

A Solid Proposal: Two Great Engineering Projects for Cooperation

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In the past several years, the problems of economic cooperation in Northeast Asia have been repeatedly and extensively discussed from the perspective of theoretical regularities as well as strategic principles. Although more penetrating studies should be carried on, I would rather call attention to some realistic engineering projects of major significance. Two projects are proposed: the deepwater port in Zhoushan in the East Sea for international collection and transfer, and a thoroughfare over the Bohai Gulf. Since Asia and the Pacific region, especially Northeast Asia, have demonstrated a bright future in the international development of economic cooperation, the two projects would bring an import of great significance.

ZHOUSHAN DEEPWATER PORT FOR INTERNATIONAL COLLECTION AND TRANSFER

The port is situated in the deepwater area of the Zhoushan Islands where isles scatter all over the place, thus forming a natural safeguard against stormy waves and providing easy access to all directions. Close to the developed area of the Yangtse River delta, Zhoushan is the deepwater port for Shanghai and the outlet of many provinces. With almost equal distance to large ports in Japan, Korea and Southeast Asia, it will be the center of seaway and river-and-sea water coordinated transport that shape up a network of sea transportation and conditions of a key deepwater port for international collection and transfer for oceanic transportation.

The natural environs for building the Zhoushan port can be generalized as follows:

1. The coast of the port is precipitous. The water is deep with a contour line of 10 meters, only 50-300 meters away from the shore. In the south portion of Yeyashan (7 km) and the south shore of Canshan, the contour line of 20-30 meters is within 300 meters to the bank.

2. The water is deep and the current is smooth. The coast is stabilized and the accumulation of silt is minimal, averaging 0.41 kg/m^2 per year. The velocity of flow is speedy, and sand carrying by rising and ebb tides is great, but the net silt shifted is slight.
3. The port is surrounded by isles extending to an area of 50 km^2 . When a typhoon makes an inroad, water waves undulate moderately. It is not necessary to build breakwaters along the coast. When Typhoon No. 8615 swept over the area, the size of the maximum wave was only 1 foot.
4. Large anchorage area can be exploited and superior conditions for water to water relaying and transfer are available. As many as 135 giant ships over 10,000 tons with a length of 250 meters can berth in the area.
5. The difference between rising and ebb tides and water raised by typhoons are relatively small within the port area, thus fending off potentially great damages.
6. There are multiple entrances and exits from the port. The water is deep and navigation is stable. It is ice free all year round. Currently, there are four passages that ships over 10,000 tons can navigate through. Outside the entrance, there are shallows, where the passage of water lower than 20m extends to three kilometers. The lowest water in the shallows is 17.6m, allowing free passage for ships of up to 130,000 tons, while ships of 130,000-200,000 tons must wait for entrance into the port when the tide rises.

Being off the mainland, Zhoushan was considered having no direct economic access to the hinterland. Beyond this, the limitations of the Shanghai port were not fully appreciated: it was thought that the Shanghai port could handle hundreds of millions of tons of cargo, while in fact ships over 10,000 tons cannot get passage to the port. However, when it was decided that Zhoushan could be used as the deep-sea port outside the Shanghai coast for water to water-to-water transfer and relaying, its advantage began to be fully comprehended.

A THOROUGHFARE SPANNING OVER BOHAI GULF

The economy of the Bohai Sea rim is the hot spot and focal point of Northeast Asia and the Pacific region. But transportation is the bottleneck of its economic development.

The Bohai Sea rim and its coastal areas contribute to half of the national economy of China. Its railway cargo volume accounts for one-third of the national total, while one-sixth for passenger transport. But the mileage of railway is only one-twentieth of the national total. Passenger transportation exceeds 70-100% of its capacity each year with only half of the cargo load. The transport capacity north of the Gulf amounts to 100 million tons, yet in the south, it is only 10-20 million tons. The transportation of both passengers and cargo in large quantities circles the Gulf forming a "C" pattern passage in Shandong province. And the Shanhaiguan Pass has become the most conspicuous bottleneck in railway transportation, where the capacity could only bear 30% of the total volume. In a situation where international track volume increases tremendously, internal demand for long distance waterway transport grows rapidly and short distance waterway transport between both sides of the Gulf accelerates vigorously, it has become imminent to build a throughway spanning the Gulf, which would cut the distance of 1,812 km between Yantai and Dalian and transform the "C" pattern of transportation between Liaodong and Jiaoding peninsulas.

A Plan for a Thoroughfare across the Bohai Gulf

What is urgently needed is to change sea transport into train-ferry transport. Modernized train-ferry transport encompasses all the advantages of waterway, railway, container and uninterrupted transportation. It connects the railways that are separated by waters and becomes the passway over waters. The passway will be convenient and speedy, transporting in great quantities. In the long run the advantage is immeasurable. Building bridgeways across the Gulf is superior to tunnel passage and has a stronger capacity for passage and greater value of general use (such as laying pipelines and calls). It is safe for construction and ventilation is good for the passage of trains and cars. And the maintenance cost is low.

In order to make full use of the natural conditions of the Gulf, it may be advisable to consider the mixed plan of "building bridges in the south and digging tunnels in the north." That is, to the south part extending to 65 kilometers of the Gulf, bridges can be built to connect the islands from Bohai to Nanchangshan and six other islands among the 32 islands of the Mioadao Archipelago. A tunnel beneath the sea should also be constructed from Huangchen Island to Laotieshan.

The two major engineering projects, upon completion, will be of great significance in the opening up of China, international trade and transportation and cooperation between the economies of Northeast Asia.