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THE CONCEPT, DEFINITIONS AND FUNCTIONS OF DRY PORTS

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Abstract: *Nowadays great attention is being paid to the development of intermodality, since it is a solution for many existing traffic problems. The quality of services in intermodal transportation can be improved by not only enhancing port facilities but also by developing the hinterland terminals and in this way strengthening the role of the port. A big impact on the ports' role in the transport chain can be made by developing Dry Ports, which can help to relieve congestion-related problems in the port, as well as increase the capacity and reliability of transportation. A Dry Port is an intermodal terminal situated in the hinterland servicing a region connected with one or several ports by rail and/or road transport and is offering specialized services between the Dry Port and the overseas destinations. Normally the Dry Port is container- oriented and supplies all logistics facilities, which are needed for shipping and forwarding agents in a port.*

Keywords: *Dry Port, Intermodal terminal, Inland terminal, definitions of the Dry port, functions of the Dry port, operational procedures of the Dry ports.*

At present, when the freight transport sector experiences very high volumes, congestion, pollution and other logistics-related problems arise due to the increasing levels of traffic. Therefore, there is a need for new solutions in the transport sector. It is essential to develop alternative, more flexible transport systems now in order to avoid critical bottlenecks in the future and to mitigate current and possible future environmental problems associated with the prevailing reliance on road transport.

The Dry Port is a rather new concept, therefore this name is rarely known even in the logistics industry. Sometimes different definitions are used to describe the concept, therefore, it is necessary to review existing Dry Port definitions, analyze the concept more deeply and find specific features, differentiating Dry Ports from other transport terminals.

There are various types of inland terminals which are facilitating the goods movement in the transport chains. However, the terminology concerning inland terminals is often raising confusion due to the lack of strict determination of various names. Different names may be used to describe the same terminal type, and the same expression may be used to describe different facilities.

For instance, in Europe the name inland port is given for the terminals located on the inland waterways and providing usual port services. In contrast, inland ports in America do not necessarily

have to be located on the inland waterways. The main idea is that inland ports would be the multimodal sites and would promote the value-added services, in this way facilitating the goods flow.

There is no official Dry Port definition registered. Therefore, several versions can be found in the literature. Transport terminals having different functions than the ones named in the literature are sometimes containing the term Dry Port in their official name.

The Dry Port concept is an inland intermodal terminal that is directly connected via rail and/or truck to one or more water ports, and which can substitute certain port services in certain areas. The main aim of establishing a Dry Port is to perform certain container handling operations that have undesirable temporal and financial implications when done at a congested seaport. According to this point of view the main advantages of a Dry Port:

- In a Dry Port container handling costs should be lower inasmuch as the land and the labour cost are lower.
- The spacious facilities together with the intermodal-centric design of the inland port accelerate the operations which are leading to positive monetary implications.
- From a network design point of view, the utilization of Dry Ports can decrease the generalized cost of dispatching containers [1].

Other specialists consider that the Dry Port is a particular type of inland intermodal terminal, together stressing the importance of port's functions employment at the Dry Port: a Dry Port is an inland intermodal terminal directly connected to a seaport, with high capacity traffic modes, where customers can leave/collect their goods in intermodal loading units, as if directly to the seaport. Additionally to the basic services, transshipment, that a conventional inland terminal provides, such services as freight storage, consolidation, storage of empty containers, maintenance and repair of containers, customs clearance, and other services should be available at full-service Dry Ports [2].

The definition suggested by United Nations Economic and Social Commission for Asia and the Pacific describes a similar, yet more detailed concept: Dry Port refers to a defined inland location for the consolidation and distribution of goods that has functions similar to those of a seaport, and which includes customs clearance services. Seaport functions that could be expected to be typically present at these Dry Ports include container (and possibly bulk) handling facilities; intermodal infrastructure connections; a geographical grouping of independent companies and bodies dealing with freight transport (including, for example, freight forwarders, shippers and transport operators); and the provision of accompanying services such as customs inspections, tax payment, storage, maintenance and repair, banking and information communication technology connections[3].

Furthermore, it is necessary to highlight that Dry Ports are existing as the mean for organizational and business strategies in a logistics chain: Dry Ports might be considered as "extended gates" for seaports, through which transport flows can be better controlled and adjusted to match conditions in the port itself. Thus the terminals can help to improve land access to ports in both physical and psychological terms. This means that a "Dry Port" is more related to the organization and the service and business needs of the transport system, than related to a physical plant [4].

The given definitions are similar, especially that they all stress the similarity of port's and Dry Port's functions and transshipment function. Additionally, a Dry Port is described usually as container-oriented terminal; however, bulk handling function should not be strictly excluded in all the cases, but considered if there is a need for it in certain area. To generalize the main idea of a Dry Port concept and to have the leading definition for this report, the following definition has been established: a Dry Port is an intermodal terminal situated in the hinterland servicing a region connected with one or several ports by rail and/or road transport and is offering specialized services between the Dry Port and the overseas destinations. Normally the Dry Port is container-oriented and supply all logistics facilities, which are needed for shipping and forwarding agents in a port. Additionally, the possibility

to handle bulk cargo should not be strictly rejected and should be considered according to the need - in case there is demand and potential for using this function.A Dry Port can exist as a separate terminal, or it can be a fully integrated part of a logistics center or logistics platform. It can start its development as a single Dry Port and later expanded considering area and functions; or the other way around - customs clearance and other services characterizing Dry Ports can be introduced in one of intermodal terminals in the facilities of a logistics center/platform, and thus this terminal would become a Dry Port. In both cases, the overall facilities could be called logistics center/platform with an integrated Dry Port; then the Dry Port would supplement activities of logistics center/platform [5].

Dry Ports can be built from scratch or it may be developed from an inland terminal including some additional facilities that are characteristic for Dry Ports. If an inland terminal fulfills the following conditions it can be theoretically counted to be a Dry Port: terminal should have direct connection to a seaport either by rail or by road; terminal should have a high capacity traffic mode (i.e. rail); terminal should offer the same types of facilities as can be found in a seaport [6].

The realization of such conditions would mean that the customs services would be available at the terminal. That would allow making the goods ready for overseas travel already in a Dry Port. Thus, the cargo could be transported through the port without long waiting time and loaded directly onto the ship. The same idea would be relevant for the imported cargo. When the port is facing capacity problems, goods do not have to wait for the services at the port - after unloading from the ship they can be transported directly to a Dry Port. In that way ports are provided with extra available areas and their capacity is increased. Following functions should be performed in a terminal:

1. Transshipment of cargo between different transportation means. This function requires having special equipment in a terminal to be able to transfer units from one mode to another. Good co-ordination of transshipment operations is necessary in order to make the operations less time-consuming. In the Dry Port case it is most often the shift from rail to road or vice-versa. In exceptional cases a Dry Port may also include a waterway connection, when the cargo from port to the Dry Port is shipped by barge.

2. Sorting. When the goods are transported by a ship, containers have to be sorted in the receiving port since a number of supply chains, which have different points of destination, are concentrated in one ship. However, in order to have more space in the port area, which is sometimes very congested, distribution functions of port can be outsourced to the inland terminal - Dry Port. In this way ports are enabled to limit the possible port-related diseconomies of scale appearing from the growing volume of maritime transshipment [7].

3. Storing. The storing of goods can take different time periods in a Dry Port. When it is mainly used for distribution service, then the goods are stored for a long time period. Moreover, the space in a Dry Port hinterland can be used for the long-term storage of empty containers and waiting units. When the goods are transshipped from one transport mode to another in a Dry Port, or the goods are supported by other services, they are stopped for a shorter period of time, short- term storing is used. Storing service is very important for the transport networks as some regions naturally receive more containers than they send and vice versa.

4. Management of container flows to different ports. This function is relevant when a Dry Port has the connections and communication with several relatively close and the same type of ports (regarding the type of cargo they are handling). When one port at a certain time is too busy to accept the cargo, the shuttle train may be directed to a less congested port.

5. Consolidation of individual container flows. The containers from different shippers can be transported to a Dry Port, loaded on one shuttle train and transported to the port or far inland destination.

6. Reduction of pre- and post-haulage of road transport and expansion of rail transport. Dry Ports are usually linked to the ports by rail. That brings the possibility to consolidate the goods from different shippers at a Dry Port and transport them further to the port by rail. In this way Dry Ports are promoting traffic on railways rather than roads, which could bring significant environmental benefits.

7. Offering special- and extra services. One of the most important special services is customs clearance. When it is done in a Dry Port instead of the seaport the waiting time is reduced in the port[5].

Most of the procedures during different operations at a Dry Port are the same as in other kinds of inland intermodal terminals, except the customs clearance procedures (if the client requires for customs clearance service). The very basic operational activities of a Dry Port related to the customs examination is to receive import containers (or another kind of cargo) arriving on trains, to unload and stack them, inform the importer, carry out the customs examination, and afterwards load the container onto a road vehicle to deliver to importers' customers; or appropriate operations for export containers.

When a transport chain, based on the shipping, does not contain a Dry Port, then the operational procedures can be the following: the chain starts from the cargo being either containerized or palletized at shippers' warehouses. Then it is transported to the consolidated warehouse by truck where cargo is placed into containers if it is not containerized yet. Afterwards containers are transported to the customs via rail or road and to the port of departure, where all port related operations are accomplished and the cargo is shipped to another port [8]. At the cargo at a port of reception is unloaded and transferred to the storage yard where the customs clearance is provided. After that the containers are moved from the port to transshipment facility or to the consignee's warehouse [8].

When a Dry Port is a part of the transport chain, the possible scheme of the operations is the following. For exports, the goods are either containerized or palletized at the shippers' warehouses and transported to a Dry Port where cargo is placed into containers in the case it is not done previously. The formalities of export customs are completed and containers are loaded on the train and dispatched by rail to the port of departure. All charges are collected at the Dry Port, also all customs procedures (which at present can be applied electronically) are completed at this point and the exporters or importers do not need to do anything at the sea port.

For imports, containers are unloaded from the ship at the port of reception, certain operations are being carried out and containers are being moved to a Dry Port. In a Dry Port the customs clearance is executed, afterwards, other services are carried out. Finally the containers are dispatched to consignees' warehouse. Activities in the Dry Port can be divided in the following main groups: receipt and dispatch of cargo; truck operations; loading/unloading of cargo/containers to and from trains; customs clearance; gate checks and security; storage of cargo and containers; information flow and communication; record keeping and data storage; billing and cash collection[6].

Important procedures in a Dry Port are related with import and export clearance. Permission for customs clearance service implementation in a Dry Port can be authorized by the customs authorities. Moreover, a number of procedures have to be executed in order to get the permission for customs clearance zone's implementation in transport terminals.

The Dry Port will be the link in the transport chain, which helps to improve the services of the

Transport complex of the country, if it is an integral part of the Complex. Therefore, certain features should be characteristic

for the Dry Port and connecting infrastructure, certain actions should be executed in order to

integrate the Dry Port.

- Dry Ports should provide such services, which can supplement the ports. Especially in the case of port's congestion, the services or functions which are taking relatively long time should be outsourced to a Dry Port. Examples of services can be customs clearance, sorting, long/short time

storage, etc. In this way the port is relieved from the congestion and the transport chains become more efficient and lean.

- A Dry Port should be beneficial regarding supply chain efficiency and effectiveness. The Dry Port can also contribute to a better environmental performance of the total logistics chain.
- A Dry Port should have high capacity, modern equipment and infrastructure, as well as adequate storage capacity in order to be able to create benefits for different actors.
- The potential customers (freight forwarders or shippers) will be encouraged to integrate a Dry Port in their transport chains if this link is able to suggest added value, which can be created by the possibility to choose from the number of tailored services in the terminal, services adding value to the goods (e.g. labeling) or by providing certain services which are usually provided in the ports and in this way solving the problems regarding the lean flow of goods.
- High capacity and efficient hinterland infrastructure should connect a Dry Port with the port.
- The suitable location should be selected in relation to the distance from the port, technical and economic aspects. These aspects can help to evaluate the costs and competitiveness of the intermodal transport. However, not all areas are suitable for Dry Port implementation. For example, it can be difficult to find suitable location for building a Dry Port in Norway due to its landscape and scale of Norwegian ports.

Information and communication technologies should be a mean for effective co-operation between different actors in transport chain (e.g. ports, Dry Ports, rail operators, etc.) and for availability of customer friendly services.

Management of operations in a Dry Port should be based on the information and communication technologies in order to enable easier and advanced co-ordination and management of transport operations, and to ensure safety, security and reliability.

Governance of a Dry Port has to ensure transparency and equal treating of the customers and equitable infrastructure charging.

Several transport modes should be served in a Dry Port.

The problem of different labeling of the sea and rail transport should be solved.

The Dry Port should be considered by: the port cities where the goods from the ports are transported only by road; congested ports; national transport policy makers and planners of the countries, which are supporting the environmental efficiency; freight forwarders, looking for efficient and value adding nodes in the transport chains, and other actors of the logistics sector.

Dry Ports can be significant facilitators of development of efficient transport sector of the country. All the listed characteristics are important for Dry Port implementation as a link in transport chain. However, they cannot be applied equally in all cases. The degree of importance for implementation of each feature depends on the individual case of the Dry Port. Dry Ports can become an important link in transport networks while also acting as a clustering point for ports.

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ПОНЯТИЕ ЗА СУХО ПРИСТАНИЩЕ, ОПРЕДЕЛЕНИЯ И ФУНКЦИИ

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Ключови думи: *сухо пристанище, интермодален терминал, вътрешен терминал, дефиниция за сухо пристанище, функции на сухо пристанище, експлоатационни процедури на сухи пристанища.*

Резюме: *Сега се отделя голямо внимание на развитието на интермодалния транспорт, тъй като това е решение на много от съществуващите проблеми в трафика. Качеството на услугите в интермодален транспорт може да се подобри не само чрез укрепване на пристанищните съоръжения, но също и чрез разработване на терминали за вътрешността на страната, като по този начин де повиши ролята на пристанището. Голямо влияние върху ролята на пристанищата в транспортната верига може да окажат развиващите се сухи пристанища, което може да помогне за облекчаване на проблемите, свързани с претоварването в пристанището, както и увеличаване на капацитета и надеждността на транспортирането. Сухото пристанище е интермодален терминал, разположен във вътрешността за обслужване на региона, свързан с едно или няколко пристанища чрез железопътен и/или автомобилен транспорт и предлагщ специализирани услуги между сухото пристанище и отвъдморските дестинации. Обикновено сухото пристанище еориентирано към контейнери и предоставя всички логистични съоръжения, които са необходими за корабоплаването и спедиторите в пристанището.*