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DIRECTIONS IN THE MODERNIZATION OF MODERN SEAPORTS

Summary. Growing trade and the globalization of production and consumption have contributed to the increased importance of seaports. Maritime transport of bulk cargo is competitive. The carriage of general cargo is also growing, mainly through the widespread use of containers. A particularly large growth in cargo throughput has taken place in seaports of developing countries. Maritime policy aims at improving the efficiency of sea transport in Europe and the world, while ensuring its long-term competitiveness. This can be achieved by the dissemination of technologies leading to increased productivity, minimizing negative environmental impacts and creating conditions for effective operations and integration of ports in transport chains.

Keywords: maritime ports; port logistics.

1. INTRODUCTION

Maritime logistics is particularly crucial in the EU, where maritime transport continues to develop. It does and will play a key role in developing transport of the EU, especially if we bear in mind that shipping accounts for approximately 90% of freight volume. In addition, passenger transport by sea is developing rapidly, which makes logistics even more essential [3,8,10].

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2. THE ROLE OF SEAPORTS IN THE TRANSPORT CHAIN

Maritime transport is the most common mode of international transport, whose function is to move cargo and passengers by ship. Its basic components are seagoing ships and seaports located by the sea or on the ocean coast. The ports and their waters, land territory and infrastructure have one primary function; transfer seaborne cargo to land transport vehicles (Figure 1).

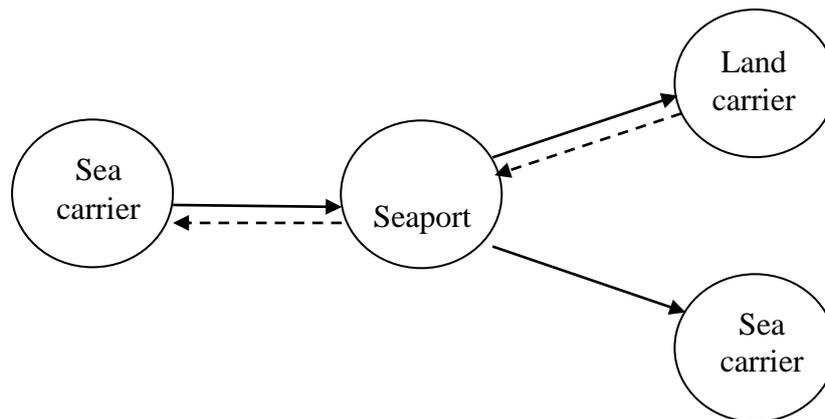


Fig. 1. A seaport as a link in the logistics chain

The port area includes two principal parts [2]:

- water area, i.e., aquatory (basins and channels, outer port and roadstead)
- land area or territory

Port infrastructure and its parts are characterized by:

- long-term construction and use
- a significant predominance of fixed costs over variable costs in the process of construction and use
- high capital intensity
- immobility
- multiple functions
- limited adaptability

Except for certain goods such as oil, gas, bulk cargoes and cars, the maritime forwarding market has been practically dominated by container transport, which is increasingly common throughout the world. This is partly due to one advantage of containerization: it allows us to reduce the turnaround time in port. Besides, port operations associated with loading and unloading container ships do not require ports to have building complexes and costly warehousing infrastructure [9].

With the onset of the container era in shipping, however, some seaports have faced the need to modernize and convert their infrastructures. Directions associated with that change will be illustrated with the case of the Port of Stockholm.

3. CHARACTERISTICS OF THE PORT OF STOCKHOLM

Located 84 km from the sea, Stockholm is the largest seaport on the east coast of Sweden. The port is capable of accepting ships drawing up to 11 m. With Kapellskar and Nynashamn, it makes up the so-called Stockholm Ports. The port in Kapellskar (90 km north of Stockholm, 4 km from the sea) and Nynashamn (60 km south of Stockholm, 2 km from the sea) are external ports; owing to short approach channels, they are complementary to the central port.

Annually, the Port of Stockholm handles, on average, a steady number of 4,700 vessels. Total cargo throughput of the port is estimated for the last 10 years at approximately 5 million tons with a decreasing trend [5]. The reason for this is the difficult access for large vessels due to a significant distance from the sea and a dangerous fairway. However, in the last decade, ferry traffic has become a vital part of the tourist industry in Sweden's capital city. A strong growth in tourism in recent years has led to more visits from ferries and cruise ships, and a 3005 increase in the number of passengers since 2000. Stockholm is currently considered to be the biggest and most popular tourist destination among the Baltic ports.

4. CONVERSION AND MODERNIZATION OF THE PORT OF STOCKHOLM

In 2006, the city authorities in Stockholm approved the reconstruction and modernization of the Stockholm Ports. It was decided that Stockholm would only handle ferries and passenger ships. Cargo-handling functions were supposed to be taken over by the Kapellskar, Nynashamn and new Stockholm Norvik Ports [5].

The Port of Stockholm - consisting of four parts: Hjorthagen, Vartahamnen, Frihamnen and Loudden - was to be reduced to two parts: Vartahamnen and Frihamnen. The other two parts were handed over to the city for residential developments and office buildings, to be inhabited by about 12,000 people and create around 35,000 jobs. Vartahamnen would only operate ferries and passenger ships, while Frihamnen would serve ferries (Figures 2 and 3).

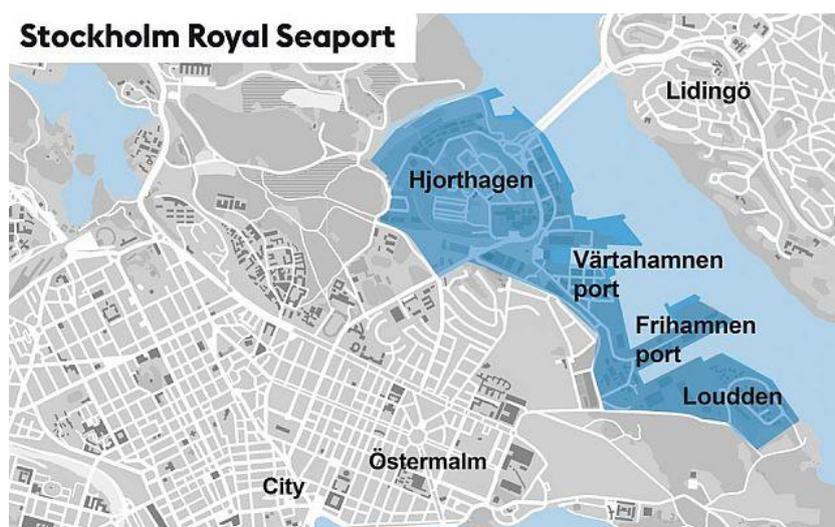


Fig. 2. Area of Stockholm Royal Seaport [4]



Fig. 3. View of Stockholm Royal Seaport [4]

The construction of Stockholm Norvik Port in the vicinity of Nynashamn started in 2008. The port for container and roll-on/roll-off traffic had the following assumptions:

- the new port to cover 600,000 m²
- ships' maximum draft to be 16.5 m to attract the largest vessels entering the Baltic Sea
- an annual transshipment of about 300 000 containers



Fig. 4. Stockholm Norvik Port [4]

5. CONCLUSIONS

From the technical and economic points of view, ports are transport junctions acting as a link between sea and land transport. The strategic importance of ports in international trade and transport results mainly from their role as the starting and finishing points of maritime transport, a vital link in the land-sea transport chains, which can handle the greatest quantity

of cargo [1]. The primary condition in which the port can perform the presented functions is easy and quick access from the sea and the land. Modern ships are getting increasingly larger, as are operating costs. Therefore, a large vessel passage from the roadstead to port should take up to 1 h, while the turnaround time of a container ship should be as fast as possible, possibly less than a day. Forwarders and shipowners prefer ports that offer such conditions of service.

The authorities of the Stockholm Ports, in developing a programme of modernization and conversion, have chosen the right path in order to provide efficient cargo handling. The transfer of the cargo-handling function to the outer ports (no more than 1 h from the sea) has boosted its attractiveness to all participants in the transport process through a significant reduction in ship operating costs. Expansion and upgrading of road and rail networks have also improved the delivery and reception of goods from ports.

The conversion of most of the Stockholm Port areas into construction sites, which are attractive due to their proximity to the city centre, has already generated substantial income for the city and many new jobs.

This is how Polish ports should be upgraded. Unfortunately, only development plans for Gdańsk, including moving outward, seem to be following in Stockholm's footsteps.

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