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Intermodal transport terminals

Logistics/Intermodal terminals/centres in Turkey*

Submitted by the Government of Turkey**

I. Mandate

1. At the fifty-ninth session of the Working Party on Intermodal Transport and Logistics it was agreed on the intermodal transport terminals study that it would be important a pilot study to be undertaken in a member State in order to identify whether the information required for the study is available (ECE/TRANS/WP.24/139, paras 62, 63). The Government of Turkey volunteered to undertake such a study.

2. This document includes analysis provided by the Government of Turkey on intermodal transport terminals.

II. Intermodal (Freight) Terminal (IMT) versus Logistic Centre

3. There are several definitions about intermodal (freight) terminal (IMT):

(a) According to the Glossary for Transport Statistics, IMT is place equipped for transhipment and storage of intermodal transport units (ITU) between modes.

(b) According to RNE definition, IMT is location which provides the space, equipment and operational environment under which the loading units' (freight containers, swap bodies, semi-trailers or trailers) transfer takes place.

** The present document was submitted late due to delayed inputs from other sources.

(c) According to EC, IMT or transfer points are places equipped for the transhipment and storage of ITU. They connect at least two transport modes, which usually are road and rail, although waterborne (sea and inland waterways) and air transport can also be integrated.

4. In case of terminal companies and bodies handling both freight transport (e.g. freight forwarders, shippers, transport operators, customs) and accompanying services (e.g. storage, maintenance and repair) these are referred to as logistic centres or freight villages. Therefore, it seems that the logistic centre is more complex establishment than the IMT and the two are not strictly related: IMTs exist and function without logistic facilities. If proven needs exist, logistic centre(s)/freight village(s) could be established (in a later stage) in vicinity of the IMT.

II. Intermodal Terminal Functions

5. Besides the pure transhipment of loading units from one transport mode to the other, intermodal terminals have to perform several basic functions that any IMT is required to match, such as:

(a) Check in/out functions, such as check of documents, the security and damages of loading units and handling of dangerous goods and respective documents;

(b) Disposition, such as rail and truck disposition for loading and unloading, disposition of internal transhipments and movements and Terminal management system;

(c) Ingoing and outgoing train check;

(d) Intermediate buffer of loading units.

Besides the basic functions, intermodal terminals may offer a variety of additional functions, depending on the local demand, such as:

(a) Agency function for railways and operators;

(b) Storage of loading units/Depot;

(c) Customs;

(d) Trucking;

(e) Maintenance, repair, cleaning of loading units;

(f) Energy supply for temperature managed units (reefer or heated);

(g) Stuffing and stripping, etc.

III. Logistic Centres

6. Today, in most EU countries, logistics activities locate in or as close as possible to industrial (mostly railway-connected) zones. The prevailing “supply chain” concept makes nowadays the division between logistics and industry less and less clear-cut and significant as logistics services providers get directly and sometimes deeply involved in industrial production processes.

7. The main organizational options are the following:

(a) Centralized management: a centralized management in the site must provide clear information about the Centre, be contact and supporter for new projects, analyse new

requests to prepare future plans and deal with problems especially where coordination between different units or public authorities is needed;

(b) Complete on-site customs services;

(c) Railway connected warehouses and open storage areas;

(d) Well-managed in-terminal railway services;

(e) Information portals;

(f) Extended handling services;

(g) Responsive trucking services;

(h) Connection to ports (optional): Organization of cheap, rapid and regular connections to nearest port from freight village is another must;

(i) Offices and facilities: currently, nearly all the logistic companies settled at terminals, only have little offices, mostly modular units. Not only the warehouses, but also the logistic offices should better be located in freight villages. Offices for rent, public transport to city centre, banks, restaurants, parking lots and amenities for drivers, gas and service station for trucks are prerequisites for being a real logistic centre.

8. It is then clear, that services and facilities to be provided by a logistic terminal go far beyond those required for an IMT.

IV. Logistic Centres in Turkey

9. In Turkey, logistics centres are accepted as the base of modern transport and implemented under the leadership of the Ministry of Transport, Maritime Affaires and Communication (MOTMC). The development of a network of logistics centres is one of the targets of the Government listed in many policy documents, in particular the '2023 Strategy' as well as the 10th Development Plan 2014-2018.

10. The rationale behind this decision relates to the necessity of an organized planning and the connection of the industrial areas to the railway network. Railway connected logistic centres are assumed to be areas of attraction and optimized locations for the Turkish industry.

11. Logistics centres include facilities for container loading-unloading and storage areas; customs areas, brokers, agencies and buildings; dangerous and project cargo loading-unloading and storage areas; bulk cargo unloading areas; maintenance and fuel oil facilities; customer offices, car parks and truck parks; banks, restaurants, hotels; warehouses; train acceptance and conveyance facilities.

12. Turkish logistics centres were initially projected in areas that are close to organised industrial regions along with advanced road connections. Other considerations include the extension potential of existing rail terminals into logistics centres and also focusing on the removal of some existing terminals to more suitable locations that will enable them to serve better for cargoes and to improve urban traffic congestion problems since they are now stuck in inner locations as cities have grown.

13. The planning and the construction of logistics centres were formerly performed by Turkish State Railways. Recently, (as from July 2017) DG Infrastructure Investments (based within the Ministry) assumed both planning and the construction of such centres. One should bear in mind that future locations and feasibilities of the logistics centres are linked to the outcome of the ongoing Logistics Master Plan. Contrary to former application of which the costs of the building of centres were borne by the general budget earmarked

under Turkish State Railways' share; such construction can also be ensured through public and private partnership model such as BOT. However, general tendency is to leave the operations of the terminals in the hand of TCDD which is regarded as infrastructure manager (IM).

14. In addition to Ankara Logistics Centre founded in 2004, which was the first logistics centre built in Turkey, logistics centres were, as mentioned, planned by TCDD, to be primarily built in the following 20 locations where the freight transport potential is high due to the existence of organized industrial zones:

Balıkesir (Gökköy), Bilecik (Bozüyük), Bitlis (Tatvan), Denizli (Kaklık), Eskişehir (Hasanbey), Erzurum (Palandöken), İstanbul (Halkalı), İstanbul (Yeşilbayır), İzmir (Kemalpaşa), Kahramanmaraş (Türkoğlu), Kars, Kayseri (Boğazköprü), Kocaeli (Köseköy), Konya (Kayacık), Mardin, Mersin (Yenice), Samsun (Gelemen), Şırnak (Habur), Sivas, Uşak.

Figure 1
The locations of logistic centres in Turkey

15. Turkish Logistics Centres vary in size, spectrum of services offered, modes served and financial/funding schemes. Most of them are developed on the basis of various forms of Public/Private Partnership. Some of them are briefly described hereunder and recent important developments mentioned to complete the picture.

A. Halkali Logistics Center (Istanbul)

16. Halkali is the biggest and most developed railway terminal in Turkey. For many years it hosted almost all trains from/to Europe. It was closed to railway traffic in the summer of 2013 because of works for the renewal of the tracks to nearby Cerkezkoy Railway Station where trains were diverted. It re-opened in December 2015 in an improved location with more space and rehabilitated warehousing and other facilities. Still, the construction works on line and terminal have not yet been completed. Electrification and signalization in particular will probably not be ready before another year. As a consequence, the capacity is limited by the use of manual switches to only two trains per day. For the time being, only container trains have been handled.

17. It started to be re-used by two container operators, Metrans and Rail Cargo/Balo129. Metrans is a Czech,major rail container operator, part of the Hamburg Hafen und Logistik AG (HHLA Group). It provides now 6 weekly departures from its European rail hub of Dunajska Streda (Slovakia) to Turkey (it was 4 in 2014 and 5 in 2015) with a transit-time of about 5 days. Currently, there are 11-12 eastbound and 9-10 westbound container trains running every week between Turkey and Europe.

B. Gelemen Logistics Centre (Samsun)

18. Located about 15 km east from Samsun city centre, it is adjacent to the Kerimbey OSB (Industrial Organized Zone) and to the drybulk and general cargo port of Yeşilyurt. The total area is 350,000 m² and the target was to increase the traffic from 500,000 tons to 1,100,000 tons. Realizations were 854,000 tons in 2008, 597,000 tons in 2011, 600,000 tons in 2012 and 814,000 tons in 2015. It is an important transit point for loads to Russia and Kazakhstan. The long distance from Gelemen to the western side of Turkey and the difference in gauge of Russian wagons cause most of the loads to move in Turkey by truck and transhipment to Russian wagons in port which limits the performance of the logistic centre. Political developments in 2015 and the suspension of rail ferry services between Russia and Turkey, could negatively impact the activity of this LC in 2016.

C. Bogazkopru Logistics Centre (Kayseri)

19. Bogazkopru Logistic Centre is situated at 4 km from Kayseri Industrial Zone, and currently the longest container trains in Turkey are operated there from and to Mersin. The railway line passing through the city centre will be shifted to outside of the city which will support the development of the logistic centre as well. When all works will be finished, the total area will be 1.5 million m² and loads handled will reach 1.7 million tons (it stood at 700,000 tons in 2013). With its 2,000 TEU capacity terminal, fully-equipped with gantry crane, reach stackers, forklifts, and a 334 unit-strong versatile fleet of trucks and trailers, it serves as a major inland container depot in Central and South Anatolia for Global Container Carriers.

D. Kars Logistics Centre

20. Kars is the last big terminal in north-eastern Turkey. The existing railway connection to Armenia is closed. The other connection to Georgia-Azerbaijan has been under construction for the past 9 years. TCDD made plans for the construction of a LC based on the assumption Kars Terminal would play an important role after the opening of Baku-Tbilisi-Kars railway line. Back in 2012, Azerbaijan showed an interest to purchase land in Kars region for building the LC. In 2014, Azerbaijan renewed its interest and planned to build up and operate a logistics centre of 30 hectares in Kars.

E. Kosekoy Logistic Centre (Izmit)

21. Kosekoy was closed to railway traffic in 2012 due to the construction works of Marmaray and High Speed Train line. Before that, especially Omsan trains (swap body trains carryin automobile parts from Europe to Southern Marmara Region which contains auto logistics cluster and factories) and exports to Iran were being organized there. The terminal reopened in December 2013, but is still under reconstruction. When completed, the total area will be 765,000 m² versus 115,000 m² only in 2013. It is forecasted that the annual load flow will increase to 1.5 million tons in 2023 (from 600,000 tons in 2013). It is

planned to serve the Gebze-Izmit-Sakarya-Bursa regions. Reportedly, however, its future depends upon effective and cheap customs, trucking and ferry services (Kosekoy is few kilometres only from Derince where TCDD operates its rail ferry service to Tekirdag). In 2015, it handled slightly more than 370,000 tons.

V. Selection Criteria for the Location of Logistics Centres

22. For a successful terminal which meets the needs of the stakeholders and the logistics needs of the region, it is important to consider multiple factors which are related with financial (e.g. cost related), geographical (e.g. topography), physical, social and environmental issues. The main criteria taken into account for the planning of logistics centres in Turkey can be summarized as follows;

(a) Availability of land with the potential for expansion in the future;

(b) Geographical situation, convenient topography and the legal status of the land (Piece of land whether assigned for agricultural purposes, industrial expansion or settlement — for example, transformation of the land earmarked for agricultural purposes into logistics use are always problematic, since it usually entails bureaucratic adjustments, solid justifications and most of the times judiciary cases which is a quite lengthy and costly process);

(c) Proximity to railway trunk line and possible linkage to water and air transport network;

(d) Availability of intermodal transport services with effective infrastructure integration;

(e) Proximity to regional Organized Industrial Zones;

(f) The number of industrial facilities in the given region;

(g) Formal decisions on Urban Expansions and regional industrial development plans approved by Ministry of Industry;

(h) Economic development of immediate surroundings of the potential logistics centres;

(i) The outcomes of feasibility studies.

VI. Intermodal Freight Terminals (IMT) in Turkey

23. In recent years, there has been a proliferation of the concept and the construction of logistic centres in Turkey. Although, the services, facilities and handling equipment envisaged in the new premises (so-called logistics centres) do not match the internationally accepted applications, there is a strong tendency to call this nodal points as logistics centre. In order to clarify the issue and also raise awareness towards the necessity of intermodality (modal shift), DG Dangerous Goods and Combined Transport took the initiative and endeavor to introduce new concept and nodal facilities for certain regions where the full-fledged logistics centre would be redundant taking into consideration the flow of cargo, supply and demand structure and also the configurations of industrial settings.

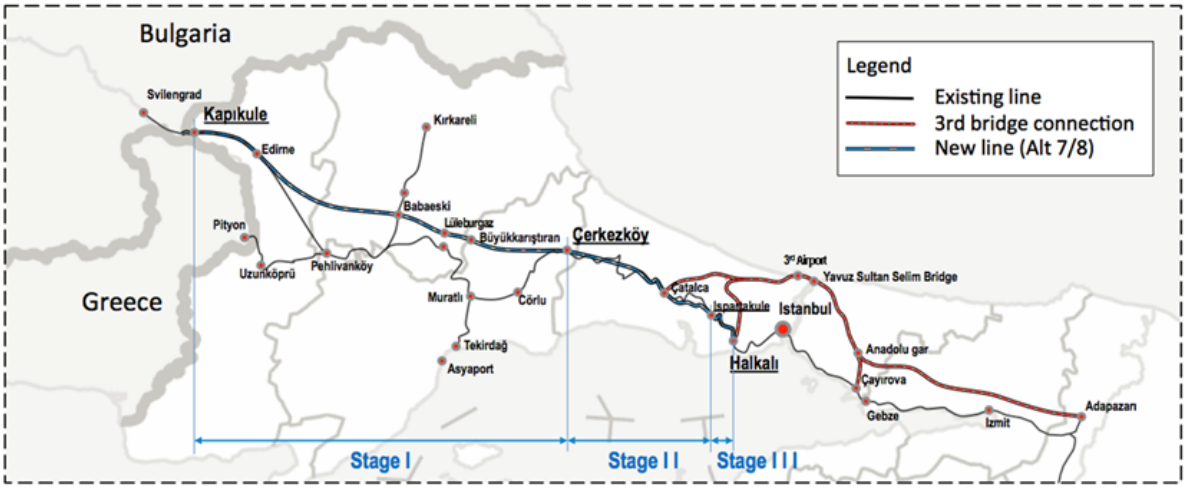
24. The transport organization and economic structure of the certain regions sometimes do not necessarily call for logistics centre but, small-scale terminal in where the modal shift is to be enabled efficiently could also cater to the needs of the local/international demands as well. Therefore, small investments and effective transport services could also contribute to sustainable modes of transport.

25. In this connection, it has been considered that one IMT model to be designed, and also to be constructed by making use of EU funds would be a good precedent for future investments to be channelled into such terminals in Turkey. In 2014, the construction of a model IMT located in the Thrace Region was included in Sectoral Operational Programme for Transport (SOPT) in order to secure financial support from European Union.

26. The SOPT financial contribution foresees implementation of small to medium-sized infrastructure investments, which should, besides their direct effect, serve also as a good example for future intermodal infrastructure investments in Turkey by financing preparation and construction of a new intermodal freight terminal.

27. Considering the above and aiming to achieve a synergy effect with investments planned in other SOPT activities, the Operational Programme identifies the five areas in the Thrace region as a possible location for the new terminal – where the planned Halkalı-Kapıkule railway line (new route-linking between the EU and the Turkish railway network) will run nearby.

Figure 2
New Halkali-Kapikule Railway Line (with possible IMT locations)



28. The necessary preparatory studies (technical documents such as Cost-Benefit Analysis (CBA), Feasibility Study (FS), Environmental Impact Assessment (EIA), tender dossier, etc.) are being undertaken under the SOPT. Works are planned for the next financing period (2017-2020).

29. The layout and dimensions of the ideal IMT differ based on its functions.

30. For the local terminal function, a terminal with tracks served by mobile cranes (reach stackers) will be sufficient, especially in the beginning. For the HUB function, a portal crane which can directly transfer between trains is required. Thus, in this needs assessment the basic layout and terminal is related to a portal crane solution which provides flexibility to serve both functions.

31. Ideally the terminal should have:

(a) Connections to the mainline at both ends;

(b) Space for storage of intermodal transport units;

(c) Storage/shunting tracks for wagons/wagon sets;

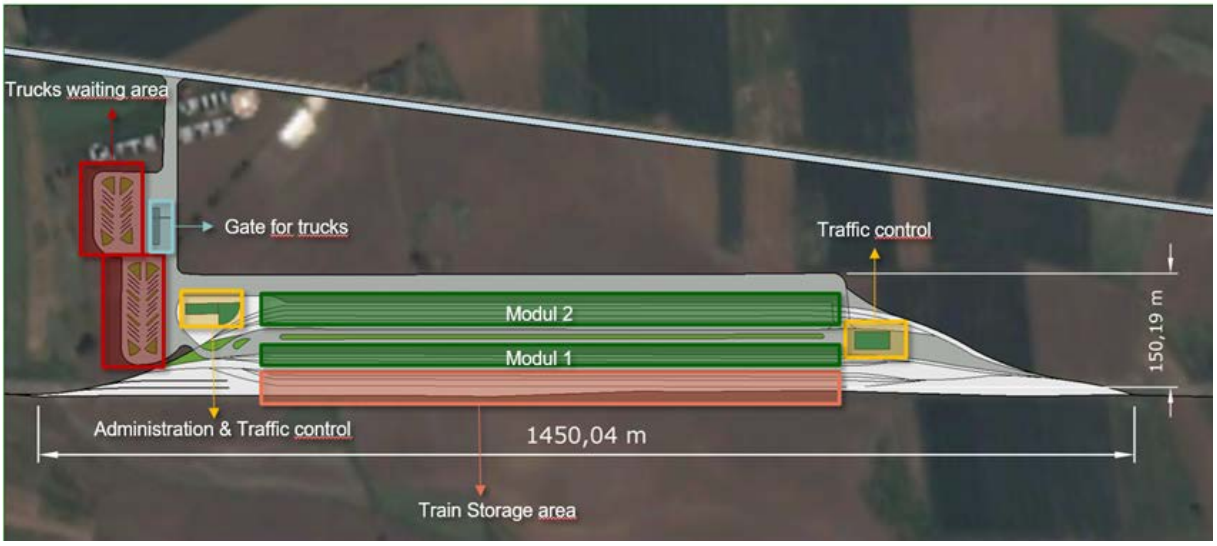
(d) A repair unit for minor repairs of transport units and wagons;

(e) Some offices, social facilities for terminal workers and drivers;

(f) Waiting areas for trucks.

32. This equates to around 0.3 km², and depending on any further analysis it may be prudent to increase the land expropriation for future expansion. For the function of HUB terminal, the area for a second terminal module is needed as it will include a connection to domestic intermodal network. In case that future needs for extra functions might occur (such as storage and customs areas) in the future, the foreseen additional area should be fenced and prepared in the rail and road layout of the terminal to avoid unnecessary costs and adaption works during expansion.

Figure 3
Exemplary ideal IMT layout planned to be implemented



33. The number of tracks depends on the available space and the number of trains to be handled in the terminal. If “standing operations” is chosen, for every couple of trains there is one handling track needed. That means, the train arrives, it is loaded and/or unloaded during the day and it leaves. If “flowing operations” is chosen, the train arrives, it is completely unloaded, ITUs are buffered (which leads to many additional handlings), wagon set is parked outside while another train is handled at the same track. When loading time comes, the wagon set is again shunted inside the terminal, the ITUs are loaded from the buffer on the train and the train leaves.

34. The estimated number of 14 pairs of trains per week means around 3 pairs of trains per working day. So for a smooth handling of trains at least 3 tracks would be required under the crane. Standard modules are planned and constructed with 4 to 5 train-long tracks and would provide terminal capacity also for the forecasted growth in the first years.

35. Terminal capacity can be increased by flow operations (in this case parking tracks are required), extension of operating time, installation of an additional (3rd) crane and in the next phase — by building a second module in parallel. Preparation works like land acquisition, ground preparation, fencing, layout of operations control and signalling should always consider such plans). Waiting tracks for locomotives, tracks for spare and damaged wagons (ca. 1 per train) and an incident track for dangerous goods (with access for fire brigade, sealing from ground water etc.) shall also be foreseen.

VII. Conclusion

36. The mentioned logistics centres and IMT operate within the national/international logistics system. However, the strategy and planning of such terminals should be put in a more wider perspective and should be linked to macro transport policies such as logistics master plan.

37. The preparation of logistics master plan is underway and the final version of the plan will be revealed in September 2018. This master plan will also include logistics map of Turkey which involves the integration of transport infrastructures, production and consumption centres, combined transport corridors and logistics centre networks in a national offer of logistics services for national and international operators and producers. the map will connect the logistics centres of Turkey designed in accordance with the method provided in the Master Plan, by means of combined transport corridors