International Transport Forum

Funding Urban Public Transport

Case Study Compendium

2013

OECD

UITP

About the International Transport Forum

The International Transport Forum at the OECD is an intergovernmental organisation with 54 member countries. It acts as a strategic think tank with the objective of helping shape the transport policy agenda on a global level and ensuring that it contributes to economic growth, environmental protection, social inclusion and the preservation of human life and well-being.

The International Transport Forum's Research Centre gathers statistics and conducts co-operative research programmes addressing all modes of transport. Its findings are widely disseminated and support policymaking in Member countries.

This research also contributes to the International Transport Forum's annual summit, which brings together Ministers and leading representatives from industry, civil society and academia to engage in focused debate about strategies for transport in the 21st century.

The Presidency of the International Transport Forum rotates among member countries. Norway holds the presidency in 2012/13. At the 2013 Summit, the Presidency will pass to France for 2013/14. Past presidencies have been held by Finland (2008), Turkey (2009), Canada (2010), Spain (2011), Japan (2012).

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Further information at www.internationaltransportforum.org

About this Compendium

This compendium of case studies on urban public transport funding was developped as an input to the 2013 International Transport Forum Summit on Funding Transport (May 22-24, Leipzig). It serves to illustrate a variety of urban contexts, public transport service services and funding mechanisms in a selection of International Transport Forum countries. It was jointly developed along with the International Association of Public Transport (UITP). The compendium was researched and written by Haoran CHU (Ministry of Transport, China), Philippe CRIST (ITF), Sangjin HAN (Korea Transport Institute), Jérome POURBAIX (UITP) and Yuichiro KAWASHIMA (Ministry for Land, Infrastructure, Transport and Tourism, Japan).

Funding Public Transport for the Urban Century

Cities are tremendously and enduringly popular – at present more than half of the world's population lives in urban areas, many of them in very large urban conurbations though medium-sized cities are growing rapidly as well. Despite, and possibly because of, crowding, more and more people are expected to move to cities in the years to come. The reasons for this popularity are multiple and they generally involve reaping the benefits of agglomeration – e.g. wide access to jobs, opportunities, people and ideas. However, crowding can grow to the point where the benefits of cities are eroded by their dysfunctions – and nowhere is this clearer than in urban transport systems. Congestion on roads and in public transport systems can grow to intolerable levels reducing the ability for cities to deliver on their promise. No single mode can handle the mass of trips required for a city to function – especially at peak hours. However, because they can efficiently handle large masses of travelers, public transport systems, are a fundamental component of successful cities. Providing these services comes at a cost and in the following pages we review how a selection of urban areas meet this financing challenge.

What is clear is that no single financing model emerges, reflecting the great diversity of local situations and needs. It also appears that there is no silver bullet for the funding of public transport and that combining funding from different sources increases the resilience of the system. These urban areas do face different tensions but nearly all find that ensuring the long-term financial stability of public transport operations remains challenging –which is true for all transport modes. The particular challenges faced by public transport operators and authorities largely rest on the cost structure of providing public transport services and infrastructure and the nature of the various mechanisms that ensure revenues, namely relying on taxpayers, users and beneficiaries. The economic outlook highlights a paradox: public transport plays a vital role in keeping the economy running and supporting its recovery, but the funding of public transport is affected by current economic circumstances.

Some urban regions, especially in large ones Europe and North America, have relatively mature public transport networks whose operation and upkeep requires significant revenue. Large, dense cities like London and Paris have been able to more-or-less keep up with costs and have deployed significant new services – but they have done so because of a large and growing customer base. This customer base is somewhat guaranteed via demographic dynamics, active land-use planning policies and other measures such as the London congestion charge that ensure a sustained public transport market. Other cities like Chicago experience more difficulty and financial sustainability remains tenuous and has come in part at the cost of asset-value sapping maintenance deferral.

The Asian cities covered in these case studies have had to, in the case of Tokyo, or are presently in the process of building extensive regional rail-based public transport systems in order to handle a huge influx of population. Early build-out of these systems in less-developed or developing urban zones ensures that land, labour and construction costs are kept relatively low but even so, costs remain significant and are often much higher than projected. Early build-out also ensures that land development is channeled in corridors that can be supported by high-capacity rail services but achieving financial equilibrium may be elusive, especially until demand grows. In some cases, cities are deploying high-volume bus rapid transport systems

and protected bus lanes to more rapidly and flexibly handle strong growth in some corridors, this is the case for Shenzhen and Beijing.

Fares generally do not cover the cost of providing high quality public transport services in the cities examined here. In some cases, fares are regulated in order to allow lower income households to benefit from access to public transport and are not set at cost-recovering levels. For instance, social considerations played a key role in the setting of fare levels in Madrid during the last decade. This leads to a system of compensation payments made by authorities to operators which may be vulnerable to changes in scale and scope with the vagaries of public finances change over time. Public transport is a service to all travelers and one that the travelling public generally is willing to pay for in return for quality – keeping fares artificially low to meet equity goals may not be the best way to ensure the long-term financial performance of public transport or to achieve social objectives as there are other more suited mechanisms to do so.

There seems to be a shared view that public transport services provide value to the urban region as a whole and this is reflected in several operational and capital funding approaches. On the assumption that employers benefit from efficient access to a large and wide labour pool, Paris and Portland have put in place a "benefiter-pays" approach that levies a public transport tax on employers (and the self-employed in the case of Portland) on the basis of payroll mass. The allocation of the income of congestion charging to public transport improvements, as it is the case in London, is also a way to acknowledge that car users benefits from better traffic conditions thanks to public transport. The benefiter-pays approach is also (indirectly) evident in Chicago where a regional sales-tax increment helps to pay for public transport operations. Paris and London derive revenue directly from employers via business and office real estate taxes in order to cover the capital costs of system expansion. This approach has been relatively successful but has the downside risk of being tied to regional economic performance and in times of crisis, revenue shortfalls can be significant even though the costs of public transport service provision remain nearly the same.

Tokyo is a special case where the largely private public transport operators are profitable and only require grants from the government in exceptional capital investment projects. Nonetheless, fare revenues fall far short of covering the costs of service provision and Tokyo-region public transport operators derive the lion's share of their revenue from maximising the return on their extensive real-estate asset base. In this business model, it is almost as if the public transport network's main purpose (from the operator's perspective) is to ensure an elevated and steady flow of customers to the operators' shops, hotels, health clubs and other commercial undertakings. The funding model of large bus interchanges in Madrid is based on similar assumptions. This of course has the added benefit of ensuring efficient and rapid public transport-based mobility throughout the urban region. Value-capture approaches such as this one should be an integral part of the public transport financing equation.

None of the models presented here are universally applicable. Many are most successful in very large and dense urban regions – the Paris model is not as successful in other cities in France and the same is true for the Tokyo model in other Japanese cities. However, many

aspects of these models can be implemented in other regions and, crucially, in fast-growing medium sized cities. Successfully providing effective urban-wide public transport services will require cost-containment on the side of operators – this may mean focusing on improving the standard and quality of bus services before investing in high-prestige but high cost rail networks. It will also require developing a diversified and sustainable revenue base that allows for less-constrained fare-setting and reduces vulnerability to sudden and unpredictable changes in income.

National governments may play an important role in supporting resilient funding architectures for public transport by:

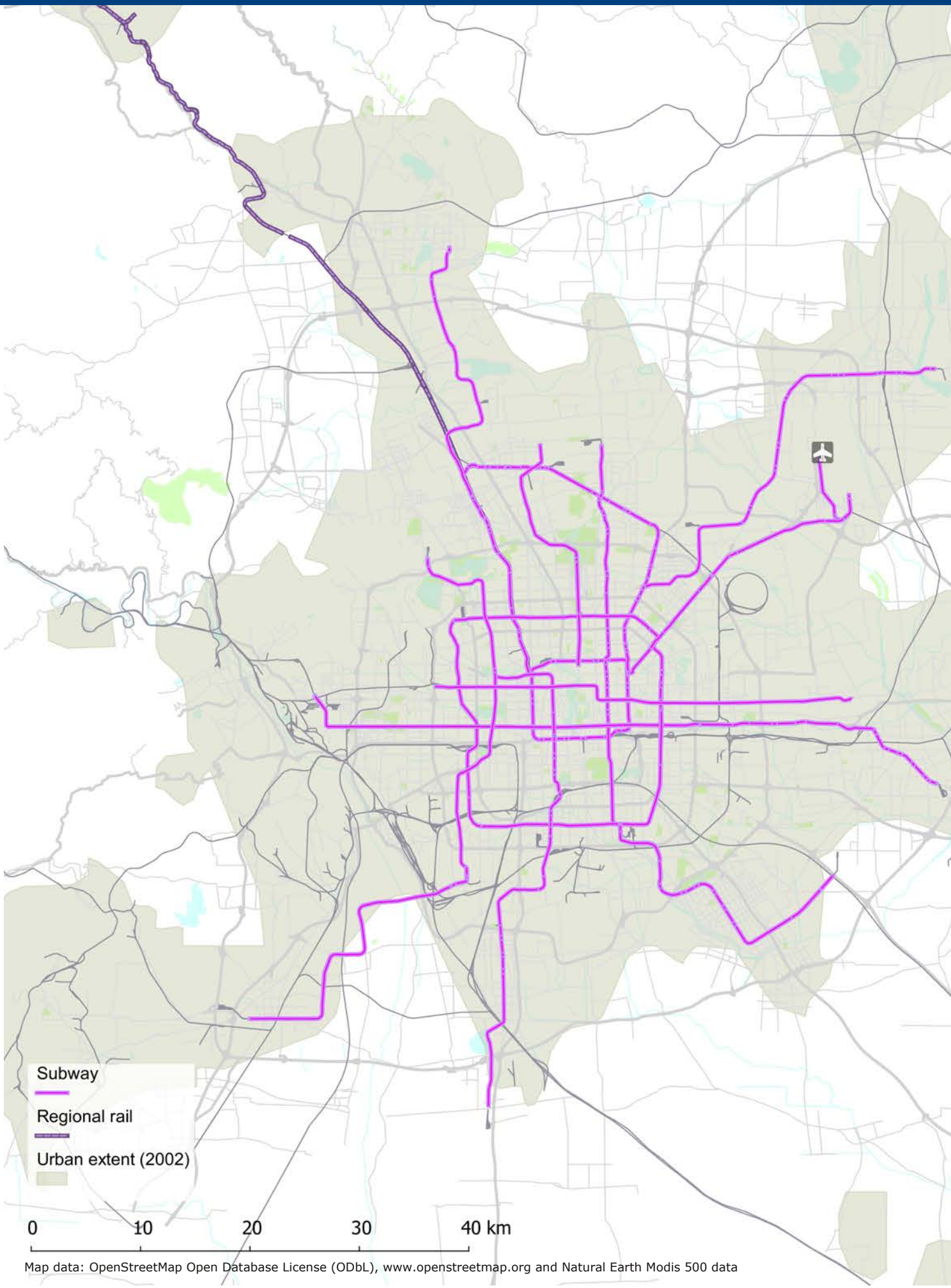
- Giving high priority and support to urban public transport investment programmes, (including well defined eligibility criteria and solid economic appraisal procedures);
- Strengthening institutional arrangements to improve urban mobility: empower local governments (notably by matching competences with resources) and enhance private sector participation;
- Mainstreaming urban mobility in national economic and social policies and programmes – to optimize mutual benefits;
- Integrating public transport into territorial planning and development policies - to reconcile connectivity and sustainability;
- Supporting innovation in policy and technology – to support new public transport business models, increase efficiency and attractiveness.

Note on Sources and data:

All land area, population and gross regional product were sourced from the OECD Territorial Development database on Functional Urban Areas with the exception of Beijing and Shenzhen.

Sources:

- Beijing: Beijing Municipal Government and the Ministry of Transport, China.
- Chicago: FTA Transit database and CTA, Metra and Pace publications and annual reports.
- London: Transport for London publications and annual reports, UITP
- Madrid: Consorio de Transportes de Madrid, UITP
- Oslo:
- Paris: Syndicat des Transports Région Ile-de-France, RATP, SNCF, and French Ministry of Transport.
- Portland: FTA transit database and TriMet publications and annual reports.
- Seoul: Seoul Metropolitan Government and KOTI.
- Shenzhen: Ministry of Transport China and Shenzhen Municipal Government
- Tokyo: Ministry for Land, Infrastructure, Transport and Tourism, Tokyo Metrpolitan Government.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and Natural Earth Modis 500 data

Beijing

Beijing capital region, China

Key Numbers

Area (km^2)	16,410
Population (2011)	20,180,000
Population density (per km)	1,230
Gross regional product (GRP, 2011 $US million)	262,892
GRP/capita (2011)	13,208
Rail network (km, 2012)	519
Bus network (km, 2012)	19,547
Rail pass. (trips 2011, millions)	2,462
Bus pass. (trips 2011, millions)	5,150

Dynamic growth and ambitious responses

Beijing has grown tremendously in recent years now reaching a population of more than 20M people. At the same time, increased wealth has led to higher car-ownership rates which have severely strained the region's road networks with an estimated 5 million (and growing) cars. Every day more than 29M trips take place within Beijing's 6th ring road (not accounting for walking)

To meet the challenges brought on by growth of travel demand, the city has built about 240km of new metro lines since 2008. It has also sought to develop multi-level bus services to match new travel patterns. Crucially, the city has, like other large cities in China, sought to relieve traffic congestion by actively managing car ownership via a license plate lottery and implementing zone-based parking charges.

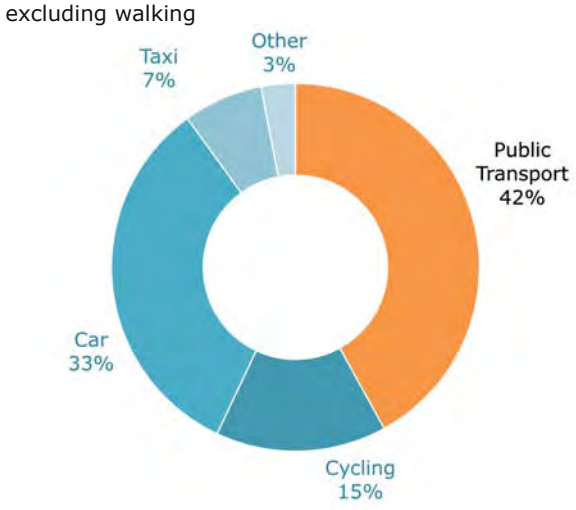
Key Actors

Government

The national government is responsible for guiding the strategic development of public transport including establishing public transport laws, policies and standards, developing national public transport development strategies and planning and monitoring the road transport market. There has been a general effort to prioritise public transport in response to the rapid development of major urban centres. In December, 2012, the national government issued a position statement emphasising priority to be given to public transport development. Though authority for operating urban public transport resides largely at the municipal level, several National Ministries and bodies of the central government play a role in public transport development. These include the National Reform and Development Commission (NRDC) which has a role in setting strategic priorities, the Ministry of Transport (MOT) which has responsibility for overseeing public transport operations and the Ministry of Housing and Urban Development (MoHURD) which has some responsibilities for building urban public transport infrastructure. Actions include the exoneration of purchase taxes for new buses through 2015 and the implementation of the National Transit Metropolis plan under the oversight of MOT through which 30 cities will receive grants to develop public transport hubs, intelligent transport systems and deploy low-carbon

Mode share (all trips, 2011)

excluding walking



Public Transport Networks

Rail	Lines	Length (km)
Metro	16	442
Commuter rail	1	77
Bus		
Total	749	19,547

Public Transport Passenger Trips (millions, all trips)

	2006	2007	2008	2009	2010	2011	2012	% of total (2012)	Average yearly change (from 2006)
Metro	700	650	1,220	1,420	1,850	2,190	2,462	32%	23%
Bus	3,980	4,230	4,710	5,170	5,050	5,030	5,150	68%	4%
All modes	4,680	4,880	5,930	6,590	6,900	7,220	7,612	100%	8%

public transport systems. The national government has also approved the construction of multiple subway systems throughout China and the country boasts more subway kilometres than North America and Europe together. However, several systems, especially in relatively smaller cities, have struggled to achieve financial sustainability.

Municipal governments have overall responsibility for the supply of transport services throughout local administrative areas. Specific responsibilities relating to urban railway or bus transport are allocated to different departments such as the Municipal Commissions of Development and Reform, State-owned Assets Supervision and Administration, Transport, Planning, finance etc. Though many municipal governments have sought to develop high-prestige (and high-cost) subway networks as noted above, several are now turning to bus rapid transportation corridors as a lower-cost, high-volume public transport option where demand is insufficient to warrant subway systems.

Municipal Transport Authority

Beijing Municipal Commission of Transport (BMCT) organises and coordinates the supply of public transport in the Beijing region. It sets priorities for and develops the overall plan regarding transport infrastructure construction. It proposes the annual programme of transport expenditure and has responsibilities for management and supervision. BMCT is also responsible for the implementation and supervision of urban rail and bus concession projects and proposes tariff rates to the Beijing Municipal Commissions of Development and Reform (BMCDR) which has responsibility for setting public transport fares.

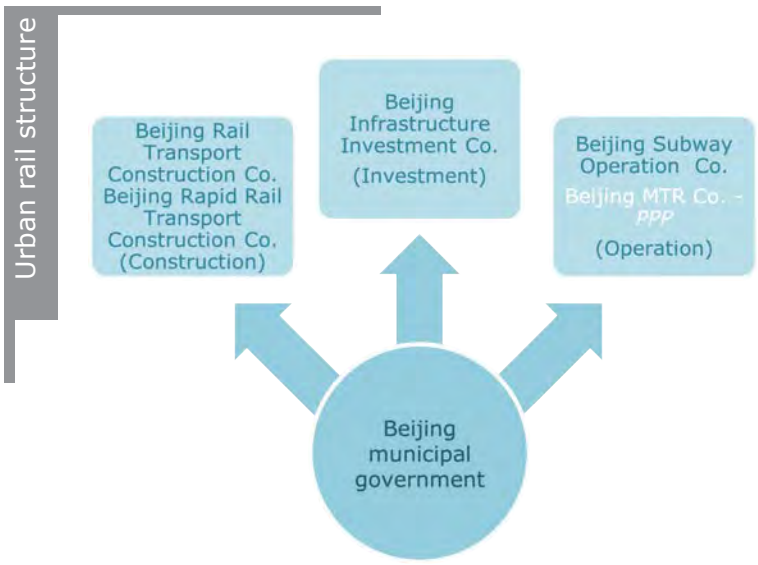
+63%

growth in number of public transport trips, 2006-2012

Operators

There are two bus operators and two urban railway operators in Beijing. Beijing Public Transport Holdings, Ltd. (BPT) is a state-owned enterprise responsible for bus system construction, operation and maintenance. BPT operates more than 700 lines and accounts for more than 13M trips per day (95% share of all bus passengers). Beijing Xianglong Bus co., Ltd is also a state-owned company operating 25 lines and carrying 630 thousand passengers per day. Overall, 68% of all public transport trips in Beijing are by bus.

Regarding urban railway transport, there are three kinds of companies which respectively take charge of investment, construction and operation, and these companies give rise to moderate competition in construction and operation. Beijing Subway Operation co., Ltd is a state-owned company that operates



391.5km of routes and 14 lines. This operator carried 85% of urban railway passengers in Beijing in 2012.

The second urban rail operator, Beijing MTR Corporation (BJMTR), is a public-private partnership whose shareholders include Beijing Infrastructure Investment Co. Ltd (BII, 2%), Beijing Capital Group (BCG, 49%) and MTR Corporation (MTR, 49%). BJMTR is responsible for investment in (and operation of) signal control systems, rolling stock, and other support systems. BJMTR will lease access to subway tracks, tunnels and structures from the municipal government. The private company will operate Beijing Metro Line 4 and the Daxing Line whose combined distance is 50.5km – these lines are expected to carry about 15% of urban railway passengers. BJMTR also plans to develop non-rail sources of revenue from real estate development and commercial concessions in stations. BJMTR's initial concession for line 4 and the Daxing line is for 30 years.

The only regional commuter rail line is line S2 operated by the Beijing Railway Bureau. It has a length of 77 km with 7 stations from city centre to suburb and carried about 10 thousand passengers per day in 2012 – including many visitors to the Great Wall in Badaling.

Funding

Operations

Limited information is available on the cost and revenue structure of urban public transport in Beijing. Fares are not set according to market conditions and operators incur substantial revenue-expenditure shortfalls for which they are compensated from the government.

Beijing Subway Operation co., Ltd's 14 lines all receive a subsidy except for the airport line. Payments are made by the municipal government and are split into three parts covering operational losses, depreciation and grants for equipment purchase.

Loss-covering payments also feature heavily for bus operations – in 2011, BPT's total farebox revenue accounted amounted to only 22% of total costs with the municipal government making up the nearly USD 2100M difference.

These payments are significant and are in part due to low regulated fares. Municipal governments have no dedicated transport taxes and make these payments out of general revenues whose source is largely based on land sales and other local sources of revenue. Sourcing general revenue from land development rights poses a challenge since the release of new land for development will also ultimately increase the cost of providing public transport service at the urban boundary.

Capital Investment

The region's total urban railway capital investment budget was USD 30200M in 2008-2012. Urban rail investment projects are implemented by the Beijing Infrastructure Investment Co., Ltd. According to municipal government guidelines, 40% of urban rail-related capital expenditures are to be covered by local government sources with the remaining 60% covered via external financing, often through special-purpose investment vehicles.

For bus facilities, the Beijing Finance Bureau funds projects planned for by the BMCDR. Maintenance of bus facilities is paid for directly by the BMCT. BPT is responsible for the actual construction and maintenance of bus facilities.

Opportunities & Challenges

Governance

Beijing has experienced tremendous population growth in recent years which has strained the road traffic system despite relatively low (but rapidly rising) motorisation rates. In response, the municipal government has set out an ambitious congestion reduction plan which outlines 28 specific measures in four broad areas. These are the accelerated deployment of new transport infrastructure, a strengthened priority for public transport in municipal plans and investments, a car plate lottery system and improved traffic management. Specific actions include the construction of three new subway lines extending the regional network by 36km, managing car ownership via a licence plate lottery and putting in place a zone-based parking price system. In 2011, the increase in car ownership had slowed to 4% and, for the first time, the share of cars in all trips dropped (by - 1.2%). Public transport now accounts for 42% of all trips in Beijing. These and other policies have had a significant impact on congestion levels. Beijing recorded a 50% year-on-year drop in average daily congestion from 2010 levels resulting in an daily average of 75 minutes less congested. Workday peak hour travel speeds have also increased by 10% and 13%, respectively in the morning and afternoon.

Public transport service

Whereas total travel (excluding walking) within the 6th ring road dropped by 1.1% in 2011, combined bus and subway trips increased by 4.6% over the same period – led by growth in subway travel (+18%). Most public transport trips in Beijing are by bus and and bus route coverage is extensive -- 97.6% of the city center within the 3rd ring road was within 500 meters of the closest bus station and 85.2% of the city within the 5th ring road had the same level of coverage. The extension of the separated bus lane network (324.5 km in 2011) has also contributed to increasing average peak hour bus speed to 9.9km/h. Bus operators have introduced several new bus services for commuting passengers. Examples include rapid bus systems connected large residential areas with busy business or financial districts and neighbourhood mini-buses feeding subway stations in order to resolve the transport problem of the last kilometre.

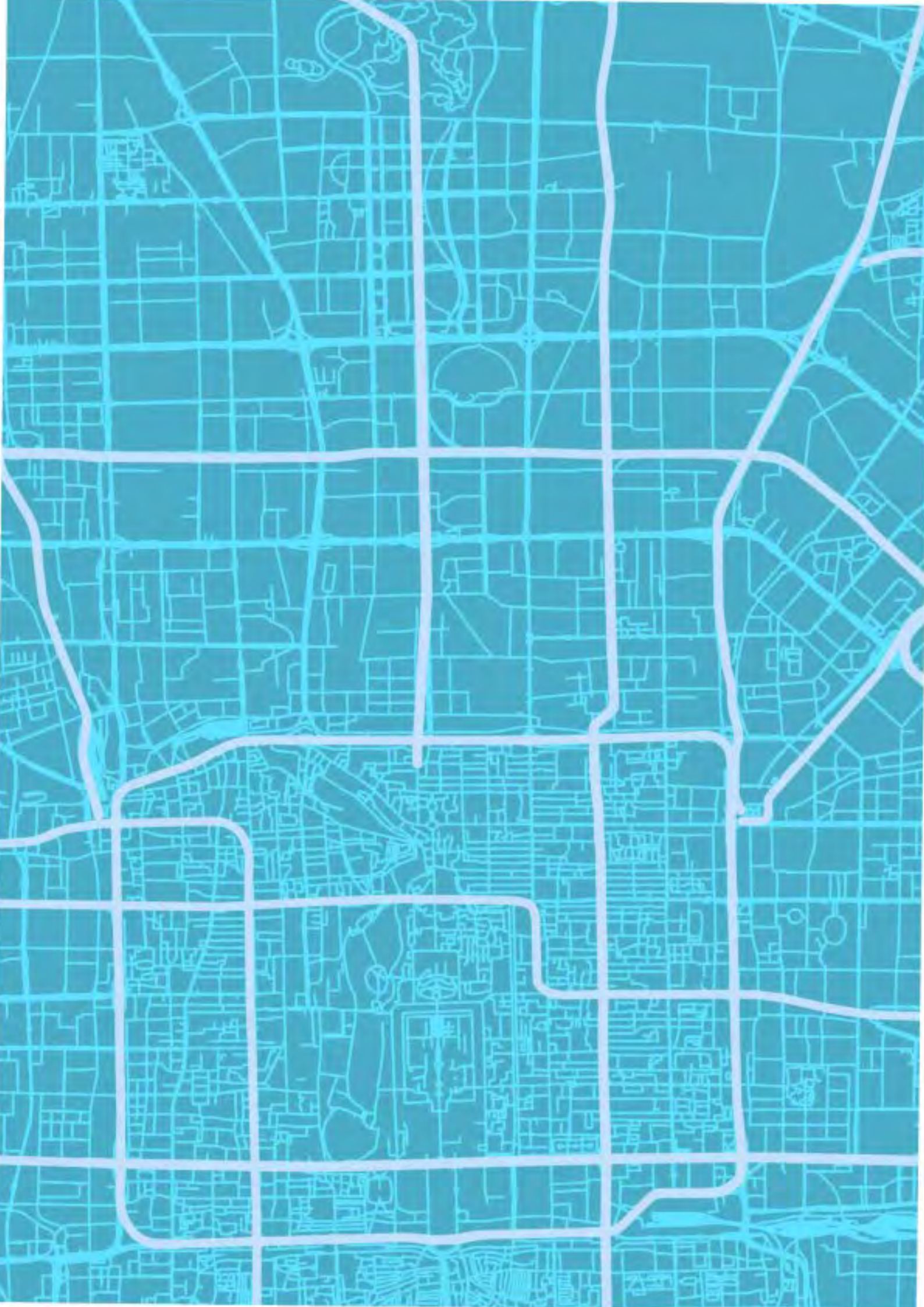
High levels of peak hour subway travel have lead to increasing congestion – the busiest line registered 50 000 passengers per hour at peak or a load factor of approximately 150%.

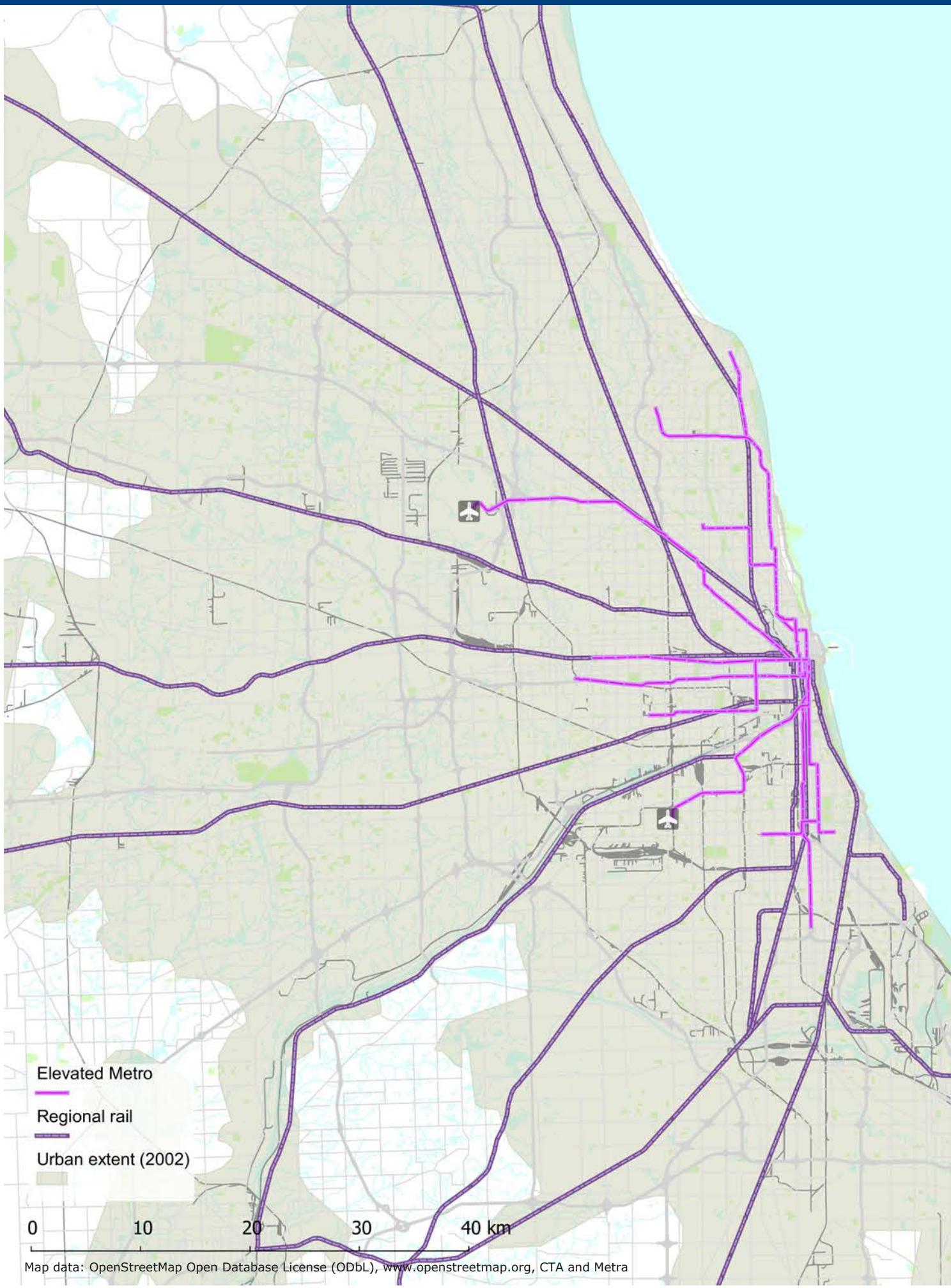
Practice and Expansion of PPPs

Faced with significant new planned investments, the Beijing region will likely see new public-private partnership agreements beyond BJMTR's operating concession for subway line 4 and the Daxing line. In 2012, the Beijing municipal government created a dedicated PPP-negotiating team which includes representatives of relevant local administrations including BMCT, BMCDR, Beijing Financial Bureau and the Office of

Legislative Affairs. This team completed its first negotiation with an additional PPP agreement with BJMTR who will invest USD 2,426M and in return will obtain part of construction permission for subway line 14 and its total operation concession for 30 years.

Nonetheless, reaching the municipal government target of a 664km subway network by 2015 will place considerable financial burdens on public transport actors in the region -- even if this burden is shared via PPP agreements. The overall cost of meeting the target has been estimated to be USD 39,600M for the years 2012-2015 – or an average of USD 9,900M per year. In the period of 2010-2015, the government may consider greater involvement of equity sourced in open markets. Two existing lines may be concessioned via PPPs (lines 6 and 8) and three new lines (7, 16, Haidianshanhou) will involve some form of concession and private capital. The projected amount of equity financing for future Beijing urban rail projects is USD 8,088M.




Elevated Metro
Regional rail
Urban extent (2002)
0
10
20
30
40 km
Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org, CTA and Metra

Chicago

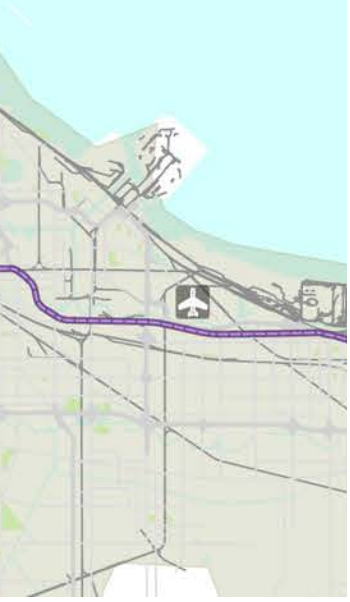
Greater Chicago region, USA

Key Numbers

Area (km^2)	6,327
Population (2008)	8,608,208
Population density (per km)	1,361
Gross regional product (GRP, 2008 $US million)	452,241
GRP/capita (2008)	48,103
Rail network (km, 2011)	970
Bus network (km, 2011)	9,156
Rail pass. (trips 2011, millions)	342
Bus pass. (trips 2011, millions)	298

Channelling development and managing an ageing network

The Chicago region boasts an extensive rail and bus network that is one of the largest in the United States. This has helped mitigate the challenges posed by lower density growth at the periphery of the region by providing a strong backbone on which core regional office and residential developments can be based. The rail network, especially the elevated metro, is ageing however and the region faces a considerable backlog in maintenance and infrastructure spending that compromises existing and future services. Financial sustainability has been allusive as well and the current system based largely on fare and sales tax revenue will struggle to keep up with growing expenses. Regional authorities recognise these issues and are seeking strategies to ensure long-term, high-quality public transport services in the region.



Key Actors

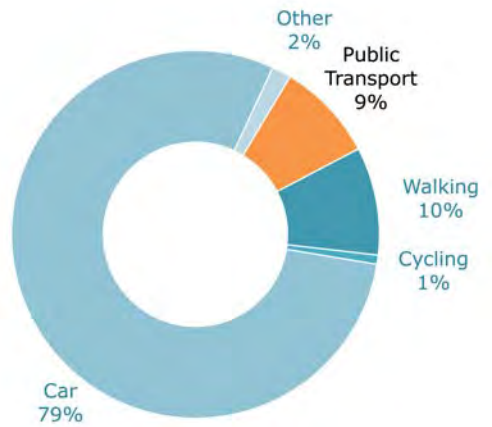
Government

The State of Illinois provides some matching funds for public transport in the greater Chicago region via the Public Transit Fund (PTF) as well as compensation for fare discounts mandated by State laws. Various levels of government are present in the governing boards of operators and the RTA, whose board must be approved by either the Governor or the Mayor of Chicago.

Regional Transport Authority (RTA)

The RTA is a planning, funding and oversight government agency set up in 1974 in order to oversee, coordinate and partially fund public transport services in the greater Chicago area. RTA reviews, approves and adopts the annual budgets for the three principal public transport operators in the region. It also reviews the financial and operational performance of these carriers who have an obligation under Illinois State law to collectively recover at least 50% of operating costs from farebox and other system revenues. RTA centralises and distributes earmarked sales tax revenue to the three regional carriers and operates some grant programmes. RTA is governed by a board appointed from the six-county region.

Mode share (all trips, 2008)



Public Transport Networks

Rail	Lines	Length (km)
Metro	8	184
Regional rail	11	786
Bus		
Total	365	9,156
... of which central city lines	*140*	*2,177*
... of which outside center	*225*	*6,979*

Public Transport Passenger Trips (millions, all trips)

	2005	2006	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2005)
Rail	259	271	269	279	278	285	298	46%	2%
Bus	339	334	344	364	349	337	342	53%	0%
Other	6	6	6	6	6	6	7	1%	3%
All modes	604	611	619	649	633	628	647	100%	1%

Chicago Metropolitan Agency for Planning (CMAP)

CMAP, is the official regional planning organization responsible for guiding long-term transportation, housing, economic development, open space, environmental and other quality-of-life issues. It does so via the comprehensive regional plan -- GO TO 2040. CMAP also houses the regional transport metropolitan planning organisation – the MPO Policy Committee – that establishes regional project and programmatic priorities for federal transport funds.

Operators

Operators have responsibility for the day-to-day operation of their respective networks, including setting fares, and undertaking capital improvements under the coordination of the RTA with input from the MPO policy committee.

The Chicago Transit Authority (CTA)

CTA is an independent government agency and is the principal public transport operator in the greater Chicago area. CTA accounts 82% of all regional public transport trips (74% of all rail and 91% of all bus trips). The CTA service area covers the urban core of Chicago and suburban Cook county. Compared to other regional operators, CTA's trips are shorter but include many non-work trips. CTA is governed by a 7-member board, four of whom are nominated by the Mayor of Chicago and the remaining 3 by the Governor of Illinois.

$18.5 billion

estimated capital investment and maintenance backlog

Metra

Metra was formed in 1983 to operate and coordinate regional commuter rail services under the oversight of the RTA. Metra's 11 suburban rail lines account for 11% of all regional public transport trips and 24% of ill regional rail-based public transport trips. Metra owns tracks and operates trains on 4 lines, operates trains on freight railroad operators' tracks for another 3 lines and coordinates commuter rail services for an additional 4 lines operated by freight railroads on their own tracks.

Pace

Pace is the third-largest regional public transport operator providing fixed-route bus, demand-responsive and van-pool services within and between the outlying counties in the region and the urban core. Pace is governed by a 13-member board drawn from municipal government representatives. Other bus-based public transport operators also provide some services within the neighbouring counties of northern Indiana.

Funding

The financial viability of the Chicago region's public transport networks has remained fragile despite a relatively high (for North American cities) level of use. Public transport governance and ownership structures have undergone several reforms and the financing framework has been modified several times (most recently in 2008) in order to ensure a more sustainable funding base.

For the region as a whole, farebox and other self-generated funds account for the largest single category of revenue though the combined revenue from local, state and federal governments accounts for the majority of operational revenue. At present, the three main operators (CTA, Metra and Pace) have four principal operational revenue streams. The first consists of farebox and other network-generated revenues which according to RTA rules must account for at least 50% of the operators' collective operational revenue. The second largest source of funding is a regional sales tax increment dedicated to public transport. This tax is allocated to operators by the RTA largely according to formula. The State of Illinois matches 30% of regional sales tax revenue via the State Public Transportation Fund (PTF). PTF funds are budgeted on an annual basis from general revenue which, in turn, is largely based on sales and income taxes. The State of Illinois also directly compensates operators for losses due to mandated reduced or free fare programmes. CTA benefits from a tax increment for real estate transactions levied in Cook County which is also matched at 30% by the State via the PTF. Finally, operators receive funding from the Federal government via Federal Transit Administration (FTA) operational grant programmes, the largest of which is the Urbanized Area Formula allocation. FTA funds are set according to the national transportation funding law – currently "Moving Ahead for Progress in the 21st Century" (MAP-21) – which is provisioned largely from a national trust fund that centralises federal fuel tax revenue.

Operating Revenues (2011, Million USD)
Totals for the Greater Chicago area (UZA)

Directly-generated revenues	863.3	38%
of which fares	*785.6*	
Federal Funds	206.2	9%
State funds	565.5	25%
of which dedicated	523.3	
Local funds	649.2	28%
of which dedicated	627.7	
Total revenue	**2,284.1**	

Capital investment (2011, Million USD)
Totals for the Greater Chicago area (UZA)

Capital expenditure		
Track-related expenditures	147,8	24%
Stations	62,1	10%
Rolling stock	286,9	46%
Fare/revenue collection equipment	1,1	0%
Buildings and facilities	40,5	7%
Other	81,7	13%
Total expenditure	**620,1**	

Sources		
Operator-generated capital funds	35,3	6%
Total Federal funds	295,8	48%
… of which:		
Federal capital programme	*110,6*	
Urbanized Area Formula (UAF) allocation	*171,4*	
Total State funds	49,8	8%
Total local funds	239,3	39%
… of which dedicated taxes, tolls and others	*237,7*	
Total capital funds	**620,1**	

Nearly half of all 2011 capital funds for public transport development in the region came from FTA-managed capital grant programmes mandated under MAP-21. These funds are largely defined by formula and ultimately come from federal fuel tax revenues. Locally-raised capital (via taxes, bonds and other instruments) accounted for the second largest source of capital funding in the region. Nearly half of all capital expenditure went to purchase and upgrade rolling stock in the region though there is a significant and growing backlog of unfunded infrastructure-related capital requirements related to the old age of rail-based public transport networks in the region.

Opportunities & Challenges

Public transport service

CMAP's regional development plan foresees a nearly 30% increase in population by 2040 which, under present trends, will considerably strain the region's already congested roads. Public transport development, both in quantity and in quality, is seen as essential in order for the region to grow and retain its competitiveness with the region's US and global peers. In addition, present demographic trends towards an ageing society highlight the need for an accessible public transport network that allows older citizens to remain mobile. CMAP development goals, though not mandatory, call for channelling future urban development into zones more easily covered by public transport services. Operators, especially those under RTA authority, plan to increase use of the existing system by developing off-peak travel for leisure use and by enhancing customer experience via better service performance, technology enhancements and customer information. Critically, however, no major new capital investment projects are planned and much of the focus will be on enhancing the services provided by the existing but ageing network.

Governance

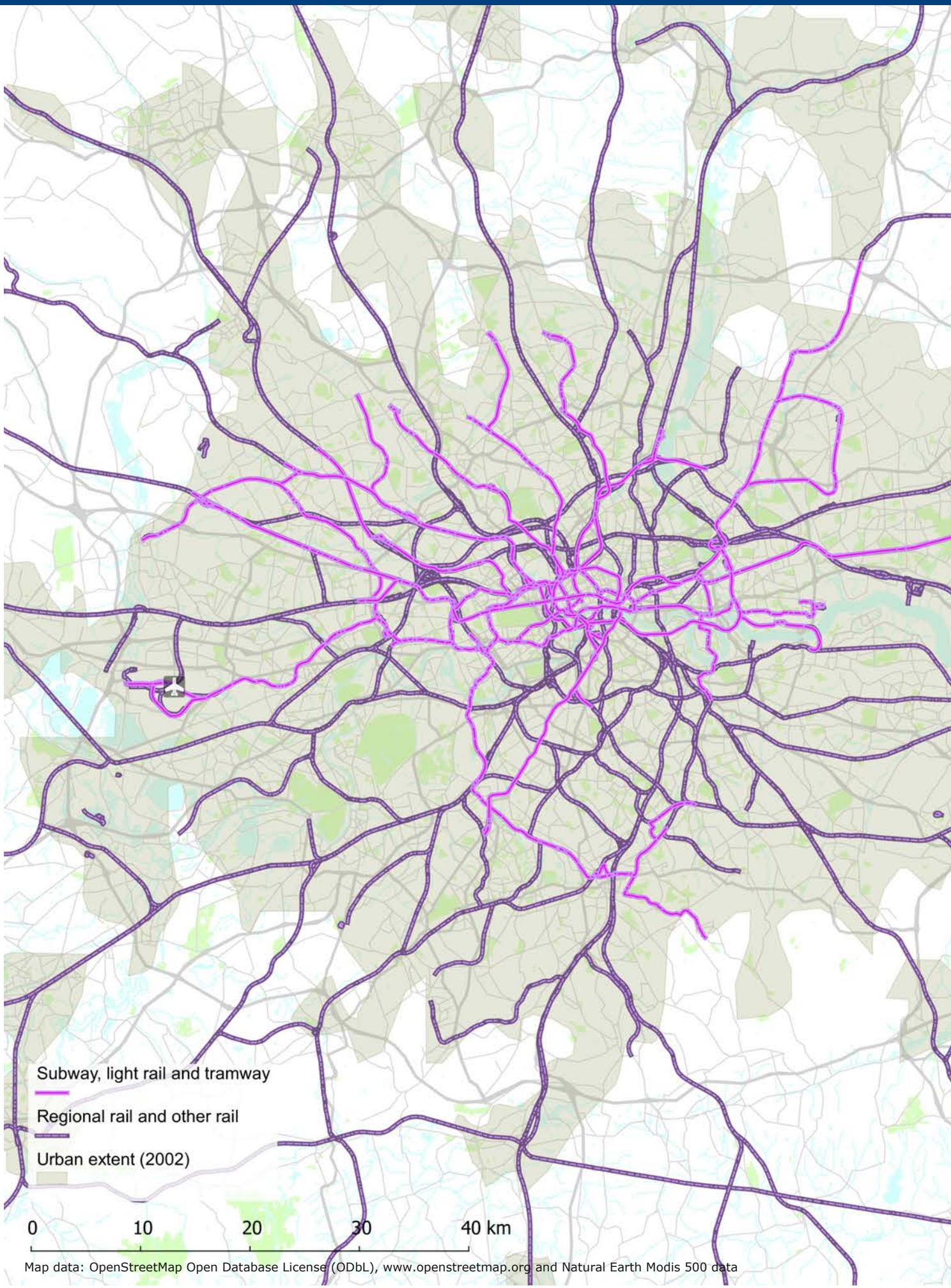
The greater Chicago region does not have a single authority governing public transport though the three main public transport operators, CTA, Metra and Pace, are under the authority of the RTA. Despite RTA oversight, the three main operators retain considerable autonomy which has stymied operational and fare coordination to date. There is a recognition that customers would benefit from a united public transport front (in terms of fare structure and identity) and efforts are underway to improve the situation. The Illinois State Assembly has mandated that a universal fare collection system be put into place for RTA operators by 2015. Already in 2013, CTA and Pace will introduce a single fare payment card ("Ventra") though fares themselves remain differentiated. Regional and public transport governance seems to be improving in the Illinois portion of the Chicago region but coordination with public transport authorities and operators in the Northwestern Indiana counties abutting Chicago remains less strong, especially on a strategic level.

Financing continued services and expansion

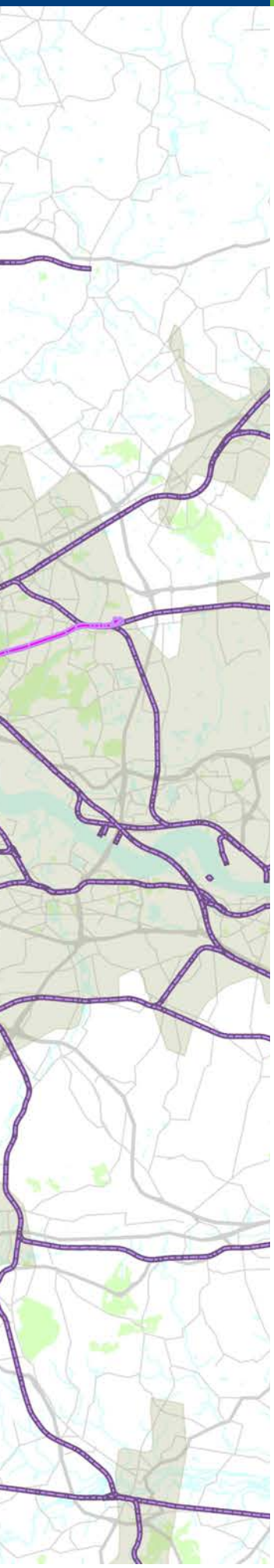
The Chicago area public transport rail network is among the oldest in the country and has suffered from considerable underinvestment in maintenance and upkeep. Furthermore, many of the region's rail and bus rolling stock are old, subject to breakdowns and in need of replacement. Current capital expenditure falls short of covering normal maintenance and replacement needs and does not even contribute to reducing the RTA operators' estimated $18.5 billion capital investment backlog. New sources of federal funding in MAP-21 such as the "State of Good Repair" capital investment programme fall short of needs, especially as general transportation funds allocated by the State of Illinois have been falling and sales tax revenue (a major source of operational funding at the State and local levels) has been under pressure due to the economic crisis. It is not at all clear that the current funding model will allow the region to meet its public transport aspirations. Indeed, even under the most optimistic scenario (inflationary fare increases, high ridership and sales tax growth), RTA operators will not avoid a funding shortfall by 2021 and under the base case (no fare increases, business as usual sales tax and ridership growth), and RTA operators will collectively face a $1.3 billion shortfall.

Innovative funding

There is considerable interest regarding the potential for new funding instruments to become a durable source of funding for regional public transport (e.g. road pricing, land value capture) but there is no mandate at present to put these into place and planning has not much advanced beyond the discussion phase.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and Natural Earth Modis 500 data



London

Greater London area, United Kingdom

Key Numbers

Area (km^2)	6,906
Population (2008)	11,112,364
Population density (per km)	1,609
Gross regional product (GRP, 2008 US$ millions)	557,912
GRP/capita (2008)	50,206
Rail network (km, 2011)	~1,258
Bus network (routes, 2011)	~700
Rail pass. (trips 2011, millions)	2,260
Bus/tramway pass. (trips 2011, millions)	2,340

Dynamic growth delivered by a leading authority

London transformed the challenge represented by the expected fast growth in population and jobs in the next 20 years into an opportunity for establishing public transport as key driver of economic development and attractiveness of the city. This opened the way to ambitious programmes of development and modernization of public transport in London. This is supported by a combination of funding sources, involving not only users and different levels of government, but also the beneficiaries of improved public transport in London, as well as innovative third-party funding arrangements.

Key Actors

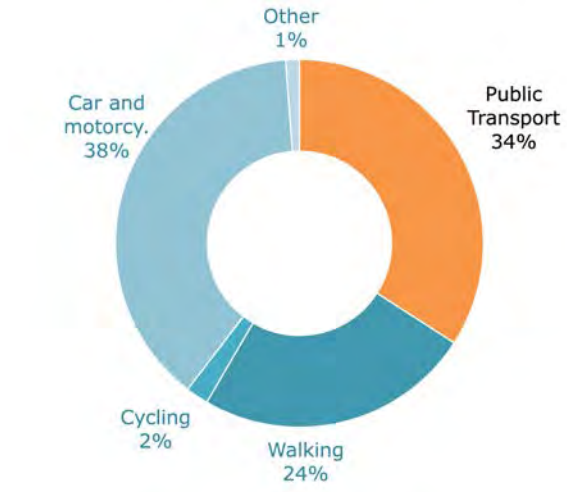
Transport for London

Transport for London (TfL) is the integrated statutory body responsible for London's transport system. It came into existence in July 2000 as a result of the Greater London Authority Act 1999. It is a functional body of the Greater London Authority and reports to the Mayor of London. Its role is to implement the Mayor's Transport Strategy and manage services across London, for which the Mayor has ultimate responsibility. It is directed by a Board whose members are appointed by the Mayor of London, who chairs it.

TfL is responsible for the planning, delivery and day-to-day operation of the London's public transport system. It manages London's buses, London Underground, the Docklands Light Railway, London Overground and London Tramlink. It also runs London River Services, Victoria Coach Station, and the Emirates Air Line.

In addition, TfL regulates taxis and the private hire trade, runs London's Congestion Charging scheme, manages a 580km network of main roads including all of London's 6,000 traffic signals, and promotes cycling and walking initiatives. It also works to improve road safety and encourage people to make sustainable travel choices.

Mode share (all trips, 2011)



Public Transport Networks

Rail	Lines	Length (km)
Metro	11	402
Regional rail (inside Greater London)	....	~790
Tramway and light rail	9	66
Bus		
Total	700	...

Passenger Trips (millions)

	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2007)
Metro, light rail	1,130	1,170	1,130	1,170	1,240	27%	2,3%
Regional rail	840	876	840	913	986	22%	4,1%
Bus, tram	2,150	2,260	2,300	2,300	2,340	51%	2,1%

London boroughs

The London boroughs are the highway and traffic authorities for 95 per cent of roads in London. They work in partnership with the Mayor to deliver the aspects of transport strategy relevant to their responsibilities. They are required to develop and implement Local Implementation Plans detailing their proposals for carrying out the transport strategy in their borough. The Borough councils receive funding from TfL for local transport schemes.

Note: The UK Department for Transport (DfT) has responsibility for national rail routes in London (except London Overground services).

TfL operates some of the public transport services under its responsibility through subsidiaries (e.g. London Underground Limited). The operation of other services is delegated to private sector companies.

1million

numbeer of jobs a Londoner can access in 45 minutes

In particular, most bus services in London are run by private operators who have been awarded a contract by TfL. All applicants have to tender for any service they would like to run. A small number of bus services in London are run commercially and are not part of TfL's competitive tender process.

Serco Docklands operates and maintains the DLR network as part of a franchise agreement.

Rail operations on national rail lines are also run by private train operating companies.

Funding

Transport for London's Business Plan

TfL's Business Plan describes how it will implement the Mayor's Transport Strategy and sets out sources of revenue to cover operating expenditure and financial charges for the financial years 2012/13 to 2014/15. The business plan also identifies sources of revenue to cover its capital expenditure over the same period. The current business plan is a departure from prior ones and so we describe the current plan and not previous ones here. Under the Business plan, Transport for London's activities are funded from six main sources.

Central government grants

The Transport Grant comprises an investment grant, which supports delivery of the investment programme, and a general grant, to support operating activities. Additional grants are also received from the Department for Transport, notably to support London Overground services.

Business taxes

TfL will receive a proportion of its funding through a locally-retained share of London's business rates.

London

Operating revenue (Million GBP)

TfL Group £m	2012/13	2013/14	2014/15	Total
Fares income	3,835	4,089	4,328	12,252
Other operating income	613	676	725	2,015
Operating expenditure (net of third-party contributions)	-5,825	-5,960	-6,183	-17,968
Interest income	10	8	9	27
Debt interest	-293	-344	-382	-1,020
Group items	11	-48	38	1
Margin	-1,649	-1,579	-1,465	-4,693
Finance sources £m				
General grant	1,954	1,102	827	3,883
Overground grant	27	28	28	83
GLA precept	6	6	6	18
Business rates retention	0	771	771	1,542
Other revenue grants	140	20	8	168
Total revenue grants	2,127	1,927	1,640	5,694
Surplus to fund capital plan	478	348	176	1,001

Capital investment (2011, Million GBP)

TfL Group £m	2012/13	2013/14	2014/15	Total
Capital expenditure	-1,647	-2,067	-2,351	-6,065
Third-party contributions - capital	53	69	116	238
Sales of property and other assets	57	177	81	315
Crossrail sponsors' funding commitment	-1,904	-2,247	-2,002	-6,153
Crossrail funding sources	2,062	2,065	1,693	5,821
Total capital expenditure	**-1,379**	**-2,003**	**-2,463**	**-5,845**
Finance sources £m				
Operating surplus	478	348	176	1,001
Investment grant	881	904	928	2,713
Metronet grant	352	184	0	536
Other capital grants	54	0	0	54
Working capital	2	-210	21	-187
Net borrowing and reserve movements	-388	777	1,339	1,727
Total	**1,379**	**2,003**	**2,463**	**5,845**

Fares and congestion charging scheme

The actual fares decision for each year is taken by the Mayor based on a number of considerations, including the need to ensure that fares make an appropriate contribution towards the cost of operating and investing in London's transport services. The Mayor keeps the level of the Congestion charge under review, with changes being subject to consultation.

Prudential borrowing

TfL borrows from a variety of sources, based on considerations such as the cost of borrowing, market conditions and the level of flexibility offered.

Commercial developments

TfL seeks to maximize income from advertising and property rental and development, as well as innovative new retail developments. It also seeks commercial sponsorship opportunities, building on the success of existing arrangements such as Barclays Cycle Hire and the Emirates Air Line. TfL can also sell property that is no longer required for operation.

TfL makes also use of third party contributions for a variety of specific projects.

Opportunities & Challenges

Public Transport Service

London's transport network is very busy, particularly during peak times, with growth in population and employment making conditions worse. Over the next 20 years the city's population is expected to increase by almost one million people and employment by more than 600,000 jobs.

Transport for London has many schemes under way to address this challenge, including:

- Crossrail, which will deliver a 10 per cent increase in rail-based network capacity in London;
- A rolling programme of Tube upgrades which will provide more than 30 per cent additional capacity;
- The investment in cycling and walking making alternatives to motorised travel more desirable;
- Maintaining London's bus services and introducing the New Bus for London to make boarding and alighting faster ;
- Addressing London's road congestion through initiatives including the London Permit scheme, the Lane Rental scheme and traffic-light optimisation schemes.

In synthesis, Transport for London's Business Plan addresses three broad requirements for the city:

- Driving London's employment and population growth

  It identifies the investment required to ensure the city can reliably support the expected increase in residents and jobs over the next 20 years.

- Putting customers at the heart of the business

  It ensuring that TfL's investment is built around the requirements of its customers by providing a safe, secure, reliable service where personalised and consistent customer service is paramount.

- Making life in London better for all

  It creates an environment in London that maintains its position as the world city where people want to live, work and visit.

Risks

Transport for London's operations and ongoing investment programme are subject to a number of risks, including:

- The future performance of the economy and its effect on fares and secondary income. Weaker economic growth could have an impact on passenger demand. A further risk would be a sustained period of high inflation or a marked increase in the cost of borrowing.
- The need for continued grant beyond the current Government settlement to 2014/15.
- The £7.6bn of efficiencies and other cost savings up to 2017/18 that are assumed in the Business Plan. This includes significant underlying initiatives involving organisational change and restructuring.
- Delivery of milestones set out in TfL's Spending Review settlement to cost and time.
- TfL's plans to sell property and other assets. These are dependent on market conditions.

- Unexpected events or acts of terrorism that could have a larger impact that the reserves included in the Business Plan to cover such attacks.

Funding for Crossrail

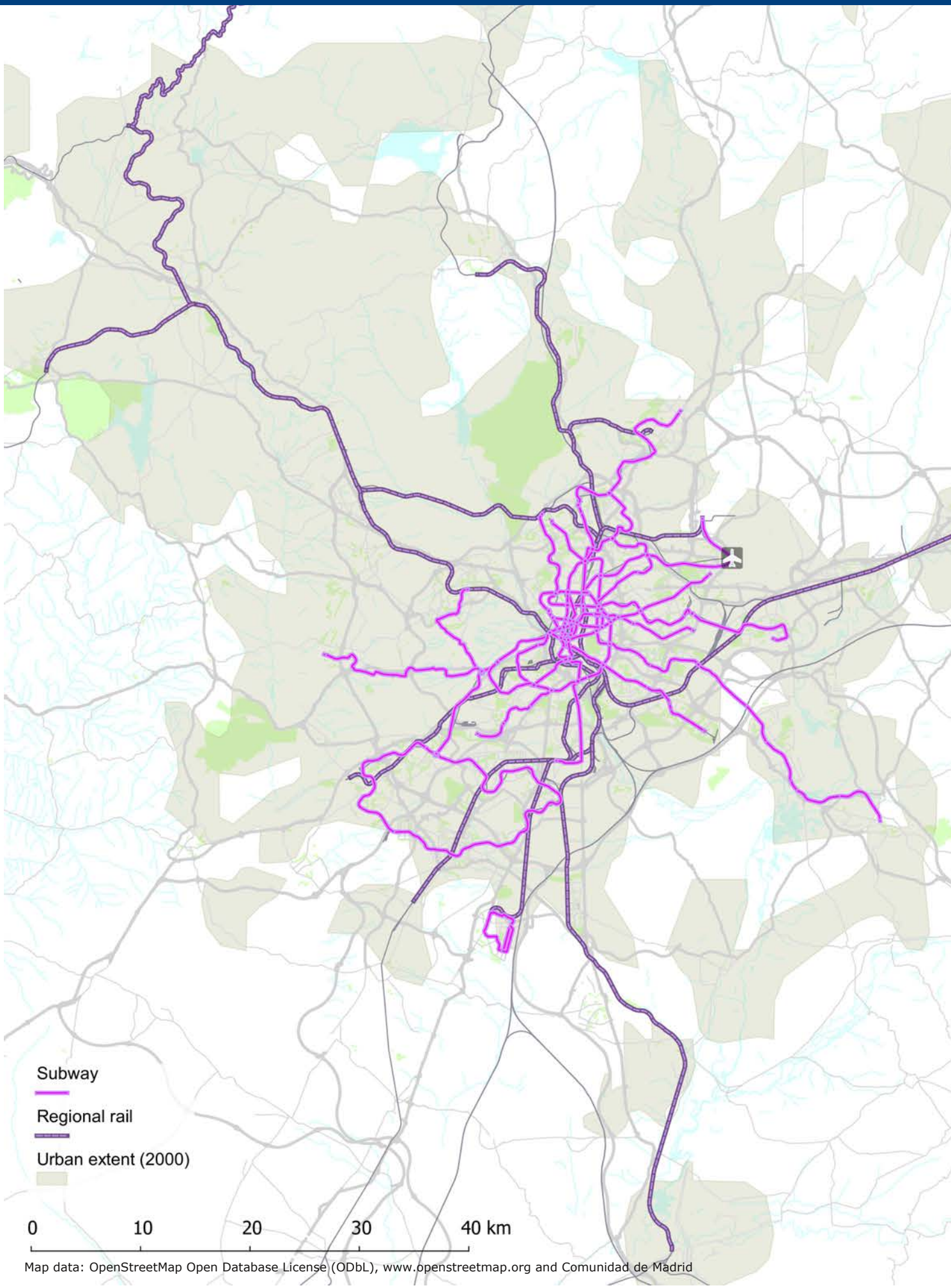
Crossrail is the responsibility of Crossrail Ltd, a wholly owned subsidiary of TfL, and is jointly sponsored by TfL and the DfT. Crossrail is fully funded within TfL's Business Plan. The remainder of the construction cost will be met by third-party finance, including from Network Rail.

As part of the Spending Review, more than £1bn in project savings was identified through station and engineering improvements and the adoption of a more efficient construction timetable.

The Mayor introduced a Business Rate Supplement in 2010/11 of two pence on every pound. This tax increment will support the cost of servicing £3.5bn of debt raised by the GLA, as well as providing a direct contribution to the project during the construction period.

The Mayor is also expecting to raise almost £600m in contributions from property development, through a new Section 106 policy implemented during 2010, as well as from the Community Infrastructure Levy to be applied to developments across the Capital, primarily in central London and Docklands.

A total of £445m is expected to be raised through sale of surplus land and property developments on top of the new stations.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and Comunidad de Madrid

Madrid

Comunidad de Madrid, Spain

Key Numbers

Area (km^2)	11,491
Population (2008)	6,400,189
Population density (per km)	557
Gross regional product (GRP, 2008 US$ millions)	234,026
GRP/capita (2008)	36,566
Rail network (km, 2011)	707
Bus network (routes, 2011)	691
Rail pass. (trips 2011, millions)	836
Bus pass. (trips 2011, millions)	658

Delivering on ambitions despite austerity

After 15 years of fast development, which provided Madrid with a world class public transport network, new challenges lie ahead. The economic crisis has called for adjustments in the funding mix – in particular fare policy - and the close examination of alternative funding sources. Mobility management and the application of new technologies are part of the priorities of the Regional Government – both areas represent opportunities for strengthening Madrid's public transport business model.

Key Actors

Consorcio Regional de Transportes de Madrid

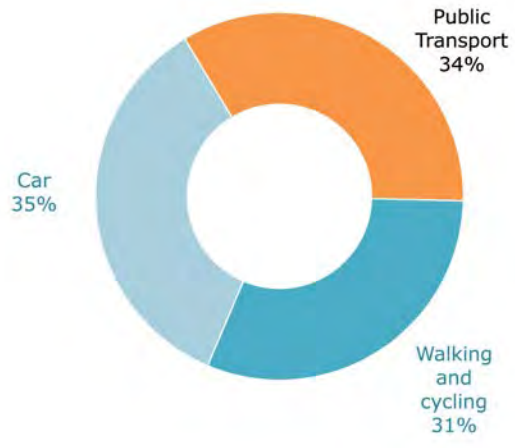
The Consorcio Regional de Transportes de Madrid (CRTM) was founded by the Madrid Regional Government in 1986. As an autonomous body of the Regional Government, the responsibilities of the CRTM cover the provision of public transport services to the inhabitants of the entire Madrid Region and associated municipalities. Its board is made up of members from a number of public and private bodies, including representatives from the Region of Madrid, associated towns and municipalities, the Spanish government, private transport operators, trade unions, and user and consumer associations.

The CRTM has authority over bus, metro, and light rail services. It has no authority over suburban train services, although there is an agreement over the use of the Travel Pass.

The functions of the CRTM include:

- The planning of the public transport infrastructures (metro extensions, interchanges, bus lanes, etc.)
- The planning and coordination of services and programmes for the operation of all transport modes.
- The establishment of an integrated fare framework for the system.
- The creation of a global image of the transport system in which the CRTM leads the relation with users.

Mode share (all trips, 2008)



Public Transport Networks

Rail	Lines	Length (km)
Metro	13	287
Light rail	4	36
Regional rail	9	384
Bus		
Total	691	...
... of which in Madrid	*216*	...
... of which in other cities	*127*	...
... of which suburban	*348*	...

Passenger Trips (millions)

	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2007)
Metro + light rail	691	689	653	630	637	43%	-2,0%
Regional rail	207	212	201	199	199	13%	-0,9%
Bus (local and regional)	729	694	672	660	658	44%	-2,5%
All modes	1,627	1,595	1,526	1,489	1,494	100%	-2,1%

CRTM's position as a regulating and coordinating body helps create a stable framework for financing the Region of Madrid's transport services. It enters into agreements and commitments with authorities at different levels in order to meet investment and operation funding needs which are not covered by fare revenues. In particular the "Contract Programme", signed between the General Administration of the State and the CRTM, determines the respective contribution of the national government, the regional government and the local governments to the funding of public transport operation and investment.

For its part, the CRTM must cover:

- operating expenses and, as the case may be, investment expenses of the public companies that are part of it;
- railway concessions;
- compensations to private suburban bus companies;
- travel on suburban railway lines made using Travel Passes.

Operators

The public transport system has various operating companies, both public and privately-owned:

100%

number of bus and light rail stations accessible to all

- Metro de Madrid, S.A., which operates the underground system, is a public company owned by the Region of Madrid.
- EMT, which operates bus services in the city of Madrid, is wholly owned by Madrid City Council.
- 30 private companies operate the suburban bus services.
- Cercanías-Renfe, a public company dependent on the Spanish Ministry of Public Works, operates suburban rail services.
- Transportes Ferroviarios de Madrid (TFM) is the company awarded the tender for the extension of Metro line 9.
- The company MetroBarajas, S.A., concessionaire of the connection within the airport.
- 3 light rail concessionaires: Metro Ligero Oeste S.A., Metros Ligeros de Madrid S.A. and Tranvía de Parla S.A.

Funding

The total costs of operating public transport services placed under the responsibility of CRTM were about 2,200 million EUR in 2011. These costs were split as follows (in 2010):

Bus, Madrid (EMT)	428M€	19%
Metro	944M€	43%
Suburban and regional services (bus, light rail and commuter rail)	729M€	33%
CRTM operation	46M€	2%
Other	65M€	3%

Required funding for public transport operation in 2011 was covered by public transport fare revenue (978M€ - 44%) and contributions from public authorities (1,246M€ - 56%). The respective contribution of each level of government was as follows:

City of Madrid	10%
Region of Madrid	39%
Central State	7%

The sources of funding for public transport infrastructure development have included the Region of Madrid, the Central Government, and the private sector through innovative funding schemes. Funding arrangements are set out in successive Infrastructure Plans.

The Metro and Light Rail Extension Plan 2003-2007 included administrative concessions for the construction and operation of some transport infrastructures, conferred to a successful bidder, for instance for new Light Rail lines and an extension of the metro network. The Plan also included a private contribution from the land value capture generated by a new urban development affected by the new transport infrastructure, for example for the Parla tramway.

The Public Transport Infrastructure Plan 2007-2011 aimed to keep the Regional Government's commitment to public transport and to improve the integration of Metro and Railway networks. The Plan initially included investments of 708 million EUR for Metro extensions and 519 million EUR for Railway developments.

The Madrid Suburban Railway Infrastructures Plan 2009-2015 is a joint initiative of Central State and Region of Madrid to upgrade rail network for Madrid with an initially expected investment of 5,000 million EUR including infrastructure construction programmes (network extension by 115km, capacity enlargement, building of new stations) and programmes to modernize the network broken down as follows:

Network enlargement	2,950M€
Capacity enlargement	620M€
Stations and interchanges	650M€
Network modernization and improvement programmes	780M€
Total	**5,000M€**

Finally, the Madrid Interchange Bus Stations Plan relied on an innovative approach for the funding of the interchanges (cf. infra).

Public transport in Madrid is funded from different sources:

- Fares: most of the fare revenues are collected by CRTM. Fares were kept at a relatively low level for most of the last decade. Some increases were implemented in the last years.
- The Region of Madrid covers a share of

public transport operation expenditure and multiannual public transport investment plans.

- The Central State also covers a share of public transport operation expenditure and supports investment, mainly in suburban railways.
- The City of Madrid, and to a lesser extent, other cities in the region cover a share of public transport operation expenditure.
- Private investors through concession agreements.
- Revenue from land value capture.
- Collaboration with private companies, which support part of the infrastructure which connects to their activities' area.

Private funding channels include:

- Administrative concessions for construction and operation of the transport infrastructure conferred to a successful bidder, for instance for the light rail lines in Sanchinarro, Pozuelo de Alarcón and Boadilla del Monte, the metro extension of line 8 to the new airport Terminal T4, and previously, the TFM concession of metro line 9 to Rivas and Arganda del Rey.
- a private contribution from the land value capture generated by a new urban development affected by the new transport infrastructure. As examples, the Parla tramway or the extension of metro line 1 to a new residential area called PAU de Vallecas.
- Collaboration with private companies, supporting part of the infrastructure which connects their activities areas. For instance, Telefónica funded one station of Metronorte, called Ronda de la Comunicación.

Funds for rolling stock renewal come directly from public operators.

Opportunities & Challenges

Innovative funding :Madrid Interchange Bus Stations Plan

Madrid has developed an innovative model of public-private partnership for the financing of large interchange stations, building on the successful experience of the Avenida de America interchange in 2000. Under the Interchange stations plan 2004-2008, four new interchange stations were built with a total budget of 369 million EUR.

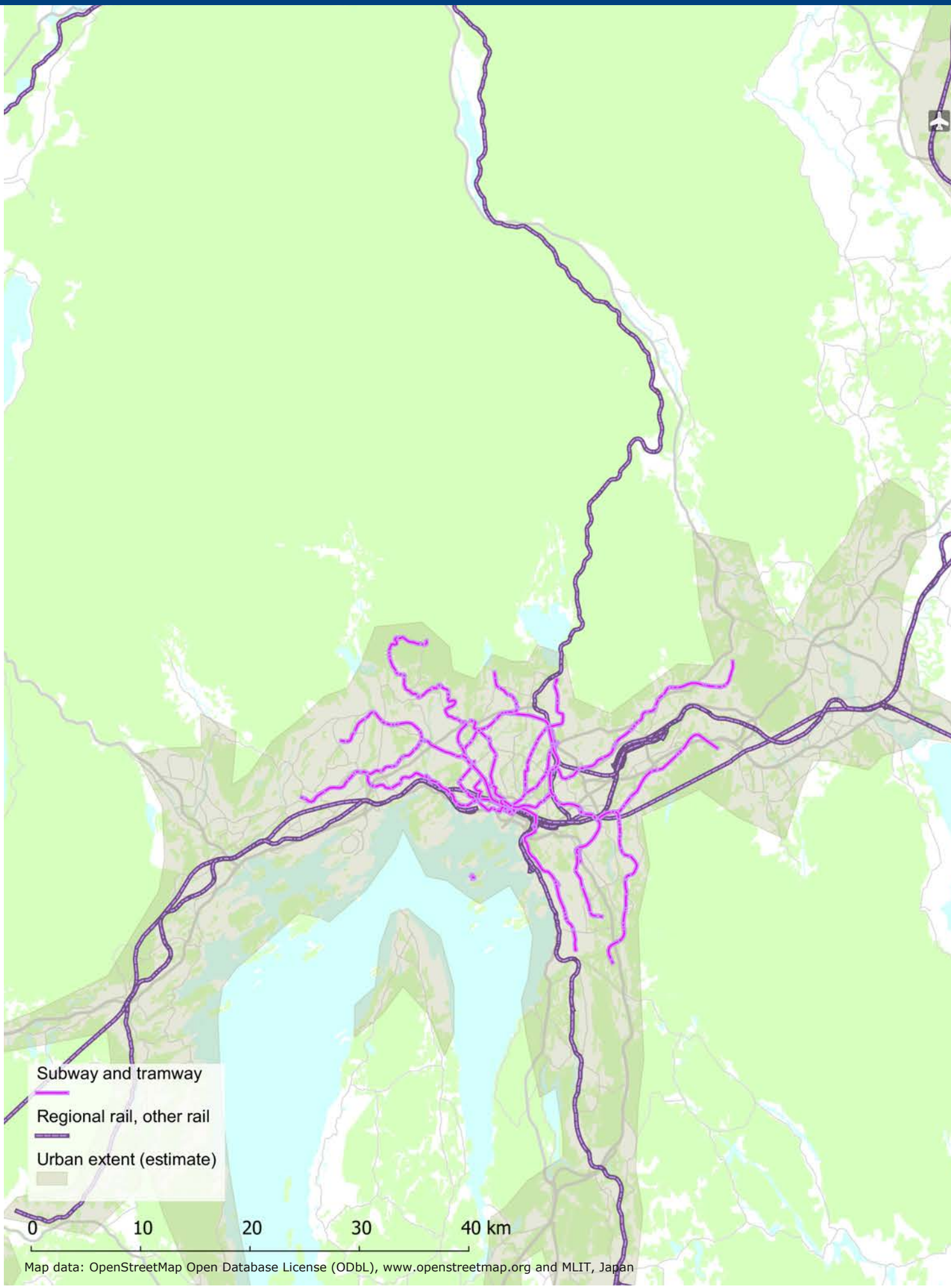
These are 30 year concessions for the construction and operation of infrastructures, which occasionally include adjoining car parks, where private partners recover their investment by means of collecting a fare from each regular bus passenger that on or off at the interchange. This also includes the operation of retail outlets, advertising areas, vending machines, etc.

Madrid interchanges received numerous awards including the joint ITF-UITP award for best innovation in public transport in 2010.

Mobility management and IT

After more than a decade of fast public transport infrastructure development, the Madrid Regional Government is now

focusing on mobility management and application of new technologies to improve public transport provision. In this new stage, one of the main challenges identified by the Regional Government is the Modernization Plan of suburban buses, involving more than 2,000 buses in the Region, which would provide high technological solutions for information, operation and coordination issues. Another challenge is the introduction, by the end of 2013, of new public transport contactless cards. Given constraints on public budgets, securing a sound financial framework for the whole system, seeking new funding sources and partnership, are also part of the challenges identified by the Regional Government.


Subway and tramway
Regional rail, other rail
Urban extent (estimate)
0
10
20
30
40 km
Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and MLIT, Japan

Oslo

Greater Oslo area, Norway

Key Numbers

Area (km^2)	6,604
Population (2008)	1,166,667
Population density (per km)	177
Gross regional product (GRP, 2008, millions, $US)	67,675
GRP/capita (2008)	58,007
Rail network (km, 2012)	397
Bus network	…
Rail pass. (trips 2012, millions)	157.2
Bus/ferry pass. (trips 2012, millions)	137.5

Commitment to public transport-led growth

Oslo has successfully taken up the challenge of increasing the modal share of public transport in a fast growing region. The allocation of a significant share of the revenues of the road toll to public transport, supporting both capital investment and operations, played an important role in the rapid delivery of the public transport development agenda.

Key Actors

The responsibility for providing local public transport services in Norway lies at the county level. Ruter AS is the responsible public transport authority for the Region of Oslo, made of the City of Oslo and the surrounding County of Akershus. It is owned by the City of Oslo (60%) and the County of Akershus (40%).

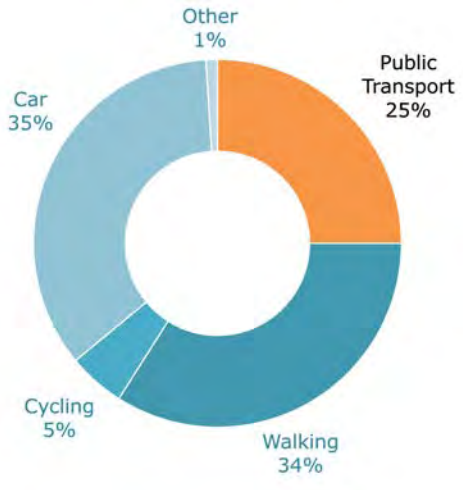
Ruter AS is in charge of strategic planning, tendering, and awarding public transport services, a well as coordinating the various public transport services, including scheduling.

Bus and ferry services have been competitively tendered since 1994. Local and regional bus services were provided by five companies in 2009: Unibuss (privately owned) with 40% of the market, Concordia Buss (privately owned), Veolia in Akershus (privately owned), Norgesbuss (privately owned) and Netbus (state-owned company owned by Norway's national railway, NSB). Ferries are operated by the privately-owned Tide Sjø AS.

The metro and tram operations are awarded directly. The operator Oslotrikken (tram) and Oslo T-banedrift (metro) are independent units of the Kollektivtransportproduksjon AS company which is owned by the City of Oslo.

Norwegian State Railway (NSB) is responsible for the heavy rail network.

Mode share (all trips, 2008)



Public Transport Networks

Rail	Lines	Length (km)
Metro	6	86
Tramway	6	41
Regional rail	9	270
Bus		
Total	102	...

Passenger Trips (millions)

	2008	2009	2010	2011	2012	% of total (2012)	Average yearly change (from 2008)
Metro	73	74	76	81	82	28%	2,9%
Tramway	40	43	45	48	48	17%	4,7%
Regional rail	26	26	26	27	27	9%	0,9%
Bus	101	109	119	126	133	46%	7,1%
Ferry	4	4	4	4	4	1%	0,0%

Funding

Expenditure on the operation of public transport services under the responsibility of the Ruter AS amounted to about 710 million EUR in 2011. This expenditure was split as follows:

Bus	276M€	39%
Metro (T-Bane)	146M€	21%
Tram (Trikke)	79M€	11%
Others costs (incl. RUTER AS operation)	210M€	29%

Revenue sources to cover public transport operation expenditure include:

Fare revenue	380M€ (54%)
Olso City/Akershus reg.	236M€ (33%)
Olsopakke	372M€ (10%)
Others	19M€(3%)

Investment expenditure in local public transport in the Oslo Region in 2012 was 184 million EUR, including 127 million EUR from the Oslopakke 3 scheme (that is, about 70%).

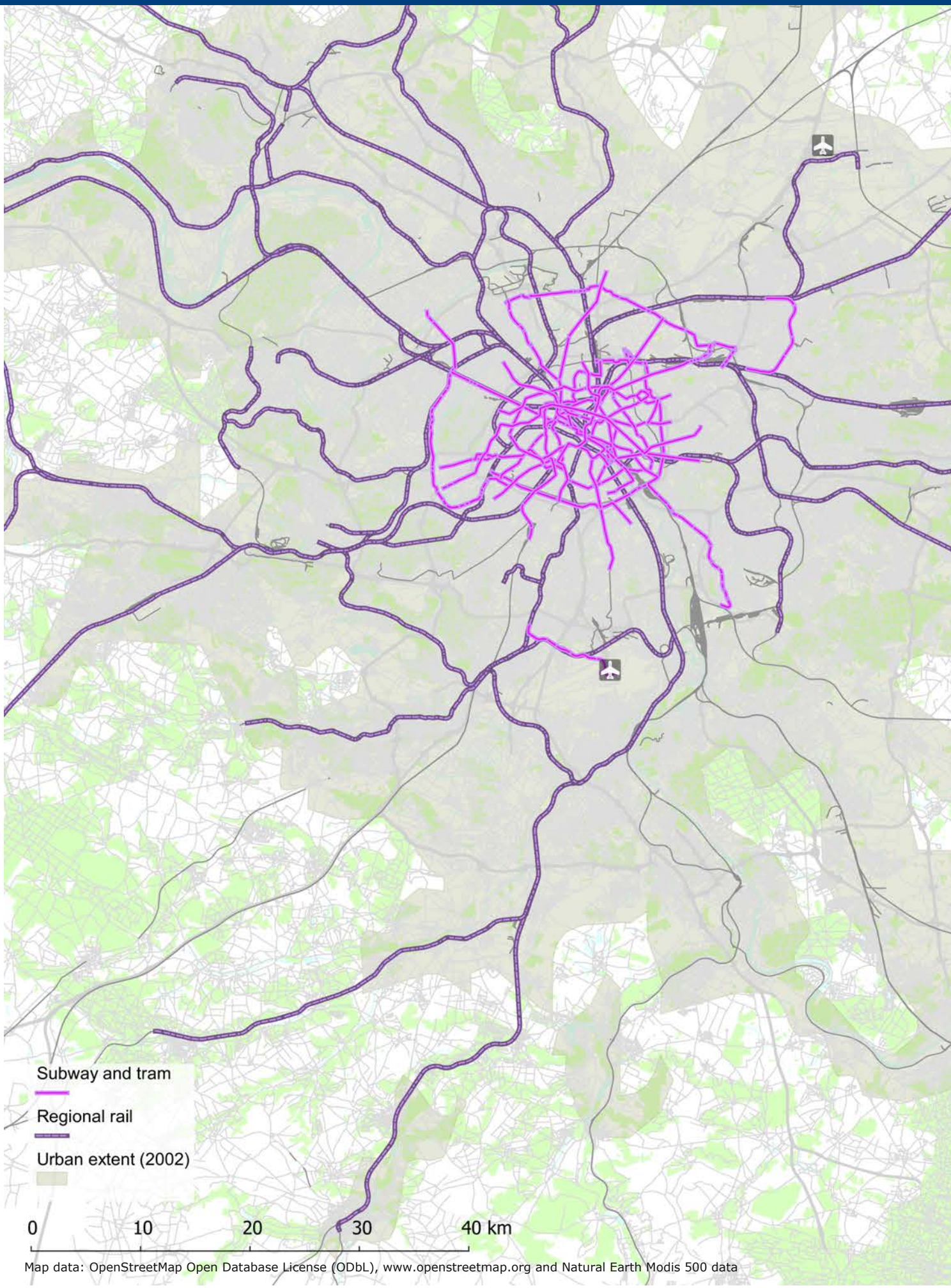
The funding of local public transport in Norway is the responsibility of the counties. Ruter AS coordinates the different sources of funding for public transport in the Oslo Region.

Public transport is funded through a combination of fare revenues, contributions from public authorities at different levels, and support from the Oslopakke 3 scheme.

Fares are collected by RUTER AS. A common electronic ticketing system for the region, named Flexus, was introduced in 2009. The fare zone system was simplified in 2011 from 77 to 11 zones.

The City of Oslo and the County of Akershus contribute to public transport operation and investment expenditure. The Central State provides additional funding for infrastructure investment and as compensation for concessionary fares.

The Oslopakke 3 scheme, based on the car toll in Oslo, plays an important role in the funding of public transport operation and investment in Oslo Region. The share of the car toll revenues dedicated to public transport has increased compared to previous Oslopakke schemes. Another innovation from previous Oslopakke schemes is that it contributes to cover part of public transport operation expenditure. All in all, about 60% of the revenues of the Oslopakke 3 scheme are allocated to public transport.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and Natural Earth Modis 500 data

Paris

Ile-de-France Region, France

Key Numbers

Area (km^2)	12,012
Population (2008)	11,867,000
Population density (per km)	988
Gross regional product (GRP, 2008 US$ millions)	573,406
GRP/capita (2008)	49,633
Rail network (km, 2011)	1,769
Bus network (km, 2009)	24,661
Rail pass. (trips 2011, millions)	2,691
Bus pass. (trips 2011, millions)	1,332

High quality regional transport and new expansion plans

The greater Paris region enjoys high levels of public transport services, especially for relations serving the core of the region. Networks are relatively well maintained and a durable funding mechanism based on the "benefiters-pays" principal -- the employers transport tax has served well to keep pace with increasing demand for services. Regional growth patterns are changing and in response, efforts are being made to better service periphery-to-periphery trips with a high quality standard of service. This will be challenging as the costs of developing this new orbital network are significant..

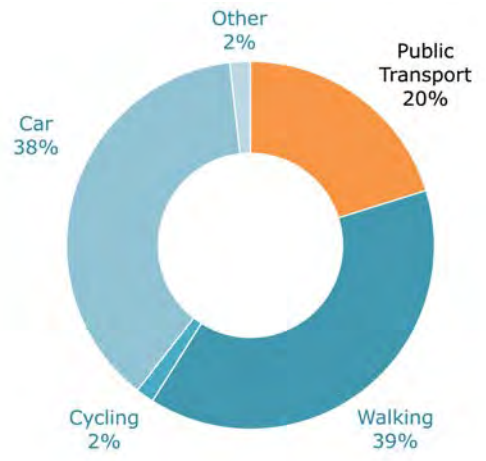
Key Actors

Government

No longer the dominant actor it once was the National government nonetheless still sets national objectives for public transport through the pluri-annual development framework contract it negotiates with the region – the Contrat de Projet Etat-Region (CPER) which sets a common programme for capital investment and allocates funding responsibility between National and Regional governments. The National government also remains the sole shareholder in the two main public transport operators in the region – the RATP and the SNCF. In addition, framework laws governing or relating to public transport service provision are set at the national level. These include the recent framework law on the organisation and regulation of rail transport (ORTF) which sets out conditions for competition and ownership of rail-based public transport in the Ile-de-France (IDF) region.

The Regional government has responsibility for coordinating the supply of transport services throughout the region. This responsibility has been delegated to the regional transport authority Syndicat des Transports d'Ile de France (STIF). The region negotiates the CPER with the National government thus establishing public transport investment priorities and is also responsible for the legally mandated regional transport planning document (Urban Mobility Plan – PDU) that guides land-use and transport decision-making for subordinate

Mode share (all trips, 2010)



Public Transport Networks

Rail	Lines	Length (km)
Metro	16	219
Regional rail	13	1,485
Tramway	4	65
Bus		
Total	1,449	24,661
… of which inside Paris	*64*	*597*
. of which outside of Paris	*1,338*	*22,717*
… of which night bus	47	1,346
Water Bus		
Seine river water bus	1	6

Passenger Trips (millions)

	2005	2006	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2005)
Metro	1,354	1,406	1,387	1,472	1,479	1,506	1,524	37%	2%
Regional rail	1,064	1,096	1,104	1,146	1,125	1,138	1,167	28%	2%
Tramway	48	50	87	96	96	108	114	3%	16%
Bus	1,218	1,228	1,237	1,298	1,297	1,296	1,332	32%	2%
All modes	3,684	3,780	3,815	4,012	3,997	4,048	4,137	100%	2%

levels of government. Départmental governments in the IDF region participate in the governing board of the STIF and may set (and fund) public transport fare subsidies for low income or other target populations.

Municipal governments elaborate local PDUs which help define land use and transport conditions and establish goals relating to public transport service provision. Local governments may also directly negotiate with public transport operators to establish target service levels and coverage in their community – especially as regards bus services. Paris is a special case as it has broader oversight powers and sits on the governing board of the STIF.

Regional Transport Authority (STIF)

STIF organises, coordinates and finances the supply of public transport in the IDF region. It defines general operational and service level targets, sets fares and negotiates performance-based contracts with public transport service providers. STIF also coordinates and helps set the regional public transport infrastructure investment plan in conjunction with the national government. In addition to new infrastructure, STIF also co-finances with operators the purchase or refurbishment of equipment, rolling stock and/or stations. In 2009, the ORTF law split ownership responsibilities for rolling stock and infrastructure between STIF and RATP with STIF becoming owner the former. The president of the IDF region sits at the head of STIF's governing board which is composed of elected representatives of the Regional and Départmental Councils, the Council of Paris, as well as from the regional chamber of commerce and a local grouping of municipalities.

1/2

public transport trip mode share in surrounding towns is one half that of Paris

Operators

RATP (Régie Autonome des Transports Parisiens) is the historic public transport operator for the city of Paris and is a state-owned commercial and industrial enterprise (EPIC). RATP carries 54% of all public transport passenger kilometres in the region, principally via the underground metro system and RATP-operated regional rail. RATP enjoys a monopoly on existing Paris bus, metro, tramway and regional rail services though this is set to end in 2024 (bus), 2029 (tramways) and 2039 (Metro). In line with the 2009 ORTF law, RATP owns all of the infrastructure necessary to carry out its mission (rail lines, stations, buildings, etc.). Most, but not all, capital investment programmes are coordinated with STIF and the national government.

SNCF (Société Nationale des Chemins de Fer), also a State-owned company, operates mainly heavy rail-based public transport services in IDF through its wholly-owned subsidiary Transilien. SNCF carries 40% of public transport passenger kilometres in the region. Also a monopoly, SNCF's Transilien services are set to be opened to competition in 2039.

OPTILE is a grouping of 83 inter and intra-urban bus operators serving IDF communities outside of the city of Paris. The OPTILE network accounts for 6% of all public transport passenger kilometres in the region but 40% of total bus travel and 82% of the total bus network. Among the key bus service providers within OPTILE are both Veolia and Keolis (a subsidiary of SNCF).

Funding

In 2010, nearly 40% of the IDF region's public transport operating revenues came from the "versement transport" – a dedicated transport tax levied on employers and based on payroll mass. Farebox revenues accounted for another 40% -- this included fares paid by passengers as well as revenues from legally mandated travel card reimbursements to employees by employers. It also includes social fare subsidies granted by departmental governments. About half of total public transport revenues are passed through the STIF. Local authorities contribute to STIF's operational revenues on the basis of statutorily set contributions, payments for covering non-profitable lines and contributions to cover fare subsidies for low income and other vulnerable public transport patrons. The national government transfers some funds to STIF for school transport and, on an exceptional basis, covers some costs related to national mandates.

Disbursements are contractually set between STIF and public transport operators -- RATP absorbs half of STIF-disbursed operational revenues and SNCF another third leaving slightly more than 10% for bus operators outside of the city of Paris. The IDF region's 2010 public transport investment budget was €2 188 M.

Capital investment (2010, Million EUR) Totals for Ile-de-France

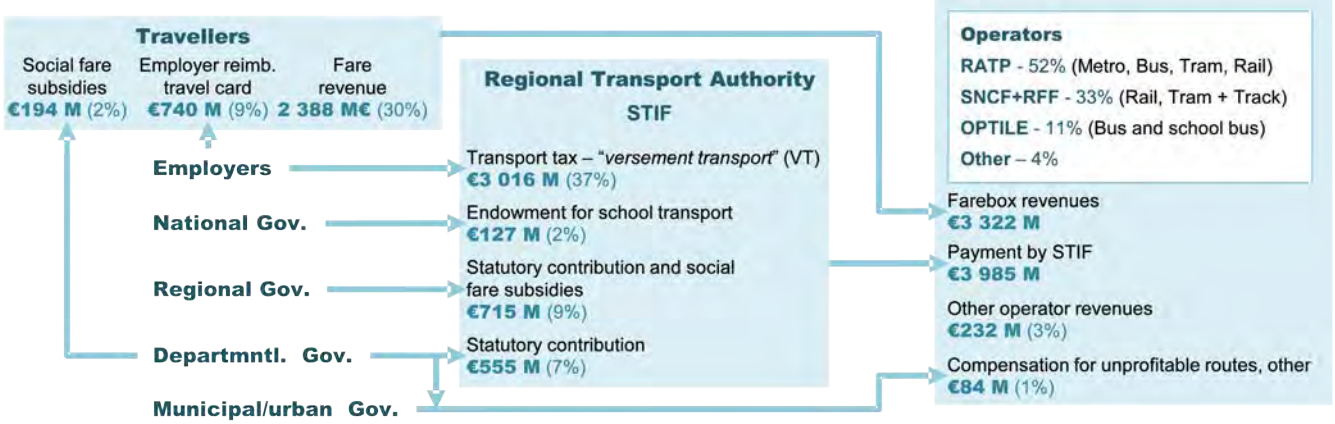
Capital expenditure		
Network extension	554	25%
Rolling stock	849	39%
Maintenance and modernisation	785	36%
Total expenditure	**2,188**	

Sources		
National government	79	4%
Regional government	316	14%
Departmental/local government	204	9%
STIF (including fines)	300	14%
Operator self-finance, loans	1,289	59%
Total capital funds	**2,188**	

The IDF region's 2010 public transport investment budget was €2 188 M. Nearly 60% of the budget came from self-financing operations/loans and an additional 14% came from the regional transport authority – this contribution largely sourced from non-recurrent reserves and the 50% share of road traffic fines the region receives.

Investment requirements are set to increase as the region seeks to catch up for under-investment in past years and as it embarks on an ambitious capital investment plan. The region foresees an investment of €7 Billion

2010 PT funding, IDF



from 2012 to 2017, much of it for tramways. An additional investment of €24.5 billion. has been announced in the context of the "Grand Paris Express" project which calls for the construction of 200km of extended or new rail and Metro lines linking 72 new stations meant to reinforce connections amongst peripheral growth centres. Most of the new funding will come from a re-allocation of existing tax-based revenue streams – principally tax on office space. A small share is expected to come from increased government contributions.

Opportunities & Challenges

Public transport service

Ile-de-France generally enjoys a high level of public transport accessibility. The supply and quality of service is most elevated within the city of Paris and on routes leading to the core of the region. Service quality drops off in the periphery where lower density and more dispersed settlement patterns complicate the task of providing public transport. A result of historic urban and planning policies, the current Paris-centric model is currently being tested by rapid development at the periphery of the region and a rise in new mobility patterns that are centred on urban areas outside of the city of Paris. This gives rise to a dual need to reinforce traditional radial links to the centre to accommodate population growth and answer the growing demand for trips between and within peripheral urban areas. Significant capital investments – more than €34 billion by 2030 -- will be required to meet these dual challenges and ensure high service quality.

Governance

The IDF region has a single authority responsible for setting public transport service objectives, negotiating service contracts with operators and setting tariffs at a regional scale. Authority and responsibility for delivering public transport services in the IDF region are clearly defined and established within a robust regulatory framework – at least in theory. Though the national government has largely withdrawn from the direct management of public transport in the region, it retains a significant role as the sole shareholder in the two main historic operators (SNCF and RATP). Tensions between these operators and the STIF -- where regional and local authorities preside -- remain as was seen in the recent re-negotiations of public service contracts between STIF and SNCF and RATP. They are also evident in the development of the Grand Paris Express plan – especially as national and regional governments were governed by different political parties. Advances have been made to better define the responsibilities of all actors – e.g. as in the recent allocation of rolling stock to the STIF and infrastructure to operators -- and the STIF and operators have ultimately been able to achieve important compromises on risk-sharing for new investments.

Financing continued services and expansion

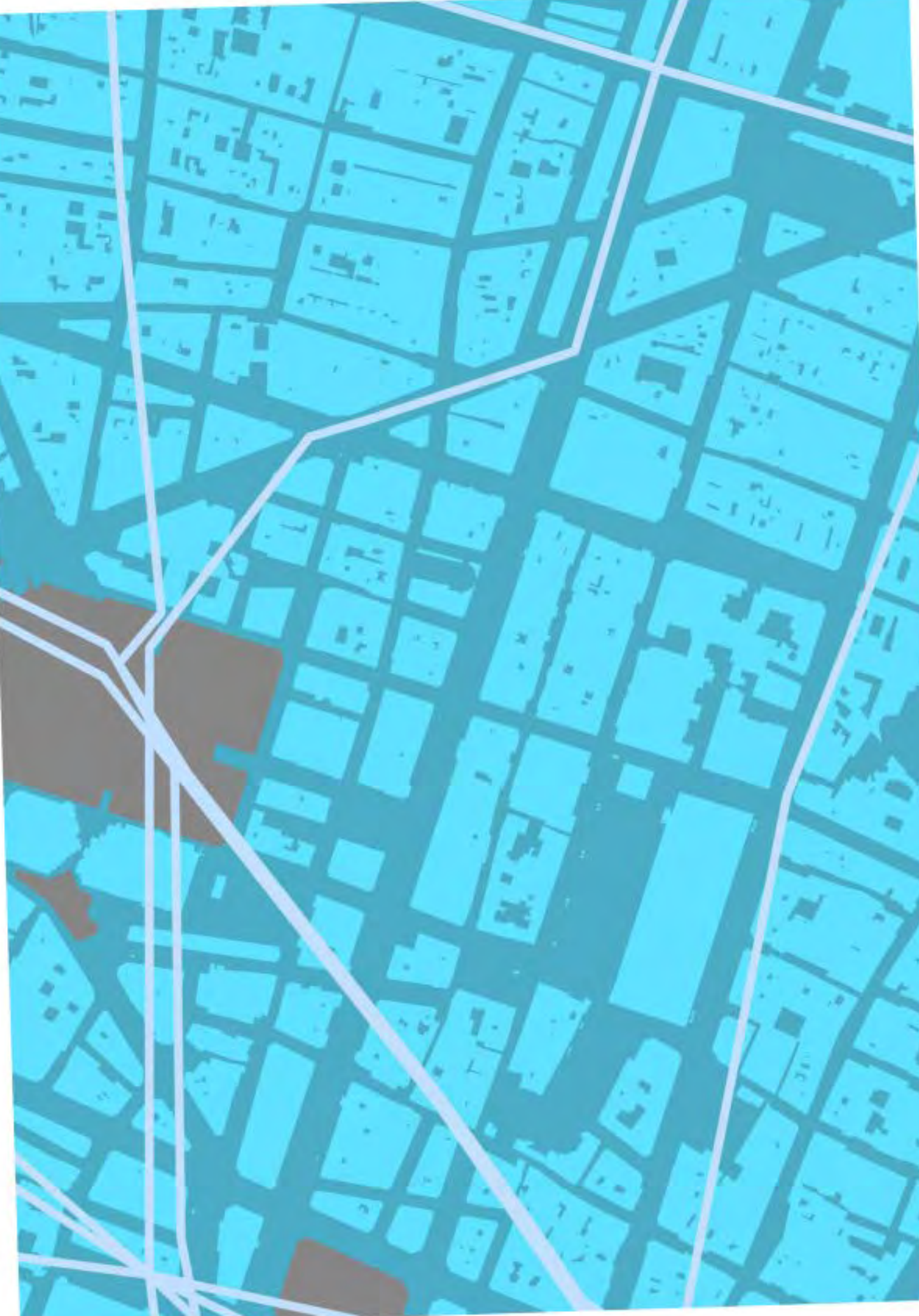
The ultimate burden for funding public transport operations in the IDF region has principally fallen on those that benefit from the supply of extensive and high quality public transport services - e.g. employers and public transport users themselves. The funding set-up also has encourages public transport use via mandated employer

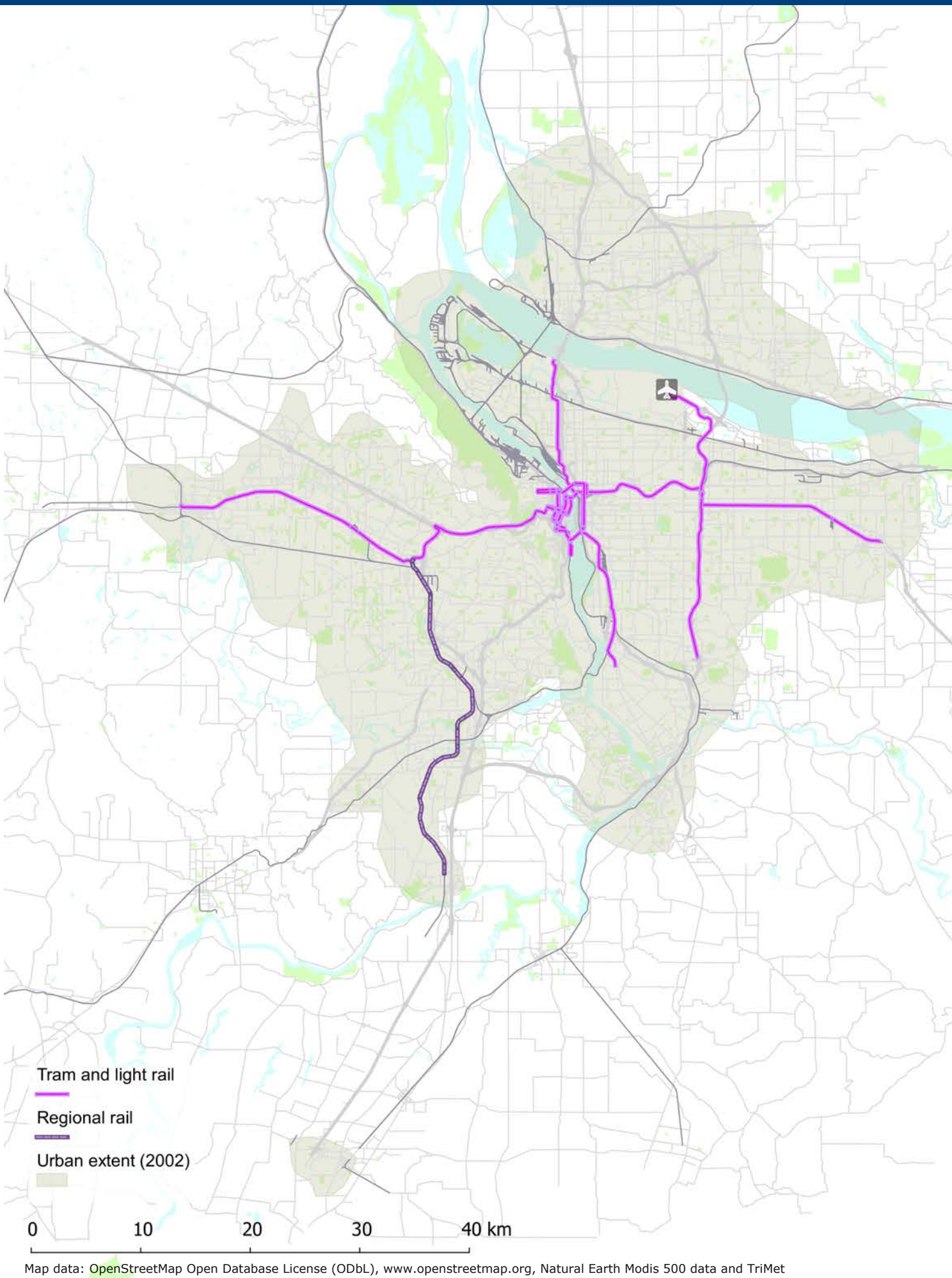
reimbursement of travel cards. Sources of operational revenues are diversified which reduces exposure of revenue streams to changes in the priorities or funding capacities of public authorities. Revenues are, however, vulnerable to a drop-off in economic activity (which impacts transport tax revenues via a drop in employment). The transport tax may also represent a burden to employers in times of crisis.

The current funding model is at risk under new demands for improving existing services (new rolling stock, frequencies, IT services, etc) and to make up for years of underinvestment. This has led STIF to seek funding on equity markets for the first time in 2012. There is concern that the monopoly position of RATP and SNCF will slow efforts to realise productivity gains that could moderate funding requirements. The capital expansion plan underpinning the Grand Paris is set to be met mainly via the re-allocation of the office space tax (ultimately paid by employers). However, large-scale infrastructure projects such as the Grand Paris often go over budget and it is not clear what additional revenue sources could be mobilised should this happen here. Ultimately, National and Regional governments may have to increase their participation should this happen.

Innovative funding

The transport tax was an innovation when it was first introduced in 1971 though it remains largely unique to France. A proposed project to establish a direct rail link between Charles de Gaulle Airport and Paris is also an innovation, at least for Paris, in that it is planned tobe built without any government aid or subsidy. Finally, the City of Paris has developed several innovative funding schemes for quasi-public transport services – the first being the Velib public bicycle sharing network financed largely via advertising spaces that complement user charges. Another innovative funding scheme is the Auto'lib station-based electric car-sharing service established public service concession and financed solely by the operator on the basis of user charges.





Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org, Natural Earth Modis 500 data and TriMet

Portland

Greater Portland (OR) region, USA

Key Numbers

Area (km^2)	17,370
Population (2008)	2,218,347
Population density (per km)	128
Gross regional product (GRP, 2008 US$ millions)	98,351
GRP/capita (2008)	44,335
Rail network (km, 2011)	119
Bus network (km, 2011)	1,340
Rail pass. (trips 2011, millions)	41.0
Bus pass. (trips 2011, millions)	65.0

Renewed efforts required to maintain leadership

Portland has built its reputation as one of the most liveable cities in North America. Innovative public transport funding and the creation of a regional light rail system and an extensive bicycle network have been the hallmarks of sustainable transport in the Portland region. However, Portland is facing a challenge of how to overcome financial constraints linked to the economic crisis to maintain this system. Ensuring continued cost recovery despite a downturn in the regional employer-generated tax revenue and escalating pension and labour costs will require renewed effots from the regional government in coming years if Portland is to retain its lead position.

Key Actors

Government

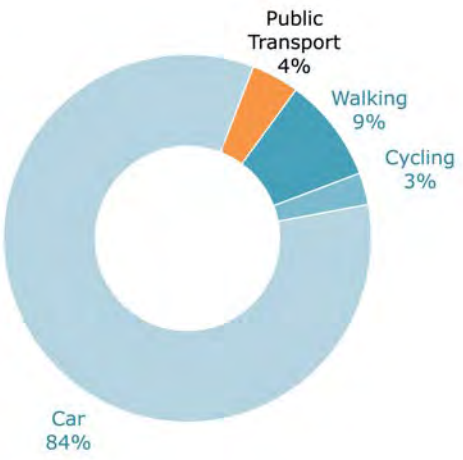
The Federal Transit Administration (FTA) of the US Department of Transport provides financial assistance, manages approved grants, and provides technical assistance, oversight and information for public transport. FTA programmes include the New Start Program, which provides funding for new rapid transit projects as well as for rehabilitating existing lines, and the Job Access and Reverse Commutes programme which provides funding to assist the poor in accessing jobs in underserved communities. FTA also provides operating subsidies to public transport agencies and operators in areas with a population of fewer than 200,000.

The Oregon State Department of Transportation helps with state-wide public transport planning via its Public Transit Division (PTD). This division undertakes state-wide coordination and planning for public transport services, provides education and technical assistance to local communities regarding public transport services and operations and helps coordinate access to various state and federal funding streams.

Metro

Metro is the elected regional government for the greater Portland area and is also the designated Metropolitan Planning Organisation (MPO) in charge of strategic

Mode share (all trips, 2011)



Public Transport Networks

Rail	Lines	Length (km)
Light rail and tramway	5	95
Regional rail	1	24
Bus		
Total	79	1,340

Public Transport Passenger Trips (millions, all trips)

	2005	2006	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2005)
Rail	35	35	36	39	39	47	41	39%	3%
Bus	75	72	69	71	75	67	65	61%	-2%
All modes	110	107	105	110	114	114	106	100%	-1%

and capital investment planning for transport and is responsible for land use planning in the region. It assists in the improvement of public transport services via facilitating integrated land use and transport planning. MPO staff work with urban public transport operators to provide planning and technical assistance. In addition, Metro may use locally-controlled Surface Transportation Funds (STP) to finance public transport capital needs in the region. Metro prioritises projects and programmes to be funded with FTA funds via the regional Metropolitan Transportation Improvement Program.

Oregon Transit Association

The Oregon Transit Association (OTA) is a non-profit association whose membership is made up of public, private for-profit and non-profit public transport operators, and public transport industry providers such as equipment suppliers. The association's mission is to assist members in the development and improvement of efficient, safe, and convenient transportation services, techniques, methods, facilities, and equipment. The Oregon State Public Transit Division Administrator is a voting member of the OTA Board.

Operators

TriMet

TriMet is a municipal corporation providing tramway, light rail, commuter rail and bus services in the urbanised areas of the tri-county Portland metro area. It has broad powers to provide public transportation in the district. It levies an employer payroll tax and as well as a tax based on net earnings from self-employment and can issue and sell general obligation and revenue bonds.

+4.8%

growth in public transport passenger kilometres of travel, 2005-2011

Other regional operators

Several other operators provide public transport services in the greater Portland Tri-county area;

- C-Tran, Clark County Washington's public transit provider, has 26 bus routes, C-Van curb-to-curb service for people who cannot access regular route service, carpool and vanpool services, a bike and bus program and more.
- Canby CAT offers fareless, fixed route service six days a week, flag stops, ADA-accessible buses, bike racks on all buses, and a lift available for qualified applicants.
- SMART provides bus service in the Wilsonville area and passengers ride for free! SMART Options program provides free assistance to employers in setting up transportation programs.
- Ride Connection is a non-profit organization offering assistance to persons with disabilities and senior citizens in Clackamas, Clark, Multnomah and Washington counties.
- Sandy Transit offers fareless fix route service six days a week, flag stops, ADA-accessible buses, bike racks on all buses, and a lift available for qualified applicants.
- There are also some shuttle services providing express connections between neighbouring communities and Portland.

Funding

Operation Funding 2011 (TriMet)

TriMet is both the principal public transport operator in the region as well as the regional government with taxation authority. The TriMet operational budget is largely paid for via a payroll tax similar in nature to that in place in the Paris region. Employers pay a portion of their employees' gross wages to TriMet (7.02USD per 1,000USD). Self-employed workers must also pay this tax which is calculated on their earnings. Farebox revenue accounts for 25% of the total operation funds. Combined payroll tax earnings and farebox revenues make up TriMet's directly generated revenues which cover 86% of operational expenditures. The remainder is supplemented through FTA-administered grants and local sources.

Capital Funding 2011 (TriMet)

Three-fourths of TriMet's USD 114.5 million capital expenditures in 2011 were paid for by the State of Oregon via special public transport capital grants. These grants covered the extension of light rail and tram routes and the cost of new and refurbished rolling stock. Remaining funds came from FTA grants at the federal level (11%) and local governments (14%).

Operating Revenues (2011, Million USD)

Totals for the Greater Portland/Tri-County area

Directly-generated revenues	375,1	86%
of which fares	*107,7*	
Federal Funds	45.9	11%
State funds	2.5	1%
of which dedicated	*1.8*	
Local funds	12.0	3%
of which dedicated	*0*	
Total revenue	**435**	

Capital investment (2011, Million USD)

Totals for the Greater Portland/Tri-County area

Capital expenditure		
Track-related expenditures	87,0	75%
Stations	7,1	6%
Rolling stock	5,0	4%
Fare/revenue collection equipment	0,3	0%
Buildings and Facilities	6,9	6%
Other	9,6	8%
Total expenditure	**116,0**	

Sources		
Operator-generated capital funds	10,8	9%
Total Federal funds	13,6	12%
... of which:		
Federal capital programme	*0,3*	
Urbanized Area Formula (UAF) allocation	*8,5*	
Total State Funds	85,8	74%
Total Local Funds	6,3	5%
... of which dedicated taxes, tolls and others		0
Total capital funds	**116,6**	1

Opportunities & Challenges

Challenges

Portland has been recognised as one of the leading cities in USA in terms of the quality and use of its public transport network. People in the Portland area use public transport more than in many larger US cities and public transport ridership has grown faster than both population and car vehicle kilometres travelled.

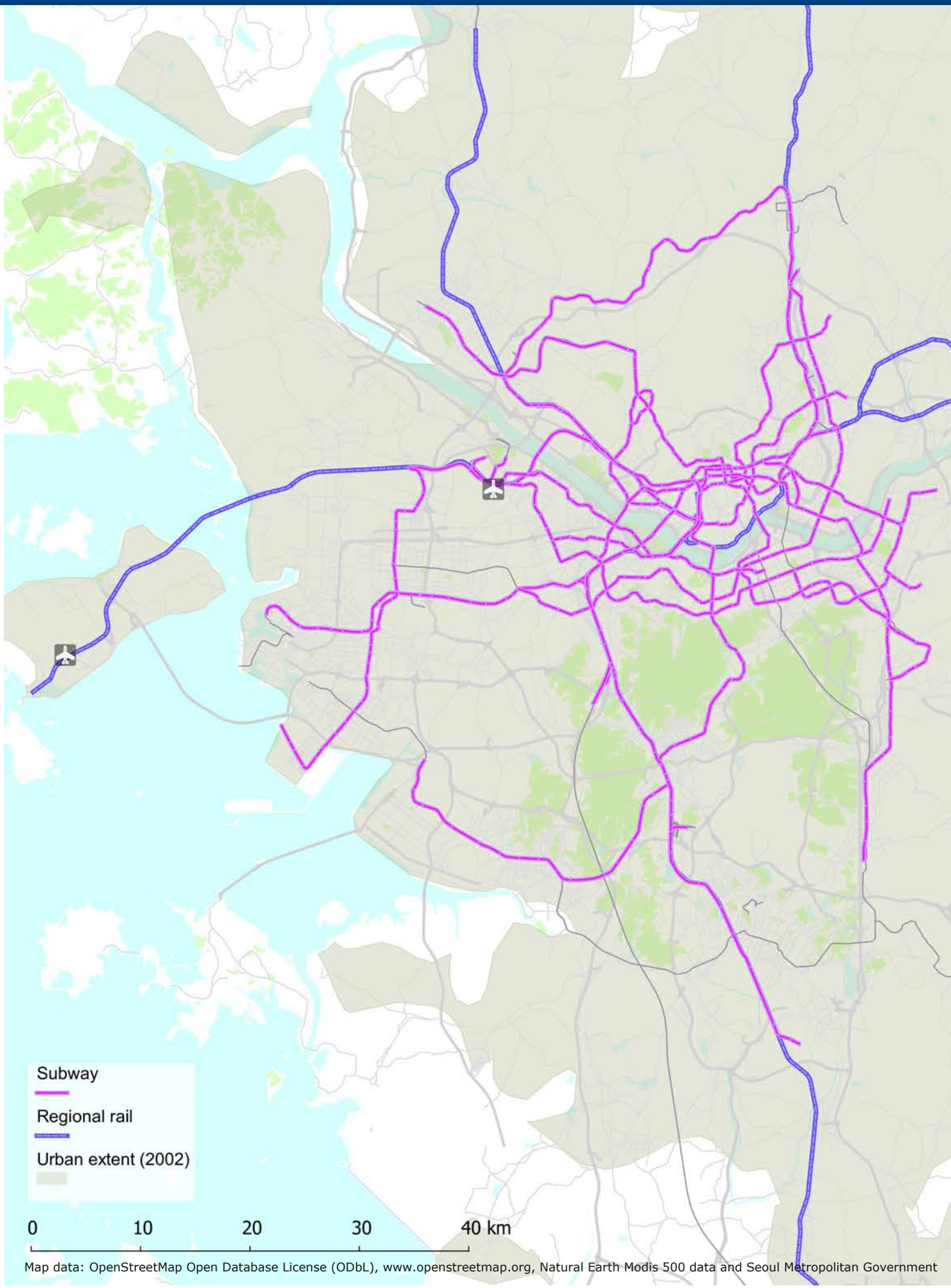
Nonetheless, the recent economic crisis has placed burdens on regional public transport operators – especially as the payroll tax which constitutes their principal source of revenue has been vulnerable to the slowdown in economic activity. This had led to cutbacks including the cessation of a fare-less public transport service in the heart of the city – the "Fareless Square" programme. While the provision of free public transport in the epicentre of the city was seen as innovative and arguably boosted overall ridership, it was no longer tenable in light of decreasing revenues and sustained costs. Monitoring the financial effects of the discontinuity of this free-ride service should provide useful lessons regarding the impacts of fare-less public transport services.

Pressure also stems from a reduction in the amount of formula disbursements given by the FTA local public transport operators. TriMet is expecting a reduction of this funding by up to 4 million USD in fiscal year 2013 which may require an increase in fares as well further internal cost-saving measures. Implementing the latter are seen as a core part of the systems long-term financial viability, especially as regards labour costs and pension which are set to increase significantly in coming years.

Opportunities

The region will is expected to grow by a further one million new residents in coming years according to the Region 2040 Growth Concept, a long-range plan in the metropolitan area adopted in 1995. The Regional Transportation Plan sets out an aspirational goal of tripling the combined public transport, walking and cycling mode share by the end of the plan period. This obviously requires an increase in public transport services, but the increase was less than half way to the goal from current levels. Achieving this mode share is also important for the region in order to meet the greenhouse gas reduction target is imposed by the Metropolitan Greenhouse Gas Emission Target Rule.

There is a call for housing development to be linked to public transport development and new cycling and walking infrastructure in order to ensure that the projected population growth does not swamp the roads and erode Portland's competitivity. TriMet's 2012 Transit Investment Plan calls for the expansion of pedestrian and bike infrastructure to increase overall connectivity within the community. It also calls for zoning regulations that promote transit-oriented development (TOD) in the implementation of regional development plans.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org, Natural Earth Modis 500 data and Seoul Metropolitan Government

Seoul

Seoul Metropolitan Area, South Korea

Key Numbers

Area (km^2)	5,197
Population (2008)	22,326,396
Population density (per km)	4,296
Gross regional product (GRP, 2008 US$ millions)	564,449
GRP/capita (2008)	25,282
Subway network (km, 2010)	327
Bus network (km, 2010)	~13,096
Metro pass. (trips 2010, millions)	2,349
Bus pass. (trips 2010, millions)	1,677

A region meeting challenges with innovation

The Seoul Metropolitan Area accounts for approximately half of the Republic of Korea's total population and produces half of the country's economic output. The city of Seoul itself is surrounded by several cities of a million or more inhabitants, including Incheon, Suwon, and Seongnnam. Collectively, these cities make up the Seoul Metropolitan Area.

The Seoul Metropolitan Area is well served by public transport including an extensive subway network, regional rail services and bus routes. The region has been particularly innovative with the latter and is well known for its pioneering bus services. These include median bus lanes, e-ticketing with credit card and a successful real-time bus information platform that allows, for example, customers to reserve bus seats or call on-demand buses to their location.

Key Actors

Government

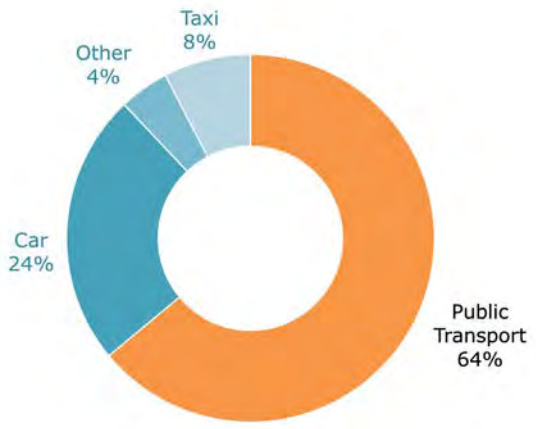
The national government is responsible for developing a national public transport master plan and monitors local public transport policy. The central government can fund public transport infrastructure projects including urban railways and Bus Rapid Transit (BRT) at the local level. The national government also plays a central role in improving interchangeable public transport operation through its funding support for the national public transport card. However, most large-scale public transport projects are initiated and managed by the Seoul Metropolitan government.

The Seoul region has a Metropolitan Transport Association (MTA) consisting of local governments including tose of Seoul, Gyeonggi, and Incheon. This association mainly coordinates conflicts between local governments related to public transport policy including conflicts regarding route location and fares. The association has limited authority and not all conflicts are satisfactorily resolved by the MTA leading to frequent arbitration by the national government.

The Seoul municipal government owns public transport-related infrastructure including urban railways BRT corridors and has a general responsibility for the construction and management of public transport systems. Management and operation of the

Mode share (all trips, 2010)

excluding walking



Public Transport Networks

Rail	Lines	Length (km)
Metro (Seoul Government owned only)	9	327
Other Metro and light rail	5	133
Regional rail	5	262
Bus		(estimated)
Total	409	13,096
... of which trunk lines	*119*	*6,069*
... of which feeder lines	*230*	*5,980*
... of which inter-city	13	975
... of which circular line	47	72

Passenger Trips (millions)

	2005	2006	2007	2008	2009	2010	% of total (2011)	Average yearly change (from 2005)
Metro	2,277	2,269	2,268	2,294	2,293	2,349	55%	0,6%
Regional rail	198	198	201	200	202	208	5%	1,0%
Bus	1,659	1,699	1,673	1,684	1,681	1,677	40%	0,2%
All modes	4,134	4,167	4,141	4,179	4,176	4,234	100%	0,5%

Seoul metro and some urban railways are carried out through special-purpose corporations that are wholly owned by the municipal government. Bus services, on the other hand, are almost all operated by private companies under public service contracts with local governments. These contracts set conditions for routes, frequency and the number of buses. Local governments compensate private operators for operational losses as determined by contract arrangements.

Both national and local governments have provided some assistance to private bus operators in order to purchase low-emission and low-floor buses.

Operators

Seoul Metro (SM)

Seoul Metro operates subway lines 1, 2, 3, and 4 covering 137.9km with 120 stations. It was first established in 1981 and is wholly owned by the Seoul municipal government. Seoul Metro transports 4 million people daily accounting for 45% of total subway riders.

Seoul Metropolitan Rapid Transit (SMRT)

SMRT operates the most extensive metropolitan subway system in Korea. It runs subway lines 5, 6, 7, and 8 covering 152km with 148 stations. It was first established in 1990 as a separate entity from the then-sole operator, Seoul Metropolitan Subway Corporation (now Seoul Metro) in order to introduce competition between metro operators. SMRT is also wholly owned by the Seoul municipal government. It now serves for 2.7 million passengers daily.

Seoul Metro Line Number 9

The most recent Seoul subway line, line number 9, was developed as public-private partnership in 2009. The private operator is responsible for the management and operation of this 25.5km metro line.

42 minutes
average commute time

Other regional rail operators.

Other urban rail operators in the Seoul region include the national rail company, Korail, which operates approximately 270 km of regional rail services within and beyond the larger Seoul area. Korail also is a principal shareholder in the 58km Incheon International Airport Express (AREX) connecting Incheon airport to central Seoul. Incheon city also has its own Metro line operated by municipally owned company. Three other operators – NeoTrans, Yongin Rapid Transit and Uijeongbu light rail are responsible for another 60 kilometres of routes.

Association of Seoul Bus Operators

There are 66 private bus operators serving 409 routes in the Seoul metropolitan area. These buses are divided into four categories according to the type of route they serve and the service they provide. These categories are: Trunk Line Buses, Feeder Line Buses, Inter-City Rapid Buses, and Circular Line Buses. Operators share revenues by being a member of the Association of Seoul Bus Operators. Bus operators can openly bid for new routes. The Seoul bus system is in effect a quasi-public service since, in return for carrying out public service contracts, bus operators are supervised by local authorities and may receive payments from these authorities to cover operational deficits.

Funding

Seoul Metro

Seoul Metro's 2012 total operating expenditure was €851M whereas total revenue was €735M, 83% of this coming directly from fares. To cover up the €116M shortfall (14% of total expenditure), Seoul Metro issues public bonds and borrows money from the public funds of Seoul Metropolitan government. Details of the breakdown of these funds are not publicly available.

Seoul Metropolitan Rapid Transit (SMRT)

SMRT's 2012 revenues of €394M (97% coming from fares) generated an even greater shortfall than Seoul Metro since 2012 expenditures were €650M. To make up the €256M difference (39% of total expenditure), SMRT received subsidies of €38.4 from both national and metropolitan governments and issued €47.8M worth of public bonds. SMRT borrowed the remaining €169.7M.

Metro Line 9

Though Metro line 9 is operated by a private operator under a PPP agreement with Seoul Metropolitan government, there are some concerns over increasing contractualy-stipulated loss-recovery payments made by the municipality to the operator to cover up the difference between the expected fare revenues and the actual fare revenue in practice.

Bus Operating Costs

There is no official data regarding bus operating costs in the Seoul region. According to some recent estimates though, total revenues of bus operators were around €754M in 2009. Direct farebox revenues accounted for €724M and an additional €17.5M came from advertisement. Local governments distributed about €8.8M of central government revenue to help cover fuel costs. According to these figures, operator-generated revenues accounted for approximately 97% of operating costs but these data seem to lump together loss-covering subsidies from Seoul Municipal government within fare revenues. These loss-covering payments made to operators are set according to standard guidelines. According to these, in 2009, Seoul Metropolitan government spent €193M to cover bus operator losses. These payments account for about 27% of fare revenues, and thus 26% of total revenues.

Capital Investment

Current plans call for the expansion of the Seoul metro. The construction of the 3rd phase of Metro 9 (9.14km) is underway and is budgeted at €747.5M by 2016. These costs are bourne by the private operator and investors as covered in the terms of the public-private partnership. Another public-private arrangement is helping to finance the €431M required for the construction of a light rail link between Ui and Sinseol (11.4km) which is set to be completed in 2014.

According to the Seoul region's Public Transport Master Plan (2012-2016), the Seoul Metropolitan government is planning to invest €33.5M to subsidise the purchase of low-floor buses, €3.5M for the development of a Public Transit Mall, and €29.8M for development of the IT-based Bus Information System.

Opportunities & Challenges

Public Transport Service

Public transport in Seoul is well used as reflected in its high modal share. Nonetheless, concern for system-wide efficiency and revenue-generation has led to some calls to reorganise the overall operational system --particularly for buses. One issue is that there is considerable overlap between some bus and metro lines leading to revenue erosion for all operators concerned. Additionally, the concessioning system for bus services seems not to favour new entrants or competition as it rare to see new operators despite years of competitive bidding. Most long-distance bus operators are suffering from insufficient farebox-revenues due to fares being set too low by local governments. Changes in growth patterns and a continuously-spreading urban region is leading to changes in public transport service requirements. For instance, demand for long-distance bus services linking central business districts in Seoul to satellite cities is on the rise as population increasingly settles at the edge of the urban area. This trend has seen a rise in popular high-quality long-distance bus services, e.g. the 'M bus' which guarantees seats once boarded and allows fast access to central Seoul (maximum 6 stops for all routes).

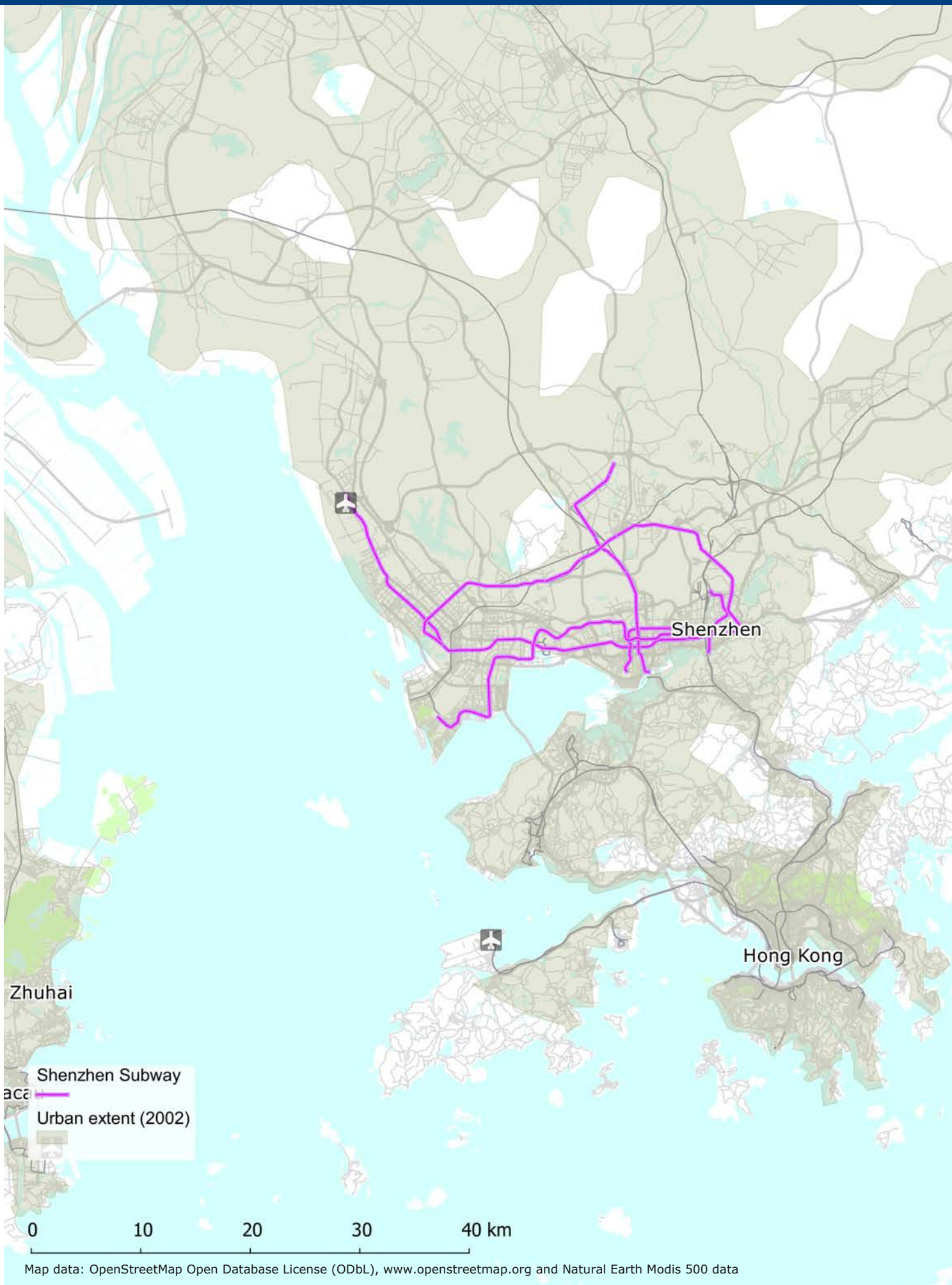
Governance

Co-operation between different local governments in the Seoul Metropolitan area has allowed the introduction of an integrated fare-revenue sharing system. MTA has worked to coordinate the establishment of the system but some have pointed out that its powers are too limited to effectively coordinate conflicts between different local governments. In effect, MTA does not have key functions such as taxation powers, budget allocation oversight responsibility for operators , direct route or service contracting with operators, etc. required to be an effective co-ordinating organisation These functions are the responsibility of individual local governments. As such, MTA has largely been engaged in arbitrating conflicts between operators over fares, routes, and frequency. Even here, central government intervention has often been required to reach agreement. The lack of a strong public transport organising authority will likely continue unless current institutional arrangements are reformed.

Innovative Funding

Seoul Metropolitan government imposes a congestion charge in one tunnel which connects the central business district with the southern business district. It also levies a traffic inducement charge to owners of certain large scale buildings, which are likely to generate high volumes of traffic. These revenues are used to improve public transport facilities and services.

Recently, on-demand bus services have been introduced in the region. This is a special service for commuters between certain satellite cities and Seoul which allows travellers reserve their seats online. This new service requires no further outlay from operators and may allow the latter to tap into new high-value markets.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org and Natural Earth Modis 500 data

Shenzhen

Beijing capital region, China

Key Numbers

Area (km^2)	1,991
Population (2011)	10,470,000
Population density (per km)	5,259
Gross regional product (GRP, 2011, millions, $US)	186,000
GRP/capita (2011)	17,860
Rail network (km, 2012)	178
Bus network (km, 2012)	18,530
Rail pass. (trips 2011, millions)	460
Bus pass. (trips 2011, millions)	2,240

Managing fast growth in a mega-region

The Pearl River delta, including Shenzhen, will eventually make up one of the world's largest metropolitan areas harbouring over 40 million people. Accommodating that growth while enabling a high level of mobility and access requires early action on the part of authorities to ensure that high-quality regional public transport is in place to help channel this growth. For this reason Shenzhen has, like many other large Chinese cities, embarked on an accelerated subway development phase. This is expensive, requires new funding models and cost-recovery may be elusive in early phases but the potential pay-off may be large. Shenzhen is also ensuring the continued development of protected bus lanes and regional bus systems to help orators deliver competitive bus services though low fare mandates imply significant cost-recovery payments from the municipality to cover losses.

Key Actors

National government

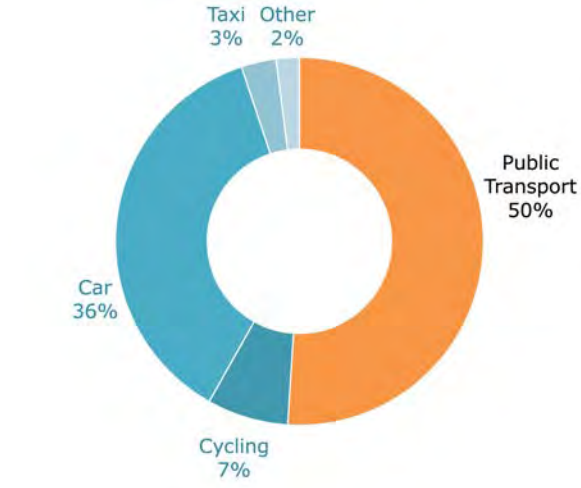
The national government is responsible for guiding the development of public transport, including laying down public transport laws, policies and standards, issuing national public transport development strategy and planning, monitoring road transport market etc. Many efforts have been made on priorities of urban public transport. The national government issued guidance of urban public transport priority in December 2012 and carried out a policy of relieving purchase taxes of bus by 2015. In addition, a big plan was proposed by Ministry of Transport to create National Transit Metropolis and it will select thirty cities, given the subsidies on transport hub, intelligent transport system and low-carbon public transport.

Regional Government

Plans have been announced to merge the cities of the Pearl river delta – Dongguan, Foshan, Guangzhou, Huizhou, Jiangmen, Shenzhen, Zhaoqing, Zhongshan and Zhuhai – into one mega-urban region. This conglomeration will cover 14,000 square kilometres and have a population of 42 million. It will cover much of China's dynamic manufacturing zones in Guongdong Province and include several of the world's largest container ports. Regional transport networks based on 29 inter-city rail lines will help the urban hubs connect to each other and to

Mode share (all trips, 2008)

excluding walking



Public Transport Networks

Rail	Lines	Length (km)
Metro and urban rail	5	178
Bus		
Total	178	18,530

Public Transport Passenger Trips (millions, all trips)

	2005	2006	2007	2008	2009	2010	2011	% of total (2011)	Average yearly change (from 2005)
Rail	60	90	120	140	140	160	460	17%	40%
Bus	1,260	1,420	1,540	1,660	1,820	1,940	2,240	83%	10%
All modes	1,320	1,510	1,660	1,800	1,960	2,100	2,700	100%	13%

Hong Kong. Some cities, such as Shenzhen, are already anticipating regional development plans by building out subway and bus rapid transportation corridors to help channel future growth. At this stage, it is not clear what role the regional mega-city government will play in the organisation and funding of public transport networks and services.

Municipal Government

The Shenzhen municipal government has the overall responsibility for the supply of transport services throughout the administrative areas. Specific responsibilities relating to urban railway and bus transport have been allocated to different local commissions such as Municipal Commissions of Development and Reform, State-owned Assets Supervision and Administration, Transport, Planning, finance etc. In 2008, the municipal government issued guidance regarding the subsidies to be made to concessioned bus operators which clearly and transparently delineates financial operating conditions for bus companies, including the calculation of loss-covering payments to operators by the Municipal government.

Municipal Transport Authority

The Shenzhen Municipal Commission of Transport (SMCT) organises and coordinates the supply of public transport in the Shenzhen region. It defines the general planning of public transport infrastructure construction, proposes the annual programme of public transport expenditure and implements management and supervision. SMCT is also responsible for the implementation and supervision of urban rail and bus concession projects.

33.5 million
trips per day, 2011

Operators

There are three major Bus operators and two urban railway operators in Shenzhen.

- Shenzhen Metro is a large state-owned enterprise, responsible for urban rail finance, construction, operation and maintenance, etc.
- Shenzhen MTR Corporation is a private partnership which is granted construction and operation rights for an urban railway system via a Build-Operate-Transfer (BOT) arrangement.
- Shenzhen Bus Group is a large state-owned enterprise with a long history which is mainly responsible for the operation of bus services It owns 318 bus lines accounting for 5022 km of routes. It accounted for 50% of regional bus transport in 2010.
- The other two bus companies also are state-owned enterprises in charge of another half of the passenger volume.

Funding

Little information is available regarding the operational budget of Shenzhen subway operators. Shenzhen Metro must report on its financial performance – including operational losses to be covered by government subsidy -- to the local State-owned Assets Supervision and Administration Commission but these reports are not publicly available. The same is the case with Shenzhen MTR.

Rules regarding loss-covering payments by the municipality to bus companies are relatively more transparent. In 2010, SMCT along with the Shenzhen Municipal Commission of Finance issued rules relating to the financial evaluation of concessioned bus operators. These rules include reporting requirements for operators and set out the terms of government subsidies to the latter. These are set such that operators are guaranteed a 100% coverage of their operating costs plus an additional 6% operating profit (that is, if an operator's revenues are below operating costs, the subsidy will cover the total operating loss plus an additional 6%). If operators return a profit on operations (e.g. if revenues are greater than costs), then the government retains 70% of the operating profit above the aforementioned 6%. These profit-guarantee subsidies are in addition to other subsidies relating to fuel, low fare compensation, etc.

In 2011, the total amount of total subsidy from the Municipal government to bus operators was 7 billions USD broken out as follows:

Fuel	USD2.1 billion
Fare compenation	USD1.1 billion
Profit garantee	USD3.6 billion
Other payments	USD0.2 billion

The first five lines (178km) of the Shenzhen Metro network cost USD 139.4 billion to build, USD 9.7 billion which came from Shenzhen MTR Corporation to build the Longhua line (16km). The next stage of construction of the urban railway network will include lines 6,7,8,9,11. The construction of these lines along with two integrated transport hubs is expected to cost USD 213 billion.

Opportunities & Challenges

Regional Characteristic and challenges

Integration of the Pearl River delta region is improving spurred by regional and national planning initiatives. Shenzhen's immediate agglomeration will likely continue to expand strongly and the city's job and commuting basin will soon cover neighbouring cities such as Dongguan and Huizhou. One potential outcome is an increase in regional road traffic which authorities plan to mitigate with a dense and far-reaching public transport network. In some ways, early build-out of the current metro system is seen as an investment to both channel and hedge against the traffic impacts of future growth. This has been a successful strategy in other cities but comes at the cost of operational losses until demand builds. Regional rail is also being developed and existing intercity bus services are being improved in terms of quality and frequency.

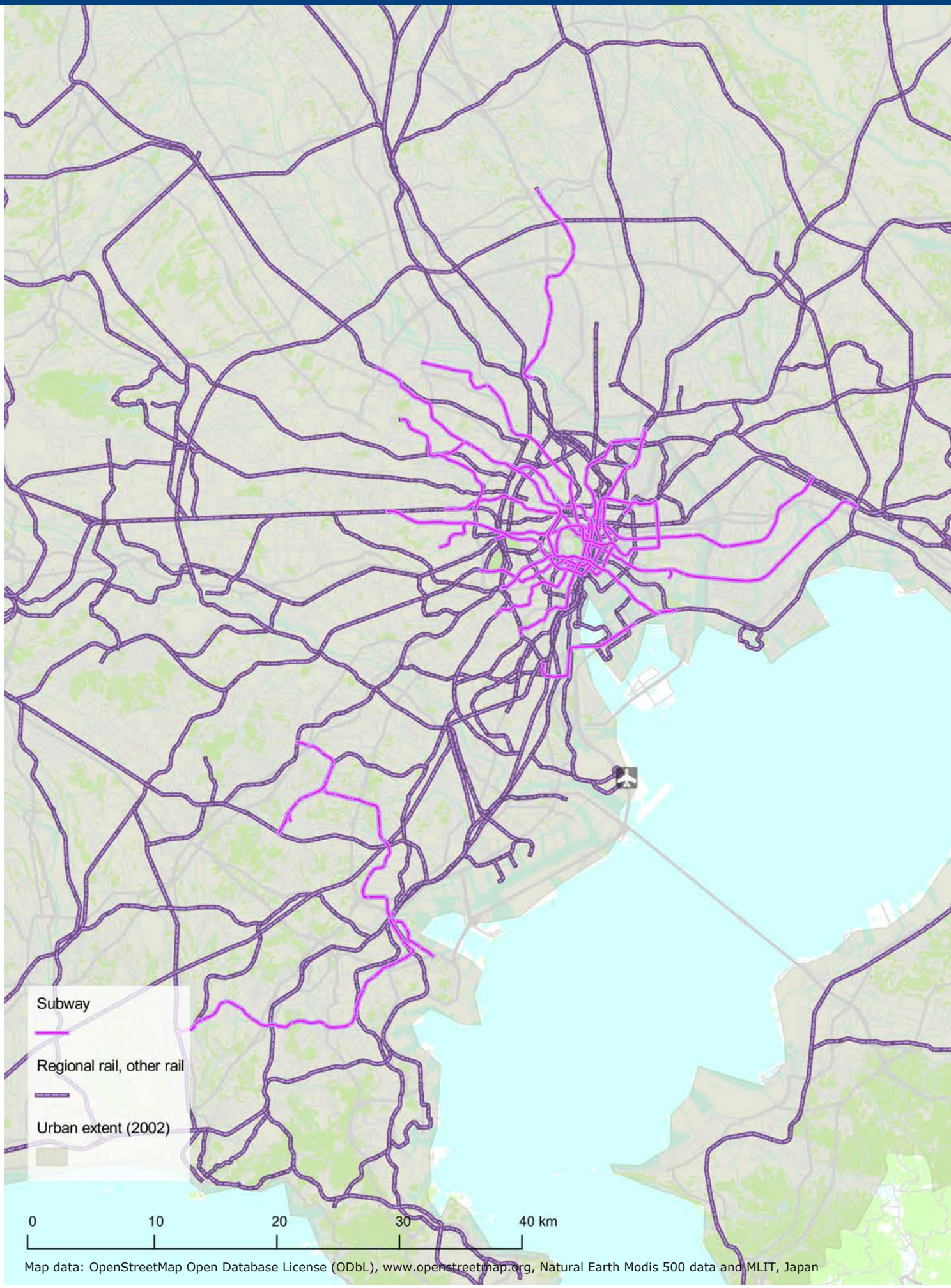
Public transport service

At present, the bus system in Shenzhen is still the leading public transport mode. This will likely change as new metro lines are completed – e.g. lines 6,7,8,9,11 or a total of 170km of new urban railway with 95 stations that are planned for 2016. Expectations are these efforts will lead to an increase of the mode share of public transport to 56% by 2015. To facilitate arriving at this target, other measures are also envisaged, including the construction of bus terminals and stations, the proliferation of separated bus lanes, and the development of new bus services. These efforts are significant – for example, plans call for the 780km of separated bus lanes allowing 85% of all bus lines to operate without being subject to congestion.

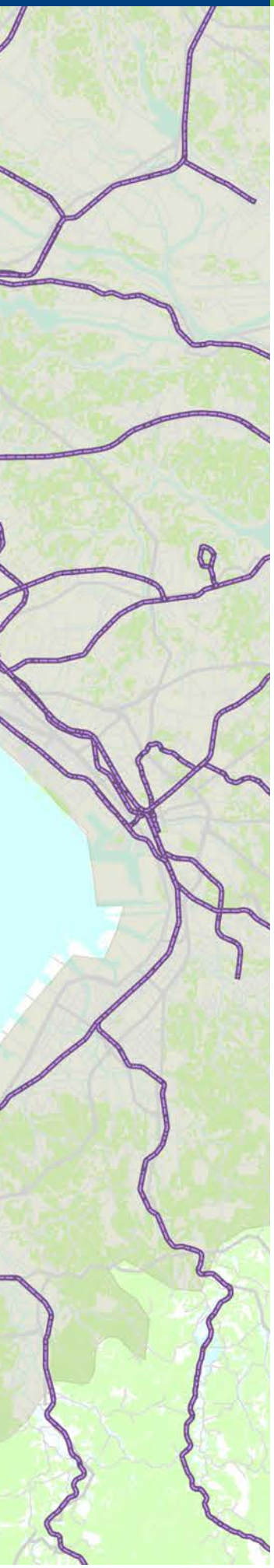
Financing

The Municipal government is concerned about the subsidy framework for compensating operators' losses. There are plans to revisit the terms of these payments and to set a more reasonable, fair and transparent framework to cover the policy-related losses stemming from mandated low fares and free tickets and low-return public service commitments. Bus operators who invest in efficiency, energy savings and pollution reduction will get additional payments from the municipal government.

The constructing line 7,9 and 11 (107km) of the Metro will adopt Build-Transfer (BT) financing for a USD 132 billion total investment. The government is also actively exploring potential funding models for additional and accelerated metro construction in order to keep up with rapid population growth. Another potential source of funding may be linked to the development of multi-modal transfer hubs that have the potential to generate commercial profits from ancillary station-based shops and activities.



Map data: OpenStreetMap Open Database License (ODbL), www.openstreetmap.org, Natural Earth Modis 500 data and MLIT, Japan



Tokyo

Greater Tokyo area, Japan

Key Numbers

Area (km^2)	9,967
Population (2008)	34,276,668
Population density (per km)	3,403
Gross regional product (GRP, 2010, millions, $US)	1,261,362
GRP/capita (2010)	36,799
Rail network (km, 2010)	2,426
Bus network (km, 2010)	15,376
Rail pass. (trips 2008, millions)	13,997
Bus pass. (trips 2008, millions)	1,592

A public transport mega-city

Tokyo is a large city with high population density and a broadly spreading urbanised area beyond core administrative boundaries. The condensed residential area widely extends toward suburbs with no clear boundary. The greater Tokyo region includes the city of Yokohama, Kawasaki, Chiba and Saitama, each of which have more than 1 million inhabitants. Although the commuting area is generally defined as a circle of 50 km, the residential area spreads beyond the circle and even high speed rail is used as a commuting tool.

The rail network covers all the region and is heavily used by residents, carrying 40 million passengers a day. IT systems, including IC tickets and mobile phones, are highly developed for public transport and make daily mobility smooth and efficient. Public transport in Tokyo is reliable in terms of safety and frequency and serves as a fundamental infrastructure to support the economic development of Tokyo. Challenges will include adapting to lower demographic growth and an ageing society.

Key Actors

Government

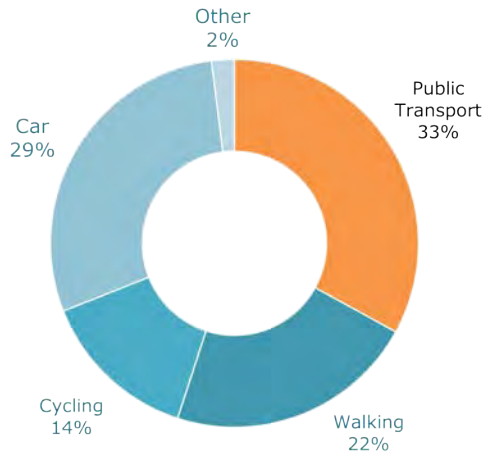
Railway and bus operators are regulated from a safety and consumer protection point of view by the national government in compliance with the Railway Business Act or the Road Transportation Business Act. When starting operations, public transport operators must seek approval from the authorities and must adhere to relevant regulations during their operation. These regulations pertain to a number of operational issues including inspection and safety checks of infrastructure, vehicles and rolling stock.

Fares are regulated by the national government which approves the maximum fare for rail and bus services. Approval of the upper bound of public transport fares is made with input from a standing fare regulation committee consisting of six expert members. The committee's findings are not binding but are typically respected by the regulatory authorities. Operators are not bound to seek approval for fare changes within the maximum statutory bounds but must notify the government of these changes.

Ownership

Within the Tokyo region, some public transport networks are owned by the government. Tokyo Metro operates subway and bus networks and is a is a public company which is owned by both the national government and the Tokyo

Mode share (all trips, 2008)



Public Transport Networks

Rail	Lines	Length (km)
Total	119	2,426
... of which Metro	*12*	*358*
... of which surface rail	*105*	*2,151*
... of which tramway	*2*	*17*
Bus		
Total	5,823	15,376

Passenger Trips (millions)

	2000	2005	2006	2007	2008	% of total (2008)	Average yearly change (from 2000)
Metro	2,792	3,031	3,113	3,295	3,373	27%	0,3%
Regional rail (JR)	2,418	2,501	2,491	2,618	2,603	21%	0,1%
Rail (non-JR)	4,896	5,123	5,178	5,524	4,949	39%	0,0%
Tramway	39	40	39	40	40	0,3%	0,0%
Bus	1,769	1,685	1,649	1,618	1,592	13%	-0,2%
All modes	11,914	12,380	12,470	13,095	12,557	100%	0,1%

metropolitan government. Another subway operator, Toei Subway Company, is a public company fully owned by the Tokyo metropolitan government. Both companies must follow specific regulations, particularly with regard to their finance and management. There are a also a few public companies operating surface railway or bus services that are owned by other local governments in the greater Tokyo region.

Monetary support

Although many of the rail and bus companies in Tokyo are profitable and do not receive any operating subsidies from the government, there are several cases when the government may provide monetary support. These include cases where operators make major capital investments, e.g. renovation of stations, rearrangement of railway lines, capacity expansion. Government support may also be extended to operators to help cover the costs of developing barrier-free facilities – e.g. by installing elevators and escalators. In some cases, operators owned by local governments may receive loss-covering payments.

Private PT operators

The principal public transport operators in the Tokyo region are private companies. These include JR-East, which used to be part of the national rail carrier Japan Rail, and seven major private carriers, whose railway lines extend from central Tokyo to its suburbs. These operators own land and infrastructure – railroad tracks, stations, cars and other facilities. They also are fully responsible for maintenance and renovation of their asset base. Many of the major bus operators in the region are also privately owned – many of them by the aforementioned rail operators.

186 billion
rail passenger kilometres, 2008

Business models and competition

There are 30 different rail companies and 48 different bus companies in the greater Tokyo area. Although their service areas generally do not overlap they can be seen as indirectly competing against each other, especially as the size of the public transport market is expected to decline in line with lower population. Rail-based providers have a vested strategic interest in retaining the attraction of their facilities which is an essential part of their business plan. They make efforts to ensure the convenience of their transport services, invest in making their facilities and the surrounding area attractive, refurbish or renew rolling stock and stations in order to guarantee a steady flow of customers to their non-transport businesses and services. Passengers benefit as they are provided a wide choice of services and opportunities to shop, learn, and otherwise stay in the operators' facilities – as well as travel.

Collaboration

Private companies also collaborate with each other, especially in order to ensure region-wide system interoperability for travellers. Regional public transport cards and passes allow travellers to use buses, subway and regional rail irrespective of the carrier even though the cards themselves are issued and managed by different operators. Revenue from card and pass use is allocated automatically to each operator according to negotiated region-wide agreements.

Another form of collaboration involves sharing rail networks by different and competing operators. For instance, some commuter trains from the suburbs run directly on Metro lines allowing travellers to reach city centre destinations without having to change trains.

Funding

Operations

The underlying business model for public transport companies in Tokyo is based on a fundamental synergy between transport and non-transport operations. These private companies own not only their entire track infrastructure, stations, rolling stock and feeder bus services, but – crucially – they own significant interests in surrounding areas including real estate, shopping facilities (including supermarkets, convenience stores, and department stores), as well as apartment complexes, hotels, sports clubs, child care facilities, storage space, schools and resort facilities. Operators also seek to maximize commercial revenue streams from services located within their stations – the so-called Ekinaka approach where companies maximise use of their assets to generate more revenue. Transport and non-transport businesses benefit each other; non-transport businesses attract more passengers while more passengers bring more revenue to non-transport business.

On average, 70% of these operators' revenue comes from non-transport services and only 30% from ticket and pass sales.

This business model is found elsewhere in Japan as well but has been most successful in the greater Tokyo region, in part due to very high population density. Many urban public transport operators outside of the largest cities in Japan face more difficulty in ensuring the financial sustainability of their operations.

Operating Revenues of Rail companies in Tokyo[1]

(million yen)

	operating revenue	operating expense	operating profit
total	**3500465**	**3272809**	**227655**
of which :			
non-transport	*2417963*	*2313925*	*104037*
transport	*1082502*	*958884*	*123618*
...of which rail account	*730091*	*625 677*	*104414*
...of which fare box revenue	*652698*		

Rail account operating expenses[1]

labour	192 052
maintainance	56 314
tax	35 294
depreciation	165 127
others	176 890
total	**625 677**

[1] Operating revenue data collected from rail companies' 2011 annual reports cove various FY periods, rail account data collected from MLIT RR data book covering

Capital investment

Many of the now-private urban rail operators acquired land and built their networks at their own expense in the post-World War II reconstruction period when land prices and labour rates were relatively low. The acquisition and construction costs of these private networks is largely amortised at present. Now, however, land, labour and construction costs are extremely high and new rail infrastructure often requires government support to alleviate high

investment costs. This support, covering up to two-thirds of total costs, is available in special cases e.g. when large station or line renovation projects are undertaken. Also, Tokyo Metro has a special funding scheme allowing national and local governments to cover up to 70 % of total construction costs.

Opportunities & Challenges

Population decline and aging society

Japan faces two mega-trends regarding its demography – an ageing society and low birth rate. While Tokyo continues to be the largest metropolitan area in Japan, and therefore still attracts people and business ,it is expected that the region's will decrease by around 3.5 million (9.3%) in the next 30 to 40 years while the number of people aged 65 years and older is expected to climb to 11 million, or approximately 35% of the region's population in the future.

Population decline in Tokyo will inevitably affect public transport in the region. Though operators are currently profitable due to strong demand in the metropolitan region, this may be less the case as the market shrinks and changes structurally due to an ageing population. Competition will increase and some operators are already starting to take a strategic approach to adapt to these demographic trends by providing better transport and non-transport services and particularly by promoting younger generations' relocation to the area around their facilities.

On the government side, the primary response to these demographic trends with regard to public transport policy has been to increase accessibility and convenience of the urban public transport system, especially for elderly people. "Barrier-free" is a key word in this context, and in 2012, the national government adopted a capital improvement plan seeks to render barrier-free public transportation facilities used by more than 3,000 passengers a day.

Disaster risks

Japan is exposed to many kinds of natural disasters – earthquakes, volcanic eruptions, typhoons, heavy snow falls, etc.

The Tokyo region is no exception and a large-scale disaster striking the capital region will no doubt inflict severe damage and disruption. To minimise these risks operators in Tokyo have designed their facilities to be earthquake-resistant with support from both national and local governments.

It is should also be noted that post-disaster recovery of transport networks is an essential part of disaster response plans. Currently, the government and public transport operators are working together to improve continuity-of-service contingency planning in the event of a large-scale disaster and to ensure rapid and extensive post-disaster recovery. This planning also addresses contingencies for widespread power shortages as experienced after the East Japan Earthquake.

Globalisation

The national government has made it a priority to boost Japan's attractiveness to overseas tourists. As part of this strategy, the government is seeking to ensure that tourists find public transport both comfortable and convenient. One of the important projects in this regard is to improve accesses to and from international airports. Narita airport, located 60km east of central Tokyo has both regional and express rail access but travel times are still relatively elevated. Haneda airport, located near central Tokyo, has seen a return of international flights – mainly at night – thus requiring late public transport services.

Efforts have been made to ease the readability and navigability for foreign travellers of Tokyo's extensive public transport networks. Public transport operators provide multilingual support for their services, including maps and signs. They also introduced a line-numbering system – each station has its own number, instead of Japanese station name -- so that foreign visitors can easily and situate themselves and recognise their destination in the complex rail networks.

Congestion

Easing rail and bus congestion is a recurring and ever-challenging theme for Tokyo's public transport networks. Though the situation has improved considerably, passengers on some railway lines still suffer from extreme crowding at peak periods. Operators take measures to increase transport capacity at those times and to carry out joint campaigns with the government to encourage off-peak commuting.

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