SUSTAINABLE URBAN MOBILITY AND COMMUNTING IN BALTIC CITIES

MULTIPLYING THE INTERMODALYZER INDEX

SUMBA

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Authors: Michal Brennek (Foundation Earth and People, Warsaw), contributions by Matthias Grätz (Baltic Environmental Forum Deutschland, Germany) and Kay Gade (Deutsches Zentrum für Luft und Raumfahrt, Germany), supported by Lotta Böckmann and Emily Carr (both Baltic Environmental Forum Deutschland, Germany)

Layout: Matthias Grätz & Elionor Ferrer, Baltic Environmental Forum Germany

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1. Introduction

During the INTERREG project SUMBA (Sustainable urban mobility and commuting in Baltic Cities), the so-called INTERMODALYZER index was developed to give cities a tool in assessing their situation regarding intermodal mobility in their cities and the functional urban area.

Key criteria for developing the index were that it should be easy to use, can be independently applied by interested cities without supervision, and should be applicable for all cities in the Baltic Sea region and beyond, regardless of their conditions. In order to achieve that, the following aspects were taken into account when selecting the indicators and their level of detail:

- Diversity of cities with heterogeneous conditions regarding urban environment, transport system, spatial structures and user needs,
- Evaluation of both the city and the functional urban area with the same set of indicators,
- Significant differences in data availability,
- Definition of a maximum value to evaluate against. Each criterion can be rated with maximum 1 point. The index has in total 11 criteria in 6 categories, which allows for a maximum score of 11 for all criteria or 6 if it is based on the average value achieved in each category.

A detailed description of the INTERMODALYZER index including an assessment of the partner cities in SUMBA and their functional urban areas can be found in a dedicated report (https://sumba.eu/sites/default/files/2020-03/SUMBA_D2.1_INTERMODALYZER.pdf).

This report will summarize the results of the application of the INTERMODALYZER index in other cities in the Baltic Sea Region (in the wider sense). Fourteen cities/regions outside the SUMBA consortium took part in Intermodalyzer assessment during the multiplication phase of the project:

- Liepaja and Cēsis, Latvia
- Klaipeda, Lithuania
- Jastrzębie Zdrój, Szczecin, Gdynia*, Legionowo* and Mińsk Mazowiecki in Poland
- Eskilstuna and Uppsala, Sweden
- Bergen, Norway
- Bremen and Rostock, Germany
- Leiedal/Kortrijk Region, Belgium

The assessment does usually include the calculation of the index for both the city and the functional urban areas but in some cases it is limited to either the city or the functional urban area depending on the expertise by person doing the analysis. The cities or regions were contacted by the project partners. Due to the restrictions of the pandemic, phone interviews were conducted with representatives of the cities/regions to be assessed, or in some cases a short introductory talk was held and then the assessment was done in written and sent back. In most cases, the evaluation was jointly done by a member of staff of the SUMBA project with

planners in the respective cities or regions. Just in two cases – the cities marked with an asterisk – the evaluation was done by the SUMBA partner Foundation Earth and People based on available data. It should be once more pointed out that the Intermodalyzer index is partly a subjective assessment since not all aspects that are important for developing an intermodal transport system can be easily quantified or are easily available – for more see the report on the Intermodalyzer index linked above. Results described below should therefore be taken with some care, since the assessment might be slightly different if carried out by different members of staff. Ideally, the index would be carried out in a consensus fashion, meaning that it is done by several members of staff and then discrepancies are discussed during a consensus meeting where a final score is agreed. We recommend this approach but due to the limitations of the pandemic it was not feasible for the multiplication of the Intermodalyzer during the SUMBA project phase.

2. Short description of the participating cities and results

Liepaja

Liepaja is a city in Latvia, located in Kurzeme Region on the Baltic Sea, the third largest city in Latvia, an important ice-free port. The population is 68,535 people (2020), the population density is 1,000 inhabitants/km². Its population has declined recently because of economic migration to western European countries and lower birth rates.

The Liepāja transport system consists of 13 bus lines and 6 minibus lines as well as one Liepāja tram line of 7 kilometers. There are also bus connections with the nearby city of Grobina. Seven kilometers east of Liepaja is the international airport "Liepaja". Currently, over 40 km of bicycle paths are available in Liepaja. City of Liepaja has uniquely designed bicycle parking spots that are located near the most popular public objects. Entrepreneurs are also encouraged to install bicycle parking spots near their businesses.

The INTERMODALYZER index was carried out jointly by BEF Latvia with 3 representatives of Liepaja (an urban planner, a public transport planner and a representative of the regional public transport provider). The scoring was done based on consensus as follows:

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,38**	0,5	0,25	**0,13**	0,25	0	**0,5**	0,5	**0,33**	1	0	0	**1**	1	**0,17**	0,25	0,25	0

The total score of the INTERMODALYZER index for Liepaja is 2,51 out of 6 possible points. The results were referenced in the Metalurg's district local planning process and discussed during ongoing regional public transport planning processes.

Klaipeda

Klaipėda is the third largest city in Lithuania, located at the Baltic Sea coast, and the capital of Klaipėda county. It is the only seaport in Lithuania. The population is 149,157 inhabitants (2020), the population density is 1,365 inhabitants/km². The population decreased from over 200,000 in 1989 due to migration to the suburbs that surrounded the city on three sides.

Suburbs are well integrated with the city (city bus lines, city water supply, etc.) and the majority of inhabitants of these suburbs work in Klaipėda. According to data from the Department of Statistics, there are 212,302 permanent inhabitants (as of 2020) in Klaipėda city and Klaipėda district municipalities combined.

The public transport is based on bus transport. There are currently 36 bus routes in Klaipeda. Klaipėda's bus public transportation is based on geographical peculiarities. It is arranged by the north-south axis, based on three parallel principal streets, running along the coast of Curonian Lagoon and thus making the grid logical and comfortable for commuting. Klaipeda was a first city in Lithuania, which introduced electronic ticketing system in Lithuanian public transport. Currently in the beginning of 2021 the implementation of the Transport Voice information system for the visually impaired and the blind is nearing the end. Transport voice tags are already integrated at 148 of the city's most popular bus stops.

The Intermodalyzer index was carried out by city representatives in cooperation with the SUMBA project partner FZL. It results in a category score 4,75 for the city and 3,42 for the functional urban area, both out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,95**	0,9	1	**0,63**	0,75	0,5	**0,75**	0,75	**1**	1	1	1	**1**	1	**0,42**	0	0,25	1
FUA	**0,75**	0,75	0,75	**0,5**	0,5	0,5	**0,5**	0,5	**0,67**	0,5	0,5	1	**1**	1	**0**	0	0	0

Jastrzębie Zdrój

Jastrzębie-Zdrój is located in Upper Silesia, in the southern part of the Silesian Province in Poland. In 2020, the city had 88,425 inhabitants, and its area is 85.33 km². Jastrzebie Zdrów is the second largest city in the Rybnik agglomeration, which includes Pszów, Radlin, Rybnik Rydułtowy, Wodzisław Śląsk and Żory as well as many downtown communes. The functional urban in 2020 was inhabited by 526,000 people.

The city has public transport connecting housing estates and suburbs, it also supports connections with the surrounding towns. There are 68 bus lines and 1044 bus stops of the Inter-Communal Communication Association. They also serve neighboring towns (Mszana, Pawłowice, Połomia, Rybnik, Skrzeczkowice, Świerklany, Wodzisław Śląski, Zebrzydowice and Żory). Recently (from August 2020) there is a very comfortable possibility to buy tickets via smartphone. 700 season tickets and almost 6,000 one-way tickets were sold during the first month of use which shows the potential of the new product and great interest in it.

There is a city bike rental system in Jastrzębie Zdrój. 61 two-wheelers have been made available to users, including 5 bicycles equipped with child seats. Talks with Żory and Rybnik on the compatibility of systems will also be undertaken, in order to enable users to organize trips to neighboring cities.

The Intermodalyzer index was carried out by city representatives of the infrastructure and communications department in cooperation with the SUMBA project partner FZL. It results in a category score 2,59 for the city and 2,34 for the functional urban area, both out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,38**	0,5	0,25	**0,13**	0,25	0	**0**	0	**1**	1	1	1	**0,75**	0,75	**0,33**	0,75	0,25	0
FUA	**0,38**	0,5	0,25	**0,13**	0,25	0	**0**	0	**1**	1	1	1	**0,75**	0,75	**0,08**	0,25	0	0

Szczecin

Szczecin is the capital and the largest city of the West Pomeranian Region, located on the Szczecin Coast, on the Oder and Dąbie Lake. Szczecin is the third largest city in terms of the occupied area (300.55 km² of which almost 24% is water) and the seventh largest city in Poland. The city has 400,990 inhabitants. It is located in the center of the Szczecin

agglomeration, which can also be counted by adding German border towns in which many Poles live and commute to work to Szczecin on a daily, as well as Germans who mainly benefit from the commercial offer of Szczecin.

Szczecin has a bus network of 83 bus lines, consisting of normal, night busses and express bus lines, which do not serve all stops on their route. Szczecin has a tram network comprising 12 tram lines serving 95 tram stops and measuring 110.77 km in length. The tram network is the main means of public transport in the city center. Tram lines radiating out from the city center ensure high transport capacity from and to the left-bank districts of Szczecin. Szczecin Fast Tram (SST) connects the right-bank and left-bank parts of the city. The route is designed to provide a fast and efficient connection combining the advantages of a classic tram and metro.

There are bicycle paths in the city, although it is still a rather chaotic system, not creating a coherent system of bicycle routes. The current system of bicycle paths covers only parts of the city, mainly in the West and Śródmieście districts. Currently, there are more and more bicycle paths on Prawobrzeże and parts of the North. In the summer of 2014, the "Bike_S" city bike system was created, with stations initially located only in the center. In 2016, the system was expanded to include other stations, including on the right bank. In year 2021 the system will be modernized and a new generation of bicycles will be introduced.

The Intermodalyzer index was carried out by a planner for the functional urban area and the metropolitan region in cooperation with the SUMBA project partner FZL. It results in a category score 4,88 for the city and 4,93 for the functional urban area, both out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,75**	1	0,5	**0,88**	0,75	1	**1**	1	**0,5**	0	0,5	1	**1**	1	**0,75**	0,75	0,5	1
FUA	**0,63**	0,75	0,5	**0,88**	0,75	1	**1**	1	**0,5**	0	0,5	1	**1**	1	**0,92**	0,75	1	1

Mińsk Mazowiecki

Mińsk Mazowiecki - a city in eastern Poland, in the Mazowieckie Voivodship, belonging to the Warsaw agglomeration, the seat of the Minsk Poviat and the rural commune of Mińsk Mazowiecki. In 2019 Mińsk Mazowiecki was inhabited by 40,999 inhabitants.

The city is located 20 km from the border and 38 km from the center of Warsaw. It is a local and supra-local economic center (developed trade, services and industry), educational (college, 6 secondary schools, university of the third century), military (air base, gendarmerie and military replenishment headquarters), cultural (community center, art school, 2 libraries, 2 museums), but most of all it is a place of residence for many people working in Warsaw.

In January 2018, public transport was launched. Residents have three lines at their disposal. Transport for holders of the Minsk Resident Card and students is free. Commuting to Warsaw and the surrounding towns is provided by private bus operators. Rail transport provides convenient connections with many cities, including many connections with Warsaw.

The Intermodalyzer index was carried out by the chief of the communal management dept. in cooperation with the SUMBA project partner FZL. It results in a category score 2,55 for the city and 1,83 for the functional urban area, both out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,75**	1	0,5	**0,38**	0,5	0,25	**0**	0	**0**	0	0	0	**1**	1	**0,42**	0,75	0,25	0,25
FUA	**0,5**	0,75	0,25	**0**	0	0	**0,25**	0,25	**0**	0	0	0	**1**	1	**0,08**	0,25	0	0

Eskilstuna

Eskilstuna is a city and the seat of Eskilstuna Municipality, Södermanland County, Sweden. The city of Eskilstuna had 70,342 inhabitants in 2020, with a total population of 106,978 inhabitants in Eskilstuna municipality.

Sörmlandstrafiken handles the city and countryside traffic in the municipality of Eskilstuna. The ticket price varies depending on how many zones you want to travel in. Public transport in Eskilstuna is provided by bus transport called Citybussen. The city bus consists of 25 lines, of which lines 1 and 2 are main lines and are served by articulated buses. Around 4.5 million journeys are made annually via the Citybussen in Eskilstuna.

Eskilstuna has slight level differences and a good network of cycle paths. New and modernized old cycle paths are being built to improve cycling conditions in Eskilstuna. A number of new bicycle parking spaces are being built across the city. In order to be able to take your bike to the bus stop, there are parking spaces for bicycles at many of them. These bicycle parking

spaces have roofs and good locking options. They are mainly located a little further from the center.

In the case of Eskilstuna, the Intermodalyzer was developed only for the urban area by a planner of the city, supported by the SUMBA project partner FZL. The city achieves a category score of 3,59 out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,5**	0,5	0,5	**0,75**	0,75	0,75	**0,5**	0,5	**0,77**	0,66	1	0,66	**0,66**	0,66	**0,41**	0,25	0,66	0,33

Uppsala

Uppsala is the county seat of Uppsala County and the fourth-largest city in Sweden, after Stockholm, Gothenburg, and Malmö. It had 177,074 inhabitants in 2019. Uppsala is located 70 km north of Stockholm and approximately 35 km north of Arlanda Airport.

Stockholm's proximity means that a large group of residents commutes to the capital, and along with the relocation of government agencies, a large group of Stockholmers also travel to Uppsala during the day. In addition, many residents of Norduppland commute to Uppasala every day.

Transport in Uppsala is largely dominated by the proximity to the capital city of Stockholm, which simplifies large-scale commuting and also contributes to Uppsala's relative proximity to Arlanda International Airport. Uppsala's hub is Uppsala's main train station, through which most of the city's rail and bus traffic passes. There are also large spaces at the central station for parking bicycles as the bicycle is an important mode of transport in the city.

Uppsala has heavy rail traffic, especially towards Stockholm via commuter trains that run through Arlanda airport, which means Uppsala also has a lot of traffic directly to the airport. Local buses operate in the countryside and in the city. The regional transport and social department is responsible for all bus traffic in Uppsala County. There are advanced plans to build a tramway along some of the busier trunk bus lines in Uppsala. A feasibility study has been initiated. The first lines could be completed around the year 2029 according to current plans.

Uppsala municipality has a well-established and deeply rooted cycling culture together with 50 km biking roads and 45 km in the functional urban area of Uppsala.

The Intermodalyzer index was calculated by a municipal planner and project manager for transport, supported by the SUMBA project partner FZL. The city achieves a category score of 3,48 out of 6, the functional urban area reaches a score of 3,12 out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,88**	1	0,75	**0,38**	0,75	0	**0,75**	0,75	**0,5**	0,5	1	0	**0,33**	0,33	**0,64**	0,5	0,625	0,8
FUA	**0,88**	1	0,75	**0,38**	0,75	0	**0,75**	0,75	**0,5**	0,5	1	0	**0**	0	**0,61**	0,5	0,625	0,7

Rostock

Rostock has 208,808 inhabitants living on 18,136ha. The functional urban area that includes the area from which people commute to Rostock includes around 400 000 inhabitants. Every day 50 000 people commute to or from Rostock because of their work.

In recent years, Rostock has been actively involved in sustainable mobility projects (e.g. “Clever mobil”, “citzies.multimodal” und “AGFK MV” (bike and pedestrian friendly traffic)) which support the six existing concepts dealing with Air Pollution, Parking Space, Mobility, Mobility Management, Noise and Electric Mobility.

Especially Rostock´s bus system and the light rail are popular as public transport systems. In addition, sharing systems exist, like E scooter. In October 2020 the city built new carsharing parking positions, which are used a lot and are praised for their good visibility and convenient spots. The providers could note an increase of registrations on their platforms.

Rostock considers itself a pedestrian friendly city, and it promises to become a bicycling friendly city as well. The city has organized a number of action days with regard to cycling and has installed bike counters in different parts of the city.

The city also supports Electric Mobility for instance by accomplishing free parking for electric cars. According to Rostock´s website the city council is developing a concept for realizing more park and ride opportunities in the next time. A municipal plot to, among other topics, mobility behavior has been conducted in 2013. It found that most of the people living in Rostock are

happy with the public transport system, however, the bicycling infrastructure was rated less positive. In 2008, 27% of the distance Rostock´s inhabitants covered was by foot, 20% was by bike, 17% by public transport and 35% by using a motor vehicle.

The Intermodalyzer index was carried out by representatives of Rostock with support by the SUMBA partner DLR. The scoring was done only for the city area and resulted in a category score of 4,54 out of 6 for the city and 3,64 out of 6 for the functional urban area.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,6**	0,6	0,6	**0,55**	0,6	0,5	**0,8**	0,8	**1**	1	1	1	**0,88**	0,88	**0,71**	0,6	0,53	1
FUA	**0,33**	0,4	0,25	**0,45**	0,5	0,4	**0,8**	0,8	**1**	1	1	1	**0,88**	0,88	**0,18**	0	0,53	0

Bremen

Bremen is located in the Northwest of Germany and constitutes one of the sixteen federal states of Germany. In Bremen city 566,573 people live on an area of 404.6 km². 42% of the people working in Bremen are commuters. Most of them live in the surrounding federal state of Niedersachen (84%) respectively in the Metropolregion Nordwest, a union of 11 municipalities belonging to Bremen or Niedersachsen (76%).

Bremen has a dense net of bus lines and light rail lines that cover all parts of the cities and the suburbs. In addition, a network of suburban trains link Bremen to larger cities and towns in the functional urban area. According to modal share data of 2018, 27% of the trips in Bremen are covered by bike, 25% by foot and 32% with a motor vehicle, the rest being public transport.

Bremen has one of the highest shares of cycling in Germany with a still increasing number of bikes per household. The city has undertaken significant efforts to improve cycling conditions in the last year.

The Intermodalyzer index was carried out by representatives of Bremen with support by the SUMBA partner DLR. The scoring was done only for the city area and resulted in a category score of 4,63 out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	Intermodal planning	Preparedness for intermodal planning	Strategic planning culture	Organisational integration	Coordinating institution	Fare integration	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	Information integration	Intermodal routing system	Infrastructure integration	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,8**	0,8	0,8	**0,75**	0,5	1	**0,5**	0,5	**0,8**	1	1	0,4	**0,8**	0,8	**0,98**	1	0,95	1

Bergen

Bergen is located at the west coast of Norway. Being the second largest city in Norway, Bergen has 285,601 inhabitants on an area of 445.0 km². The functional urban area has 350,000 people. Regarding to public transport systems Bergen is progressive. In recent years, Bergen has built a light rail line which was expanded towards the airport in 2017. In 2020, Bergen switched to a mostly fossil free public transport.

Bergen participates in the project *SHARE North* and has committed to strengthen the bicycle infrastructure. Since joining the project, Bergen made a few progresses, the most popular are five mobility hubs. In the next years Bergen wants to further increase the number of mobility hubs.

The Intermodalyzer index was carried out by representatives of Bergen with support by the SUMBA partner DLR. The scoring was done only for the city area and resulted in a category score of 3,07 out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	Intermodal planning	Preparedness for intermodal planning	Strategic planning culture	Organisational integration	Coordinating institution	Fare integration	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	Information integration	Intermodal routing system	Infrastructure integration	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,6**	0,7	0,5	**0,35**	0,6	0,1	**0,5**	0,5	**0,78**	1	1	0,33	**0,22**	0,22	**0,62**	0,85	0,9	0,1

Gdynia

Gdynia - a city with poviat rights in northern Poland, in the Pomeranian Voivodeship, located on the Baltic Sea, on the Gdańsk Coast and the East Pomeranian Lake District. It is part of the Tricity (together with Gdańsk and Sopot), therefore it is one of the central cities of the Tricity agglomeration. Gdynia had 245,867 inhabitants (2020) and covers 135.14 km². The Tricity metropolitan area also includes Wejherowo, Reda, Rumia, Pruszcz Gdański and several other communities. The total population in 2018 was 748,986 in an area of 1580.69 km².

Public transport in Gdynia is based mainly on city buses - an extensive bus transport system that reaches all districts, as well as neighboring cities and communes. Transport in Gdynia is managed by the Public Transport Authority. ZKM provides services on 108 lines, including selected lines in the neighbouring cities and suburban communes. There are also 22 trolleybus lines in Gdynia.

Fast city railway (Szybka Kolej Miejska w Trójmieście SKM) functions as a commuter rail service backbone for the Tricity, operating frequent trains on the central section between Gdańsk and Gdynia, and less frequently to outlying sections. The SKM route has 27 stops covering the Tricity between Gdańsk, Gdynia and Wejherowo.

Gdynia does not have a developed network of bicycle paths, but the city, with the help of its official - a bicycle officer, tries to change this state. Work is underway to reintroduce the bicycle rental system (after the failure of the first attempt to terminate the contract with the contractor in 2019).

The Intermodalyzer for Gdynia was calculated based on available data by the SUMBA partner FZL with a total category score of 4,65 out of 6 for the city and 4,05 for the functional urban area.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,75**	0,75	0,75	**0,75**	0,75	0,75	**0,75**	0,75	**0,85**	0,8	1	0,75	**1**	1	**0,55**	0,5	0,65	0,5
FUA	**0,5**	0,5	0,5	**0,75**	0,75	0,75	**0,5**	0,5	**0,75**	0,5	1	0,75	**0,9**	0,9	**0,65**	0,25	0,3	0,1

Legionowo

Legionowo - a city in the Masovian Voivodeship, is located in the Warsaw agglomeration, approx. 22 km north of the capital city center. The city has a total population of 53,886 (2019).

Rail transport begins to play the role of the main means of transport in the commuting of residents to the capital. In the city and part of the Nieporęt commune, free bus connections are organized as part of the Free Legionowo City Transport, which is entirely financed from the budget of the City of Legionowo.

As part of the concluded Intercommunal Agreement with the Municipal Transport Authority in Warsaw, within the Warsaw agglomeration, Legionowo has rail and bus connections with Warsaw. There are several bicycle paths in Legionowo, together with cyclists' rest points and bicycle parking.

The Intermodalyzer for Legionowo was calculated based on available data by the SUMBA partner FZL with a total category score of 3,92 out of 6 for the city. The total score for the functional urban area has not been calculated in total due to a missing value

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	**Intermodal planning**	Preparedness for intermodal planning	Strategic planning culture	**Organisational integration**	Coordinating institution	**Fare integration**	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	**Information integration**	Intermodal routing system	**Infrastructure integration**	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,63**	1	0,25	**0,75**	0,75	0,75	**0,25**	0,25	**0,83**	0,5	1	1	**0,75**	0,75	**0,71**	0,75	0,375	1
FUA	**0,5**	0,5	0	**0,38**	0,5	0,25	**0**	0	**0,75**	0,75	0,5	1	**0,75**	0,75	-	0,25	0	No data

Leiedal

Leiedal is the region surrounding the city of Kortrijk. It is located in the West Flanders province in Belgium. The Leiedal Region includes 13 cities and communities and counts approximately 300 000 inhabitants. Similar to many other urban regions, also Leiedal region is suffering from still increasing individual transport, despite rather good public transport in Kortrijk and the functional urban area, run by the company DeLijn which is in charge for most of public transport in Flanders. The central station of Kortrijk, one of the major railway stations in Belgium, is gradually turned into a hub with better connections between different modes of transport. The city centre of Kortrijk is car-free. Despite these

efforts, the modal share of individual motorized transport was almost 60% in Kortrijk in 2018. Cycling share is around 20%, followed by public transport and walking.

The Intermodalyzer index was carried out by Leiedal region, being the functional urban area of Kortrijk, supported by the SUMBA partner DLR. The results for the functional urban area are a category score of 2,45 out of 6.

	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	Intermodal planning	Preparedness for intermodal planning	Strategic planning culture	Organisational integration	Coordinating institution	Fare integration	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	Information integration	Intermodal routing system	Infrastructure integration	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
FUA	0,48	0,7	0,25	0,48	0,35	0,6	0,5	0,5	0,5	0,4	1	0,1	0,29	0,29	0,2	0,4	0,1	0,1

Cēsis

Cēsis is a city in Vidzeme region, Latvia, 90 km from Riga. The city is the center of the county, it is located quite compact (area 19.28 km^2). The population dated in Cēsis is 14,960 (beginning of 2020). JSC "CATA" provides bus routes in the city of Cēsis, in total there are 5 routes available, where two of them also connect Cēsis with Priekuli. Basically, residents within the city limits are mobile, walking or using their own car. The positive aspect of the city of Cēsis is the railway line, which provides passenger train routes and connectivity with Riga and Valga, as well as centers of regional significance.

During the testing of the Intermodalyzer tool, an understanding of the current situation in the field of intermodality was gained - the city has known developments, especially practical ones, which have already been implemented and which are in the process of implementation in the city territory. At present, the main lack is the development of a single mobility plan, which would promote both inter-institutional cooperation and independent monitoring of processes. The tool could be re-used at regular intervals to indicate whether significant changes have been made during this period to update and promote both overall mobility and intermodality issues, thus assessing the city's self-growth. The current analysis shows that the Intermodalyzer score was calculated at 1,51 out of 6 which leaves a lot of room for improvement during the next years.

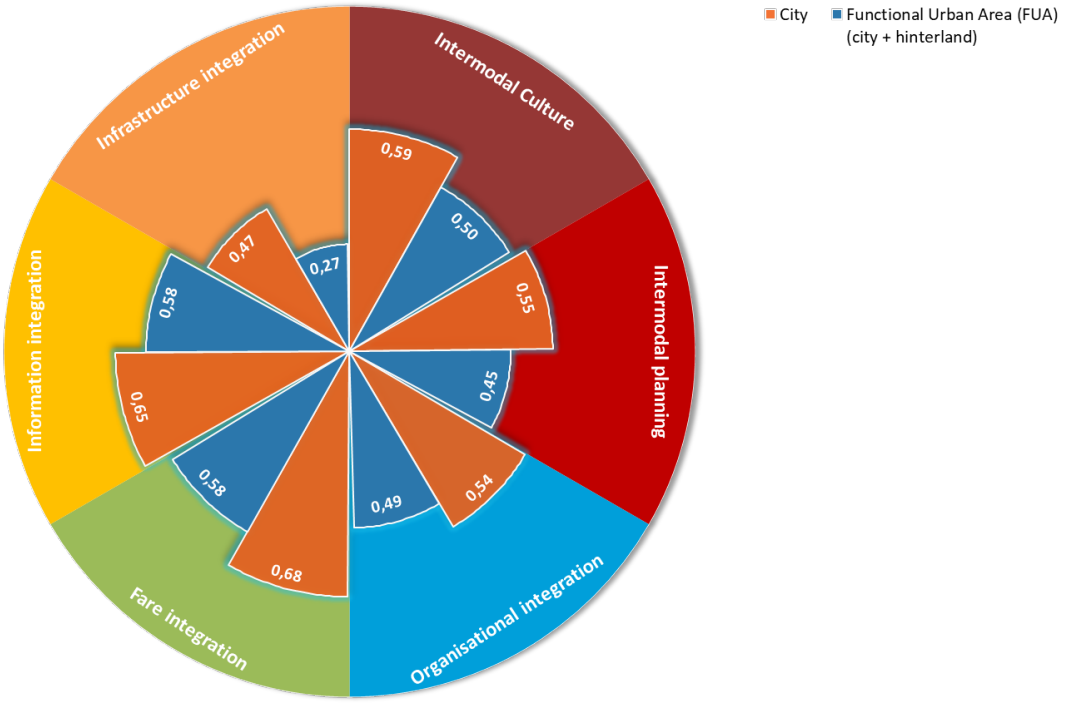
	Intermodal culture	Political climate	Preparedness for new and emerging mobility concepts	Intermodal planning	Preparedness for intermodal planning	Strategic planning culture	Organisational integration	Coordinating institution	Fare integration	Unified fare scheme across different means of transport and operators	Unified fare scheme across municipal borders	Integrated ticketing	Information integration	Intermodal routing system	Infrastructure integration	Mobility Hubs	Park & Ride interchanges	Bike & Ride interchanges
CITY	**0,13**	0	0,25	**0,38**	0,75	0	**0,5**	0,5	**0,33**	0	1	0	**0**	0	**0,17**	0,5	0	0

3. Discussion of results

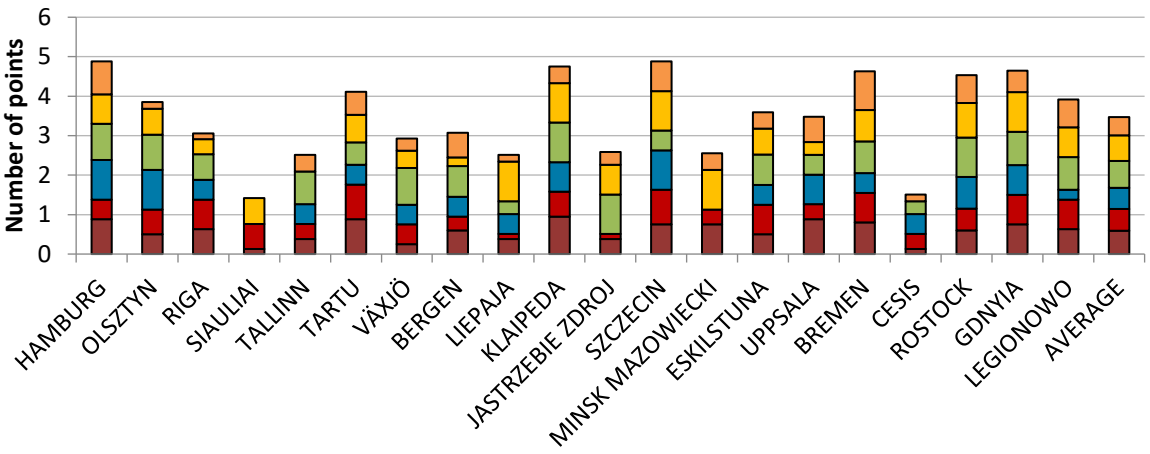
The overview of the rsults includes the analysis of all cities that have been analysed in SUMBA with the Intermodalyzer index, thus project partners and cities in which we multiplied the Intermodalyzer index. In total, we calculated the Intermodalyzer for 20 cities and 15 functional urban areas.

The average Intermodalyzer category score was 3,48 out of 6 for cities themselves and 2,87 for functional urban areas. See details also in the table and pie chart below.

Indicator	City	FUA
Intermodal culture	**0,59**	**0,5**
Political climate	0,63	0,6
Preparedness for new and emerging mobility concepts	0,55	0,4
Intermodal planning	**0,55**	**0,45**
Preparedness for intermodal planning	0,61	0,47
Strategic planning culture	0,49	0,42
Organisational integration	**0,54**	**0,49**
Coordinating institution	0,54	0,49
Fare integration	**0,68**	**0,58**
Unified fare scheme across different means of transport and operators	0,68	0,53
Unified fare scheme across municipal borders	0,78	0,67
Integrated ticketing	0,57	0,55
Information integration	**0,65**	**0,58**
Intermodal routing system	0,65	0,58
Infrastructure integration	**0,47**	**0,27**
Mobility Hubs	0,49	0,28
Park & Ride interchanges	0,46	0,3
Bike & Ride interchanges	0,46	0,23
CATEGORY SCORE	**3,48**	**2,87**



The geographic conditions, transport setups and even the size of the cities varied greatly across the analyses, but despite this fact there were many similarities regarding challenges and possible solutions. The analyses also showed that while there are problems at hand, cities seek advice and try to implement many innovative solutions on their own as well as in many cases the cooperation between cities. From the analysis we observe that cities score better than functional urban areas, which is perhaps not surprising as the use of alternative means of transport is typically higher in denser areas leading to more emphasis on public transport and active transport in policy and planning. As a general trend, we can furthermore observe that bigger cities score better than smaller ones. The reason is probably that larger cities tend to have a better public transport offer than smaller ones, leading to a greater demand in intermodal planning and infrastructure provision. The following chart shows the Intermodalyzer results just for all analysed cities.



One of the biggest identified challenge was the lack of representation of all actors needed for the shaping of functional and intermodal transport system. There were different reasons mentioned, ranging from lack of institutionalized or informal discussion framework up to large numbers of actors (i.e. in cities where private small bus transport is being used). The best identified solution to this was to introduce a strategic plan on a larger spatial level and a semi-institutional or institutional framework for discussion and coordination – such solutions brought good results in Sweden. The conclusion is that participatory approaches and methods of structured dialogue are still in high demand. This is clearly visible on unregulated transport markets.

Another big, identified challenge was the fare integration which clearly resulted from the challenges mentioned above (as indicated by numerous city staff). Integration of fares was easier and feasible in many cases only with regions with high population density and with the dominant role of at least one transport provider or transport organization. In areas with multitude of actors or without clearly defined “leaders” of the transport market the fare integration was hard to achieve.

What remains problematic is the integration of information and data exchange especially for planning an intermodal trip that goes beyond the classical timetable or connection search available already today. Many cities indicated that the development of a planning tool is costly and requires expertise they do not have at hand. The other solutions were providing open data to Google services or to local planning and e-ticketing providers which serves as a planning tool integrating most transport means but also allows to buy tickets.

Regarding the observation of political climate, it is visible that metropolitan regions have the political staff aware of the transport problems and in most cases seeking actively for the implementation of new solutions. This openness towards new and emerging mobility concepts on a political level is less visible in local politics and in smaller cities. The cities are open to new and emerging mobility concepts however a trend can be observed. It is visible that the cities that are within the scope of bigger structure i.e. a metropolitan area, or the cities that are capitals are better oriented towards new concepts and in many cases gain knowledge form similar cities through better developed international cooperation. The majority of urban and transport planners are familiar with intermodal mobility concepts and plan accordingly; however, there are still gaps in the knowledge of international best practice especially in sub metropolitan regions.

Institutionalized coordination of the transport system is either present – again in the metropolitan regions that form regional networks with other cities or in case of bigger cities benefiting from international cooperation. In many cases the coordination was done project to project based or for the purpose of creating strategic documents on a higher regional level – but there was no clear coordinating institution, or such institution was only exiting for the period of undertaken planning effort. This explains why in cases of cities which scored high in terms of organizing multi city transport platforms, integrating ticketing schemes etc. low scores (zeros) are observed regarding the existence of institutionalized coordinating institutions.

Despite the problems of introducing unified fare schemes, ticketing platforms and planning platforms most cities scored high in these three regards. This indicates high efforts put into making the both intra city and cross border intermodal transport feasible. What is observed is that there are lengthy and laborious efforts to introduce such systems but once these are being created most transport operators join, thus achieving scores close to 1. However, the city staff indicated these three issues as being the most important problems and the hardest to solve without clearly defined transport leaders and means of dialogue.

Summing up, the Intermodalyzer index gives a mixed picture to which extent transport systems are intermodal. While progress has been made in some areas, we still see room of improvement in many categories, including “classical” topics such as infrastructure. Creating truly intermodal transport systems that will effectively address climate change mitigation issues will hence remain a challenging task for the next years and decades in cities and functional urban areas in the Baltic Sea Region and beyond.

ABOUT SUMBA

WHY DO WE NEED SUMBA?

More and more people chose to live in suburbs while they continue to work in cities, resulting in high number of daily commuters. Commuter traffic is still dominated by private cars, resulting in problems such as

- congestion
- air pollution
- high demand of parking spaces
- higher costs of public transport.

SUMBA will address commuter transport and help to mitigate these problems!

OUR ACTIVITIES

The urban transport system can be reshaped to an intermodal network that off ers a combination of various transport modes, including bike and car-sharing. This helps cities to achieve a more attractive and environmentally friendly commuting system. SUMBA will develop and test tools that help urban and transport planners to assess, plan, and integrate intermodal mobility solutions into transport plans and policies of their cities and municipalities.

OUR PARTNERS CITIES

Hamburg (Germany)
Tallinn city, Union of Harju municipalities (Estonia)
Tartu (Estonia)
Riga (Latvia)
Växjö (Sweden)
Šiauliai (Lithuania)
Olsztyn (Poland)
Associated cites Gdynia, Warsaw suburban region, Słupsk municipality (Poland), and Helsinki (Finland)

EXPERT PARTNERS

German Aerospace Center, Institute of Transport Research
Baltic Environmental Forum Latvia, Estonia and Germany
Earth and People Foundation

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