FARE-FREE PUBLIC TRANSPORT (FFTP) IN TALLINN

ILMAINEN JOUKKOLIIKENNE TALLINNASSA

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PÄÄHAVAINNOT

Tallinnassa alkoi vuonna 2013 käytäntö, jossa Tallinnaan rekisteröitynyt asukas voi käyttää ilmaiseksi joukkoliikennettä Tallinnassa. Myös joukkoliikenteen reittejä ja kalustoa on parannettu. Tallinna on maailman suurimpia kaupunkeja, jossa on ilmainen joukkoliikenne.

Käyttäjille ilmainen joukkoliikenne toteutettiin alle vuodessa. Tallinnaa hallitsevalla puolueella oli tuolloin määräenemmistö valtuustossa. Vuonna 2012 75 % kannatti ilmaista joukkoliikennettä, mutta äänestykseen osallistui 15 % äänioikeutetuista tallinnalaisista.

Ilmainen joukkoliikenne on ollut taloudellisesti kannattavaa Tallinnalle. Se on lisännyt asukkaiden rekisteröitymistä Tallinnan asukkaiksi. Tämän seurauksena valtio palauttaa Tallinnalle verokertymää enemmän kuin joukkoliikenteen muuttamisesta ilmaiseksi aiheutuu kuluja. Pitkä-aikaisen taloudellisen vaikutuksen arviointi on vaikeaa.

Joukkoliikenteen käyttö on lisääntynyt Tallinnassa noin 15 %. Ilmainen joukkoliikenne on tuonut sosiaalisia ja ympäristöhyötyjä, mutta tallinnalaisten kävelymatkat ja polkupyörän käyttö ovat vähentyneet. Kestävän kehityksen paremmaksi saavuttamiseksi tulee käyttäjille ilmainen joukkoliikenne ulottaa kokonaisuudessaan toiminnalliselle kaupunkiseudulle.

Key lessons to be learned from the fare-free public transport in Tallinn

The report discusses presents fare-free public transport (FFPT) in Tallinn in 2012–2016, and presents:

- particular political-economic context that supported the development of FFPT in Tallinn;
- chronology and events in the FFPT implementation process;
- economic organisation of FFPT, especially the relations between the cost of the fare-free service and income generated through the growth of registered residents in Tallinn;
- impact of FFPT on mobility and accessibility for low-income residents in Tallinn;
- environmental impact of FFPT, especially the use of public transport, private cars and walking;
- political governance of public transport issues, e.g. the role of public voting to achieve FFPT;
- future considerations of FFPT in Tallinn and lessons to be learned.

1. Pre-conditions influenced the FFPT implementation in Tallinn: FFPT already existed for a large amount of users (36% of Tallinn inhabitants) before making it available to everyone; about 2/3 of PT costs were covered by the Tallinn municipality; relatively high usage of PT (60% of people as main mobility mode); and the majority of one political party in the city council.

2. FFPT in Tallinn was realised rapidly in under a year and in an *ad hoc* top-down manner. This process generated opposition, which could have been avoided through a more strategic and participatory urban policy. Some key components of PT reform (e.g. improvement of connectivity) only occurred several years after FFPT.

3. The (indirect) finance of FFPT in Tallinn was possible in a particular context. The Tallinn FFPT was opened exclusively to registered residents of Tallinn. This motivated people to register themselves as inhabitants of Tallinn, including those who had lived there un-registered; newcomers, and even those who considered FFTP individually useful despite not living in Tallinn on a daily basis. The Estonian state collects income tax and redistributes part of it back to municipalities based on where inhabitants are registered. The rapid growth of registered inhabitants in Tallinn resulted in a rapid increase in the returned income tax that made FFPT financially viable in the short term. However, there is a strong long-term challenge to improve the quality of public transport in the context of the growing cost of the mobility service.

4. FFPT increased PT use in Tallinn (10–15% and about 17 million boardings in 4 years) but it was co-dependent on a wider improvement of the PT infrastructure, e.g. new near-city trains, novel trams, and new buses. Besides the fare-free component, connectivity and speed are important in supporting the shift from cars to PT. The sharp decrease of electricity-based vehicles in PT in Tallinn is negative concerning environmental sustainability, but this will change after the reconstruction of the tram infrastructure.

5. FFPT increased the use of city transport among lower income social groups in Tallinn. However, bike-use and walking trips decreased (Cats et al., 2016). Similar to FFPTs in several cities (Chen et al., 2011; Fearnley, 2013; Thøgersen and Møller, 2008), FFPT in Tallinn has so far a minor effect on wider mobility patterns, e.g. that car drivers would start using PT. The reduction of private car traffic requires many other measures than just FFPT.

6. Tallinn FFPT indicates that for all dimensions of sustainability, the scale of (functional) urban region(s) is relevant. The implementation of FFPT in a single (capital) city may generate unwanted centre-periphery competition between municipalities in the wider urban region.

1. FFPT in Tallinn

This report is about the city-wide application of fare-free public transport (FFPT) in the context of Tallinn, Estonia. Tallinn with nearly 450,000 inhabitants is currently the largest city globally where a city-wide FFPT is implemented. Therefore, it is an important reference globally and especially for nearby Finnish urban areas. Today, various forms of FFPT exist in at least 180 cities worldwide. In about 90 cities, FFPT functions as city-wide FFPT where fares do not apply to the majority of passengers in the great majority of local PT services, and most of the time (Kębłowski et al., 2017).

In 2017, Tallinn had a territory of 159.3 km², 443,623 inhabitants and eight sub-administrative districts. The history of Tallinn's formal public transport dates back to 1888 when the city's first horse-drawn railway was opened. Today the public transport system in Tallinn consists of 4 tram lines, 7 trolley bus lines and 62 normal bus lines (Tallinn municipality, 2016). The city public transport is managed by the municipality owned enterprise Tallinna Linnatranspordi AS, which was established in 2012 by unifying two former PT organisations. In 2016, there were 143 million boardings/trips in the municipal public transport (PT). Of these, about 3 million (2%) trips generated ticket revenue[1].

The FFPT in Tallinn was enacted for its registered inhabitants (regardless of income or social status) from 1 January 2013. The FFTP in Tallinn was initiated and realised by the municipal government, which manages and owns the public transport system in Tallinn. This mobility measure in the context of Tallinn city was prepared and applied publicly in a one-year period. The rationale of the Tallinn FFPT is not written in any urban or transport policy document, but it can be read from public (media) presentations and discussions since January 2012[2].

Three main aims of the FFPT were expressed as: a) to decrease car use, including traffic jams and accidents; b) increase accessibility to public transport for poorer families; and c) to support environmental sustainability. In the preparation process, there was also a fourth aim articulated: to increase the municipal budget through the income tax of newly registered inhabitants. The actual priority of these aims depends on media channels and political situations.

As a precondition in 2012, public transport (PT) in Tallinn (then with 416,000 inhabitants) had substantial market share. About 40% of all trips in the city were performed by the urban PT system. Moreover, 30% of all trips were performed on foot (Cats et al., 2016). The use of bikes was small 1–3%, and thus about 30% of the trips were done by cars (Sarv and TNS-Emor, 2015). A year before the start of FFPT, there were about 135 million boardings by public transport (see Figure 1). Then about 75% of the people living in Tallinn used public transport and about 60% used it as the main mode of mobility (Kaldaru, 2015). Therefore, about 250,000 people used PT in Tallinn daily. Many social groups; for example, children, elderly and certain occupational groups, already had fare-free access to PT, and these groups had been expanding for several years. In 2012, the share of users that were exempt from paying amounted to 36% with an additional 24% of the users, such as students and the low-income inhabitants, having special concessions (Cats et al., 2016). Full ticket rates were paid by about 40% of Tallinn PT users in 2012. The full-scale FFPT can therefore be conceived as the final stage in a sequence of steps aimed to make PT in Tallinn more affordable.

Even though PT retained a substantial market share in Tallinn, ticket sales only covered one-third of the system's operational costs in 2012. This is a low fare-box recovery rate in comparison to other European cities (Nielsen et al., 2005). A single PT trip with an e-card cost 1.1 euro (and a paper ticket

[1] Interpreted statistics from Tallinn Municipality source: Tallinn in Figures, 2016. E-publication.

[2] First public declaration about FFPT was made the mayor of Tallinn in tabloid newspaper Õhtuleht on 11th January 2012, http://www.ohtuleht.ee/459606/kommentaar-uhistransport-olgu-tallinnas-tasuta

1.6 euros), and a monthly card 23 euros in December 2012. Financially, the FFPT measure approximately cost the municipality an additional EUR 12 million (see Figure 3), which previously was generated by ticket revenue. This financial gap was supported from Tallinn's municipal budget.

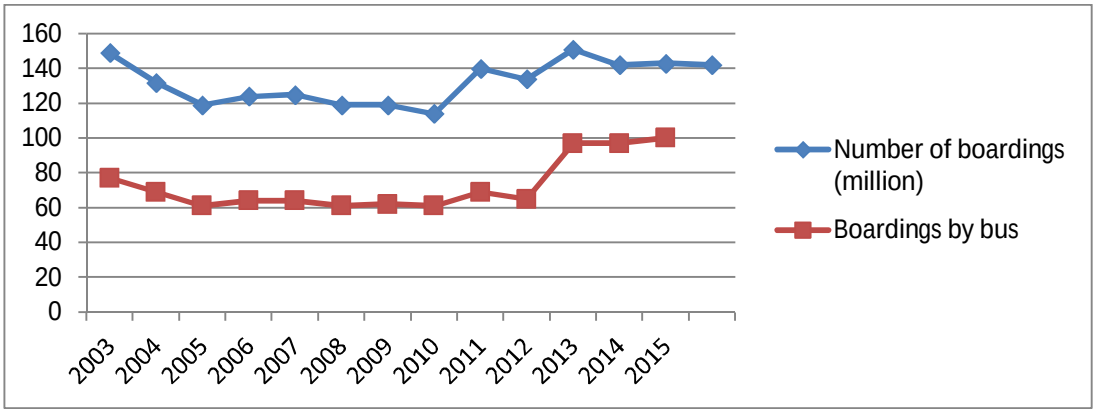

Figure 1. Number of boardings/trips by public transport in Tallinn (S: data from Transport Department of Tallinn, presented in e-publication "Tallinn in Figures, 2016")

Following the collapse of the Soviet Union in 1991, the use of private cars rose steadily in Tallinn (see also Noorkõiv and Antov, 2016). Public transport did not lose its importance, although through 2000–2010, trips on PT decreased by about 25%. The car is the main transport mode for 37% of the city's inhabitants (Kaldaru, 2015); all together there were 172,279 registered vehicles in Tallinn in 2015, which means about 2.4 people per car (Tallinn municipality, 2016). Furthermore, 50%–65% of workers from nearby municipalities in Harju county commute to Tallinn daily (Oidjärv, 2014). The role of private cars remains important in regard to the conditions where 78% of the population (aged over 15 years) living in Tallinn had access (through their formal place of residence) to the FFPT service in 2015 (Sarv and TNS-Emor, 2016). Tallinn FFPT, which is concentrated on a single city, has limited capacity to change to wider mobility patterns on the scale of functional urban region(s). Current PT coverage fails to correspond to contemporary mobility patterns, which include not only daily commutes from the suburbs to Tallinn, but also inversely, from the capital to growing employment activities in the surrounding Harju region.

There is a remarkable gender difference in FFPT use because PT appears to be a main mode of mobility for 29.5% of women (aged over 15 years), but this number for men is much smaller at 16.5% (Sarv and TNS-Emor, 2016). The general grades of satisfaction for Tallinn PT modes increased already after 2010, because FFPT initiatives co-exist here with the wider renovation of the PT infrastructure – new trams, more comfortable and frequent near-city trains, new buses and additional priority traffic-lines in the city. These tendencies indicate that besides ticket prices, there exist additional strong factors (e.g. speed, comfort) affecting the choice of mobility modes in Tallinn.

2. Organization of FFPT in Tallinn

The process of implementing FFPT involves diverse milestones and events (see Figure 2). In 2004, Tallinn municipality tied the 40% reduction of PT ticket prices to those users who were registered inhabitants of Tallinn. This quickly brought 30,000 new inhabitants to register themselves in the city (Cats et al., 2016). FFPT in Tallinn was formally initiated by the municipal government and ultimately approved by the city council (decisive majority of seats possessed by the Centre Party) in 2012. The council meetings addressed (critically) some aspects of FFPT in the Tallinn context; for example, possible obstacles and imbalances for daily commuting between the capital city and the surrounding

municipalities. The need for FFPT in Tallinn was not publicly articulated by any citizen-activists or expert groups.

The first mention of FFPT in public discussions in Estonia dates from 2005. This was when it was touched upon in the election pledges of the Green Party and Social Democrats in Tallinn. In 2009, the liberal-conservative Pro Patria and Res Publica Union included FFPT in their program in the local elections in Tartu, the second largest city in Estonia. On 11 January 2012, the leader of the Centre Party and mayor of Tallinn Edgar Savisaar announced in an Estonian daily newspaper Õhtuleht that a city-wide referendum will be held on FFPT in March 2012.

The realisation of FFPT was generally a top-down process. However, in March 2012 a public consultation through a consultative referendum was organised. This public vote was accompanied by an intensive media campaign in which EUR 220,000 was spent from the municipal budget. The voting took place in 14 different nodes in Tallinn. Internet-based public voting was not possible, although this had been practiced for almost a decade in local and national elections. Altogether 15% of Tallinn's population expressed their opinions in the referendum and 75% of this group supported FFPT. The overwhelmingly supportive public voting generated a milestone to make the public demand for FFPT explicit and to the same extent increase the priority of PT in the city space; for example by introducing additional designated "bus lanes" on the streets. Furthermore, Tallinn FFPT was extended to near-city trains; for example, on 28 October 2013, the city started covering the cost of train rides for the inhabitants of Tallinn within the city limits to the state company Elron. However, the abolition of fares was integrated very little with the wider measures of the PT system and quality design such as route connectivity and speed.

The implementation of FFPT is co-dependent on enactments of additional (electronic) infrastructure. For example, the commencement of the common electronic ticketing system in Tallinn and Harju region (green e-card) generated an integrated platform for trip-validation, planning transport connections and further integrating (public) services to the platform. In regard to the electronic platform, there remain differences and obstacles within regional transport governance. The PT in Harju region is managed by the NGO Harju Public Transport Centre. All Harju municipalities are part of this NGO. This Centre widely uses state-owned buses and high subsidies in outsourcing the transport service from private companies. These differences between the city and the regional PT system were articulated from the beginning as one dimension of the obstacles to planning Tallinn FFPT in the regional context.

ID-card based PT ticket commences in Tallinn (functioning until March 2013). ID-cards were launched in Estonia and were also used as PT smartcards, which facilitated reduced fares for registered residents of Tallinn	March 2004
FFPT initiative is voiced in Tallinn municipal election pledges by the Green party and Social Democrats	Year 2005
FFPT initiative is voiced in Tartu municipal election pledges by the liberal-conservative Pro Patria and Res Publica Union	Year 2009
In response to an annual municipal public transport satisfaction survey from 2010, fare was the most commonly mentioned source of dissatisfaction with 49% of the respondents, followed by crowding (29%) and frequency (21%). (Cats et al., 2016)	Autumn 2010
First public notice about the FFPT agenda in Tallinn	11.01.2012
The process of elaborating and implementing FFPT—a programme approved by Tallinn's city council	February 2012
Public referendum about FFPT in Tallinn	24.-25.03.2012, Tallinn
FFPT accessible for everyone in Tallinn during the days of the referendum	24.-25.03.2012, Tallinn

Enacting and marking new "Bus" traffic lanes on the city streets	May 2012
Unification of two previous transport organisations and establishing the municipal enterprise, Tallinna Linnatranspordi AS, to manage city public transport	18.07.2012
Public notice that Tallinn will apply for the status of European Green Capital City	July 2012
Fare-free use of public transport for people with driving licences during Car-Free Week	16-22.09.2012, Tallinn
The final decision in Tallinn council about abolishing public transport fares for registered citizens – 20 council members against and 40 in favour of FFPT	20.09.2012
Common electronic ticketing system commences in Tallinn and Harju region (green e-card, *ühiskaart*)	Autumn 2012
International conference "FFPT in Tallinn – brave step towards European Green Capital" (incl. presentations of examples of FFPT from Aubagne and Hasselt)	25-27 October 2012
FFPT commences in Tallinn for citizens formally registered in Tallinn	01.01.2013

Figure 2. Important milestones and events in the process of implementing FFPT until 2013

3. Economic impact of FFPT in Tallinn

The municipality of Tallinn planned to fund FFPT by increasing the amount of registered residents in Tallinn. In Estonia, the state collects all income tax and returns part of it to the municipalities from where it was collected. The amount returned is based on the number of residents officially registered in that municipality. Since 2014, 11.6% of the income tax from registered individuals is redirected to local municipalities, and the average income tax per person depends on salary levels which varies between municipalities. This finance from income tax even forms 91% of the total budgets of local municipalities in Estonia, which is very high in comparison with many EU countries (Cumulus Consulting, 2014). In Tallinn, growth of inhabitants was expected from new residents moving to Tallinn at least partly supported by the FFPT, but also from those who actually lived in Tallinn but had not formalized their residence there. In addition, growth could also take place via those who would register as Tallinn residents despite not formally living there. The latter mostly described people who worked or otherwise travelled in Tallinn and for whom the cost of PT in Tallinn was relevant. Furthermore, economically active new people would stimulate the local economy.

Between May 2012 – seven months before the actual implementation of FFPT – and May 2016 the number of Tallinn residents increased from 415,000 to 440,000, with the increase being most intense in the month preceding and succeeding the launch of FFPT. Therefore, it can be estimated that in four years (2013–2016) Tallinn gained about EUR 80 million on the basis of tax redistributions from the increase in the population and simultaneously the rise in average personal income levels (see Figure 3 and 5). At the same time, the decrease in PT ticket revenues was about EUR 40 million. According to Laiksoo (2016), free rides using the Tallinn FFPT amounted to about 95% in 2015. Obviously, not all growth in the registered population of Tallinn is based on FFPT. Tallinn municipal representatives articulated that about 60% of the "new" inhabitants in the first year of FFPT (2013) already lived and worked on a daily basis in Tallinn before 2013. Furthermore, as a result of the increased population there were various municipal costs – and also direct and indirect economic benefits. However, the increased redistributed taxes due to increased registrations in Tallinn were much greater than the costs of abolishing fare fees from PT in Tallinn.

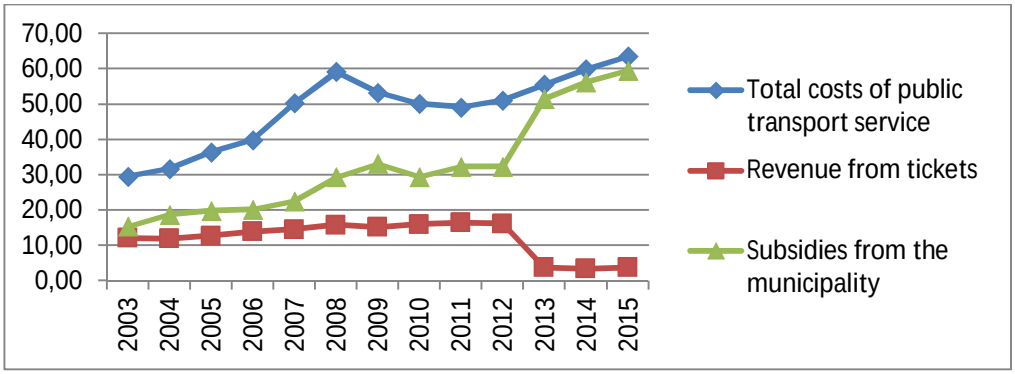

Figure 3. Running costs (million) and ticket revenues of Tallinn public transport (Tallinn municipality, 2016)

Meanwhile, the population of Harju county (excluding Tallinn city) slightly decreased in 2012–2015, but this trend changed in 2016 (see Figure 4). However, it is difficult to estimate how much of this growth in the Tallinn population was a result of introducing FFPT, and statistical registers provide contradicting data. As mentioned, Tallinn municipal representatives have articulated that about 40% of these "new" inhabitants (11,000 people during the first year of FFPT) already lived and worked on a daily basis in Tallinn before 2013. These raw calculations enable the municipality to present the FFPT initiative as a financially successful intervention.

Year	Tallinn city	Harju county	Harju without Tallinn city
2007	399 096	544 170	145 074
2008	401 372	547 840	146 468
2009	404 005	552 060	148 055
2010	406 703	556 650	149 947
2011	411 980	562 230	150 250
2012	416 144	566 741	150 597
2013	419 830	567 967	148 137
2014	429 899	572 103	142 204
2015	434 426	575 601	141 175
2016	439 517	576 265	136 748
2017	443 623	602 409	158 786

Figure 4. The number of registered population 2007–2017 (data from Estonian Statistics Office, 2017)

EUR / year	2012	2013	2014	2015	2016
Total cost of public transport (million EUR)	51.19	55.58	59.93	63,53	66.16
Net cost of public transport (million EUR),	32.73	51.95	57.87	61,27	63.76
*incl. subsidies from the state**	*0.43*	*0.32*	*0.36*	*0,35*	*0.35*
incl. compensation for train-trips by city inhabitants	*0.00*	*0.13*	*1.30*	*1,47*	*1.43*
Income tax from registered inhabitants (total sum redirected to Tallinn municipality), (million EUR)	241.3	262.24	291.33	318, 66	343.98
Income tax per registered inhabitant (1 EUR)	580	625	678	734	783
Net result (total income tax minus net PT costs), (million EUR)	208.57	210.29	233.46	257,39	280.22

*the state subsidises only seven PT lines that cross the city's border

Figure 5. Net cost dynamics for PT compared to yearly income tax revenues (Transport Department of Tallinn, 2017)

The curious situation surrounding residence registration and related anomalies stem from the Soviet and early post-Soviet period in Estonia. Before 1990, the movement of people in Estonia as well as elsewhere in the Soviet Union was restricted by a *propiska* system. It did not only made registration obligatory but also restricted where people could move to live and work. After the fall of the Soviet Union, the *propiska* system was abolished in independent Estonia but a certain lag in re-registration emerged. The law requires the residents of Estonia to register themselves within 30 days of having changed their place of residence. However, there is no punishment if this requirement is not met. In addition, there is no formal way of controlling whether people actually reside where they have declared (Tammur et al., 2009).

Opposition to the strongly regulated Soviet system has led in the past two decades to a substantial mismatch between actual and formal place of residence. Residents often engage in 'fake migration' using the registration system for personal benefit; for instance, to obtain a place for a child in a kindergarten or school by registering as residing at a friend's or relative's house or at a second property. People might have a sense of loyalty to their former place of residence and make a "donation" by remaining formally registered there. For national statistics, the relaxed system of registration caused major problems regarding data accuracy. In the 2000s, this inaccuracy may have been as high as 30% for the younger and the most mobile population group (Tammur et al., 2009).

The exact numbers of people and their location in Estonia was traceable in 2011, when the population census was held and differences between census and registration data illustrated the phenomenon. An abrupt change occurred after 2011 evidenced by the growth of Tallinn and the decline of other municipalities. Obviously, not all of this growth can be attributed to the FFPT in Tallinn but it played an important role.

The economic impacts of Tallinn's FFPT are spatially distributed along three main groups of municipalities. The first group is consisted by municipalities on which FFPT in Tallinn did not have much effect. There were municipalities that were distant (over 100 km) from Tallinn, or municipalities near Tallinn in which the majority of workers used a private car to get to work or otherwise visit Tallinn. To the second group belong municipalities from where already before had moved people to work of study in Tallinn and who now decided to register themselves formally to Tallinn. These were found everywhere in Estonia, including the major university town Tartu. The third group were rather near-by municipalities in which many daily commuters to Tallinn practiced 'fake migration' and registered themselves to Tallinn despite continuing to live outside it, as we explain in the next chapter. However, even one of the most southernmost municipalities in Estonia, Valga municipality, declared that they lost from their 60–70 registered persons because of Tallinn´s FFPT. Also in towns of North-eastern Estonia, such as Kohtla-Järve, inhabitants who have relatives in Tallinn and visit the town frequently, registered themselves to Tallinn to gain benefits from FFPT.

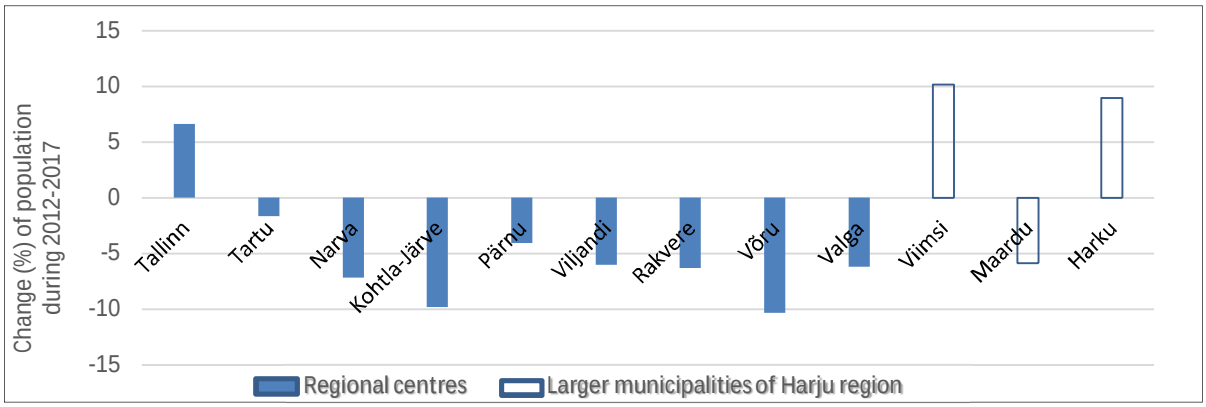

Figure 6. Relative change (%) of registered population in the bigger regional centres and in few larger municipalities of Harju during 2012–2017 (S: data from Estonian Statistical Office, 2017).

Some economic dimensions also appear when looking at the dynamics of the institutional setting of the Tallinn PT system. PT in Tallinn is managed by a municipally owned enterprise, Tallinna Linnatranspordi AS, owned by 100% of capital shares by Tallinn. It was established in July 2012 after unifying two former municipal enterprises, Tallinna Autobussikoondise AS and Tallinna Trammi- ja Trollibussikoondise AS. Tallinna Linnatranspordi AS was primarily formed on the basis of Tallinna Autobussikoondise AS by changing its former statutes. According to the Estonian business register, the principal capital of the municipal enterprise is EUR 6.4 million, and annual turnover was about EUR 61 million in 2015. In 2013, Tallinna Linnatranspordi AS experienced EUR 1.8 million in losses, but in 2016 it made profits of EUR 13.7 million, and this profit remained in the city's budget for further investments in the development of public transport (Vaher, 2017). This high profit is generated using the revenue from the city's targeted financing (for the renovation of infrastructure and new vehicles), which is formally presented as profit. These financed objects will start to influence PT costs in the coming years, e.g. changing the annual running costs. Generally, this level of reinvestment in Tallinn PT is similar to the ticket revenue from PT services before 2013.

4. Social impact of FFPT in Tallinn

There is mixed evidence concerning whether FFPT improved the mobility and accessibility of low-income and unemployed residents in Tallinn. The use of PT increased significantly (comparing the short period between November 2012 and November 2013) among those aged 15–19 and 60–74, on a very low income (up to 300 euros net/month) and who are not in employment or education. These groups are arguably the most sensitive to price and while they already benefited from special discounts prior to the new policy, FFPT promoted greater PT usage. FFPT led to a trip generation effect among these user groups and the respective market share of PT increased by more than 20%. However, there is no empirical indication that employment opportunities improved as a result of this policy (Cats et al., 2016).

An argument was used in public discussions stating that a family of four would save 50 euros a month thanks to the FFTP measure. Some modest effects of FFPT appeared when looking at the mobility habits of unemployed people. Interviews with labour-office specialists indicated that the FFPT settings in Tallinn removed previous penalty fees and the growing bank-rates (related to unpaid penalty fees) for ticket-free riders, which caused expanding problem for persons in precarious economic situation. Nevertheless, the current regional imbalances in accessibility were also articulated, because unemployed people living outside the city in the Harju region sometimes do not have money or have little motivation to pay for a ticket to attend a job interview in Tallinn. A quantitative study (Cats et al., 2016) indicated that ticket price is a relatively marginal factor in missed employment opportunities. The main reasons for declining a job opportunity due to mobility reasons have to do instead with poor and unattractive connections.

During the implementation of FFPT, one concern was that homeless people would occupy PT and cause security problems. To minimize these negative scenarios, alarm-buttons were installed in some trams, e.g. travelling towards to the poor areas in north Tallinn. Cameras are also installed in buses for security reasons (e.g. against pick pockets) and to get a clearer picture of some accidents and possible insurance cases. In reality, these negative scenarios did not materialise. The information related to PT in Tallinn (schemes, transport vehicles, posters, etc.) is made visible using renewed infographics, which won a graphic design award for the corporate design concerning the PT information interface.

Interestingly, the share of PT trips performed by very high income groups (above 1000 euros net per month) decreased substantially, possibly due to image and crowding issues during the first year of the FFPT programme (Cats et al., 2016). This early tendency would require further studies. The image of PT is to some extent still negatively influenced by some PT routes connecting the city centre with low prestige districts such as towards Kopli in north Tallinn. People with diverse social backgrounds can usually be encountered in most PT vehicles. Nevertheless, general satisfaction with PT increased after introducing FFPT (Turu-uuringute AS, 2015). This positive trend in the qualitative evaluation certainly coexists with the improvement of the PT infrastructure. For example, the near-city trains started to become more popular from 2011 after introducing new trains and more frequent schedules. The group of train users mostly increased because many people shifted from buses to near-city trains; however, the exact extent of the shift from private cars to new trains would require further analysis. A similar trend illustrates evaluations concerning the tram infrastructure. However, since 2014 these positive trends of public quality evaluations of transport modes have stabilised, and even slightly decreased.

5. Environmental impact of FFPT in Tallinn

The assessment of the environmental cost of Tallinn FFPT measure can be based on indirect assumptions because the policy design did not formulate clear systematic markers for later evaluation. In public presentations and conducted interviews, environmental sustainability appears one of the (vague) FFPT aims, which is mainly associated with the reduction of car-use in the city. This modal shift away from cars was expected to reduce carbon dioxide emissions by 45,000 tons annually (van Hulten, 2015). This priority was realised by marking the PT priority "bus lanes" on the larger city streets. These priority lanes did improve the speed of PT vehicles on some routes. However, this intervention was only modestly associated with additional transport and city design measures (e.g. higher prices for car parking, new bicycle roads) prioritising PT and light-traffic. A comprehensive analysis about how to improve the PT system as a whole in Tallinn was conducted in 2016.

Tallinn FFPT is formulated and communicated as a clear benefit for all registered inhabitants of the city. No significant effort is made to communicate FFPT to certain groups of people such as everyday car-drivers. The municipal officials of Tallinn admit that to make people change from using a private car to PT is the most difficult task. Nevertheless, several changes in the PT system are mentioned; for example, the average age of vehicles decreased during the last four years (new hybrid-buses with electricity batteries, new trams).

The environmental sustainability issue was mentioned in interviews in the context of changing PT vehicles in Tallinn. The municipal officials refer to the EU directives, which make increasing renewable energy based PT mandatory by 2020. Nevertheless, this does not worry officials because new trams (purchased using CO_2 emission funds Estonia received from selling its un-used quota) are being introduced, and also new electric-diesel hybrid buses. Trolleybus lanes are diminished because of costs and vulnerability issues in street traffic. However, it is remarkable that the share of electric vehicle boardings in Tallinn dropped suddenly from 52% (69.7 million in 2012) to 25% (35.6 million 2015) (Tallinn municipality, 2016). This negative trend is partly influenced by the on-going reconstruction of the tramways, e.g. extending one tram-line to the airport and renovating infrastructure towards north Tallinn during 2016–2017, and therefore will recover to some extent. No clear priority regarding the connectivity between city districts in Tallinn's FFPT context has been articulated. The modal share of PT increased during the first year of the FFPT most substantially in the eastern and north–eastern districts of Lasnamäe (from 55% to 61%), Pirita (from 41% to 48%) and north Tallinn (from 56% to 68%) as well as the southern district of Nõmme (from 43% to 68%) (Cats et al., 2016). A municipal survey from 2015 (Kaldaru, 2015) indicates that the use of PT continued to

increase in Lasnamäe (67%), but this survey presents more modest growth in Pirita and Nõmme. The improved quality of electric trains is an important factor in understanding the fast growth of PT users in the Nõmme district that is an area with mostly private detached houses. This tendency generates support for the regional planning vision, which extends the current tramlines over the city borders towards new residential districts and business/semi-industrial districts.

The expert-interviews indicate that FFPT in Tallinn increased the use of "park and drive" parking lots along the main road-gates of the city, and the need to develop this integrated mode of transport. This trend certainly depends on the quality of the PT mode integration in the functional urban region. For example, the improved train infrastructure motivated more people to leave cars at stations outside Tallinn city (e.g. Aegviidu, about 60 km from Tallinn). Cats et al. (2014; 2016) used travel diaries and questionnaires, which reveal temporal aspects of FFPT influences on mobility patterns. In their earlier study, Cats et al. (2014) state that there was an initial ridership increase of 3% in the 3 months following the introduction of FFPT. However, in a later paper, Cats et al., 2016 argue that almost a year after the introduction of FFPT, PT usage increased by 14%. The statistics for annual boardings/trips by Tallinn PT indicates that the growth of PT users was not gradual, and the user level even decreased after 2013, and then stabilised (see Figure 1). FFPT was strongly influencing the 10–15% growth in Tallinn PT use during 2012–2016, and the exact growth dynamics require further analysis. This increase has supposedly been accompanied by two unplanned side effects: pedestrians began to choose PT for short distances, while the average distance travelled by cars increased (Cats et al., 2016). In empirical terms, Cats et al. (2014) argue that a considerable shift occurred from walking to PT in 2013, with a 40% decrease in the share of walking trips while the distance of the average walking trip remains unchanged. While the share of car users decreased by 5%, the average distance travelled by car increased resulting in a 31% increase in total vehicle km. This is explained by the increase in daily travel distances – from 7.98 to 9.07 km per person – a 13% increase, driven by changes in shopping and leisure destination choices. The expert-interviews and statistics indicate some minor tendencies in terms of the number of registered private cars reducing in Tallinn in recent years. The quantitative survey (Kaldaru, 2015) reveals that the issue of speed and frequent connections between destinations are still the most important factors influencing the shift from car to PT use. Here the most visible trend is that the ticket price factor has dropped significantly since 2011 (from 50% to 16% in 2015), and over-crowded vehicles is not seen as a problem anymore. Therefore, encouraging a further shift in mode of transport in Tallinn's urban mobility would require better PT connections and speed qualities on a regional scale.

6. Political impact of FFPT in Tallinn

The idea of abolishing fares for PT in Tallinn was not based in any preparatory mobility-related technical analyses. Rather than opening the debate about transport, it was developed in an obscure and quasi-participative manner that helped key local stakeholders consolidate their power. This style of policy design has associations with the quick political and economic reforms in Estonia since the 1990s, which translated incremental tactics and an attitude of experimenting into the sphere of public governance. The analysis of urban/transport policy documents indicate that the FFPT component of Tallinn city transport is not directly written into any development plan or PT strategy. There appear contradictions between policy documents (e.g. providing everyone with good options for moving around) and the on-going practice of FFPT for Tallinn-registered population.

Media analysis indicates particular discrepancies representing different attitudes to FFPT. In the beginning, media outlets managed by the local municipality (e.g. Pealinn, Tallinna TV) presented this transport related change as a new way of thinking and an investment in the future. According to media channels, different aspects of the topic have been emphasised (see Table 2). The very positive

attitudes communicated through the Tallinn municipal media are politically motivated by the Centre Party. National newspapers by comparison often brought a critical tone to the discussion. The relatively high number of foreign media articles indicates that the FFPT issue attracted some international attention as well. Tallinn officials have legitimised the idea of FFPT by referring to a broad rationale that reached well beyond a transport-focused perspective. In interviews with international media outlets and presentations delivered to international audiences, Tallinn authorities seem to give priority to highlighting the social aspects of FFPT, as a policy of guaranteeing mobility for unemployed and low-income residents. The financial mechanism that Tallinn officials use as the primary argument in favour of FFPT in the domestic debate is seldom mentioned in the international discourse. For local commentators, FFPT has clearly functioned as a very good slogan to put on diverse banners. These often revolved around issues of "sustainability," visibly related to Tallinn's bid for the title of EU Green Capital for 2018, which although eventually unsuccessful, visibly utilised the concept of FFPT as a 'green' policy, leading to the slogan "Capital of Free Public Transport" for Tallinn.

Orientation of media	Number of thematic broadcasts	Negative position	Neutral position	Positive position
Tallinn city media	53	1	21	31
National media	96	37	46	13
Foreign media channels	56	15	21	20
Summary	205	53	88	64

Table 2. General attitude of broadcast media to free public transport in Tallinn city (period January 2012 – May 2016)

The manner in which FFPT was developed could hardly be viewed as participatory in the common sense. As "free public transportation was hardly a grassroots demand in Tallinn" (Galey, 2014, p. 20), the process of implementing it took a wholly top-down form, and lacked transparency even for the usual transport decision-makers in the city. While the decision to engage in a fare abolition experiment was taken in a referendum, which may appear as a way of directly involving Tallinn's inhabitants in the decision-making process about FFPT, it is for a number of reasons that the referendum was highly controversial. For example, it was accompanied by a pro-FFPT campaign in the city-owned print and broadcast media, and the actual suspension of PT fares for a certain period (see also Chapter 2). However, the support for FFPT expressed by the voters was crucial for its further development, and it was virtually impossible to question Tallinn's city council, or Estonia's national parliament. Therefore, paradoxically, holding a public vote on FFPT functioned as an effective strategy to stifle the debate about the policy. Although subsequent discussions within Tallinn city council have revealed a number of criticisms and concerns, they took place in the shadow of the overwhelmingly positive public vote, and the council's approval of FFPT in September 2012 was seen as a formality.

The unequal positions forced municipalities to mobilise diverse legal arguments against the FFPT in Tallinn targeted at the registered population. For example, the town of Keila argued that this territory-based FFPT measure allocated only to Tallinn citizens is in conflict with EU directives (e.g. free movement of people) and with Estonian public transport law. Keila officially asked the Minister of Regional Affairs and Estonian Chancellor of Justice about the possible legal conflict in this matter. The concerns articulated here related to the registering of fictive places of residence in Tallinn, the outflow of income tax, the territory-based discriminating subsidies (which are not based on the special needs of any social groups). One counter-argument was embedded in the transport infrastructure, which was established in Tallinn (e.g. new trams) based on EU subsidies and/or CO_2 emission grants. According to Keila's statement, access to this kind of infrastructure should be equal for all people living in Estonia. These confrontations reveal discussions about accessibility bound justice in urban mobility. The lawyer for the Chancellor's Office answered and made reference to the Estonian constitution by

arguing that local municipalities make decisions freely and manage matters concerning 'local life', including local PT and distributing additional social benefits.

7. Future considerations

Tallinn municipal officials generally believe in the durability of FFPT in Tallinn, because this programme achieved political legitimacy through the public vote. Sceptical voices argue that FFPT can exist until the quality of PT increases with continuous investments. The financial report indicates that the profits (about EUR 13.6 million in 2016) for the municipal transport enterprise are reinvested (see also Chapter 3). One financial tendency is that EU-fund related investments will become more limited in the next funding period after 2020. Therefore the fast improvements in the PT infrastructure will most probably continue with more modest redesigning of existing transport routes and connectivity issues.

The discussions about Tallinn FFPT have used Hasselt as the model city for PT reforms. This model city reveals some challenges as well. The FFPT system operated in Hasselt during 1997–2013. In the first decade, passenger numbers became ten times bigger, annual kilometres of PT vehicles doubled, and annual PT costs increased four times (Canter, 2014; van Hulten, 2015). The rising costs of FFPT forced the municipality of Hasselt to sharply limit fare-free access to certain social groups. The period 2013–2016 indicates much lower growth in PT users (10–15%) in Tallinn, annual kilometres of PT vehicles increased by only about 5%, but the growth in the annual costs of PT was rather significant (about 80%). Therefore, refinancing the growing costs of the FFPT programme and the simultaneously improvement of PT quality will be a challenge in the coming years, particularly if the EU funds and income tax levels decrease. Therefore, the long-term effects of FFPT remain to be assessed. A cost-benefit analysis of the FFPT policy should also encompass wider economic benefits such as labour market effects and location choice (see also Cats at al., 2016).

The shift away from cars will also be influenced by following potential and on-going tendencies in Tallinn: a) rethinking the current PT routes and frequencies; b) densification of Tallinn urban areas (e.g. Kalamaja district) near the city centre along with new residential facilities; c) design programmes for city streets (e.g. Main-street project), which prioritise pedestrians (and light-traffic) and decrease car-traffic lanes; d) expanding the use of (seasonal) bicycle use; e) potential to extend the existing tramlines (on some routes regionally outside the city borders).

An important transport issue emerged from the FFPT in Tallinn related to the on-going local and regional administrative reform and the rise of the Centre Party to the national government, including the position of Prime Minister. The reform foresees that smaller municipalities are united to form larger units and the functions of current regional county governments become up-scaled to 4–5 larger regions. The governance of regional PT will take place on the basis of four regional territories and related NGO bodies involving municipalities.

The FFPT character in Tallinn became translated into the state reform agenda in autumn 2016, when the Centre Party leader became the Prime Minister of Estonia. The centre-left coalition agreement and recent politicians articulate intensions that regional PT will become fare-free in Estonia from 2019. The goal is to improve the regional mobility of people, gain economies of scale in transporting goods, and diminish private car use (Williamson, 2017). However, the expansion of the regional FFPT is still unclear and expert knowledge was not used in its preparation as it happened with the FFPT in Tallinn. The realisation takes place in an ad hoc manner rather than through strategic policy formation. Despite its realisation being unclear, this political initiative has forced a rethinking of the PT on broader and interdependent scales across municipal administrative borders.

There exists political goals and potential to also make Tallinn PT more suited to the actual mobility needs on a wider regional scale in the following year(s). This (inter)regional dimension could be extended to the Tallinn-Helsinki twin-city context. Currently, two smart city related projects are running (FinEst Smart Mobility, see http://www.tallinn.ee/est/FinEstSmartMobility and The FINEST Twins, see https://smarttwincity.eu/), which elaborate mobility challenges between Helsinki and Tallinn. An integrated PT ticket-system between these cities is seen as one option. In addition, a smart system will be elaborated to ameliorate the traffic rush-hours in the harbours of both capital cities and to work on strategic mobility-agendas. Therefore, these projects are dealing with the smart and quality side of PT through the idea of integrated services and improved access.

8. Study material, methods and references for the report

To create this report, we conducted a mixed-method analysis of the FFPT in Tallinn. First, we analysed former studies and all publicly available statistical information and a variety of quantitative empirical registers related to the FFPT in Tallinn. Second, we conducted over 30 interviews with key Tallinn stakeholders including municipal officials, PT authority representatives, city councillors and local activists to understand the process of developing and implementing the FFPT in Tallinn. Third, we interviewed representatives of the surrounding commuting area of Harju county, and further carried out a brief survey to which we obtained answers from 60 municipalities and larger settlements across Estonia to capture the role of FFPT in the dynamics between Tallinn and the areas surrounding it. Fourth, we conducted a content analysis regarding approximately 250 articles from the urban, national and international media, relevant policy-related juridical documents, and archival materials; for example, including recorded thematic discussions in Tallinn city administration.

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