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The Panama Canal turns 100: history and possible future scenarios

Introduction

The 100th anniversary of the opening of the Panama Canal finds a world clouded with uncertainty as to the outlook for the international economy —a world where trade relations and trade flows and, therefore, international maritime transport, are changing. Part of this process is related to changes in global maritime trade arteries (the Panama Canal included), but also to shifting geopolitical interests worldwide. Just as the Panama Canal was born of similar shifts, new players are now vying to gain control of resources, major infrastructure facilities and transport routes.

Among the changes in global trade arteries relating to the Panama Canal is the recent announcement of a Suez Canal expansion project that, according to the latter's authorities, will make it a more competitive alternative to the former. Also under discussion is the feasibility of building an all-water route across Nicaragua, the potential opening of a navigable Northwest Passage in the Arctic and other intermodal "canals" like the ones in the United States of America and Canada. There are also several projects in the feasibility study stage in Central America and, to a lesser extent, in South America.

The centennial celebrations provide an opportunity for putting into perspective the meaning of one of humankind's greatest achievements in its quest to tame geography for the purpose of economic and social development. This hundred-year mark is a good time to examine the Panama Canal's past, present and future from two viewpoints: global interests and their service to the United States, and interests and opportunities for Latin America and the Caribbean.

This issue provides a brief history of the canal, its construction and its social and political impact on Panama within the context of international trade

This issue of the *FAL Bulletin* sets out a brief history of the Panama Canal, its construction and its social and political impact on Panama, within the context of international trade at the time. This issue also reviews the recovery of the canal by the Republic of Panama and subsequent major events, including the decision to expand the canal and the start-up of work on the expansion project.

The authors are Rodolfo Sabonge, consultant, Infrastructure Services Unit of ECLAC, and Ricardo J. Sánchez, Officer-in-Charge of the Natural Resources and Infrastructure Division of ECLAC. For further information contact ricardo.sanchez@cepal.org.

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Natural Resources and Infrastructure Division, UNECLAC

at the time. It also reviews the recovery of the canal by the Republic of Panama and subsequent major events, including the decision to expand the canal and the work on the expansion project. At the end are some conclusions and future scenarios.

I. The beginning

Throughout the history of civilization, powers have emerged, evolved and waned. Their ascendancy has mostly been linked to control over trade flows, especially over waterways. That is why ever since Vasco Núñez de Balboa discovered the existence of other seas in September 1513, people have been thinking about connecting the two great oceans by building some kind of canal to allow navigation between them.

But long before the canal was built, Panama was a natural route for the transit of goods and people. Between 1606 and 1739, trading expeditions from Spain with goods to be sold in the colonies converged at Panama's Portobelo Fairs and returned with precious metals and other goods, mainly from the Viceroyalty of Peru. The galleons arrived in Portobelo on the Atlantic coast of Panama; goods were transported by mule to and from the Pacific coast. Thus was the first interoceanic multimodal transportation system developed in Panama.

In 1832 the United States Congress sent Colonel Charles Biddle to Panama to negotiate a concession for building a railroad. Following acquisition of Upper California in 1848 and the growing movement of settlers to the West Coast drawn by the gold rush there, the United States Congress authorized the operation of two mail-ship lines: one from New York to Chagres on Panama's Atlantic coast, and one from Oregon and California to Panama. The first train crossed from the Atlantic to the Pacific in January 1855. The Panama Railroad operated successfully until 1869, when construction of the first transcontinental railroad in the United States was completed. By 1874 the Panama Railroad was in decline; the value of its shares collapsed in 1877.

Almost simultaneously (between 1859 and 1869), in another part of the world, Ferdinand de Lesseps had directed the construction of a sea-level canal running across Egypt and connecting the Mediterranean Sea with the Red Sea. This opened a navigable route that shortened travel time and distance between Asia and Europe.

The findings of a number of scientific expeditions to Central America during the nineteenth century were presented at the International Congress for Study of an Interoceanic Canal in Paris in May 1879, where the route for building a sea-level canal in Panama between the Atlantic and the Pacific was chosen. Lesseps inaugurated the ambitious French undertaking on 1 January 1880. A chain of calamities drove the Compagnie universelle du canal interocéanique to declare bankruptcy on 15 May 1889. In an effort to save some of the investment, in 1894 the company's asset auditors formed the Compagnie Nouvelle de Canal de Panama, which tried unsuccessfully to continue work until intervention by the United States changed history.

As a rising maritime and continental power, the United States had already shown interest in building a canal across Central America, primarily for military purposes to more easily defend its coasts. In 1900 the United States Congress approved a canal project across Nicaragua, but the Frenchman Philippe Bunau-Varilla and other New York attorneys trying to recover some of the French investment launched a campaign in favour of a Panama route. Their main argument was the danger of earthquakes in Nicaragua. On 18 January 1902 the Interoceanic Canal Commission recommended the Panama route; on 28 June the United States Congress approved construction of the canal.

Panama was part of Colombia at the time, so negotiations for building the canal were between the United States and Colombia. They even led to the signing of the Hay-Herrán Treaty, which ended up being rejected by the Colombian Senate. This set the stage for the separation of Panama from Colombia and resulted in the Hay-Bunau-Varilla Treaty, which was signed by the Frenchman who had been appointed plenipotentiary ambassador of Panama in Washington. In 1904, the United States bought the French interests in Panama for forty million dollars.

These facts cast a spotlight on the interests swirling around construction of the Panama Canal and on how the project shaped the fate of several countries in the region. The impact of the new route, both on trade and on the shipping industry, would be seen over time.

II. Building the canal across Panama

Among the decisive calamities that befell the French campaign were the tropical environment and unhealthy conditions that favoured transmission of mosquito-borne diseases such as malaria and yellow fever. That is why one of the United States' first initiatives was to implement health measures and eradicate mosquitos in the area where the canal was to be built. The sanitation of Panama was instrumental in the development of the metropolitan region that later took in thousands of citizens from other countries who came to work on the great project.

Construction of the canal progressed very differently from the way the French had planned and proceeded. The first major change was the decision to build a lock canal. The chief engineer, John F. Stevens (whose experience

was mainly in railroad construction), had seen the flow and strength of the Chagres River and concluded that the main challenge was to control the river. This decision had far-reaching implications, not only for design and construction of the canal but also for the shipping industry in the design and size of the ships that were to go through it: lock size would be the limiting factor. And the decision to build a lock canal determined the canal's capacity in terms of number of vessels that could transit per day. Controlling the river and operating the canal locks would require damming the Chagres and creating a lake (Gatún), which at the time was the world's largest artificial lake. And since the canal depended on the lake to operate properly, care and maintenance of the watershed that fed the lake became essential. Despite the negative impact caused by the creation of the lake, over the longer term the need to conserve the watershed would force Panama to develop a culture of environmental protection that is unusual for a developing country. Another positive environmental impact that might have gone unnoticed at the time was that a lock canal with an artificial lake in the middle acted as a barrier preserving the ecological stability of the marine fauna of both oceans.

The other change under Stevens' direction was attributed to his experience in building railways, which he drew on for moving large amounts of earth, personnel and materials throughout the project. Logistics and planning were key to the United States' success in completing the project on time.

The decision to build a lock canal had other consequences. Controlling the lake and thereby the river current would facilitate safe navigation and allow for better management of fixed-plant and navigable waterway maintenance. The currents caused by rivers and changes in tide levels between the Pacific and Atlantic oceans would have made navigation daunting.

Stevens resigned for personal reasons on 1 April 1907. The project was continued and completed by Colonel George W. Goethals, a graduate of the West Point military academy with experience in building locks and dams. It fell to Goethals to solve the main challenges of passing through the mountains. To this end he called on Major David DuBose Gaillard, whose contribution was recognized by naming the Culebra Cut (the most difficult stretch to build) the Gaillard Cut.

The design of the canal changed even while it was being built. One of the major changes was to widen the locks from the initial 95 feet to 110 feet at the request of the United States navy because of the ships that by then were already being designed. Another change was the decision to build a breakwater at the Pacific entrance to control the currents and keep sediment from blocking the canal entrance. The last change, which was also significant and far-reaching, was to build two sets of locks on the Pacific side instead of one as designed for the Atlantic side. The result was the Pedro Miguel locks, which are the main factor limiting the capacity of the existing canal.

III. Social and political impact in Panama

The construction of the Panama Canal involved two basic factors that were instrumental in shaping Panamanian society as well as the country's economic and political development.

The Hay-Bunau-Varilla Treaty gave the United States, in perpetuity, rights to a strip of land (that later would be called the Canal Zone) where the laws of the United States would apply. This enclave in the middle of Panama would house facilities and activities related to canal operations, maintenance and defense. Not only would the strip divide the country geographically —for more than 75 years it would be a source of conflict between Panama and the United States.

The other factor with significant implications for Panamanian society were the workers from all over the world brought in by the United States during construction of the canal. They stayed in Panama after project completion, giving rise to one of the most heterogeneous and diverse communities on the planet. This cultural, religious and ethnic diversity had positive consequences, but it also created a social problem: the number of workers who remained in Panama and were left jobless once construction was complete. That is why Panama's first economic crisis broke out a few years after the canal opened.

Last but not least, the arrangement for operating the canal did not allow for Panama to share in the revenue or financial benefits it produced. For Panama, then, the only benefits would be a modest yearly lease payment and direct and indirect jobs for Panamanian nationals, whose wages for most of the first 75 years were well below those earned by their American peers.

All of this fuelled rising political and social pressure that reached a flash point with the events of 9 January 1964 that resulted in the death of 23 young people and the wounding of more than 200 Panamanians. Panama lodged a complaint with the Organization of American States; on 21 March 1964 United States President Lyndon B. Johnson acknowledged that Panama's claims "are based on a deeply felt sense of the honest and fair needs of Panama" adding "it is, therefore, our obligation as allies and partners to review these claims and to meet them, when meeting them is both just and possible. We are ready to do this."

It would be another ten years until the Torrijos-Carter Treaties on canal operations and permanent neutrality

were signed on 7 September 1977 at Organization of American States headquarters in Washington, D.C. They put an end to the concept of perpetuity, provided for abolishment of the Canal Zone and set hand-over of the Panama Canal for 31 December 1999 at noon.

IV. Canal traffic and economic impact on international trade

1914-1946

The Panama Canal was built primarily with strategic military objectives in mind, making it easier to defend the coasts of the United States by optimizing the use of its naval fleet and creating a strategic hemispheric defense centre covering North and South America, as well as the Caribbean and the Pacific.

As for trade, the geographic location of the Panama Canal defines the main routes and their economic impact, especially in terms of distance and time savings. The distance between New York and San Francisco through the Panama Canal is 5,262 nautical miles; the alternate route would be 13,135 nautical miles via the Strait of Magellan. The distance between San Francisco and Liverpool through the Panama Canal is 7,836 nautical miles; via the Strait of Magellan it is 13,522 nautical miles. When the canal opened these were typical routes that benefited from the new shortcut and contributed to the economic development of these markets. As an example of the savings achieved with the Suez Canal, a standard route when it was opened was London to Mumbai, at 6,372 nautical miles through the Suez Canal and 10,667 nautical miles around the Cape of Good Hope. London to Singapore via the Suez Canal is 8,362 nautical miles, while via the Cape of Good Hope the distance is 11,740 nautical miles.

1946-1977

Between 1914 and 1946, the services provided by the Panama Canal tended to be regional. As noted earlier, the canal played a strategic military role by enabling the United States to consolidate its military hegemony during the first and second world wars. On the trade front, much of the traffic was oil between the coasts of the United States and general cargo from the west coast of South America to the east coast of the United States; volume to Asia was low. During that period, in addition to the two wars, the Great Depression had a substantial impact on the flow of commercial cargo. The vessels then transiting the canal were small, and the canal operated just eight hours a day.

The global economic and business environment changed drastically between the Second World War and the 1970s. The General Agreement on Tariffs was signed; it was a preamble of what later evolved to become the World Trade Organization (WTO). Japan's technological and industrial growth made it the second largest user of the canal and one of the main importers of raw materials, grains and other inputs. The United States grew more powerful in a tripolar world. During this period Asia and Europe were recovering from the effects of the Second World War, and international organizations were created that acted as catalysts for what would eventually be globalization.

Tonnage through the Panama Canal did not top 20 million net tons until 1946. Between 1946 and 1977 it soared to 160 million net tons. It was during this period that containers appeared on the scene, although their impact was not felt until the 1980s. Containers radically transformed the shipping world and international trade. They speeded up vessel turnaround time and increased usage: by cutting the time that ships spent in port and establishing the concept of regular service they substantially boosted international trade. Concepts like JIT (just in time), which propelled Japanese industry to the forefront, would not have been possible without containers because container ships ensured reliable on-time delivery.

Another factor that impacted this period and affected the shipping industry and the Panama Canal was the oil price boom. Coupled with rising demand in industrialized countries, it encouraged the shipping industry to take the first steps towards designing larger and more efficient vessels that would enable it to take advantage of economies of scale. Until then, the Panama Canal had been an industry benchmark; "Panamax" had been coined as a term for maximum size because the Panama Canal gave ships the flexibility they needed to sail the seas of the world.

Most ocean freight back then was liquid and dry bulk cargo, so the first post-Panamax size ships designed were tankers that did not need to transit the Panama Canal because oil moved primarily between the Persian Gulf and the rest of the world via the Suez route. Capesize dry bulk carriers (which, as their name implies, do not need to transit any canal) and Suezmax vessels (the largest that could transit the Suez Canal at the time) entered service at about the same time.

Other major developments during the period included the nationalization of the Suez Canal in 1956. This was a period of social upheaval in which social groups were seeking emancipation, greater inclusion and participation. In Panama, as explained above, this was when the main conflicts between Panama and the United States arose. Inspired in a way by the nationalization of the Suez Canal, they culminated in 1977 with the signing of the

Torrijos-Carter Treaties. Meanwhile, the administration of the United States had already studied the growth in Panama Canal traffic and foreseen the need to expand the canal. The Americans had begun just such a project in 1939 but dropped it because of the Second World War. In any case, growing traffic was already hinting that the canal had reached maturity and was in need of expanded capacity. In the early 1970s the United States had conducted a feasibility study for building a sea-level canal across Panama. The studies included the use of nuclear explosives. One of the most interesting studies concerned the ecological impact of joining the two oceans and found that it would be devastating to marine life in both. These studies were conducted by the Smithsonian Institution.

Clearly, the need to expand the canal prompted the United States to renegotiate the Hay-Bunau-Varilla Treaty. Based on the provisions of Article XII, paragraph I of the 1977 canal treaty, an exchange of diplomatic notes beginning in September 1982 led to an agreement to set up a preparatory committee for studying alternatives to the Panama Canal. In 1985 the governments of Panama, the United States and Japan formally established the Commission for the Study of Alternatives to the Panama Canal.

As mentioned above, the energy crisis and rising demand had led the United States to move much of its oil from Alaska through the Panama Canal to major refineries in the Gulf of Mexico. A large part of the growth in traffic on the Panama Canal in the 1970s was due to oil. But the locks were not the right size for the larger vessels that could move oil more economically. This led to the idea of building a pipeline across Panama. The pipeline was completed in 1981; traffic through the Panama Canal dropped dramatically that year as Very Large Crude Carriers (VLCC) began to carry oil to the Puerto Armuelles terminal on the Pacific to be sent by pipeline to the Charco Azul terminal on the Atlantic for onshipping to the final destination on Aframax vessels. This alternative to the Panama Canal was to be temporary while a pipeline was being built in the United States.

1978-1999

During this period the world saw changes that impacted the economy and international trade. The most important was the fall of the Berlin Wall and the end of the cold war. This milestone in the trend towards the hegemony of capitalism led to broader mobilization of capital and investment and the transfer of production to countries like China, which would soon enter the WTO.

Shipping changed, too, during this period of rapid change and technological development. Vessels became specialized, container ships grew to post-Panamax sizes and ports were transformed to handle containerized cargo with their own equipment. Prior to 1978 almost all container vessels operated their own cranes. Moving crane capacity onshore drove port terminal specialization and growth, but also pushed ports lacking equipment to the sidelines.

The rise of Asia as a major producer (first Japan and then the Republic of Korea, Hong Kong, Singapore and Taiwan Province of China, and eventually the People's Republic of China) and the involution of the United States and Europe in terms of production capacity to become the world's major consuming regions transformed trade routes and the maritime industry.

In the United States, the late 1980s brought development of the San Pedro Bay ports (Los Angeles and Long Beach) in Southern California and the emergence of what would subsequently become the Panama Canal's main competitor: the United States intermodal system. This began with the construction of tracks and tunnels designed for handling a new system of double-stack unit container trains. This encouraged the design and construction of larger ships that did not need to be routed through the Panama Canal.

The same thing started to happen with the Asia-Europe route, this time via the Suez Canal, which, because of its size, was not a limitation for container ships. As for other market segments, the oil segment, instead of continuing to grow, took a hit from the Exxon Valdez ULCC (Ultra Large Crude Carrier) accident that wreaked unprecedented ecological havoc and forced the industry to set limits and change design regulations and rules for transporting hazardous goods.

The Panama Canal was facing increasing competition from alternative routes, mainly because the larger vessels were too big for it. Between 1978 and 1999 the Panama Canal was handed over to Panama. This period was marred above all by the last decade of military dictatorship, leading up to invasion by the United States on 20 December 1989. That unfortunate event launched the democratic process that was crucial for the successful transition of the canal.

In 1997 the Government of Panama held the Universal Congress on the Panama Canal and invited the international community and users of the canal to discuss Panama's plans for managing the canal. In preparation for the event, the administration and the Panama Canal Commission (PCC) engaged two independent consulting firms (one paid for by the European Union and the other by the PCC) to conduct separate studies on future demand for the canal.

Both studies agreed that demand would exceed the capacity of the existing canal by 2011, even though China had not yet joined WTO and the impact this would have on

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world trade was unknown. Panama started to prepare for managing the canal and began the technical and financial feasibility studies on the possibility of expanding it.

At noon on 31 December 1999, just before the new millennium began, the United States flag in front of the Canal Administration Building was lowered for the last time. Panama had regained its sovereignty and was going to manage its own main resource, its geographical location and its people.

2000-2014

The new millennium dawned on a new world economic order in the midst of a technological revolution that brought the Internet and electronic commerce. What had become a hegemonic world from the economic point of view was split by deep religious and cultural differences. On 11 September 2001 those differences took on a new dimension when airplanes hijacked by terrorists hit several locations in the

In early 2002, the Panama Canal Authority (PCA) announced a change in toll structure to start what would later be a market segmentation and price differentiation strategy. This strategy would generate US$ 10 billion in canal contributions to the Government of Panama —far more than all of the canal contributions between 1914 and 1999.

The PCA continued to invest in the canal and in studies supporting expansion. In October 2006 it concluded the studies and held a referendum on the proposal to expand canal capacity. The people of Panama approved the project. In September 2007 work began on what was to be a US$ 5.350 billion undertaking to be completed in 2014.

In late 2008, the speculative real estate market in the United States imploded and put the brakes on the economic boom that had begun in 2002, driving the world into the worst crisis since the Great Depression. The biggest loser in this crisis was international trade. The economy faltered as banks sank under the weight of overvalued mortgages and assets, triggering the sharpest credit contraction in history. This contraction slowed investment and consumption, which ultimately dealt a substantial blow to international trade.

A dramatic scale-back in the traffic projections that had supported the expansion of the Panama Canal warranted further review. Consumer habits had changed, building permits had come to a standstill, borrowing capacity had disappeared and inventories were overflowing. Industrial production declined. Overall, goods transiting the Panama Canal saw significant changes —mostly downward.

Stiffer competition from the United States intermodal system had already eaten into the Panama Canal's comparative advantage for high-value cargo. Much of the containerized goods transiting the canal bound for the east coast of the United States are low-value goods, including building materials, which were the hardest hit

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