Analysis of Utilization Trends of International Transport Infrastructure such as Canals, Ports and Harbors against the Background of the Impact of Social and Economic Environmental Changes and Geopolitical Risks to International Logistics

(Study period: FY2016–)

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1. Introduction

Trade and transport trends in each country are rapidly changing due to changes in industrial trends in each country, economic partnerships in each country associated with the development of free trade, economic friction, and emerging geopolitical risks.

In light of these changes in the environment surrounding international logistics, we will comprehensively analyze ship movement data and various statistics such as trade, and analyze the utilization trends of canals and important ports and harbors, which are bottlenecks in international transportation.

In this material, we present research that analyzed the impact of the opening of the Panama Canal (New Panama Canal), which was expanded in 2016, and utilization trends of the canal during the ongoing U.S. shale revolution.

2. Shale Revolution and American Energy Exports

The shale revolution has made the United States one of the world's largest energy producers. In addition to being the world's largest exporter of liquefied petroleum gas (LPG), the production and exports of unconventional shale-derived liquefied natural gas (LNG) have increased, which in turn increased the exports of surplus coal in the U.S.

Exports of energy resources and other resources to Japan from the coast of the Gulf of Mexico and the East Coast of the United States, and Colombia where large coal ports are established along the Caribbean coast, etc. are handicapped due to the ocean transport cost over longer distances than other regions. Passage through the Panama Canal makes it possible to shorten transportation distances.

3. Opening of the New Panama Canal

Traditionally, the largest vessel that can pass through the Panama Canal is called a Panamax (ship length: 294.1 m, draft: 12 m, ship width: 32.3 m), and this has been a standard for vessel size. However, with the increase in the size of ships, it became a bottleneck on the route network. In addition to the existing lock gates (former Panama Canal), the canal expansion project provided a third access channel and lock gates and in June 2016, the new Panama Canal, which allows transit of Neopanamax ships (ship length: 366 m, draft: 15.2 m, ship width: 49 m, 51.2 m since June 2018) and new LNG carriers, was opened.

In about two years from its opening to 2018, the cumulated total number of transits in the New Panama Canal reached 4,000, of which about half were container vessels, 30% LPG vessels, 10% LNG vessels, and the rest dry bulk carriers. This time, against the backdrop of the shale revolution, the analysis focused on LPG and LNG carriers whose exports from the United States have increased, and dry bulk carriers that transport resources such as coal and food (grain).

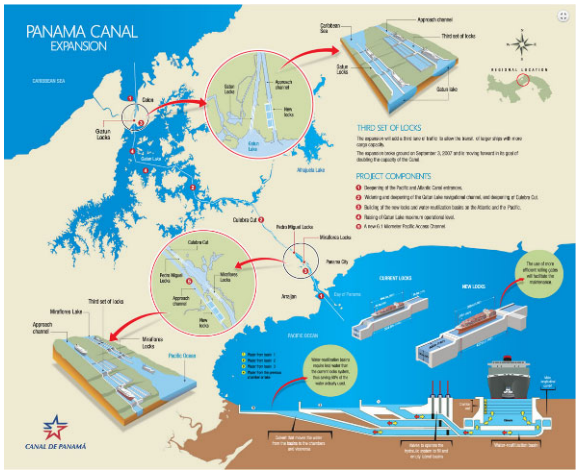

Figure 1: Overview of Panama Canal Expansion Project

4. Ships Using the New Panama Canal

For each type of ship, it was suggested that the opening of the New Panama Canal contributed to improved efficiency in transporting energy resources from the United States and Colombia, where the shale revolution has progressed, to Northeast Asia including Japan. The drawings are based on the results of analysis of vessel movement data for 2018.

- LPG vessels (Neopanamax class)

Figure 2: Utilization trends of LPG vessels in the New Panama Canal

- LNG vessels

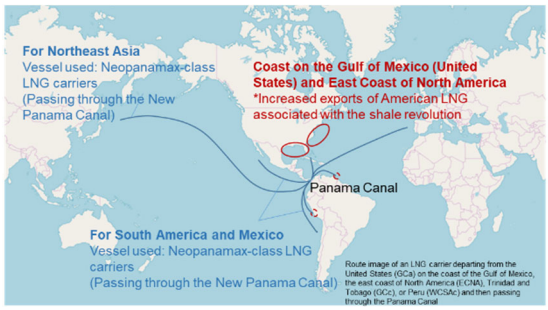

Figure 3: Utilization trends of LNG vessels in the New Panama Canal

- Dry bulk vessels (Neopanamax Class)

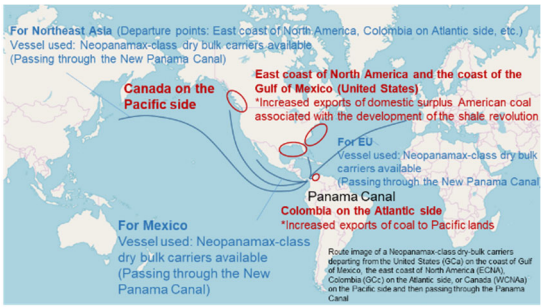

Figure 4: Utilization trends of dry bulk carriers in the New Panama Canal

5. Potential Demand for the Panama Canal and the Suez Canal

Panamax-plus and Neopanamax dry-bulk vessels, which find it difficult to pass through the Panama Canal from the Atlantic side of the United States and Canada to the Northeast Asia area from the viewpoint of draft and loading efficiency, have chosen the Suez Canal route as well as the Panama Canal route whose navigation distance is shorter, even after the opening of the New Panama Canal (2018). This suggests a competitive relationship between the Panama Canal and the Suez Canal and a potential demand for transit through the New Panama Canal. The Panamax-plus is a vessel that can pass through the former Panama Canal if the load is sufficiently reduced, and it is probable that the transit through the new Panama Canal was limited, and the load was sufficiently reduced to pass through the former Panama Canal.

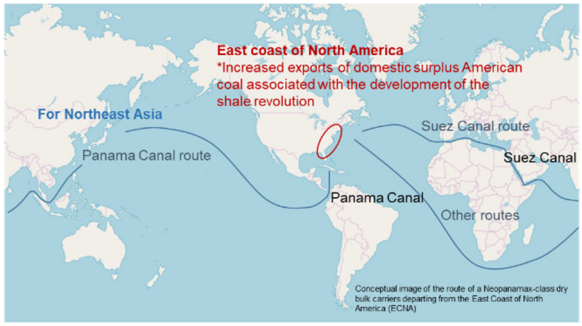

Figure 5: Conceptual image of route selection of dry bulk vessels

Figure 6: Departure points of dry bulk vessels (Neopanamax class) heading for Northeast Asia

6. Conclusion

This analysis shows the relationship with Japan and other countries in international logistics such as the Panama and Suez canals, the impact on Northeast Asia and other countries, and the potential demand for canals. The findings can be used to help design strategies for the development of import environments that contribute to the diversification of Japan's procurement of resources, energy, food, etc., and to examine the role of the Panama and Suez canals, etc. in trade from a geopolitical perspective.

Against the backdrop of the growing tension in Ukraine such as the destabilization of global food production due to climate changes and the intensification of procurement competition resulting from the expansion of global food demand, further assuring the safe supply of energy and food has become an urgent and paramount issue for the nation. In light of social and economic environmental changes and geopolitical risks, we will continue to analyze trends in the use and transportation of overseas ports, harbors and canals.

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1) NILIM material No. 1180
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