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Deep-Water Ports for Germany

by Heino Greve, Hamburg *

The world-wide trend in bulk shipping towards larger-sized vessels has in recent years evoked a discussion in the Federal Republic of Germany about the advisability of providing technical facilities for handling giant ships on the German coast. Such facilities do not yet exist. The issue retains great topical interest because more and more mass carriers drawing too much water to enter German ports with a full load are coming into use or are under construction.

When the discussions about the need for German deep-water ports for handling giant ships¹ began, the authorities responsible for infrastructure investments did not possess the information important as material to assist in taking decisions. This information has since been provided by the Deep-Water Port Commission. This body was set up in 1969, on a suggestion by Hamburg, by the Federal Minister of Transport and the Ministers and Senators responsible for economic matters and transport in Bremen, Hamburg, Lower Saxony and Schleswig-Holstein, and given the task of preparing information to help to determine "whether there is a need for building deep-water ports on the German coast and, if so, where they should be built". The Commission has carried out its task and presented its final report².

The Need for an Economic Approach

The Deep-Water Port Commission deemed it necessary to take transport, regional and national economic considerations into account to provide preliminary work for a comparison, as far as possible, of all the material advantages and drawbacks of the investment alternatives. The economic approach of the Commission finds expression in its view that the construction of deep-water port facilities should be contemplated only if it was to be expected that economical use would be made of them.

This approach of the Commission is not as obvious as should really be assumed. It is common knowledge that intuition and emotion, rather than

rational calculation, play a great part in decisions on seaport investments. Intuitive decisions, however, involve a danger of misdirecting investments. The growing demands made on the limited financial resources of the state demand more urgently than ever that optimum use shall be made of them. The chance of achieving this aim is greatest if rational consideration plays as great a part as possible in the decisions. It must however be noted that generally recognised methods of investigation for rational overall assessment of complex seaport investments are lacking, for the available methods, such as utility versus expenditure studies, are of limited evidential value because of their many unresolved methodical and practical problems. This is particularly true of the assessment of regional economic effects.

In view of these difficulties, the rational assessment of seaport investments is most likely to be assisted by abandoning any pretence at accuracy by methods of allegedly scientific precision, compiling and comparing as many investment advantages and drawbacks as possible, and if there is no other possibility, applying qualitative judgment. With this point in mind the work of the Deep-Water Port Commission must be regarded as preparatory work for a decision.

Use of Giant Ships for Moving Mineral Oils

The studies of the Deep-Water Port Commission have shown that the use of giant ships in the German coastal area is a practical proposition for imported mineral oils and iron ore only and not for any other products. That is the conclusion from projections of future import requirements for the Federal Republic and assumptions regarding the average length of transport routes, measures for the extension of the ports of shipment and users' locations. These justify the assumption that

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¹ Conforming with the definition of the Deep-Water Port Commission, the term "giant ships" is used here for vessels substantially in excess of 100,000 tdw.

² Report of the Deep-Water Port Commission, January 1972. Passages from the Report are reproduced here textually or almost textually without special reference.

giant ships will at best be used in isolated cases only for imports of bauxite, coal and cereals.

The projections of required imports, supplemented by assumptions about the future trend of transports through the Federal Republic to countries in eastern and south-eastern Europe, were based on the present production and transport structure and discernible development trends. Such a supposition may be regarded as unrealistic in the case of the imports of iron ore because the locations of the metallurgical plants are expected to change. The Deep-Water Port Commission presumes that there will be steelworks overseas and on the coasts of Europe as well as at the traditional inland localities, according to the locational requirements of the steel industry at the time.

In cooperation with ship-yards, shipping companies and the petroleum industry, the Deep-Water Port Commission ascertained that a size of 250,000 tdw., drawing 20 metres of water, has become normal for tankers. Deep-Water port projects for mineral oil imports must for the foreseeable future be based on the requirements of this size of tanker because in the North Sea, unlike other seaways, the particular topographical conditions seem to rule out a further continuous growth of ships' size. Larger ships could not pass through the Straits of Dover and would have to enter the North Sea north of Scotland, where the costs of transport per unit of cargo would not be lower than in 250,000 tdw. vessels unless the tanker size exceeds 700,000 tdw. which involves a draught of 29.5 metres. There is however no indication yet of such large tankers coming into use.

Iron Ore Transportation

Ships' sizes of 175,000–250,000 tdw. must be expected to be used within measurable time for imports of iron ore. Today German ore shippers already operate ore carriers of up to 150,000 tdw., and in some ore shipping ports of importance for supplying the Federal Republic extensions to suit 200,000, and in a few cases 300,000 tdw., vessels are being planned. It does not matter whether the proposed extensions are made with a view to voyages to Europe or, for example, to Japan. As long as there are ports in Europe which can cope with such giant ships, thanks to natural advantages or owing to extensions, the question must be faced whether a deep-water port should not also be constructed in Germany for unloading iron ore.

German deep-water ports would have to compete with other deep-water ports, existing or projected, on the North Sea coast. A large part of the import

tonnages could, and is already being, imported through these on attractive terms. That holds good in particular of Rotterdam, the port which currently handles most of the German ore imports. The reason is the location structure of the German metallurgical industry. Even a highly efficient German deep-water port could not attract more than a minor part of the ore imported for German industry. The Deep-Water Port Commission was therefore able to disregard such extensions as would merely allow non-optimal use of giant ships, eg: by lighterage or calling at several unloading ports in succession. This applies to imports of iron ore as well as mineral oil.

Possible German Deep-Water Ports ...

Tankers and ore carriers of the aforementioned sizes carrying a full load cannot be unloaded anywhere on the German coast. The Deep-Water Port Commission's examination of the opportunities for port extensions indicated that an extension of the existing harbours on the Ems, Weser and Elbe rivers (apart from the Outer Elbe) to accommodate vessels of much more than 100,000 tdw. cannot be recommended because of the very high cost of such extensions and also for nautical reasons. The enlargement of the most favourably placed ports would at best be technically possible to the extent that ships of up to 150,000 tdw. could reach them coming in on the tide. The expenditure necessarily involved in the extensions and current maintenance however would greatly exceed the cost of extending Wilhelmshaven or constructing a new project at Neuwerk/Scharhörn³, in the Elbe estuary, with a view to accommodating ships of up to 250,000 tdw. For vessels of much more than 100,000 tdw. these two projects appear to be the only feasible ones near mainland if the extension is to meet economically and technically acceptable conditions there being no other alternatives.⁴

An offshore harbour near Heligoland would be feasible as an alternative to constructing a German deep-water port. It would, however, be so expensive that the implementation of this project need not be considered, even if one day 700,000 tdw. tankers were to be used in the North Sea; for an offshore harbour capable of accommodating such ships would cost much more than

³ Cf. H. Laucht, "Neuwerk/Scharhörn, Industriehafen am tiefen Wasser" (Neuwerk/Scharhörn, a deep-water industrial port), No. 10 of the publication series of the Department of Economic Affairs and Transport of the Free and Hanseatic City of Hamburg.

⁴ This does not imply that the projected extensions for mixed-cargo traffic on the Lower Elbe upstream to Hamburg and on the Outer Weser upstream to Bremerhaven, which would of course improve also the opportunities for bulk transports, are to be regarded as uneconomical. Economic considerations however hardly justify deepening the Outer Weser and Lower Elbe to more than 13.5 or 14 metres below MLWST. An extension within these limits appears necessary, chiefly because of the growth of container ships.

a proportionate extension or even the construction of a completely new harbour as at Neuwerk/Scharhörn, and this without providing for the cost of large industrial areas, which is included in the Neuwerk project.

... Wilhelmshaven or Neuwerk/Scharhörn

Relatively favourable opportunities already exist for importing mineral oils through German ports as tankers of up to 200,000 tdw. can unload in Wilhelmshaven already today. From 1973, when the current extensions in the Jade river up to Wilhelmshaven will have been completed it will be possible to accommodate tankers of up to 250,000 tdw., which means that Wilhelmshaven will be able to meet all foreseeable requirements, provided the transit and storage facilities of the mineral oil industry and inland connections are brought into line with mounting quantitative needs. It is worth mentioning that these investment decisions on the Jade extension were preceded by a joint decision of the Federal Government and the North German Lands bordering on the North Sea to make Wilhelmshaven the German deep-water port for the trans-shipment of oil. Together with the projected pipeline from Wilhelmshaven to Hamburg, conditions will thus be created which will enable the refineries located in Hamburg to avail themselves of the cost savings of very large tankers. They could not have been achieved on economically acceptable terms by deepening the Lower Elbe.

A different situation as regards new decisions will be faced only if and when the use of tankers of about 700,000 tdw., becomes attractive in the German coastal zone. The extension of the Jade for such ships would not be technically or economically recommendable. The extension would involve an even higher expenditure than an offshore harbour, costly though the latter would be. On grounds of expenditure and because of other advantages for the development of the regional economy, Neuwerk/Scharhörn would be the only feasible German deep-water port for 700,000 tdw.

vessels, should such ever be considered necessary.

As Wilhelmshaven is available as a German deep-water port for mineral oils and will be adequate as far ahead as one can see, the reflections about German deep-water ports can for the time being be confined to the problems which arise from the use of giant ships for moving ores. These requirements can be satisfied only at Wilhelmshaven or by the construction of an industrial harbour at Neuwerk/Scharhörn. In addition to transshipping facilities, large industrial areas would coincidentally be provided at Neuwerk/Scharhörn along the very deep waterway – 1,250 hectares in the first stage of construction and up to 6,000 hectares later. Wilhelmshaven would not offer quite the same chances for improving the structure of the regional economy; for the availability of adequate areas adjoining very deep water is an essential prerequisite to the acceleration of regional economic growth through the establishment of industries. For this reason it must be counted a drawback of Wilhelmshaven that a large part of the industrial area adjoining very deep water which is now available or to be developed has already been disposed of under existing plans. Attractive opportunities for the provision of additional areas of this kind are offered in the Federal Republic by the Neuwerk/Scharhörn area alone.

Transshipment Must not be Over-rated

An aspect to be borne in mind when assessing German deep-water ports is that the construction of another ore transit installation adjoining deep water must be expected to draw away business from the traditional German mineral ports. This loss of turnover need not however be considered a disadvantage of the new transshipment facilities. Such losses will occur in any case, even if no new German ore transit facilities are built, since Rotterdam competes with the German ports whatever happens and more cargo will probably be routed through it. Besides, the economic losses



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involved in loss of turnover should not be over-rated, the less so because they can be offset by measures of structural policy in the port localities.

Likewise, the value added by the transshipment of ores itself and its importance for the regional economy must not be over-rated also in relation to the new installations. It is questionable whether this factor alone justifies large infrastructure measures, even though the Deep-Water Port Commission has established the availability of ore supplies of about 12 mn tons a year which would be needed for the economical operation of a transshipment installation. For this alone does not mean that infrastructure measures would be profitable for the region or the whole economy. Even judging the establishment of German ore transshipment facilities by the savings accruing to the whole economy, it is still uncertain where the advantage lies, for the savings in the costs of transport to be achieved can to a large extent be obtained without a German deep-water port transshipment facility. A considerable part of the German ore imports can be routed via Rotterdam on almost as favourable terms. A German deep-water port would however yield advantages to some metallurgical plants which cannot be secured in any other way.

Decisive Regional Repercussions

Their repercussions on the regional economy are likely to be decisive for the assessment of future extensions. Positive effects on the coastal region may occur if the deep-water port facilities create locational advantages which open up favourable opportunities for the development of existing or new industrial enterprises.

The possible opportunities for saving transport costs in the German coastal area, which, unlike the region of the Rhine-Schelde estuary, is not itself a consumption centre, favour mainly the iron and steel industry. To the mineral oil industry the immediate vicinity of very deep water is less important than the vicinity of centres of consumption because crude oil can be carried cheaply through pipelines. A deep-water port may however be an attractive location for the petroleum industry if combined with favourable marketing conditions. In the chemical industry the cost of transport determines the location of plants in some sectors of production only; and the tonnages to be moved are not large enough to give a deep-water port the advantage of the lowest transport costs. A seaport may provide a favourable location if other favourable conditions complement that accruing from vicinity of deep waterways.

To attract a metallurgical plant to the German coast, other geographical attractions must exist in addition to the availability of enough land near the very deep water, such as low-price electricity, a qualitatively and quantitatively adequate supply of labour and convenient inland connections. Crucial for providing this package of locational requirements is the availability of a sufficient area of land, and this can be provided on favourable terms in the Neuwerk/Scharhörn area, as has been mentioned. Once this condition is fulfilled, the chances for letting economic growth at a keypoint of development on the coast radiate outward over a major economically backward region are bound to improve. Such a growth process could be sparked off by establishment of a metallurgical plant and other works which benefit from a location near a deep-water port with its many advantages. If, on the other hand, the demands of industrial enterprises willing to move in are not satisfied, opportunities for economic growth and job creation will be missed, to the detriment of the population in the German coastal area. If such advantages for the regional economy are neglected, they will also be missed by the national economy, at least if, owing to the shortage of land near very deep water, the steel industry's "move to the sea", which is taking place in any case, cannot be diverted to the German coast which is in competition with foreign coastal localities.

Need for More Analyses

The Deep-Water Port Commission is of the opinion that the land available on the German coast should satisfy the demand for favourably priced land near very deep water within the framework of the overall economic requirements and possibilities. Existing growth reserves could in consequence be utilised for accelerated economic development of the German coastal area. The industrial port of Neuwerk/Scharhörn would offer particularly good opportunities as a key-point for regional development. The advantages and drawbacks of this project must be analysed in greater detail than has been done by the Deep-Water Port Commission in the course of its studies. Such analyses can be carried out only in cooperation with the enterprises which are willing to settle there. It goes without saying that the state must effect investments only if the regional organisations concerned assess them on the basis of the most rational calculations as beneficial. The Neuwerk Study Society has been set up to prepare further material to assist in decision.⁵

⁵ It is not a matter of checking the technical feasibility of the project. This is, after years of intensive investigations, no longer in doubt.