 25 people per hectare. Population density is not the same all over Prague. The individual districts that compose Prague have greatly varying densities – as high as 200 persons per hectare in the case of Vinohrady and as little as 10 per hectare in Kreslice. Areas with multi-storey buildings have higher density levels than those with single-family houses with gardens (IPR, 2015_[3]).

Prague's current borders have remained unchanged since 1974. During the Soviet era, housing estates were built in the rings surrounding the city centre. The outskirts of Prague began to be filled in with satellite towns. Future developments are being considered in former industrial sites and disused railway land. Between 1985 and 2000 in Prague, built-up areas increased from 1.1% of the territory to approximately 8.1%. Housing covers 12% of Prague's area while 5.5% is reserved for public services and amenities (IPR, 2015_[3]).

The metropolitan area of Prague has an estimated population of 1.99 million (Hainc, 2019_[4]). The Functional Urban Area (FUA) of Prague, together with those of Brno and Ostrava, account for 40.8% of national GDP, 30.7% of national employment and 29.5% of the national population. This suggests that these cities are the engine of the country's economic growth (OECD, 2018_[5]). Thus, improving these cities levels of productivity and competitiveness will have positive repercussions nationwide.

The cost, quality and affordability of housing are major concerns in Czech cities. In Prague only 30% of residents considers it is easy to find good housing at reasonable prices, whereas in Ostrava 65% of people thinks it is easy (European Commission and UN-Habitat, 2016_[6]). House prices in Prague are higher than in the rest of the country, reflecting higher demand (OECD, 2017_[7]). In 2016, for instance, the average price per one square meter of an apartment in Prague was 30% greater than in Brno. The vast majority of residents in Prague live in owner-occupied apartments (43.4%) followed by rented domiciles (31.1%), cooperatives (11.4%), houses (11.4%) and other accommodations (2.4%).⁸

Intense suburbanisation

As a whole, the Czech Republic is experiencing a process of suburbanisation (OECD, 2018^[5]), but Prague has seen the most intensive urbanisation and suburbanisation of any municipality in the country. Since 2000, the Prague functional urban area (FUA) developed land at a faster rate than the OECD Europe average. According to the OECD (2017^[7]), this development underscores a period of intensive suburbanisation, made possible by Prague's permissive land use planning system and the high prices for housing in Prague compared to those in the suburbs (Table 1). The number of small villages surrounding Prague has doubled in recent decades, due to the increase in house prices in the city centre, without a concomitant rise in jobs or services in these areas. As a result, the number of trips across the border of Prague from neighbouring municipalities has tripled since 2005. This growth was driven by both increased usage of public transit as well as automobiles, which grew by 17% and 19% respectively over the previous decade. Over 80% of the trips across the border are made by car rather than public transportation (OECD, 2018^[5]).

Table 1. House prices in Prague and its suburbs

Description	Price per square meter
Price for a new 100 sq. meters apartment in Prague	EUR 400 000
Price for rent per sq. meter per month in Prague	EUR 13 on average
- 100 sq. meter apartment	EUR 1 300 per month
- 100 sq. meter apartment	EUR 15 600 per year
Price for a new prefabricated wooden house (5 rooms) in the suburbs of Prague	EUR 150 000 on average

Source: (Hainc, 2019^[4])

Prague's new land use plan – the Metropolitan Plan – intends to control urban sprawl and protect the green areas around the city. However, the plan only covers the municipality and not the metropolitan area which is seeing some of the largest peri-urban growth (OECD, 2017^[7]). The new land use plan aims to concentrate and intensify the use of existing areas and to develop brownfields, while designating almost no new greenfield areas to be developed for real estate purposes. It is grounded in a compact city approach. The main drawback of the metropolitan plan seems to be its locality as it does not make reference to the functional urban area or regional priorities. A more promising strategy to achieve sustainability would be to work cooperatively across administrative borders and sectorial boundaries to protect and manage land (OECD, 2017^[7]).

The land use planning system has contributed to expansionary and often sprawling developments. Between 2000 and 2012, developed land across Prague's FUA increased by 0.7% per year, which is higher than the European average at 0.40% (OECD, 2017^[7]). Prague's urban core has a share of developed land per person slightly below the European average, but its commuting zone is characterised by dispersed developments compared to European averages. This sprawl may be explained by the cultural preference for large suburban homes in addition to commercial and industrial firms' decisions to locate their operations outside of the city of Prague's administrative boundary in order to qualify for EU funds in the Central Bohemian region. Notably, the areas with the greatest development potential are commuting zones. Almost 200 000 commuters and 20 000 visitors travel to Prague daily, which amounts to 1.5 million people and ensuring their seamless movement is a challenge for the local authorities (Dosly, 2017^[8]).

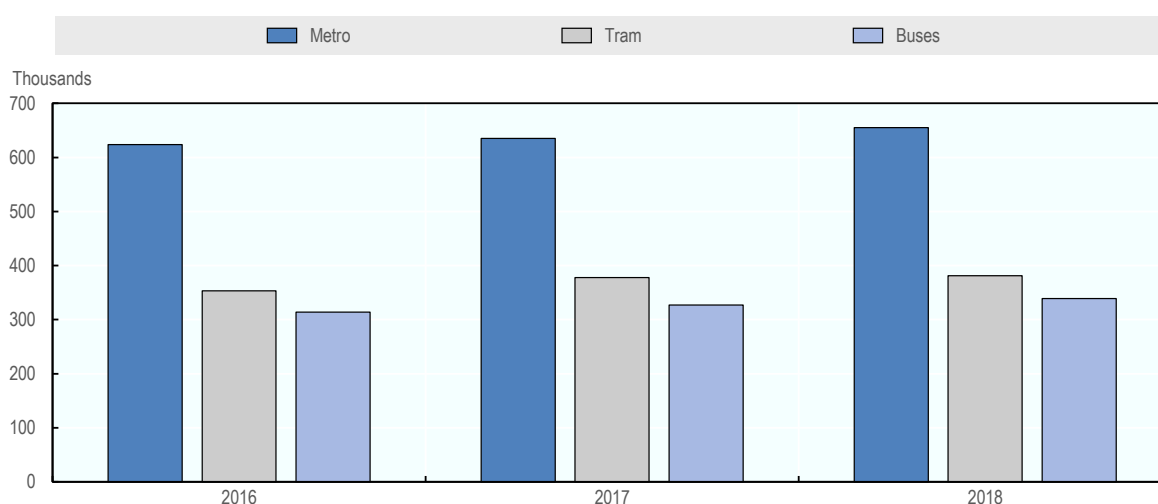
Learning from previous critiques of relatively closed processes, the land use plan's elaboration has proceeded in a participatory manner with many efforts to engage the public, boroughs, developers and other key stakeholders. The new plan has also sought to address criticism that Prague's land use plans have been rigid and inflexible—acting as static regulatory documents that do not adequately encourage new and innovative uses to emerge. It introduces the 'locality' as a new basic unit which is defined by its position in the city, the prevailing character of the built-up area and landscape, and the cultural and economic conditions.

Underinvestment in public urban transport

Rail transport is the backbone of the transport system but it mired in overcapacity

Rail transport (metro, tram and train) is the central component of Prague's public transport system. As Figure 1 shows, the number of passenger transported by metro and trams has been inching higher in recent years, at least before the COVID-19 pandemic. The metro is the most important mode of public transport. In 2014, most people travelled by metro (35.6%) followed by buses (32.4%) (IPR, 2015^[3]). Prague has 65 kilometres of metro lines and 143 kilometres of tram lines (Czech Statistical Office, 2019^[9]). Due to Prague's monocentric structure and the success of the rail transport system, the Sustainable Mobility Plan (SMP) focuses on railways as a solution to sustainable transport and an alternative to automobile usage. Railways are constructed based on allocations from the state budget so that Prague can declare to the Ministry of Transport what upgrades are needed for the railway system. New proposals for transport investment include: a fourth metro line, new tramway lines, and the construction of park and ride facilities in the municipalities that surround Prague. By connecting commuters in the municipalities with the existing railway system, the SMP seeks to achieve a more sustainable and multi-modal system of transportation.

Figure 1. Passengers transported by the city of Prague public transport



Note: This data do not include suburban trains

Source: (Czech Statistical Office, 2019^[9]).

However, the rail network is currently overcrowded, particularly the suburban train network. Indeed, the number of passengers travelling by suburban trains has increased 50% compared to the 2008 levels (Zderadicka, 2018^[10]). The possible explanation is the large number of residents living in the suburbs that commute for work to Prague city centre and this trend is likely to continue, although the effects of COVID-19 and telework will need to be analysed in the near future. Since the rail transport is the underpinning of the transport system, a major challenge for Prague is to further increase the proportion of train journeys made both within the city and to the outlying municipalities. The lack of capacity of the railway corridors has limited the development of the railway service and caused interference across segments of the service (long-distance, suburban and freight). In the short and medium term, Prague needs to invest in upgrading the existing railway lines to increase capacity and unify the rail gauge (width of train tracks) to make the system fully integrated. In the long term, Prague needs to build new infrastructure such as new tracks and

stops, and even a high-speed railway line. This effort is not only up to Prague city government, it requires the coordination of public investment across levels of government, mainly the national government and the Railway Infrastructure Administration.

Limited transport coverage leads to car dependency in suburban areas

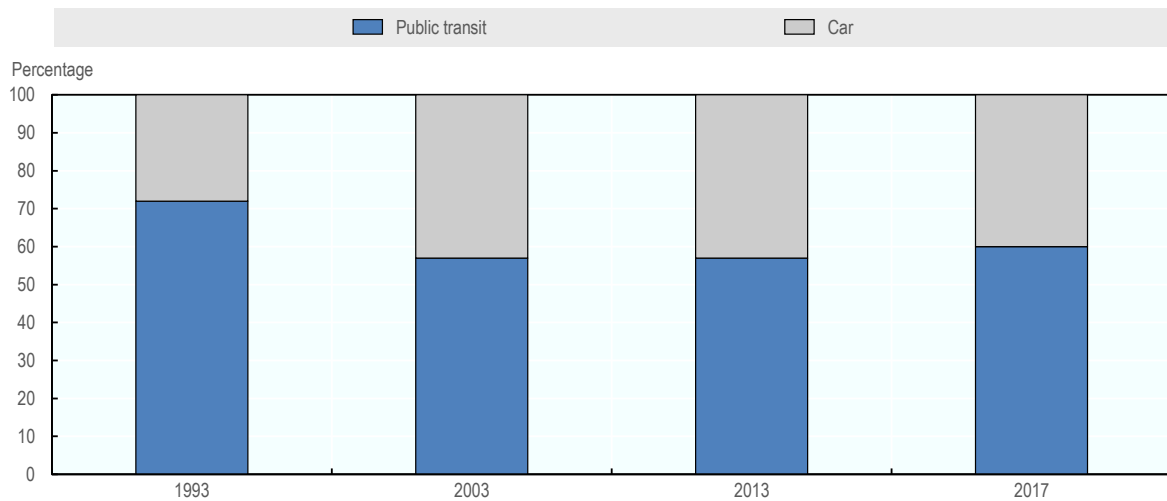
Public transport coverage in Prague's suburban area is more limited than in the core city. Despite the high level of public transport coverage within the city of Prague, the suburban area has more limited transport solutions or options causing higher levels of private vehicles usage and consequently increasing congestion and pollution, which are key concerns in Czech cities in general (OECD, 2018_[5]). Cross-border commuting is done predominantly by car. Between 1997 and 2015, the use of public transit for cross-border commuting went from 30% to 20% approximately, while driving increased (Zderadicka, 2018_[10]). Cross-border commuting has tripled in recent years from just over 200 million trips in 2005 to 600 million in 2015 (Zderadicka, 2018_[10]). There is a concentrated network of "bedroom" communities where many residents commute to the city of Prague on a daily basis. Public transport infrastructure does not extend to these areas and there is strong car dependency. These areas have grown rapidly, despite there being ample land within the city to develop. High car dependency has led to major traffic and roads are jammed, especially those that lead to the city. This has resulted in environmental deterioration, especially in the quality of air and noise pollution in the conurbation, and longer commuting periods. To deal with the problems posed by an increasing number of cars, the City of Prague undertook a range of policy measures such as parking management with preference for residents, while increasing parking prices and limiting parking time.

In recent years the travel time of public transport seems to be higher than passenger car travel time (Lukeš, Kotek and Růžička, 2014_[11]). Since transit and cars share common roads, to increase the level of efficiency of the transport system, the priority for public transport measures should focus on increasing the speed and reliability of surface modes of transport (trams and buses). Whereas most radial tram lines already have reserved tracks and are given high degree of preference at traffic lights, Prague still aims to develop priority measures for its buses. The biggest challenges is the lack of continuity of designated bus lanes, and an insufficient degree of priority for buses at traffic lights in the city of Prague (Eurocities, 2018_[12]).

The fact that one of the main motorways crosses the city of Prague has had a negative impact on urban traffic and on public transport, particularly buses. To alleviate traffic congestion within the city of Prague, authorities are planning to construct a new outer ring road along with an inner-city beltway, which is expected to decrease growing traffic congestion in the city. However, delays in the construction are hampering the transfer of road transit transport outside the developed parts of the city contributing to more traffic jams and pollution.

In Czech cities car ownership has increased in recent decades. After the communist regime, the share of residents using public transport was over 70% but that level decreased with the change of regime. In Prague, from 1990 to 2000 car ownership almost doubled from 276 to 525 per 1 000 inhabitants; by 2014 the number had increased to 550 (EU, UN-Habitat, 2016). The actual number of cars in Prague grew 12% approximately between 2013 and 2015 passing from 701 890 to 786 769 (Dobes, 2013_[13]). In Prague, the increase in the use of private cars for everyday purposes and cross-border commuting has overloaded the city centre and the adjacent area. However, individual passenger transport may also work as part of a multimodal passenger transport if combined with a Park and Ride concept. Although the level of public transport use has been constant until recently (and even increasing slightly as of late), the levels are still below those of 1993 (Figure 2). The average number of passenger cars per 1 000 inhabitants rose from 336 in 2000 to 459 in 2014 (European Commission and UN-Habitat, 2016_[6]). This could be explained by higher incomes, which have led to a higher car ownership rate, but also to the peri-urbanisation process as transport options in suburban areas are limited.

Figure 2. Transport modal area within the city of Prague



Source: Presentation given to the OECD team at IPR (Zderadicka, 2018^[10]).

Green mobility options are underdeveloped in Prague

Environmentally-friendly mobility options are still largely underdeveloped in Prague. Efforts to reduce the environmental impact of the city's mobility system need to be reinforced through, for instance, low-emission vehicles, bicycle infrastructure and easing road congestion. Appropriate walking and cycling infrastructure has not been built at the same pace as the construction of suburban areas. Thus, suburbanites tend to live too far away from the nearest public transit stop. In many suburbs, it is difficult to reach the bus transit stop on foot, as pedestrian infrastructure is lacking. Approximately 35% of people use walking as the main transport mode in Prague and only 5% cycle (European Commission and UN-Habitat, 2016^[6]). Public transport in suburban areas is not perceived as an alternative transportation mode and residents prefer to use their private vehicles (Lukeš, Kotek and Růžička, 2014^[11]). Indeed, one of the main challenges for public transport in the metropolitan area of Prague is to offer public transport options within the range of acceptability for the majority of commuters from the suburbs and make them the best alternative. However, insufficient connectivity of pedestrian infrastructure is an obstacle to access public transport in many suburban areas.

The Strategic Mobility Plan promotes the construction of infrastructure for cycling, but there seems to be a lack of political support for this mobility option as politicians, until recently, favour cars. The promotion of bicycle transport and the creation of the necessary infrastructure is part of the city's development plan. Cycling solutions are being integrated into new building and construction projects.

The 'Pavement Programme' aims at fostering walking as a means of transport. However, given growing car usage in the region, much more will need to be done to promote sustainable mobility such as car sharing, park and rides, regional trains and the introduction of a low emission zone (OECD, 2017^[7]). The city administration vehicles are mostly electric, and electric cars in general get special fees in the parking areas. The Ministry of Transport is leading cross-ministerial efforts to look for ways to promote green mobility.

The Operational Programme Prague – the Growth Pole of the Czech Republic 2014-2022, supported with funds from the European Commission, allocates 30% of its budget (EUR 121 million) to supporting mobility and energy conservation.⁹ This is part of the priority axis 2 that focuses on the support of energy efficiency, smart energy systems, and renewable energy sources in public infrastructures, public buildings and private houses. In 2017, the Prague Public Transit Company (PPT Co.) planned to invest a total of CZK 606 billion

(EUR 245 million) in the public transport system. Investments include preparation works for a new metro line, modernisation of safety technologies in the metro, and renovation and construction of new tram lines.¹⁰ This is part of the city's strategy to promote the use of public transport and contribute to meeting environmental goals.

Box 1. Sustainable mobility and energy saving – the focus of investment projects in Prague

Within the priority axe 2 of the Operational Programme Prague - the Growth Pole of the Czech Republic 2014-2022, there are resources available for investment projects funded by the European Regional Development Fund. The focus is on:

- Energy savings in public transport facilities;
- Energy saving in urban road transport;
- Transformation of energy-intensive city buildings into energy-neutral buildings;
- Building car parks as part of the P+R system;
- Measures to ensure priority of public transport in traffic.

The City of Prague, its boroughs, organisations established primarily by the City of Prague, the Prague Transit Company, Prague Integrated Transport Organiser, the Railway Infrastructure Administration, and organisations for research and knowledge transfer can apply for funds from the Operational Programme Prague.

Source: <http://penizeproprahu.cz/eng/>

In 2015, the Czech government adopted a strategy to support eco-friendly mobility called the National Action Plan for Clean Mobility. The goal is to bring the total costs of operation of clean vehicles in line with those of vehicles with an internal-combustion engine. This includes cash subsidies for new vehicles, exemption from excise and road taxes, lower toll fees, etc. In cities, drivers of electric vehicles will be allowed to enter urban areas and to park free of charge and use the preferential public transport lanes. The Plan estimates a minimum of 1 300 electric charging power stations around the country, which is a necessity for the development of green mobility.

3 The transport planning framework

The national and local development plans

The Czech Republic has a hierarchical system of urban development plans, with the Spatial Development Policy (SDP) at the top of the hierarchy. Although it contains planning guidelines and delimits development areas as well as the main transport and infrastructure corridors, the SDP does not outline a general vision for spatial development. Some of the priorities are to ensure integrated territorial development in cities and regions, prevent space-social segregation in the urban environment, support polycentric development of the settlement structure, create the conditions for multifunctional utilisation of brownfields to protect undeveloped areas (agricultural and forest) and preserve public green areas, ensure migration, suitability of the landscape for wildlife and humans when deciding where to locate transportation and technical infrastructure, improve public urban transport infrastructure, and ensure transport connectivity of residential, leisure and production spaces. It is worth noting that the SDP sets the development planning priorities of the three metropolitan areas and the main cities of the country.

The 2015 SDP established planning priorities for, among other issues, sustainable development, corridors and areas for transport infrastructure. In 2017, the national government updated the Principles of Urban Policy, a framework document to propose guidelines and activities conducive to sustainable urban development, coordinate the approach taken by all levels of government and ensure the implementation of the UN-Habitat New Urban Agenda (Box 1). The principles are binding for the central government but only recommendations for city governments.

Box 2. Principles of Urban Policy in the Czech Republic

The Principles of Urban Policy outline the view of the central government on cities. The principles cut across fields and complement each other and create the frame for increasing the quality of inhabitants' life in urban areas.

- Principle 1: Strategic and integrated approach to the development of cities.
- Principle 2: Polycentric development of the settlement system.
- Principle 3: Cities as poles of development in the territory.
- Principle 4: Protection of the urban living environment.
- Principle 5: Implementation of the New Urban Agenda.

Some of the key priorities the principles help to promote are: brownfield redevelopment, investment in public transport and improved access to housing and public services.

Source: (Ministry of Regional Development, 2017^[14]); (OECD, 2018^[5]).

At local levels, Prague's 2016 Strategic Plan, adopted by the Prague City Assembly on November 24, 2016, determines investment priorities. It is based on diagnoses of the major challenges facing the city

and the critical areas for action and investment across a wide range of policy areas – from education to transportation and land use planning. The Plan determines the primary direction for development in the medium and long term (10-15 years), and sets out the city's social and economic objectives and priorities. It aims to reduce pressure on the urban core and improve the quality of the urban environment and architecture.

The Strategic Plan was authorised by the Mayor and City Council and Assembly after a participation process that involved all the administrative bodies, institutions and various stakeholders, including the public and academia and in particular the city's 57 boroughs, which, by law, must be intensively consulted in the preparation of the strategic plan. Each of Prague's boroughs can adopt its own strategic plan, and those plans are not obliged to be in agreement with the strategic plan for the whole city.

The themes outlined in the strategic plan include: 1) a cohesive and healthy metropolis; 2) a thriving and creative metropolis; and 3) a well-governed metropolis. There are numerous action items under each of these themes that are operationalised through the implementation programme for the strategic plan, which extends to the year 2030 and proceeds in three four-year phases starting in 2019. Annual implementation plans detail the preparation of individual projects across the city and its boroughs and the implementation of these projects will be a priority in the allocation of the city budget.

A mobility plan for Prague's metropolitan area

In 2019, the City of Prague and the Central Bohemian Region approved the 'Sustainable Urban Mobility Plan for Prague and its Suburbs' (SMP), which had been under preparation since 2016. The SMP was developed through the "P+Polad'Prahu" project to replace the 1996 Transport Policy Principles with the aim of addressing the transport challenges of the metropolitan area.

The SMP is enshrined in the Prague Strategic Plan. It covers the entire city of Prague and its metropolitan region, which is composed of municipalities in the Central Bohemian Region. The SMP provides a medium-term conceptual framework and a strategic solution for the transport system until 2030, which fulfils the principles of sustainable mobility and improves the standard of living of Prague's current and future population. The SMP seeks to exploit the connectivity of each mode of transport: automobile, public transport (buses, metro, trains), walking, cycling and city logistics. It is worth pointing out that the mobility plan is also one of the conditions for the possibility of having access to funds from the European Union, namely the Operational Programme Traffic (OPD) and Integrated Regional Operational Programme (IROP).

Box 3. The Sustainable Mobility Plan for Prague and its Suburbs 2019-2023

The Sustainable Mobility Plan for Prague and its Suburbs 2019-2023 (SMP) is the strategic document that coordinates transport investment in the city of Prague and its metropolitan area. The SMP is the basic conceptual document of the city in the area of mobility, traffic and traffic infrastructure.

The SMP captures the mobility vision of the Strategic Plan. The mobility vision is called "Praha efektivní" which is based on improvements to the rail transport to facilitate mass transit with a low environmental impact. It also focuses on car traffic regulation. The vision contains four building blocks:

- A focus on sustainable mobility – ensuring that the movement of people and goods is acceptable over the long term socially, economically and environmentally.
- Transport will focus on environmentally friendlier means of transport: mainly rail, walking and cycling.

- Greater coordination among transport, environment and public space.
- Reduction of the negative impact of automobile traffic promoting safety and energy efficiency.

The objective of the SMP is to secure the mobility of inhabitants and ensure that the future transport of people across the city is as flexible and seamless as possible. It is built based on the needs of the inhabitants of Prague and the suburbs, as it also expects to contribute to the improvement of the quality of life in the city by reducing the levels of noise and emissions. The SMP contains 242 specific measures as a long-term solution to facilitate easier links of the commuter belt and the City of Prague. These measures amount to an investment of CZK 113 billion (USD 4.1 billion approximately) investment to 2030.

The SMP includes a Transport Policy that sets out the direction mobility should take until 2030. It was built with the participation of experts and civil society. The Transport Policy has seven strategic objectives: i) increasing the spatial efficiency of transport; ii) reducing the carbon footprint; iii) increasing performance and reliability; iv) increasing safety and security; v) increasing financial sustainability; vi) improving public health; and vii) improving transport accessibility.

Source: (City of Prague, 2019^[15]); Polad Prahú <http://poladprahu.cz/en/sustainable-mobility-plan-for-prague-and-its-suburbs>.

Some of the main investment activities under the framework of the SMP include: the reconstruction of existing infrastructure, especially roads and the electric rail transport; the construction of Prague's freeway outer city ring; and improvement of city logistics. Local authorities expect that the implementation of the SMP will:

- Improve accessibility,
- Improve efficiency of passenger and goods transportation, and reduce the energy burden,
- Reduce environmental pollution,
- Create attractive high quality public areas,
- Improve public spaces (liveable short distance city), and
- Increase traffic safety.

To implement the SMP, Prague City Council approved the 'P+Action Plan for 2019-2023'. This is a strategic document for the implementation of transport projects in the city. It sets out the responsibilities that each organisation in the municipality has for the different projects and sets the respective deadlines. It includes 249 measures and is expected that by 2023 at least 224 will be in their preparatory phase. The Action Plan will be binding in the city of Prague.

Transport planning has some weaknesses

The SMP lacks enforceability in the suburban area

While the SMP Working Group marked a turning point of coordinated transport planning, in reality few municipalities joined the development and elaboration of the plan. All municipalities in the Central Bohemian Region were invited, though only three participated in the workshops for scenario planning and new transport policy design. Further, while the SMP is binding for the city of Prague, the document lacks enforceability outside of the municipal boundaries where local authorities must make their own local development plans and land use plans. The SMP is only a guidance for municipalities in the Central Bohemian Region. The lack of enforceability across jurisdictions highlights a critical problem for transport

planning in the region. It is currently extremely complicated to coordinate the entire metropolitan area regarding transport policy and land use.

Part of the problem resides in the lack of a common land use plan for the entire metropolitan area. Each local authority prepares its own land use plan, which are not necessarily coordinated with those of neighbouring municipalities. Having separate land use plans hinders the potential of the SMP. Indeed, while the SMP states what it is necessary to build in the metropolitan region to improve transport and mobility, the land use plans regulate what is possible to build, and they are not necessarily coordinated across the Prague metro area. In the City of Prague, land use and transport planning are to a certain extent coordinated but that is not the case for municipalities in the Central Bohemian Region.

One problem for the City of Prague, like for the rest of local authorities in the country, is that coordination across policy domains is still weak. This is reflected in the lack of integrated policies. Interviews for this case study revealed a widespread perception that urban, social and environmental policies in Prague are still largely conducted in siloes, and there is a lack of a unified direction for policy implementation. This suggests that, despite the existence of a general sustainable development framework, the vision on urban sustainability has not been integrated with a holistic view in different policy areas, including transport. Sectorisation and specialisation seem to be well-rooted in the Czech administration and while they have provided clarity for accountability and responsibility, their drawback is that they limit the ability of ministries to cooperate on holistic solutions. For example, water policy does not seem to be coordinated across ministries that have a role in it (infrastructure, regional development, and environment). Local authorities have been working to have a more comprehensive planning system that integrates both land use and transport but progress has been minimal.

Public transport is not at the core of urban renewal

Czech cities, in general, have a lot of space inside their borders that constitute brownfields. In Prague, former train stations and factories have been abandoned and not repurposed. Even housing estates require renovation to be attractive to residents as places to live. Prague's requires a strategy for brownfield development as the largest development opportunities in the city—those with the potential to transform entire neighbourhoods and districts—are located in central brownfield sites. This is an opportunity to ensure that major developments in the city are not dominated by trips made by cars as the central parts of the city are well served by public transport. However, there is no evidence that major brownfield developments are public transport oriented. An increase in the number of people moving to the centre may also have an impact in the quality of public transport if capacity concerns are not addressed.

Prague should continue its efforts to develop brownfields, plan strategically the use of land, and combine urban policies with socio-economic development policies. However, ensuring that transport is part of this planning is key. Preserving the urban green environment while developing a compact city that provides different housing and transport alternatives to a population that is growing (albeit slowly) is a difficult balance to strike. However, by making transport part of urban regeneration the city could be in a better position to increase capacity including both infrastructure and connectivity, and journey times to destinations as well as frequency and availability of service. Moreover, it could coordinate public transport and street management and regulate other transport services to ensure accessible, safe and reliable services are provided, as well as improving streets and environment around stations.

The assets of the transport strategy

The City of Prague has a high level of public transport use

The City of Prague has one of the highest shares of public transport use in the EU (European Commission and UN-Habitat, 2016^[6]). Prague's integrated transport system (PID) is used by 1.8 million residents and visitors every day (1.3 trillion passengers per year) and transport is the largest budget item of the city, which normally constitutes between 35% and 40% of public expenditure (City of Prague, 2019^[15]). In Prague almost 70% of inhabitants regularly use public transport as a mode of transport, bested only by Vienna, Zurich and Paris (European Commission and UN-Habitat, 2016^[6]). Taking into account the location of transport stops, the frequency of departures at each stop, the distribution of the population and the extent of the urban centre, almost 70% of the population in Prague has excellent access to transport. This means that people can easily walk to a bus or tram stop with more than 10 departures an hour and/or a metro or train station with more than ten departures an hour (European Commission and UN-Habitat, 2016, p. 128^[6]). As mentioned above, proximity to public transport in the suburban area, however, is more limited than within the city of Prague. The lack of walking infrastructure or bus stops that are located in the wrong area—given the built-up area and street structure—causes very long walking distances to the bus stop within small population centres.

The City of Prague has an integrated public transport system

One of the reasons behind the high levels of public transport use in the City of Prague is its Integrated Public Transport System (PID) where all means of transport are interconnected and coordinated. The PID operates an extensive network of metro, trams, buses, railways, funiculars and ferries across the city that allows modal splits and operates day and night (Table 2). The use of digital technology to facilitate public transport use, such as smart phones to buy tickets, is one of the assets that distinguishes Prague's system from others in the world. Travellers only need to purchase one ticket to use a combination of transport means. The bus network was expanded with suburban routes growing from 607 to 2 258 kilometres. Traffic safety has also been improved as traffic fatalities decreased from 94 in 1990 to 20 in 2014.¹¹

Table 2. The Prague Integrated Public Transport Network, 2017

	Metro	Railway	Trams	Buses	Regional buses
Number of lines	3	30	34	154	167
Number of stops	61	45	276	1176	2025
Network length	65km	160km	143km	834km	>1 700km
Peak-hour vehicles	103 trains	126 trains	436 trains	1 359 vehicles	658 vehicles
Annual performance	58 mil. veh. km	5 mil. veh. km	58 mil. veh. km	79 mil. veh. km	27 mil. veh.km

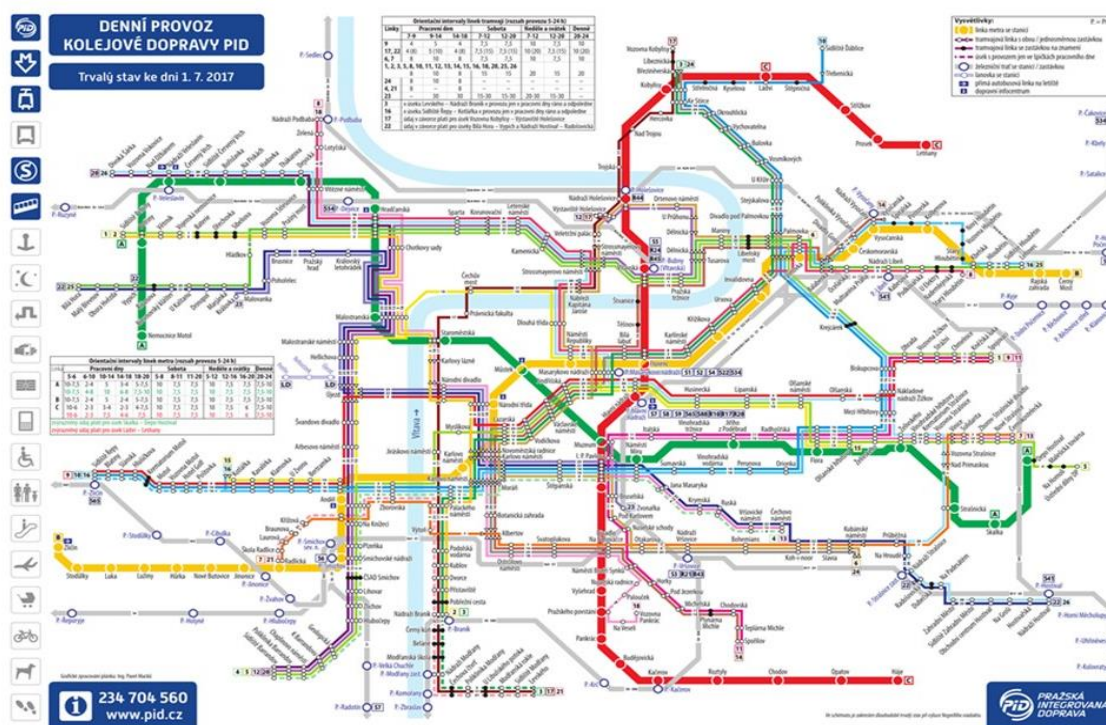
Source: ROPID (2018^[16]).

Prague's rail network is central for accessibility and mobility in the city and the metro area (Figure 3). From 1990 to 2014, the metro network grew from 39 to 59 kilometres and the tram network from 130 to 143 kilometres. Since 2010, the city government has been investing in extending line A of the metro with an estimated cost of CZK 18.7 billion. According to Kruml (2015^[17]) the project has been financed by European funds within the framework of the Operational Programme Transport (OPT) Priority Axis 5 'Modernisation and Development of the Prague metro and the road traffic management systems in the City of Prague'. The European Commission approved a contribution of EUR 287 724 562 (approximately CZK 7.9 billion) for the project of extending the Metro Line A. The total cost of the OPT project, in accordance with the application, amounts to CZK 18.4 billion (the price level in 2008) (Kruml, 2015^[17]). The City of Prague has undertaken the task to provide the remaining funds needed. Thus, local government took a CZK 11 billion credit line from the European Investment Bank (EUR 405 million approximately). The city government

approved a subsidy to cover the remaining funds. Another investment priority for Prague is the construction of the fourth metro line. The urban and suburban railways have significant potential but it is necessary to complete the new stops and terminals in the city, as well as much needed infrastructure in the suburban areas.

Figure 3. Prague's Public Transport Network

Metro, trams, railways and funicular



Note: This map does not include bus lines.

Source: Presentation given to the OECD (ROPID, 2018_[16])

The PID serves the entire area of Prague and two-thirds of the Central Bohemian Region, although there are plans to expand it to cover the entire Central Bohemian Region (Figure 4). The recent adoption of the SMP could certainly be a catalyst towards the expansion of the service.

Figure 4. Area covered by the Prague Public Integrated Transport System

Prague and the Central Bohemian Region



Source: Presentation given to the OECD by ROPID (2018_[16]).

Due to the PID's comprehensive coverage, reliability, efficiency, affordability and commitment in infrastructure investment, Prague's public transport system is considered one of the leaders in Europe and the world according to the *Fédération Internationale de l'Automobile* (FIA) and the Sustainable Cities Mobility Index for 2017. Prague's transport system ranks fifth, just behind Hong Kong, Zurich, Paris and Seoul.¹² Satisfaction with the quality of public transport appears to be high within the city of Prague (86%) (European Commission, 2016_[18]).

Suburbanisation has increased demand from passengers travelling between the suburbs and their place of work, mostly in central Prague. According to research, the process of residential and non-residential suburbanisation of the Czech economy has prompted the development of the integrated transport system and the integrated information system (Dobes, 2013_[13]). Many passengers travel from the periphery to work in central Prague. In some cases, the development of the transport system is closely linked with the suburban lines in the regional transportation system. Thanks to the PID, Prague's transport system has the same tariffs, standards and organisational conditions throughout the network. As Box 4 shows, the idea behind the PID is to have one network, one tariff, one ticket and one timetable in the functional urban area. This certainly has advantages for the smaller municipalities in the Central Bohemian Region, which are within greater Prague, that do not have the financial and technical capacity to deliver high quality service.

Box 4. The basic characteristics of Prague Integrated Transport (PID)

The Prague Integrated Transport system is a modern integrated transport system of public transport whose creation was based on the recommendations of the European Union as a municipal transport association. It has four basic characteristics:

- A unified regional transport system built around a rail transport (railways, metro and trams), and bus services linking-up residential areas to rail transport stations.
- P&R parking lots at train stops in the suburbs and beyond facilitate multimodal transport (car + public transport).
- Single ticket enables passengers to travel easier regardless of the selected way of transport and transport service provider.
- Competitive market conditions keep costs down, while coordination and cooperation are maintained.

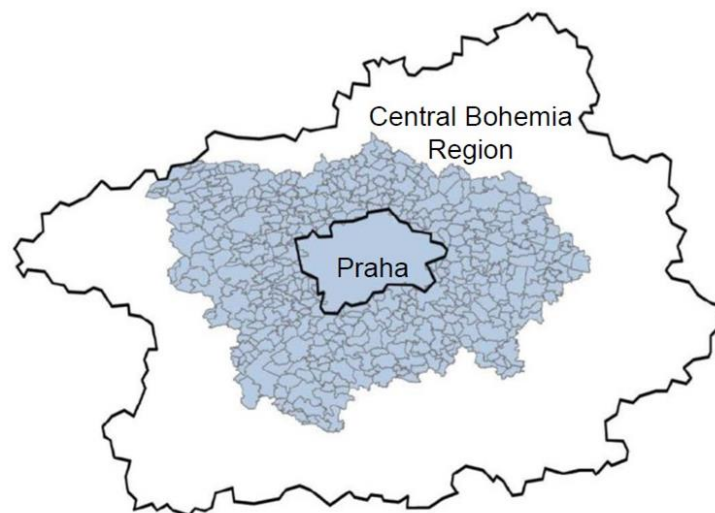
Source: ROPID accessed at: http://stary.ropid.cz/info/we-introduce-pid_s219x903.html.

4 The governance of metropolitan transport in Prague

A highly fragmented metropolitan area

The metropolitan area of Prague is composed of the City of Prague (57 boroughs) and 435 surrounding municipalities of different sizes in of the Central Bohemian Region (Figure 5). The City of Prague has the level of a regional government. The rights and duties of Prague’s assembly, council and office as well as the smaller offices of individual parts of the city are defined by the Czech National Council Act. Prague enacts its own legislation, municipal act and building code. It has the powers of a region and those of a municipality, but some of these powers have been delegated to the city districts (boroughs). There is an interplay among these levels that makes planning processes more complex (OECD, 2017^[7]). The planning of Prague’s development includes several territorial levels of planning: municipal (the territory of Prague itself), metropolitan (Prague and its metropolitan region), regional/national (Prague as part of the national regional system), and regional/European (as part of the European regional system).

Figure 5. Prague functional urban area



Source: (Hainc, 2019^[4])

The City of Prague is divided into 57 boroughs, but the crucial power is at the municipal level (central government in Prague) because it decides about the decentralisation of responsibilities to borough levels. For instance, Prague is the owner of real estate; however, it decentralises the management of certain properties (e.g., housing) to boroughs. Prague as a municipality is responsible for public transport, waste

collection, police, care of historical sites, economic development and planning, social assistance for disadvantaged groups and other issues of citywide significance. The municipal districts or boroughs are responsible for parks, schools, some social and health programmes and public housing.

Box 5. The Czech administrative system

The Czech Republic is a unitary State divided into 14 administrative regions (kraj). The Constitution (Article 99) of the country assumes a two-level system of local government represented by the municipalities, which are the basic territorial self-governing units, and into regions, which are the higher territorial self-governing units. There is no hierarchical link between these two levels of government. The State can intervene in territorial self-government only in cases provided by law and for reasons of upholding the law. The Constitution stipulates that the territorial self-government units are territorial communities of citizens with the right to self-government. A statute specifies the cases when they have the role of administrative districts.

The Constitution guarantees the independent administration of the municipality by its elected assembly and council. The municipal level includes 6 258 municipalities (obce), 604 towns (město), 26 statutory cities (statutární město), and 221 market-towns (městys). There are too many municipalities compared with countries with similar population sizes; for instance, Sweden also has 10 million inhabitants but only 290 municipalities. The majority of the Czech municipalities have a population of less than 500 inhabitants. A municipality with at least 3 000 inhabitants is considered a city. The majority of municipalities are also too small to ensure a cost-effective provision of public services.

Source: (OECD, 2018^[5])

The Central Bohemian Region surrounds Prague and therefore a high level of coordination and communication is needed to leverage the investment in public transport and other public services. Prague's government proposed a strategic plan for the metropolitan area in 2014, but it does not appear to involve significant cooperation with municipalities in the Central Bohemian Region. Any future measure to enhance metropolitan coordination should focus on land use planning, including to address urban sprawl resulting from inadequate coordination (OECD, 2017^[7]). For that, one single authority in charge of transport and spatial planning could be an option.

Absence of a metropolitan approach for urban development

In the Czech Republic a metropolitan approach to face the urban challenges of the larger agglomerations (the functional urban area) (OECD, 2018^[5]) seems to be lacking. Metropolitan competitiveness is not a central theme in Czech urban development policies. In Prague, for instance, there is not a metropolitan-wide planning approach to managing land use (OECD, 2017^[7]). This is particularly relevant for transport planning as the two domains are closely linked (OECD, 2017^[19]).

The lack of a metropolitan-wide approach makes it difficult to address the mobility and accessibility challenges of the Prague functional area. For example, addressing the issue of suburbanisation requires substantial coordination amongst the different municipalities in the Central Bohemian Region and the City of Prague. Development planning is compartmentalised in the surrounding municipalities, which are responsible for their own development and land use plans and lack the incentives to coordinate with Prague's transportation planning and overall vision for sustainable development. Municipalities often face pressure from private companies to build new developments but make no plans for transport or services.

The SMP represents a step forward in addressing these challenges, though more coordination on housing and land use is essential. Another consequence of the poor coordination between the two regional authorities has been the dramatic increases in car traffic in the greater Prague metropolitan area.

The creation of the Prague Integrated Transport (PID) and the adoption of the 'Sustainable Mobility Plan for Prague and its Suburbs' have facilitated to some extent transport planning with a more metropolitan perspective. As mentioned above, the PID covers the entire city of Prague and two-thirds of the municipalities in the Central Bohemian region (2.3 million inhabitants). To ensure that the system works as a whole, Czech authorities created two transport organisers: i) the Regional Organiser of Prague Integrated Transport (ROPID) that coordinates transport operators in Prague and the municipalities of the Central Bohemian Region where the PID applies; and ii) the Central Bohemia Integrated Transport Authority (IDSK) that coordinates transport in the remaining municipalities of the Central Bohemian Region.

In Prague's metropolitan area, ROPID acts as the transport authority and one of its critical tasks is to further develop the PID (Box 6). It coordinates the activities of 22 operators that provide public transport service in Prague metropolitan area. The biggest transport operator is the Prague Public Transit Company (DPP), owned by the City of Prague, which operates the metro, trams and most bus lines. The railway lines are operated by the Czech Railways.

Box 6. The Regional Organiser of Prague Integrated Transport, ROPID

The Regional Organiser of Prague Integrated Transport (*Regionální organizátor Pražké integrované dopravy*, ROPID), created in 1993, is a municipal organisation owned by the City of Prague responsible for the operation of the Prague Integrated Transport. Its basic tasks include organising and designing transport, coordinating the operations of multiple providers, setting quality standards, discussing traffic solutions and their funding with subsidy providers and transport operators, negotiating contracts and supervising operators' performance, organising financial flows of revenues and subsidies within the PID system, setting tariffs and fares within the PID system and checking and marketing the system.

ROPID also conducts transport quality monitoring (punctuality, tidiness, information), passenger counting (on stops and in vehicles), and passenger surveys (travel behaviour).

Source: (ROPID, 2018^[16]) and http://stary.ropid.cz/info/we-introduce-ropid_s219x902.html.

In the metropolitan area of Prague there is no regional institute for strategic development planning beyond the political-administrative limits. The lack of a metropolitan planning institute contributes to the absence of proposals and referral projects that meet the diverse needs of the population on the metropolitan scale. Only the City of Prague has a specific institute for planning that provides a solid technical knowledge and coordinates strategic documents. Indeed, the Prague Institute of Planning and Development (IPR Prague) has an important role in producing and coordinating key documents in areas such as strategic and spatial planning and development, public space, transport, and landscape and economic infrastructure.¹³ It represents the City of Prague in spatial planning matters. IPR Prague ensures a high level of technical capacity for planning in the City of Prague, which is a key weakness in the smaller municipalities in the functional area. IPR Prague ensures the coordination in the preparation of strategic projects and monitors the ties between existing and new strategies. The fact that IPR Prague focuses exclusively on the City of Prague and not on the functional area may be a lost opportunity to enhance the capacity for planning at metropolitan level. Capacity for planning is a key concern across municipalities in the Central Bohemian Region. Some of them are too small to afford such a body. This is what makes a metropolitan planning institute so essential.

The challenge of funding transport investments

Sources of financing for public transport are weak. According to ROPID, 77% of the operating cost of the PID is covered by subsidies from the City of Prague and the Central Bohemian Region, 22% are revenues (tickets and advertising) and the rest comes from other sources (ROPID, 2018^[16]). The overall year costs amounts to CZK 19 billion (USD 1 billion) of which only CZK 4 billion (USD 0.2 billion) are revenues from passengers. Moreover, there are many discounts that apply to customers depending on their age, and seasonal or yearly tickets. These discounts, despite being good incentives to use public transport, may be reducing revenue. This could limit the government's efforts to modernise, maintain and expand the network to suburban areas where the population is growing. Moreover, studies have found that in Prague fares and tariff system settings are not a sufficiently motivating tool for increasing public transport use. According to IPR the load of expenditures on transport on the city plans amounts to USD 6.8 billion, but in the city budget transport investment limited to only USD 0.12 billion per year (Zderadicka, 2018^[10]). Thus, the tight budget for capital expenditures is leading the government to rethink investment priorities and reassessing the feasibility and sustainability of investment plans.

Another problem is that municipalities in the Czech Republic have low fiscal autonomy, which limits their possibilities for investing in urban infrastructure. Municipalities are financed mostly through a mix of shared taxes (personal income taxes, corporate income taxes and value added taxes) and grants and transfers from the central government. The majority of municipal revenues come from taxes (around 60%), while for regions, the majority of revenue comes from grants and transfers (around 60%). However, very little of municipal tax revenue is directly raised (OECD, 2017^[7]).

Prague's revenue comes mostly from non-direct taxes and transfers from the national government. It has the largest share of tax revenue of any region in the country (67% out of total revenue versus an average of 50% for all Czech regions). The vast majority of the transfers and grants are earmarked, mostly for education and investment spending (OECD, 2016^[20]). In 2015, Prague received far fewer transfers than any other region in the country; these form 22% of its revenue while the average for all regions is 40%. In terms of taxes, Prague's largest revenue contributor is the value added tax, followed by the business tax (income tax on legal persons) and the personal income tax (income tax on natural persons) (Table 3). The city can also levy charges and fees on selected activities and services (e.g. environmental and administrative fees and charges). Transport formed roughly 37% of the city's budget while education expenditures were roughly 26% in 2015.

Table 3. Prague's sources of revenue

In millions of CZK

Item	Prague
Value Added Tax	20 354
Income tax of individuals	11 335
Taxes on corporate income	11 878
Property taxes	800
Environmental fees and charges	714
Local charges	638
Administrative charges	492
Other charges	882
Non-investment charges from the state budget	12 632
Non-investment transfers from municipalities	1 700
Income from the use of rights of natural resources	0 001
Returns from funded organisations	2 322

Source: Information provided by Czech authorities to the OECD team (OECD, 2018^[5]).

Planning mobility through participatory process

The City of Prague has a good track record in enhancing citizens' engagement. Strategic planning and, in particular, mobility planning are conducted with the participation of a large number of stakeholders and civil society. IPR Prague promotes participatory planning to help harmonise the views of different stakeholders in planning processes, to prevent conflict and to contribute to a long-term consensus. The premise is that effective public participation can save time and human and financial resources. It can also facilitate involvement in urban planning of marginalised groups. The elaboration of the SMP and the updating of the Strategic Plan exemplify Prague's participatory planning.

The SMP was developed under a wide participatory process marking a turning point in mobility planning in Prague as it has been prepared as a collective effort between transport organisations in the City of Prague and the Central Bohemian Region. The work was carried out in three phases: analysis (2016-17); transport policy with scenario selection (12/2016 – 9/2017); and proposals (9/2017 – 5/2019). During each phase the group of 'partners' or 'experts' got together in workshops for the elaboration of the SMP. They included Prague Municipality, the Institute of Planning and Development (IPR Praha), Prague Integrated Transport Organiser (ROPID), Technical Administration of Roads of the City of Prague, Prague Public Transport Company (DPP), the Central Bohemia Integrated Transport Authority (IDSK), representatives of the Central Bohemian Region, Prague Operator ICT and other transport provider companies. The Czech branch of the Mott MacDonald company acted as an external project manager that coordinated the collaboration of city organisations and companies. The Joint Assistance to Support Projects in European Regions (JASPERS) provided assistance for using EU funding on major infrastructure projects such as roads, railways, water energy and urban transport.¹⁴

During the transport policy phase, citizens' input was received. Local authorities received more than 2 700 suggestions from the public through surveys and panel discussions. This feedback focused on three primary issues: public transport and parking, infrastructure, and the management of traffic. As a result of the workshops and citizen feedback, Prague's transport policy focuses on public rail transport and its connection to other transport modes such as walking infrastructure, bikes and passenger cars in the metropolitan region. Its policy also covers maintenance of existing transport infrastructure and reconstruction of public spaces. The reason is that the suburban rail network is essential for accessing the metropolitan region but it is now at full capacity.

The Strategic Plan for the City of Prague was updated through a participatory process that included professionals and the general public. In-depth interviews, workshops, working groups and consultations were organised to develop a common vision and set the development priorities of the city. Prague's Strategic Plan fosters sustainable urban development through the promotion of creativity, citizens' participation in urban life, enhancing social cohesion and the revitalisation of public spaces. One example is the reconstruction in 2015 of 'Vinohradská Street' where citizens got involved in preparatory works and the improvement of the urban design concept prepared by IPR Prague. In 2015, IPR Prague and the City of Prague launched a pilot project to revitalise housing estates in Vybíralka courtyard and its surroundings. Citizens were one of the main stakeholders involved in the project as it intended to find sustainable solutions that fit local needs.

However, Veselý and Vacek (2013^[21]) argue that most of the Czech municipalities still distrust participatory processes as they are afraid of civic protests. But it is precisely the lack of participation and information that leads to social dissatisfaction. They argue that the participation of residents in the revitalisation of public spaces such as the 'Central Park' of Southern Town 1 in Prague is essential to the enhancement of identification of locals with the public space. IPR Prague has issued a 'Participation Manual' to help local public employees understand the participatory processes and improve their ability to involve the people of the city in spatial and strategic planning processes, and in designing the city's public spaces and infrastructure.

5 Enhancing accessibility in Prague's metropolitan area

Reviewing Prague's experience on accessibility

The metropolitan area of Prague is an area of contrasts in terms of mobility and accessibility. On the one hand, the City of Prague has: an extensive integrated public transport network that covers most of its territory, solid technical capacity for planning and coordinating across strategic plans, and a relatively strong culture of community participation in public affairs. Moreover, because it is equivalent to a province, the metropolitan area of Prague has direct communication with the central government to advocate for its needs and priorities. On the other hand, the municipalities in the Central Bohemian Region that form part of the metropolitan area have a growing population that requires public services, little financial resources for transport investment, and limited technical resources for planning. While residents in the City of Prague have easy access to public transport services, accommodation is becoming rather expensive. In the neighbouring municipalities, residents have access to relatively affordable housing but public transport services are in short supply.

Promoting a more sustainable urbanisation in the metropolitan area requires an improvement in urban accessibility. That is, "... the ease with which people can reach destinations and connect with one another" (Rode et al., 2019, p. 6^[22]). People need access to jobs, goods, services and other opportunities that meet their individual needs close to where they reside. Although accessibility should be provided at the neighbourhood level, it must be planned within a metropolitan perspective. No local government in Prague's metropolitan area will be able to ensure urban accessibility without coordinating with other municipalities and levels of government.

Table 4 presents a summary of the main assets available to the metropolitan area of Prague to foster accessibility as well as the areas where there is room for improvement. The findings suggests that any strategy intended to improve accessibility in the region should be based on: the integrated transport network, the central transport agency (ROPID), the Sustainable Mobility Plan (SMP) and the technical experience of the City of Prague in strategic planning. However, there are issues that would hinder any policy intervention aimed at improving mobility and accessibility such as the lack of coordination among entities involved in land use, housing and transport planning at metropolitan level. In addition, the transport plan is enforceable for the core urban area but not for the neighbouring local government units.

The COVID-19 pandemic has undoubtedly created challenges for the metropolitan area, which needs to regain citizens' trusts in the safety of public transport. However, COVID-19 also opens an opportunity to incentivise the use of green forms of mobility such as walking and cycling that are currently underdeveloped in Prague. This requires rethinking public transport's role in fostering well-being, growth and environmental protection in the metropolitan area.

Table 4. Assessing accessibility in the metropolitan area of Prague

Strengths	Weaknesses
<ul style="list-style-type: none"> • An integrated public transport system for the City of Prague and some municipalities in the Central Bohemian Region. • The Sustainable Urban Mobility Plan for Prague and its Suburbs (SMP). • High levels of public transport use in the city of Prague • A central agency for the coordination of transport services across the City of Prague and parts of the Central Bohemian Region (ROPID). • The strong technical capacity for strategic planning in the City of Prague (IPR Prague). • Strong community engagement in public affairs in the City of Prague. • Strong cooperation for transportation across regions. 	<ul style="list-style-type: none"> • The lack of a metropolitan approach for urban development and planning, and transit-oriented growth in the suburbs. • The financing model for transport investment is too dependent on central government transfers. • The Strategic Mobility Plan is enforceable in Prague but not in the neighbouring municipalities. • Active mobility (walking and cycling) is not part of the priorities for transport development and accessibility. • Lax land use planning and weak coordination with housing and transport plans. • Lack of planning instruments and weak institutional capacities. • Weak cooperation between Prague and the Central Bohemian Region • No strategy for smart city and smart mobility.
Opportunities	Threats
<ul style="list-style-type: none"> • The COVID-19 pandemic may trigger a cultural preference for active mobility: walking and cycling. • The installed technical capacity and experience for planning in Prague could be extended to the region. 	<ul style="list-style-type: none"> • The administrative fragmentation requires extensive coordination and negotiation for decision-making at regional level. • The suburbanisation process creates imbalances in where people live and work. • Strong dependency on cars for cross-border commuting. • The economic crisis from the COVID-19 pandemic may hamper the resources available for investments in transport.

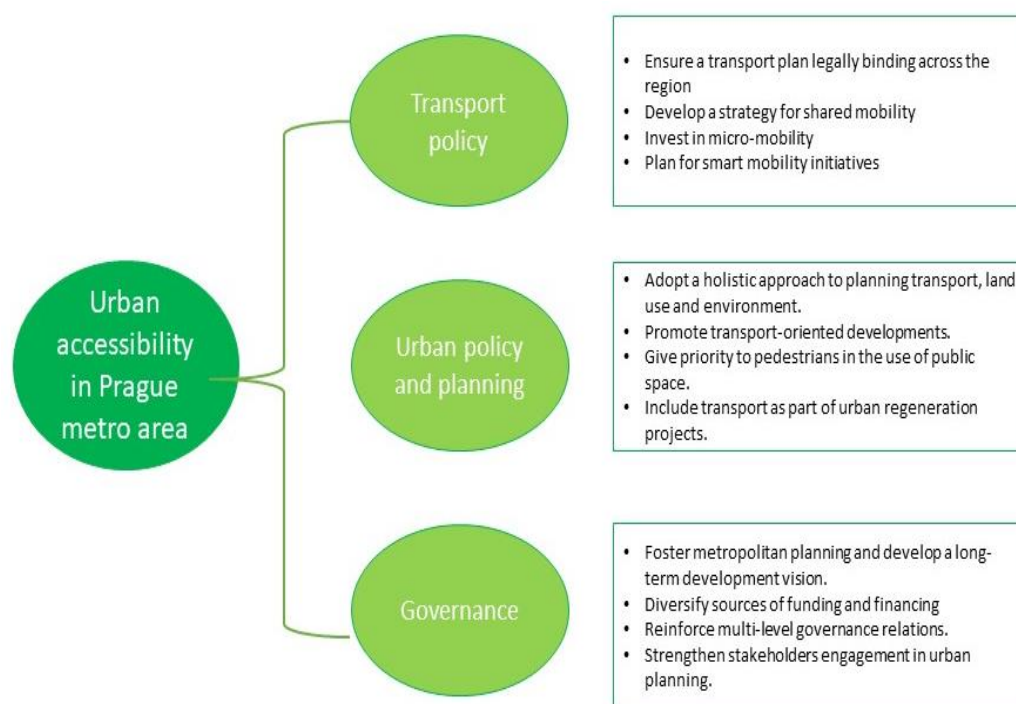
Source: Own elaboration.

Some options for improvement

Improving mobility and accessibility in Prague's metropolitan area will require engagement, innovation, revised governance arrangements and considerable financial resources. The potential benefits would be improved health, an even more attractive city to live and work, lower mobility costs for residents, fairer access to transport and a better environment. It could contribute to the recovery package to face the economic crisis that has been a by-product of the COVID-19 pandemic. How people use transport and their mobility choices will certainly have an impact on accessibility. Prague seems to have the planning capacity and experience to enable experimentation and pursue the objectives of the SMP.

Authorities from the City of Prague and the Central Bohemian Region need to work together to improve mobility and urban accessibility building on their current strengths in at least three policy domains: transport policy, urban policy and planning, and governance (Figure 6).

Figure 6. Policy actions for promoting urban accessibility in the metropolitan area of Prague



Source: Own elaboration.

Actions on transport policy

- *Ensure the adoption of a transport plan that is legally binding across the region.* Prague should be commended for its efforts to ensure a common transport strategy for the metropolitan area that crosses administrative boundaries. However, the problem is that it is mandatory only for the city of Prague and a mere guideline for the suburban municipalities. If this strategy is going to have a positive impact it should be implemented by all local authorities in the metropolitan area. The regional government in the Central Bohemian Region, with the support of the central government, may intervene to ensure that municipalities, at least those in the metropolitan area follow the Sustainable Mobility Plan.
- *Develop a strategy for shared mobility.* As it has been reported, shared mobility (i.e. car-sharing, bike-sharing programmes) is an area where the City of Prague and its neighbouring municipalities have not made significant progress (OECD, 2018^[5]). Shared, automated systems involving smaller vehicles could complement traditional public transport, particularly in suburban and rural areas and improve accessibility (van Grinsven, van Essen and Skinner, 2019^[23]). Shared mobility could ease the pressure weighing on the rail transport services that operate at overcapacity and its expansion could take a long time.
- *Invest in micro-mobility (i.e., walking and cycling).* Walking facilities should be perceived as an integral part of the transport strategy. Municipalities in the suburban area could exploit the potential of cycling in the suburbs to expand the catchment of public transport. Suburbs need to be seen as specific regions with different transport behaviour and patterns.
- *Plan for smart mobility initiatives.* Prague may explore adopting a smart city and smart mobility strategy to leverage digital technologies to deliver more efficient, sustainable and inclusive environments with the participation of the private sector. The aim would be to intermesh digital technologies amongst devices, vehicles and infrastructure for better traffic management. As a first

step, it could revise the regulatory framework to ensure that it enables innovation and remains flexible but that at the same time provides data protection. It should guide the action of the private sector in developing smart mobility initiatives (ITF/OECD, 2020^[24]).

Actions on urban policy

- *Adopt a holistic approach to transport, land use and environment policy.* These three areas should no longer be undertaken, analysed and planned in isolation one from the other. The aim should be to reduce the need to travel and avoid further urban sprawl and improve the environment. Prague and its surrounding municipalities have become clogged with vehicles making journeys that more coordinated and comprehensive planning would either have avoided or enabled by sustainable modes of transport. A first step would be to ensure that land use planning is conducted with a metropolitan view. Another issue would be to ensure that there is a clear division of roles and responsibilities for transport, land use planning and environment protection; however, there should be mechanisms in place to ensure inter-departmental and inter-agency relationships for planning.
- *Promote transport-oriented developments (TODs).* The City of Prague is in a position to shift from a policy oriented towards mobility to one that prioritises urban accessibility. It would require aligning housing, land use, transport and environmental policies to build communities where residents can access jobs, goods, services and opportunities by any means of transportation, including walking. TODs may help concentrating growth on brownfield sites while generating and attracting transit ridership to shift mode shares. This involves the integration of land use and transport planning encouraging a compact and pedestrian-oriented form. This, in turn would improve access to nearby residential housing, retail space, offices, and community facilities. Since TODs are site-specific projects that are shaped by their close proximity to rapid transit and transport, they would need to be developed by every municipality based on their own specificities and priorities but under the aegis of a metropolitan entity.
- *Give priority to pedestrians in the use of public space.* Public investment should ensure that infrastructure prioritises public transport including walking. Particular focus may be given to programmes for shared transport means: carpooling and bicycles. IPR Prague and the city authorities may need to work further to ensure that road space is reallocated away from individual motorised transport to public transport means. The idea is to facilitate the quick and easy use of public transport alternatives, particularly in the city centre area.
- *Make transport an integral part of urban regeneration projects and strategies.* This can catalyse and support investment in the area to be redeveloped. In turn, this could have a positive impact on facilitating urban regeneration through an increase in jobs and services and fostering economic renewal by property development and commercial growth. If it were to include transport in urban regeneration projects, the city could be in a better position to improve accessibility for people to access education and work and services (UITP, 2018^[25]). This action would need to be linked to the promotion of affordable housing programmes in central areas.

Actions on governance

- *Foster metropolitan urban planning and develop a long-term development vision.* Planning at the appropriate scale will maximise the potential of all local government units in the metropolitan area as it strives to boost growth and well-being. Authorities in the Prague metropolitan area, based on the OECD Principles on Urban Policy, may wish to promote flexible and collaborative territorial governance and policy by supporting a functional urban area approach (OECD, 2019^[26]). The Planning and Development Institute of Prague might be given the authority and resources to assume a regional role in planning, considering its wealth of experience, capacity and knowledge

in this area. Its main role would be to set, with the participation of a wide range of stakeholders, a vision that guides policy action in the medium and long term.

- *Diversify sources of funding and finance for scaling up investments in sustainable infrastructure.* Authorities, with the support of the central government, may explore a mixture of financing mechanisms that may include user fees and charges, simple property tax systems, land sales, betterment levies, piggy-backed arrangements on income and carbon taxes, and even the creation of public-private partnerships for infrastructure development (Ahmad et al., 2019^[27]). Authorities may also form partnerships that would include municipal and regional governments, the private sector and the voluntary sector to finance urban infrastructure projects that have an impact on accessibility through an urban improvement programme.
- *Revitalise the relationships between the city of Prague and the municipalities of the metropolitan area in the Central Bohemian region with the national government.* It is true that the national government has been contributing to the investment in public transport in Prague but strengthening the national planning policy framework the national government may help to determine the shape of the city and the entire functional area for the years to come. It may provide the necessary guidance on how local governments may and should work together to this common end. It may also assist municipalities in finding the adequate financial instruments to invest in public transport.
- *Strengthen stakeholders' engagement in urban planning.* Although the city of Prague seems to have solid experience in engaging with citizens for the design of urban policy, it is necessary that such experience be adopted throughout the metropolitan area. According to the OECD Principles on Urban Policy to build inclusive cities it is necessary to involve all segments of society and in particular the most vulnerable groups such as the elderly, the disabled, women, migrants and minorities (OECD, 2019^[26]). IPR Prague could provide guidance to local governments in the metropolitan area on how to engage with citizens and even provide training to local officials to develop their skills for promoting citizen engagement.

In Conclusion - what accessibility lessons can be learned from the experience of Prague?

The case study of the city of Prague and its metropolitan area provides some relevant lessons for other cities on how to improve mobility. While there is no ideal case and all solutions need to be contextualised based on the specific characteristics of the cities, Prague offers some governance and planning lessons that might be of inspiration to other cities facing similar challenges.

Developing the capacity and expertise for planning at local level is vital to inform public transport investment. A major strength of Prague's transit system is the long experience with planning and creating documents that outline both the strategic goals of the city as well as defined programme of actions. Prague's capacity for planning provides a strong basis for coordination and investment over the medium and long term regardless of the political climate. Further, by bringing together many stakeholders throughout the transport system to form a working group, as well as including citizen feedback, these documents are comprehensive, transparent, and accountable to the citizens of Prague. The case of the metropolitan area of Prague suggests that *having a central planning authority facilitates communication and coordination of planning.* The Prague Institute of Planning and Development has a key role to play in both conducting, planning and communicating with the different neighbouring authorities, and coordinating the inputs from the different service providers. The installed capacity for planning has facilitated the elaboration and adoption of key documents such as the SMP.

Developing a common vision and building synergies across administrative borders is essential to promote seamless mobility and underpin public transport effectiveness. Prague, like many other metropolitan areas, has a high level of administrative fragmentation that makes transport provision difficult. The fact that the SMP was discussed and elaborated between the city of Prague and the Central Bohemian Region and its municipalities is already an achievement. This is of key importance to reduce the obstacle for service provision and opens the window for conducting land use planning under a metropolitan perspective. It is also a way of ensuring that municipalities with limited technical and financial capacity are able to provide reliable transport services to their citizens.

An integrated transport system (physical, operational and managerial) is essential to increase the efficiency of the service and promote public transport use. Before it could develop its PID, Prague had to convince service providers to connect their systems in terms of transport, organisational and rates. Its success depends on consistency in planning over the long term, effective use and production of data for mobility flows, effective coordination among the different agencies involved, strong cooperation and collaboration

among the different municipal governments, and coordination across levels of government. The systems benefits from having one single authority (ROPID) that determines, rates, schedules and planning. ROPID has an essential role in coordinating the activities of a large number of service operators across the metropolitan area. This avoids unhealthy competition among providers, helps building synergies among the different mode of transport as it operates as a single system, increases its cost-effectiveness, and it enhances the capacity to achieve greater productivity while meeting users' needs better. Moreover, PID has been also an instrument for transport planning and overcoming administrative fragmentation as the system is delivered with a metropolitan approach.

Rate integration is a key part of an integrated transport system. This is one of the basic underpinnings of the success of the PID. Creating a unique rate that is comprehensible and advantageous to users facilitates and promotes the use of public transport. This rate covers regular and irregular passengers to avoid confusion in the use of different tickets during different seasons and for different types of passengers.

Preparing a sound mobility plan accepted by a wide range of stakeholders including citizens is a long process that requires negotiation, planning, technical knowledge, and political back-up. The process of preparing the SMP was led by a group of experts from the city of Prague and the Central Bohemian Region, this was needed to generate ownership by both local authorities. To be able to manage the team and sustain momentum, an external expert was appointed as project manager for the drafting of documents and organisation of meetings and workshops. Since the process took five years to be completed it was necessary to divide it into stages each one focused on a particular product (analysis, transport policy, proposal).

The preparation of the SMP highlights the *importance of active cooperation among the city authorities, service providers and the citizens from the very early stages of the process to ensure consensus and buy-in.* To ensure the participation of the public, the working group used different instruments such as sociological surveys, discussion panels and collection of suggestions. Ensuring citizen participation in planning is an area where Prague has a lot of experience. It has allowed different actors to get on board of the transport strategy with a shared vision. This facilitates dialogue allowing all groups to express their interests and enable them to agree on the future of public transport and feasible solutions based on real needs.

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Notes

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⁵ .The second contributor to the GDP is Středočeský Region with 11.5%. (Czech Statistical Office). Ostrava contributes about 10.2% of the total national GDP (<http://europe-re.com/ostrava-czech-republic/41249>)

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