



Recommendations for state and local government authorities to promote the use of cargo bikes in Estonia

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1. CARGO BIKE AND ITS BENEFITS FOR THE MUNICIPALITY

1.1 Possibilities for using the cargo bike

Cargo bikes are a diverse means of transport that allow activities from transporting children to running an outdoor café. This chapter outlines some of the most common uses of cargo bikes, but this list is certainly not exhaustive, as the uses for cargo bikes are really only limited by the imagination of the users themselves.

1.1.1. Private persons

Children's transport

In European cities, cargo bikes are probably used most often to take children to school, kindergarten, the park, etc. A cargo bike allows you to transport several children safely and comfortably, while at the same time offering plenty of communication opportunities between the parent and the child, as well as between them and the surrounding community. Cargo bike users in particular highlight sociality as a particular advantage over other modes of movement – a child learns social norms and community practices by observing their environment or communicating with them directly, while parents are able to establish themselves as an active member of



Riding with children. Photo: Wout Verlinden

the community. While this may seem insignificant, it is these types of social contact that form the basis for strong communities and social cohesion.

In the context of today's fast paced life, parents also greatly appreciate the opportunity to communicate with their child and hear about his/her daily activities during the journey. As the child can be placed in a bicycle box facing the parent, the cargo bike offers an opportunity for direct conversation and, unlike in the car, for eye contact. Small advantages such as these help strengthen families and contribute to the growth of happy children.

Cargo bikes also help increase road safety around kindergartens and schools by reducing the number of cars that crowd around childcare facilities in the morning and afternoon.

'I don't use a car, instead I have a cargo bike. I can take all three of my children with me and move around at my own pace and cheaply.'
 Cargo bike rider from Tallinn

Transportation of goods



Bringing a Christmas tree home. The bike in the picture is called Nighthawk, and was assembled in Estonia by KP Cyclery OÜ. Source: KP Cyclery homepage.

One common obstacle to using a regular bicycle is the frequent need for people to carry large or heavy objects. This is not a concern with a cargo bike, as it can carry both large objects, such as furniture, and really heavy things (depending on the cargo

bike, more than 100 kg). So, for example, you can use a cargo bike to go to the store, move, take out recycling, bring home firewood, take a training bag to work, or do all of these things at once!

'The cargo bike also allows you to transport the family's weekly shopping bags, or plants or soil bags from the garden centre. In short, when I'm at the store I don't have to think about what and how much I'm buying and how I'm going to get it all home.'

- Year-round cargo biker from Tartu

1.1.2. Companies/institutions

Delivery service

One of the fastest growing applications for cargo bikes in Europe is the provision of courier services. The advantage of the cargo bike over a car is best seen in densely populated areas, where car traffic is often congested and parking/stopping a car is difficult. In such city districts, a cargo bike offers a faster and cheaper solution for providing courier services than a car, and it also has no negative effects on the surrounding urban environment.

Mobile services

The cargo bike is well suited for offering various mobile services, especially serving as food



Coffee shop on a cargo bike. Source: <https://www.velopresso.cc/>

and beverage counters. With a cargo bike, the point of sale can be set up in the most suitable places, such as a pedestrian area. In Estonia, cargo bikes have been used, for example, to sell ice cream and coffee on the street. In other parts of the world, in addition to all kinds of places to eat and drink, the cargo bikes have also been used, for example, to offer mobile bicycle repair.



Cargo bike couriers in traffic. Source: <https://theecofleet.com/>

Performance of duties

In many areas, duties of employment include moving around the city and often bringing the necessary tools or other items along with you. Most of these trips can be easily done with a cargo bike. In this way, the performance of work duties is favourable, environmentally sustainable, and pleasant and healthy for the employee. In other parts of the world, for example, cargo bikes have been used by landscaping workers, plumbers, caterers, butchers, and florists.



A butcher's business in London, which uses a cargo bike to deliver goods to customers. Source: <https://www.sustrans.org.uk/>

1.2 Benefits to local governments from the increased use of cargo bikes

The benefits to local governments from the growing popularity of cargo bikes are very significant and varied. The following are the six main areas where the positive impact of cargo bikes is particularly high.

Healthier people

The use of a cargo bike increases people's physical activity, which is especially important in today's sedentary lifestyle. It has been found that the life expectancy of regular riders is up to 2 years longer than average¹.

As the more active use of cargo bikes helps to reduce car use, it also reduces the health damage to people caused by car use. Reducing street noise and emissions will help reduce the stress level of the population and the incidence of respiratory diseases. In Copenhagen,

¹ Cycling and Health. Researchgate. Available on the web: https://www.researchgate.net/publication/264405920_Cy-cling_and_Health

it has been estimated that bicycle use in 2016 reduced the number of sick days by a total of 1.1 million – among other things, it saved the region almost 215 million euros². In addition, reduced car traffic increases road safety, especially for pedestrians, cyclists, and children. The European experience shows that the more movement by bicycle, the lower the number of road deaths.



Health benefits are especially important for children, whose lifestyle choices have not yet been developed.
 Pictured: the S'cool bus in France. Source: bicycling.com, picture author: Emilie Sfez

Better living environment

Cargo bikes also contribute to a more pleasant and people-oriented living environment. As cargo bikes are not separated from the rest of the city space by a metal cocoon, they interact directly with other people on the street, thus making urban streets more lively, interesting

² Cycling Report for the Capital Region. 2016. Regionh.dk. Available online: https://www.regionh.dk/til-fagfolk/trafik/Cykler/Documents/19129%20Cykelregnskab%202017_A4%20bred_ENG_enkeltsider_final.pdf

for pedestrians, and more socially active. This is especially true through the various exciting mobile services that cargo bikes make possible. On a more casual level, seeing and hearing fellow citizens in the urban space is fundamental for social relationships, which helps to increase social cohesion – meeting fellow city residents on the street helps people to get used to the differences in society and to tolerate and accept them. A more vibrant urban space also offers people entertainment and cultural experiences, and a higher income for businesses. As the cargo bike has more potential uses than a conventional bike, it offers a greater degree of replacement for the car. In Copenhagen, for example, 30% of cargo bikes serve as replacements for cars.³ And since a cargo bike requires much less space than a car, the more active use of cargo bikes saves valuable urban space, which can be given a new, necessary, and pleasant purpose for people.

Climate objectives

The transport sector is one of the largest emitters of greenhouse gases (GHGs) and the trends in this area in Estonia are rather negative. Therefore, it is very important to find effective measures to reduce GHG emissions in the transport sector. The more active adoption of cargo bikes is one such measure. By providing an alternative to the car, it reduces car traffic and thus also GHG emissions. Replacing a single diesel commercial vehicle with a cargo bike can reduce GHG emissions by almost 5 tonnes per year⁴ (total emissions by the Estonian transport sector in 2018 were about 2.4 million tonnes of carbon dioxide equivalent). A cargo bike is also much more economical than a car in terms of materials and energy required in the production process.

Local economic recovery

The more active use of cargo bikes is extremely beneficial for the local economy in a number of different ways.

³ Danish Cycling Statistics. Cyclingsolutions. Available online: <https://cyclingsolutions.info/embassy/danish-cycling-statistics/>

⁴ Boom Time for Cargo Bikes. Cyclinguk. <https://www.cyclinguk.org/news/it%E2%80%99s-boom-time-for-cargo-bikes>

Firstly, the use of a cargo bike allows many residents to reduce their car use or eliminate it entirely. This results in a significant reduction in expenditures on mobility by the region's inhabitants, as the acquisition costs for the cargo bike are much lower and the running costs are minimal compared to a car. The potential savings would be significant: In 2019, household mobility expenses accounted for an average of 13% of household income⁵ in European countries, while in Tallinn and Harju County alone the costs related to passenger cars for the population and companies amounted to 1.5 billion euros⁶ in 2018. The money saved through more active use of cargo bikes could then move to economic sectors that are more local in nature than those related to car use, including local small businesses.

Secondly, the more active use of cargo bikes reduces the number of sick days and premature deaths of workers. It is estimated that doubling the share of cycling in Europe will add 7 billion euros a year to the region's economy due to reduced sick days and 78 billion euros saved from the prevention of premature deaths.⁷

Thirdly, pedestrians and cyclists are found to be much more likely to stop at street-side businesses than car users. Thus, more active use of cargo bikes would support the viability of local businesses. As one cargo biker from Tartu said: 'When riding a cargo bike, we definitely make more spontaneous stops, for example in a café or bakery. Our children are particularly fond of this.'



The cargo bike makes it easy to make spontaneous visits to roadside businesses. Source: <http://www.tdcbikes.com/>

⁵ Consumption by Purpose. Eurostat. Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php/Household_consumption_by_purpose

⁶ Tallinn Region Urban Mobility Development Plan 2035. Available online: https://www.mnt.ee/sites/default/files/elfinder/article_files/tallinna_liikuvuskva_2019november_portrait.pdf

⁷ Draft pan-European master plan for cycling promotion. UNESE. Available online: <https://thepep.unece.org/sites/default/files/2021-01/Informal%20document%203%20Draft%20Master%20plan%20version%2019%20Jan%202021.pdf>

Fourthly, the cargo bike allows you to enter business with a small amount of initial capital. As the cargo bike can successfully offer various mobile services, there is no need for other retail space to start such businesses. In this way, broader awareness of the cargo bike favours the creation of small businesses and entrepreneurship by the population in general.



Young entrepreneur. Source: cargobike_living, Instagram. Author: Hannes Lents

Financial benefits for the local government

Cost-benefit analyses have shown that investment in bicycle infrastructure is very profitable. While a rate of return of at least 2:1 is generally considered to be high for transport projects,

the rate of return on cycling infrastructure in London is 4:1,⁸ and almost 8:1 in Helsinki.⁹ This means that in Helsinki, every euro invested in bicycle infrastructure produces a socio-economic benefit worth 8 euros. This level of profitability is extremely high. Moreover, such high-return investments help to increase the local government budget, which can then be used to implement more positive and necessary activities. While many types of revenue or savings from bicycle use do not directly affect the local government budget in the Estonian administrative system (e.g. savings on health care costs), then the savings from infrastructure construction and maintenance costs and the increase in income tax revenues have a very clear and direct positive effect on local government budgets.

More equal opportunities for all

As cargo bike use is so favourable, encouraging the use of cargo bikes helps to break down mobility barriers, even for people with lower incomes. The need for a car due to the development of cities thus far has made the poverty trap more and more topical, at least in the Tallinn region, forcing lower income residents to spend a large part of their income on car use, because other modes of transport make it difficult or impossible to take care of their daily activities. Designing cities according to the needs of (cargo) bike users would help to reduce this problem.

While there are generally significantly more men than women among the users of conventional bicycles in Europe, this proportion is more balanced among users of cargo bikes. The reason lies in the better fit of cargo bikes to women's mobility needs. Compared to men, women make more multi-stop trips, such as stopping by the kindergarten and the shop when they are coming home from work. The cargo bike is an ideal means of transport for this type of movement, because it allows people and things to be transported. Thus, the more active use of cargo bikes helps women to reap the health and other benefits of cycling, which they would otherwise receive on average less than men.

⁸ <https://www.cyclinguk.org/sites/default/files/document/migrated/info/economy1fbrf.pdf>

⁹ https://www.hel.fi/hel2/ksv/julkaisut/julk_2015-1_en.pdf

2. PROMOTING THE USE OF CARGO BIKES

2.1. Barriers to the use of cargo bikes in Estonia/Tartu

The following are the primary barriers to the use of cargo bikes in Estonia and, more specifically, in Tartu. The barriers were identified on the basis of previous mobility research, an on-line survey among Estonian cargo bike riders, interviews with cargo bike riders in Tartu and the expert assessment of the compilers of the materials.

Infrastructure

Neither in Tartu nor elsewhere in Estonia is there a comprehensive cycle path network with a modern design that connects the necessary attraction centres comfortably, safely and smoothly. Inadequate infrastructure is by far the biggest obstacle to the use of cargo bikes, having been consistently highlighted in both survey responses and interviews. Without a proper infrastructure network, the use of both a conventional bike and a cargo bike is cognitively dangerous, slow and inconvenient. The availability of suitable infrastructure is especially important for cargo bikers, as a cargo bike is more sensitive than a conventional bike to road surface irregularities, high curbs and narrow cycle paths. In Tartu, the cycle paths along Vaksali Street may be considered a rather decent infrastructure solution, although even there it would be



Winter weather can be a barrier to the use of a cargo bike, especially if infrastructure is not properly maintained. Source: rollingspoke.com

necessary to widen the paths and physically calm down car traffic in order to create a greater sense of security.

In addition to poorly designed infrastructure and low network coverage, infrastructure (winter) maintenance is also a very important issue. An additional obstacle to roads that are not maintained roads is slipperiness and, especially for cargo bikes, thick snow and ridges, which often make the already too narrow cycle paths even narrower. Depending on the cargo bike rider's sense of security, low-traffic and quiet traffic routes can also be considered a satisfactory alternative to the evolving cycling infrastructure in some sections.

Storage conditions

In addition to road infrastructure, storage infrastructure is also essential for when it comes to using a cargo bike. While cargo bike riders generally have no problem parking in the city, storage at home is difficult for many, especially those living in apartment buildings. Because cargo bikes are usually quite heavy, pulling them up or down stairs is not very convenient or feasible for many. Therefore, a street-level storage area with a roof is needed in order to protect the cargo bike from the weather. Gradually, bicycle houses have been built next to apartment buildings, but there are still too few of them.

Cargo bike price

A significant obstacle to the use of cargo bikes is the price, which is in the range of about 1,000–12,000 euros, depending on the type of bike, its condition (new or used) and whether or not it is equipped with an electric motor. The price of the most popular cargo bike models in Estonia so far is generally in the range of 2,000–4,000 euros. This price is high for a bicycle, but if you see a cargo bike as a replacement for a car, it is still cheaper than a car. In addition, the maintenance costs of the cargo bike are significantly lower than those of the car. The market for used cargo bikes would help to alleviate the high price barrier; unfortunately, such a market does not yet exist in Estonia.

Awareness

The cargo bike remains a rather uncommon means of transport in Estonia. Therefore, the population's awareness of the cargo bike as a means of transport and its potential for replacing a car is rather low. A lack of awareness is a barrier to the use of cargo bikes, as people are often even unaware that this mode of transport even exists.

Speed and comfort compared to a car

At present, moving about with a cargo bike takes a lot more time in Estonian cities compared to a car. This is due to an underdeveloped and poorly functioning bicycle infrastructure and an overdimensional street network. At the same time, the latter makes driving effortlessly fast and convenient, while at the same time creating physical barriers for active means of movement, in which users have to endure long waiting times, noise, air pollution and a low sense of security when crossing wide streets.

Changing weather

Changing weather conditions cause discomfort for cargo bike riders, as they have to wear different clothes and other items to protect themselves in the rain during the course of the day. In addition, it can be difficult to maintain a presentable appearance in rainy weather.

Winter frost can also present a problem from time to time, especially when the cargo box is being used to transport children, who may begin to feel cold from sitting still. In general, the right clothing and a box covering in the form of a windscreen will help against the cold. Users of cargo bikes do not generally consider cold weather to be a major problem, but people who do not have experience with winter cycling often find it a significant obstacle.

Habit

In addition to rational considerations, it is also worth considering the power of habit as an important barrier. Once a person has developed normal movement habits, it is very difficult to change them, even if some form of change would be objectively beneficial. It is especially

difficult to break habits with a new means of transport such as a cargo bike, because people lack awareness and the necessary skills to use it.

2.2. Recommendations to the state and local governments

Presented below are the most important measures by which local governments and the state can encourage the use of cargo bikes. The measures are divided thematically into four groups, and after each measure the brackets indicate whether it is relevant for the state, local governments or both.

2.2.1. Infrastructure

Creation of a network of cycle paths

The most important measure that can be used to encourage the use of cargo bikes (and conventional bikes) is the creation of a comprehensive network of safe cycle paths with a modern design. The network must be based on the potential for bicycle use and be (preferably physically) separated from other groups of road users on all major routes. This type of network is needed in particular for cargo bikes, as they are often used to transport children, which makes cargo bike riders more cautious than the average rider. Certainly, cycle paths should also be wide enough to accommodate cargo bikes. In the course of building good bicycling infrastructure, a roadway can also sometimes serve as a temporary satisfactory alternative, but only if more is invested in the physical calming of car traffic (see below). (Local government, state)

Improving the level of maintenance of cycle paths (winter)

In Finnish and Swedish cities, it has been repeatedly proven that you can ride a bicycle in winter. To this end, however, exemplary winter maintenance of cycle paths must be ensured. The best practice is to maintain cycle paths before roads, to provide a practical advantage and symbolic support for cycling. An excellent option is to also enter into a separate contract

for the cleaning of cycle paths, which will ensure that they are cleaned at the same pace as roadways. Allowing for year-round cycling is important, ensuring that cycling can be a part of people's daily movement habits. Habits are difficult to change, which would ensure a consistently high level of bicycle use. Winter maintenance is very important for cargo bikes, as they are affected more by slipperiness since they are heavier vehicles and unploughed snow makes cycle paths too narrow in places to be traversed by cargo bikes. In addition to winter maintenance, the maintenance of cycle paths should not be overlooked during other seasons – fallen leaves and a thick layer of mud can also create dangerous situations for cyclists. (Local government)

Winter maintenance in Oulu

The undisputed authority and best example when it comes to the winter use of bicycles is the City of Oulu, in Finland. During winter, bicycles are used to perform 12% of the movement in Oulu – this is higher than the share of bicycle use out of all movements in summer in many cities (including Tartu). Behind this impressive figure is a good network of cycle paths and exemplary winter maintenance. The priority level for winter maintenance on the main network of bicycle paths is higher in Oulu than it is for the carriageway, the cleaning of bicycle paths utilises milling, not salt, and plough drivers are required to periodically cycle through the maintained sections. These are just some of the important details of Oulu's winter maintenance system.



Photo by: Pekka Tahkola

Read more here:

<https://www.euronews.com/2021/01/22/meet-the-bike-loving-finnish-city-that-keeps-peddalling-even-in-the-snow>

Creating a cargo bike rental system

Velorent in Tartu

At the beginning of 2021, the pilot bicycle rental project (bicycle library) Velorent was launched in Tartu. Individuals and companies can rent three different cargo bikes on a daily or weekly basis (25 euros per week). The main purpose of renting in this format is to give people the opportunity to test the cargo bike in making their daily moves, to see if it is the right means of transportation for them. After the rental period, people can buy a personal cargo bike with less trepidation, if they have had a positive experience. During the first month, Velorent has been very popular and the feedback has been overwhelmingly positive. There is a particularly high demand for cargo bikes that can carry children – models of this type have been reserved in advance for several months.

As buying a cargo bike is a significant expense, potential buyers will benefit greatly from the opportunity to try out the cargo bike in advance. In order to be able to provide such an opportunity, it is recommended that local governments establish a cargo bike rental service, even if only on a smaller scale. In addition to potential buyers, residents who need a cargo bike on such an infrequent basis that it is not worth buying one for themselves will also benefit from such a rental service. In cities where such rental services have been established, they have proven to be very popular. (Local government)

Construction of roofed bicycle parking lots next to the most important public buildings

At present, cargo bike storage is particularly problematic in apartment

buildings (see below), but also at jobs and services. As cargo bikes are more expensive than conventional bikes, weather protection is more important. While at work, the cargo bike can be exposed to the rain or snow for several hours at a time in the absence of good storage conditions. Therefore, it is important to build roofed bicycle parking lots – which

would also accommodate cargo bikes – next to larger employers and more important public buildings. (Local government, state)

2.2.2. Changes in traffic management and other regulations

Requirement to build bicycle houses in new developments

Storage is currently one of the biggest concerns for cargo bike riders. Therefore, in the case of new housing developments, developers should be required to build bicycle houses or other convenient, weatherproof and safe bicycle storage facilities. The storage location should definitely be level with the street or at least not require the cargo bike to be carried up and down the stairs. (Local government)

Land use management

In order to encourage the use of bicycles, it is important to develop the city as compactly as possible. In this way, the distances between important destinations are short enough to give active modes of movement a competitive advantage over the car. Specific measures include encouraging new developments within already existing urban settlements, encouraging mixed use, for example by requiring the construction of commercial premises on the ground floor of new developments, and promoting the establishment of smaller grocery stores. (Local government, state)

(Physical) calming of car traffic

Fast and heavy car traffic is a very clear barrier to the use of both cargo bikes and conventional bikes. Therefore, it is recommended to limit the speed of cars to 30



A road restriction serves as an effective traffic calming measure. Source: <https://dallascityhall.com/>

Calming car traffic in Gothenburg

Over the past few decades, Gothenburg has been extensively involved in the physical calming of car traffic. Techniques used include obstacles, road restrictions and small traffic circles. To assess the socio-economic effects of physical relaxation, a study was commissioned in Gothenburg on physical relaxation techniques used in car traffic between 1990 and 2003. The results show that the physical calming of car traffic was extremely cost-effective during this period – each currency unit invested generated 21.7 times that amount in socio-economic benefits during the period (see materials used). It is worth noting that the study only analysed the impact of lives saved and serious injuries prevented – taking into account the effects of reducing car use, the result would have been even more positive.

kilometres per hour on all streets passing through residential areas and to bring the street design in line with the speed limit. This includes, inter alia, the use of traffic calming techniques – barriers, road restrictions, speed cameras, alternating roadside parking between different sides of the road. In addition, a ban on through traffic in certain places should be considered in order to reduce car traffic while maintaining access to housing and services. (Local government)

Restriction and/or calming of car traffic at educational institutions

As the transporting of children with a cargo bike is particularly sensitive to dangerous traffic conditions, special attention must be paid to the surroundings of educational institutions. Physical calming of car traffic is essential and various solutions to restrict car traffic could be considered. Such techniques ensure a safe traffic environment around schools, which encourages both the independent

movement of children and the use of cargo bikes. (Local government)

Changing parking standards in new developments

In order to reduce car use and increase the competitiveness of active modes of transport, minimum standards for parking spaces should be lowered and maximum rates for parking applied when new developments are built. As the cargo bike is particularly well-suited for replacing a (second) car, such a measure would, in particular, contribute to the use of cargo bikes. However, this measure should certainly not be used without simultaneously improving the conditions for active mobility. Otherwise, there may be stronger opposition from the population and a deterioration in the general availability of jobs and services. (Local government)

Reducing parking spaces in the City Centre

The gradual reduction of parking spaces would provide more space for the construction of bicycle paths in cramped city centres, reduce car traffic and increase the competitiveness of

School Streets Initiative in the UK

Based in Italy and gaining popularity in the UK since 2015, the School Streets Initiative is a traffic management solution that restricts car traffic in the immediate vicinity of a school in the morning, when children arrive, and in the afternoon, when classes end. This prevents the crowding of cars in the morning at the school, thereby improving air quality and road safety. At schools, the closure of morning and afternoon traffic is usually arranged by volunteers comprised of parents and teachers. More information:

<http://schoolstreets.org.uk/>

School street closure in Ireland. Source: FingalCountyCouncil Twitter

active modes of transport compared to the car. The extended traffic space is especially important for cargo bikes. (Local government)



Visualization of a street in Sweden, where the construction of bicycle and scooter parking lots and benches instead of car parking spaces is planned. Source: globetrender.com

Upgrading the standard for urban streets

As a guidance document for urban space design, the urban street standard has a major impact on the design of bicycle infrastructure. Unfortunately, the treatment of bicycle infrastructure in the applicable standard is incomplete and based on outdated principles. Therefore, the urban street standard requires an overhaul, during the course of which the approach to bicycle traffic would be modernised and sustainable modes of transport would be set as a clear priority in street design. (State)

2.2.3. Taxes and subsidies

Implementation of the purchase support for cargo bikes

This measure would help people to overcome the barrier associated with the relatively high price of cargo bikes. Various subsidies for the purchasing of cargo bikes have been implemented in several European cities, for example, in Oslo, residents are offered purchase support in the maximum value of 1,200 euros and a maximum of 25% of the total cost of the cargo bike. In the experience of other cities, the maximum grant should be at least 1,000 euros in order to be as effective as possible as a measure. The support can be either determined by the local government or state. In the latter case, electrically assisted cargo bikes could be made eligible under the electric vehicle support scheme. (Local government, state)

Exemption from fringe benefit tax of the use of the company's bicycle during leisure time

Companies do not have to pay a fringe benefit tax on health and sports expenses. This benefit could also be extended to the leisure time use of a bicycle purchased by a company. In this way, companies would be exempted from paying the fringe benefit tax if they want to buy a conventional bike or a cargo bike for the company, with which employees can move about not only during the performance of their duties but also in their free time. (State)

Providing tax-free compensation for cycling to work

As compensation for traveling by car to work is tax-exempt, it is important to do the same for bicycles in order to create a level playing field. Considering that the acquisition costs of a cargo bike is much higher than that of a conventional bike, compensation for travelling to work is also a more topical issue. Possible specific solutions would be, for example, the implementation of a kilometre-based compensation system or enabling the acquisition of an official bicycle. (State)

Higher and more differentiated taxation of car use

In the Estonian tax system, a motor vehicle tax is one of the few taxes that can be imposed by local governments (see subsection 5 (7) of the Local Taxes Act). This opportunity should be used to implement peak hourly rates. On the national level, this should be supplemented by a general car tax based on car emissions. The effect of such taxes would be twofold. First, they would reimburse society for the annual costs of car use (health, infrastructure, and other associated costs). Secondly, they would help to encourage the use of sustainable modes of transport, as they would become even more affordable than cars. Higher taxation of car use is one of the main recommendations in the report on Estonian transport policy recommendations (ITF 2020, 'The Future of Passenger Mobility and Goods Transport in Estonia'), commissioned by the Ministry of Economic Affairs and Communications and prepared by the International Transport Forum (ITF). (Local government, state)

Offering support for the construction of bicycle houses

In order to solve the cargo bike storage problem, support should be offered to apartment associations for the construction of a bicycle house. In this way, satisfactory storage conditions could also be gradually developed in existing apartment buildings. This measure is already in use in some local governments, such as Tartu. In addition to the support for construction, it would be advisable to develop a standard design for a good bicycle house and make it available free of charge. In this way, the construction costs of apartment associations and thus also the need for support could be reduced. (Local government, state)

Raising parking fees

Like the car tax, there is a twofold motivation for raising parking fees: compensating for social costs and increasing the competitiveness of sustainable modes of transport. It has been found that raising parking fees is one of the most effective measures for reducing car use. In addition, the right to free parking in city centres should be abolished at all times – as public

money has been spent on the construction and maintenance of each parking space, enabling free parking essentially amounts to a social subsidy for car use. (Local government)

European Union funds

It is worth applying for European Union funds to finance the measures listed here. For example, Brussels spends EUR 5.8 million, of which EUR 4.7 million comes from European Union funds, to encourage the purchasing and use of cargo bikes in the Belgian capital, both among businesses and individuals. EU funding comes through the Urban Innovative Actions program:

<https://www.uia-initiative.eu/en/news/uia-5th-call-proposals-has-ended-get-insight-11-new-uia-projects>

More about the Brussels program:

<https://www.eltis.org/in-brief/news/brussels-aims-encourage-use-cargo-bicycles>

2.2.4. Example and communication

Use of cargo bikes in the provision of local government services

Cargo bikes are highly suited for many services provided by local governments, such as landscaping services or street cleaning, but also simply for the movement of local government employees around the city. In the case of services provided directly by local governments, cargo bike use can be adopted with relative ease; however, in the case of bought-in services, the use of cargo bikes must be encouraged

with the procurement conditions. One possibility is, for example, to add to the tender evaluation criteria the amount of greenhouse gas emissions generated through the provision of the service. In this way, it is possible to influence a considerable number of activities in the city. (Local government)

Conducting information campaigns

As a means of transport the cargo bike is relatively unknown in Estonia, and various information campaigns should be organized to introduce it and highlight its various benefits. Many innovative and popular campaigns have been carried out in cities around the world, which Estonia can take a cue from. The Copenhagen measure, for example, within the framework of which useful information on sustainable mobility is provided to every new citizen, has been highly successful. Similar measures can be applied to other groups of people whose lives

have recently undergone a major change – in the case of cargo bikes, a suitable target group could be, for example, new parents. Another very popular approach is to set an example for city and state leaders. In Estonia, for example, mayors and deputy mayors could, from time to time, use a cargo bike to take care of daily business, while at the same time ensuring that they are photographed doing so and that the pictures reach promotional materials. (Local government)

Cargo bikes in Strasbourg

The City of Strasbourg has successfully integrated cargo bikes into its operations. For example, cargo bikes are used in the work of the traffic management service, street cleaning, and the provision of a mobile library service. With a cargo bike it is often easier to access the necessary places (for example, pedestrian areas) and its use is beneficial to the health of both citizens and city government employees.

*Mobile library on cargo bikes.
Source: cyclelogistics.eu*

Implementing bicycle-friendly measures in the workplace in cooperation with companies

Cargo bike campaign in Helsinki

During the period 2018-2020, several campaigns were organized to popularise cargo bikes in Helsinki. Within the framework of the most exciting campaign, four families were given a cargo bike to use for one month, with the cargo bike to replace each family's second car. Each of the families documented and shared their experiences on social media. One of the somewhat surprising findings from this and subsequent campaigns aimed at families was that it is often easier for single car families to replace their only car with a cargo bike than it is for two car families to replace their second car. In the first case, it is a joint decision by the family, which affects all family members in the same way, while in the second case, replacing only one car often leads to an unequal situation within the family.

[Read more about the campaign here.](#)

companies

Both clothing standards and working time flexibility are factors that affect people's ability to travel to work using a cargo bike. Excessively demanding clothing standards do not allow people to go to work with slightly wet and dirty clothes or slightly dishevelled hair, and inflexible working hours do not allow cyclists to wait for the rain to pass before commencing their commute to work. Local governments, in cooperation with employers, could look for ways to increase the flexibility of dress codes and work schedules. Such consultations could also lead to solutions for the storage of cargo bikes in the workplace. (Local government)

Organisation of winter (cargo) cycling demo days/trainings

The notion of a bicycle as being exclusively a summertime mode of transport remains widespread in Estonia. At the same time, it is known that people with experience in winter cycling rate the obstacles to cycling in winter weather (cold, snow, and slipperiness) much lower than people without such experience. Therefore, it pays to organise events where people can try winter (cargo) cycling independently or preferably under the guidance of an instructor. The experience gained at such an event reduces people's prejudices about winter cycling, and the acquired skills also help them to cope better in real winter conditions. (Local government)

Establishment of a national communication plan for promoting bicycle use

Communication techniques used to promote bicycle use should be nationally coordinated. This would allow for the geographical harmonisation of the quality of communication and create a situation where communication activities at different levels



would be mutually supportive. The communication plan should be based on the experience of the rest of the world and research on the attitudes of the Estonian population towards the use of bicycles. (State)

King of the Netherlands on a cargo bike. Source: <https://amsterdamcyclechic.wordpress.com/>

Reflecting road user hierarchy principles in national and local development plans

The priority given to sustainable modes of transport, including bicycle use, should be clearly and strongly embedded in development plans. The implementation of this measure provides a framework on which to base individual decisions and thus promotes the creation of higher quality infrastructure solutions. The emphasis on the priority development of bicycle traffic in public development plans also sends a message to the public that increasing the share of bicycle traffic is important and that (cargo) bike riders are valuable members of the community. (Local government, state)

3. SOURCES

The most important materials used:

Aksel Part (2019) 'Analysis of Barriers and Motivations for Bicycle Commuting Among Recently Employed in Tartu: A Social Practice Theory Approach'

Baltic Environmental Forum (2020), 'National Recommendations for Promoting Bicycle Use'

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Larsson, J. and Carlsson, A. (2013), Evaluation of Speed Reducing Measures in Gothenburg.

<https://trid.trb.org/view/1360017>

Skepast & Puhkim (2018), Tartu City and Surrounding Mobility Survey

Annex: Problem areas for using cargo bikes and their potential solutions in Tartu

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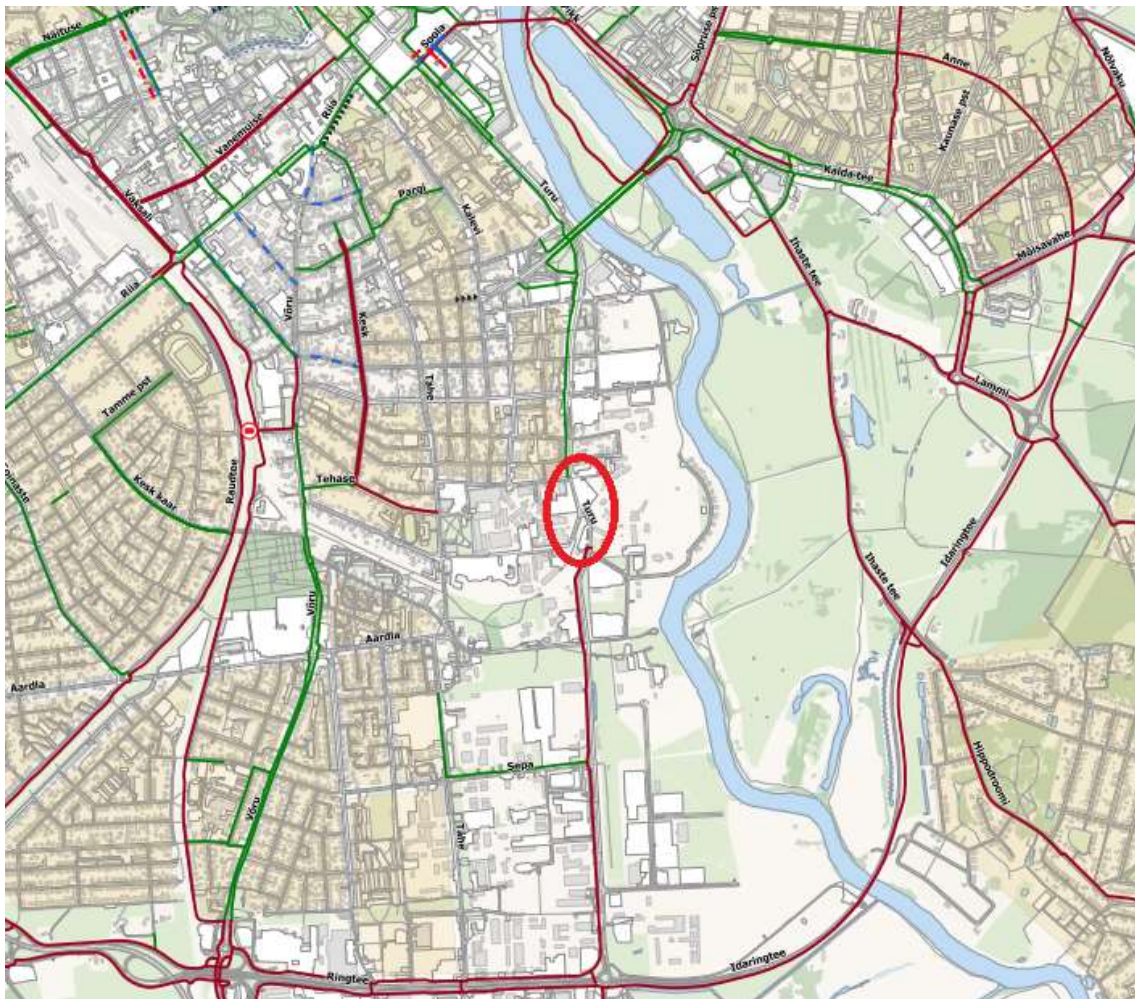
Baltic Environmental Forum

Problem areas in using cargo bikes and their potential solutions in Tartu

This document outlines the infrastructure and traffic management related problem areas for the use of cargo bikes in Tartu. Potential solutions have also been proposed. In order to find the problem areas discussed here, no separate analyses were performed; instead, they were found during the preparation of the Tartu cargo bike route map. Therefore, the list of problem areas is certainly not exhaustive – only the problems that arose during the compilation of the mentioned map are described.

Also, this work is not aimed at addressing larger and more fundamental problems (e.g. an inadequate network of cycle paths separated from other groups of road users or shortcomings involving the winter maintenance of cycle paths). Instead, the focus is on problem areas that can be fixed relatively easily, quickly, and affordably.

1. Missing section of cycle and pedestrian track along Turu Street



Excerpt from the map of Tartu cargo bike routes. The section in question is marked with a bright red circle. Here and hereafter, the dark red lines indicate good cargo bike routes and the green ones indicate a bicycle infrastructure that is less suitable for cargo bike use.

Problem: The section shown on the map lacks bicycle infrastructure, traffic on the street too heavy for cargo bike riders and pavements are difficult to cross with a cargo bike, especially in winter. This means that the section in question lacks satisfactory infrastructure for the use of a cargo bike. This gap in the infrastructure cuts the cycle and pedestrian path on Turu Street in half, which would otherwise run in a straight line from the city centre to the very edge of the city. As there are no good alternative routes running in the same direction near

Turu Street, the lack of one short section there significantly reduces the integrity of the cargo bike route network.



Part of the section with poor passability on Turu Street. Photo by: Aksel Part

Solution: the simplest solution is to widen the pavement along this section and improve the quality of this road surface, in order to transform it into a cycle and pedestrian path. The investment would be relatively small, but the benefits in terms of improving network integrity and connectivity would be significant. The construction of infrastructure that conforms to the standards of the main network of bicycle paths is planned for Turu Street in the future, but until its completion a cycle and pedestrian path would also be of great benefit.



Newer cycle and pedestrian path along Turu Street. A similar cycle and pedestrian path could be built on the missing section. Photo by: Aksel Part

2. Connecting the Song Festival Grounds with the Emajõgi River



Excerpt from the map of Tartu cargo bike routes. The bright red circle marks the cycle and pedestrian tracks around the Song Festival Grounds, the orange-line denotes the footpath that could connect this section with the Emajõgi River.

Problem: There are pretty good cycle and pedestrian paths around the Tartu Song Festival Grounds, but they connect poorly with the rest of the cargo bike route network. From the point of view of network integrity, this is bad because it reduces the potential for complete routes that can be traversed using infrastructure suitable for the cargo bike. A gravel path leads to the Emajõgi River from the end of the cycle and pedestrian path, but its use is limited to pedestrians.



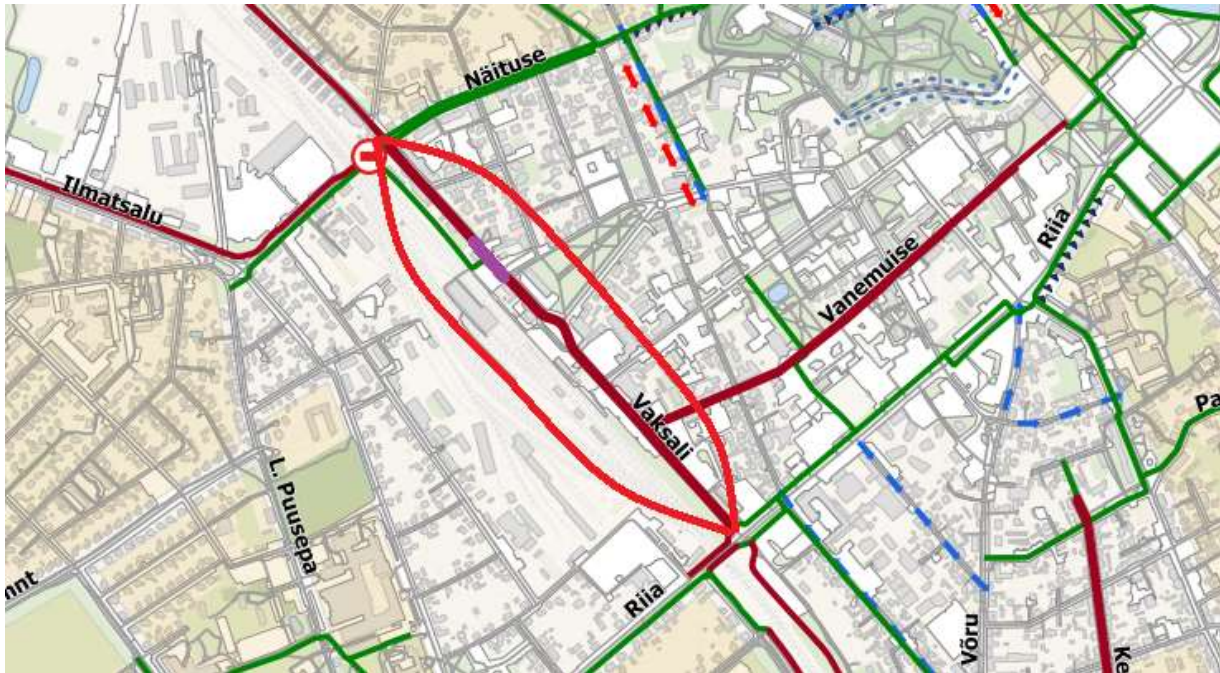
End of the cycle and pedestrian path at Tähtvere Sports Park. Photo by: Aksel Part

Solution: The quickest and easiest solution would be to also allow cyclists to use this footpath. This is also a very advantageous solution, as it only requires a change of signage. At the same time, the impact of the solution would be considerable, as it would immediately and quite significantly increase the size of the connected network of cycle paths. Although the given trail is quite narrow, pedestrian and cyclist traffic in the area is not so heavy that a big problem can be expected. In the future, a proper cycle and pedestrian track may be considered in place of the pavement; however, in the short term, the simple solution offered here will also help. Although nothing would change physically, simply reclassifying the road would still encourage cargo bike use, as cargo bike riders plan their journeys further in advance than conventional cyclists. In doing so, they give priority, in particular, to routes along cycle paths or cycle and pedestrian paths. The creation of a new cycle and pedestrian path connection would therefore open up new possibilities for them when planning routes.



Start of the footpath at Tähtvere Sports Park. This footpath could be turned into a cycle and pedestrian path. Photo by: Aksel Part

3. Sections of cycle paths along Vaksali Street that are level with the pavement



Excerpt from the map of Tartu cargo bike routes. The section with cycle paths on Vaksali Street is surrounded by a bright red circle, the section where the cycle paths have been made level with the pavement is marked with a purple line.

Problem: The cycle paths along Vaksali Street have been made level with the pavement at the location shown on the map. There are inconvenient curbs located at the crossings, and ridges of snow or mud form there in the autumn and winter because these areas are difficult to clean. Ridges of snow and mud make these sections virtually impassable, leaving cyclists with no choice but to get off the bike uncomfortably or swerve onto the road – such a manoeuvre can often be dangerous if the obstacle is unforeseen and the carriageway is swerved onto at the last minute and without warning passengers in time. A situation where cyclists are unable to access an important cycling route for a significant portion of the year is unacceptable in a city that is actively trying to increase the share of cycling. The solution for the section is especially poor in that it ruins the cycle paths on Vaksali Street, which have been quite successful in other respects.



Half-melted snow on the Vaksali Street cycle path at the point where the trail passes from the level of the pavement to the level of the street. Photo by: Aksel Part

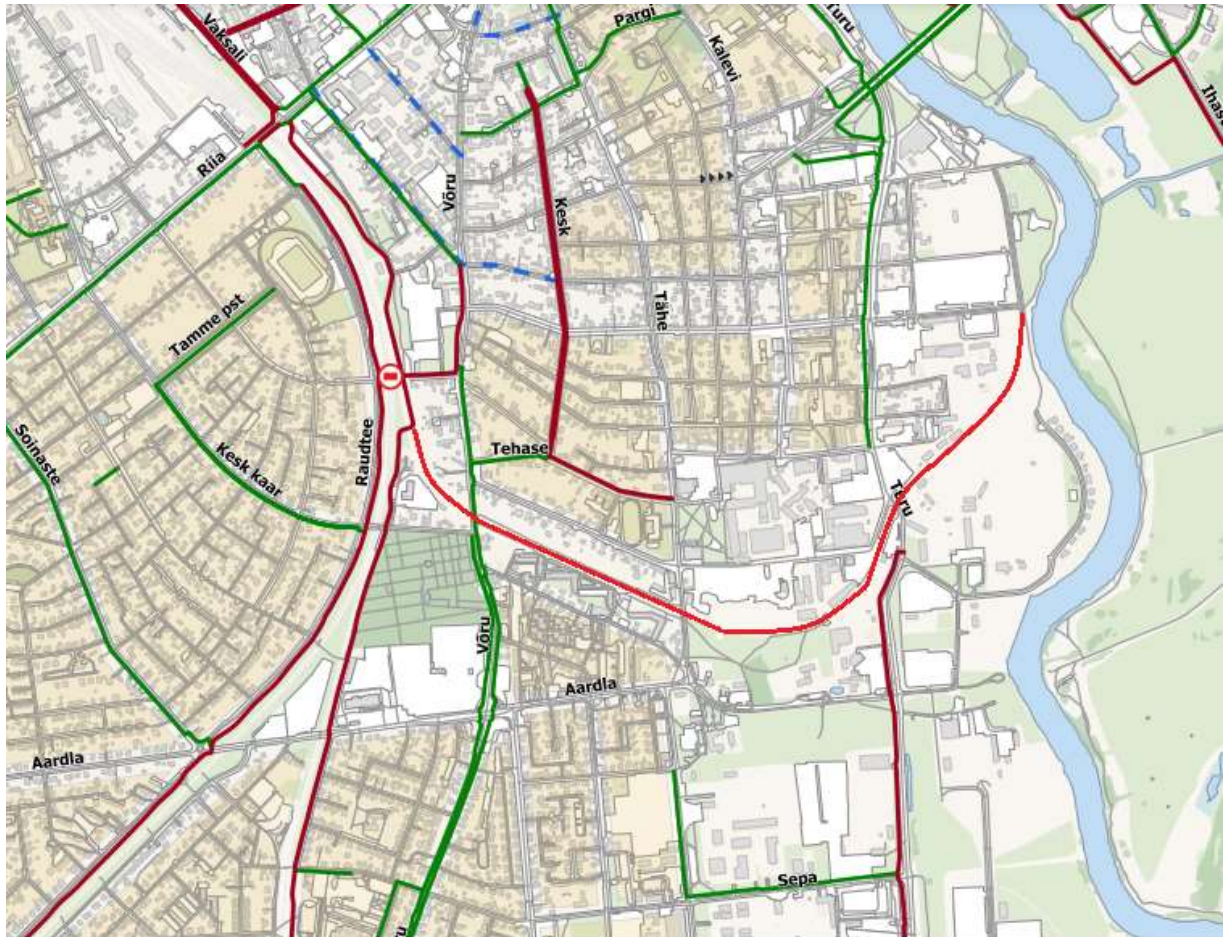
Solution: the best solution for this section is to bring the cycle paths to the level of the street. During the construction of the cycle paths, it was found that the street in the given location is too narrow to accommodate the cycle paths. It would worth revisiting this assessment – perhaps the cycle paths could be drawn on the street. If this continues to be impossible, the best solution would be to widen the street such that it could also accommodate cycle paths. Although this is a relatively expensive undertaking, it will ultimately pay off because it is not just a question of this one place, but the functionality of the entire Vaksali Street cycle path – one inconvenient and dangerous spot is enough for users to avoid the entire section. Alternatively, the creation of a road restriction, which is commonly used as a traffic calming measure, could be considered. With this solution, space for a passenger car in the section under discussion would be sufficient for only one car – the process of negotiating the obstacle

could be regulated by traffic signs, but from the point of view of traffic calming it would be better to leave it to the drivers to resolve themselves. It should be noted, however, that on such a long section, road restrictions are not normally used as a traffic calming measure. However, this would be in line with the approach of the road user hierarchy: The road user hierarchy adopted by the Tartu City Government stipulates that in case of a lack of space, nice and convenient traffic conditions should first be ensured for pedestrians and cyclists, and only then, if possible, for cars.



Cycle paths at the level of the street on Vaksali Street. The same solution could be used in this problem area. Photo by: Aksel Part

4. Harbour railway route



Excerpt from the map of Tartu cargo bike routes. The harbour railway route is marked in bright red.

Problem: there are connections located in close proximity to the port railway route that are running in the same direction, although they are poorly suited for a cargo bike (see map). This means that the existing network in this area is insufficient, and does not allow for convenient movement in the required directions.



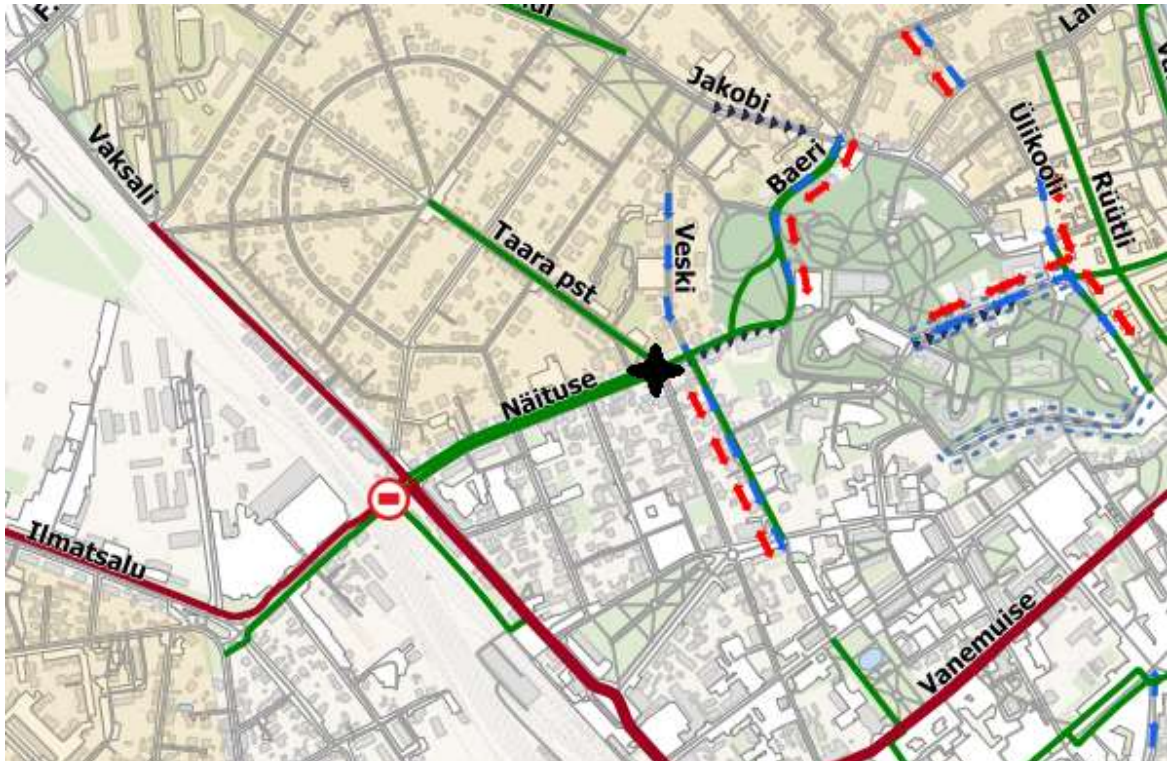
Although the harbour railway does not yet have a cycle and pedestrian path, pedestrians have already begun to use it. This shows that there is a need for a cycle and pedestrian path. Photo by: Aksel Part

Solution: a green corridor intended for a cycle and pedestrian path could be built relatively cheaply along the harbour railway corridor. City government officials have estimated the cost of building a crushed stone cycle and pedestrian track along the entire length of the route at around 50,000 euros. The construction of the cycle and pedestrian track will be made easier by the presence of a base layer of coarse gravel under the former railway, which is currently located in the corridor. It would be sensible to solve the intersections between the planned cycle and pedestrian path and streets in a pedestrian and cyclist-friendly manner, but these would significantly increase the cost of the entire site. Although the cost of this solution is higher than the others proposed in this document, it will eventually pay off, as a fairly long section of cycle and pedestrian track can be created, which is also urgently needed from the point of view of the integrity and connectivity of the region's network of cycle paths.



Visualization of the harbour railway cycle and pedestrian path with a crushed stone surface.

5. End of the Näituse Street cycle path



Excerpt from the map of Tartu cargo bike routes. The black cross marks the intersection where the cycle path ends.

Problem: at the location shown on the map, the cycle path ends in the middle of the intersection and the end of the path outlined slantwise, directing riders to continue travelling on the pavement. Such a solution not only encourages cyclists to break Traffic Code (adult cyclists are generally not permitted to ride on the pavement), but can also lead to dangerous traffic situations. If a rider continues their journey on the street after the end of the cycle path, in accordance with the Traffic Code, the end of the slantwise outlined cycle path may direct cars into their traffic space – drivers may accidentally push the rider to the edge of the road or cut them off. This solution is particularly poor in the middle of an intersection, which is already the most difficult part of urban traffic for both drivers and cyclists. The current solution is poor for cargo bike riders in particular because the pavement is not wide enough nor in good enough condition.



Slantwise end of a cycle path in the middle of the Näituse-Kastani intersection. In addition, the road surface markings have hopelessly worn away. Photo by: Aksel Part

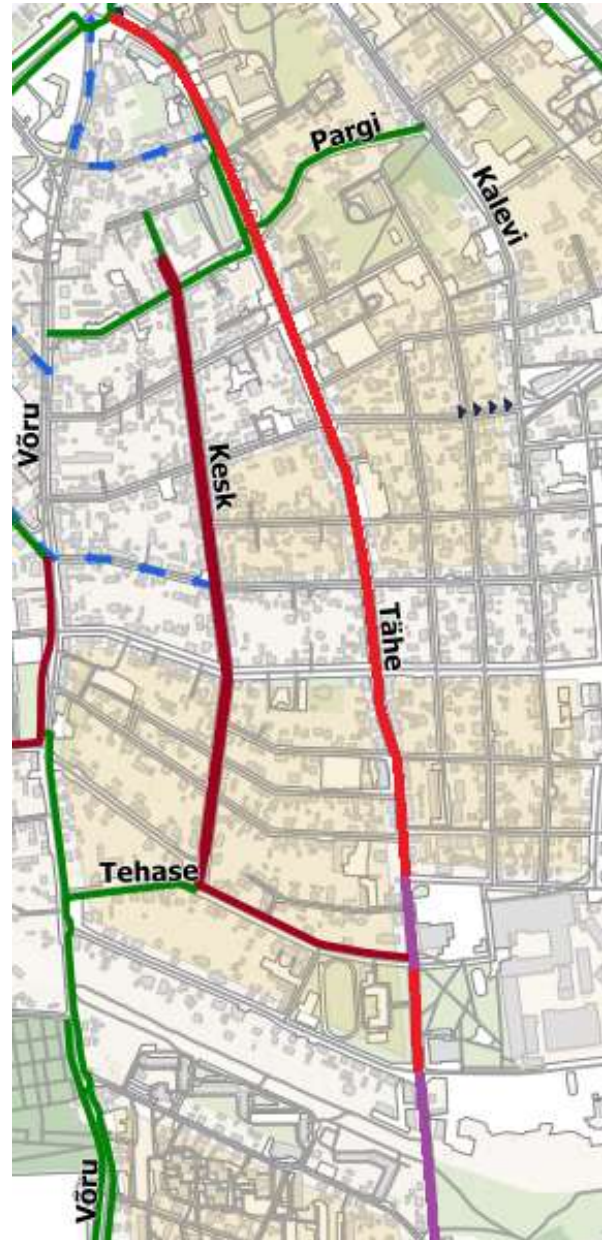
Solution: the correct solution for the end of the cycle path has been demonstrated on Vanemuise Street, where the path ends at a right angle, not slanted. Such a solution does not direct drivers into the rider's space, and the merging of the two lanes takes place over a longer period of time and more safely. For (cargo bike) cyclists who prefer not to drive on the street, the possibility of using the pavement remains. A similar solution should be used on Näituse Street, with the cycle path ending before the intersection, in order to eliminate the need to perform complex manoeuvres at an already complex intersection.



End of an effectively resolved cycle path on Vanemuise Street. Photo by: Aksel Part

6. Physical calming of traffic on Tähe Street

Problem: In recent years, a number of areas with a speed limit of 30 km/h have been established in Tartu, especially in residential areas, but little attention has been paid to complying with the speed limit in these areas. As a result, real speeds in many places significantly exceed the limit. One such street is definitely Tähe Street, but there are many more in Tartu. High-speed car traffic inhibits cargo bike use (and other active modes of movement) as it reduces people's sense of security in the street space. Higher speeds also mean more and more serious accidents.



Excerpt from the map of Tartu cargo bike routes. Sections with a 30 km/h limit are marked in bright red, sections where there could be a 30 km/h limit are marked in purple.



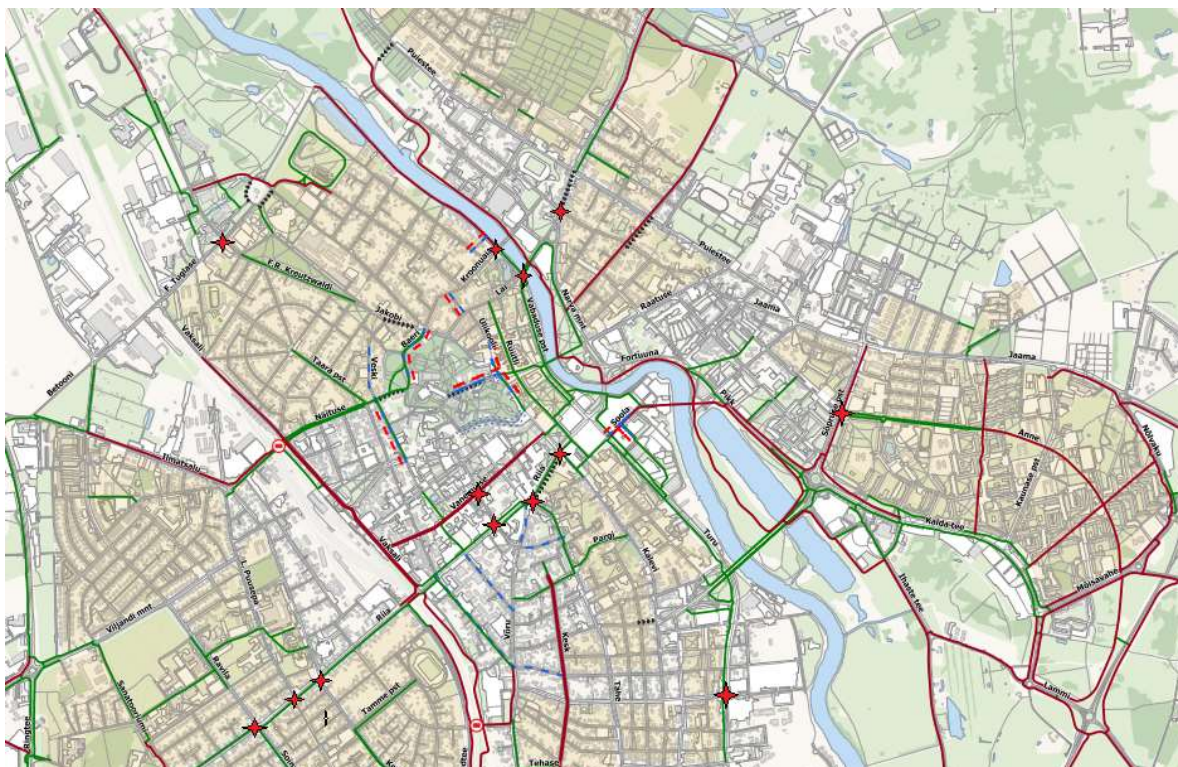
A car is driving at a speed of 45 km/h on Tähe Street in an area with a speed limit of 30 km/h. The flagged building is a children's music school. Photo by: Aksel Part

Solution: speed limits must go hand in hand with physical calming of car traffic, so that real speeds conform to the established limits. There are several techniques for physically calming traffic, the most common of which are obstacles and road restrictions. On Tähe Street (and elsewhere in Tartu), physical speed calming techniques have been used in some places, but in order to reduce speed effectively, traffic calming techniques should be used along the entire length of Tähe Street – when crossing the barrier, the driver should see the next barrier so that the intermediate acceleration does not pay off. In a broader sense, an analysis should be carried out in Tartu to find streets where the street design is not in conformity with the speed limit. Based on this analysis, a more systematic approach to traffic calming could be taken.



Street with calm traffic. Source: <http://www.mikeontraffic.com/>

7. Stop lines at a traffic light regulated intersection



Extract from the map of Tartu cargo bike routes. Intersections where one or more branches could and could add a stop line for cyclists are marked with a red cross.

Problem: because a cargo bike is much wider than a conventional bike, it cannot perform manoeuvres that require it to fit through tight spaces. This causes problem especially when driving on a carriageway with traffic light regulated intersections, where the cargo bikes tend to get stuck in traffic jams because they cannot fit past cars between the lanes. In order to increase the ease of use of the cargo bike and the connection speed, it is important that it be able to avoid such congestion in the same way as a conventional bicycle.



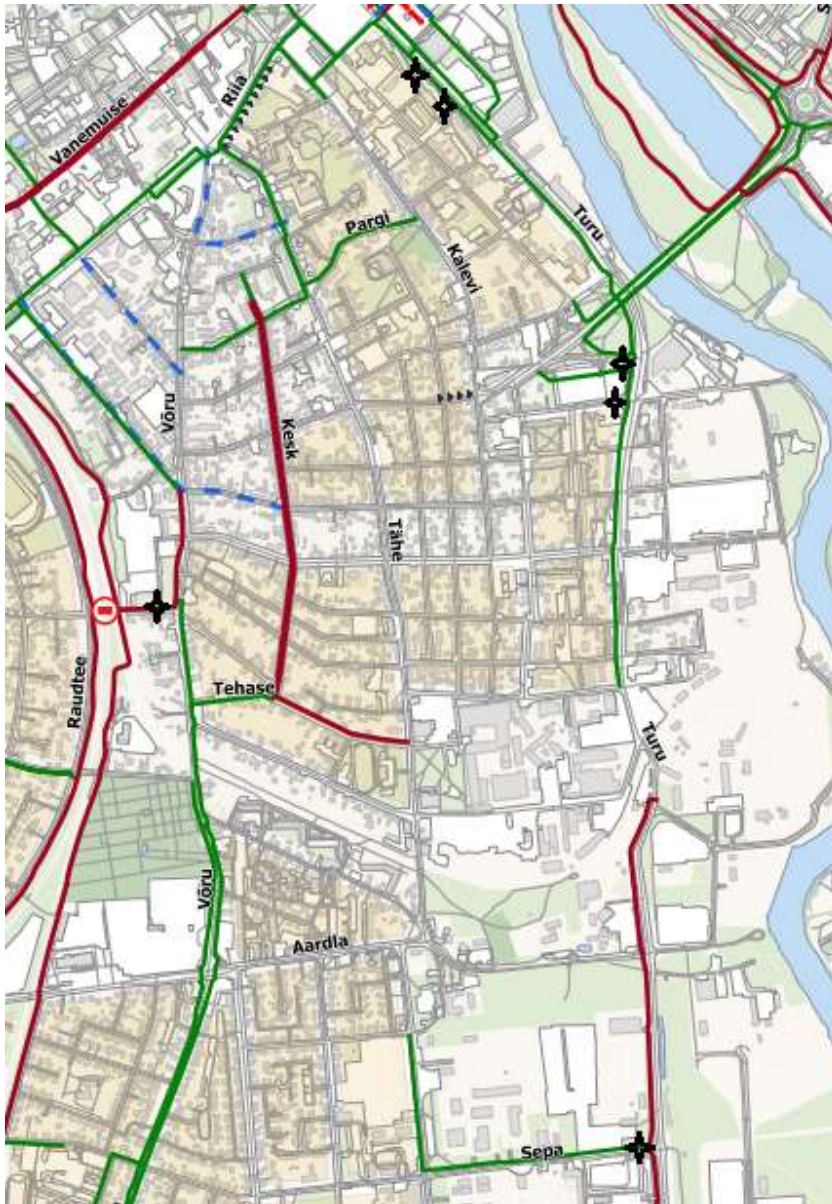
A row of cars on the Tähe Street branch of the Tähe-Võru-Riia intersection. This is one of the places where a separate stop line and section of path would be of great benefit to cyclists. Photo by: Aksel Part

Solution: a good solution to this problem is to draw a separate bicycle stop line (see picture below) in front of the car stop line for intersections. In addition, a short cycle path should be drawn that allows (cargo bike) riders to pass the cars on the right, in order to reach their stop line. The cycle path should be wide enough to accommodate cargo bike riders. This means that the proposed solution is only applicable at traffic light regulated intersections where the street is wide enough to accommodate a passenger car and a cargo bike side by side. On the map above, some intersections with potentially suitable branches are marked. For safety reasons, branches with only one lane (i.e. without turning lanes) are preferred, although branches with turning lanes may be considered, if desired. Roads that are too narrow and where traffic is too heavy are excluded. The latter have been omitted because without separate cycle paths, there are not many (cargo bike) cyclists who would dare to ride them, even when a separate stop line is drawn. Therefore, the proposed solution is not currently needed on these roads.



A further stop line for cyclists along with a cycle path on Vaksali Street. Photo by: Aksel Part

8. There are no cycle and pedestrian path markings



Excerpt from the map of Tartu cargo bike routes. Some unmarked crossings are marked with crosses.

Problem: at many intersections between streets and cycle and pedestrian paths (some examples are shown on the map), it is not clear to the driver that there is a cycle and pedestrian path. This increases the risk of accidents, as a cyclist on a cycle and pedestrian path can easily go unnoticed by a driver making a turn. It is also not very clear to the driver that they must yield to the cyclist when making a turn. As children are often transported on a cargo bike, safety is especially important for cargo bikes.



Unmarked crossing on Turu Street from the driver's view. Photo by: Aksel Part

Solution: drawing a bicycle sign at the crossings of streets and cycle and pedestrian paths is a simple, inexpensive and effective means to alleviate this problem, one that has also been used in several places in Tartu. In this way, the intersection is clearly fixed for the driver and the obligation to give way is more obvious.



A well-marked crossing on Võru Street. Photo by: Aksel Part