

The importance of shipping routes thrown up by the Panama Canal

Yuki Kobayashi, Researcher, Security Studies Program, The Sasakawa Peace Foundation

1. Panama Canal attracting attention

The Panama Canal, located in Central America and linking the Pacific and Atlantic oceans, has been attracting attention in recent years, and in January 2025, U.S. President Trump, now in his second term, began claiming that the high tolls and the fact that Hong Kong-based companies control two of the ports on the canal "pose a security concern" and he began to insist that he would "take it back. Earlier in March of the same year, the Hong Kong-affiliated companies agreed to sell the rights to operate the ports to a U.S. company.¹

In addition, after 2023, the lowering of the water level will limit the number of vessels that can pass through the Canal, which could hinder logistics between Japan and the East Coast of the U.S. and Central and South American countries. It has been pointed out that there is a link between the lowering of water levels and climate change. If restrictions on canal passage become the norm, the number of transport days and costs will increase, and delays in the supply of necessary goods could affect not only individual companies, but also the competitiveness of the Japanese economy.

This paper will first examine the history and current status of the Panama Canal, followed by a discussion of measures to avoid or reduce its impact on Japan, including the establishment of alternative shipping routes.

2. History and Current Status of the Panama Canal

(1) History of the Panama Canal

The Panama Canal is 82 kilometers long, with a minimum width of 91 meters and a maximum width of 200 meters and connects the Pacific and Atlantic oceans without wading through the Strait of Magellan or the Drake Passage.

Photo1 : Container ship passing through the Panama Canal



Source: Embassy of Panama in Japan

However, as shown in Table 1, it was extremely difficult to complete the construction, as France, which first undertook the construction, withdrew from the project. The Panama Canal finally began operating in 1914, 45 years after the Suez Canal linking the Mediterranean Sea and the Red Sea began operating. A record of Japanese engineer Akira Aoyama's involvement in the construction of the canal can be found at², and the route has been associated with Japan since the beginning. During the Pacific War, Japanese ships were banned by the U.S., while it is known that the former Japanese military planned to attack the canal with undersea carrier-type submarines.³ After Japanese ships were allowed to pass through the canal in 1950, it supported Japan's trade and economic growth. The New Panama Treaty signed in 1977 promised that control of the canal would be returned to Panama from the U.S., and this was done in 1999.

Table2 : Main History of the Panama Canal

AD	event
1881.	France establishes a company and begins construction of a canal
1889	French canal construction company goes bankrupt
1903.	The Republic of Panama becomes independent from Colombia.
1904-1914	U.S. begins construction of the Panama Canal and completes it.
1941-1950	Prohibition of passage of Japanese-flagged vessels
1950-.	Canal Restitution Movement Grows in Republic of Panama

1977	Panama and the U.S. both sign the new Panama Treaty. U.S. promises to convert the Canal.
1999	Canal returned to Republic of Panama
2006-2016	Expansion of the canal, with the expanded portion of the canal becoming operational in 2016.

Source: Prepared by the author with reference to the Embassy of Panama in Japan (Japanese version) and other sources.

(2) Mechanism of the Panama Canal

The main countries using the canal are shown in Table 2, with the U.S. accounting for 75% of the total trade, and Japan ranking third in terms of volume.

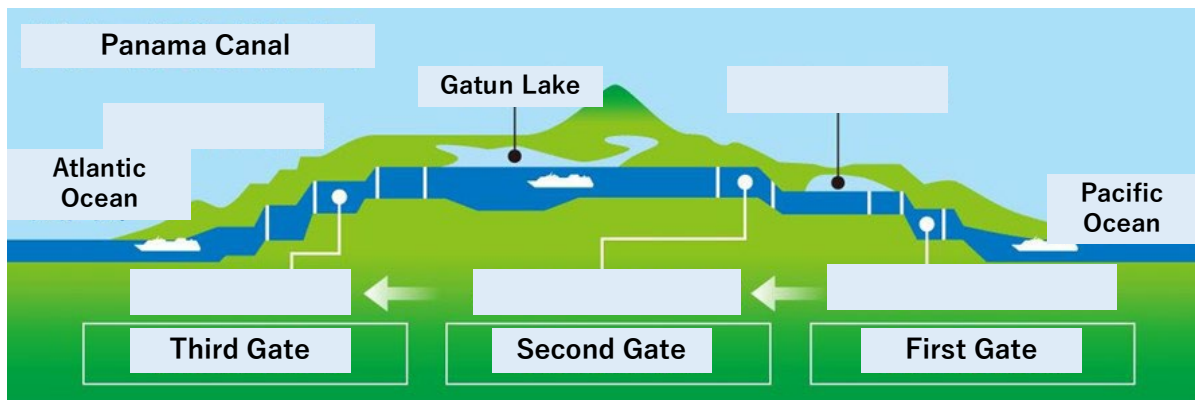
Table 2: Actual Use of the Panama Canal

order	nationality	Cargo volume (long tons)
1	America	157.06 million
2	China	45,040,000
3	Japan	30.73 million
4	Korea	19.67 million
5	Chile	17,420,000

Source: Prepared by the author based on data from the Panama Canal Authority. 1 long ton is 1,016 kilograms.

In order to allow these cargoes to pass through, the canal is operated by opening and closing the gates and adjusting the water level while taking in water from the lake over a height difference of 26 meters (see Figure 1). Therefore, there is an upper limit to the number of vessels that can pass through the canal in a day, which is generally 36 vessels (10 large-sized vessels and 26 medium-sized vessels).

Figure3 : How the Panama Canal works



Source: Courtesy of iCruise (compiled by the author)

The operation of this canal has often been threatened in the 2020s due to the low water level of Lake Gatun, the main source of water. In particular, since May 2023, the lack of precipitation during the local rainy season and the implementation of water withdrawal restrictions from the lake have prevented the canal from maintaining sufficient water levels, resulting in continued restrictions on the number of vessels passing through; by December 2023, the number had dropped to 22 vessels per day, nearly half the normal number (see Table 3).

Table 3: Number of Vessels Passing through the Panama Canal

type of vessel	normal time	Dec. 23, 2011	Jan. 24, 2012	Mar. 24, 2012	Feb. 25
Neopanamax (Large)	10	6	7	7	10
Panamax (Normal type)	26	16	17	20	26
plan	36	22	24	27	36

Source: Prepared by the author based on IMF Portwatch.

As a result of these conditions, congestion of ship registers in front of the canal began to be noticeable. Containerized cargo ships and passenger vessels were given priority, and bulk carriers carrying iron ore and grain were increasingly forced to turn around.

3. Intrinsic challenges facing shipping

(1) Global Shipping Challenges posed by the Panama Canal

According to the NYK research group, the decline in the water level of Lake Gatun has been attributed to abnormal weather conditions such as the El Niño phenomenon and long-term climate change, as well as to population growth since Lake Gatun is also a source of water for domestic use for the surrounding residents, and a decrease in water retention capacity due to deforestation⁴. The Republic of Panama is planning construction work to stabilize the water level of the canal by building a dam on the river that flows into Lake Gatun to enhance its water storage function, and is aiming for completion in the early 2030s. However, global maritime transport volume in 2023 was approximately 12.37 billion tons, up 3.0 percentage points from the previous year⁵, and is expected to continue to increase. While the stabilization of water levels in the Panama Canal is good news for global shipping, it is not expected to be the only decisive factor in eliminating congestion of ships.

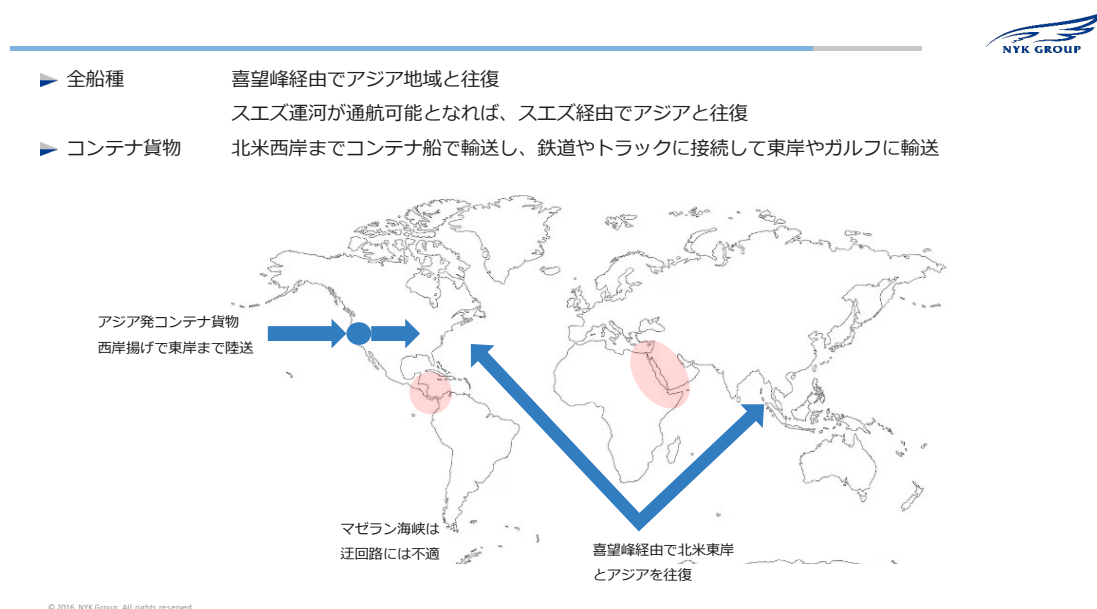
Major users of the Panama Canal are being urged to take action. Japan, the third largest user of the Canal in terms of transit volume, mainly unloads its main export products, such as automobiles and electronic equipment, via the Canal to the East Coast of the United States. Restrictions on canal passage could affect the competitiveness of Japanese companies if transportation costs increase.⁶ It also concerns Japan's energy supply strategy. Japan imports liquefied natural gas (LNG) from the central and southern parts of the U.S., including Texas, but only a limited number of tankers can pass through the Panama Canal, where container ships have priority, and the LNG is often transported from the U.S. East Coast through the Suez Canal and Red Sea. However, as discussed below, passage through the Red Sea is now difficult. As the Japan-U.S. summit agreed to increase LNG imports from the U.S. in February 2025, increasing LNG imports from allied countries will contribute to strengthening Japan's energy security, but this will not be easy to achieve. The U.S., the world leader in the volume of cargo passing through the canal, is also under pressure to take action. Of the 50 minerals it designates as critical, the United States relies on supplies from Asia for 100% of 12 of them and more than 50% of another 31. The country faces the challenge of establishing alternative shipping routes to prepare for the risk of supply disruptions of critical minerals due to restrictions on passage through the Panama Canal.⁷

(2) Diversification of shipping routes and world affairs

Although the Strait of Magellan is geographically close to the Panama Canal as a detour route, it has long been known as a dangerous route due to the numerous inlets and islands scattered throughout its waters, as well as climatic factors such as strong currents and frequent wind gusts. For this reason, as a route connecting the Asian region, including Japan,

to North America, emphasis has been placed on a route that crosses the Pacific Ocean, transshipment by rail or truck on the west coast, and land transport to the interior or east coast of the United States, as well as a route via the Suez Canal to the east coast of the United States. However, the latter route has become difficult due to the situation in the Middle East. When Israel launched a large-scale attack on the Gaza Strip controlled by the Islamic organization Hamas, the Houthi rebels in Yemen, who stand in solidarity with Hamas, retaliated in the form of attacks on civilian vessels sailing through the Red Sea.⁸ As a result, an increasing number of vessels are choosing the route around the Cape of Good Hope in South Africa, anticipating that the voyage will take more than 10 days and extend the distance by several thousand kilometers, as well as increase transportation costs (see Figure 2).

Figure 2: Alternative Panama Canal route



Source: Compiled by NYK Research Group

4. Implications for Japan

An examination of the maritime transportation problems posed by the Panama Canal shows that it is important not only to stabilize the water level of the Canal, but also to ensure the safety of all maritime transportation routes by stabilizing the world situation in order to meet the ever-increasing maritime transportation needs in the future.

As a maritime nation, Japan must, of course, appeal for the stability and safety of maritime shipping routes, but it must also make efforts to identify budding crises and simulate alternative shipping routes. Unfortunately, it is clear that a crisis in the vicinity of Japan, such as the Taiwan contingency, would have a tremendous impact on Japan's imports and exports. It is essential that each company, especially shipping companies, establish in advance

alternative routes in the event of a crisis from a security perspective, and make efforts to minimize the impact.

(End)

¹ Lloyd's List "CK Hutchison agrees \$22.8bn deal to sell off Hutchison Ports stake" March 4 2025 [https://www.lloydslist.com/LL1152768/CK-Hutchison-agrees-228bn-deal-to-sell-off-Hutchison-Ports-stake]

² Embassy of Japan in Panama webpage "History of the Panama Canal" [https://www.panama.emb-japan.go.jp/jp/panama-canal/?p=history]

³ Ibid.

⁴ Author's interview with NYK's Research Department.

⁵ JETRO Business Brief, "Ministry of Transport Announces China's Share of Global Shipping Volume Surpasses 30%," July 16, 2024. [https://www.jetro.go.jp/biznews/2024/07/77df598160ddbb5a.html#:~:text=%E5%90%8C%E5%A0%B1%E5%91%8A%E3%81%AB%E3%82%88%E3%82%8B%E3%81%A8%E3%80%812023,7%2C000%E4%B8%87%E3%83%88%E3%83%B3%E3%81%A0%E3%81%A3%E3%81%9F%E3%80%82]

⁶ Daisuke Komatsu, "A Study of the Impact of the Vulnerability of the Panama Canal on U.S. Economic Security," General Transportation Research Institute, August 22, 2024. [https://www.jttri.or.jp/jitti_20240822_komatsu.pdf]

⁷ Ibid.

⁸ NHK International News Navigation, "Avoiding the Suez Canal Route! Houthi shipping attacks disrupt global logistics," February 2, 2024. [https://www3.nhk.or.jp/news/special/international_news_navi/articles/feature/2024/02/02/37458.html]