North Sea Baltic Connector of Regions
Interreg Baltic Sea Region programme 2014–2020

Definition of Assessment Indicators and Criteria

Summary of assessment indicators and criteria for nodal point infrastructure

Activity: WP 2, Activity 2.2.3

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Contents

List of Abbreviations

CNC	Core Network Corridor
CT	Combined Transport
DG	Dangerous Goods
DGG	Deutsche GVZ-Gesellschaft
EU	European Union
FV	Freight Villages
HHM	Hafen Hamburg Marketing
ICOB	Investor Center Ost Brandenburg
ILiM	Institute of Logistics and Warehousing
ITU	Intermodal Transport Unit
KPI	Key Performance Indicator
MS	Member States
NSB	North Sea Baltic
NSBCoRe	North Sea – Baltic Connector of Regions
TEN-T	Trans European Network – Transport
TEU	Twenty Foot Equivalent Unit
TKM	Tonnes per Kilometre

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1. Definition of Assessment indicators and criteria for Nodal Point Infrastructure

1.1. Definition of Assessment Indicators

Indicators are a representation of data, a relevant characteristic or aspect at a specified capacity (length, size, width, amount, etc.) and point in time or place. An indicator is obtained from an array of noted facts and allows for relevant correlations for a particular question (Eurostat, 2014). For the particular question of assessment indicators for nodal point infrastructure, the indicators orientate along European Union (EU) regulation and findings related to Combined Transport (CT).

1.2. Definition of Criteria for Nodal Point Infrastructure

A criterion, like an indicator, is a standard through which a judgment can be made (Cambridge Dictionary, no date). Criteria are conditions that need to be met to meet fundamental aspects of an objective (University of Greenwich, no date). For the purpose of this paper, the objective is the analysis of nodal point infrastructure. Therefore the indicators mentioned in this document are used to measure the performance and / or to compare infrastructure along the North Sea – Baltic (NSB) Corridor under consideration of latest developments and findings related to CT.

2. Considerations for assessment indicators and criteria for nodal point infrastructure

The main goal of Activity 2.2 is to provide instruments and framework conditions to support the investments in new intermodal infrastructure and services for the NSB Corridor area to increase the competitiveness of intermodal transport and promote the use of intermodal solutions. Activity 2.2 has several sub-activities that aim to identifying the state of the art and best practices for European Nodal Points. The definition of assessment indicators and criteria are the basis for a benchmarking analysis within the NSB Corridor, followed by a recommendation and action plan in regards to an intermodal nodal point standard. The complexity of spatial planning activities find consideration during this activity. It is important to consider Policy and regulation, just as much as all parties actually involved in intermodal transportation – e.g. logistics and transport service providers and shippers or clients. Only through this, a sustained usage of an intermodal nodal point standard in the future is possible. The aim of this Activity therefore is to consider all these aspects in the search for - and the revision of existing Key Performance Indicators (KPIs), in order to provide a recommendation and action plan of lasting benefit to parties involved in intermodal transportation. Therefore, it is first necessary to understand the different aspects of the long-term visions and planning taking place on EU and national policy level and the effects on minimum criteria for KPI measurements and possible funds available through these entities.

The next step is the identification of aspects and criteria that have an effect on the long-term profitability of such a nodal point. This secures a long-term existence of the same. The identification of potential KPIs also takes place through one aspect of Activity 2.1 - the collection of business requirements and needs. The feedback received from logistics service providers, associations, shippers and sea port organisations will be one pillar in consideration of KPI definition for nodal point

infrastructure. Other pillars in consideration are: existing indicators from previous projects; those applied by other Trans-European Transport Network (TEN-T) corridors (e.g. those of the Baltic Adriatic Corridor on page 7 of the second coordinator work plan); and aspects discussed from the findings of the 'Freight Villages (FV) in Europe – Results of the second European Ranking 2015' from the Deutsche GVZ-Gesellschaft (DGG) (Nestler & Nobel, 2016). The DGG ranking is a widely accepted comparison of FV across Europe and thus should be looked in more detail below. This ensures a broader applicability and acceptance on EU-level.

The DGG ranking makes use of 40 criteria and then creates clusters. The criteria are looking at measurable and comparable characteristics, as well as 'soft' factors that can be useful in a benchmarking effect. The clusters have been adjusted since the first ranking in 2010 and extended from four to 16 clusters. Furthermore, a further classification into different colour groups was made. The first cluster group (darkest colour) assess the geography and connectivity of a FV. The second cluster group looks at the structure of the FV itself and the users, tasks and structural aspects. The last cluster group considers secondary effects, such as services to a FV, development and contribution or importance of a FV to its immediate surroundings (Nestler & Nobel, 2016). These criteria and clusters can be seen in figure1 and figure 2 below. Further details and examples from the Ranking 2015 can be viewed in the appendix of this document.

1	size of total area
2	exploitation in % in relation to total area
3	current status of marketed area size in ha
4	opportunities expansion of space in ha
5	storage capacity in square meter
6	current number of companies
7	number of companies at final stage
8	current number of employees
9	final expansion of number of employees
10	employees per ha exploited area
11	time period between planning phase and first business settlement
12	year of complete development and marketing
13	decentralized/centralized Freight Village
14	greenfield/brownfield
15	modality
16	number of the service facilities
17	market share of the total regional offered property
18	vacancy rate in %
19	personal estimation of level of development (own Freight Village)
20	number of employees of FV development companies
21	range of tasks from management companies - amount
22	intensity of task (all estimations added and divided by the amount)
23	transport mode: all assessments added and divided by the amount of mode of transport
24	positioning in TEN-T (amount)
25	terminal capacity in loading units
26	terminal utilization in loading units
27	terminal utilization in %
28	terminal service offers - amount
29	green logistics: amount of the measures implemented
30	all assessments of the implemented measures added and divided by the amount measures
31	security management: amount of established measures
32	risks for the site (all assessments added by the amount)
33	strengths - amount
34	weaknesses - amount
35	opportunities - amount
36	threats - amount
37	modal traffic shift
38	Urban Logistics
39	Green Logistics
40	Importance for the region

Figure 1: DGG Criteria (Nestler & Nobel, 2016, p. 82)

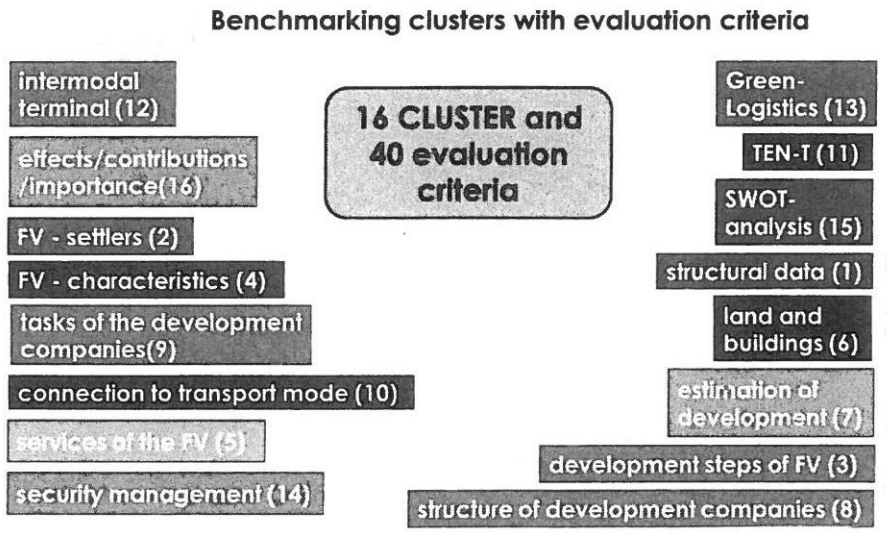

Figure 2: DGG Clusters (Nestler & Nobel, 2016, p. 80)

Finally, the EU differentiates the complex corridor network in terms of a Core and Comprehensive network. The former will be completed by 2030 and acts as the backbone of the TEN-T network. The latter is to be finished by 2050 and shall connect to the core network. It is therefore essential to primarily focus on the identified nodes of the core network (mentioned in the Corridor Study of Proximare on page 11). General socio-economic factors that might deem another location for a nodal point analysis feasible should not be ignored, but as this belongs to the aspect of a comprehensive network, it is of lower importance in regards to NSBCoRe's activity. The KPIs agreed upon for the core network are applicable regardless of a core- or comprehensive network character.

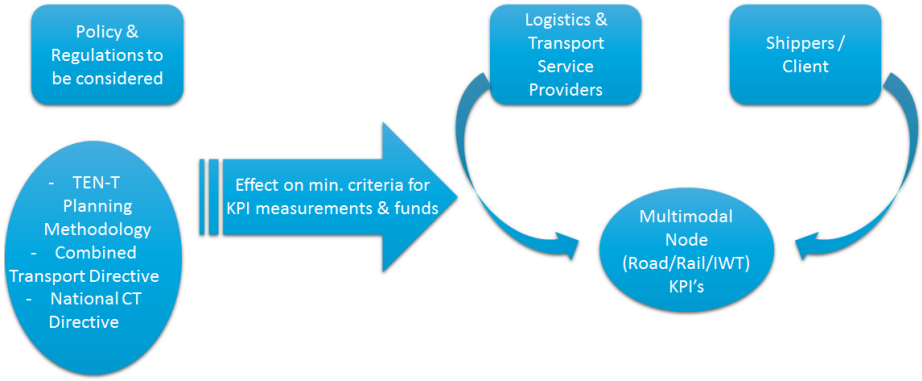

Figure 3: Considerations for assessment indicators and criteria for nodal point infrastructure (HHM, 2017)

The final report on the "Analysis of the EU Combined Transport" (KombiConsult;Intermodality;Planco;Gruppo Clas, 2015) allows for a comprehensive insight into the current economic and legal state of CT and all its combinations and sectors in the EU. A key element of this document is the examination of the compliance of the national legal framework that Member States (MS) use in order to implement the CT directive (Union, 1992) on national level. Bottlenecks of CT for rail/road operations (KombiConsult;Intermodality;Planco;Gruppo Clas, 2015, pp. 159-160) identified are: lack of operational quality, interoperability deficits of rail infrastructure, insufficient train path capacity for CT trains, lack of maintenance of rail infrastructure, non-harmonised terms and conditions for rail access, lack of service level guarantees, costly last mile, constraints on loading gauges, lack of open-access terminals and insufficient ICT capabilities. Aspects considering the railway infrastructure, or capacity in that regard as such, are covered either by the MS themselves or through EU activities such as 'Shift2Rail' (Shift2Rail, 2016) among other things. However, they should be kept in mind when looking at potential KPIs on a qualitative and quantitative level. The final report also points out the necessity of a revision of the CT directive. The EU currently has an open public consultation, followed by a targeted consultation collecting feedback prior to amending the directive. We expect to involve NSBCoRe in the targeted consultation to start a dialogue with the EU based upon the findings of Activity 2. It is therefore vital to have a lively discussion on potential KPIs accordingly. The next section(s) will rest on the above considerations and will provide suggestions of KPIs and the sources from which they originate.

3. Performance Indicators

Performance Indicators can be considered on the level of involvement (macro or micro), the viewpoint (policy, transport chain, nodal point), scope (door/door, terminal/terminal, terminal/door, door/terminal), or the benchmarking area (Activity 2.2.4). Furthermore, these indicators can be qualitative or quantitative. The former refers to data acquired through e.g. observation or interviews. The latter refers to e.g. questionnaires and / or surveys. Using the qualitative research approach helps us to understand and interpret, whereas quantitative research lets us test, look at cause and effect, and make predictions. The data size is usually smaller and not randomly selected with qualitative and larger and randomly selected with quantitative research. Qualitative data help to identify patterns or features for example. Quantitative research on the contrary uses precise measurements, statistics and thus validated data-collection instruments. A final differentiation

mentioned in the context of this document, whilst there are further differentiation possibilities, is the expected subjectivity in qualitative research and the criticalness of objectivity in quantitative research. Activity 2.1 covers both types of research and approach. Considering the required outcome when agreeing on the KPIs at the upcoming workshop during the third Project Meeting in Riga is important. The hereafter-exemplified indicators originate from previous EU projects or infrastructure documents, as basis for a discussion. An example project that has also touched the above-mentioned approach or point of view is BE LOGIC. In figure 2, the co-modality is broken up into the different levels and areas.

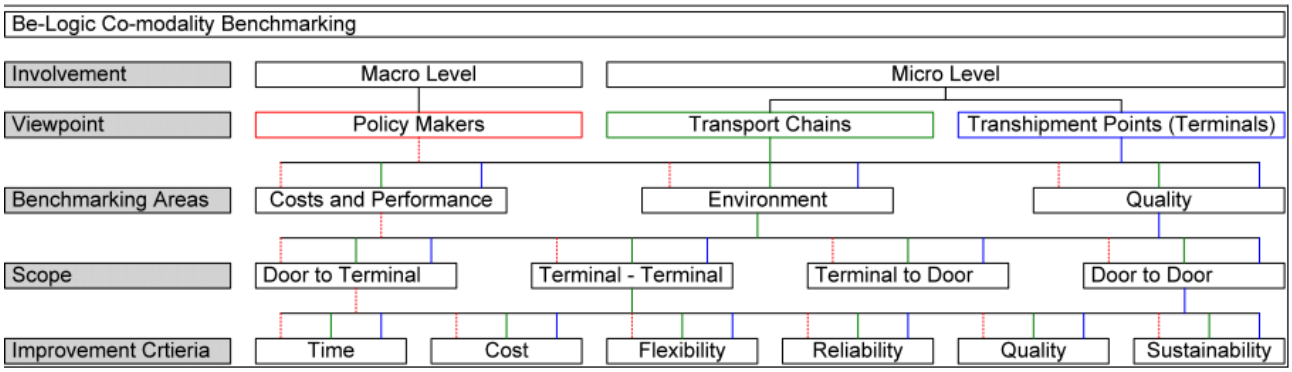

Figure 4: BE LOGIC Co-modality Benchmarking (Posset, et al., 2010, p. 83)

Figure 3 breaks down Benchmarking indicators into the area of relevance. Thus, into policy outcomes, transport chain and terminal. This therefore covers the logistics and transport service providers and shippers' / clients' perspective, along with the multimodal node. Both figures together cover what is shown in figure 1 The other projects that the suggested KPIs are based upon are Rail Baltica Growth Corridor, AGORA and the great overview provided in the collection of different KPIs in the COCKPIIT project. Furthermore the KPIs mentioned in the Baltic Adriatic Corridor work plan version 2 (page 7) are included. Lastly, for Germany the terminal provider DUSS has information sheets with benchmarking parameters of their terminals. The examples of information in these sheets are part of the suggested KPIs noted below.

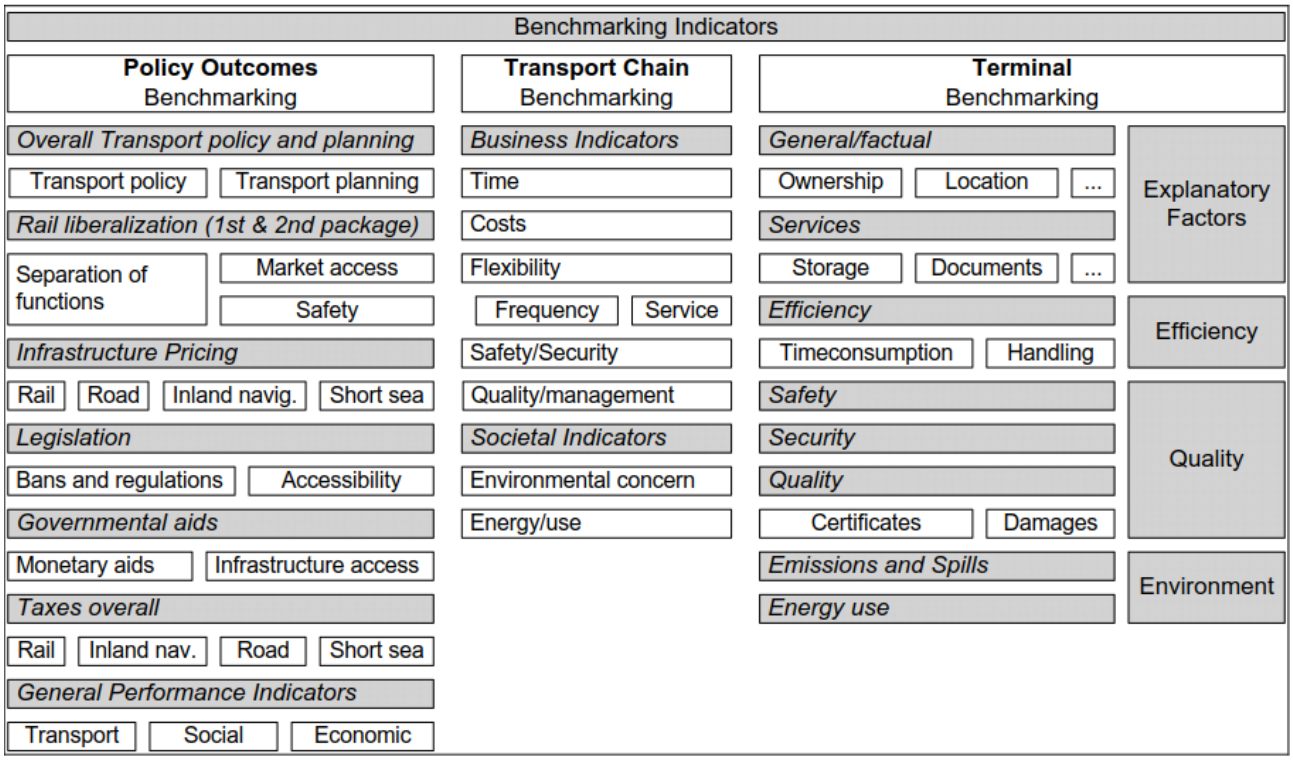

Figure 5: BE LOGIC Benchmarking Indicators (Posset, et al., 2010, p. 85)

The following list does not intend to be a closed and completed list of indicators, but rather a first suggestion of the most often considered important in relation to other papers, projects or fact sheets of nodal points.

3.1. Qualitative Indicators

*Table 1: Qualitative Indicators (*comment link to (Corridor, Rail Baltica Growth, 2013, pp. 6-7))(HHM, 2017)*

Opening Hours	Accessibility - Connection to roads of significance - Connection to railway lines of significance - Connection to sea-ports
Railway Undertaking Punctuality	Service Frequency (departures / week)
Lead-Time (transit time)	Electrified tracks (yes / no)
Length of tracks at terminal (fitting new desired 740 m train length? Yes / no?)	Length of siding tracks (fitting new desired 740 m train length? Yes / no?) on access railway lines
Safety and security standard (e.g. ISPS certified, damages p. a.)[*1.6]	Crane type and / or model
Value Added Services (e.g. EDI, Track and Trace, Cleaning, Customs)[*2.3]	Turnaround times for trucks
Turnaround times for trains[*1.7]	Proximity to market (catchment area of terminal, industry zones)
Possibility to expand terminal	Staff qualification / training (to be defined from NSB CoRe findings may be?)
Production system (direct or shuttle train asf.)	Quality Management (ISO9001)
Neutrality and openness of terminals for all operators and clients	

3.2. Quantitative Indicators

Examples of measurable indicators are as follows:

*Table 2: Quantitative Indicators (*comment link to (Corridor, Rail Baltica Growth, 2013, pp. 6-7))(HHM, 2017)*

Storage capacity (m^2 and or Twenty Foot Equivalent Unit (TEU)) - Available for reefer (yes / no or number of reefer plugs available) - Dangerous Goods (DG) cargo (yes / no, or number of possible TEUs to be stored)	Transshipment volume / throughput of Intermodal Transport Units (ITUs) or TEUs
Number or rail tracks*1.3 - Length of tracks in meter - Track gauge (EU-, wide-, small-standard)	Number of buffer tracks*1.5
Terminal productivity	Utilisation rate
Cranes*1.4 - Number available - Crane load possible (weight in tons or kg) - Average crane rate (moves per hour) - Average movement time / distance between yards and crane	Transshipment cost per ITU
Total terminal cost per ITU	Truck area in meter or m^2 - For waiting*1.2,1.8 - Gate-in / gate-out (Considering “Lang-LKW”, Euro- and Semitrailer?)
Driving / waiting time ratio (minutes)	Emission per ITU*2.2
Energy use per ITU or tkm*2.2	Noise emission (acceptability of terminal / terminal expansion)*2.2

Appendix I

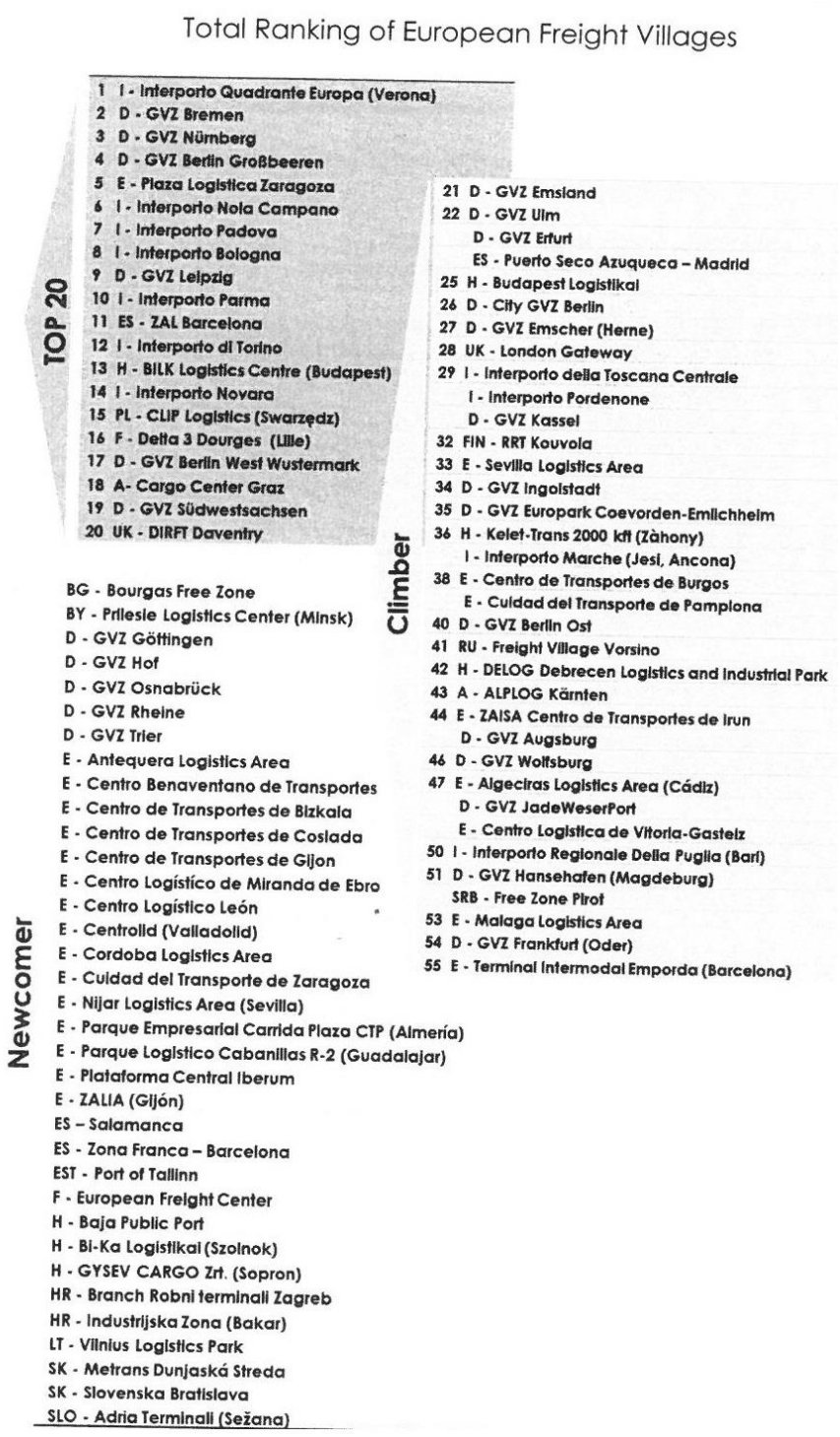

Figure 6: Total Ranking European Freight Villages (Nestler & Nobel, 2016, p. 128)

Appendix II

Illustration Q SWOT analysis TOP 20 FV - selection

criterion "strengths"

- location at the intersection of supra-regional transport axes
- sufficient expansion options
- high performance Intermodal Terminal
- strategic, geo-central location (TEN-T)
- international networking
- private Train Network
- broad range of logistics companies
- trimodal terminal: rail, inland waterways and roads
- settlement in an economically advanced region

criterion "weaknesses"

- not completed transport infrastructure
- limited availability of land plots, low provision of logistics space and property in the region
- low level of decision making structures of local stakeholders
- spatial proximity to residential areas
- insufficient road-rail transportation
- economic "underdevelopment" of FV region
- no networking/participation in networks

criterion "opportunities"

- improvement of infrastructure
- opportunities to extend the FV
- connection to "hinterland transport" of seaports (function as hinterland seaport hub)
- development of "Green Logistics"
- quality management standard ISO 2001
- logistics cluster (transport, mobility, logistics)
- development of new technologies (terminals)

criterion "threats"

- increasing shortage in public road and rail network
- traffic (congestion) problems
- political and environmental restrictions
- regional competition due to resettlement in the area of FV
- aging of logistic real estate
- strong political support of road transportation
- delay of development by administrative regulations

Figure 7: SWOT of Top 20 Freight Villages (Nestler & Nobel, 2016, p. 107)

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