

CONNECT2CE

Pilot Action No. 4

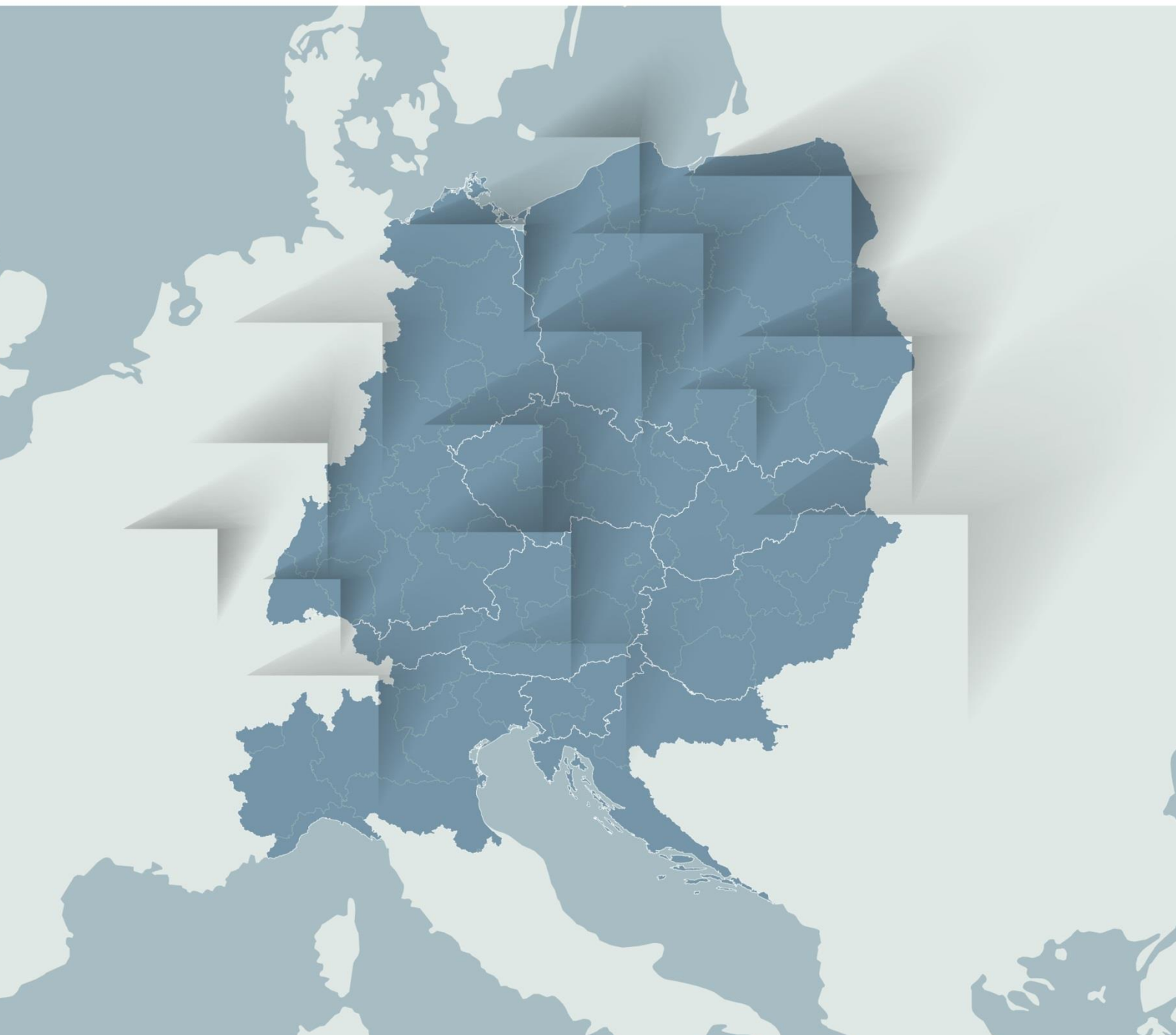
Cross Border Public Service Obligation (PSO)

Ungarn - Südburgenland - Graz

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Inhalt

1. OBJECTIVES.....	4
2. FRAMEWORK	5
2.1. National legal framework for cross-border public transport.....	5
2.2. EU regulation on public passenger transport services on rail and road - Public Service Obligation (PSO)	5
2.3. Transnational Tools	5
2.3.1. Public Service Obligation (PSO) and Timetable harmonisation	6
2.3.2. Tariff & Ticketing Systems.....	7
2.3.3. Info-Mobility	7
2.3.4. Open points for the project area based on the Transnational Tools.....	9
Commissioning body	9
Harmonization of timetables	9
3. STATUS QUO	11
3.1. Location of project area	11
3.2. Commuter flows	13
3.2.1. Calculation of working and student commuter traffic in Southern Burgenland	13
3.2.2. Working commuters.....	15
3.2.2.1. District Oberwart	16
Outbound commuter from the district of Oberwart to Styria, especially Graz	19
3.2.2.2. District Güssing	21
Outbound commuters from the Güssing district to Styria, especially Graz	23
3.2.2.3. District Jennersdorf	24
Outbound commuters from the district of Jennersdorf to Styria, in particular Graz	26
3.2.2.4. Outbound commuters from the Southern Burgenland to Graz	28
3.2.2.5. Cross-border commuter flows from Hungary to Southern Burgenland	29
3.2.3. Training commuters.....	30
3.3. Analysis of the existing transport offer	32
3.3.1. Public transport connections Oberwart - Hartberg - Graz.....	32
3.3.2. Public transport connections Hartberg - Graz	33
3.3.2.1. Presentation of the passenger numbers Hartberg - Graz	34
3.3.2.2. Public transport connections Güssing - Fürstenfeld (Stegersbach) - Graz	36

3.3.3.1. Presentation of passenger numbers Fürstenfeld - Graz	37
3.3.4. Public transport connections Jennersdorf -Fehring - Graz	37
3.3.4.1. Presentation of passenger numbers Jennersdorf - Fehring - Graz.....	38
3.3.4.2. Cross-border connection to Hungary	39
3.3.5. Excursus - Bus connection G1 between Southern Burgenland and Vienna	40
3.4. Estimation of passenger potential	42
3.4.1. Axis 1: Szombathely - Oberwart - Hartberg - Graz	44
3.4.1.1. Passenger potential Hungary - District Oberwart	44
3.4.1.2. Estimation of passenger potential from the district of Oberwart to Styria	45
3.4.1.3. Estimation of passenger potential from Hartberg/Hartberg Umgebung to Graz bzw. to the district Oberwart	46
3.4.2. Axis 2: Körmend - Güssing - Fürstenfeld - Graz.....	46
3.4.2.1. Passenger potential Hungary - District Güssing	48
3.4.2.2. Passenger potential district Güssing - Steiermark	48
3.4.2.3. Passenger potential Fürstenfeld - Graz resp. district Güssing	49
3.4.3. Axis 3: Szentgotthárd - Jennersdorf - Fehring - Graz	49
3.4.3.1. Passenger potential Hungary - district Jennersdorf	50
3.4.3.2. Passenger potential district Jennersdorf - Styria	50
4. FEASIBILITY STUDY.....	52
4.1. Timetabling.....	52
4.1.1. Axis 1: Szombathely - Oberwart - Hartberg - Graz	52
4.1.1.1. Variant 1: Minimal variant.....	52
4.1.1.2. Variant 2: Maximum variant, based on the draft of the Regional Mobility Plan Eastern Styria	53
4.1.1.3. Variant 3: Coordinated target variant	54
4.1.2. Axis 2: Körmend - Güssing - Fürstenfeld - Graz.....	58
4.1.2.1. Variant 1: Minimal variant.....	58
4.1.2.2. Variant 2: Maximum variant with quick connections	59
4.1.2.3. Variant 3: Coordinated target variant	59
4.1.3. Axis 3: Szentgotthárd - Jennersdorf - Fehring - Graz	60
4.2. Operating and financing concept.....	60
4.2.1. Cost estimate	61
4.2.1.1. Cost estimate for axis 1: Szombathely - Oberwart - Hartberg - Graz	61
Cost estimate variant 1	61

Cost estimate variant 1a	61
Cost estimate variant 3	62
4.2.1.2. Cost estimation for axis 2: Körmend - Güssing - Fürstenfeld - Graz.....	63
Cost estimate variant 1 (short-term feasible)	63
Cost estimate variant 3 (coordinated):	63
4.2.2. Financing	64
4.2.2.1. Financing Axis 1: Szombathely - Oberwart - Hartberg - Graz	64
4.2.2.2. Financing axis 2: Körmend - Güssing - Fürstenfeld - Graz	65
5. SOURCES.....	66
6. LIST OF FIGURES	68
7. LIST OF TABLES	70
8. ANNEXES.....	72

1. Objectives

The European project CONNECT2CE is part of the programme Interreg Central Europe 2014-2020. Its 13 project partners are working on the further development of cross-border public transport accessibility. The main goal of the project is to improve the public transport planning capacities of the responsible institutions. Furthermore, the project aims to improve accessibility - especially of metropolitan areas where the TEN-T interchanges are located; rural and cross-border areas should profit the most thereby.

To achieve this, each of the 13 project partners must implement a predefined pilot action. This project report describes Pilot Action No. 4, for which the Regional Management Burgenland GmbH is responsible. The content of Pilot Action No. 4 is the development of a public service obligation (PSO)/a transport service contract for cross-border bus traffic between Austria and Hungary (AT-HU).

Due to its geographical location, Burgenland works very closely with neighbouring countries. Burgenland - together with Vienna, Bratislava, western Hungary and Styria - is part of a cross-border, functional region. The so-called SETA corridor (South-East-Transport-Axis) runs from north to south through the region and represents the backbone of public transport. The SETA-project, which was completed in 2014, focused on a railway connection between Vienna/Bratislava via Hungary and Croatia to the northern Adriatic ports.

As part of Pilot Action No.4, two new bus routes are being developed in order to strengthen the SETA corridor; this development is embedded in the strategic overall development concept for the further development of public transport in the Burgenland-West-Hungary region. The new bus lines will connect the city of Graz with the SETA corridor (Körmend and Szombathely) via the local centers of Southern Burgenland (Oberwart and Güssing). The following layouts are planned:

1. Graz - Oberwart - Szombathely (HU)
2. Graz - Fürstenfeld - Güssing - Körmend (HU)

Based on a potential analysis, which is based, among other things, on empirical values of an existing bus line from the Southern Burgenland to Vienna (line G1), a feasibility study on a comparable system between the districts of Oberwart, Güssing and Jennersdorf as well as the adjacent Hungarian region and Graz is being presented.

The project involves conducting a status analysis of existing traffic and commuter flows from Southern Burgenland to Graz and Vienna. Based on this, requirements for an effective bus connection will be defined, including a potential assessment of the expected short, medium and long-term passengers.

The pilot action will be developed in close coordination with the relevant regional and sectoral stakeholders. The result is a ready-to-run operating and financing concept.

2. Framework

There is a legal framework to be considered on a national and European level with regard to establishing a cross-border public transport service as well as with the Public Service Obligation. In order to define the legal and contextual scope of the project, this framework - together with so-called transnational tools, which play a major role in the implementation of the PSO regulation - is briefly presented.

2.1. National legal framework for cross-border public transport

Responding to a parliamentary question in 2016, the Minister of Infrastructure at the time, Jörg Leichtfried, noted that supraregional bus transport represents a sensible addition to existing transport services, especially where there is currently no sufficiently developed rail infrastructure. However, it must be borne in mind that international and domestic motor traffic under the Kraftfahrlinien-Gesetz requires a concession or approval for which, in the case of national motorways (even if they operate between two or more federal states), the respective „Landeshauptleute“ (provincial governors) are responsible; Cross-border motor lines are the responsibility of the Federal Ministry of Transport, Innovation and Technology. In the EU/EEA area, the approval procedure is based on the relevant EU regulations. (bmvit 2016)

2.2. EU regulation on public passenger transport services on rail and road - Public Service Obligation (PSO)

In 2007, Regulation No 1370/2007 of the European Parliament and of the Council on public passenger transport services by rail and by road, also known as the PSO Regulation, was adopted.

This Regulation lays down the conditions under which the responsible public transport authorities (rail and road) may act in order to ensure the provision of services of general interest. (European Union 2014)

Based on Regulation No 1370/2007 or its national implementations, there is a European Public Service Obligation (PSO) or Public Service Contract (PSC) system, which, in a transparent, comparable and competitive way, regulates the services that are very important to the public interest despite the losses they incur. (CONNECT2CE 2018a)

2.3. Transnational Tools

As a conclusion of WPT1, CONNECT2CE project has implemented a decision support tool for each of the 3 thematic areas

- Public Service Obligation/Timetable harmonisation
- Multimodal Integrated Ticketing and Tariff Systems
- Passenger Information Systems.

It can be summarized that the public service contract for operating cross-border services is the main “hardware,” while timetable harmonisation is the energy which allows the hardware to run; the ticketing

system and passenger information system are the key software of efficient passenger transport. (CONNECT2CE 2018a)

As the project partners within CONNECT2CE belong to very heterogeneous regions and come from different geographic, socio-economic and sectoral areas, the efficient management of public transport requires special attention in terms of heterogeneity. (ibid.)

There are a variety of EU directives, local regulations, technical standards and social aspects to consider in each region. Harmonizing them all poses a great challenge to the authorities concerned, who are already confronted with a multitude of other tasks. The transnational tools are intended to provide assistance in developing or operating a public transport service. (ibid.)

Creating an appropriate cross-border public transport system has become a growing priority within the EU, not least because of increasing traffic congestion and growing environmental awareness. In many border areas there is an increasing demand for cross-border mobility solutions between member states. As far as the cross-border connections are concerned, the modal split is significantly worse for public transport than within the respective border areas. The main reason for this is a lack of coordination. (ibid.)

The three tools, including challenges and recommendations, which were illustrated in an analysis within CONNECT2CE and published in 2018, will be discussed in the chapters below. (vgl. CONNECT2CE 2018a, 2018b & 2018c). The tools are based on online questionnaires that provide binominal, multiple-choice and/or evaluation questions for individual project regions.

2.3.1. Public Service Obligation (PSO) and Timetable harmonisation

In order to make cross-border public transport appealing, it is necessary to harmonize timetables. This results in difficulties, as the affected regions can be very heterogeneous. This is also the case in the current project area. For here, too, decentralized structures, as found in federal states such as Austria, encounter centralized government structures, such as those in Hungary. This is often an administrative barrier to effective and integrated cross-border public transport and must therefore be given special consideration during implementation. (CONNECT2CE 2018a)

The tool supports decision-making and covers various legal and organizational areas. In particular, the following two challenges are taken into account: One is the fact that peripheral border areas are often not efficiently linked to urban areas (eg TEN-T networks and main transport hubs) and the other is the lack of integration of different public transport modes in peripheral/cross-border areas. (ibid.)

The PSO/timetable harmonisation tool deals with the different organisational and responsibility levels on the different sides of the border, and also takes into account how willing the different groups are for ordering and financing services. It divides the potential services into target groups. Target groups or segments of the service contract that play a role in this tool are (1) tourism & shopping, (2) pupils and students, (3) commuters, (4) general transport links. The application of the tool reveals options as well as the requirements or conditions and possible consequences that exist in connection with the harmonization of timetables. After answering the question set, the application results in recommendations and suggestions. (ibid.)

2.3.2. Tariff & Ticketing Systems

There are hurdles to tariff regulation in terms of harmonization of tariffs. The reason for this is that there are several ways in which the fare for a route from A to B can be calculated. Essentially, a flat rate could be introduced for a particular area in which the same tariff applies to an entire zone. But there are other possibilities as well, including a tariff model based on a distance-based calculation. Here again, the question arises of which distance is used as reference for the tariff calculation, because so far this is regulated differently in the existing, individual systems. A combination of the two approaches is also possible. More generally, the decision in favour of a specific ticket system is reflected in appropriate financing models, which also affects the validation and control of tickets. (CONNECT2CE 2018 b)

In multimodal transport systems, a flat rate system combined with a simplification of tariff products is favorable. The use of season tickets (monthly tickets, half-year tickets or annual tickets or even day tickets instead of single tickets) contributes to simplifying the system. It should also increase user-friendliness through the possibility of different channels for purchasing tickets (including electronic ticketing). (ibid.)

In the case of an integrated ticket system, the difficulty lies not only in the coordination but also in the equitable distribution of the revenues from ticket sales. An electronic ticket system brings the benefits of automatically generated data, but can be expensive to implement and cause problems if it is incompatible with the existing systems. Compatibility, along with the introduction of security standards, is a basic requirement for data exchange and thus the functionality of a cross-border system. The tickets themselves do not have to be exclusively electronic: paper tickets with barcodes are also a very good starting point. Any form of e-ticketing or mobile ticketing system is already an important step in the development of a basic infrastructure. (ibid.)

The availability of different ticket distribution channels is crucial for the introduction of an integrated ticket system. In a (cross-border) network, which is partly operated by different providers, it is vital that passengers can buy their ticket at each point of sale of each operator and that the ticket so purchased is valid and recognized for each provider within this ticket system, regardless of the form of ticket, whether it be an electronic ticket, a paper ticket or another form. (ibid.)

The decision support tool provides information on six major elements of tariff and ticketing systems that need to be addressed for successful integration of the public transport systems: (1) tariff model, (2) tariff products, (3) ticket medium, (4) ticket sale (distribution), (5) ticket validation and (6) ticket control. The tariff and ticketing tool has been developed in the form of a knowledge base drawn by the user through the questionnaire where the user is asked about the features of actual tariff and ticketing system that is subject to integration and also about the user's preferences and potential development plans. The result of the application is, again, a list of recommendations, suggestions, and annotations. (ibid.)

2.3.3. Info-Mobility

The third transnational tool deals with mobility information systems (MIS) and integrated mobility information systems (IMIS), which contribute significantly to user-friendliness. (CONNECT2CE 2018 c)

IMIS bring data together from different providers or competent authorities, provide passengers with information before or during the journey or a corresponding ticket service, and increase the overall user-friendliness in many respects. Ideally, the interplay of information before and during the journey, along with a unified ticket system, will result in a synergetic relationship, so an IMIS should consider all three of these points. As far as the provision of information is concerned, it ideally provides a comprehensive multimodal overview of the region. Multimodal Information Systems make it possible for passengers to combine different types of sustainable mobility (public transport, bicycles, carsharing, etc.), taking into account, among other things, customized transfer times and information. This gives passengers suggestions for door-to-door connections without having to rely on a car. Ideally, users can put together a customized and personalized route. For this purpose, filters such as "departure point", "destination", "via", "driving time", "restriction to be considered (e.g., handicap, slower walking speed)", etc.) should be selectable in a timetable information service. (ibid.; Stadt Wien 2019)

As far as passenger information during the journey is concerned, always providing up-to-date and reliable real-time information provides a sense of confidence and satisfaction. However, this also requires data exchange between providers. By contrast, a lack of information while using public transport can lead to passengers feeling a sense of loss of control and general dissatisfaction. In general, information is required both online and offline to ensure ideal passenger care and satisfaction. (CONNECT2CE 2018 c)

Finally, as regards the ticketing service or information on ticket purchase, validity, etc., it is beneficial to develop an app that can be operated and used for ticket purchasing in different languages, which can save commuters time. In addition to an app, a ticketless system or electronic ticketing could be considered. In general, it is important to enable a user-friendly purchasing process. This also includes different payment methods (SMS, credit or debit card, etc.) and different types of tickets. (ibid.)

A SWOT analysis, which has already been conducted under CONNECT2CE, shows that MISs are highly influenced by several external themes, such as

- the level of political collaboration
- technical feasibility
- the availability of services
- the organization of transport providers
- the presence of integrated tariffs
- the complexity of integrative tariff schemes,
- the specific needs of transboundary commuters.

The challenge in considering all these aspects lies in the diversity within a project region. Particularly in cross-border projects, political cooperation and cooperation between individual transport providers are important but also difficult points. (CONNECT2CE 2018)

The Integrated Mobility Information System tool consists of question clusters, which can be answered either as yes-no questions, questions with two possible answers, or through quantitative assessment (none, few, many, all). First, a territorial classification is made in the form of a question regarding which planning level (from local to interregional) is addressed, whether it is a rural or urban space and who the tar-

get persons are (such as residents or tourists). In addition, the MIS or IMIS to be developed is identified, as well as the effectiveness of the system with regard to the availability of information (1) before the journey, (2) during the journey and (3) in relation to the ticket analysis. The result of the application of the tool is a table with individual feedback. The aim is to provide proposals for the development of MIS in cross-border peripheral areas. (CONNECT2CE 2018c)

2.3.4. Open points for the project area based on the Transnational Tools

From the described general explanations to these Transnational Tools or first recommendations, an overview of the most important points will be given. These topics have already been partially clarified in a meeting of the project partners.

On June 12, 2019, a conversation took place in Sopron between representatives of GySEV, KTI and the Ministry of Innovation and Technology, during which the following points were noted:

Commissioning body

The project promoters of cross-border public transport systems are the European Grouping of Territorial Cooperation (EGTC) and the Verkehrsverbund Ostregion (VOR GmbH).

The European Grouping of Territorial Cooperation (EGTC) is a European Union instrument aimed at facilitating and promoting territorial cooperation, in particular between its members, in order to strengthen economic, social and territorial cohesion in the EU. The EGTC was established on 5 July 2006 on the basis of EU Regulation 1082/2006. (European Parliament 2019)

There are currently no undertakings with the EGTC between Austria and Hungary. The problem could be the difference in the political framework of the two states - Austria being a federal republic, Hungary being centrally governed. The possibility of an EGTC as a flagship project in the coming EU funding period is under discussion.

The second promoter would be the Verkehrsverbund Ostregion GmbH. After having successfully operated a corridor solution through Hungarian territory in the VOR network area for many years, a similar model could also be implemented for the two bus axes Szombathely - Oberwart and Körmend - Güssing - Fürstenfeld.

Harmonization of timetables

According to the timetable concept for western Hungary, there will be a clock node at the Szombathely station for the 30th minute. Therefore, bus connections should be timed so that arrivals at Szombathely station are between minute 20 and 25 and departures around minute 40.

At the station Körmend a clock node is set up to the minute 00. Therefore, the arrival of the buses should take place at about minute 55 and the departure between minute 05 and 10.

Tariffs and ticketing system

Concerning the tariffs and ticketing system, it was discussed that as a short-term solution an assumption of the cross-border bus connections in the tariff system of the VOR could be considered after the model of the corridor solution in the area Sopron.

Ticket sales should be possible in both currencies, in euro and in forint. An electronic ticket system is to be implemented to largely avoid cash payments.

3. Status quo

In the following chapter, the project-relevant basics of spatial conditions as well as all available data on commuter flows from the districts Güssing, Jennersdorf and Oberwart to Graz or Vienna and an analysis of the existing transport offer are determined.

3.1. Location of project area

The project area covers the corridor from Szombathely in Hungary to Graz via Southern Burgenland. Based on the three districts of Southern Burgenland, Oberwart, Güssing and Jennersdorf, the Styrian border area up to the provincial capital of Graz and the Hungarian border area between Szombathely and Körmend are considered.



Figure 1: Location of project area (own representation 2019)

The Austrian part of the project area comprises Southern Burgenland with the districts Oberwart, Güssing and Jennersdorf. In Styria, it covers the area from the cities of Hartberg and Fürstenfeld to the provincial capital of Graz. The Hungarian cities of Körmend and Szombathely form the eastern border of the corridor.

The following table shows the most important cities in the project area with their population.

Table 1: Most important cities in the project area and their population (based on data of Statistik Austria 2018)

	City	Population
AT - Bgld	Oberwart	7.494
AT - Bgld	Güssing	3.662
AT - Bgld	Jennersdorf	4.165
AT -Stmk	Graz	283.869
AT -Stmk	Fürstenfeld	8.408
AT -Stmk	Hartberg	6.527
HU	Szombathely	78.025
HU	Körmend	12.379

District	Population
District Oberwart	53.630
District Güssing	26.636
District Jennersdorf	17.643

The distance between Southern Burgenland and Graz is around 80 km. In comparison, Vienna is 130 km from Oberwart and 180 km from Jennersdorf. The table below shows the distances between the cities most relevant to the project. In the following illustration, these distances are graphically displayed.

Table 2: Distances between relevant cities of the project area (based on Google Maps 2019)

	Szombathely	Körmend	Graz	Fürstenfeld	Hartberg	Wien
Oberwart	40	60	80	40	20	130
Güssing	35	25	80	25	45	160
Jennersdorf	70	40	70	15	50	180

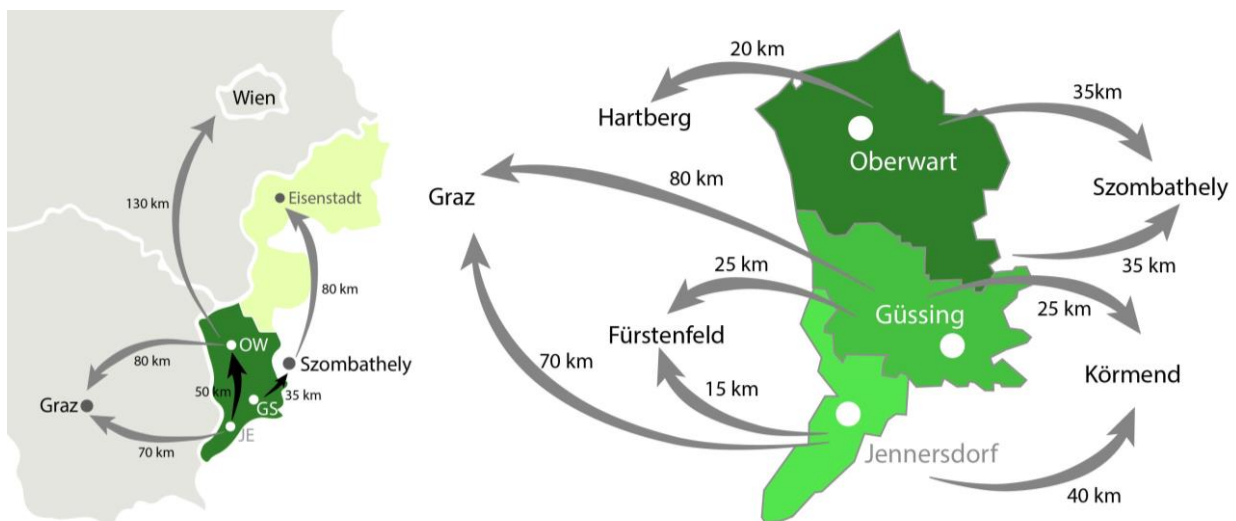


Figure 2: Distances between important locations within the project area (own representation 2019)

3.2. Commuter flows

In the project a distinction is made between commuters who travel for work (working commuters) and those who do so for educational purposes (training commuters). For the determination of commuter data, data was used, which was prepared in cooperation with the statistics department of the Burgenland provincial government. Statistics Austria defines that the statistics on commuters give an idea of the ways to reach their job or their training institution (training in formal education) of employed persons, pupils and students. If students are also gainfully employed, they are regarded as earners and not as student commuters or training commuters. (Statistik Austria 2019).

The report therefore deals first with working commuters - subdivided into districts or with cross-border commuter flows into border regions - and then with training commuters.

3.2.1. Calculation of working and student commuter traffic in Southern Burgenland

Occupational working commuter traffic was reported on the basis of available statistical data for the years 2011 and 2016 as well as on forecast values for 2030 for all source municipalities and the most important target municipalities in southern Burgenland and in neighboring Styria. For 2011, the register count of Statistics Austria was accessed. For 2016, Statistics Burgenland evaluated the corresponding commuter matrices on the basis of the concerted employment statistics from 2016. For the first time, this data contains the commuters from Hungary to the selected target communities. For the forecast year 2030, the district population forecast of ÖROK was used. In this forecast for Burgenland's political districts, the number of 20- to 64-year-olds (essentially the same as the working-age population) in Southern Burgenland will have declined by more than 10 %. A loss of some 6,300 domestic workers will not only cause a decline in commuter migration, but also greatly increase the labor shortage in the region's companies. The expected decrease in the number of Burgenland commuters is forecast at around eight percent.

Table 3: ÖROK - small-scale population forecast 2018 (Quelle: ÖROK 2018)

Southern Burgenland 20 - to 64-year-olds				
	2018	2030	18-30	In %
Güssing	15.313	13.469	-1.884	-12 %
Jennersdorf	10.552	9.080	-1.472	-14 %
Oberwart	32.480	29.481	-2.999	-9,2 %
GESAMT	58.345	52.030	-6.315	-10,8 %

The choice of transport for the working commuters is based on the 2001 census results and the 2011 projection of the means of transport carried out in the GREMO project. It was adopted unchanged for the years 2016 and 2030. This seemed justified, as between 2011 and 2016, the public transport offerings did not change fundamentally.

Some relief from this situation is likely to be brought by the increase of Hungarian, working commuters. Since 2011-2016, the influx of Hungarian commuters has increased significantly (+8 % per annum). From 2016 to 2030, it was assumed that this growth would flatten again (due to the decline in the working-age

population in Hungary). The increase in Hungarian commuters to Southern Burgenland working communities was therefore estimated rather cautiously at around +10 % between 2016-2030.

The student commuter traffic was calculated as follows: the values given in the matrices do not include the trips of the elementary and secondary school students (including NMS), but only the trips to the middle and higher schools of Southern Burgenland, as well as to school centers in neighboring Styria.

The calculations are based on the school statistics of Statistics Austria and the school statistics of the Burgenland Bureau. Statistics on the detailed distribution and use of schools in Southern Burgenland by Hungarian school commuters do not provide any useful documentation, which is why an estimation procedure was used for the number of Hungarian pupils. This is based on the specification of students with a non-German mother tongue in Burgenland, the student commuters from Hungary to the entirety of Burgenland and the study of Statistics Austria in Northern Burgenland on Slovak and Hungarian working and school commuters (Statistics Austria 2012). The forecast figures for the number of students for 2016 and 2030 were taken from the forecast results of Statistics Austria (see the following table).

Table 4 Forecast of the number of students (Source: Statistik Austria 2012)

Students in the school year 2009/10¹) by political district						
Bundesland (Province), Political district of the school location	Total (incl. VS, HS, NMS and Sonderschulen (special needs school)	AHS- lower cycle ²	AHS- upper cycle ²	Berufsschulen (vocational school)	BMS	BHS ³
Österreich	1.138.126	115.651	87.863	140.256	51.712	137.534
Burgenland	35.380	3.154	2.435	2.650	1.830	6.292
Güssing	2.757	-	282	-	253	507
Jennersdorf	1.535	-	216	-	60	-
Oberwart	9.203	700	530	1.312	428	2.113
Forecast of the number of students in the school year 2020/21 by political district, Trendvar¹						
Bundesland (Province), Political district of the school location	Total	AHS- lower cycle ²	AHS- upper cycle ²	Berufsschulen (vocational school)	BMS	BHS ³
Österreich	1.084.365	124.685	85.049	123.513	46.018	130.769
Burgenland	33.661	3.447	2.307	2.349	1.557	6.017
Güssing	2.525	-	253	-	219	478
Jennersdorf	1.293	-	184	-	40	-
Oberwart	8.580	758	501	1.154	350	1.921
Forecast of the number of students in the school year 2030/31 by political district, Trendvar¹)						
Bundesland (Province), Political district of the school location	Total	AHS- lower cycle ²	AHS- upper cycle ²	Berufsschulen (vocational school)	BMS	BHS ³
Österreich	1.132.529	144.802	91.536	123.949	45.036	139.851
Burgenland	35.066	4.076	2.417	2.350	1.476	6.398

Güssing	2.471	-	264	-	210	504
Jennersdorf	1.265	-	186	-	33	-
Oberwart	8.702	839	517	1.153	332	1.999
<p>¹ Starting year of the school visit forecast</p> <p>² Incl. Pupils in classes of the New Middle School, who are led at locations of the mentioned school type.</p> <p>³ Higher institutions of teacher and educator education (educational institutions for kindergarten and social education).</p>						

With regard to the pupils' choice of means of transport, the results from the GREMO calculations, which were calculated on the basis of the 2001 census, were used to extrapolate the pupils' choice of means of transport; this was done by municipality for the number of students in 2016 and 2030. There are no studies and no data on the choice of means of transport for student commuters from Hungary. It was therefore assumed that the students were taken to the nearest bus stops that had direct access to the respective school locations. In any case, these students are considered potential users for cross-border bus service in school transport.

The calculation of other workday trips (as an additional potential for cross-border bus services) was waived for 2016 and 2030 due to the lack of calculation bases (eg 5-year age groups). However, it can be clearly demonstrated from the evaluations of the Upper Austrian traffic survey/household survey 2011 that the other work-day traffic to the regional centers is approximately the same as that of professional commuter traffic.

3.2.2. Working commuters

A total of about 98,000 people live in the districts Oberwart, Güssing and Jennersdorf. All of Burgenland had about 290,000 inhabitants as of 01.01.2018 (Statistics Burgenland 2018). Of the 98,000 inhabitants of Southern Burgenland, 32,078 people or about one third of them, work outside their community, making them commuters. According to the Mobilitätszentrale Burgenland (Mobility Center Burgenland 2019), in Burgenland an average of 85 % of commuters commute daily to work, 15 % weekly. In Southern Burgenland, the proportion of weekly commuters is about 22 % higher than the overall average and in central Burgenland (about 18 %) and in northern Burgenland (about 11 %). (ibid.)

Relative to the communities, a distinction can be made between groups of outbound commuters and inbound commuters. From the point of view of the place of residence, persons whose place of residence and work are located in different communities are called outbound commuters. From the point of view of the workplace, they are inbound commuters (Statistik Austria 2011). Whether a community is an inbound commuter or outbound commuter community can be described by the index of the commuter balance. This covers the relationship of the employed persons at the place of work to the employed persons at the place of residence. If the value is below 100, there are fewer jobs than employees who live there (outbound commuter community). If the value is above 100, there are more jobs than resident workers (inbound commuter community) (Statistik Austria 2011). The following figure gives an overview of the index of the commuter balance for the project area.

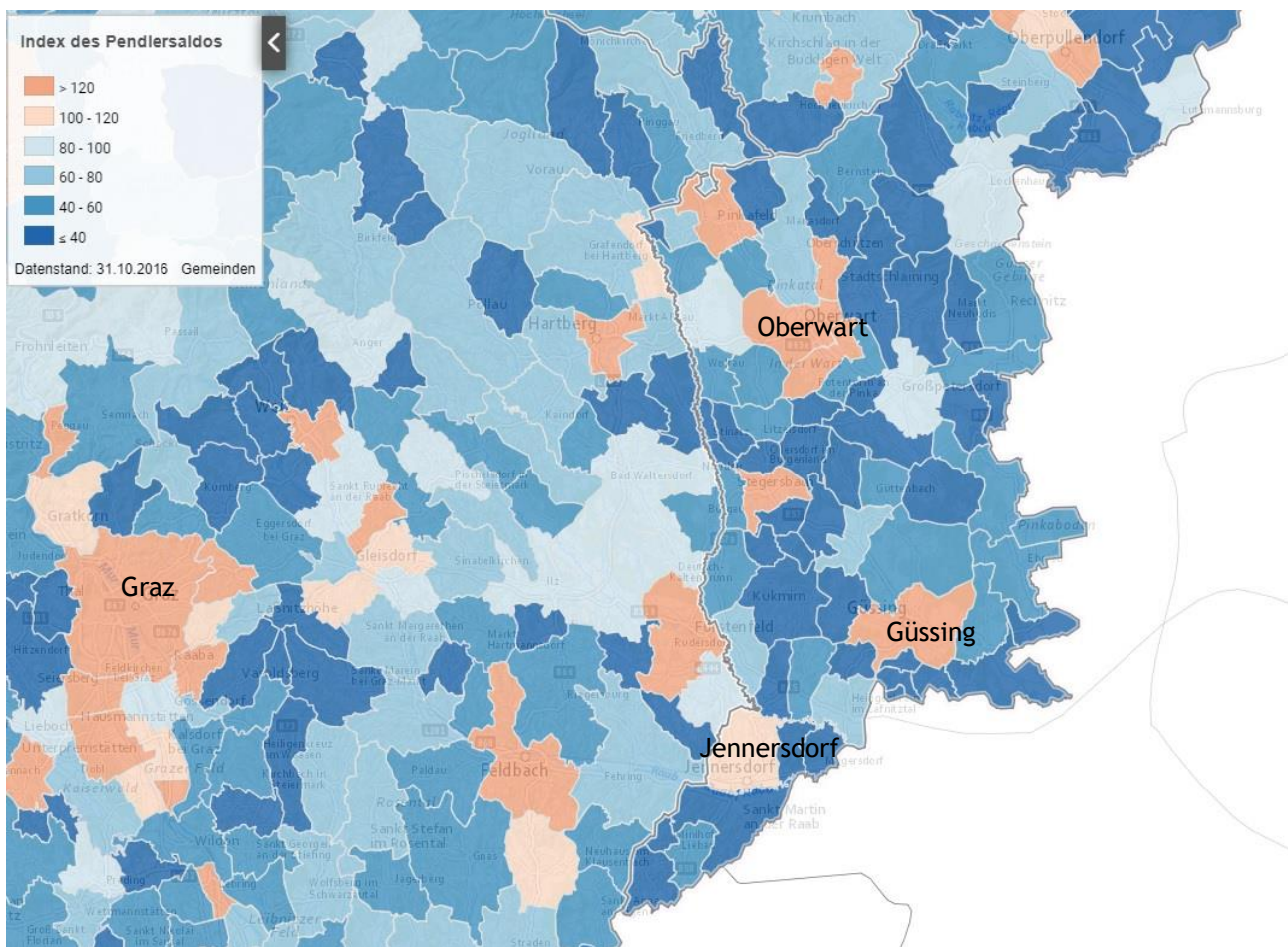


Figure 3 Index of commuter balance for municipalities within the project area (Statistik Austria 2016)

The figure shows a clear urban-rural divide. While the cities have an index value of ≥ 100 and are therefore inbound communities, the comparatively smaller municipalities have index values < 100 and are thus outbound commuter communities. Especially in the southernmost districts of Burgenland, it shows that only the district capitals as well as Stegersbach and Pinkafeld are inbound commuter communities. All other communities are outbound commuter communities, and the further south a community is, the more the number of workers exceeds the number of jobs. In the environment of Graz, there are several inbound commuter communities surrounding the state capital. According to the agreed employment statistics and workplace census of 2016 (Statistik Austria 2018b), Graz is one of the ten largest inbound commuter centers in Austria. In the following chapters, the commuter flows of the three Burgenland districts of the project area are described in detail.

3.2.2.1. District of Oberwart

The following table provides information on the number of commuters from the municipalities of the district of Oberwart to Vienna, Styria and Graz.

Table 5: Number of outbound commuters from the municipalities of the district of Oberwart who work in Vienna, Styria (including Graz) and Graz (Source: Statistik Austria 2016)

Oberwart	Total outbound commuters	Wien	Steiermark*	Graz
Bad Tatzmannsdorf	461	80	33	6
Badersdorf	101	14	4	2
Bernstein	715	164	32	11
Deutsch Schützen-Eisenberg	356	94	13	2
Grafenschachen	502	93	124	13
Großpetersdorf	1.111	237	90	19
Hannersdorf	276	49	26	5
Jabing	291	74	16	6
Kemetten	600	119	82	10
Kohfidisch	523	112	35	9
Litzelsdorf	382	78	48	10
Loipersdorf-Kitzladen	525	62	120	11
Mariasdorf	452	85	28	4
Markt Allhau	615	109	144	20
Markt Neuhodis	237	67	3	1
Mischendorf	595	149	42	11
Neustift an der Lafnitz	361	54	146	7
Oberdorf im Burgenland	407	90	32	7
Oberschützen	773	161	71	12
Oberwart	1.796	349	237	47
Pinkafeld	1.560	328	280	27
Rechnitz	814	191	37	9
Riedlingsdorf	631	95	88	4
Rotenturm an der Pinka	558	73	48	11
Schachendorf	237	52	12	2
Schandorf	75	19	3	0
Stadtschlaining	694	130	38	7
Unterkohlstätten	383	84	9	2
Untewart	345	57	35	2
Weiden bei Rechnitz	266	54	16	4
Wiesfleck	475	76	53	6
Wolfau	555	94	140	16
Summe	17.672	3493	2085	303

*incl. Graz

Almost 3,500 of the 17,672 outbound commuters from the Oberwart district commute to their workplace in Vienna. About 2,100 people work in Styria, of which a little more than 300 commute to Graz.

The communities with the most outbound commuters in total are

- Oberwart (1.796)
- Pinkafeld (1.560)
- Großpetersdorf (1.111)

Outbound commuters who work in Vienna come from

- Oberwart (349)
- Pinkafeld (328)
- Großpetersdorf (237)
- Rechnitz (191)
- Bernstein (164)
- Oberschützen (161)

The five municipalities with the most outbound commuters to Styria are

- Pinkafeld (280)
- Oberwart (237)
- Neustift an der Lafnitz (146)
- Markt Allhau (144)
- Wolfau (140)

The communities in the district of Oberwart with the most outbound commuters to Graz are

- Oberwart (47)
- Pinkafeld (27)
- Markt Allhau (20)
- Großpetersdorf (19)
- Wolfau (16)

In the following two illustrations, exemplary of the district capital Oberwart, the catchment areas of the inbound commuters are shown on the left and those of the outbound commuters are shown on the right, which is exemplary for the district capital Oberwart.

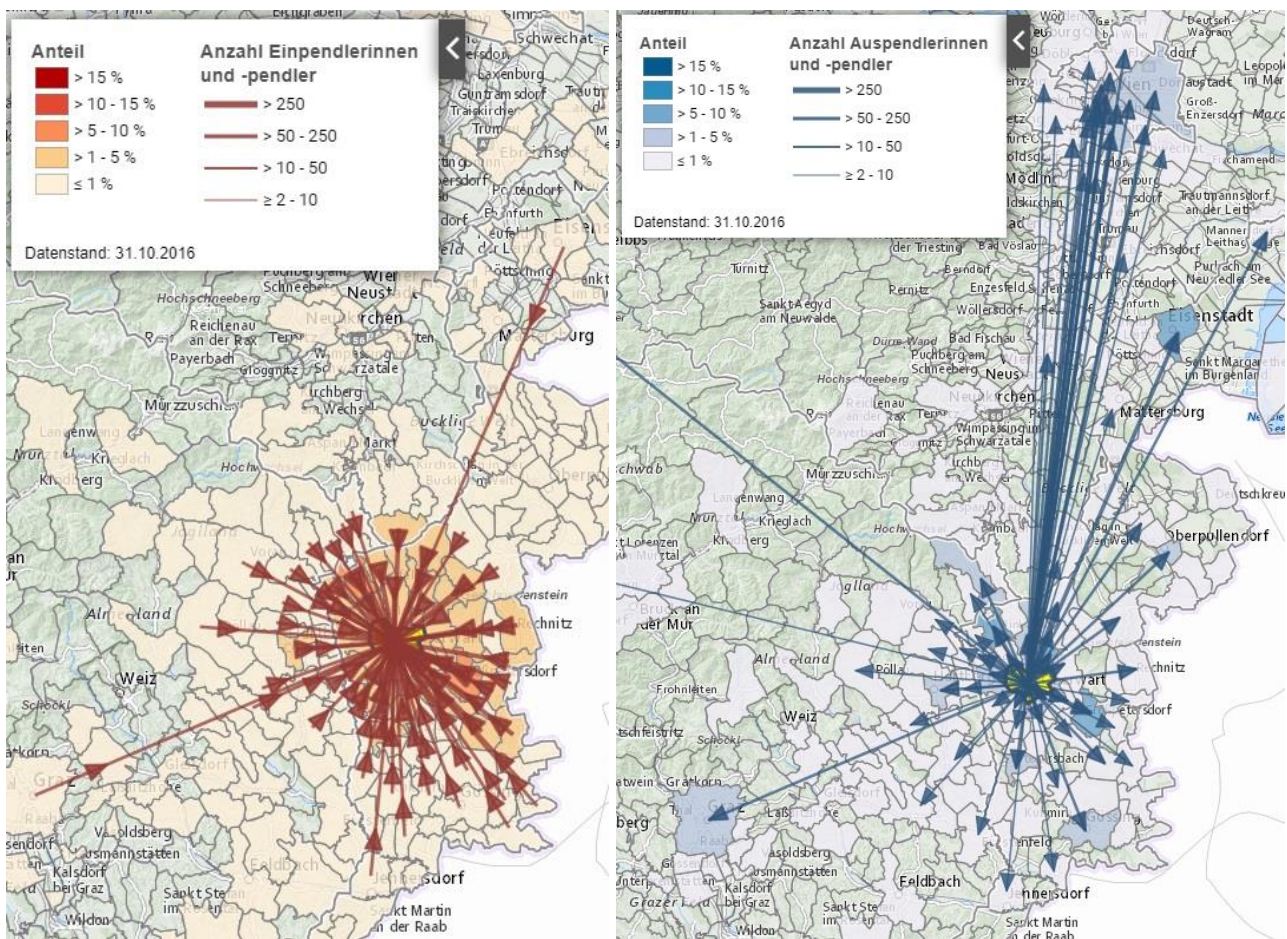


Figure 4: Inbound respectively outbound commuters of the district capital Oberwart (Statistik Austria 2016; STA-Tatlas 2019)

Oberwart has an especially large number of outbound commuters who work in Vienna. In addition, the graph shows that many commuters from Oberwart travel long distances to their workplace. In the case of the inbound commuters, however, a much smaller catchment area is recognizable. The commuters who travelled the longest distances between home and work are from Graz and Eisenstadt. Basically, a catchment area with a radius of 30 km is clearly visible.

Outbound commuter from the district of Oberwart to Styria, especially Graz

For the project objective, it is particularly relevant to highlight how many people commute between the local centers of Southern Burgenland and Styria (to Graz) in order to be able to estimate the passenger potential for the planned bus routes later on.

The following table shows how many employees commute from Oberwart to Graz, Hartberg and Hartberg Umgebung as well as to Fürstenfeld.

Table 6: Number of commuters from the Oberwart district to Graz, Hartberg and Hartberg Umgebung as well as Fürstenfeld (Source: Statistik Austria 2016)

District Oberwart	Number of commuters
to Graz	303
to Hartberg and Hartberg Umgebung	429
to Fürstenfeld	40

The following graphic shows the number of outbound commuters from the individual municipalities of the Oberwart district to Styria and the number of inbound commuters from the Oberwart district to the municipalities of Graz, Hartberg, Hartberg Umgebung, Fürstenfeld and some other communities.

The communities of the district of Oberwart are colored in different shades of blue. The darker the shade of blue, the greater the number of people commuting to Styria (see Table 5). It can be seen that - with the exception of Unterkohlstätten (140 commuters) and Stadtschlaining (53 commuters), mainly persons from the southern and southwestern municipalities of the district commute to Styria. The most important Styrian municipalities for commuters from the Oberwart district are depicted in red tones. The arrows indicate those four communities with the most commuters from the Oberwart district: Graz (303), Hartberg (392), Fürstenfeld (40) and Gleisdorf (25).

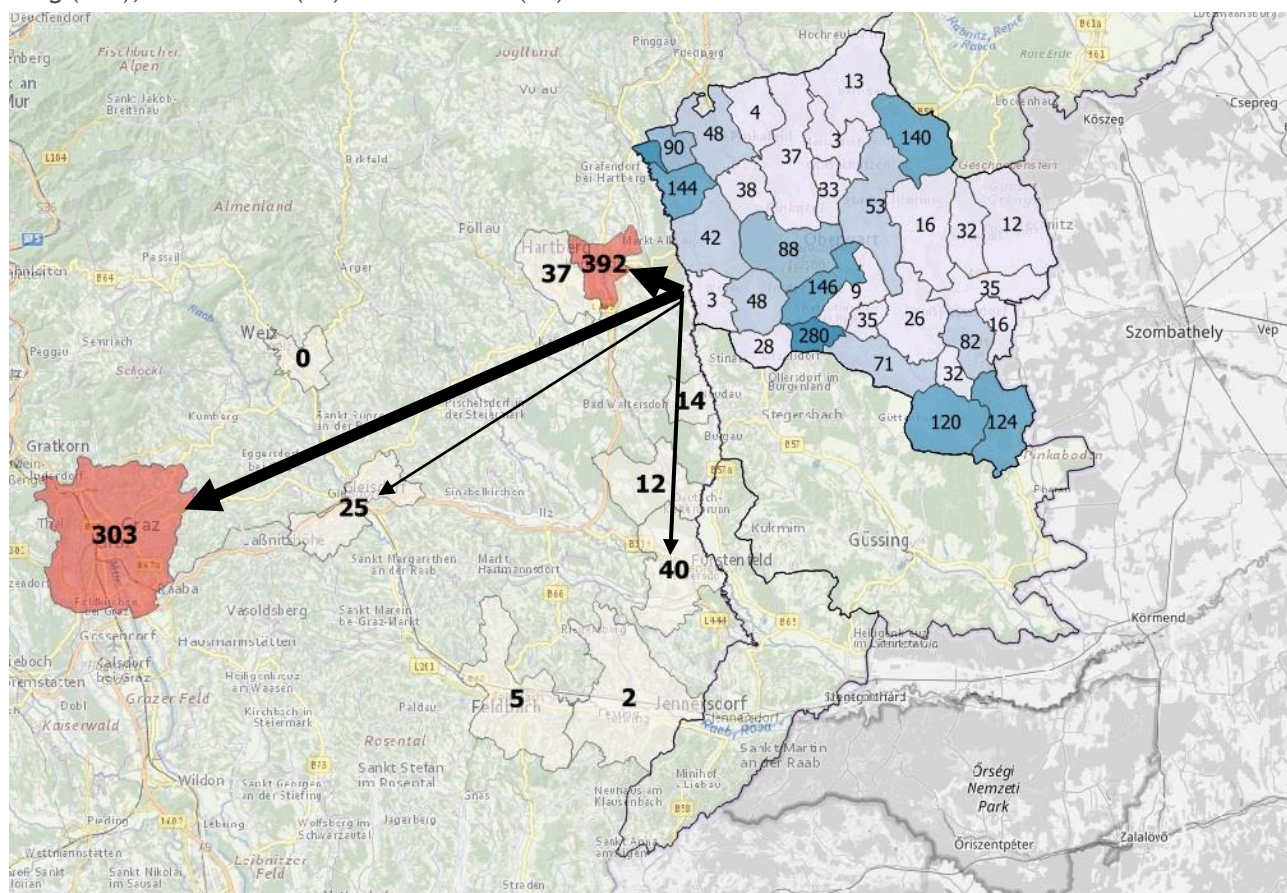


Figure 5: Commuter flows from the district of Oberwart in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)

3.2.2.2. District Güssing

The following table provides information on the number of commuters from the municipalities of the Güssing district to Vienna, Styria and Graz.

Table 7: Number of commuters from the municipalities of the Güssing district working in Vienna, Steiermark (including Graz) and Graz (Source: Statistik Austria 2016)

Güssing	Total outbound commuters	Wien	Steiermark*	Graz
Bildein	111	18	5	1
Bocksdorf	291	45	33	5
Burgauberg-Neudauberg	509	85	204	26
Eberau	256	48	18	4
Gerersdorf-Sulz	372	69	47	11
Großmürbisch	97	25	5	1
Güssing	747	166	105	28
Güttenbach	328	88	19	5
Hackerberg	146	20	53	11
Heiligenbrunn	270	57	21	12
Heugraben	87	26	7	3
Inzenhof	122	25	14	6
Kleinmürbisch	99	16	16	3
Kukmirn	645	67	213	33
Moschendorf	129	14	8	3
Neuberg im Burgenland	399	102	32	4
Neustift bei Güssing	173	28	28	7
Olbendorf	494	129	53	9
Ollersdorf im B.	351	76	54	10
Rauchwart	168	38	16	3
Rohr im Burgenland	138	29	31	2
Sankt Michael i.B.	333	71	51	8
Stegersbach	749	139	168	25
Stinatz	432	122	72	21
Strem	263	43	13	0
Tobaj	497	71	35	9
Tschanigraben	21	2	3	1
Wörterberg	184	29	59	7
Gesamtergebnis	8.411	1.648	1383	258

*incl. Graz

In total, just fewer than 1,650 of the 8,411 outbound commuters of the Güssing district travel to Vienna to work. About 1,400 people work in Styria, of which a little more than 250 commute to Graz.

The communities with the most outbound commuters in total are

- Stegersbach (749)

- Güssing (747)
- Kukmirn (645)
- Burgauberg-Neudauberg (509)
- Tobaj (497)

Outbound commuters who work in Vienna come from

- Güssing (166)
- Stegersbach (139)
- Olbendorf (129)
- Stinatz (122)

The five municipalities with the most outbound commuters to Styria are

- Kukmirn (213)
- Burgauberg-Neudauberg (204)
- Stegersbach (168)
- Güssing (105)
- Stinatz (72)

The communities in the district of Güssing with the most outbound commuters to Graz are

- Kukmirn (33)
- Güssing (28)
- Burgauberg-Neudauberg (26)

In the following two illustrations, the catchment area of inbound commuters for the district capital Güssing are shown on the left and the catchment area of the outbound commuters are shown on the right. Compared to Oberwart, the inbound commuter catchment area is much larger here. The outbound commuters again show a strong Vienna axis. You can also see a wide dispersion of commuters and very long commuting distances here.

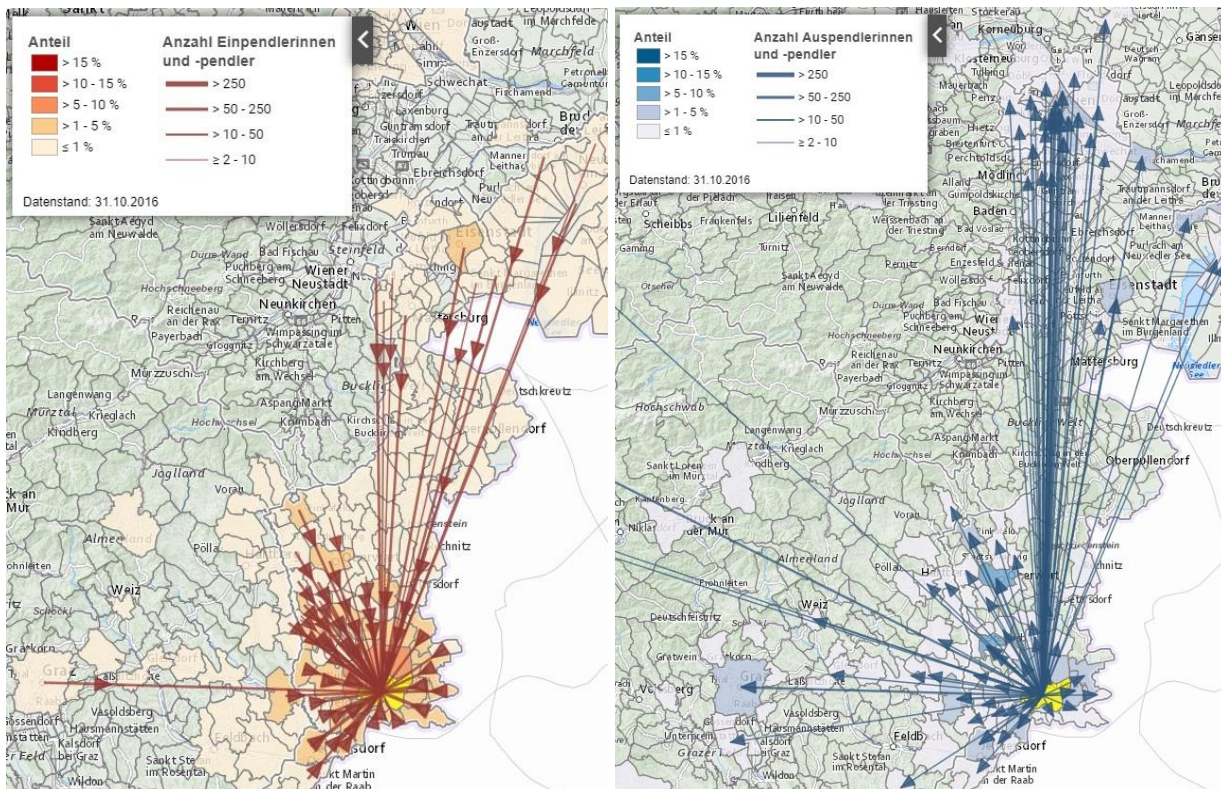


Figure 6: Inbound respectively outbound commuter of the city Güssing (Statistik Austria 2016; STATatlas 2019)

Outbound commuters from the Güssing district to Styria, especially Graz

For the project objective, it is particularly relevant to highlight how many people commute between the local centers of Southern Burgenland and Styria (to Graz) in order to be able to estimate the passenger potential for the planned bus routes later on.

The following table shows how many employees from the district of Güssing commute to Graz, Fürstenfeld, Hartberg and Hartberg Umgebung.

Table 8: Number of commuters from the district Güssing to Graz, Fürstenfeld and Hartberg plus Hartberg Umgebung (Source: Statistik Austria 2016)

District Güssing	Number of commuters
to Graz	258
to Fürstenfeld	247
to Hartberg and Hartberg Umgebung	135

The following graphic shows the number of outbound commuters from the municipalities of the Güssing district to Styria and the number of commuters from the Güssing district to the municipalities of Graz, Hartberg, Hartberg Umgebung, Fürstenfeld and some other municipalities.

The municipalities of the Güssing district are colored in different shades of blue; the darker the shade of blue, the greater the number of people commuting to Styria (see Table 7). With the exception of the town of Güssing (105 commuters), the municipalities from which most people commute to Styria, lie mostly in

the western part of the district near the border with Styria. The Styrian municipalities, for which there is data regarding the number of commuters from the Güssing district, are depicted in red tones. The arrows point to the four communities with the most commuters from the Güssing district: Graz (258), Fürstenfeld (247) and Hartberg (120). The large number of commuters from the Güssing district to the Fürstenfeld district is striking, but can be explained by their geographic proximity.

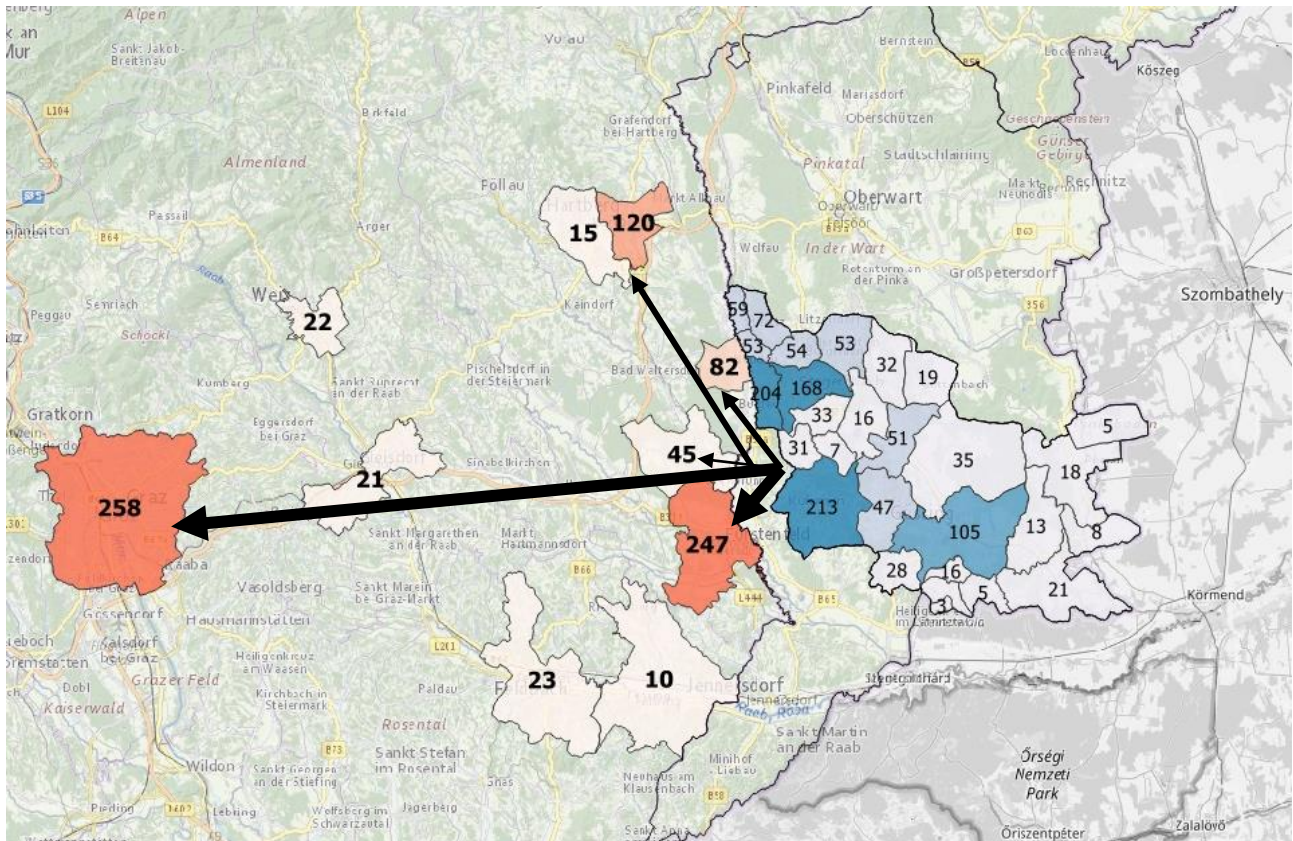


Figure 7: Commuter flows from the Güssing district in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)

3.2.2.3. District Jennersdorf

The following table provides information on the number of commuters from the municipalities of the district of Jennersdorf to Vienna, Styria and Graz.

Table 9: Number of commuters from the municipalities of the district of Jennersdorf with work in Vienna, Styria (including Graz) and Graz (Source: Statistik Austria 2016)

Jennersdorf	Total outbound commuters	Wien	Steiermark*	Graz
Deutsch Kaltenbrunn	653	66	316	41
Eltendorf	337	41	98	19
Heiligenkreuz i. L.	395	42	125	21
Jennersdorf	1.238	131	664	101
Königsdorf	259	14	105	16
Minihof-Liebau	397	29	195	35
Mogersdorf	424	32	158	28
Mühlgraben	180	13	83	21
Neuhaus am Kl.	327	29	168	22
Rudersdorf	749	56	458	74
Sankt Martin a.d. Raab	749	55	294	54
Weichselbaum	287	22	92	11
Gesamtergebnis	5.995	530	2756	443

*incl. Graz

In total, just over 500 people of the nearly 6,000 commuters travel from the district of Jennersdorf to Vienna. Around 2,750 people work in Styria, of which a little less than 500 commute to Graz.

The communities with the most outbound commuters in total are

- Jennersdorf (1.238)
- Rudersdorf (749)
- St. Martin an der Raab (749)
- Deutsch Kaltenbrunn (653)

Outbound commuters who work in Vienna come from

- Jennersdorf (131)
- Deutsch Kaltenbrunn (66)
- Rudersdorf (56)
- St. Martin an der Raab (55)

The five municipalities with the most outbound commuters to Styria are

- Jennersdorf (664)
- Rudersdorf (458)
- Deutsch Kaltenbrunn (316)
- St. Martin an der Raab (294)
- Minihof-Liebau (195)

The communities in the district of Jennersdorf with the most outbound commuters to Graz are

- Jennersdorf (101)
- Rudersdorf (74)
- St. Martin an der Raab (54)

In the following two illustrations the catchment areas of the inbound commuters of the district capital Jennersdorf are shown on the left side and the destinations of the outbound commuters are shown on the right side. There are strong similarities to the situation in Oberwart. On the one hand, the graphic shows here again that many outbound commuters from Jennersdorf travel long distances to their workplace and

that there is a strong Vienna axis. On the other hand, as with Oberwart, the inbound commuters have a much smaller radius. Commuters from Graz cover the greatest distances between home and work.

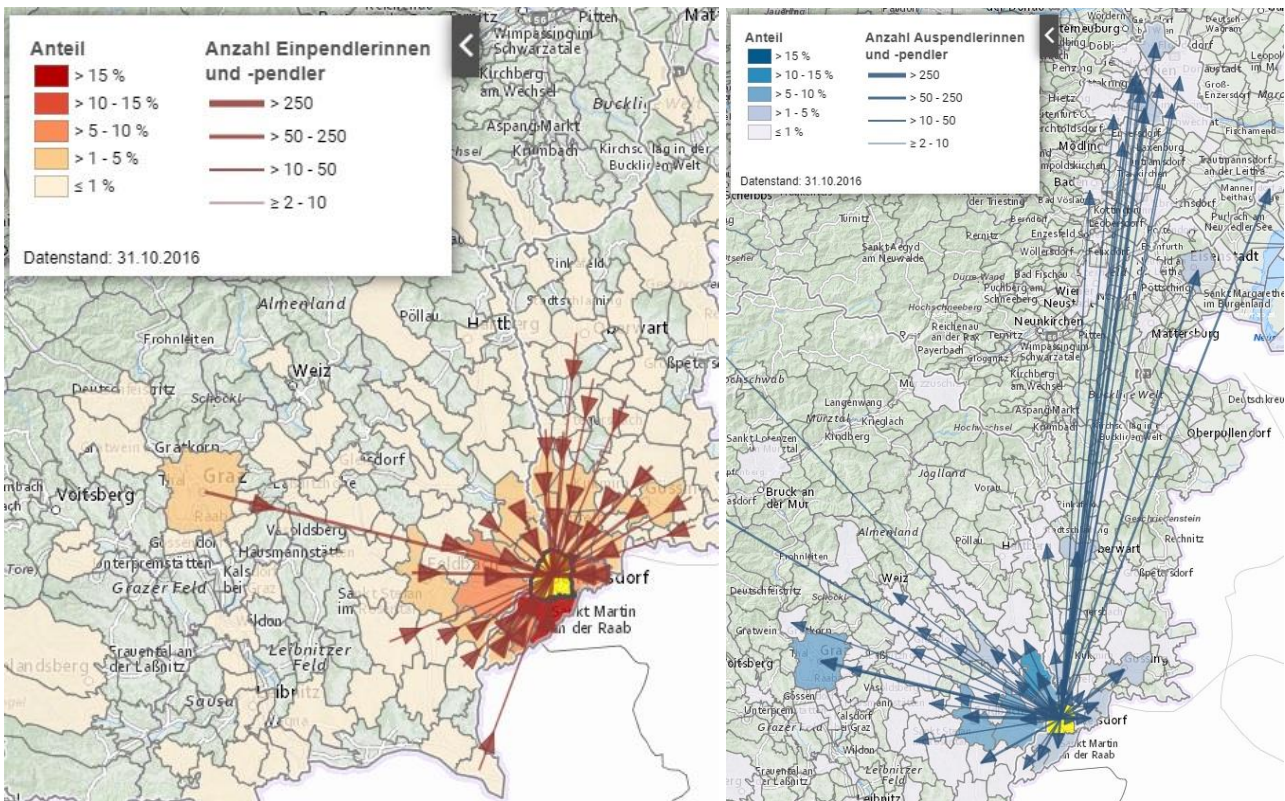


Figure 8: Respectively: inbound and outbound commuters of Jennersdorf (Statistik Austria 2016; STATatlas 2019)

Outbound commuters from the district of Jennersdorf to Styria, in particular Graz

As already mentioned, it is particularly relevant for the present project how many people commute between the local centers of Southern Burgenland and those of Styria in order to be able to estimate the passenger potential for the planned bus routes later on.

The following table shows how many employees commute from the district of Jennersdorf to Fürstenfeld, Fehring or Feldbach and to Graz.

Table 10: Number of commuters from the district of Jennersdorf to Fürstenfeld, Fehring or Feldbach and Graz (Source: Statistik Austria 2016)

District Jennersdorf	Number of commuters
to Fürstenfeld	674
to Fehring/Feldbach	513
to Graz	443

The following chart shows the number of outbound commuters from individual municipalities of the district of Jennersdorf to Styria and the number of inbound commuters from the district of Jennersdorf to the municipalities of Graz, Fürstenfeld, Fehring, Feldbach and other relevant communities.

The municipalities of the Jennersdorf district are colored in different shades of blue. The darker the shade of blue, the greater the number of people commuting to Styria (see Table 9). In the entire district, but especially in the West, and mainly in the district capital of Jennersdorf (664), there are high numbers of outbound commuters. The Styrian municipalities, for which there is data available regarding the number of inbound commuters from the district of Jennersdorf, are depicted in red tones. The arrows point to the communities with the most inbound commuters from the district Jennersdorf, above all Fürstenfeld (674), Graz (443), Feldbach (286) and Fehring (227). The high number of inbound commuters in the community Fürstenfeld stands out conspicuously, but is comprehensible based on the geographic proximity.

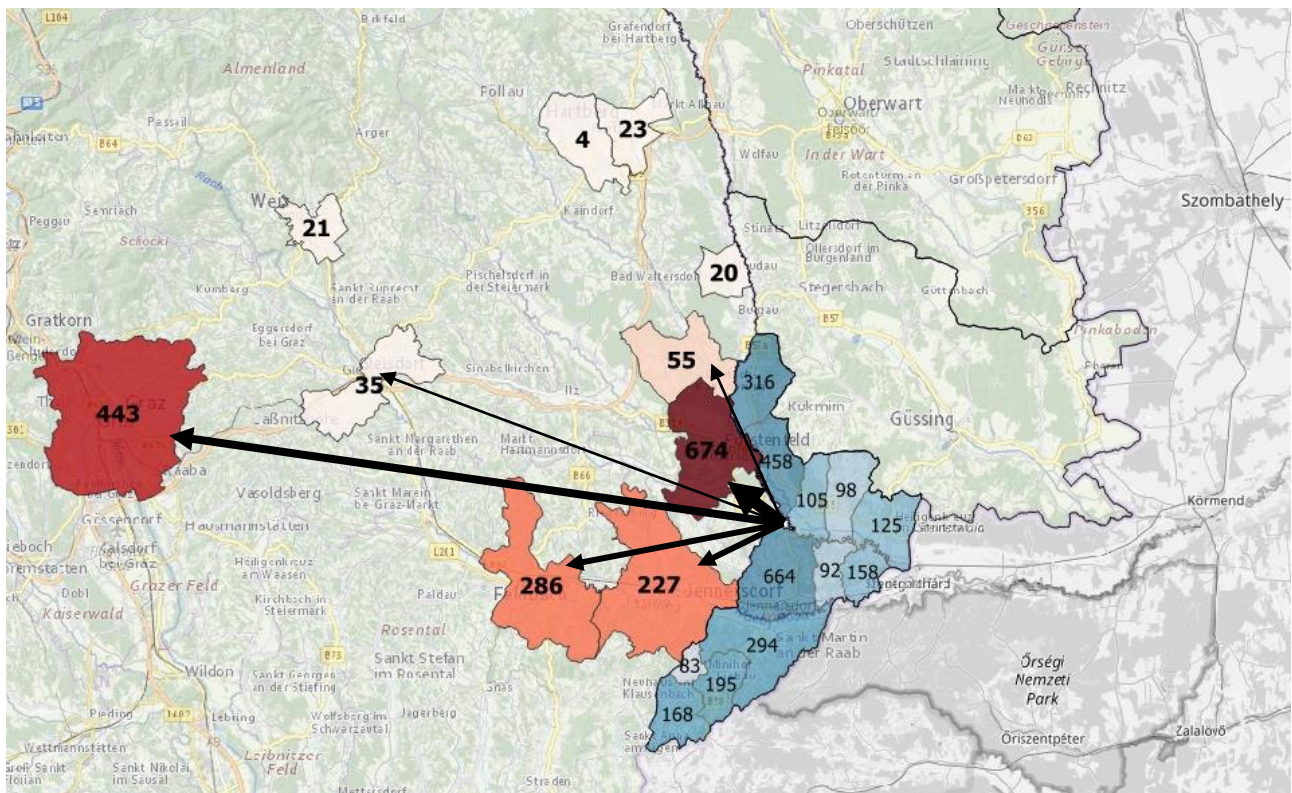


Figure 9: Commuter flows from the district of Jennersdorf in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)

3.2.2.4. Outbound commuters from Southern Burgenland to Graz

The commuter flows from the entirety of Southern Burgenland to Graz are shown below. This gives a good overview of the dominant commuter flows in order to be able to estimate the passenger potential for the planned bus routes.

The following table shows how many employees from the three districts Oberwart, Güssing and Jennersdorf commute to Graz.

Table 11: Number of commuters from the districts Oberwart, Güssing and Jennersdorf to Graz (Source: Statistik Austria 2016)

District	Number of commuters to Graz
Oberwart	303
Güssing	258
Jennersdorf	443

The following graphic illustrates the number of outbound commuters from the individual municipalities of Southern Burgenland to Styria by the different shades of blue.

The figure focusses on the commuter flows to Graz: a total of 1,004 people from all over Southern Burgenland commute to Graz and most of them - 443 - come from the district of Jennersdorf.

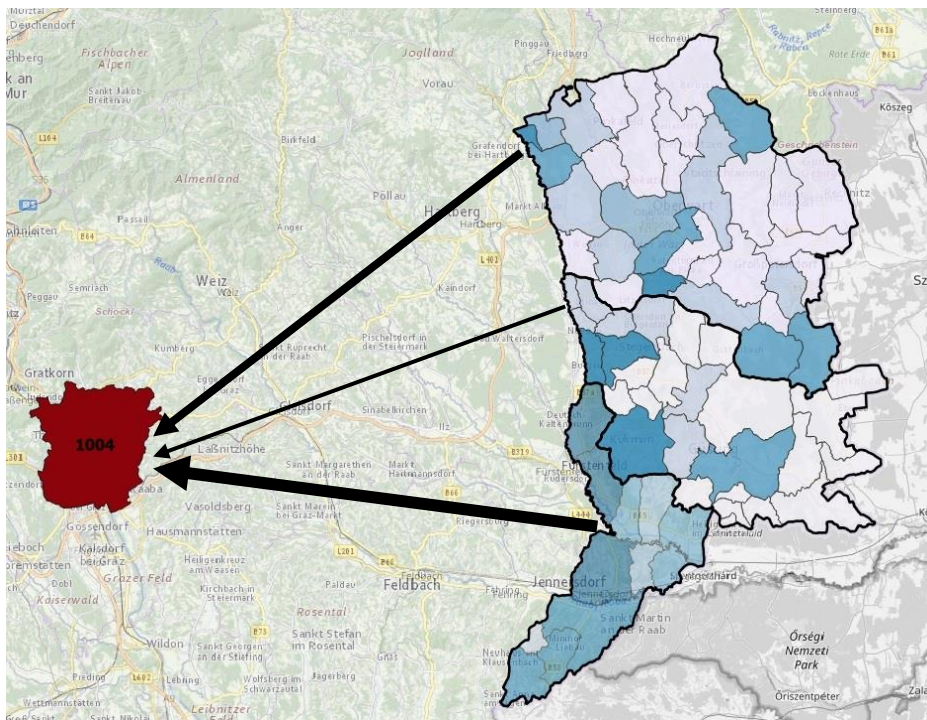


Figure 10: Commuter flows from southern Burgenland towards Graz (Statistik Austria 2016, own editing 2019)

3.2.2.5. Cross-border commuter flows from Hungary to Southern Burgenland

So far, the focus has been on commuter flows to Southern Burgenland or between Southern Burgenland and Styria. But equally important for the project are the cross-border commuter flows. The table below shows the cross-border inbound commuters from Hungary with reference to the three project districts of Southern Burgenland: Oberwart, Güssing and Jennersdorf.

The table shows how many workers from Hungary commute to the respective districts of Southern Burgenland and how these figures changed in the period between 2011 and 2016. In all three districts, very strong increases, almost to doubling, are noticeable.

Table 12: Number of cross-border working commuters from Hungary to the districts of Oberwart, Güssing and Jennersdorf including their development in the period 2011-2016 (Statistik Austria 2011-2016)

District	2011	2016	Development
Oberwart	971	1760	+ 81 %
Güssing	410	713	+ 74 %
Jennersdorf	307	464	+ 51 %

The graph below shows the contents of the table graphically and uses the green colour to demonstrate how high the number of inbound commuters in the respective municipality is. The darker the green tone, the more people commute from Hungary to the respective municipality. In 2016, the majority of the commuters from Hungary, namely 1,760 people, commuted to the district of Oberwart, with the district capital Oberwart having the most inbound commuters from Hungary, namely 492.

The following municipalities have the most commuters in descending order:

- Oberwart (492)
- Großpetersdorf (153)
- Bad Tatzmannsdorf (121)
- Rechnitz (108)
- Pinkafeld (104)

This is followed by the district of Güssing with 713 inbound commuters from Hungary in 2016; most of these go to the following municipalities

- Güssing (173)
- Stegersbach (151)
- Kukmirn (71)
- Tobaj (44)
- Eberau (39)

In 2016, 464 inbound commuters from Hungary had their workplace in the district of Jennersdorf. The majority of them by far commute to the district capital of Jennersdorf (182), as the following list of districts with the most inbound commuters shows:

- Jennersdorf (182)
- Rudersdorf (97)
- Heiligenkreuz im Lafnitztal (62)

- Deutsch Kaltenbrunn und Mogersdorf (je 22)

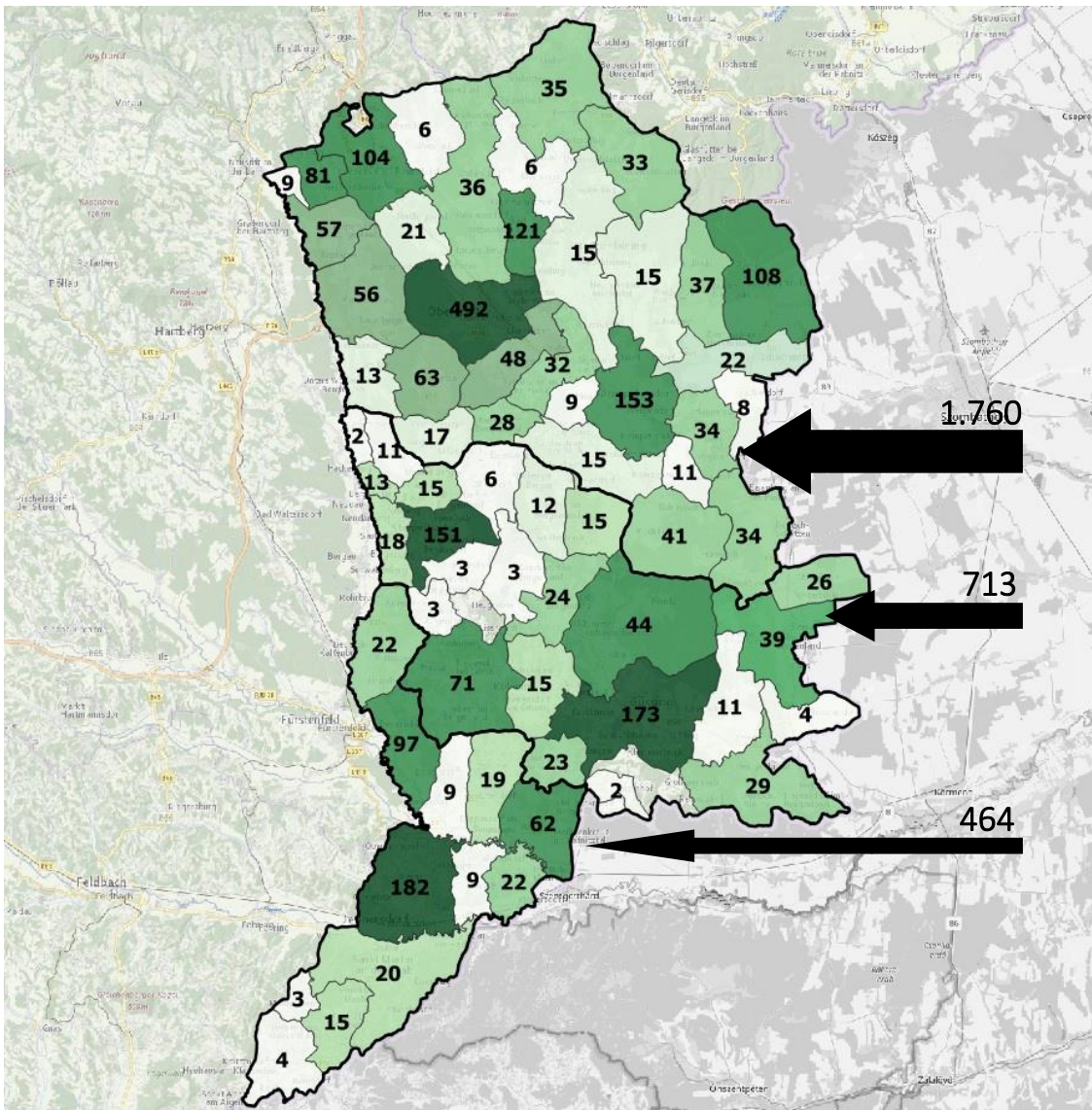


Figure 11: Commuter flows from Hungary to the districts of Oberwart, Güssing and Jennersdorf (Statistik Austria 2011-2016, own editing 2019)

3.2.3. Training commuters

In addition to the working commuters, the group of training commuters also plays a role in this project. Looking at the region of Southern Burgenland, the following table shows how many people from the districts of Southern Burgenland commute to reach their training facility. The table compares a total value, namely the number of training commuters to another federal state as a whole, to the number of training commuters to Graz, as this commuter flow is the most relevant for this project.

Table 13: Number of training commuters from the districts Oberwart, Güssing and Jennersdorf to Graz or to another federal state (Statistik Austria 2011)

Source district	to Graz	In another federal state (Bundesland)	Share of the commuters to Graz
Oberwart	109	670	16 %
Güssing	62	405	15 %
Jennersdorf	198	413	48 %

As the table shows, most of the training commuters whose training facility is located in another federal state live in the district of Oberwart (670), followed by the district Jennersdorf (413) and the district Güssing (405). Of interest is the proportion of people commuting to Graz. With 198 out of 413 commuters and a share of 48 %, the district of Jennersdorf is at the forefront of training commuters to Graz. The districts of Oberwart and Güssing have significantly lower shares, namely around 15 % each.

The following bar chart demonstrates this ratio between training commuters to another state in total and the proportion that commute to Graz:

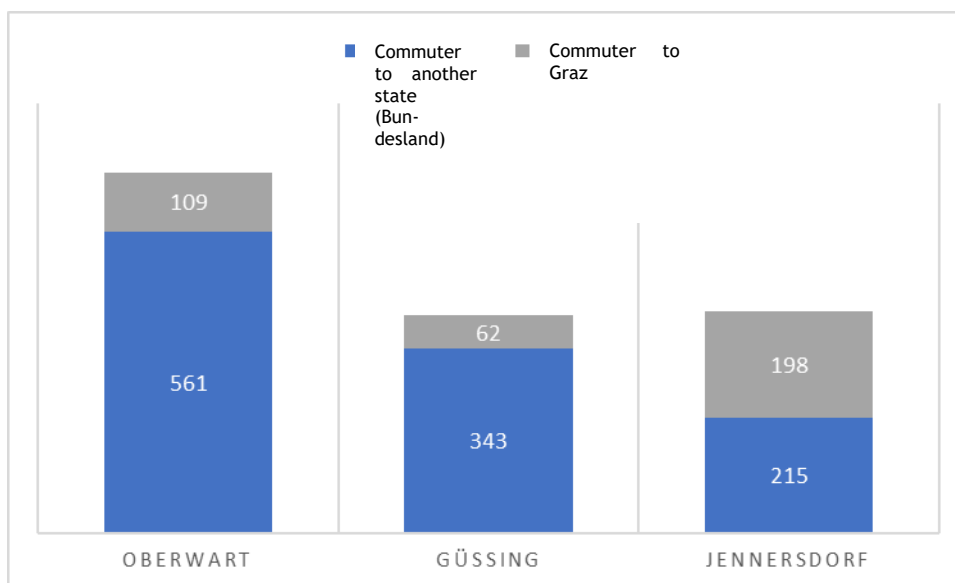


Figure 12: Training commuters from the districts Oberwart, Güssing and Jennersdorf to Graz as well as to another federal state in total (Statistik Austria 2011, own editing 2019)

3.3. Analysis of the existing transport offer

In the following chapter, the existing public transport connections between the districts of Oberwart, Güssing and Jennersdorf, in Southern Burgenland and Styria respectively, are examined in more detail. The existing, well-functioning public connection from Southern Burgenland to Vienna serves as a comparison or best practice example.

The analysis mainly uses data on public transport connections in the morning, as these are particularly relevant for commuters and allow comparability.

3.3.1. Public transport connections Oberwart - Hartberg - Graz

The best existing public transport connection between Oberwart and Graz during the morning peak takes place with a change in Hartberg. The line 310 starts at 6:55 in Oberwart with a scheduled arrival in Hartberg at 7:29. In Hartberg, commuters change to the line X31 at 7:30; they reach Graz Opernring at 8:42. The travel time from Oberwart to Graz is thus a total of 1h 45min, with one change.

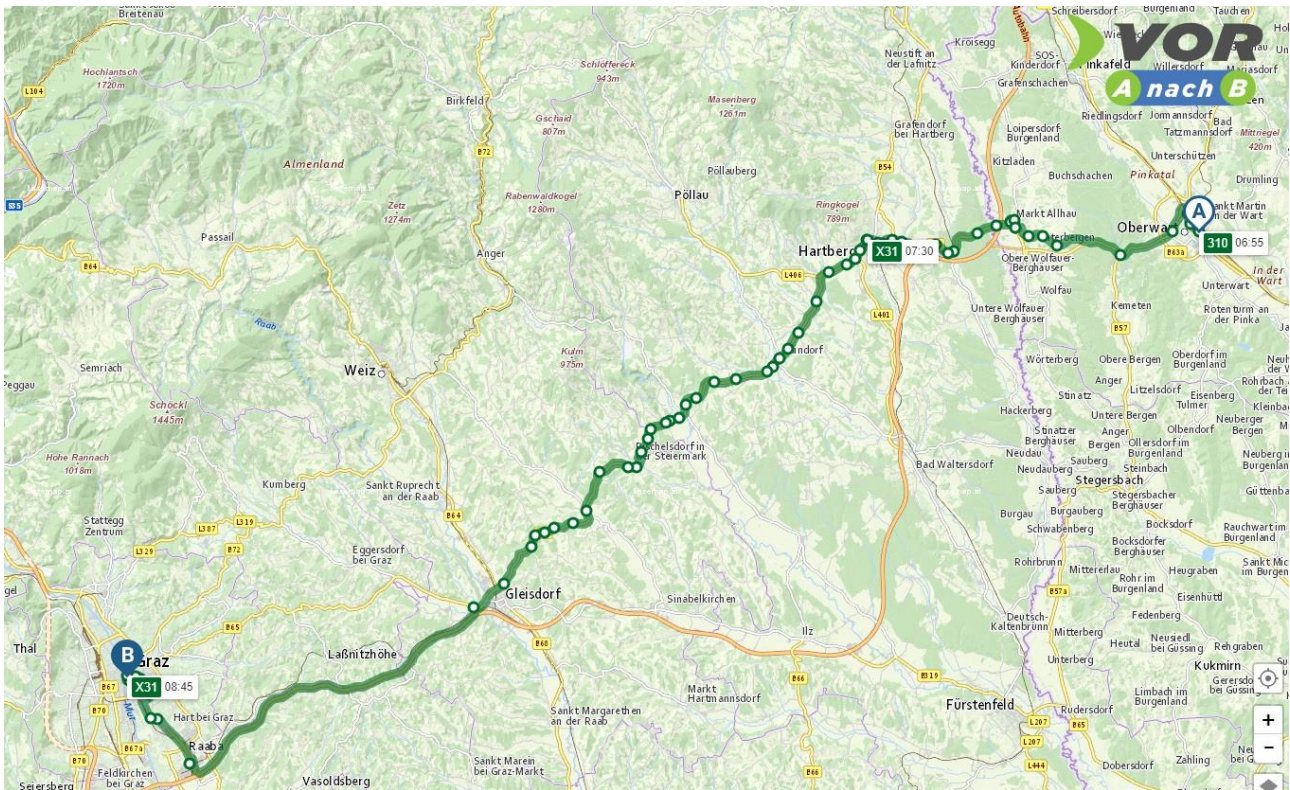


Figure 13: Bus connection Oberwart via Hartberg to Graz (VOR a nach b 2019)

The variant shown above is the earliest. There is no public transport connection between Oberwart and Graz earlier in the morning. The next connection starts in Oberwart at 7:08 and runs through Fürstenfeld. However, this variant has a significantly longer travel time of 2 h 54 min. The next connection, which runs again through Hartberg and starts at 8:02, is also less effective for commuters because of a longer waiting time at the changeover, a travel time of 1 h 58 min and an arrival time at 09:59.

Table 14: Bus connections (early traffic) from Oberwart to Graz

Departure Oberwart	Details	Arrival Graz	Travel time
06:55	Change in Hartberg at 7:30 clock to X31, no waiting	08:42	1h 45min
07:08	Transfer in Fürstenfeld	09:56	2h 48min
08:02	Transfer in Hartberg, waiting time 20 min	09:59	1h 58min

3.3.2. Public transport connections Hartberg - Graz

The bus line 300, as well as the express bus lines X30 and X31, run between Hartberg and Graz. On weekdays (Mon-Fri) there is a dense range of morning bus services between Hartberg bus station and Graz Opernring: quarter-hourly between 5:00 and 6:30, with additional buses at 7:30, 7:35, 8:50 and 9:00.

The journey time of the express line is about 1h 15min, the line 300 requires about 1 h 30 min because of additional stops. The following two graphs show the course of line 300 or X30 and their respective stops.

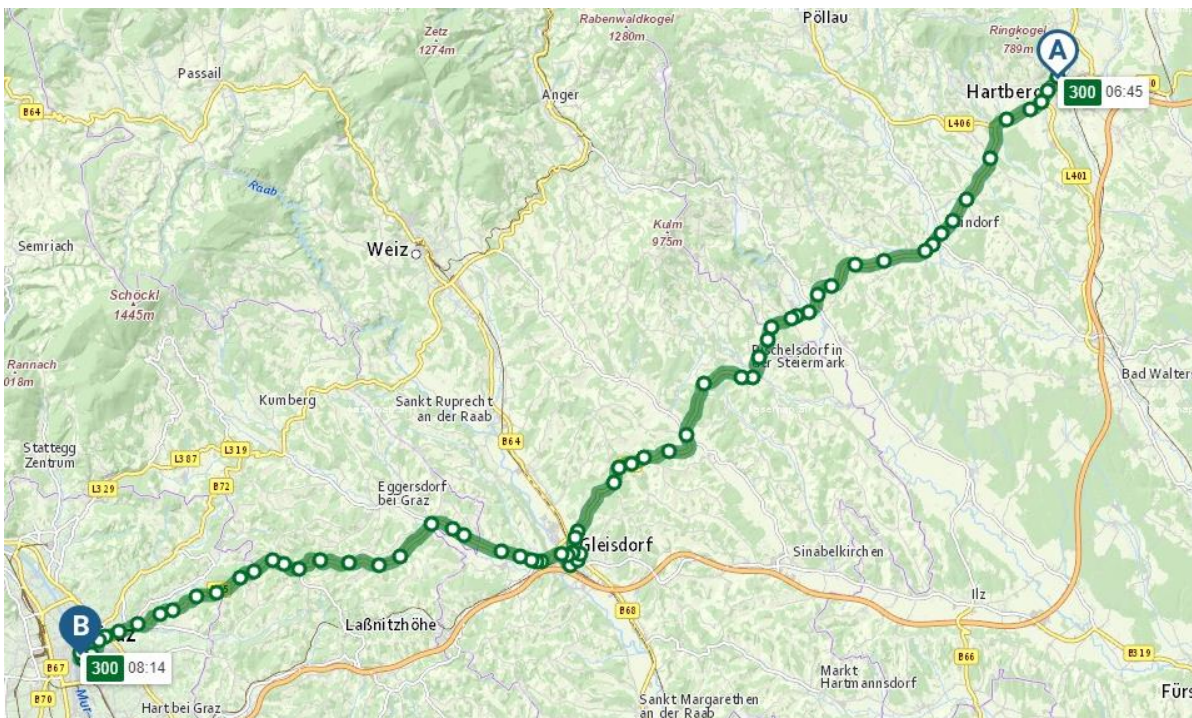


Figure 14: Bus connection Hartberg to Graz, line 300 (VOR a nach b 2019)

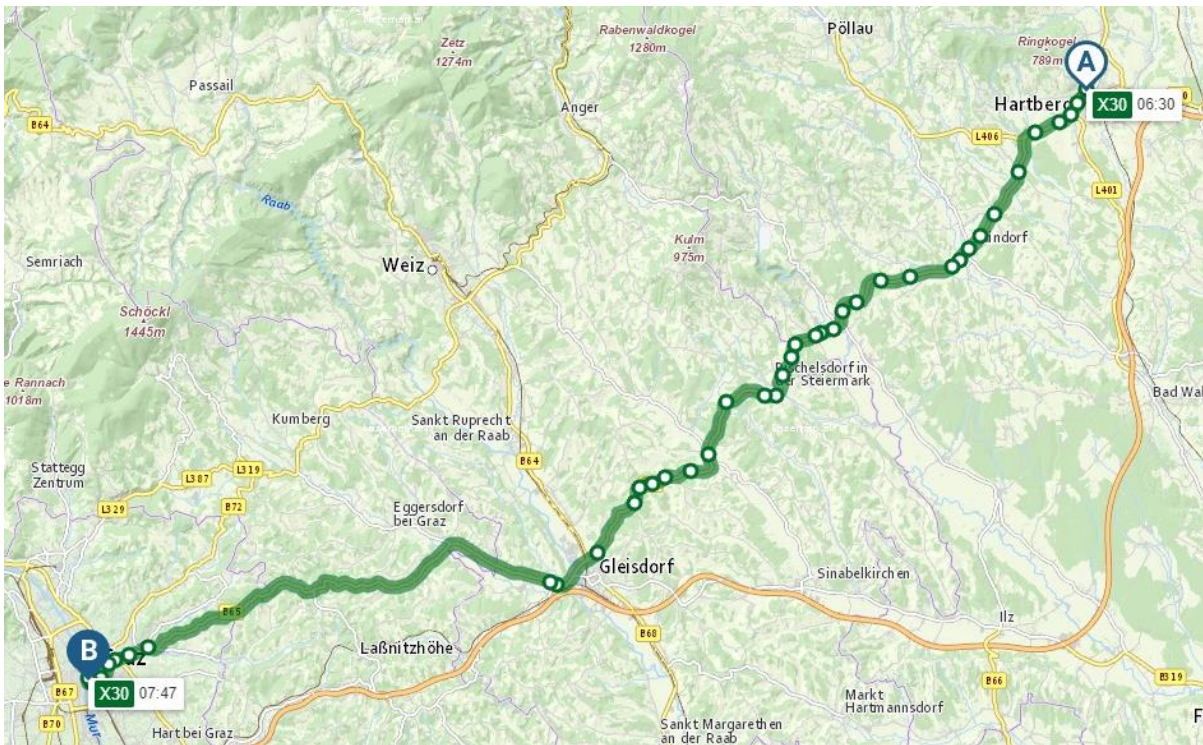


Figure 15: Bus connection Hartberg to Graz, line X30 (VOR a nach b 2019)

Table 15: Bus connections (early traffic) from Hartberg to Graz

Departure Hartberg	Details	Arrival Graz	Fahrzeit
05:00 to 06:30 (quarter-hourly)	Express line	06:14 - 07:44	1h 15min
06:45	300	08:11	1h 25min
07:00, 07:30, 07:35	Express line	08:16 - 08:51	1h 15min

3.3.2.1. Presentation of the passenger numbers Hartberg - Graz

With regard to the following numbers of passengers between Hartberg and Graz, a travel guest count from the Styrian transport association from the years 2017 and 2018 is used. The counts were - depending on the course - carried out on between 1 and 29 days, whereby the informative value varies in its quality. The data is thus to be regarded as approximate values without any claim to absolute validity.

The following figure shows the passengers of the course 302 with departure at 05:32 in Hartberg. For the presentation, the maximum occupancy of the different count days in the corresponding section was used and the respective course was divided into several sections. From the available daily values, a mean maximum occupancy was determined for the corresponding section. For course 302, this results in the following picture: shortly after the departure in Hartberg, there is on average a maximum of seven people on

the bus. Before Gleisdorf this value is already at 15 people, and in approximation to Graz there are on average a maximum of 22 people travelling with the course 302.



Figure 16: Passenger numbers for course 302 from Hartberg to Graz, Kurs 302 (VOR 2018, own editing 2019)

Of all courses of the morning hour the highest maximum occupancy with 40 persons was counted on course 320 with departure at 6:30 in Hartberg. The average maximum occupancy of the courses with departure between 5:00 and 6:30 is between 28 and 35 people. In the weakest counted courses, there are a maximum of five people on the bus at the same time. It should however be noted that the weakest counted days were on bridging days (Friday after the holiday).



Figure 17: Passenger numbers for course 320 from Hartberg to Graz, Kurs 320 (VOR 2018, own editing)

3.3.3. Public transport connections Güssing - Fürstenfeld (Stegersbach) - Graz

Relevant public transport connections in the morning hours between Güssing and Graz are essentially limited to departure times between 4:55 and 6:45. The first connection starts at 4:55 in Güssing and arrives at 5:15 in Stegersbach. At 5:37, the line 7930 from Stegersbach continues to Graz (arrival 7:15 Operring). The journey takes 2 h 20 min.

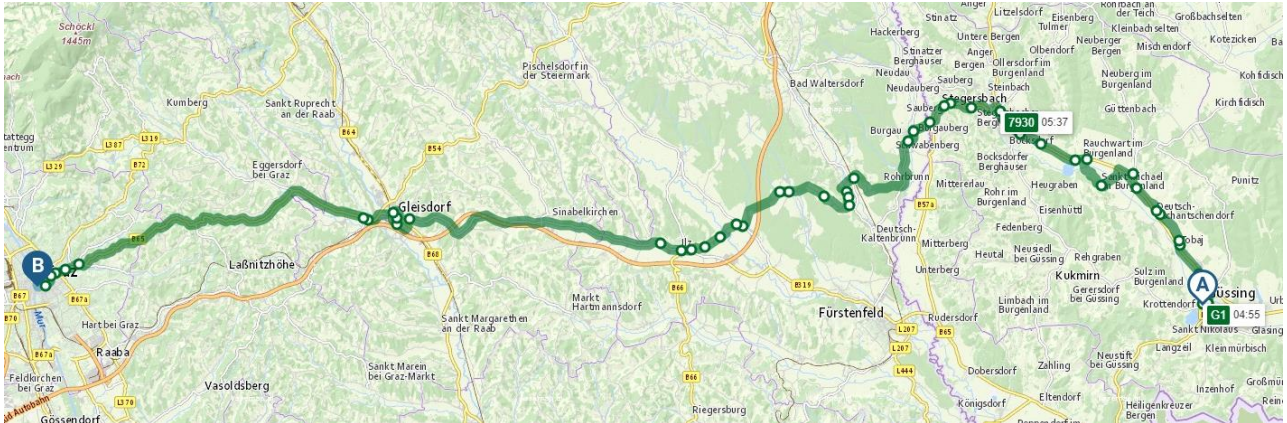


Figure 18: Bus connection Güssing - Graz, departure: 4:55 (VOR a nach b 2019)

The next connection starts at 5:58 in Güssing (hospital) and reaches Graz (Operring) at 7:52. This journey is possible without a transfer, since the line from Fürstenfeld continues as X41 in the direction of Graz. The travel time is 1h 54min. The subsequent trip with departure at 6:20 has a similar travel time and reaches Graz at 8:15. In this connection, a change in Fürstenfeld is required.



Figure 19: Bus connection Güssing - Graz, departure: 5:58 (VOR a nach b 2019)

A connection with departure at 6:43 reaches Graz after 2h 13min at 8:56. The following courses are rather unsuitable for daily commuter traffic because of travel times around 2h 45min.

Table 16: Bus connections (early traffic) from Güssing to Graz

Departure Güssing	Details	Arrival Graz	Travel time
04:55	transfer in Stegersbach (7930), waiting time 17 min	07:15	2h 20min
05:58	Continue in the same vehicle (as X41)	07:52	1h 54min
06:20	transfer in Fürstenfeld, waiting time 9 min	08:15	1h 52min
06:43	transfer in Fürstenfeld, waiting time 16 min	08:53	2h 10min

3.3.3.1. Presentation of passenger numbers Fürstenfeld - Graz

In the passenger counting of the Styrian transport association (Steirischer Verkehrsverbund), a maximum number of persons of 52 persons were counted on the connection between Fürstenfeld and Graz. This value was counted at course 402 with departure at 4:50. Overall, the maximum number of passengers of all courses was between 25 and 52 people. On the weakest days there were sections with only a maximum of eight people on the bus. Again, it should be noted that these count days were bridging days, which explains the low occupancy.

Below the average maximum occupancy of the respective sections of the course 402 with departure at 4:50 is presented. The figure shows that at the beginning, relatively few people are in the bus, while from Gleisdorf on the average maximum occupancy is 38 people.



Figure 20: Passenger numbers for the bus course 402 from Fürstenfeld to Graz (VOR 2018, own editing 2019)

3.3.4. Public transport connections Jennersdorf -Fehring - Graz

From Jennersdorf, Graz can be reached via a rail connection with change in Fehring. The travel time for this route is about 1h 20min. Between Graz and Fehring the line is served by the Styrian S-Bahn line S3. The following table shows the rail connections from Jennersdorf to Graz in early traffic.

Table 17: Train connections (early traffic) from Jennersdorf to Graz

Departure Jennersdorf	Details	Arrival Graz	Travel time
04:56	Transfer in Fehring	06:15	1h 19min
06:30	Transfer in Fehring	07:48	1h 18min
07:00	Bus 488, transfer to REX in Fehring - Graz	08:38	1h 37min
08:27	Change and a short stay in Fehring	09:53	1h 26min

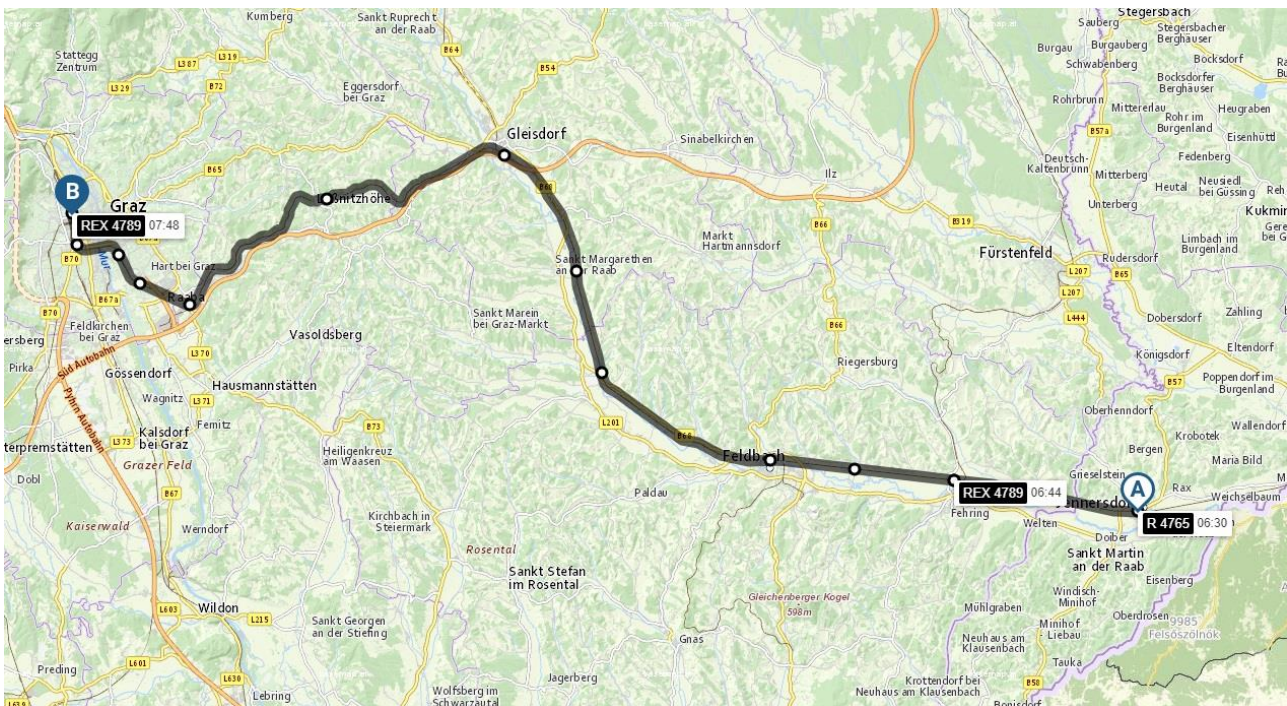


Figure 21: Train connection Jennersdorf - Graz (VOR a nach b 2019)

3.3.4.1. Presentation of passenger numbers Jennersdorf - Fehring - Graz

Since the connection between Jennersdorf and Graz is a rail connection, there is no passenger data like the previously described bus connections. In the following, data is used which the S-Bahn Styria always collects in the second week of October. It applies to the section of the S3 between Fehring and Graz; the section to Jennersdorf is not included in the count.

Based on this data from the province of Styria in 2016, it can be seen that the S-Bahn line S3 between Graz and Fehring in particular has recorded strong growth of almost 100% since its introduction in 2007 to 2017. Since the clock system introduced in 2011, around 10,000 people use the S3 connection on weekdays, as shown in the following figure. (Land Steiermark 2016)

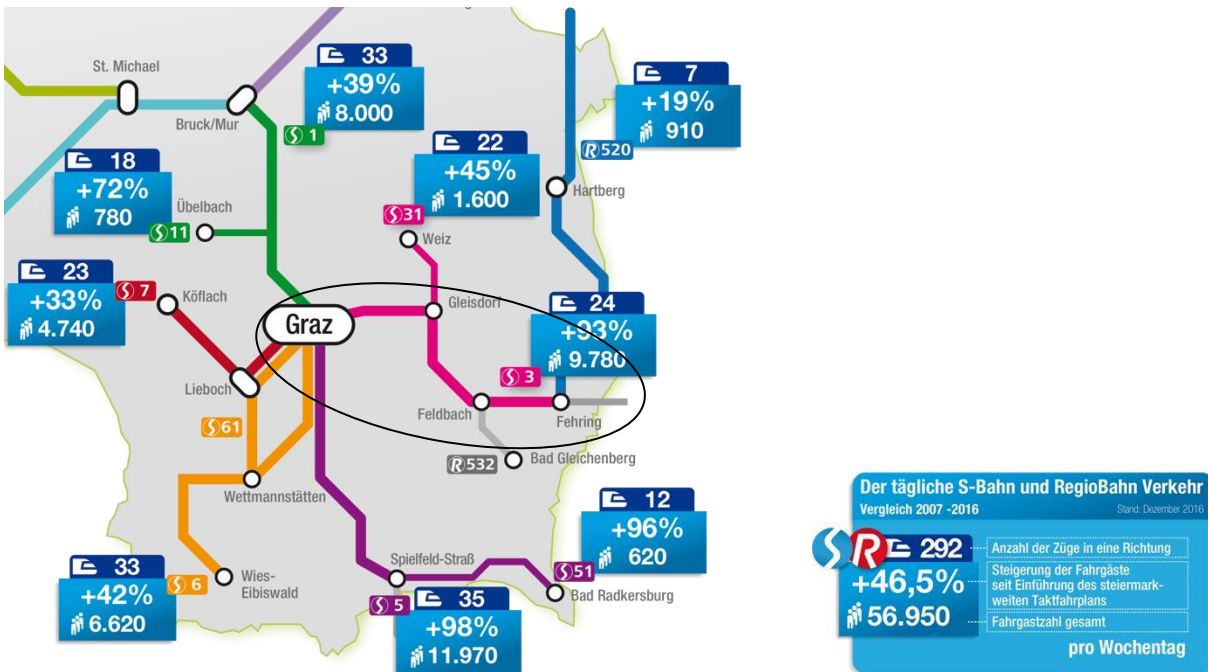


Figure 22: Rail connections Southeast Styria, S3 Fehring - Graz incl. legende (Land Steiermark 2016, own editing 2019)

3.3.4.2. Cross-border connection to Hungary

With the already described S3 line there is also a cross-border rail connection to Szentgotthárd. From there, there are transfer options to Hungarian trains. The Styrian Eastern Railway and the GYSEV on the Hungarian side thus already offer a connection between Graz and Szombathely via Jennersdorf, Szentgotthárd and Körmend.

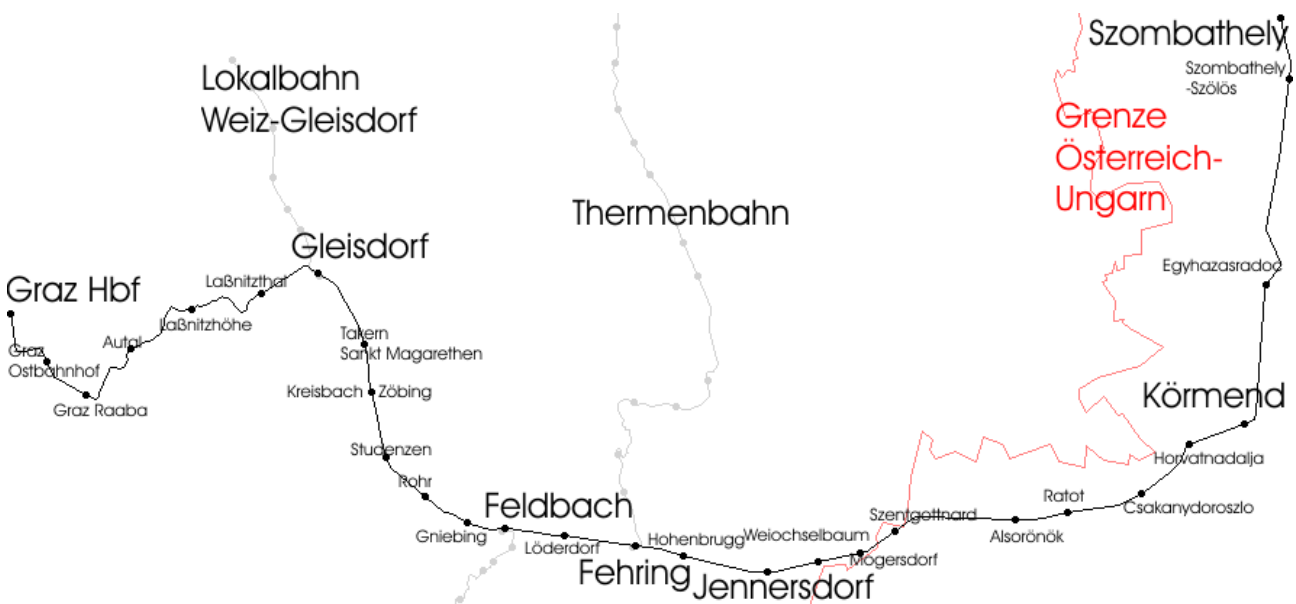


Figure 23: Route of the Styrian Eastern Railway, Hungarian section GYSEV (Source: Wolfgang Wallner, Wikipedia 2019)

As far as cross-border bus connections are concerned, there are so far - with one exception - no connections between the area of Szombathely/Körmennd and Southern Burgenland. The only existing bus line is the Südburg line 7222/7910/715 Sárvár-Bük-Szombathely - Bucsu / Schachendorf - Oberwart, which is mainly relevant for school traffic. With few exceptions, it travels twice an hour in the morning and in the afternoon on Austrian school days.

3.3.5. Excursus - Bus connection G1 between Southern Burgenland and Vienna

In Southern Burgenland, the line G1 of Dr. Richard Linien GmbH & Co KG represents an existing and widely used public transport service for commuters from Southern Burgenland to Vienna. The reasons for using this line as a best practice example for the project in question are the rising number of passengers and the high level of public acceptance.

The G1 bus line offers a wide range of public transport services between Southern Burgenland and Vienna. From Monday to Friday, depending on the stop, up to 23 pairs of coaches are offered daily, another 10 pairs on Saturdays and 11 on Sundays and public holidays. 31 double-decker buses are used for this. There is also a feeder system with minibuses, which take over the fine distribution of passengers in the region. (Dr. Richard 2018)

The following figure shows the number of course pairs that run daily on the G1 line, depending on the section of the route or the boarding stop.

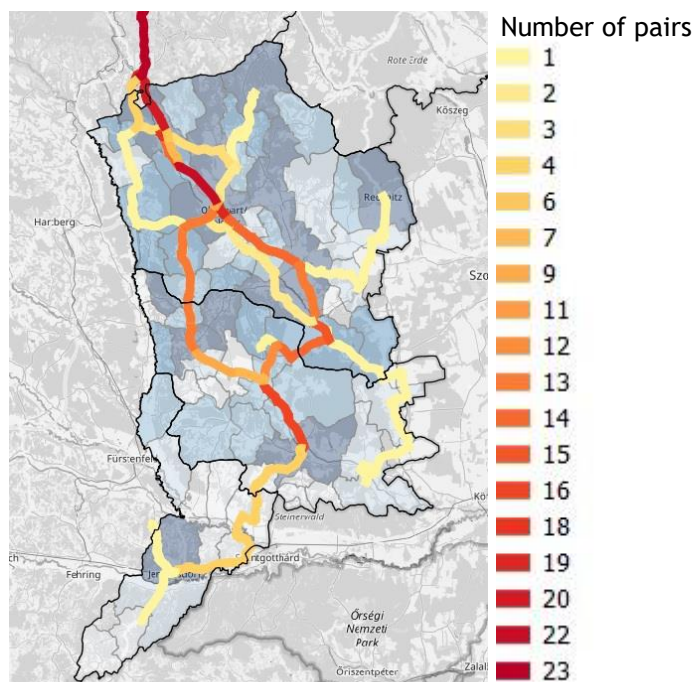


Figure 24: Number of daily pairs of coaches of line G1 (Source: Own representation 2019)

From Monday to Friday the first course starts in Güssing at 2:55 and the last course leaves Vienna at 21:15. During peak hours (Mon to Fri), the buses leave at an interval of 30 minutes. From Oberwart, busses depart at a 15-minute interval during the morning rush hour between 4:45 and 5:45.

Due to the numerous courses tailored to the commuters and the high quality of service of the buses (W-Lan, WC, 24-hour service hotline), the G1 line is used by many Southern Burgenlanders. The fast connections via the motorway and the terminus in the center of Vienna (Karlsplatz) also contribute to the high level of acceptance of the route among the general population. (Dr. Richard 2018)

All this is reflected in the number of passengers: In 2004, 315,144 passengers used the line G1, in 2017, the number rose to 463,769. This is an increase of almost 50 percent.

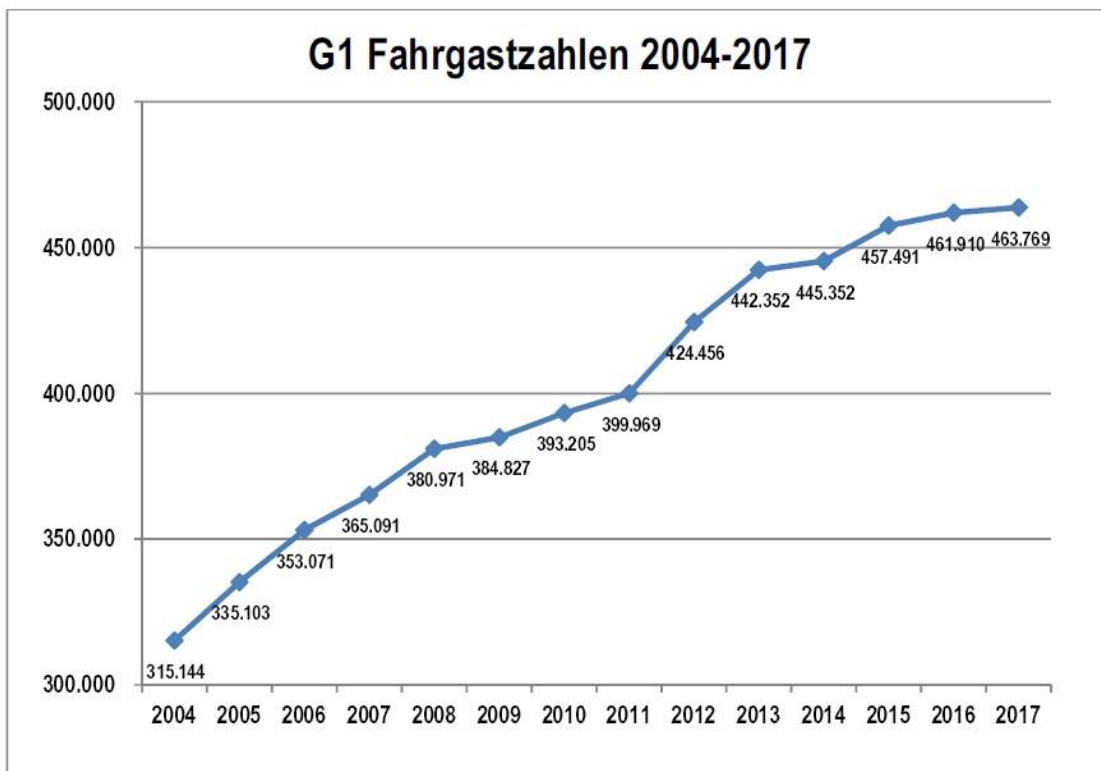


Figure 25: Development of the annual passenger numbers of the G1 line (Dr. Richard Südburg 2018)

For the year 2018, it was extrapolated that a total of approx. 750 of the Vienna commuters from the districts Güssing and Oberwart (altogether approx. 5,050 persons) used the G1. Thus, the proportion of G1 users going to Vienna is about 15%.

The above factors, which contribute to the success of the G1 line, can also be considered as a model or as a goal in the planning of similar projects. For example, in the further estimation of passenger potential, it can be assumed that the use of an effective bus offering of about 15% of commuters will be assumed.

3.4. Estimation of passenger potential

This chapter defines the requirements for an effective bus service for the Szombathely - Southern Burgenland - Graz corridor. The expected passenger potential is the main thing being considered. In chapters 3.2. and 3.3. a comprehensive analysis of the existing commuter flows and of the existing transport offering in the project area was carried out. Building on this, passenger potentials will now be calculated.

When estimating the passenger potential, the first step is to build on the existing data for the G1 line between Southern Burgenland and Vienna (see previous chapter). The evaluation of the available data, taking into account the modal split of the commuter journeys, results, as mentioned above, in a public transport share of 15 % between Vienna and Southern Burgenland for this route.

In order to be able to estimate the long-term passenger potential for the project area, at least 15% of the public transport share should be allocated to the local passenger numbers and the current passenger potential should be compared with the anticipated future numbers. To this end, the table below describes the evolution of South Burgenland's commuter traffic over the period 2011-2030, with the latest value based on ÖROK's 2018 national population forecast for Austria. The figure shows the number of people commuting from the respective district to Graz.

Table 18: Development of southern Burgenland traffic with destination Graz in 2011 (Statistik Austria 2011) über 2016 (Statistik Austria 2016) nach 2030 (ÖROK 2018)

Source district	2011	2016	2030
Güssing	252	258	234
Jennersdorf	494	443	401
Oberwart	265	303	288

Based on the current figures for 2016, the passenger potential, taking into account a 15% share of the total working traffic for Southern Burgenland, is as follows:

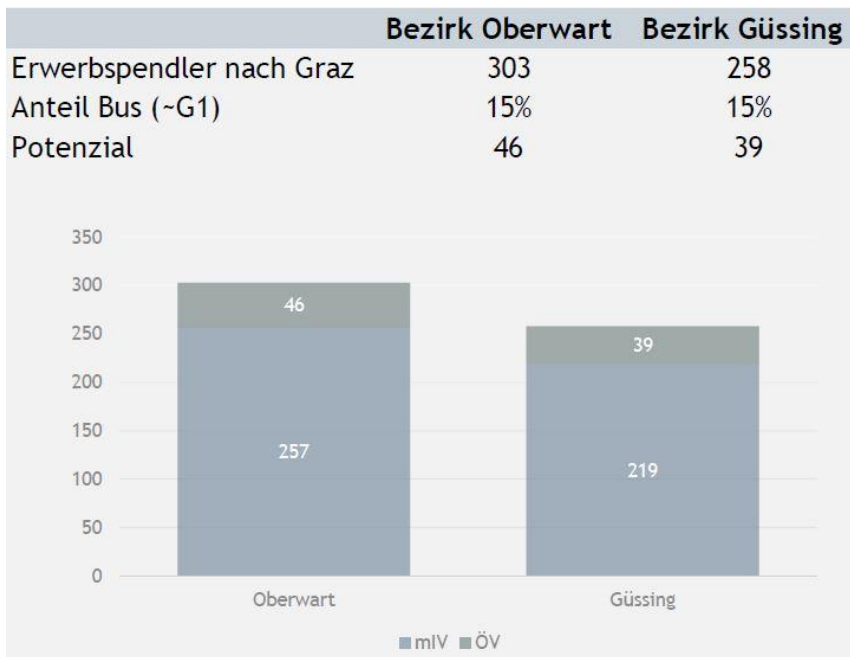


Figure 26: Public transport potential of working commuters based on the G1 line (Own representation 2019)

Based on a cross-border public transport concept (part of the cross-border mobility project for the region Burgenland - Western Hungary "GreMo-Pannonia", Transport & Media Consulting, 2012), which calculated for Burgenland that 17 % of all professional journeys were made by public transport, a potential public transport share of 17 % in the project area is also targeted for this project.

In order to be able to quantify the passenger potential in the project area in more detail, the commuter flows are displayed along three axes, which will also guide the future routes:

- Axis 1: Szombathely - Oberwart - Hartberg - Graz
- Axis 2: Körmend - Güssing - Fürstenfeld - Graz
- Axis 3: Szentgotthárd - Jennersdorf - Fehring - Graz

3.4.1. Axis 1: Szombathely - Oberwart - Hartberg - Graz

Axis 1 leads from Szombathely to Hartberg and Graz via Oberwart.



Figure 27: Axis Szombathely - Oberwart - Hartberg - Graz (Own representation 2019)

For the commuter flows along this axis, there is sufficient data from which to calculate the potential passenger potential, as chapter 3.2. describes in detail. This is divided into sections according to the statistical data situation. The calculations of the passenger potential of the individual sections can be found in the following subchapters.

3.4.1.1. Passenger potential Hungary - District of Oberwart

In total, about 1,800 people currently commute from Hungary to work in the district of Oberwart. The main target communities are the municipality Oberwart with about 500 Hungarian commuters as well as the communities Großpetersdorf, Bad Tatzmannsdorf, Rechnitz and Pinkafeld, each with about 100 to 120 commuters. Assuming a public transport potential of about 17 % in daily commuter traffic, up to 300 of these commuters from the Hungarian border region could use an effective bus service. Along the axis Oberwart - Szombathely the public transport potential is about 110 to 120 people (municipalities Oberwart, Großpetersdorf and small communities).

Table 19: Commuter flows from Hungary to the district Oberwart, incl. public transport potential (Statistik Austria, own calculation)

Target district or municipality	Commuters Hungary → district OW	Public transport potential (assuming 17 %)
District Oberwart	1.760	299
Of which city of Oberwart	492	84
Of which Großpetersdorf	121	21

Of which Bad Tatzmannsdorf	121	21
Of which Rechnitz	108	18
Of which Pinkafeld	104	18

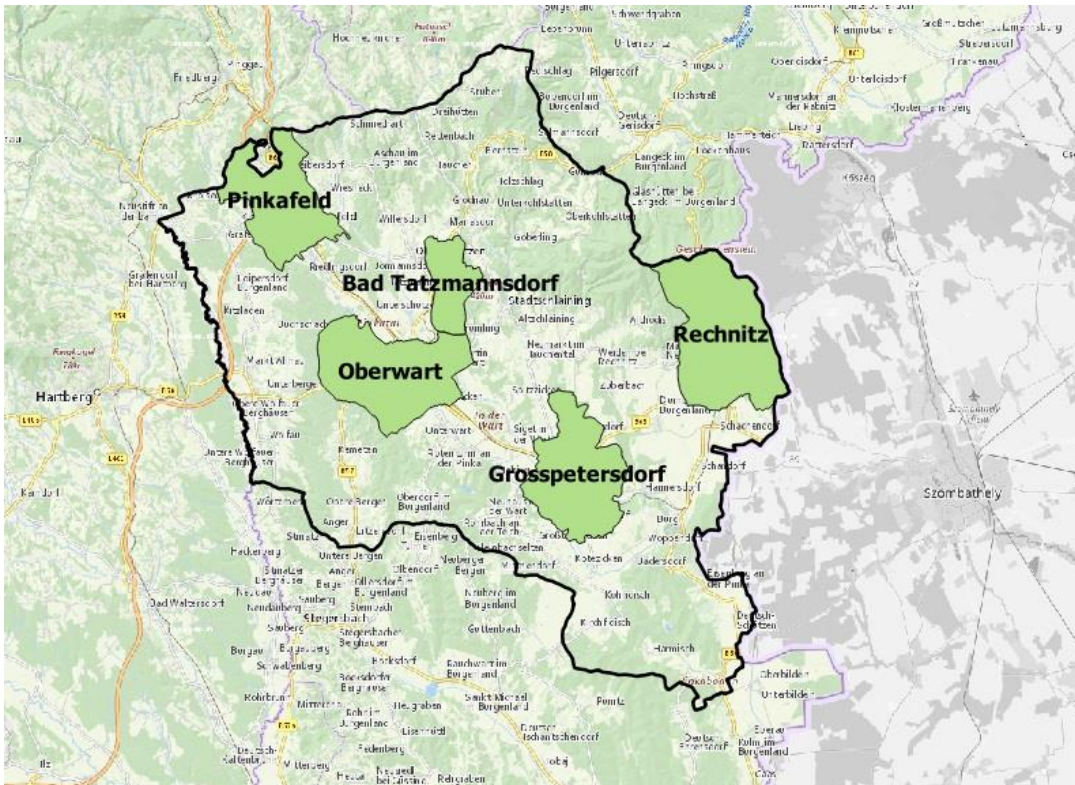


Figure 28: Location of the municipalities of the district of Oberwart with most of the commuters from Hungary (Own representation 2019)

3.4.1.2. Estimation of passenger potential from the district of Oberwart to Styria

The determination of the passenger potential from the district of Oberwart to the most important target communities of Styria, which are based on commuter numbers, shows that the municipality Hartberg (including Hartberg Umgebung) with 429 inbound commuters from the district Oberwart is much more popular than the city of Graz with about 300 commuters. With an assumed public transport potential of 17%, there is a public transport potential of about 50 passengers to Graz and 70 passengers to Hartberg.

Table 20: Comuter flows from the district of Oberwart to Styria, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters district Oberwart → Styria	Public transport potential (assuming 17 %)
Graz	303	52
Hartberg (+ Hartberg Umgebung)	429	73
Fürstenfeld	40	7

3.4.1.3. Estimation of passenger potential from Hartberg/Hartberg Umgebung to Graz bzw. to the district of Oberwart

Starting in Hartberg or Hartberg Umgebung, both the passenger potential in the direction of Graz and that to the east to the district of Oberwart, are of interest. This shows that the city of Hartberg is in much higher demand from inbound commuters from Oberwart than vice versa Oberwart from inbound commuters from Hartberg. The number of commuters in the direction of Graz, and thus the public transport potential, is comparable to the estimates from Oberwart with approx. 50-55 persons.

Table 21: Commuter flows from Hartberg and Hartberg Umgebung to Graz and to the district Oberwart respectively, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters Hartberg (+ Umgebung) → Graz respectively → municipalities of the district Oberwart	Public transport potential (assuming 17 %)
Graz	326	55
Oberwart (City)	67	11
Pinkafeld	38	6

3.4.2. Axis 2: Körmend - Güssing - Fürstenfeld - Graz

Another axis represents the connection from Körmend to Graz via Güssing and Fürstenfeld.



Figure 29: Axis Körmend - Güssing - Fürstenfeld - Graz (Own representation 2019)

The most important sections along this axis are the sections Körmend - Güssing, Güssing - Fürstenfeld and Fürstenfeld - Graz. Subsequently, the passenger potentials along these sections are determined.

3.4.2.1. Passenger potential Hungary - District of Güssing

Currently about 713 people from Hungary commute to the Güssing district. The most important inbound commuter communities are the municipalities of Güssing (173) and Stegersbach (151). Passenger potential in working commuter traffic on the Körmend - Güssing section is therefore around 30 people, assuming a public transport share of 17%.

Table 22: Commuter flows from Hungary to the district of Güssing, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters Ungarn → district Güssing	Public transport potential (assuming 17 %)
District Güssing	713	121
Of which Güssing (city)	173	29
Of which Stegersbach	151	26

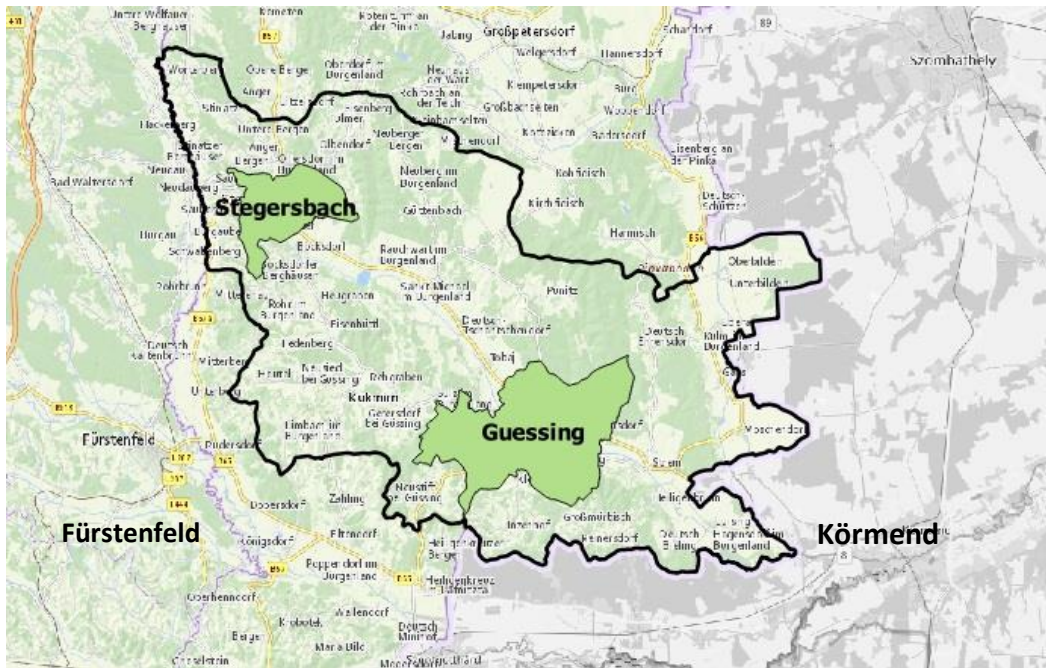


Figure 30: Location of the municipalities of the district of Güssing with the most inbound commuters from Hungary (Own representation 2019)

3.4.2.2. Passenger potential district of Güssing - Steiermark

About the same number of people, namely about 250, commute from the district of Güssing to Fürstenfeld and Graz respectively, whereby a high proportion of the commuters to Fürstenfeld come from the nearby communities of Kukmirn and Burgauberg-Neudauberg. This space should be served by means of small-scale public transportation systems instead. In the direction of Graz, the Güssing district has a public transportation potential of approx. 50 people.

Table 23: Commuter flows from the district of Güssing to Styria, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters district Güssing → Styria	Public transport potential (assuming 17 %)
Graz	258	44
Fürstenfeld	247	42
Hartberg (+ Hartberg Umgebung)	135	23

3.4.2.3. Passenger potential Fürstenfeld - Graz resp. district of Güssing

Starting from Fürstenfeld, the passenger potential in the direction of Graz has to be considered above all. In the Güssing district, hardly any commuters from the Fürstenfeld area are to be considered in the planning.

Table 24: Commuter flows from Fürstenfeld to Graz and to the district of Güssing respectively, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters Fürstenfeld → Graz respectively Bezirk Güssing	Public transport potential (assuming 17 %)
Graz	391	66
Güssing	23	4
Stegersbach	23	4

3.4.3. Axis 3: Szentgotthárd - Jennersdorf - Fehring - Graz

This southernmost axis from Szombathely to Graz forms the existing railway line of the Styrian Eastern Railway (steirische Ostbahn) and the Hungarian section of the GYSEV.



Figure 31: Axis Szombathely - Szentgotthárd - Jennersdorf - Graz (Own representation 2019)

3.4.3.1. Passenger potential Hungary - district of Jennersdorf

Commuter traffic from Hungary to the district of Jennersdorf can already be handled in public transport due to the existing rail connection. The following table shows the potential for an effective offer (electrification, direct connections without borderline waiting time).

Table 25: Commuter flows Hungary - district of Jennersdorf, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters HU → district Jennersdorf	Public transport potential (assuming 17 %)
District Jennersdorf	464	79
Jennersdorf (city)	182	31

3.4.3.2. Passenger potential district Jennersdorf - Styria

The commuter data between the Jennersdorf district and the most important destinations in Styria and the passenger potentials derived from it are again to be considered in two parts. The high number of commuters to Fürstenfeld is again due to the proximity of neighboring communities (Rudersdorf, Dt Kaltenbrunn, etc.) and not relevant for this project. The public transport potential to Graz, however, can probably be realized in the course of the expansion of the Styrian Eastern Railway.

Table 26: Commuter flows district of Jennersdorf - Styria, incl. public transport potential (Statistik Austria 2016, own calculation)

Target district or municipality	Commuters district Jennersdorf → Styria	Public transport potential (assuming 17 %)
Fürstenfeld	674	115
Fehring/Feldbach	513	87
Graz	443	75

4. Feasibility study

4.1. Timetabling

After fully determining all of the requirements, the next step is the development of possible timetables along the three axes through the project area. The planned routes are largely based on the existing public transport lines, which were worked out in detail in the inventory and groundwork (see chapter 3.3). As the analysis shows, existing route guidance within Austria is generally good, but there is a lack of cross-border connections. The timetable development therefore supplements the necessary extensions of the existing lines with regard to the cross-border aspect, since this relationship is virtually non-existent in the stock.

As with the routes, the existing public transportation offering was used as the basis for drawing up timetables. In the following, different variants are described, with the target variant being presented in more detail, including concrete timetable suggestions.

4.1.1. Axis 1: Szombathely - Oberwart - Hartberg - Graz

As already described, Axis 1 leads from Szombathely to Hartberg and Graz via Oberwart. There is already an extensive public transportation service between Hartberg and Graz, which is now to be compressed to Oberwart or extended to Szombathely.

For this northernmost axis of the project area, several variants have been developed, ranging from a "minimal variant" which changes little, to a "maximum variant" with fast connections. Variant 3 is the variant that was agreed upon after an appointment in May 2019 in Graz with representatives of the transport association of Steiermark and the state of Styria.

4.1.1.1. Variant 1: Minimal variant

Option 1 is a revision of the existing public transportation connection between Szombathely, Oberwart, Hartberg and Graz. This variant is based mostly on the preservation of existing traffic between Oberwart, Hartberg and Graz (lines X30 and X31).

- In variant 1, further morning and evening courses in Hartberg will be connected to Oberwart via Pinkafeld on line 6222 (X30, X31) or additional courses will be set up between Oberwart, Markt Allhau and Hartberg.
- In addition, the routes between Hartberg and Oberwart (line 310) and between Oberwart and Szombathely (line 7910) are to be improved.
- In the town of Oberwart buses are scheduled to run every half hour.

4.1.1.2. Variant 2: Maximum variant, based on the draft of the Regional Mobility Plan Eastern Styria

The Province of Styria is currently working out regional mobility plans for individual subregions of Styria. As part of an interim presentation of the "Regional Mobility Plan Eastern Styria" (RMPE), the status quo for the region will be described and recommendations made and discussed. Based on the version of the draft from March 2019, the now described variant 2, represents a maximum variant for the Styrian section of the route and includes fast connections for the local suburban axes and regional main axes. This classification is based on representations of the RMPE, where the operating qualities shown in the following two figures are also proposed according to different categories or settlement sizes.

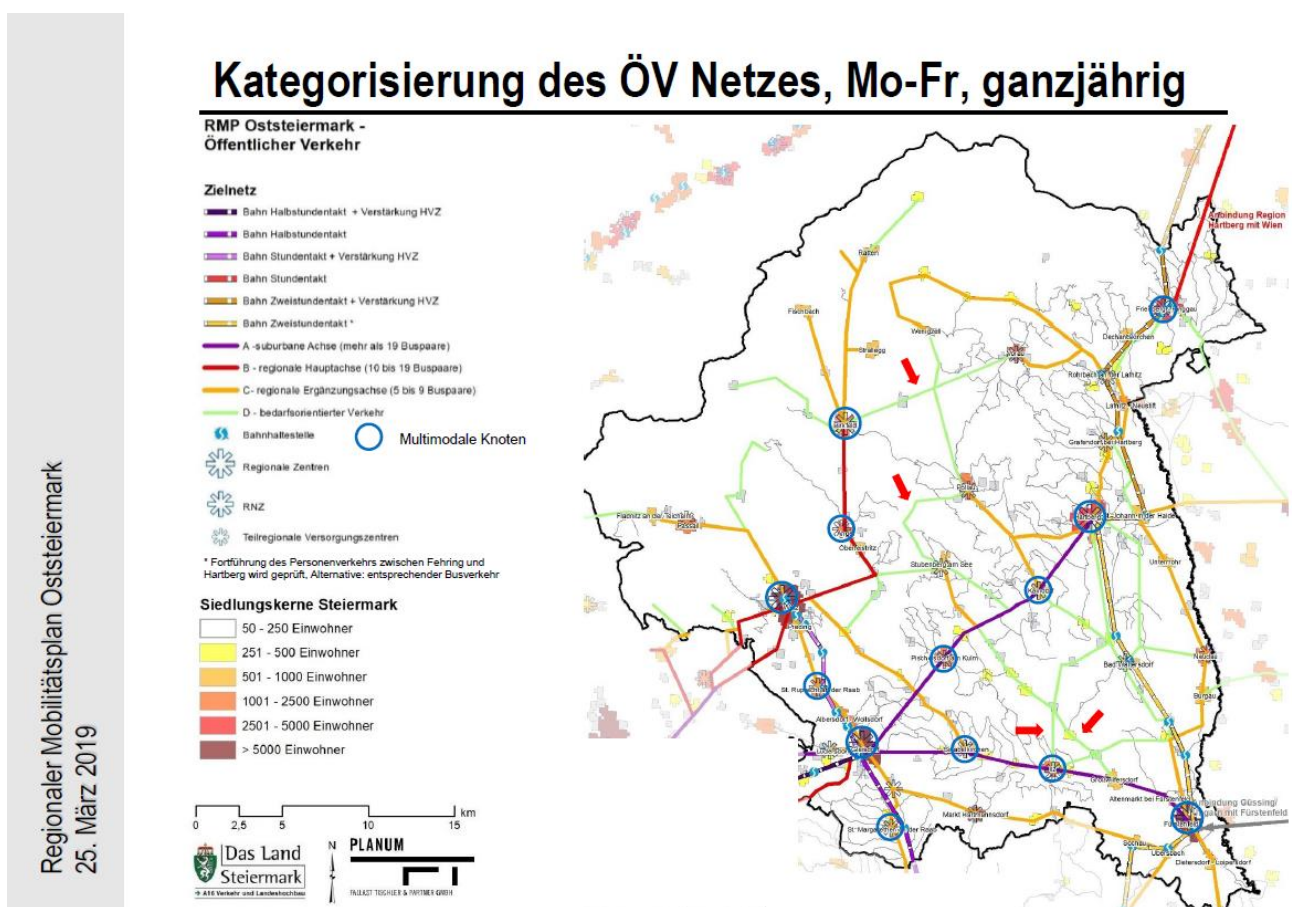


Figure 32: Regionaler Mobilitätsplan Oststeiermark (Entwurf Stand 25. März 2019): Kategorisierung des ÖV-Netzes (Land Steiermark 2019)

This means for the individual sections of the route:

- Along the Graz - Gleisdorf - Hartberg line, which is classified as a suburban axis in the RMPE, the existing train connection is to run every half hour between Graz and Gleisdorf. Additional intervals during the rush hour shall be introduced.

- In addition, more than 19 pairs of buses will run on the route from Graz to Hartberg. Also, between Gleisdorf and Graz there should be supportive bus connections according to a regional main axis with 10 to 19 pairs of buses.
- The section Hartberg - Oberwart is according to RMPE a regional extension axis. Accordingly, an operation with 5 to 9 pairs of buses is planned.
- In this maximum variant, there should also be express connections between the regional centers, Oberwart, Hartberg, Gleisdorf and Graz. In Oberwart, a 60-minute interval is planned to start during rush hour and a 120-minute interval in the off-peak hours. A significantly reduced travel time of 25 minutes between Oberwart and Hartberg and 60 minutes between Hartberg and Graz is planned.
- Between Oberwart and Szombathely a cross-border bus service is introduced, in which during peak hours - including school traffic - connections are met every 30 minutes. In the off-peak hours, the intervals are extended to 120 minutes. The travel time should be only 45 minutes for this section.
- As with all variants, the city traffic in Oberwart should also be considered in this maximum variant and coordinated accordingly.

4.1.1.3. Variant 3: Coordinated target variant

During a meeting in Graz on May 14, 2019, a further variation was drafted between representatives of the Styrian Transport Association (Verkehrsverbund Steiermark) and the Province of Styria as well as representatives of the province of Burgenland. This represents a further development of the two variations described above, and is therefore the target variation, the implementation of which is to be aimed for.

The following parameters and objectives were considered:

- On the section Oberwart - Hartberg - Graz there should be three connections during the morning rush hour, with arrival in Graz at 6:30, 7:30 and 8:00. The travel time Oberwart - Graz should be about 90 minutes, and the travel time Hartberg - Graz about 60 minutes.
- Hartberg is to be connected to the line at three stops, namely Busbahnhof, Wüstenrot and Landeskrankenhaus.
- From Hartberg, the bus takes the B 54 to the junction Gleisdorf West, then the A 2 to Graz Andreas-Hofer-Platz.
- There are also connections to the P & R Markt Allhau, P & R Kaindorf and the bus station Großesendorf.
- In the evening there will be four evening connections on the section Graz - Hartberg - Oberwart between 15:30 and 19:00, the last connection ends in Hartberg.
- In addition, there are supplementary regional bus connections between Hartberg and Oberwart with five course pairs. For the city traffic in Oberwart, a separate timetable was developed.
- Buses run every hour between Oberwart and Szombathely during the morning and evening rush hours, with a two-hour interval in between. This results in a total of eleven courses on the section

Szombathely - Oberwart - Szombathely including a loop on the EO (shopping center Oberwart) and the hospital Oberwart.

Compared to the other two variants, this means in summary that the lines on the section between Hartberg and Gleisdorf in Styria continue to be via the B 54 and not via the motorway, but the number of stops served is substantially reduced and restricted to the park-and-ride facilities in Kaindorf and Großpesendorf. This results in a significant acceleration in comparison to the existing connection while maintaining a good operating quality for Styrian commuters.

There are also improvements for cross-border traffic and commuters from Southern Burgenland: Not only are Szombathely and Oberwart connected at hourly intervals during peak hours, but thanks to a loop and an additional city line, the town of Oberwart is also served by public transport.

These points are incorporated in the elaborated timetables for the routes Oberwart - Graz (and back), Szombathely - Oberwart (and back) and for the city traffic of Oberwart. It was taken into account that according to the timetable concept for West Hungary at the Szombathely railway station there should be an interval knot at minute '30. Therefore, bus connections should be timed so that the arrival at Szombathely station takes place between the minutes '20 and '25 and the departure at approx. minute '40.

Essentially, this variant provides for three express busses between Oberwart, Hartberg and Graz in the morning and evening peak hours. A max. travel time of 90 minutes and commuter-friendly arrival times in Graz between 6:30 and 8:00 were defined. Based on the aforementioned objectives (route via B 54, stops in Hartberg and P & R facilities), there are three express courses both in the morning and evening peak hours (5:00, 6:00 and 6:30 from Oberwart). The return trips from Graz take place in the evening peak hours at 15:30, 16:30, 17:30 and 19:00 (to Hartberg). Due to the noted heavy (commuter) traffic between Oberwart and Hartberg, it is proposed to supplement the express lines with existing line 310 and to operate as a shuttle line between these two cities throughout the day. The following tables show the timetable design for this variation. The color classifications show that the express bus line requires three busses that could otherwise be used during the day.

Table 27: Draft timetable Oberwart - Graz via Markt Allhau, Hartberg, Kaindorf and Großpesendorf

Linie	Express	Express	Express	310	310	310	310	Express	Express	Express	310
Oberwart Hauptplatz	05:00	06:00	06:30	07:30	09:30	11:30	13:30	14:30	15:30	17:10	18:10
Oberwart P&R	05:05	06:05	06:35	07:35	09:35	11:35	13:35	14:35	15:35	17:15	18:15
Markt Allhau P&R	05:20	06:20	06:50	07:50	09:50	11:50	13:50	14:50	15:50	17:30	18:30
Hartberg Busbahnhof	05:30	06:30	07:00	08:00	10:00	12:00	14:00	15:00	16:00	17:40	18:40
Hartberg Wüstenrotplatz	05:32	06:32	07:02					15:02	16:02	17:42	18:42
Hartberg Landeskrankenhaus	05:33	06:33	07:03					15:03	16:03	17:43	18:43
Kaindorf P&R	05:43	06:43	07:13					15:13	16:13	17:53	
Großpesendorf Busbahnhof	05:50	06:50	07:20					15:20	16:20	18:00	
Graz Andreas Hofer Platz	06:30	07:30	08:00					16:00	17:00	18:40	

Table 28: Draft timetable Graz - Oberwart via Großesendorf, Kaindorf, Hartberg and Markt Allhau

Linie	Express	310	Express	310	Express	310	310	310	Express	Express	Express	Express
Graz Andreas Hofer Platz			07:00		08:00				15:30	16:30	17:30	19:00
Großesendorf Busbahnhof			07:40		08:40			✓	16:10	17:10	18:10	19:40
Kaindorf P&R			07:47		08:47			✓	16:17	17:17	18:17	19:47
Hartberg Landeskrankenhaus			07:57		08:57			✓	16:27	17:27	18:27	19:57
Hartberg Wüstenrotplatz			07:58		08:58				16:28	17:28	18:28	19:58
Hartberg Busbahnhof	06:00	07:00	08:00	08:30	09:00	10:10	12:10	14:10	16:30	17:30	18:30	20:00
Markt Allhau P&R	06:10	07:10	08:10	08:40	09:10	10:20	12:20	14:20	16:40	17:40	18:40	
Oberwart P&R	06:25	07:25	08:25	08:55	09:25	10:35	12:35	14:35	16:55	17:55	18:55	
Oberwart Hauptplatz	06:30	07:30	08:30	09:00	09:30	10:40	12:40	14:40	17:00	18:00	19:00	

In view of the fact that there is no meaningful data on the existing commuter flows between Hungary and Graz, the development of the connection to Hungary focused on an effective link between Szombathely and Oberwart. There is a connection to Graz scheduled as a transfer connection with the express bus. The estimated driving time of this connection is 2h 20 min. In contrast, there is already the possibility of a rail connection between Szombathely and Graz in 2h 47min with a 22-minute layover in Szentgotthárd. From a planning point of view, therefore, an acceleration of the Graz - Szombathely railway line should be preferred as the future public transport axis between these two cities.

According to the objectives of the transnational tools, the timetable development has taken into account both the future timetable concept at Szombathely station (interval knot at minute '30) and the existing bus line along which a future cross-border line could be run without additional concessions. The line 6690 - operated by the bus company ÉNYKK Zrt. - runs a tight schedule between the bus station Szombathely and the municipality Bucsu, directly on the Austro-Hungarian border. The following coordinated timetable is proposed in combination with the Austrian line 7910 (Südburg):

Table 29: Draft timetable Szombathely - Oberwart and back incl. loop in Oberwart

Szombathely	05:40	06:40	07:40	08:40	10:40	12:40	14:40	16:40	17:40	18:40
Sé	05:50	06:50	07:50	08:50	10:50	12:50	14:50	16:50	17:50	18:50
Torony	05:52	06:52	07:52	08:52	10:52	12:52	14:52	16:52	17:52	18:52
Schachendorf	06:02	07:02	08:02	09:02	11:02	13:02	15:02	17:02	18:02	19:02
Dürnbach	06:06	07:06	08:06	09:06	11:06	13:06	15:06	17:06	18:06	19:06
Großpetersdorf	06:12	07:12	08:12	09:12	11:12	13:12	15:12	17:12	18:12	19:12
Untervart Industriezentrum	06:20	07:20	08:20	09:20	11:20	13:20	15:20	17:20	18:20	19:20
Südburg	06:21	07:21	08:21	09:21	11:21	13:21	15:21	17:21	18:21	19:21
Steinamangerer Straße 113	06:22	07:22	08:22	09:22	11:22	13:22	15:22	17:22	18:22	19:22
GH Schwab	06:23	07:23	08:23	09:23	11:23	13:23	15:23	17:23	18:23	19:23
Oberwart Hauptplatz	06:25	07:25	08:25	09:25	11:25	13:25	15:25	17:25	18:25	19:25
Neutorgasse	06:27	07:27	08:27	09:27	11:27	13:27	15:27	17:27	18:27	19:27
Grazer Straße/Bachgasse	06:28	07:28	08:28	09:28	11:28	13:28	15:28	17:28	18:28	19:28
Grazer Straße 70	06:29	07:29	08:29	09:29	11:29	13:29	15:29	17:29	18:29	19:29
EO	06:32	07:32	08:32	09:32	11:32	13:32	15:32	17:32	18:32	19:32
Dornburggasse	06:34	07:34	08:34	09:34	11:34	13:34	15:34	17:34	18:34	19:34
Internat	06:36	07:36	08:36	09:36	11:36	13:36	15:36	17:36	18:36	19:36
Hauptschule	06:37	07:37	08:37	09:37	11:37	13:37	15:37	17:37	18:37	19:37
Badgasse	06:38	07:38	08:38	09:38	11:38	13:38	15:38	17:38	18:38	19:38
Troergasse	06:39	07:39	08:39	09:39	11:39	13:39	15:39	17:39	18:39	19:39
GH Schwab	06:40	07:40	08:40	09:40	11:40	13:40	15:40	17:40	18:40	19:40
Steinamangerer Straße 113	06:41	07:41	08:41	09:41	11:41	13:41	15:41	17:41	18:41	19:41
Südburg	06:42	07:42	08:42	09:42	11:42	13:42	15:42	17:42	18:42	19:42
Untervart Industriezentrum	06:43	07:43	08:43	09:43	11:43	13:43	15:43	17:43	18:43	19:43
Großpetersdorf	06:51	07:51	08:51	09:51	11:51	13:51	15:51	17:51	18:51	19:51
Dürnbach	06:57	07:57	08:57	09:57	11:57	13:57	15:57	17:57	18:57	19:57
Schachendorf	07:01	08:01	09:01	10:01	12:01	14:01	16:01	18:01	19:01	20:01
Torony	07:11	08:11	09:11	10:11	12:11	14:11	16:11	18:11	19:11	20:11
Sé	07:13	08:13	09:13	10:13	12:13	14:13	16:13	18:13	19:13	20:13
Szombathely	07:23	08:23	09:23	10:23	12:23	14:23	16:23	18:23	19:23	20:23

This timetable, which also accesses the most important destinations in the municipality of Oberwart, could be supplemented by a counter-current city bus line. As a result, a combined urban and regional transportation system for the greater area Oberwart - Szombathely with a connection to the express bus line Oberwart - Hartberg - Graz could be created with relatively little effort.

Table 30: Timetable supplementary line city bus Oberwart

Oberwart Hauptplatz	06:55	07:55	08:55	09:55	10:55	11:55	12:55	13:55	14:55	15:55	16:55	17:55
Schulgasse	06:56	07:56	08:56	09:56	10:56	11:56	12:56	13:56	14:56	15:56	16:56	17:56
Hauptschule	06:58	07:58	08:58	09:58	10:58	11:58	12:58	13:58	14:58	15:58	16:58	17:58
Internat	06:59	07:59	08:59	09:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59
Dornburggasse	07:01	08:01	09:01	10:01	11:01	12:01	13:01	14:01	15:01	16:01	17:01	18:01
EO	07:03	08:03	09:03	10:03	11:03	12:03	13:03	14:03	15:03	16:03	17:03	18:03
Grazer Straße 70	07:06	08:06	09:06	10:06	11:06	12:06	13:06	14:06	15:06	16:06	17:06	18:06
Grazer Straße/Bachgasse	07:07	08:07	09:07	10:07	11:07	12:07	13:07	14:07	15:07	16:07	17:07	18:07
Neutorgasse	07:08	08:08	09:08	10:08	11:08	12:08	13:08	14:08	15:08	16:08	17:08	18:08
..	07:10	08:10	09:10	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	18:10
..	07:11	08:11	09:11	10:11	11:11	12:11	13:11	14:11	15:11	16:11	17:11	18:11
..	07:13	08:13	09:13	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:13	18:13
Oberwart Hauptplatz	07:15	08:15	09:15	10:15	11:15	12:15	13:15	14:15	15:15	16:15	17:15	18:15

4.1.2. Axis 2: Körmend - Güssing - Fürstenfeld - Graz

The second axis represents the connection from Graz to Körmend via Fürstenfeld and Güssing. For this axis the section Fürstenfeld - Graz already has regular connections. There are also connections between Güssing and Fürstenfeld, which should, however, be condensed or extended across borders to Körmend. Thus, there are currently four early courses between Güssing/Fürstenfeld and Graz, but the travel times are more than two hours and there is only one connection from Güssing. There are hardly any evening courses.

Existing routes currently include the lines

- 7930/472 from St. Michael to Graz via Stegersbach
- 1864 from Güssing to Fürstenfeld via Kukmirn and
- Linie X41 from Fürstenfeld (resp. with transfer in Güssing) to Graz

Also for this second axis, several variations have been worked out, ranging from close-to-existing up to a maximum variation, which will now be presented.

4.1.2.1. Variant 1: Minimal variant

Option 1 is a revision of the existing public transportation connection between Güssing and Fürstenfeld resp. to Graz. This variation largely relies on the preservation of the existing lines 1864, 7930, 1866 and 6214. On the one hand, the goal was shorter travel times and on the other hand, additional connections to the X41 line in Fürstenfeld. This should be achieved as follows:

- Extension of the early course 7930, which currently starts in St. Michael and leads via Burgau to Graz. In this variation, the course should start instead in Güssing.
- Additional early courses from Güssing to Fürstenfeld on lines 1864 and 6214 respectively.
- An additional evening course from Fürstenfeld to Güssing on line 6214.
- Extension of the evening course 7930 to Güssing

4.1.2.2. Variant 2: Maximum variant with quick connections

The maximum variation of this axis is also based on the previously presented draft of the regional mobility plan Oststeiermark (RMP Oststeiermark) from March 2019 (Land Steiermark 2019), in which a train is planned to run on the axis Graz-Gleisdorf every half hour with additional reinforcement at rush hour. In parallel, 10 to 19 bus pairs should also operate. In the RMP Oststeiermark, the Gleisdorf-Fürstenfeld axis is defined as a suburban axis, which is why more than 19 pairs of buses should run on this route.

This means specifically for the individual sections of the route:

- In this maximum variation, there should be express connections between the regional centers, ie between Güssing, Fürstenfeld, Gleisdorf and Graz. Therefore, there should be a connection starting in Fürstenfeld every hour during rush hour. Together with an increase in frequency and a route on the A 2 instead of the B 54 in Styria, the travel times are significantly reduced, namely to 25 minutes between Oberwart and Hartberg and 60 minutes between Hartberg and Graz.
- Between Güssing and Szombathely, a cross-border scheduled bus service is introduced, in which during peak hours - including school traffic - connections are met every 30 minutes. In the off-peak hours, the intervals are extended to 120 minutes. The travel time should only be 45 minutes for this section.

4.1.2.3. Variant 3: Coordinated target variant

The following parameters and objectives have been taken into account for the preparation of the itinerary:

- On the route Güssing - Fürstenfeld - Graz there should be three connections during the morning rush hour with arrivals in Graz at 6:30, 7:30 and 8:00. The travel time between Güssing and Graz is about 90 minutes and about 55 minutes between Fürstenfeld and Graz.
- The following route is planned: from Güssing to the planned P & R facility of Fürstenfeld Interspar via Heiligenkreuz and Rudersdorf. From there the bus continues on the A 2 from the interchange Ilz.
- In addition, there will be three evening connections between 16:30 and 18:30 on the Graz - Fürstenfeld - Güssing section.
- In addition, a regional bus connection between Körmend - Güssing - Fürstenfeld is being developed with a total of 13 connections (both directions).
- At Körmend station, an interval knot is set up at minute '00. Therefore, the busses should arrive at approx. minute '55 and depart between the minutes '05 and '10.

The following drafted timetable results from these considerations and specifications:

Table 31: Timetable Körmend - Fürstenfeld via Güssing and Güssing - Graz via Fürstenfeld

Linie	Express	Express	Express	Regional	Regional	Regional	Regional	Regional	Regional	Regional
Körmend Bhf				06:30	07:30	09:30	12:30	15:30	17:30	18:30
Güssing	05:00	06:00	06:30	07:00	08:00	10:00	13:00	16:00	18:00	19:00
Heiligenkreuz	05:14	06:14	06:44	07:14	08:14	10:14	13:14	16:14	18:14	19:14
Poppendorf	05:16	06:16	06:46	07:16	08:16	10:16	13:16	16:16	18:16	19:16
Eltendorf	05:20	06:20	06:50	07:20	08:20	10:20	13:20	16:20	18:20	19:20
Dobersdorf	05:24	06:24	06:54	07:24	08:24	10:24	13:24	16:24	18:24	19:24
Rudersdorf	05:28	06:28	06:58	07:28	08:28	10:28	13:28	16:28	18:28	19:28
Fürstenfeld P&R Interspar	05:35	06:35	07:05							
Fürstenfeld Bahnhof				07:35	08:35	10:35	13:35	16:35	18:35	19:35
Großwilfersdorf	05:45	06:45	07:15							
Graz Andreas Hofer Platz	06:30	07:30	08:00							

Table 32: Timetable Graz - Güssing via Fürstenfeld and Fürstenfeld - Körmend via Güssing

Linie	Regional	Regional	Regional	Regional	Regional	Regional	Express	Express	Express
Graz Andreas Hofer Platz							16:35	17:05	18:35
Großwilfersdorf							17:20	17:50	19:20
Fürstenfeld Bahnhof	06:00	08:00	11:00	14:00	16:00	17:00			
Fürstenfeld P&R Interspar							17:30	18:00	19:30
Rudersdorf	06:07	08:07	11:07	14:07	16:07	17:07	17:37	18:07	19:37
Dobersdorf	06:11	08:11	11:11	14:11	16:11	17:11	17:41	18:11	19:41
Eltendorf	06:15	08:15	11:15	14:15	16:15	17:15	17:45	18:15	19:45
Poppendorf	06:19	08:19	11:19	14:19	16:19	17:19	17:49	18:19	19:49
Heiligenkreuz	06:21	08:21	11:21	14:21	16:21	17:21	17:51	18:21	19:51
Güssing	06:35	08:35	11:35	14:35	16:35	17:35	18:05	18:35	20:05
Körmend Bhf	07:05	09:05	12:05	15:05	17:05	18:05			

4.1.3. Axis 3: Szentgotthárd - Jennersdorf - Fehring - Graz

This southernmost axis from Szombathely to Graz forms the existing railway line of the Styrian Eastern Railway and the Hungarian section of the GYSEV. The route leads from Graz to Szombathely via Jennersdorf as well as the Hungarian stops Szentgotthárd and Körmend.

The Regional Mobility Plan RMP Southeastern Styria (RMP Südoststeiermark, Land Steiermark 2018) provides the expansion and enhancement of the Styrian Eastern Railway in the chapter Action Plan, Action Areas and Measures (p. 75). This includes the following relevant points:

- On the section Graz - Gleisdorf there should be connections every half hour; during rush hour the frequency should be increased by one to two additional pairs of trains.
- The section Gleisdorf - Fehring is to be operated every hour, with an increase of frequency to every half hour during rush hour.
- The section Fehring - Szentgotthárd is served every hour.

In the operating and financing concept, this axis is no longer considered.

4.2. Operating and financing concept

Finally, this chapter presents a concrete operating and financing concept for the previously defined and described axes.

4.2.1. Cost estimate

Cost estimates were made for different axes and variations. The calculation of the costs was based on the expected kilometers to be traveled based on the elaborated timetables. Depending on the annual operating days and a kilometer price of € 3.00, this results in the anticipated costs per year.

In view of the preliminary discussions with the representatives of the province of Styria and the Styrian transport association (steirischer Verkehrsbund), only the variations 1 (close to the existing connections) and 3 (coordinated variant) are compared. The two maximum variations were already eliminated due to the low probability of implementation.

4.2.1.1. Cost estimate for axis 1: Szombathely - Oberwart - Hartberg - Graz

Cost estimate variant 1

This variant consists essentially, as described in chapter 4.1.1., of a connection to the existing bus routes between Hartberg and Graz through increased frequency of the existing routes between Oberwart and Hartberg, and the addition of existing student traffic between Szombathely and Oberwart. This means the following for the cost estimate, based on the individual sections:

- Oberwart - Szombathely:

km/line:	42 km
lines/day:	16
km/day:	504
km/year:	126.000 (250 operating days/Mo - Fr when working day)
€/km:	3,00
€/year:	378.000,-

- Oberwart - Hartberg:

km/line:	23 km
lines/day:	9 additional lines
km/day:	207
km/year:	51.750 (250 operating days/Mo - Fr when working day)
€/km:	3,00
€/year:	155.250,-

The calculation for the third section Hartberg - Graz in this variation is based on the existing lines of the Styrian Transport Association (Steirischer Verkehrsverbund). As a result, there are no additional costs.

The operation of the two sections Szombathely - Oberwart (new) and Oberwart - Hartberg (extension of the existing connections) would cost **€ 533.250,- annually** for this variation, with an assumed kilometer rate of € 3.00 and daily operation between Monday and Friday (during work days).

Cost estimate variant 1a

- Oberwart - Szombathely: as variation 1

- Oberwart - Hartberg: as variation 1

In addition to the costs calculated above for the Oberwart - Szombathely and Oberwart - Hartberg axes, a supplementary urban bus line was also designed for Oberwart in this version. This line would run roughly 24 courses daily with a length of about 8.0 km in the urban area of Oberwart. The above mentioned kilometer tariff of € 3.0 would result in annual costs of € 144.000, - for the city traffic.

Cost estimate variant 3

The coordinated version stipulates that in the process of the re-tendering of the VOR and the Styrian Transport Association (Steirischer Verkehrsverbund), new express courses between Hartberg and Graz on the B 54 should be commissioned, and that the frequency of the existing line 310 between Hartberg and Oberwart should be increased to fixed intervals. In addition, as part of a cross-border PSO, a scheduled route between Oberwart and Szombathely is to be established based on the existing lines 7910 (Südburg) and 6690 (ÉNYKK Zrt.). The cost statement is based on the kilometer costs estimated for Austria. The assignment should take place until the establishment of a cross-border transport network by the VOR and be offset to the responsible Hungarian authority.

- Szombathely - Oberwart -- Szombathely (incl. loop through Oberwart):

km/line:	84 km
lines/day:	10
km/day:	840
km/year:	210.000 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	630.000,-

- Oberwart - Hartberg - Graz (express lines):

km/line:	82,5 km
lines/day:	12
km/day:	990
km/year:	165.000 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	742.500,-

- Increased frequency on Linie 310 (Hartberg - Oberwart)

km/line:	21 km
lines/day:	10
km/day:	210
km/year:	52.500 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	157.500,-

- City traffic Oberwart

km/line:	8 km
lines/day:	12

km/day:	96
km/year:	24.000 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	60.000,-

The operation of this variation costs an assumed kilometer rate of € 3.00 and an operation cost of € **1,590,000,-** every year when running between Monday and Friday (during work days), of which the share for the municipality of Oberwart would be € 60,000.

4.2.1.2. Cost estimation for axis 2: Körmend - Güssing - Fürstenfeld - Graz

Cost estimate variant 1 (short-term feasibility)

This variation essentially envisages a connection to the existing bus routes between Fürstenfeld and Graz through a consolidation of the existing traffic between Güssing and Fürstenfeld. Due to the lack of licensed services between Güssing and Körmend, such a connection is consequently not feasible in the short term.

- Güssing - Fürstenfeld (Lines 7930/471, 1864, 1866 and 6214):

lines/day:	additional 6
km/day:	132,4
km/year:	33.100 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	99.300,-

Cost estimate variant 3 (coordinated):

The coordinated version stipulates that in the course of the re-tendering of the VOR and the Styrian Transport Association (Steirischer Verkehrsbund), new express courses between Fürstenfeld and Graz via the A 2 (junction Ilz) should be commissioned, and that the frequency of the existing regional busses between Fürstenfeld and Güssing over Heiligenkreuz should be increased to a regular interval timetable. In addition, the regional bus line between Fürstenfeld and Güssing is to be extended via Heiligenkreuz to Körmend as part of a cross-border PSO. For this purpose, both on the Austrian and on the Hungarian side, the respective authority requires a public service license. The assignment could take place until the establishment of a cross-border transportation network by the VOR, and the cost could be shared with the responsible Hungarian authority. The cost statement is based on the kilometer costs estimated for Austria.

- Güssing - Fürstenfeld - Graz (express lines):

km/line:	94,8 km
lines/day:	6
km/day:	538,80
km/year:	134.700 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	404.100,-

- Güssing - Fürstenfeld (regional lines)

km/line:	31,6 km
lines/day:	13
km/day:	410,80
km/year:	102.700 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	308.100,-

- Güssing - Körmend (regional lines)

km/line:	25,3 km
lines/day:	13
km/day:	328,90
km/year:	82.225 (250 operating days/Mo - Fr during work days)
€/km:	3,00
€/year:	246.675,-

The operation of this variant costs **€ 958,875** per annum, with an assumed kilometer rate of € 3.00 and daily operation between Monday and Friday (during work days), divided into the participating countries or transport associations.

4.2.2. Financing

On the basis of the variations agreed upon between representatives of the federal states of Burgenland and Styria, as well as by the Styrian transportation association and the VOR, the costs for the individual bus services are determined, both with regard to the territory of the services provided (Land Steiermark, Land Burgenland, Hungary) and in terms of the added value of the respective service for the respective population.

4.2.2.1. Financing Axis 1: Szombathely - Oberwart - Hartberg - Graz

Based on the assumption that the costs for bus services in Austria and Hungary are borne only by the respective local authority, a cost key based on the mileage in the two countries was calculated for the Szombathely - Oberwart connection. According to this, the costs incurred in Austria amount to about € 390.000, - per year, and those incurred in Hungary to about € 240.000, -. It should be mentioned that the planned connection on the Hungarian side is essentially integrated into the already existing traffic of the line 6690, whereby the described sum for Hungary would hardly represent additional costs.

On the section Oberwart - Hartberg a higher utility value for Burgenland was assumed for the additional bus services on the basis of the mutual commuter relations between the districts Oberwart and Hartberg. Accordingly, the total annual cost of approximately € 345,000 for this section could be divided between the two federal states in a ratio of 40% (Styria) to 60% (Burgenland).

For the section Hartberg - Graz a utility ratio of 60:40 in favor of the province of Styria compared to Burgenland is assumed. On the one hand, this is justified by the fact that considerably more commuters from

Styria use the new bus offers; on the other hand, there is already an extensive supply of bus services for Styrian commuters from the region and the current planning primarily represents an appealing offer for commuters from Burgenland.

Table 33: Draft cost allocation for axis 1 Szombathely - Oberwart - Hartberg - Graz

Abschnitt	km	km/d	km/Jahr	€/Jahr	Nutzenfaktor			Kosten		
					Steiermark	Burgenland	Ungarn	Steiermark	Burgenland	Ungarn
Szombathely-Staatsgrenze	16	320	80000	€ 240.000,00	0	0	1	€ -	€ -	€ 240.000,00
Staatsgrenze - Oberwart	26	520	130000	€ 390.000,00	0	1	0	€ -	€ 390.000,00	€ -
Oberwart - Landesgrenze	14	308	77000	€ 231.000,00	0,4	0,6		€ 92.400,00	€ 138.600,00	€ -
Landesgrenze - Hartberg	7	154	38500	€ 115.500,00	0,4	0,6		€ 46.200,00	€ 69.300,00	€ -
Hartberg - Graz	61,5	738	184500	€ 553.500,00	0,6	0,4	0	€ 332.100,00	€ 221.400,00	€ -
Gesamtergebnis	124,5	2040	510000	€ 1.530.000,00				€ 470.700,00	€ 819.300,00	€ 240.000,00

4.2.2.2. Financing axis 2: Körmend - Güssing - Fürstenfeld - Graz

In accordance with the procedure for Axis 1, bus services in Austria and Hungary are only allocated to the respective local authority, resulting in an annual cost of approximately € 166,500.00 for the Körmend - Güssing connection to Burgenland and approximately € 213,000.00 for Hungary.

For the connection Güssing - Fürstenfeld, a significant overflow of persons commuting towards Styria was ascertained for the additional bus services on the basis of the mutual commuter relations between the districts Güssing and Fürstenfeld and therefore a higher utility value for Burgenland was assumed. Accordingly, the total annual cost of approximately € 521,400 for this section could be divided between the two federal states in a ratio of 90% (Burgenland) to 10% (Styria).

For the section Fürstenfeld - Graz an equivalent utility ratio of 50:50 between the two federal states is assumed. On the one hand, this can be explained by the relatively small number of commuters from Burgenland who can claim these benefits, compared to commuters from Styria. On the other hand, the system brings a clear additional benefit to the current bus service for those commuters from Styria who live in the greater Fürstenfeld area and who now reach Graz faster from the Ilz interchange via the motorway.

Table 34: Draft cost allocation for axis 2 Körmend - Güssing - Fürstenfeld - Graz

Abschnitt	km	km/d	km/Jahr	€/Jahr	Nutzenfaktor			Kosten		
					Steiermark	Burgenland	Ungarn	Steiermark	Burgenland	Ungarn
Körmend-Staatsgrenze	14,2	284	71000	€ 213.000,00	0	0	1	€ -	€ -	€ 213.000,00
Staatsgrenze - Güssing	11,1	222	55500	€ 166.500,00	0	1	0	€ -	€ 166.500,00	€ -
Güssing - P&R Fürstenfeld	31,6	695,2	173800	€ 521.400,00	0,1	0,9	0	€ 52.140,00	€ 469.260,00	€ -
P&R Fürstenfeld - Graz	58,2	698,4	174600	€ 523.800,00	50	50	0	€ 26.190.000,00	€ 26.190.000,00	€ -
Gesamtergebnis	115,1	1899,6	474900	€ 1.424.700,00				€ 26.242.140,00	€ 26.825.760,00	€ 213.000,00

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6. List of figures

Figure 1: Location of project area (own representation 2019).....	11
Figure 2: Distances between important locations within the project area (own representation 2019)	12
Figure 3 Index of commuter balance for municipalities within the project area (Statistik Austria 2016) ..	16
Figure 4: Inbound respectively outbound commuters of the district capital Oberwart (Statistik Austria 2016; STATatlas 2019).....	19
Figure 5: Commuter flows from the district of Oberwart in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)	20
Figure 6: Inbound respectively outbound commuter of the city Güssing (Statistik Austria 2016; STATatlas 2019)	23
Figure 7: Commuter flows from the Güssing district in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)	24
Figure 8: Inbound respectively outbound commuters of Jennersdorf (Statistik Austria 2016; STATatlas 2019).....	26
Figure 9: Commuter flows from the district of Jennersdorf in the direction of Graz/Styria (Statistik Austria 2016, own editing 2019)	27
Figure 10: Commuter flows from southern Burgenland towards Graz (Statistik Austria 2016, own editing 2019)	28
Figure 11: Commuter flows from Hungary to the districts of Oberwart, Güssing and Jennersdorf (Statistik Austria 2011-2016, own editing 2019).....	30
Figure 12: Training commuters from the districts Oberwart, Güssing and Jennersdorf to Graz as well as to another federal state in total (Statistik Austria 2011, own editing 2019)	31
Figure 13: Bus connection Oberwart via Hartberg to Graz (VOR a nach b 2019)	32
Figure 14: Bus connection Hartberg to Graz, line 300 (VOR a nach b 2019).....	33
Figure 15: Bus connection Hartberg to Graz, line X30 (VOR a nach b 2019)	34
Figure 16: Passenger numbers for course 302 from Hartberg to Graz, Kurs 302 (VOR 2018, own editing 2019).....	35
Figure 17: Passenger numbers for course 320 from Hartberg to Graz, Kurs 320 (VOR 2018, own editing) ..	35
Figure 18: Bus connection Güssing - Graz, departure: 4:55 (VOR a nach b 2019)	36
Figure 19: Bus connection Güssing - Graz, departure: 5:58 (VOR a nach b 2019)	36
Figure 20: Passenger numbers for the bus course 402 from Fürstenfeld to Graz (VOR 2018, own editing 2019).....	37
Figure 21: Train connection Jennersdorf - Graz (VOR a nach b 2019).....	38
Figure 22: Rail connections Southeast Styria, S3 Fehring - Graz incl. legende (Land Steiermark 2016, own editing 2019).....	39

Figure 23: Route of the Styrian Eastern Railway, Hungarian section GYSEV (Source: Wolfgang Wallner, Wikipedia 2019)	39
Figure 24: Number of daily pairs of coaches of line G1 (Source: Own representation 2019)	40
Figure 25: Development of the annual passenger numbers of the G1 line (Dr. Richard Südburg 2018)	41
Figure 26: Public transport potential of working commuters based on the G1 line (Own representation 2019).....	43
Figure 27: Axis Szombathely - Oberwart - Hartberg - Graz (Own representation 2019)	44
Figure 28: Location of the municipalities of the district Oberwart with most of the commuters from Hungary (Own representation 2019)	45
Figure 29: Axis Körmend - Güssing - Fürstenfeld - Graz (Own representation 2019).....	47
Figure 30: Location of the municipalities of the district Güssing with most of the inbound commuters from Hungary (Own representation 2019).....	48
Figure 31: Axis Szombathely - Szentgotthárd - Jennersdorf - Graz (Own representation 2019).....	50
Figure 32: Regionaler Mobilitätsplan Oststeiermark (Entwurf Stand 25. März 2019): Kategorisierung des ÖV-Netzes (Land Steiermark 2019)	53

7. List of tables

Table 1: Most important cities in the project area and their population (based on data of Statistik Austria 2018)	12
Table 2: Distances between relevant cities of the project area (based on Google Maps 2019)	12
Table 3: ÖROK - small-scale population forecast 2018 (Quelle: ÖROK 2018)	13
Table 4 Forecast of the number of students (Source: Statistik Austria 2012).....	14
Table 5: Number of outbound commuters from the municipalities of the district of Oberwart who work in Vienna, Styria (including Graz) and Graz (Source: Statistik Austria 2016).....	17
Table 6: Number of commuters from the Oberwart district to Graz, Hartberg and Hartberg Umgebung as well as Fürstenfeld (Source: Statistik Austria 2016).....	20
Table 7: Number of commuters from the municipalities of the Güssing district working in Vienna, Steiermark (including Graz) and Graz (Source: Statistik Austria 2016)	21
Table 8: Number of commuters from the district Güssing to Graz, Fürstenfeld and Hartberg plus Hartberg Umgebung (Source: Statistik Austria 2016)	23
Table 9: Number of commuters from the municipalities of the district of Jennersdorf with work in Vienna, Styria (including Graz) and Graz (Source: Statistik Austria 2016).....	25
Table 10: Number of commuters from the district of Jennersdorf to Fürstenfeld, Fehring or Feldbach and Graz (Source: Statistik Austria 2016)	27
Table 11: Number of commuters from the districts Oberwart, Güssing and Jennersdorf to Graz (Source: Statistik Austria 2016).....	28
Table 12: Number of cross-border working commuters from Hungary to the districts of Oberwart, Güssing and Jennersdorf including their development in the period 2011-2016 (Statistik Austria 2011-2016).....	29
Table 13: Number of training commuters from the districts Oberwart, Güssing and Jennersdorf to Graz or to another federal state (Statistik Austria 2011).....	31
Table 14: Bus connections (early traffic) from Oberwart to Graz	33
Table 15: Bus connections (early traffic) from Hartberg to Graz	34
Table 16: Bus connections (early traffic) from Güssing to Graz.....	37
Table 17: Train connections (early traffic) from Jennersdorf to Graz	38
Table 18: Development of the southern Burgenland traffic with destination Graz in 2011 (Statistik Austria 2011) über 2016 (Statistik Austria 2016) nach 2030 (ÖROK 2018)	42
Table 19: Commuter flows from Hungary to the district Oberwart, incl. public transport potential (Statistik Austria, own calculation)	44
Table 20: Comuter flows from the district Oberwart to Styria, incl. public transport potential (Statistik Austria 2016, own calculation).....	46
Table 21: Commuter flows from Hartberg and Hartberg Umgebung to Graz respectively to the district Oberwart, incl. public transport potential (Statistik Austria 2016, own calculation).....	46

Table 22: Commuter flows from Hungary to the district Güssing, incl. public transport potential (Statistik Austria 2016, own calculation)	48
Table 23: Commuter flows form the district Güssing to Styria, incl. public transport potential (Statistik Austria 2016, own calculation).....	49
Table 24: Commuter flows from Fürstenfeld to Graz respectively to the district Güssing, incl. public transport potential (Statistik Austria 2016, own calculation)	49
Table 25: Commuter flows Hungary - district Jennersdorf, incl. public transport potential (Statistik Austria 2016, own calculation).....	50
Table 26: Commuter flows district Jennersdorf - Styria, incl. public transport potential (Statistik Austria 2016, own calculation).....	51
Table 27: Draft timetable Oberwart - Graz via Markt Allhau, Hartberg, Kaindorf and Großpesendorf	55
Table 28: Draft timetable Graz - Oberwart via Großpesendorf, Kaindorf, Hartberg and Markt Allhau.....	56
Table 29: Draft timetable Szombathely - Oberwart and back incl. loop in Oberwart	57
Table 30: Timetable supplementary line city bus Oberwart.....	58
Table 31: Timetable Körmend - Fürstenfeld via Güssing and Güssing - Graz via Fürstenfeld.....	60
Table 32: Timetable Graz - Güssing via Fürstenfeld and Fürstenfeld - Körmend via Güssing.....	60
Table 33: Draft cost allocation for axis 1 Szombathely - Oberwart - Hartberg - Graz	65
Table 34: Draft cost allocation for axis 2 Körmend - Güssing - Fürstenfeld - Graz.....	65

8. Annexes

Presentation of the routes and timetable designs of the two axes:

Annex 1:

Axis 1 Szombathely - Oberwart - Hartberg - Graz, section Szombathely - Oberwart

Annex 2:

Axis 1 Szombathely - Oberwart - Hartberg - Graz, section Oberwart - Hartberg - Graz

Annex 3:

Axis 2 Körmend - Güssing - Fürstenfeld - Graz