

Validated recommendations on the integration of the urban node Vienna in the TEN-T network



EUROPEAN COMMISSION

Horizon 2020

H2020-MG-2016-2017

GA No. 769458

Version: 1.0

Date: 31/01/2018

Authors: Kevin van der Linden and Raymond Linssen in cooperation with
Ricardo Poppeliers and Mitchell van Balen

The sole responsibility for the content of this document lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769458

Document Control Page

Deliverable / Milestone number	VITALNODES D3.1		
Deliverable / Milestone title	Validated recommendations on the integration of the urban node Vienna in the TEN-T network		
Dissemination level	Confidential (CO)/Restricted (RE)/ Restricted (PP) /Public (PU)*		
Lead participant	Rijkswaterstaat		
Written by	Raymond Linssen (Rijkswaterstaat) Kevin van der Linden (Rijkswaterstaat)		
Reviewed by	Martijn De Bruijn (Omgeving Vlaanderen) Ricardo Poppeliers and Mitchell van Balen (Ecorys) Rainer Mueller (UIV Urban Innovation Vienna)		
Approved by	Sjaak van der Werf (Project Coordinator) Jos Arts (Innovation Manager)		
Brief description	Validated recommendations on the integration of the urban node Vienna in the TEN-T network		
Creation date	18 January 2018		
Version number	1.0		
Version date	31 January 2018		
Last modified by	Raymond Linssen		
Rights			
Version	Date	Modified by	Comments
0.1	29 January 2018	Raymond Linssen	
0.2	30 January 2018	Kevin van der Linden	
1.0	31 January 2018	Raymond Linssen	



Table of contents

Executive summary	4
1 Context Vienna.....	6
1.1 Introduction.....	6
1.2 Vienna: A fast-growing city and region.....	7
1.3 TEN-T corridor, national and cross-border context.....	8
2 Preparation workshops Vienna.....	10
2.1 Approach: Fingerprint	10
2.2 Workshop goal.....	12
3 Findings and outcomes Vienna workshop.....	13
3.1 Introduction.....	13
3.2 ‘Logistics Oriented Development’	13
3.2.1 Context for freight and logistics	13
3.2.2 Building Blocks for Logistics Oriented Development.....	15
3.3 Lack of coordinated spatial planning at functional area level	20
3.4 Robustness and vulnerability of the network	23
3.5 Summary and Lessons Learned.....	24
4 Building blocks for recommendations EC.....	26
4.1 TEN-T network needs and investments.....	26
4.2 Regional and metropolitan needs	27
4.3 Data and Research	27
Attachments	28
1. Fingerprint urban node Vienna	29
2. Map corridor level	31
3. Map regional/urban node level	32
4. Map city level.....	33
5. List of participants	34



Executive summary

The Austrian capital, Vienna, is a major transport hub for passengers and freight transport in Central Europe and therefore one of the 88 ‘urban nodes’ of the core TEN-T transport network of the European Union. Vienna is located at a junction of three (of nine) TEN-T corridors. The preparation and organization of workshops in eight European urban nodes (‘Tier 1 urban nodes’) is closely related to the main objectives of the VitalNodes project:

- Deliver validated recommendations for a more effective and sustainable integration of all 88 urban nodes into the TEN-T corridors focusing on freight logistics
- Establish a long-lasting European expert network based on existing (inter)national and regional networks for safeguarding long-term continuity in knowledge and implementation

The first of these urban node workshops took place in Vienna, on 17 January 2018 and 16 November 2017. Three main challenges have been discussed, related to the Viennese freight and logistic situation on national, regional and local level:

- The lack of **‘Logistics Oriented Development’** in terms of a real link between long distance and last mile (city) logistics.
- The lack of **coordinated spatial planning at the level of the regional and functional area**, whereas the regional area is meaning the city of Vienna and parts of the neighboring Bundesland Niederösterreich (Lower Austria). This regional area is coping with ad-hoc urban sprawl instead of coordinated polycentric urban development and multi-modal transport. When taking into account that the Slovakian capital Bratislava is in effect part of Vienna’s functional area, an interwoven issue is the lack of a common strategy between the two neighboring capital cities, between “east and west”.
- **Robustness and vulnerability of the network**: Vienna is coping with capacity constraints on national, regional and local levels. One of the major constraints is the limited number of Danube crossings for road and rail. Another aspect is the need of alternative routes, modes and timing.

At the workshop these challenges have been discussed among a wide variety of stakeholders, by ‘zooming in and out’ at three cascading geographical scales: TEN-T corridor level, regional and local city level. Also several European good practices have been presented.

Most important lessons learned are:

- The important interrelation between infrastructure/mobility management and spatial planning. There is a lack of attention to the interrelation between land use planning and infrastructure/mobility planning on all scale levels.
- There is little awareness of the role of Vienna in the TEN-T network. Within the strategic planning department of Vienna the focus is making local aspects function well. Therewith there is no awareness of the necessity to provide capacity for long distance freight. There might be problems on the TEN-T network if the network surrounding Vienna hasn’t got the necessary capacity. The other



side of the coin is that that there might be European financing for investments in Austria which might strengthen the European network.

- Interconnection between infrastructure networks: In and around urban nodes the same infrastructure (e.g. railway line) are used for both local, regional and transnational transport and by both passenger and freight transport. If all these different networks need more capacity, as might be the case in fast growing Vienna, bottlenecks can appear more quickly than anticipated.
- Need for cooperation at the functional urban area. Even if the city of Vienna is not so directly impacted by its function as urban node, the region of Vienna is. Through better metropolitan governance negative effects might be mitigated and opportunities better exploited. In the case of Vienna the functional urban area, in a TEN-T perspective, might even cross the country border and include Bratislava.
- The opportunity of logistics: Logistics is now in the Vienna region mostly seen as something that needs to be done. It is put away and not seen as something that can add value to the quality of the city and region. It can be worthwhile to plan ahead and in an integrated way also keeping in mind the major investments that have been done in Vienna's two main hubs for freight and logistics: Wien Süd and Hafen Wien.

Finally some building blocks for recommendations to the European Commission have been assembled, e.g. on incentives for regional collaboration, on European investments in urban nodes that might have an added value for the functioning of the European network as a whole, and on data and research.



1 Context Vienna

1.1 Introduction

The workshop in the urban node Vienna was organized on 17 January 2018, two months after the first pilot workshop in the Austrian capital (16 November 2017). This workshop is the first in a row of urban node workshops that will be organized throughout several European urban nodes on different TEN-T core network corridors in the coming two years. Some fifteen relevant stakeholders in the urban node Vienna participated in the workshop, taking into account (different modes of) infrastructure, mobility and spatial developments as well as its local, regional and (inter)national context. Together with these stakeholders we discussed the challenges and needs for infrastructure and spatial development and potential related European funding. In order to do this we deepened the question ‘what is an urban node?’ and based on the challenges that are specific for the urban node Vienna we discussed future possibilities.

Goal of this Vienna workshop is:

- achieving a common understanding about the “Fingerprint Vienna” (facts and figures);
- achieving a common understanding about the challenges of the urban node Vienna;
- sharing best practice examples;
- discussing possible solutions, assessing drivers, barriers and impacts at three scale levels (corridor / functional area / city) and in time (short / long term);
- developing recommendations to the European Commission on investment needs (for future infrastructure, transport and spatial developments), on funding strategies and on research needs.

The Vienna workshop is part of the VitalNodes project – a Coordination and Support Action (CSA) executed under the European Commission’s Horizon2020 program (see text block below).

Background: Goal of the VitalNodes project

VitalNodes aims at enabling efficient, sustainable freight delivery across the TEN-T urban nodes (metropolitan areas), by bringing together existing European, national and regional networks of experts and professionals. As a result of increasing freight/logistic traffic, these urban nodes need to cope with challenges such as congestion, poor air quality, noise, and road safety risks. The objectives of the VitalNodes project are to improve European interconnection, while developing sustainable mobility within cities. VitalNodes will deliver evidence-based recommendations for effective and sustainable integration of the nodes into the TEN-T network corridors, addressing specifically the multi- and intermodal connection between long-distance and last-mile freight logistics. It will also support the deployment of innovations in the urban nodes, while establishing a long-lasting European expert network.



The workshop results will be input for future transport and infrastructure investments funding strategies at urban, metropolitan and European levels thus improving the performance of the urban nodes throughout the entire TEN-T network. To this end, this report provides preliminary recommendations based on the analysis and workshop of the urban node Vienna.

1.2 Vienna: A fast-growing city and region

Vienna is Austria's capital and largest city and it is also one of the nine states (Bundesländer) of Austria. Besides the national government and these Bundesländer, the City of Vienna has its own city government as well which works dually as municipality and province government. At this moment the city has approximately 1.75 million inhabitants. It may be good to remember that before the splitting of the Austro-Hungarian Empire in World War I, the city had around 2 million inhabitants. Especially in the coming years Vienna's population is growing fast, with 40,000 inhabitants per year. "So every year a city the size of St. Pölten will be added" as one of the participants stated. The number of inhabitants is expected to increase to 2 million citizens in 2030, while the metropolitan region is expected to be home and workplace for over 3 million people (source: *STEP 2025 – Urban Development Plan Vienna*). This growth will be mostly facilitated via urban densification for which 5,500 to 7,000 apartments will be built every year, with a total number of 150,000 housing units for the coming 10-12 years. At this moment the city is developing among others the north-eastern city district Aspern Seestadt. When completed, Aspern Seestadt will host 20,000 houses, 50,000 inhabitants and 20,000 jobs. Unique selling point of Vienna is the fact that the metro extension to this area already opened in 2014, just before the new housing development started. However road and public transport accessibility of Aspern Seestadt to and from the east bank of the Danube is quite limited as a river connection is missing. A tunnel is proposed to give direct access to the working areas and Vienna Airport. This so-called Lobautunnel of 8.2 km long should protect the river and Lobau national park and could relief the existing highways in central Vienna, especially the A23.

Besides Aspern Seestadt the city of Vienna is dealing with several other inner city housing and mixed-use densification projects as Sonnwendviertel and Nordwestbahnhof. The city has an ambitious Sustainable Urban Mobility Plan (SUMP) in place, the Vienna Urban Mobility Plan, which is part of the overall Smart City Strategy and Urban Development Plan (STEP 2015). Each of the big infrastructure projects in the urban node Vienna is in fact physically situated in the neighboring province Niederösterreich (Lower Austria): The Lobautunnel on the east side of Vienna, as prolongation of the "Schnellstrasse" S1 under the Danube, the planned S8 Marchfeld route in the north, that should offer an alternative to Bratislava for the busy A4 highway and the planned extension of Vienna Airport. Besides there are several rail upgrade projects throughout the region including improvement of the rail link between Vienna's railway stations Meidling and Hütteldorf.

For historical reasons the green area on the west side of the city, the Wienerwald, has been protected from additional highways (except for the existing A1 and A21) and provides the city clean air and recreational grounds within short distance from the central city. Recently a new high-speed rail line has been built including an altogether 26 km-long tunnel – the Wienerwald/Lainzer Tunnel – enabling trains travelling along the Westbahn to Vienna's new Central Station. Regional transport to Vienna is stimulated by building a new regional station Tullnerfeld as hub for the region. In general, many city (metro) and regional train station hubs offer Park & Ride facilities of qualitative high standards. This is also related to Vienna's strict parking regulations. Only inhabitants that live in the particular district can



get a parking permit for this district. Visitors have to pay and in most districts only short-time parking is allowed (maximum 2-3 hours during daytime, depending on the district). Most of Vienna's districts are areas of paid-parking. As a result many inhabitants got rid of their second car or cars at all. However parking garages are quite empty as street parking is cheaper.

Besides a growing amount of parcel services, Vienna has to cope with increasing heavy transport for building/construction materials etc. Most distribution centers for city distribution are company-specific. At this moment there is no incentive to combine them. In Vienna night-time freight delivery is forbidden due to noise regulations – even for electric and other relatively cleaner vehicles. Another trend shows that companies are moving further away out of the city. This is caused by rising real-estate prices. For that reason the last-mile distribution distance is growing.

Vienna has two main hubs for freight and logistics, the Port of Vienna (Hafen Wien) and the RRT Wien Süd (often referred to as Inzersdorf), which both have recently been (re)developed. Via rail the Port of Vienna is connected to the west (Hamburg and the 'ZARA' harbors in Flanders and the Netherlands) and east, and serves as an inland shipping node on the Danube. The RRT Wien Süd went into operation in December 2016 and serves as a major freight hub in the region, connecting basically all directions by lying directly on a high-level rail-road crossing. The terminal's capacity might experience a further stage of expansion in a second step. This brings us to Vienna's position in the broader, (inter)national and cross-border context.

1.3 TEN-T corridor, national and cross-border context

The urban node Vienna can be identified by the fact that it is located on the cross-point of three TEN-T core network corridors: Baltic Adriatic, Orient/East-Mediterranean and Rhine-Danube. It covers four modes of transport for both freight and passenger (road, rail, inland shipping, aviation) and is part of a European Union region covering parts of four member states (Austria, Czech Republic, Slovakia and Hungary) – sometimes coined as the 'Centrope' region. In fact Vienna is bordering to different cohesion regions, in which the strong relation with Slovakia's capital Bratislava deserves special attention.

On corridor level Vienna has an important role on the transit flows crossing Europe, from north to south and east to west and vice versa. Although most north-south freight flows go via Bratislava, more flows are expected to pass Vienna in the future, which makes linking local and regional developments and investments with the corridor level necessary.

A strong link is seen between the EU investments and the developments in the region of Vienna, because (future) capacity bottlenecks might become a European issue. Knowing that the EU regional policy funds dedicated for cohesion regions are different from EU funds for non-cohesion regions. Cohesion regions are Europe's poorest regions whose per capita gross domestic product (GDP) is less than 75% of the EU average. These include new member states such as Czech Republic, Slovakia and Hungary. So this issue becomes very specific for Vienna due to its non-cohesion neighbors, compared to other European urban nodes.



At regional level there are conflicts between freight and passenger transport as local, regional and long-distance trains share the same tracks. This happens mostly on the southern rail link (Südbahn) towards Wiener Neustadt and Graz. In addition, at local level, the limited number of bridges over the Danube – for rail and road, passengers and freight – is expected to become a real problem in the coming years, keeping in mind Vienna's urban growth. Capacity of the various urban transport networks will be quickly 'filled'. This issue touches on an important topic – robustness and vulnerability of the network – that will be dealt with in paragraph 3.4.



2 Preparation workshops Vienna

Via preparatory analysis, desk research and based on interviews with relevant stakeholders the VitalNodes consortium has identified specific challenges of the urban node Vienna before the workshop. These challenges have to be deepened well before the workshop. The following building blocks have been important for developing the workshop format:

- Delivering facts and figures, background documents (e.g. a strategic city vision or transport plan, e.g. the STEP 2025 / Urban Development Plan Vienna) and maps
- Defining what is the functional area of the urban node
- Identifying challenges, solutions, drivers and barriers
- Contacting stakeholders to explain the workshop's objectives, to fine-tune the goals and expectations and to get input for the workshop
- Collecting good practices as possible input for the urban node's challenges, solutions and drivers and barriers.

Several of these building blocks have been used in drafting the 'fingerprint' for the urban node, by WP2, that will be explained in the next chapter. By using the above-mentioned sources and putting facts and figures together, all stakeholders will be able to start the workshop with a somewhat equal amount of information about the urban node and the TEN-T network.

This document mainly focuses on the content-related aspects of the Vienna workshop; the practical and organisational aspects will be described in another document (deliverable 3.2 'Format for Vital Nodes workshops for Tier 1 (and Tier 2 and 3) urban nodes').

2.1 Approach: Fingerprint

Urban nodes have very diverse geographical and infrastructural characteristics such as their size, position on various TEN-T corridors, socio-economic development, and the status of the multimodal infrastructure network. To get a clear understanding on the status of an urban node the VitalNodes consortium has developed a so-called 'fingerprint'. The fingerprint for Vienna serves as a framework to appraise, analyze this urban node and in the end compare urban nodes. In addition, it serves as a basis to shape the further discussion in the node on its main challenges, drivers, (implementation) barriers, appraisal of impact of good practices and/or solutions.

The fingerprint Vienna has been made in close collaboration between VitalNodes' WP2 and WP3 with input of stakeholders, information from the first workshop (16 November 2017) and data available and contains data and insights on several relevant dimensions. These include, amongst others, traffic flows and congestion, modal split data, data on environment and safety as well as the current and forecasted corridor function of the node. Qualitative information on urban sprawl and densification, regional developments, other spatial characteristics and institutional / governance and planning structures are integrated in the fingerprint, as well.



The information is categorized on three cascading geographical scales:

- TEN-T corridor level;
- regional / Daily Urban System level (based on Eurostat data / NUTS classification);
- local / city level.

Together with the facts and figures, maps have been developed per scale.

Thus, the fingerprint can be seen as an elaboration on the specific situation of the urban node and its key current and future challenges including impact. Additionally, the fingerprint will enable the comparison of urban nodes on several dimensions, hence contributing to the development of a general typology. The Vienna fingerprint has been sent in advance to all the stakeholders participating in the workshop – as well as to key stakeholders of the state of Niederösterreich (Lower Austria) and the City of Vienna – in order to validate the typology. Good practices from elsewhere in Europe – related to the specific challenges – have also been sent to the participants before the workshop – and discussed with the participants at the workshop.

Summarized, analysis, desk research and interviews with relevant stakeholders have contributed to identifying the specific challenges of the urban node Vienna.

The aim of the fingerprint is to get insight in – and common understanding about – the characteristics of the node, to see similarities and differences between nodes that might specify drivers/barriers for challenges, impacts and solutions, and might show good practices usable for other nodes. As a result, the stakeholders:

- understand and agree upon the goal of the fingerprint
- agree upon the current facts and figures, challenges in the fingerprint (see the appendix with the fingerprint Vienna).

Before the workshop three main challenges have been validated and agreed upon with the stakeholders interviewed (WP2 and WP3). During the workshop, solutions, practices, impact and barriers/drivers for solutions have been discussed, using spatial design and based on facts and figures. Discussions took into account the TEN-T network scale, the regional scale and the local scale between which was 'zoomed in and out'. This led to (building blocks for) recommendations for the European Union at the end of the workshop, which have been submitted to the participants via a draft version of the workshop report. These recommendations will be dealt with in chapter 4.

On basis of the preparatory analysis and the first pilot workshop (16 November 2017) three challenges have been discussed:

- **(Lack of) logistics oriented development**

Link between long distance and last mile (city) logistics;

Organization of logistics centers/distribution centers and multi company hubs;

- **(Lack of) coordinated spatial planning at functional area level**

Ad hoc urban sprawl instead of coordinated polycentric urban development and multi-modal transport;

No common strategy with west and east (e.g. Bratislava);



- **Robustness and vulnerability of the network**

Capacity constrains national, regional and local (e.g. Danube crossing via road and rail);

Alternative routes (bypass South, East), modes and timing.

Finally, in the first two weeks after the workshop, the participants have validated the workshop results and outcomes by giving feedback on the preliminary workshop report.

2.2 Workshop goal

The goal for the Vienna workshop has been formulated as:

- a common understanding about the ‘fingerprint Vienna’ (facts and figures);
- a common understanding about the challenges of the urban node Vienna;
- sharing best practice examples;
- discussing potential solutions, assessing drivers, barriers and impacts at three scale levels (corridor / functional area / city) and in time (short / long term);
- develop recommendations to the European Commission on investment needs (for future infrastructure, transport and spatial developments), on funding strategies and on research needs.

In the next chapter we will discuss the main findings and outcomes on the urban node Vienna. These are based on the above-mentioned challenges, addressing elements that are relevant for Vienna’s local, regional and (inter)national stakeholders as well as for the European Commission.



3 Findings and outcomes Vienna workshop

3.1 Introduction

This chapter will deal with the overall findings and outcomes on the urban node Vienna. Some strategic elements are not only relevant for the urban node Vienna but for other urban nodes and stakeholders as well. Already in the case of the urban node Vienna some first relevant building blocks for recommendations to the European Commission appear. These will be discussed in chapter 4.

Main challenges

Three main challenges have been discussed. These challenges are based on Vienna's fingerprint, consisting of facts and figures relating to the Viennese freight and logistic situation on national, regional and local level:

- The lack of '**Logistics Oriented Development**' in terms of a real link between long distance and last mile (city) logistics. In addition to this, there is the challenge of organization of logistics centers/distribution centers and multi company hubs.
- The lack of **coordinated spatial planning at the level of the regional and functional area**, whereas the regional area is meaning the city of Vienna and parts of the neighboring Bundesland Niederösterreich (lower Austria). This regional area is coping with ad-hoc urban sprawl instead of coordinated polycentric urban development and multi-modal transport. When taking into account that the Slovakian capital Bratislava is in effect part of Vienna's functional area, an interwoven issue is the lack of a common strategy between the two neighboring capital cities, between "east and west".
- **Robustness and vulnerability of the network**: Vienna is coping with capacity constraints on national, regional and local levels. One of the major constraints is the limited number of Danube crossings for road and rail. Another aspect is the need of alternative routes (bypass South, East), modes and timing.

These three main challenges will be dealt with into more detail in the following paragraphs, including underlying drivers, barriers and potential stepping stones for solutions. Also several European best practices will be taken into account in order to give guidance to these stepping stones. As was said in the previous chapter, the workshop discussion was structured by 'zooming in and out' at three cascading geographical scales: TEN-T corridor level, regional / Daily Urban System level, and local / city level.

3.2 'Logistics Oriented Development'

3.2.1 Context for freight and logistics

Vienna has two main hubs for freight, the Port of Vienna (Hafen Wien, often referred to as Hafen Freudenau) and the RRT Wien-Süd (often referred to as Inzersdorf). Besides a growing amount of parcel services, Vienna has to cope with increasing heavy transport for construction materials into the heavily densifying capital. Most distribution centres for city distribution are company-specific. At this moment there is no incentive to combine them in consolidated logistic/distribution centers..



Another trend shows that companies are moving further away out of the city, to several municipalities in the neighbouring Bundesland Niederösterreich (Lower Austria). This is caused by rising real-estate prices within the boundaries of the city of Vienna. For that reason the last-mile distribution distance is growing. And even a factory in 'show-case' Vienna's urban district Aspern Seestadt has its goods transported by road instead of by rail, as the volumes are too low and otherwise internal costs would become too high.

The city focuses on decreasing car traffic to make room for sustainable logistics. But in general, politically there is not enough pressure on CO₂ reduction yet. At national level most investments focus on rail, as federal policy aims a modal shift from road to rail and inland waterways. In Austria the Danube corridor is no mayor bottleneck but the western part in Germany (Straubing) and eastern part in Hungary and Bulgaria are indeed. For a big part waterborne transport is coming from Ukraine, as provider for raw materials (which is not included in EU data). Vienna is much less important than the city of Linz as the Voestalpine steel and metal factory attracts quite some waterborne freight transport. Many other Austrian production locations have shifted outside the country. Challenge is to find substitutions for these cargo flows – such as bulk transport – over the Danube. For inland navigation there is no Rhine focus.

Combining the rail terminals of Sopron (HU) and Bratislava with Vienna turned out not to make sense, according to one of the stakeholders, because goods are transported in a different directions and therefore this would only cause a longer transport distance.

For freight and logistics Vienna mainly copes with transit traffic via road and rail, West-East and North-South. North-South the route via Slovakia and Hungary is mostly used. Historically there is a strong relationship as it comes to transport with Czech Republic and Poland. The Danube has a lot of capacities for freight transport in comparison to road and rail.

At this time there are no time windows and access regulations within the city boundaries. Night-time freight delivery is forbidden due to noise regulations – even for electric and other relatively cleaner vehicles. The driving ban on Large Goods Vehicles in Vienna has been toughened in 2016 by including vehicles in EURO category 2. However “the general policy on logistics is that there is no policy: Most is left to the market” as one of the stakeholders remarked.

Within Austria the North-South highway connection (Vienna-Brno) offering an extension of the A5 towards Brno is almost finished. A stretch in Czech Republic is missing, mainly caused by a National Park / Natura 2000 area. This new route could give a shorter alternative for the existing North-South freight route via Bratislava – also keeping in mind the urban growth in Slovakia's capital city.



3.2.2 Building Blocks for Logistics Oriented Development

Background

As described earlier, economic activities will mainly concentrate in city regions. This will result in a growth of convenience logistics, warehouses and on-demand delivery which will have a growing impact on liveability issues (environment, quality of life, health and noise) and accessibility in cities. Some of the Vienna stakeholders expect that liveability and quality of life issues will become a real challenge, keeping in mind Vienna's rapid population growth – “There is no public discussion about this growth” – and the expected increase in competition on space. At this moment a connection is missing between local initiatives as Wien Süd and Hafen Wien and the European multimodal transport network.

Logistics Oriented Development (LOD) has been described by the CEDR-funded research project 'FLUXNET' as a concept integrating multimodal transport networks, liveability and spatial planning (sources:

http://www.cedr.eu/download/other_public_files/research_programme/call_2015/freight_and_logistics_in_a_multimodal_context/CEDR_Call_2015_Summaries_-FLUXNET.pdf;

<http://www.must.nl/de/blog/fluxnet/>). LOD combines transport infrastructure, terminals (nodes) and modes of transport (via road, rail, water and aviation) and brings together (interests of) local, regional and national planning authorities, infrastructure providers and actors in the transport and logistics sectors. Other sources speak of Cargo Oriented Development (COD) or logistics, which purpose is to increase close local employment opportunities by bringing distribution and industrial operations together to serve industry needs. As this COD concept is lacking the multi-level approach the Vital Nodes project proposes we will stick to the wording Logistics Oriented Development (source: http://blogs.dcvelocity.com/reverse_logistics/2015/07/transit-and-cargo-oriented-developments.html).

Workshop participants agree on the need to stimulate integrated mobility management and first and last mile freight initiatives at a regional scale. On the one hand companies are moving out of the city of Vienna. On the other hand Vienna will face the challenge towards the organization and governance of city-oriented consolidation centres and the shift from single company hubs towards multi-company hubs. At this moment it is not clear what is the ideal model to organize this transition. Should this be organized in a polycentric way, with several sub centres and city hubs? One of the underlying barriers is a lack of data on the current situation (e.g. on the share of goods in sub centres and city hubs and their origin and destination: Where do they go and what are the percentages?). This barrier is closely related to the topic of Intelligent Transport Systems (ITS). One of the stakeholders stated that ITS is lacking a clear public-private division and a clear European framework.



STEP 2025

Vienna has developed an encompassing long-term strategy including a state-of-the-art SUMP (STEP 2025), which is stated to strive for ‘a livable, sustainable, affordable and prosperous city’. However, in Vienna the feeling exists that collision between the city and national interests is upcoming. The TEN-T Baltic Adriatic corridor passing via Vienna only has double-track rail to the east and only one rail bridge for freight crossing the Danube. Mixture of local/regional/long-distance (high-speed) passenger and freight trains will possibly lead to interruptions, traffic jams and collapses. An additional hindering aspect is the growing demand for ‘just in time’ freight delivery converging at the same time with peak hour rail transport, entering the city in the morning hours as well as incoming passengers transport. This will cause even more pressure on the same rail tracks. Robustness is an issue in that respect. **Exclusive conversion zones**

During the workshops several building blocks for this Logistics Oriented Development concept have been discussed. At city level awareness is growing that not all open space – e.g. the former railway grounds of Nordwestbahnhof and Westbahnhof – should be used only to build apartment blocks. So besides ‘classical’ brownfield developments, areas that are being transformed into mixed-use or housing areas, Vienna labelled several industrial estates as conversion areas that should exclusively be reserved for future industrial, manufacturing and physical working activities including goods and freight. So without mixing these with housing in order not to lose all inner city space to housing, offices, services, leisure and green functions. Besides these conversion areas will not get an extra qualitative upgrade in terms of spatial quality (e.g. additional investments in green and public space) to be able to sell these areas for a low price in comparison to ‘classical’ mixed-use brownfield development sites. This solution can be labeled as a good practice as infrastructure and other facilities are already there. Vienna is especially looking at the potential of conversion locations along a rail link and how they could be set aside for these future manufacturing and physical works. These inner-city locations should limit traffic movements as well although the Vienna stakeholders agree a clear link with the regional and (inter)national network is still lacking. However, the initiative might contribute to a mental shift that “Vienna should reinvent itself as an industrial city” – as one of the stakeholders stated during the first workshop.

The industrial conversion initiative is part of Vienna’s Logistic 2030+ vision (www.logistik2030.at). This vision is an initiative of the provinces (Bundesländer) Vienna and Lower Austria and the corresponding branches of the Austrian Chamber of Commerce (WKO) with the following aims:

- Solving conflicts of use in the free-flowing and stationary goods and individual traffic
- Sustainable reduction of CO₂ emissions in the provinces of Lower Austria and Vienna
- Traffic reduction without performance and quality losses
- Development of concepts in logistics and transport on which general consensus can be obtained
- Development, initiation and monitoring of pilot projects

The Logistics 2030+ project started in January 2017 and will be carried until October 2019 resulting in an action plan. This will include the development and initiation of pilot projects.

Wien Süd as joint multimodal cargo terminal

Considering the concentration of intermodal goods traffic in and around Vienna a multifunctional cargo terminal, the RRT Wien Süd, has been built at the southern city border of Vienna - at the interface of a rail line (the Pottendorfer rail line) and the S1 highway. The cargo center is jointly developed by Vienna,



Lower Austria and the Chamber of Commerce (WKO). The RRT Wien Süd went into operation in December 2016 and serves as a major freight hub in the region, connecting basically all directions by lying directly on a high-level rail-road crossing. The terminal's capacity might experience a further stage of expansion in a second step. The site is well developed and there are no environmental problems although the bordering municipality in Niederösterreich (Lower Austria) first intended to build houses close by the cargo terminal. This may seem a detail, but is in fact a sign of the lack of coordinated spatial planning at functional area level (more to be dealt with in paragraph 3.3).



Micro and Midi Hubs

A quest for the city of Vienna is to avoid an unstructured growth in freight and logistics that would become a burden for the city. For many years this topic was hardly discussed as the main focus was on building houses and apartments. Now freight and logistics is more prominent on the urban agenda as city representatives acknowledge that inhabitants and companies are being served from locations outside the city as for example the airport (Schwechat). The distance from these consolidation centers to the city is big and cause lots of traffic. To avoid this burden the city is working on the concept of midi and micro city hubs. Midi hubs with a size of around 1,000 m² should be located at between 5 and 8 locations at strategic points in the city whereas micro hubs should be much smaller – 100 to 150 m² – and located at much more locations – up to 150 locations, so more on neighborhood level. Places to install a midi hub are difficult to find: except for the large surface they need good road access for heavy trucks.

It is easier to find locations for the smaller micro hubs as empty shop space can be transformed into micro hubs. Rail access to midi hubs is much more difficult and expensive to realize so the choice was made for trucks delivery in order to get a realistic business case. At this moment there are no city restrictions as a low emission zone (LEZ) although discussion on implementing a LEZ has started in 2017. However a major bottleneck for rail freight to the midi hubs is the fact that a 40 ton truck driving from Budapest to Vienna only costs EUR 160 so this is very cheap. Combined with the low diesel prices this disadvantages a good business case for rail. One of the tools to support the position of rail freight could be national legislation as in Switzerland, where road use by freight transport is constrained to stimulate freight by rail.

While executing these consolidation possibilities, the claim of space needs to be taken into account. It could mean that instead of one truck moving 24 ton, six trucks will be moving 4 ton each. This means much more space is claimed by transporting the same amount of goods. So moving consolidation centers out of the cities could also result in more movements in and out the city.

Contributing towards a new identity for Vienna?

The ‘twin-city’ concept of Vienna and Bratislava really needs to be further developed, as will be described in paragraph 3.3. Stakeholders of the ‘thinkport VIENNA’ initiative underline the need for a common strategy, when focusing on freight and logistics. ‘thinkport VIENNA’ is an open mobility laboratory stimulating innovations and start-ups in logistics and contributing to a leading position for Vienna in the transition of city logistics that will be supported by its citizens and should contribute to an attractive and livable city (<https://www.thinkportvienna.at>). One of the pilot projects will start in February 2018 and sounds promising as six persons will start working specifically on last mile logistics in close collaboration with enterprises. The experiences gained in the project ‘Binnenstadservice’, a local independent urban logistics service centre in the Dutch city of Nijmegen, will act as a showcase for the approach in Vienna.

At this moment, the image of the logistics sector is a barrier: How could Vienna embrace freight and logistics, linked with the TEN-T network as an opportunity? At this moment, logistics is not considered as a real added value for the quality of the city. The topic is quite new for the Austrian capital – until now a city of (inter)national services and knowledge – in comparison to urban nodes as Antwerp, Hamburg and Rotterdam. Hanging on to the existing identity of the urban node, as a relic of the past, could be barrier



for the future development of the urban node. However, some Viennese stakeholders agree that a city being “attractive for industries and people is much more important than the number of containers”. At this moment chances are seen by the surrounding municipalities, but not (enough) by the city of Vienna. What could be the backlash for the city if the regional municipalities take the initiative?

Another initiative that might contribute to this new identity is ‘The Productive City’ (Produktive Stadt) that was adopted in June 2017 and started in November 2017. This is another initiative of Vienna and Lower Austria combining several other stakeholders at city and regional level. This approach should offer solutions for finding space for ‘new’ industrial functions in the city of the future, but stakeholders in the workshop replied that freight into the city is not part of the scope (yet). Another suggestion was to include the national infrastructure providers as ASFiNAG (road) and ÖBB / RailCargo Austria (rail) and not limit to the local public transport of Wiener Linien.

Good European practice: Norrköping

The VitalNodes project is building on best practices and lessons learned throughout Europe. With regard to the challenges in Vienna we already discussed some practices in other cities in order to feed discussion among the stakeholders. Basic information on a selection of best practices has been added to the ‘Vienna Fingerprint’ (as described in chapter 2), containing e.g. hyperlinks to presentations and websites and contact persons in the specific city. In a later stage of the VitalNodes project these practices and experiences will be additional input for the VitalNodes toolbox and the long-lasting expert network

The development in the Swedish city of Norrköping (130.000 inhabitants) might be inspiring for the Vienna stakeholders as there can be seen important parallels to the Inzersdorf terminal development. The city is situated 165 km southwest of Stockholm and is transforming fast due to the building of a new high-speed rail line linking the Swedish capital with Gothenburg and Malmö including a new railway station in Norrköping. At this moment the existing rail link is heavily used by both passenger and freight transport. The new high-speed railway connection will create conditions for improving freight transport and activities at both the corridor and the local level. At corridor level the new high-speed rail link will leave extra capacity at the existing rail link for freight trains (also causing less mixing of freight and passengers traffic). At local level, harbor and logistics activities will be concentrated on a ‘Harbor Island’ that will be developed north of the city at the former harbor area, while a new harbor extension is created to the east in seaward direction. Several smaller distribution centers that are currently scattered in the city and thereby disturbing the city life will be relocated to the Harbor Island. A new, consolidated logistic center will be developed in the new harbor area as well.

Recommendation for Vienna

Several aspects of the Norrköping case look quite similar to the situation in Vienna. An important difference between Norrköping and Vienna is the multi-level masterplan with a multi-level governance structure to avoid problems for the future. This includes a step by step approach leading to added value for the city, region and Europe. Norrköping is now developing this multi-level masterplan while Vienna did not start at all.

Recommendation for Vienna will be to include a connection between local initiatives (such as Inzersdorf) and the European multimodal transport network. Besides Norrköping’s holistic approach – connecting city redevelopment, zoning, and freight and logistics – is very interesting for Vienna. Challenge for the



Austrian capital is to connect local and regional investments on a smart way to (potential) investments and added value at a higher, European level.

3.3 Lack of coordinated spatial planning at functional area level

Stakeholders agree that an important barrier is a lack of coordinated planning at the functional urban area level, which is the reason why negative impacts exist (e.g. accessibility, robustness). They address the lack of an integrated approach on freight and logistics, mobility management and infrastructure planning on the one hand and spatial / land use planning on the other hand. There is co-operation in planning (voluntary) but a stick or “requirement” for co-operation in planning from outside is recommended by the stakeholders. For example the requirement of a strategic plan at functional urban area level by the authorities for receiving CEF-funding (see good example). This strategic plan should build on the local experiences gained in Vienna’s Urban Development and Mobility Plan (STEP 2025) have been evaluated very positively.

Functional area

Discussing the ‘urban node Vienna’ almost immediately starts with the question what is the functional area of the urban node. For each of the 88 European urban node the corresponding profile has been based on EC definitions and Eurostat statistics. Eurostat has set up the NUTS classification as a single, coherent system for dividing up the EU’s territory in order to produce regional statistics for the European Community. When preparing the ‘Vienna fingerprint’ for the second workshop the Vital Nodes team (i.e. the WP2 leader) defined the region of Vienna as the following NUTS 3 regions:

- AT 130: Wien
- AT 126: Wiener Umland/Nordteil (including the Bezirke Korneuburg and Tulln and parts of the Bezirke Gänserndorf, Mistelbach and Wien-Umgebung)
- AT 127: Wiener Umland/Südteil (including the Bezirke Bruck an der Leitha, Baden, Mödling and parts of Bezirk Wien-Umgebung).

However this definition of the Vienna region does not fully correspond with Vienna’s functional area as the latter also includes the city of Bratislava. So the functional area definition has to be tailor-made. This is expected not only to be the case in Vienna but in other European urban nodes as well. Access to Eurostat data is quite limited at the moment. In this first pilot case Vienna the Vital Nodes team experienced the need to get access to these data: It is important for the European investment potential to get a grasp on the EU data as a first basis for an urban node’s investment request. That is why the Vital Nodes project team has requested the EC to get access to the Eurostat data (see chapter 4).



A lack of metropolitan strategy

The scattering of land use planning of housing and warehouses in the Vienna region – ‘urban sprawl’ – is something to be careful with. At this very moment, the smaller municipalities mostly profit from the developments of the city, while they do not necessarily contribute. For example the housing and environmental goals of the bigger metropolitan area. During the workshop stakeholders agreed on the need to develop a strategy on the metropolitan level (under guidance from BMVIT and with support of ASFiNAG) in order to develop the relationship between the different organizations and build on a common strategy. An integrated approach across administrative borders, which requires collaboration on all levels.

The municipal level is dominant in Austria’s planning system, causing a fragmented governance between the city of Vienna and its surrounding municipalities, which form the functional urban area of Vienna – as a consequence metropolitan governance is lacking, which seems to be a core problem. Strategies are developed within own boundaries, having neighbors involved in the development, but resulting in loose outcomes that are not integrated. Partly these issues are caused by the free riding problem, small municipalities (hundreds) benefit from the status quo and have freedom to do what they want if they are not involved in the bigger (Vienna) development(s) – vice versa Vienna city is pushing externalities to the peri-urban ring of municipalities. An example is that smaller municipalities want to attract companies as well, which is not following any strategic plan or coordinated action. The regional opportunities for transit oriented development (TOD) – and the potential combination of this with Logistic Oriented Development – are not taken nowadays as municipalities are mutually competing.

With Stadt-Umland management a first step in this direction is taken, although the capacity (“two people running around”) is rather limited. Nationally the need for cooperation building is recognized, but a very strict legal framework is holding back, having no national incentive to change the entire institutional way of working. On the other hand there is the willingness on different levels to make a next step, knowing that other cities are way further in understanding the needs of metropolitan collaboration.

Another step taken towards a better governance between the city of Vienna and its surrounding regions is the implementation of a regional public transport association, the ‘Verkehrsverbund Ost-Region’ (VOR). Vienna and (parts of) the Bundesländer Niederösterreich (Lower Austria) and Burgenland are jointly offering public transport and joint ticketing in the East Region (see www.vor.at).

The growing amount of commuters is a difficulty for the city of Vienna, also in perspective of the fact that local public transport responsibilities (Wiener Linien) stop at Vienna’s administrative borders. The borders of the regions Lower Austria and Greater Vienna make this more complex – there might be a need for a combined vision – next to and building on the experiences of the already existing joint VOR-ticketing. Especially urban sprawl throughout the region by developing housing districts and warehouses in greenfield areas might occur as a strategic regional strategy and metropolitan governance for the Vienna region are absent and different municipalities are all in charge for spatial planning.

As stated before, the functional area of the urban node Vienna is bigger than the city and its surrounding municipalities. It is a complex issue, also because Bratislava seems to be part of it. In the upcoming decades, problems on the limited capacity of the S-Bahn, the new crossing of the Danube by rail (North-South) – bypassing by train Vienna is now only possible via Bratislava - will have its impact on different levels. At the same time, this issue cannot be seen isolated from the recent developments as the Port of Vienna and Inzersdorf and their potential for obtaining a stronger position in the TEN-T network.



Relation with Bratislava

Vienna has a long tradition of working together with Bratislava, which cooled down recently. The shortest distance between the two capital cities is about 65 km. They are Twin-cities although both cities have their own Daily Urban System (DUS). As dwelling prices in central Bratislava are increasing, people are moving out, also to towns in Austria such as Hainburg an der Donau. At some points there is competition between Vienna and Bratislava, especially as companies can choose between the two capital cities. But the two cities can be considered as one functional urban region in terms of labor and housing market, although this is not (yet) governance-based. A first step could be to start with developing a common strategy for Vienna and Bratislava.

Ideally a regional spatial plan should therefore include a polycentric concept for urban development and multi-modal transport including the regional level and cross-border relations. Key element will be the position of Vienna Airport as a major hub on this level with an agglomeration of companies but lacking a real strong inter-modal position. For example Vienna Airport is lacking a direct railway connection to the Eastern Railway (Ostbahn) running from Vienna towards Hungary (Győr-Budapest). Possibly the Centrope concept (covering parts of Austria, Czech Republic, Slovakia and Hungary) could be of added value for developing this common strategy although the Centrope has mostly remained a study-term and is hardly used at the moment.

At this moment, the fastest way to get from the one to the other city center is by boat (75-90 minutes). However this is only a seasonal service from April to October. Regular train services include a regional train to Bratislava-Ptrzalka (southern district, south of the Danube) and a train to Bratislava main station via the rural Marchfeld area north of the Danube. Both are hourly services take a little more than one hour. The original 'Pressburgerbahn' running from Vienna via the airport to Bratislava south of the Danube has been stopped in the village of Wolfsthal near the (former) 'Iron Curtain' in 1946.

The main road connection between Vienna and Bratislava is the A4 highway, via the airport. Plan is to build a new road north of the Danube and the S8 that should remove traffic pressure at the A4 and improve relations between Vienna's eastern city parts (as Aspern Seestadt) and Bratislava.

Barrier in developing a combined strategy is the recent cooling-down in the relation between Vienna and Bratislava after a long tradition of good collaboration. One of the stakeholders stated that the Slovak capital lost interest and opposed to foreign ownership of e.g. real estate and got the feeling of being absorbed in Vienna. Besides there have been much administrative and political changes and identity issues as well. Building relations with Bratislava will cost a lot of time, so for the moment the 'twin cities' are just neighbors.

Sustainable Urban Development in Cohesion Policy

In European Cohesion policy a certain budget is reserved for sustainable urban development. Cities can acquire this funding if they have integrated sustainable urban development strategies in place. Some member states (e.g. Poland) have added the requirement for their cities that such a strategy is designed at metropolitan level. If such a requirement would become a European policy, this could become an important incentive for cooperation at metropolitan scale.

Good European practice: Antwerp – Research by Design



A good practice example in which different scale and governance levels come together is ‘Ringland’ Antwerp. The city of Antwerp (522,000 inhabitants) is also an urban node at the TEN-T network and is confronted with important and increasing road transport, linked to this function. In order to deal with this increase, the initial idea was to complete the ring with new and classical road infrastructure. Even though all environmental impact assessments procedures were followed, the projects became legally and politically blocked due to important and well organized citizens’ protest. A solution was found through the appointment of an independent expert (the ‘intendant’) who managed to bring parties together and devise solutions. The new projects link the infrastructure needs with spatial planning opportunities with important gains for the quality of life of the inhabitants. Major parts of the ring road will be covered, hereby overcoming the barrier effect of the highway, linking neighborhoods, green areas and creating opportunities for last mile delivery hubs. Important investments in multimodality and separating long and short distance traffic will reduce the overall traffic intensity. Through research by design, exploring land value capturing and multi-level governance the new approach is found to have benefits for the city, the region and its residents. One participant compared this approach with Vienna as follows: “In Antwerp you solve concrete problems. In Vienna we are used to solve problems with concrete.”

It is good to mention that this ‘Research by Design’ approach could result in some quick wins, but the timeframe usually covers several decades and therefore includes an approach for the long run.

3.4 Robustness and vulnerability of the network

Robustness and vulnerability of the network is an important critical factor in the urban node Vienna. Especially when taking into account the limited number of bridges over the Danube – for rail and road, passengers and freight – this is expected to become a real problem in the coming years, thinking of Vienna’s urban growth. The metro and regional S-Bahn networks seem quite well dimensioned to manage an increasing number of passengers, with the exception of some sections during the peak hours. For freight and logistics it is expected that first and last-mile and long-distance flows will both increase and encounter each other more than today.

At regional level there are conflicts between freight and passenger transport as local, regional and long-distance trains share the same tracks. This happens mostly on the southern rail link (Südbahn) towards Wiener Neustadt and Graz. Increasing capacity on the rail stretch Vienna-Wiener Neustadt is in planning as the ‘Pottendorfer line’ will be upgraded to provide additional capacity e.g. for long-distance trains. But even then some stakeholders wonder if this investment will really solve the bottleneck as the different flows still will be bundled. In general robustness of the network should be stimulated. One of the stakeholders referred to the Rastatt tunnel accident in August 2017: Lowering of tracks during tunnel construction works led to closing down all passengers and freight railway traffic between Karlsruhe (DE) and Basel (CH) for almost two months. The TEN-T Baltic Adriatic corridor passing via Vienna only has double-track rail to the east and only one rail bridge for freight crossing the Danube. However the rail line north of the Danube to Bratislava (“Marchegger Ast”) will be upgraded to double track in the next years.

Mixture of local/regional/long-distance (high-speed) passenger and freight trains will possibly lead to interruptions, traffic jams and collapses. An additional hindering aspect is the growing demand for ‘just in time’ freight delivery converging at the same time with peak hour rail transport, entering the city in the morning hours as well as incoming passengers transport. This will cause even more pressure on the same rail tracks, so timing is important.



From a European perspective the interconnection of functional areas might be more important than just cross-border traffic. An overlay in networks is an important aspect to be considered at the European level as relevant aspects on which funding and investments should be based on. Let's illustrate this by means of the planned Lobautunnel (S1) on the eastern side of Vienna. Realizing this new connection will influence the urban node Vienna as well as Bratislava by giving (freight) transport flows more possibilities to cross the Danube, pass by Vienna and cross Europe on its way from north to south and vice versa. Recommendation in making the Lobautunnel (S1) business case is Vienna should involve the EU by considering the effects on corridor level besides the local/regional effect.

This needs a mental shift in awareness when drafting strategic plans for Vienna. Nowadays the focus is on local aspects to function well and therewith is no awareness of the necessity to provide capacity for long-distance freight transport ("not my issue"). However European freight transport flows passing by Vienna from east to west and vice versa might be obstructed if the network surrounding Vienna has not got the capacity needed. As European institutions themselves will not be able to build railway or road infrastructure through Austria initiatives need to be considered by the Austrian stakeholders (national railway and/or road administrations) and these might be (partly) funded by the EU.

An example of a successful project framing of this relation linking city, region, national and EU level is the planned cable car in the Swedish city of Gothenburg. The current public transport system is very radial, like spokes in a wheel passing one narrow hub in the centre. The new cable car will be fully integrated in Gothenburg's public transport system and thereby unburden the hub. So this project will achieve several local, regional, national and EU targets and applied for funding from the CEF Blending Call.

3.5 Summary and Lessons Learned

- *The important interrelation between infrastructure/mobility management and spatial planning.* One of the conclusions drawn by the participants is the lack of attention to the interrelation between spatial/land use planning and infrastructure/mobility planning on all scale levels. One example are the last mile delivery hubs. Depending on their size and location in the city, this could mean that instead of 1 truck moving 24 ton, 6 trucks are moving 4 ton each. In this way, more space is claimed by transporting the same amount of goods. Moving consolidation centers out of the cities could also result in more movements in and out the city.
- *Awareness of the urban node function.* There was little awareness of the role of Vienna in the TEN-T network. Within the strategic planning department of Vienna the focus is making local aspects function well. Therewith there is no awareness of the necessity to provide capacity for long distance freight ("not my issue/problem"). There might be problems on the TEN-T network if the network surrounding Vienna hasn't got the necessary capacity. The other side of the coin is that that there might be European financing for investments in Austria which might strengthen the European network.
- *Interconnection between infrastructure networks.* In and around urban nodes the same infrastructure (e.g. railway line) might be used for both local, regional and transnational transport and by both passenger and freight transport. If all these different networks need more capacity, as might be the case in fast growing Vienna, bottlenecks can appear more quickly than anticipated.
- *Need for cooperation at the functional urban area.* Even if the city of Vienna is not so directly impacted by its function as urban node, the region of Vienna is. Through better metropolitan governance negative (environmental) effects might be mitigated and opportunities better exploited. In the case of Vienna the functional urban area, in a TEN-T perspective, might even cross the country border and include Bratislava.



- *The opportunity of logistics.* Logistics is now in the Vienna region mostly seen as something that needs to be done. It is put away and not seen as something that can add value to the quality of the city and region. Participants assessed the thinking is now quite sequential, many years there are thoughts on road projects (e.g. now on the Lobautunnel), but nevertheless people are surprised by the impacts the development has after 10-20 years. It can be worthwhile to plan ahead and in an integrated way also keeping in mind the major investments that have been done in Wien Süd and Hafen Wien.



4 Building blocks for recommendations EC

During the Vienna workshop several challenges and solutions have been discussed that were related to the European transport network (investments), regional development policy, frameworks and research. As input is only based on the Vienna experiences at this moment, some building blocks for recommendations to the European Commission have been assembled. In the following workshops with Tier 1 and Tier 2 urban nodes we expect to refine these building blocks into more robust recommendations, so this chapter can be seen as a first glimpse or preview on the final recommendations will be delivered in Month 12 (deliverable 3.3).

4.1 TEN-T network needs and investments

Solving bottlenecks

Bottlenecks at TEN-T networks are not necessarily at border crossings, but might very well appear at urban nodes where local, regional and trans-national networks interconnect. European investments in these urban nodes could have an added value for the functioning of the European network as a whole. These investments should not just cover infrastructure investments as these might not be the best option to increase the robustness and multimodality of the network. Although the modal split of rail freight is quite good in Austria, there has been no increase in modal shift from road to rail anymore. At this moment use of the road network by trucks is cheaper because diesel is cheap. Example could be the way Switzerland has imposed limitations on road transport to stimulate freight via rail infrastructure.

Silk Road

Current discussions about improving rail connections with China (the 'Silk Road') might have an enormous impact on Vienna and the surrounding urban nodes (e.g. Bratislava), also in relation to the European context and overall TEN-T network. In the future goods transported via the Silk Road from China to Europe are expected to be delivered in 14 to 18 days instead of the current 40 days. Heavy rail road infrastructure will be needed to handle these freight flows. At this moment there will be not enough capacity to do so as the rail network in and around Vienna is already quite full and vulnerable, as described in the previous chapter.

Plans need to be made – not only at local and national level – to be able to handle these new freight flows and by possibly creating new inland ports. The bigger picture of the Silk Road needs to be linked to the local/regional topics such as the vulnerability of the railway network in and around Vienna and capacity constrains for passengers and freight transport. The freight situation in central and eastern Europe might change a lot as the (proposed) Chinese investments in developing this Silk Road are quite massive. Example for this is the purchase of the Greek port of Piraeus by a the Chinese state-owned company and huge railway investment plans to connect the port and Central Europe.

As a result of these Chinese investments the TEN-T network might get more entry and exit points in eastern Europe connecting to the Silk Road. This will potentially alter the function of some urban nodes.



4.2 Regional and metropolitan needs

Incentive for regional collaboration

Given the major impact of the quality and architecture of metropolitan governance for urban nodes, the EC might consider initiating policy incentives to stimulate regional cooperation. In European cohesion policy a certain budget is reserved for sustainable urban development. Cities can acquire this funding if they have integrated sustainable urban development strategies in place. Some member states (e.g. Poland) have added the requirement for their cities that such a strategy is designed at metropolitan level. If such a requirement would become a European policy, this might become an important incentive for cooperation at metropolitan scale. In other words, recommendation is to link a metropolitan SUMP requirement to CEF or cohesion funding. For Vienna such a European incentive might be helpful in developing a metropolitan strategy including an integrated approach across Vienna's administrative borders.

EC support for an integrated planning approach

Especially in densely populated urban nodes there are important livability issues linked to TEN-T infrastructure. An integrated approach of spatial and mobility planning seems the only way to make infrastructure investments acceptable to citizens and local authorities and to capture added value, e.g. for environment, livability and property. But such an approach is expensive and European funding can contribute to achieving a business case.

4.3 Data and Research

Discussing the challenges in Vienna – based upon facts and figures, trends and impacts – stakeholders agree that the functional urban area of Vienna is bigger and also includes the region of Bratislava, as the Daily Urban System of people and companies are closely connected. The current definition of regions (NUTS3) is too small to define the functional urban area of Vienna. Also a bigger part of Niederösterreich is part of the functional urban area Vienna. For that reason, Vienna's functional area should be tailor-made with available data or data should become available to be able to profile the functional urban area.

From a European perspective it might be needed to structure the development of the urban node typology and guide the data and information collection. To achieve this it is crucial to come to a common understanding and description of an urban node. To structure data and information collection and to be able to compare the different urban nodes among each other, this definition will be used in the VitalNodes project. However, in case we could get access to data at European level this would make it easier and less time-consuming to shape the functional areas.



Attachments

1. Fingerprint urban node Vienna
2. Map corridor level
3. Map regional/ urban node level
4. Map city level
5. List of participants Vienna workshop



1. Fingerprint urban node Vienna

Vienna

A) General facts and figures - based on EC definitions and statistic

CITY (= Bezirk 130)			REGION (= NUTS 3 = Bezirke 126 and 127 and 130 (Wiener Umland Nord, Wiener Umland Sud, Wien))		
	Baseyear 2016	Trend		Baseyear 2016	Trend
City area (km2)	414,9	→	Region area (km2)	tbd	→
Population (city)	1.867.960	↑	Population (region)	2.600.000	↑
Population density city (km2)	4.326,10	↑	Population density city (km2)	4.326,10	↑
GDP (bn EUR)	86,5	↑	GDP (bn EUR)	...	↑
GDP per capita (EUR)	47.700	↑	GDP per capita (EUR)	...	↑

Region = NUTS 3 as defined by EC

B) Corridor

B.1 Current function on the corridors / added value for EC

Vienna is an urban node on three corridors:
1) Baltic Adriatic 2) Orient / East-Med 3) Rhine-Danube

Vienna integrates road, rail, aviation and waterway networks. On each of the corridors Vienna is positioned mid-way, which heightens the urban node's importance to enable well performing transit flows.

It is noted that Baltic-Adriatic flows by road are mostly transferred along Bratislava. Future investments in road and rail infrastructure between Vienna and the Czech border may draw these North-South flows towards Vienna.

Distinctive factors

- Integrates three corridors
- Trimodal, both freight and passenger
- Large population (freight attraction)
- Borders cohesion regions
- Strong relation with urban node Bratislava

B.2 Overview of the corridors



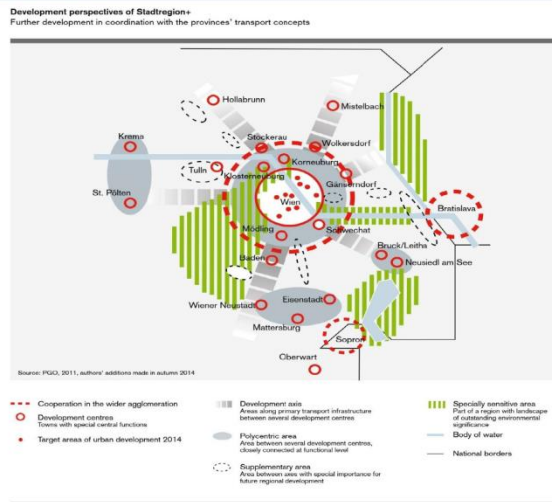
C) Regional (NUTS3) and functional area

Governance structure

- * City administration of Vienna: local planning
- * City administration of Vienna is also Bundesland
- * Surrounding villages / municipalities: local planning
- * National administration: motorways (road, ASFINAG) and high speed lines (rail, OBB), water (Via Donau)
- * Bundeslaender: Niederösterreich: regional planning
- * Cross border

Important characteristics

- Regional developments
- * urban developments
- * passenger developments
- DC / location / throughput
- * logistics developments



FREIGHT FLOWS	Baseyear (2016)				Trend			
	Road	Rail	IWW	Aviation	Road	Rail	IWW	Aviation
Modality ('000 tonnes)								
Intrazonal (Bezirke 130, 126 and 127)					↑	→	→	↔
Import (dom.)								
Import (Int.)								
Export (national)					↑	↑	→	↑
Export (international)					↑	↑	↑	↑
Transit					↑	↑	↑	↑

see data for whole lower Austria (without Vienna) in separate sheet regional data

PASSENGER FLOWS	Baseyear (2016)				Trend			
	Road	Rail	IWW	Aviation	Road	Rail	IWW	Aviation
Passengers (million)								
Intrazonal	0	0	↑	↑	↔	↔
From/to other zones	0,3	12	↑	↑	↑	↑

FREIGHT INFRASTRUCTURE	Baseyear (2016)				Trend			
	Number	Area (ha)	Throughput (mton)	Throughput (TEU)	Number	Area (ha)	Throughput (ton)	Throughput (TEU)
Road-Rail terminal	1	57	4		440.000	↑	↑	↑
Air terminal	1	...	0,5		not applicable	↑	↑	↑
Trimodal terminal	1	300	7		200.000	↑	↑	↑

D) City of Vienna

Governance structure

- * City administration of Vienna: local planning
- * City administration of Vienna is also Bundesland
- * Bundeslaender: Niederösterreich: regional planning
- * National administration: motorways (road, ASFINAG) and high speed lines (rail, OBB), water (Via Donau)

Urban developments: Major urban development projects are set to develop on Vienna's East in Aspern. Inner city housing projects

- Sonnwendviertel: Region around Hbf
- Nordwestbahnhof



Use of road space	%	Commuter flows (source: Eurostat, trips)	%
Average freight transport on road	tbd	Work by car	41,05
Average passenger transport on road	tbd	Work by public transport	45,55
Average freight transport on ring road	...	Work by motor cycle	0,97
		Work by bicycle	1,71

E) Impacts / performance indicators

Capacity rail

Link Hütteldorf-Meidling
 Discussion about link Airport - Eastern Rail Line (Budapest)
 Discussion about upgrade Pressburgerbahn (Hainburg > Bratislava)

Capacity road (average intensity road on evening peak, source: google maps)



Capacity water

no major capacity issues observed

Capacity aviation

discussion about extra runway

Environment & Health (source: urban audit)

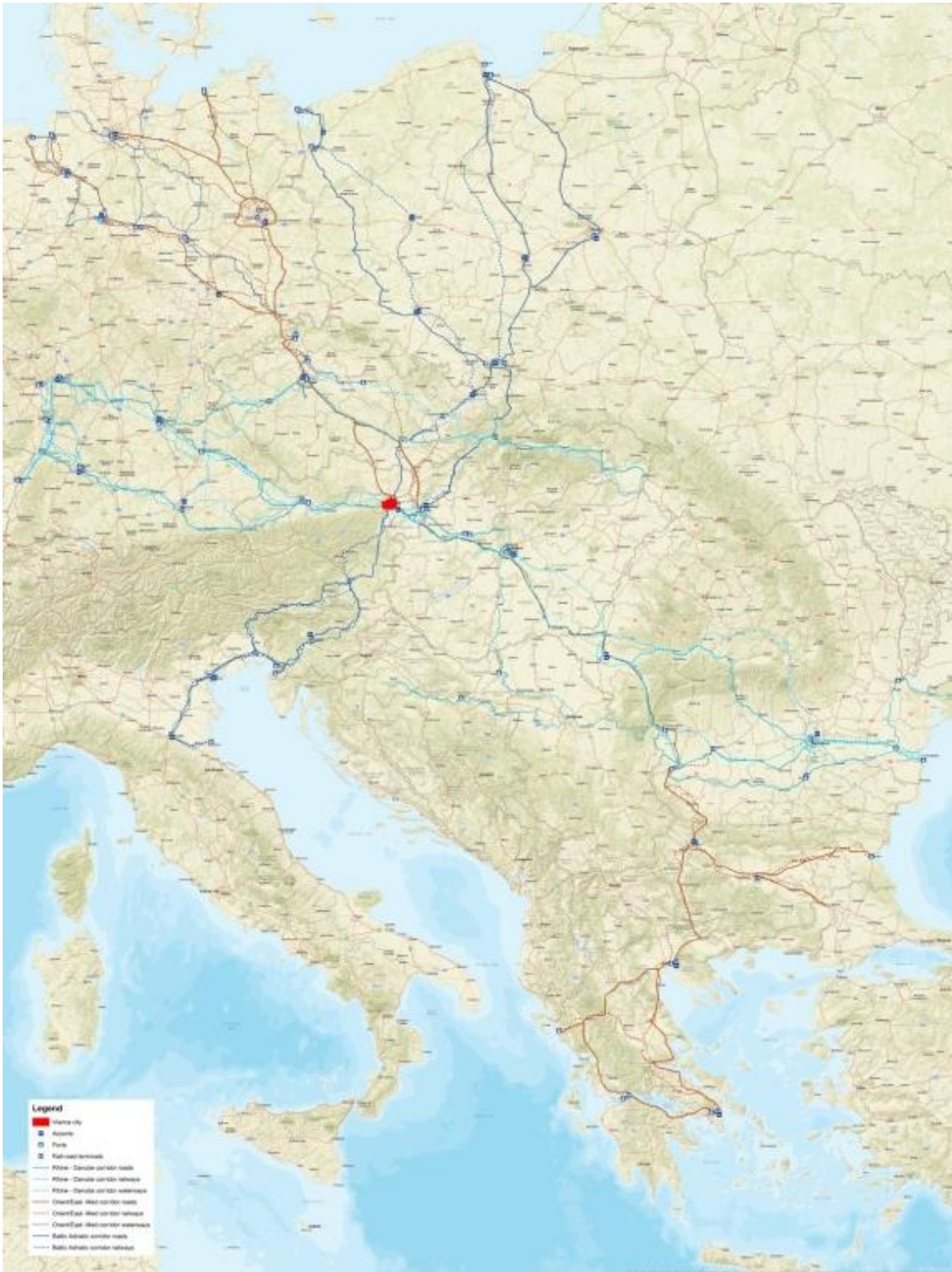
	%
Road traffic noise at night (>55db, % pop. exposed)	na
Rail traffic noise at night (>55db, % pop. exposed)	na
Air traffic noise at night (>55db, % pop. exposed)	na
O3 pollution (# days >120 µg/m3)	na
PM10 pollution (# days >50 µg/m3)	na

Safety (source: urban audit)

	#
Number of road deaths (2014)	21
Number of road injuries (2014)	7121
Number of rail deaths	none
Number of rail injuries	none

observation: health and safety issues appear to be relatively limited (?)

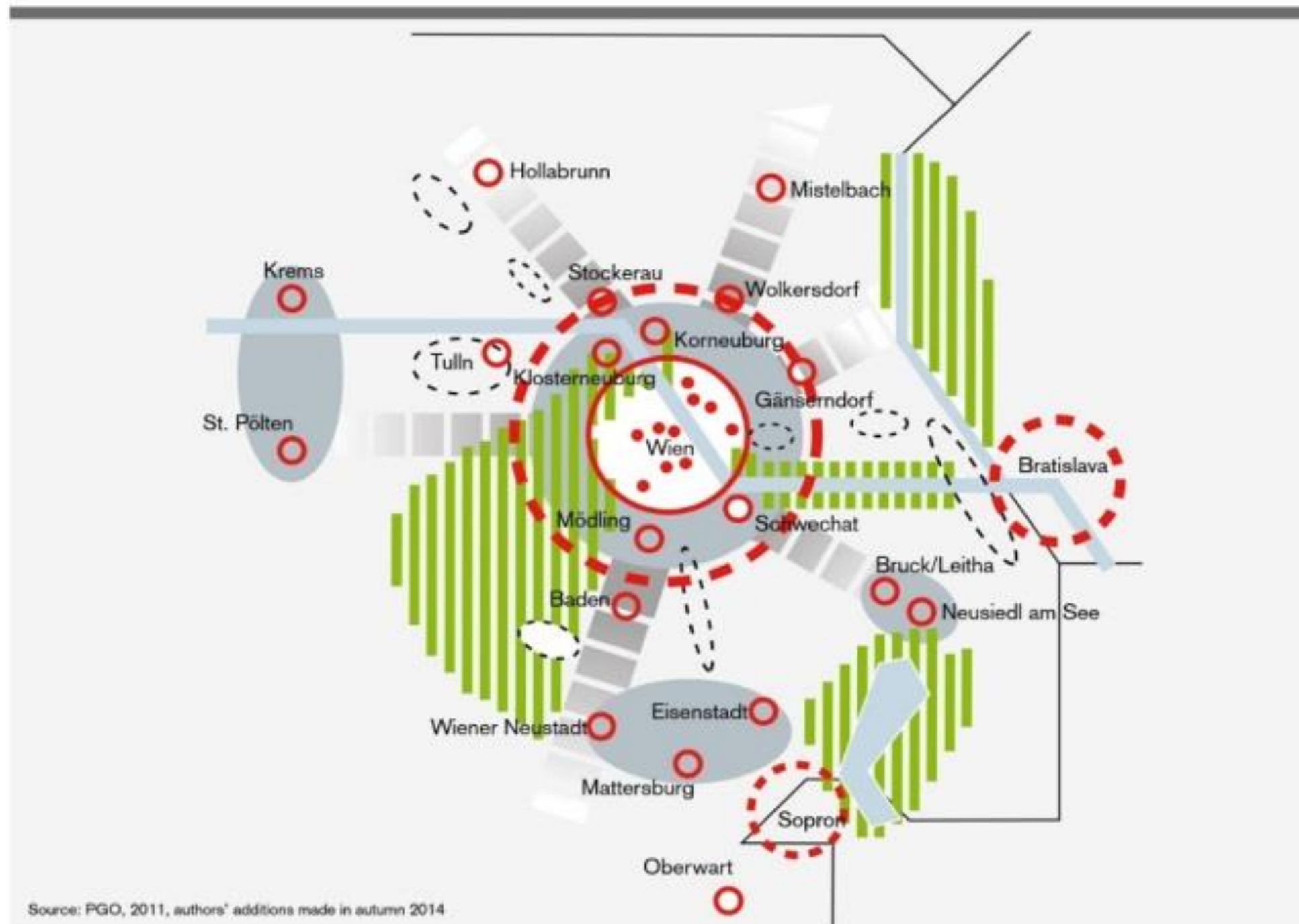
2. Map corridor level



3. Map regional/urban node level

Development perspectives of Stadregion+

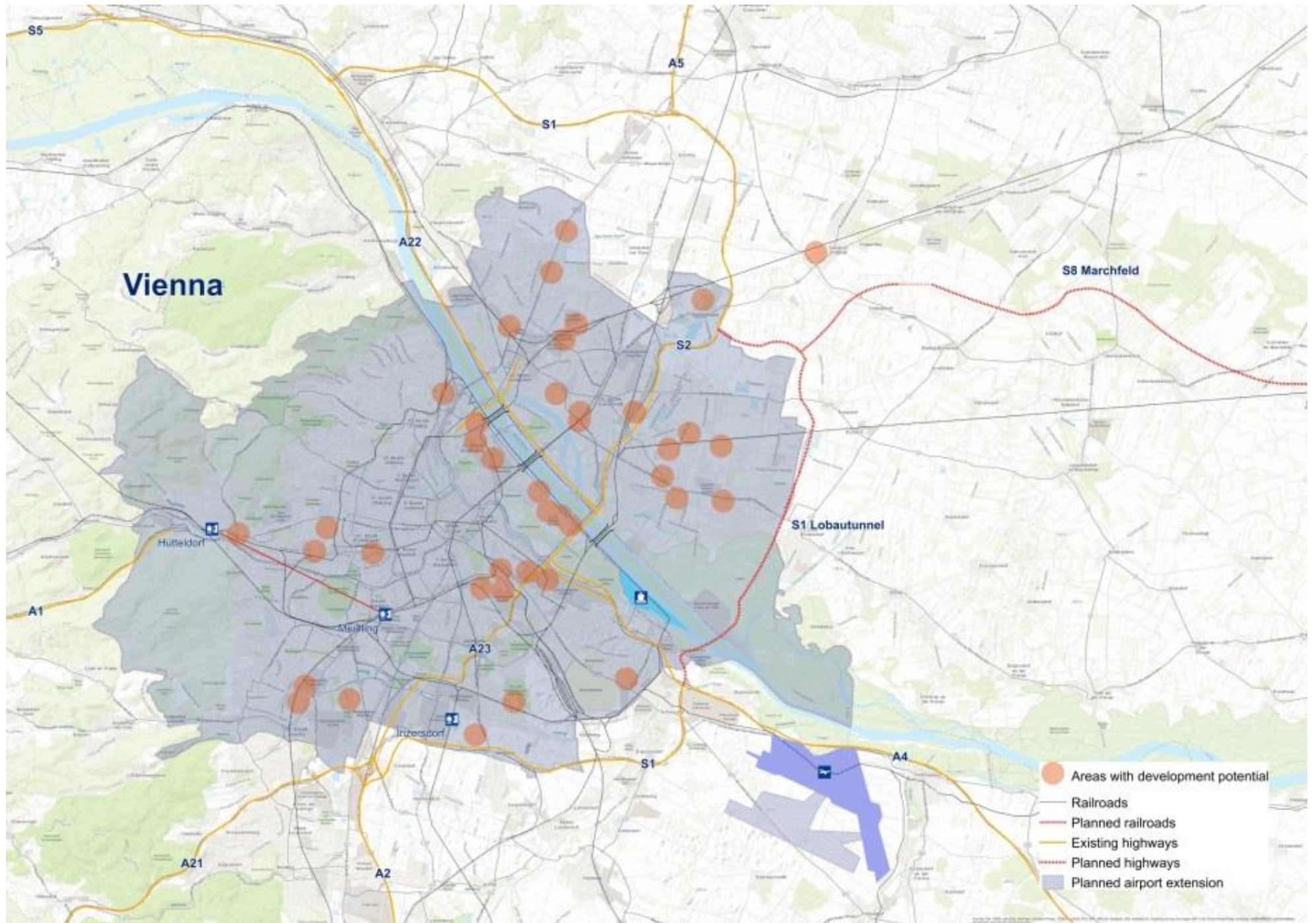
Further development in coordination with the provinces' transport concepts



Source: PGO, 2011, authors' additions made in autumn 2014

- - - Cooperation in the wider agglomeration
- Development centres
Towns with special central functions
- Target areas of urban development 2014
- Development axis
Areas along primary transport infrastructure between several development centres
- Polycentric area
Area between several development centres, closely connected at functional level
- Supplementary area
Area between axes with special importance for future regional development
- Specially sensitive area
Part of a region with landscape of outstanding environmental significance
- Body of water
- National borders

4. Map city level



5. List of participants

VitalNodes workshop Vienna – List of participants

Wednesday 17 January 2018

Location: Wiener Planungswerkstatt, Friedrich-Schmidt-Platz 9, 1010 Vienna, Austria

Name	Organisation
Mr. Jos Arts	Rijkswaterstaat (moderator)
Mr. Gerhard Bogner	Railway Infrastructure Manager (ÖBB)
Mr. Martijn De Bruijn	Omgeving Vlaanderen
Mr. Roman Dangl	Regional Government of Lower Austria
Mr. Michael Fastenbauer	National Waterway Administration (ViaDonau)
Mr. Dieter Häusler	City of Vienna, Department Urban Development and Planning
Mr. Dieter Hintenaus	ASFINAG (National Road Administration)
Mr. Franz Jöchlinger	Vienna Airport
Mr. Wolfgang Khutter	City of Vienna, Environmental protection
Mr. Rainer Müller	UIV Urban Innovation Vienna
Mr. Vincent Neumayer	Wiener Linien
Mr. Christian Obermayer	Railway Infrastructure Manager (ÖBB)
Mr. Martin Posset	Thinkport Vienna
Ms. Petra Reiter	ASFINAG (National Road Administration)
Mr. Michael Rosenberger	City of Vienna, Department Urban Development and Planning
Ms. Petra Schaner	UIV Urban Innovation Vienna
Mr. Gerald Tranz	UIV Urban Innovation Vienna
Mr. Josef Zitzler	Austrian Ministry for Transport, Innovation and Technology (BMVIT)
Mr. Karl Zöchmeister	RailCargo Austria
<i>VitalNodes Organisation</i>	
Mr. Kevin van der Linden	Rijkswaterstaat
Mr. Raymond Linssen	Rijkswaterstaat
Mr. Ricardo Poppeliers	Ecorys