CANAL DE PANAMÁ

The Panama Canal and Global Trade: Past, Present, and Future

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Administrator | CEO

43rd Annual William A. Patterson Distinguished Transportation Lecture – Northwestern University

May 7, 2025

Panama: A Meeting Point of Oceans, Culture, and Global Trade

4.57M inhabitants

29,120 sq mi of territory (~0.2% of global land surface)

49.7 miles at its narrowest point

Home to **10,000+** plant species and **1,500+** vertebrate species

One of the most ethnically diverse populations in Latin America

6% of world's maritime trade sails through the Canal

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The Isthmus That Rewired the World

40
millions years ago

The Isthmus was an archipelago of volcanoes

The Isthmus did not exist

This infographic is for illustrative purposes only and may not represent the exact information.

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The Isthmus That Rewired the World

Weak current

20
millions years ago

The Isthmus had more than one canal

Temperature and salinity similar in both oceans

Strong current

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The Isthmus That Rewired the World

The Isthmus became a bridge, and change the world forever

Strong Current

Gulf Stream

Caribbean Current

Pacific Ocean

3 millions years ago

Higher temperature
Higher salinity
Higher density

Lower temperature
Lower salinity
Lower density

Equatorial Current

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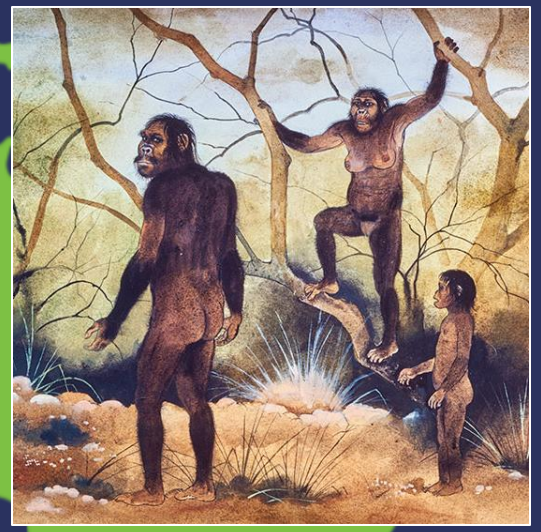
Before Panama, Before Us

Australopithecus afarensis



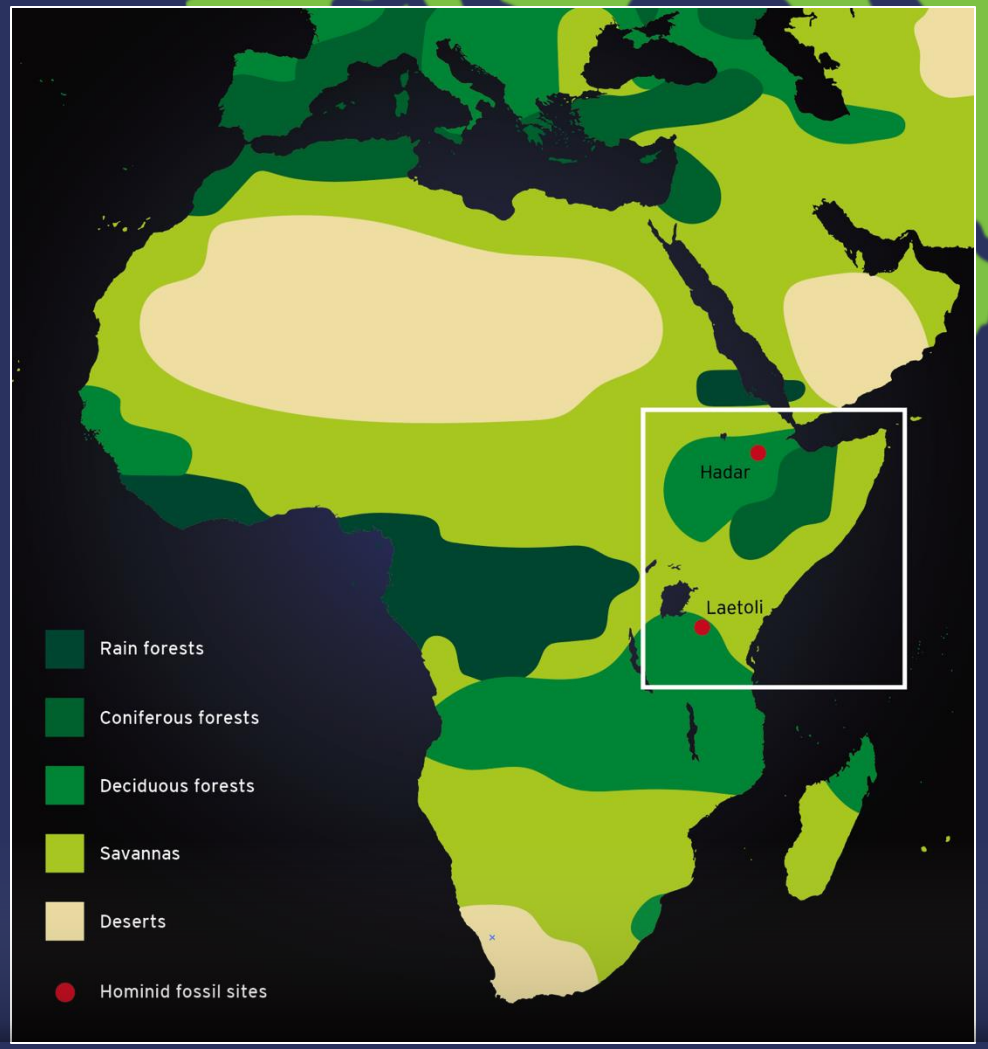


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Illustration by Maurice Wilson of the extinct hominin Australopithecus afarensis
Infographics– Biomuseo Panama

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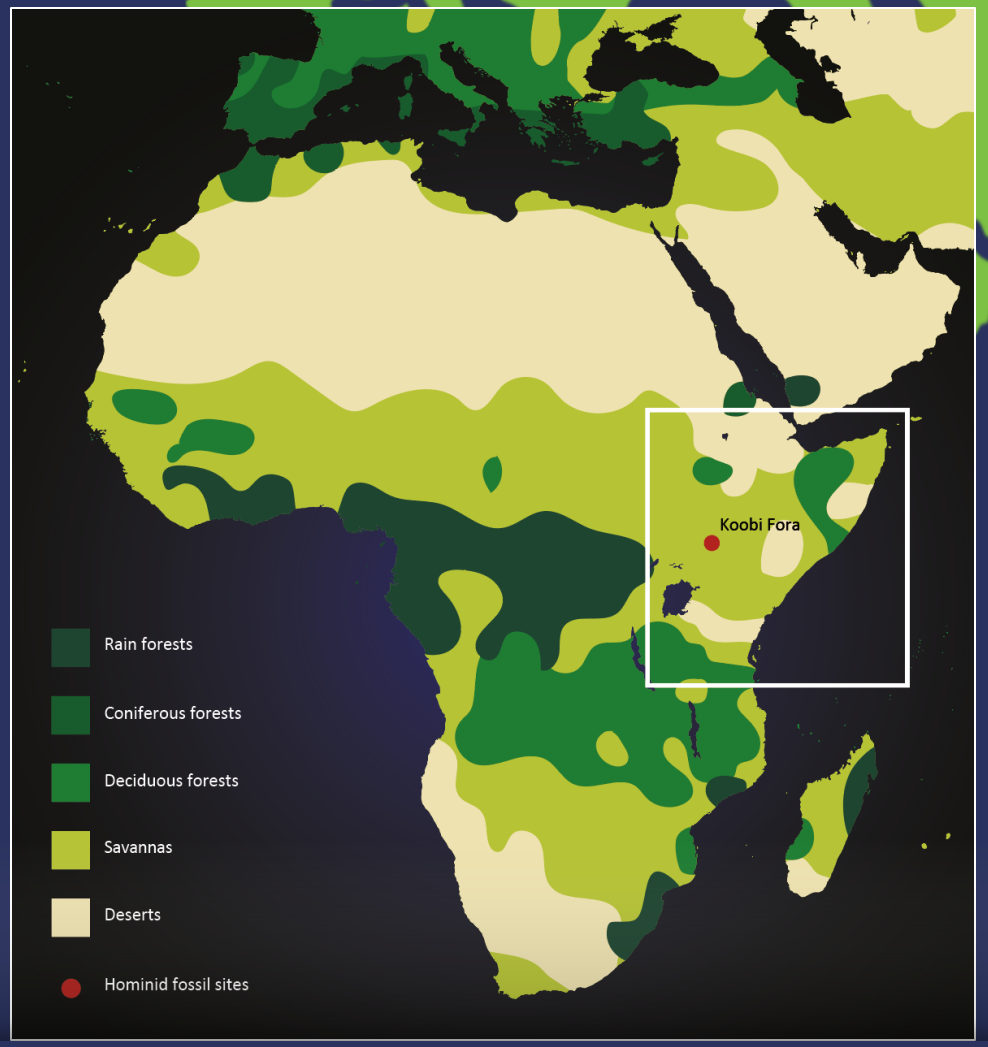
Before Panama, Before Us

Homo rudolfensis



Before Panama, Before Us

120000
Earliest modern humans

92000
Middle East

43000
Europe

12000
Scandinavia

30000
Sibera

30000
Japan

50000
Australia

4000
Pacific Islands

¿20000?
North America

15000
South America

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Infographics– Biomuseo Panama

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Indigenous Networks Before the Conquest

Long before colonial roads, the Isthmus of Panama was already a corridor of exchange. Indigenous societies created complex trade networks along rivers and coasts, linking distant communities across the territory.

Goods like salt, feathers, ceramics, and stone tools circulated through these routes, shaping the Isthmus as a space of movement and connection.

What would later be known as "The Panama Route" had already begun—mapped by memory, landscape, and community.

approx. 10,000 years ago

1501 AD

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Contact and Communication in Pre-Hispanic Panama. 2024. Panama Canal Museum, "Panama Before the Canal" gallery.

Indigenous Exchange, illustration by Ologwagdi of Akwanasadup – Biomuseo Panama

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Colonization and Transformation: From Territory to Corridor

By the early 16th century, Spanish expeditions reached the Isthmus and quickly recognized its geographic potential. They encountered diverse Indigenous societies with **well-established trade networks and distinct cultural systems**.

Colonial rule reconfigured this landscape—not through full settlement, but by adapting it into a corridor for imperial logistics. The Isthmus became a conduit for silver, goods, and people, linking the Atlantic and Pacific coasts through overland and riverine routes.

1501 AD

1754 AD

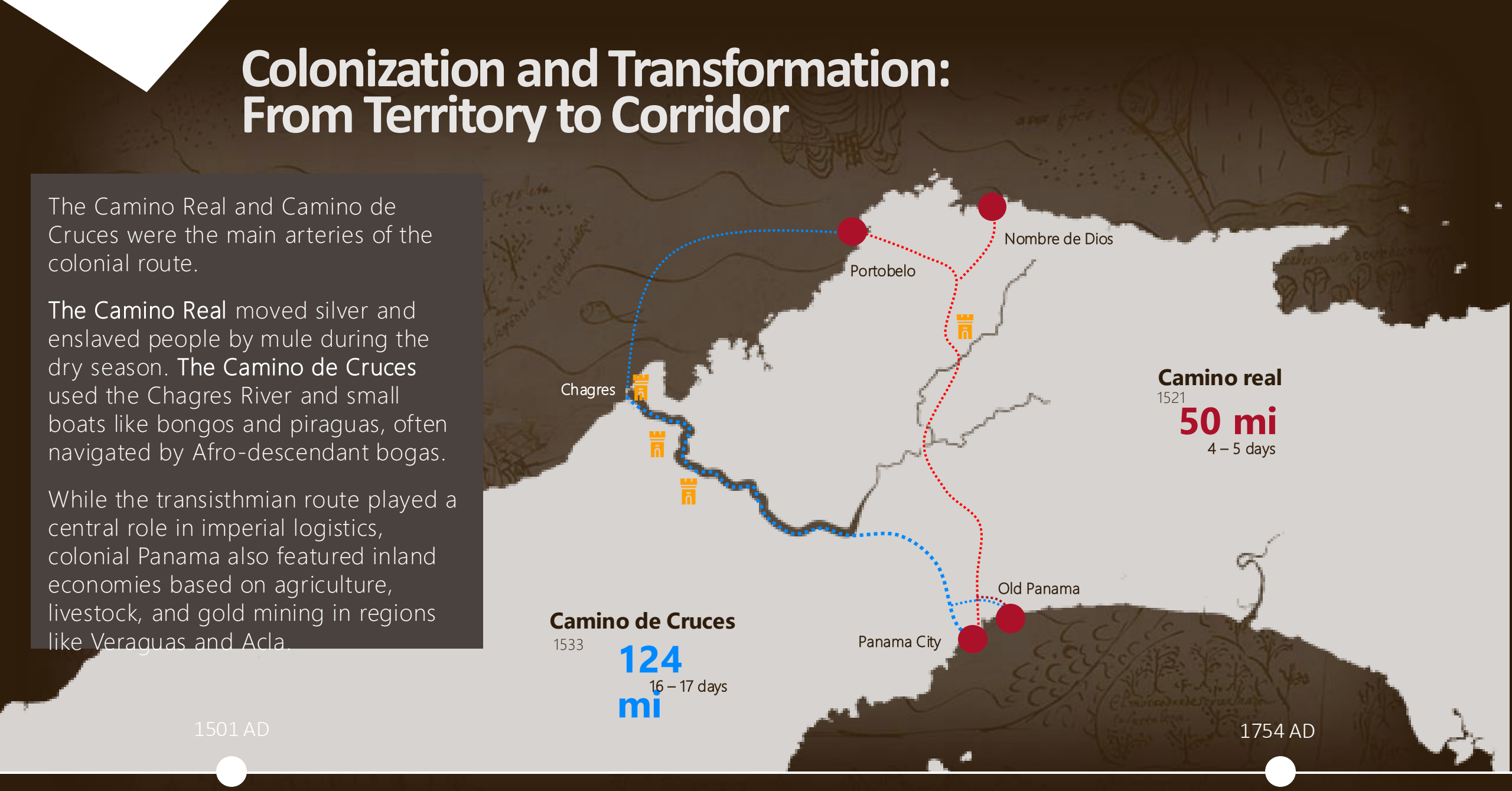
Sketch indicating where it seems appropriate to build the fortress of Nombre de Dios. 1541. General Archive of the Indies.

Colonization and Transformation: From Territory to Corridor

The Camino Real and Camino de Cruces were the main arteries of the colonial route.

The Camino Real moved silver and enslaved people by mule during the dry season. **The Camino de Cruces** used the Chagres River and small boats like bongos and piraguas, often navigated by Afro-descendant bogas.

While the transisthmian route played a central role in imperial logistics, colonial Panama also featured inland economies based on agriculture, livestock, and gold mining in regions like Veraguas and Acla.



Sketch indicating where it seems appropriate to build the fortress of Nombre de Dios. 1541. General Archive of the Indies.
Route of the Camino de Cruces and Camino Real. 2024. Museo del Canal Interoceánico,
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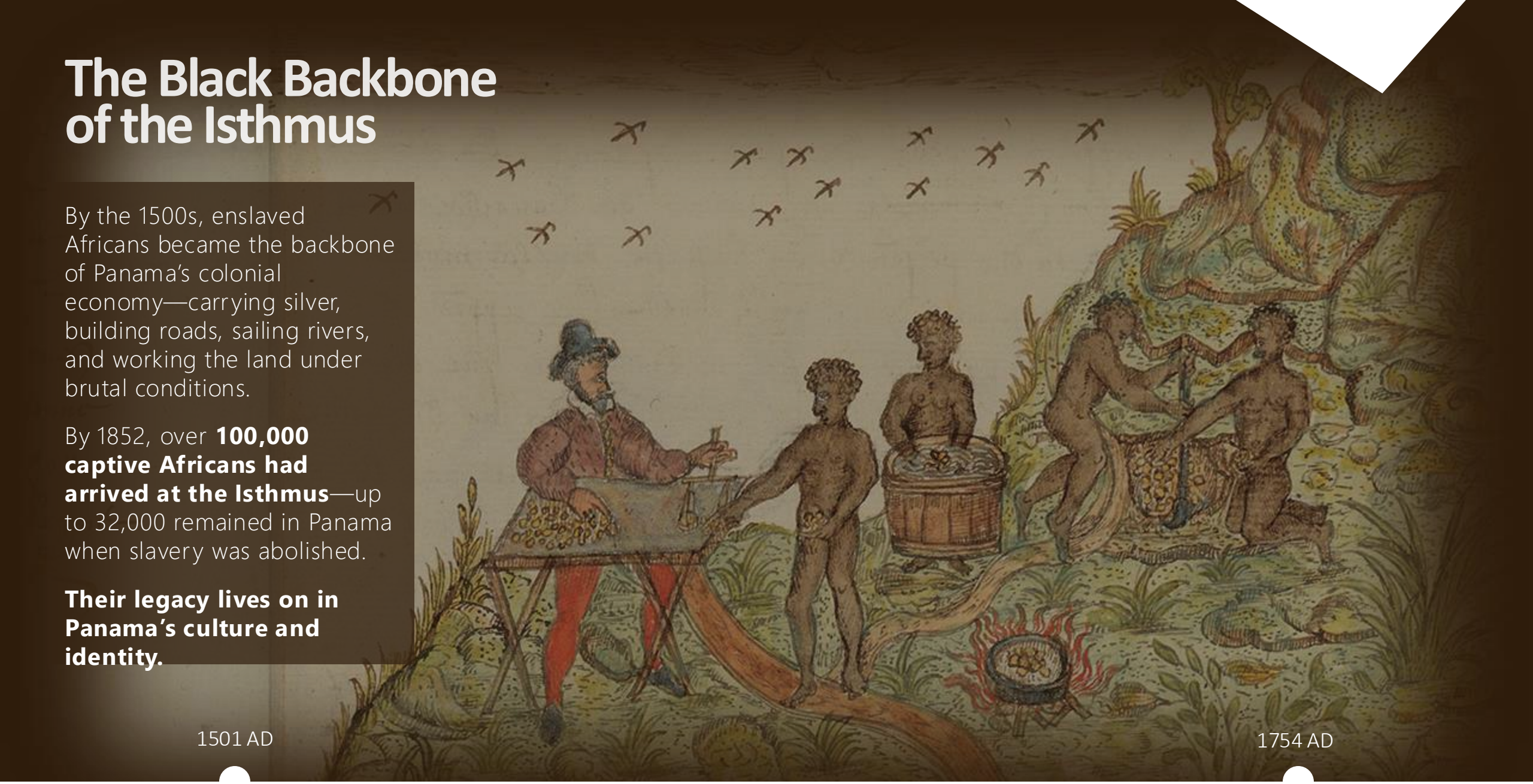
The Black Backbone of the Isthmus

By the 1500s, enslaved Africans became the backbone of Panama's colonial economy—carrying silver, building roads, sailing rivers, and working the land under brutal conditions.

By 1852, over **100,000 captive Africans had arrived at the Isthmus**—up to 32,000 remained in Panama when slavery was abolished.

Their legacy lives on in Panama's culture and identity.



1501 AD

1754 AD

How the Negro Slaves Work and Look for Gold in the Mines of the Region Called Veragua [Panama]. Histoire Naturelle des Indes, Unknown author, c. 1586. The Morgan Library and Museum.

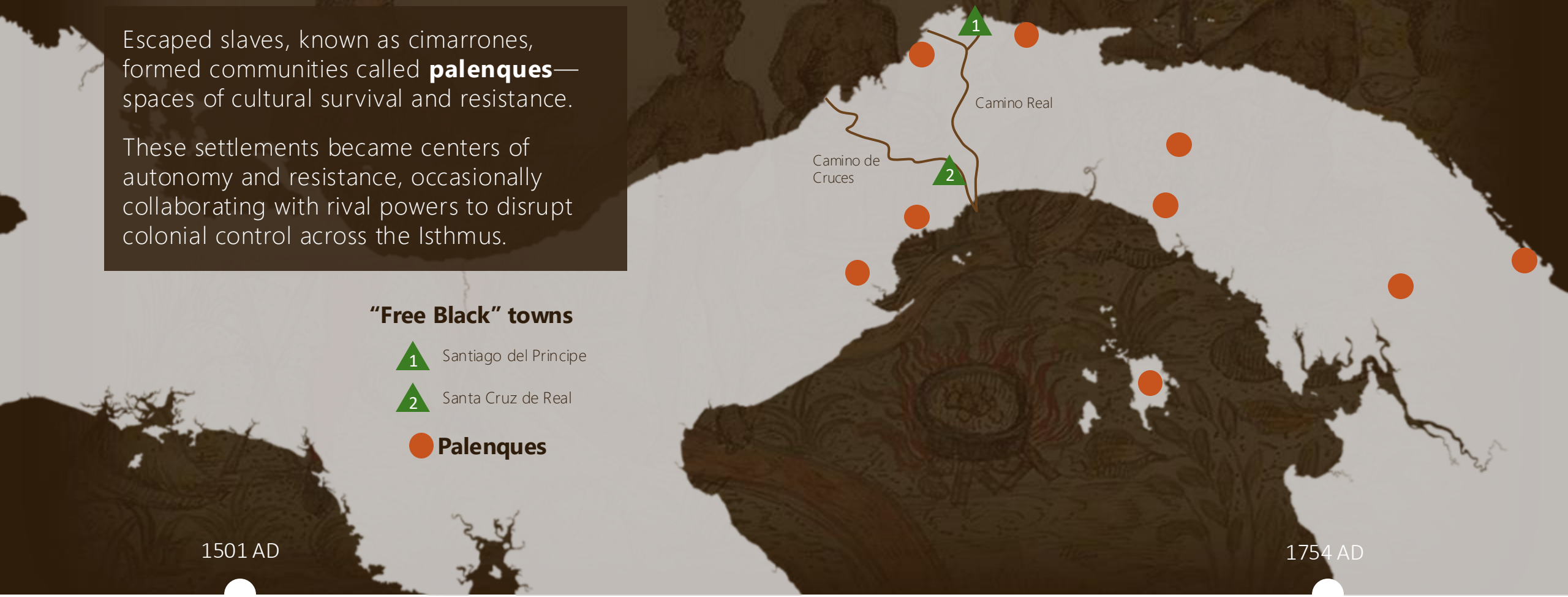
The Black Backbone of the Isthmus

Escaped slaves, known as cimarrones, formed communities called **palenques**—spaces of cultural survival and resistance.

These settlements became centers of autonomy and resistance, occasionally collaborating with rival powers to disrupt colonial control across the Isthmus.

Cimarronaje in Panama

*Approximate locations



“Free Black” towns

1 Santiago del Principe

2 Santa Cruz de Real

Palenques

1501 AD

1754 AD

How the Negro Slaves Work and Look for Gold in the Mines of the Region Called Veragua [Panama]. Histoire Naturelle des Indes, Unknown author, c. 1586. The Morgan Library and Museum.
Infographic on some Palenques and “Free Black Towns.” 2024. Museo del Canal Interoceánico.
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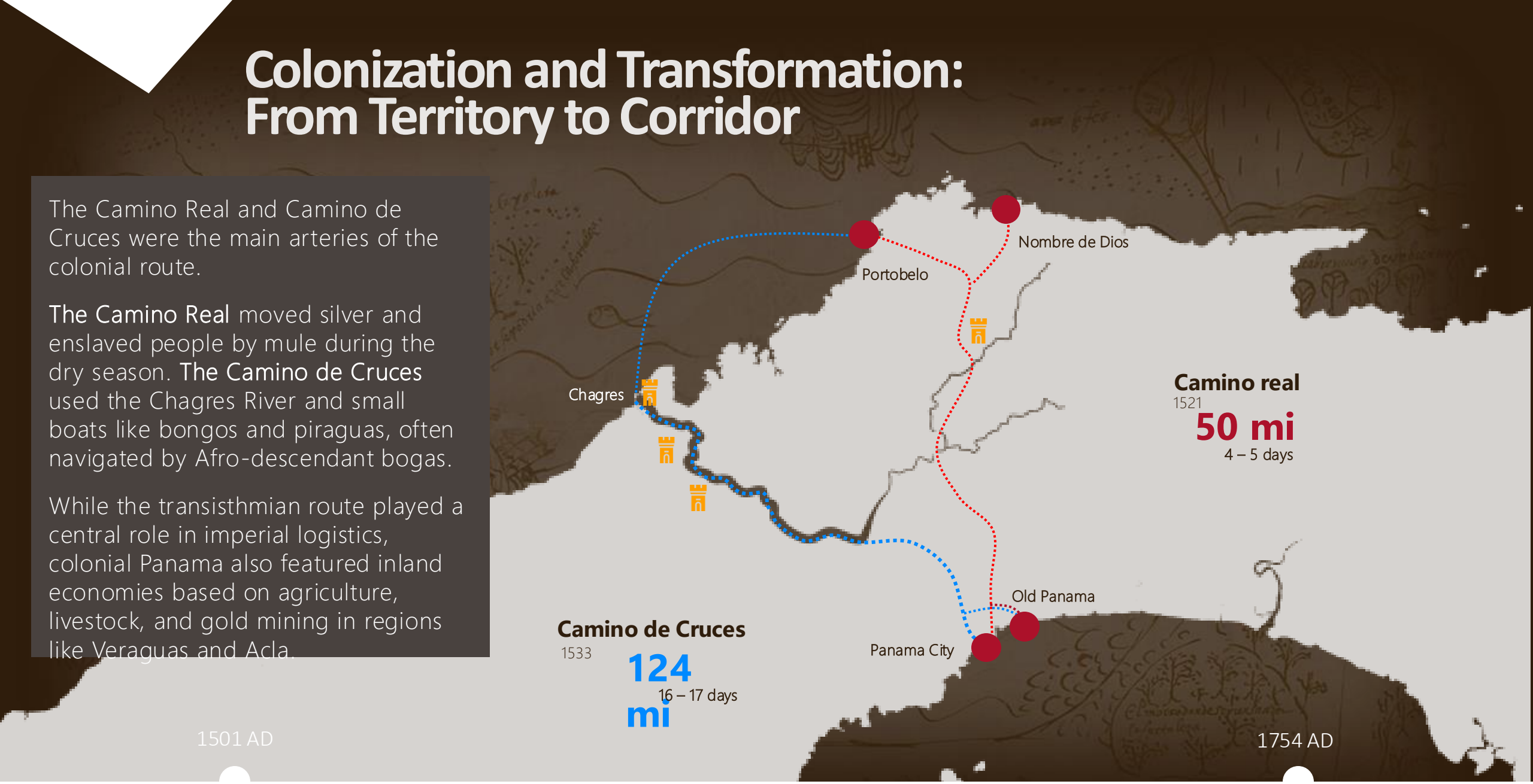

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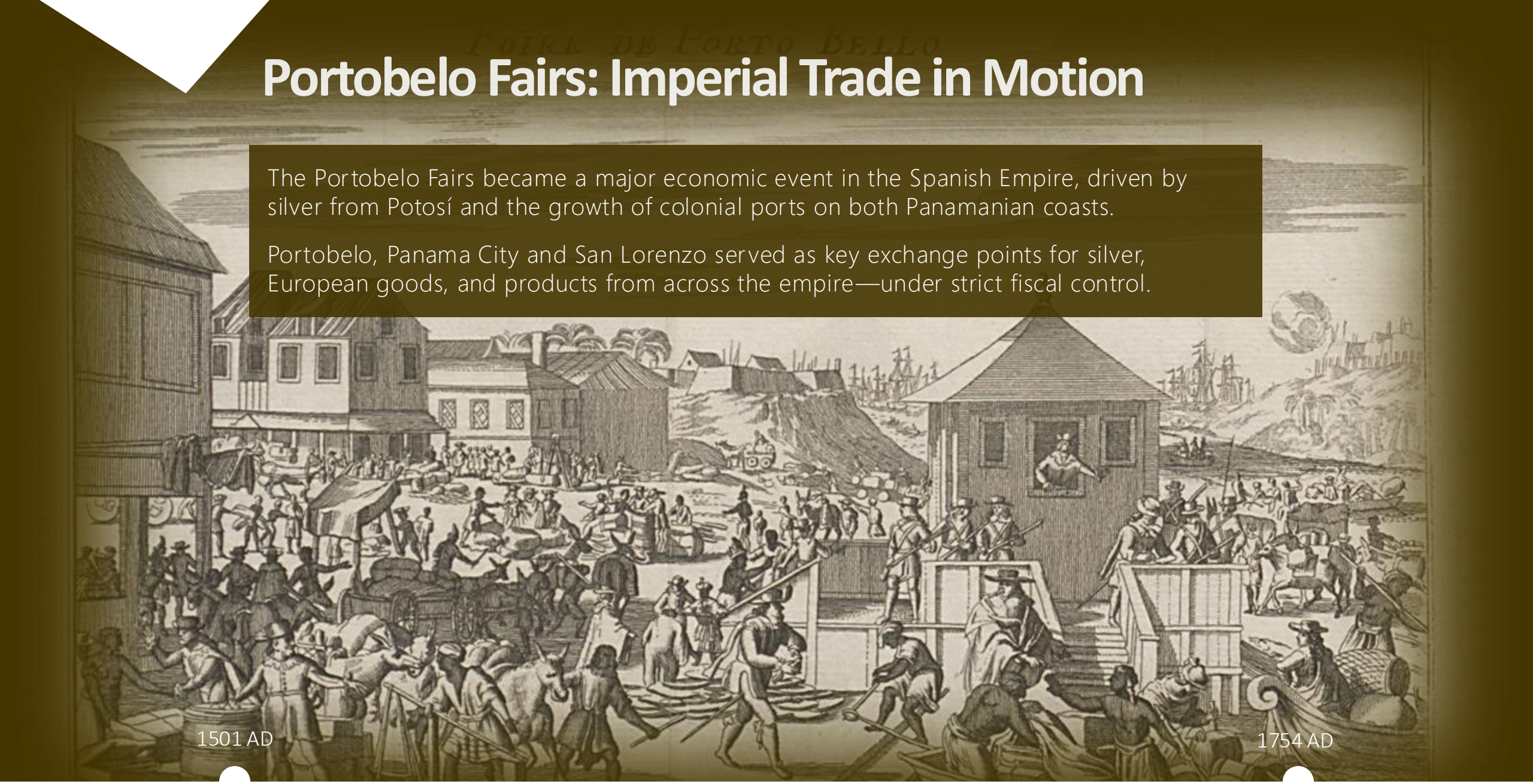
Portobelo Fairs: Imperial Trade in Motion

The Portobelo Fairs became a major economic event in the Spanish Empire, driven by silver from Potosí and the growth of colonial ports on both Panamanian coasts.

Portobelo, Panama City and San Lorenzo served as key exchange points for silver, European goods, and products from across the empire—under strict fiscal control.



1501 AD

1754 AD

Foire de Porto Bello]. David Paul Marret, 1720. Biblioteca Nacional de Colombia.

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Portobelo Fairs: Imperial Trade in Motion

To connect its port cities, the Spanish Crown developed a road network across the Isthmus. The Camino Real and Camino de Cruces allowed silver, goods, and people to cross from the Pacific to the Atlantic.

These roads supported global maritime routes like the **Armada del Mar del Sur and the Flota de Tierra Firme**. Along the way, towns and ventas emerged to serve travelers, forming a transisthmian circuit that linked Europe, the Americas, Africa, and Asia through Panama.

1501 AD

1754 AD

Foire de Porto Bello]. David Paul Marret, 1720. Biblioteca Nacional de Colombia.
The Isthmus at the Crossroads of Global Trade. 2024. Museo del Canal Interoceánico
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Fortifying the Empire: The Panama Defense Complex

During the colonial period, Panama's strategic position and role in moving wealth made it a constant military target.

To protect both the routes and port cities, the Spanish Crown built forts, batteries, and defensive systems—especially around Panama, Portobelo, the Chagres River, and the Camino de Cruces.

Despite these efforts, the Isthmus remained vulnerable to attacks by pirates, privateers, and rival empires, exposing the limits of imperial control.

1501 AD

1754 AD

Perspective plan of the site at the mouth of the Chagres River, including the proposed fortress. Author: D. Enrique Enriquez, 1637. General Archive of the Indies.
The battle between the Spaniards and the pyrats or Buccaniers before the city of Panama. Alexandre Exquemelin, 1686. Museo del Canal Interoceánico Collection.
Early battle plan showing Vice Admiral Edward Vernon's successful attack on Chagres during the War of Jenkins' Ear. Author: Emanuel Bowen, 1740. Museo del Canal Interoceánico Collection.

Decline of the Route and the Independence Period

In 1739, British Admiral Edward Vernon captured Portobelo, exposing the fragility of Spain's defenses in the Caribbean.

By 1754, the Flota de Tierra Firme and the Portobelo Fair were suspended, signaling the decline of Panama's trade prominence.

In 1821, Panama declared independence and joined the Republic of Colombia.

Throughout the 19th century, international interest in building a canal revived, prompting surveys and proposals to reactivate the transisthmian route.

1754 AD

1821 AD

Edward Vernon. Author: Thomas Gainsborough, c. 1753. Picture Library, National Portrait Gallery, London. Museo del Canal Interoceánico Collection.
Painting of the capture of Portobelo by British Vice Admiral Edward Vernon. Author: Samuel Scott, 1740. National Maritime Museum.

Steam, Rail, and the 19th Century Route

In the 1820s, **steamships** began operating along Panama's coasts, using the old Camino de Cruces to move people and cargo.

The 1849 California Gold Rush made faster crossings essential.

By 1855, the **Panama Railroad** connected the Atlantic and Pacific—accelerating transit and marking a new era of technification along the Isthmus.

1821 AD

1855 AD

View of the harbor and Castle Chagres. Gleason's Pictorial Drawing-Room Companion, c. 1851. Museo del Canal Interoceánico Collection.
Panama Railway – The Culebra or Summit Station. The Illustrated London News, 1855. Museo del Canal Interoceánico Collection.

The French Attempt

In 1876, Ferdinand de Lesseps led a French initiative to study canal routes in Central America.

Naval officer Lucien Wyse surveyed the region and proposed a sea-level route from Limón Bay to Panama City, aligned with the Panama Railroad.

In 1878, the Wyse Concession granted France exclusive rights from Colombia for 99 years.

The 1879 Paris Congress formalized the project and attracted international investment, though the route and design were already predetermined.

1876

1904

Camp and Facilities in the Center of the Isthmus. Lucien N.B. Wyse, Le Canal de Panama. 1886 / 13.1.6. Museo del Canal Interoceánico Collection
Mr. Ferdinand de Lesseps, .circa 1880, Museo del Canal Interoceánico Collection

The French Attempt

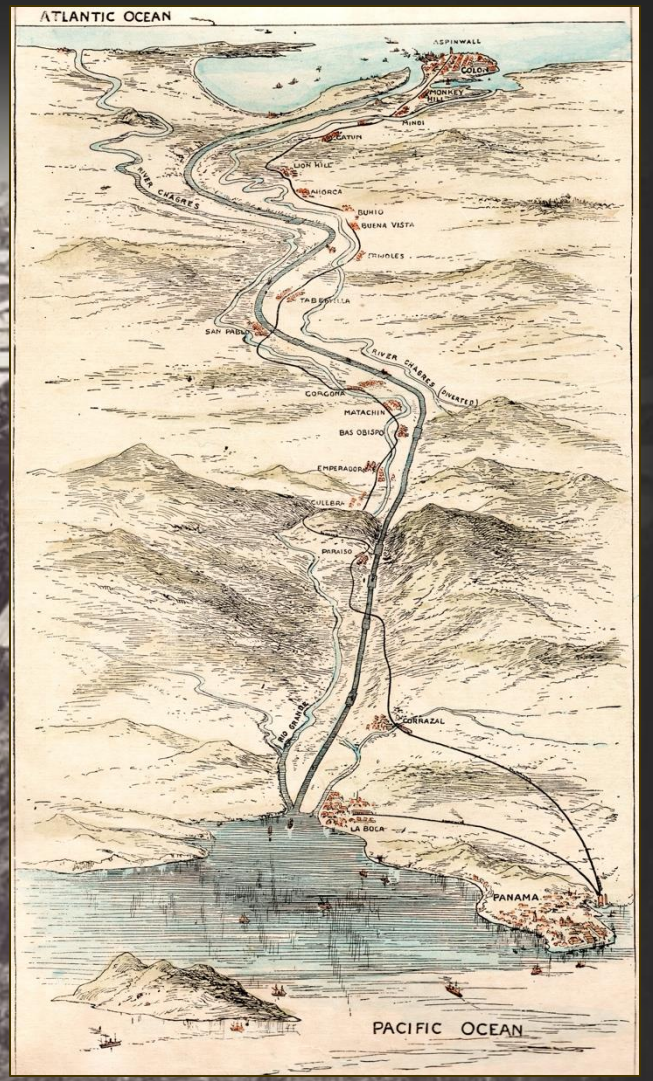
At the 1879 Paris Congress, engineers presented various proposals, including a lock-based design by Baron de Lépinay featuring dams, artificial lakes, and locks—minimizing excavation and flood risks.

De Lesseps rejected this in favor of a sea-level canal. As work advanced, harsh terrain and tropical conditions took their toll.

Malaria and yellow fever devastated the workforce, causing thousands of deaths.

Though the French attempt was ultimately halted, it laid critical technical and political groundwork for the canal's future realization.

1876



1904

Looking South from the Hill on the West Bank. 1898. 12.44.1. Museo del Canal Interoceánico Collection.
Route of the Canal from Colón to Panama. Published in The Illustrated London News, June 1888. 13.1.715. Museo del Canal Interoceánico Collection.

Building the Canal, Shaping a Nation

In 1904, the United States began construction on a state-led, federally funded canal project—following the earlier French attempt.

By 1907, engineers shifted to a lock-based design, better adapted to the Isthmus's terrain.

Culebra Cut was the most demanding section, requiring explosives, machinery, and precise coordination.

Key innovations included damming the Chagres River, creating Gatun Lake, and building 1,000-foot-long locks to enable elevation changes between oceans.

1904

1914

Deck Scene, SS Ancon Arriving At Cristobal With 1500 Laborers, Panama Canal Authority Archives
Culebra Cut: Looking East From West Bank, French Excavation And Equipment (Gold Hill), Panama Canal Authority Archives
Looking East From West Bank, Rock Slide, Gold Hill, With Two Steam Shovels Caught, Panama Canal Authority Archives

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Building the Canal, Shaping a Nation

Completed in 1914, the Panama Canal became a landmark of 20th-century infrastructure—reshaping global trade and Panama's strategic role.

Over 32,000 workers, mostly from the Caribbean, along with others from Europe, took part in the project.

The Ancon made the first official transit on August 15, 1914.

The U.S. invested $375 million and excavated nearly 239 million cubic yards—building on the groundwork of the French attempt and completing the canal under budget.

1904

1914

SS Ancon In Upper West Chamber, Miraflores, Panama Canal Authority Archives

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From International Oversight to Panamanian Leadership

On December 31, 1999, Panama assumed full control of the Canal, ending nearly a century of foreign administration.

This historic shift followed the 1977 Torrijos–Carter Treaties, which established a gradual and orderly transfer of the Canal and surrounding zone.

The transition was more than a legal act—it marked the recovery of national purpose, identity, and vision.

Since then, the Canal has become a symbol of Panama's ability to lead, manage, and shape its own future.

1977

1999

Jimmy Carter and General Omar Torrijos shake hands after signing the Panama Canal Treaty. circa 09/07/1977. (Photo by: HUM Images/Universal Images Group via Getty Images)
Panama Canal Authority Archives

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Modernization and the Canal Expansion

In 2016, Panama completed one of the most ambitious infrastructure projects in its history: the expansion of the canal. This wasn't just an upgrade—it was a bold step into the future.

The new locks allow the transit of larger vessels (Neopanamax), expanding capacity and reaffirming Panama's relevance in global trade.

But beyond engineering, the expansion was a statement: Panama has not only inherited a canal—it has reimagined it.

1999

2006

Panama Canal Authority Archives

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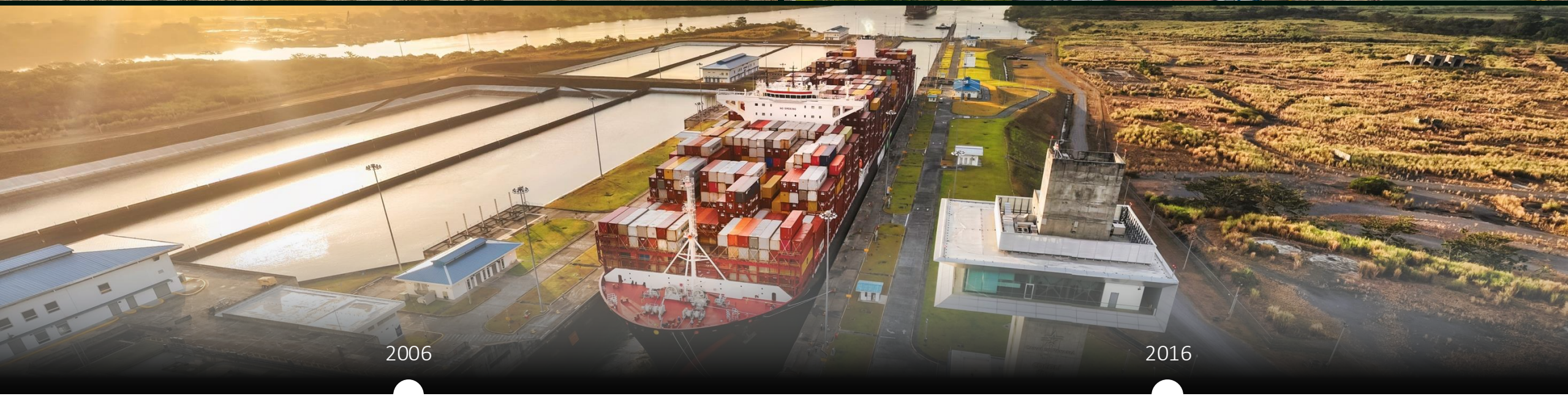
Modernization and the Canal Expansion



2006

2016

Panama Canal Authority Archives

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Panama Canal Today: Delivering Results

2000 – 2025

USD 15B

25 years of investment and maintenance

Capital investments

Operational maintenance and watershed management

USD 28.3B

transferred to the National Treasury over a period of 25 years

Present

Panama Canal Authority Archives

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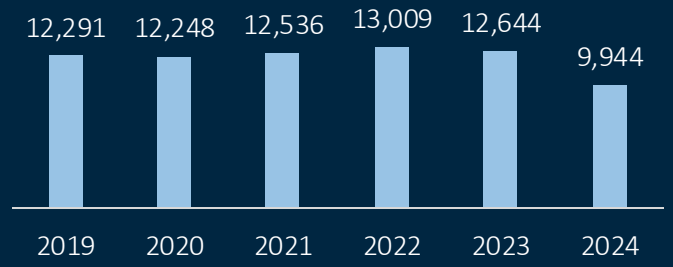
Panama Canal Today: Delivering Results

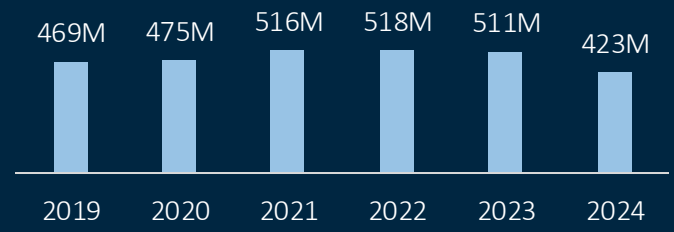
Operational

Total Transits (oceangoing)



Transits peaked at **13K in FY22**; down to **10K in FY24**

Tonnage (PC/UMS) (oceangoing – millions tons)



Tonnage peaked at **518M in FY22**; down to **423M in FY24**

Financial (FY2024)

Revenues
USD 4,986.0M
CAGR (2019 - 2024): 9%

Net earning
USD 3,453.3M
CAGR (2019 - 2024): 18%

Operating Margin
62.2%
CAGR (2019 - 2024): 7%

Operating Margin includes water cost
48.0%
CAGR (2019 - 2024): 14%

Present

Operating in an Era of Climate Risk

Average Rainfall in the Panama Canal Watershed

Historical avg. | 103.7 in

1997 | 66.6 in

2014 | 88.7 in

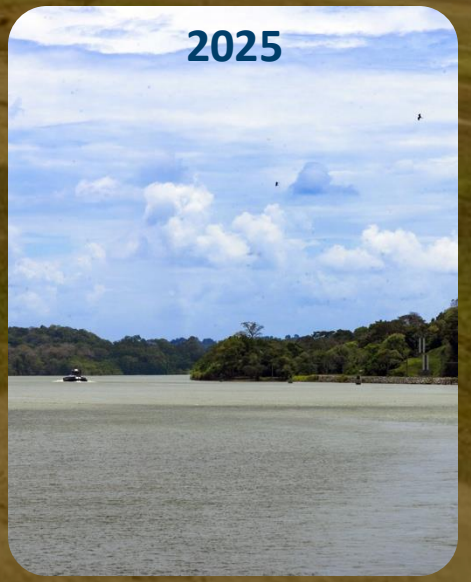
2015 | 70.0 in

2016 | 107.8 in

2019 | 84.6 in

2023 | 72.7 in

2024 | 95.2 in



Present

Panama Canal Authority Archives

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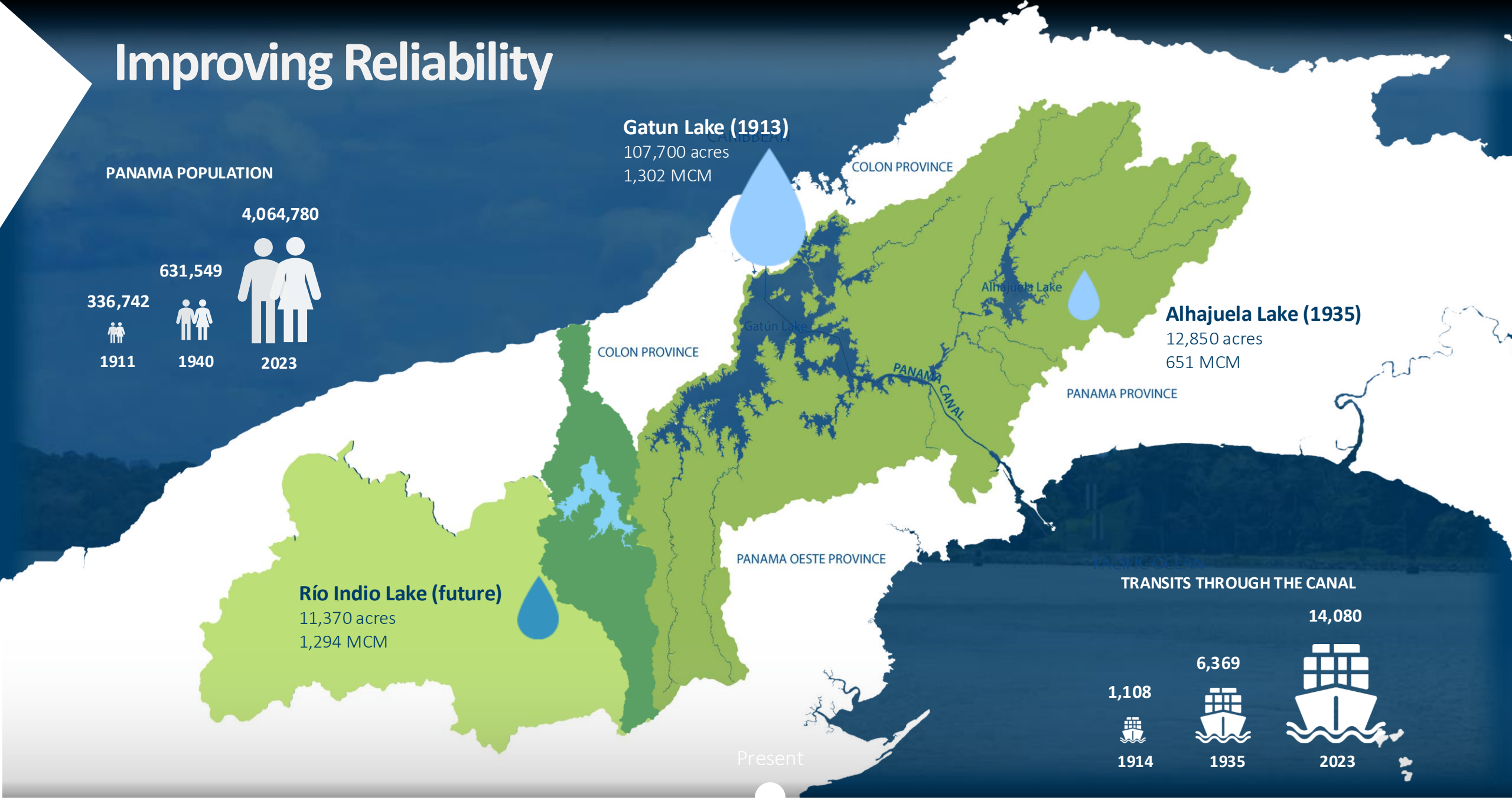
Improving Reliability



Aiming for sustainability

Integrated and sustainable watershed management plan

- Improvements or construction of **rural aqueducts and sanitation**.
- **Land titling** program.
- **Agroforestry, silvopastoral and family farming** project.
- Environmental **education programs**.
- Training center.
- **Photovoltaic systems** in schools.
- **Training** to strengthen job **opportunities.**
- **Risk mitigation** measures in the event of **floods** or **droughts**.
- Strengthening of **local organizations and institutions**.
- **Agribusiness**, **marketing** and **ecotourism** support.

Investment over the last 17 years: **US$ 117 million**

Present

Aiming for sustainability

Environmental management oriented to SDG

A Shortcut That Moves the World

A Shortcut That Moves the World

Present

FY 2024 Total Cargo
(million long tons)

Country	FY 2023	FY 2024
US United States	204.3	160.12
CN China	64.3	45.04
JP Japan	41.3	30.73
KR South Korea	27.9	19.67
MX Mexico	27.5	17.73
CL Chile	23.8	17.42
PE Peru	19.7	15.71
EC Ecuador	16.4	13.18

Main Routes – FY 2024

Country	FY 2024	% Total Cargo
◉ Asia - US East Coast	88.4M	42.0%
◉ West Coast South America - East Coast USA	30.9M	14.7%
◉ West Coast Central America - East Coast USA	17.2M	8.2%
◉ West Coast South America - Europe	13.6M	6.5%
Other Routes	60.3M	28.7%

Beyond the Locks: Panama's Expanding Logistics Hub

Panama's air hub

Direct flights to the Americas and Europe	89
Countries	38

Panama Maritime Hub

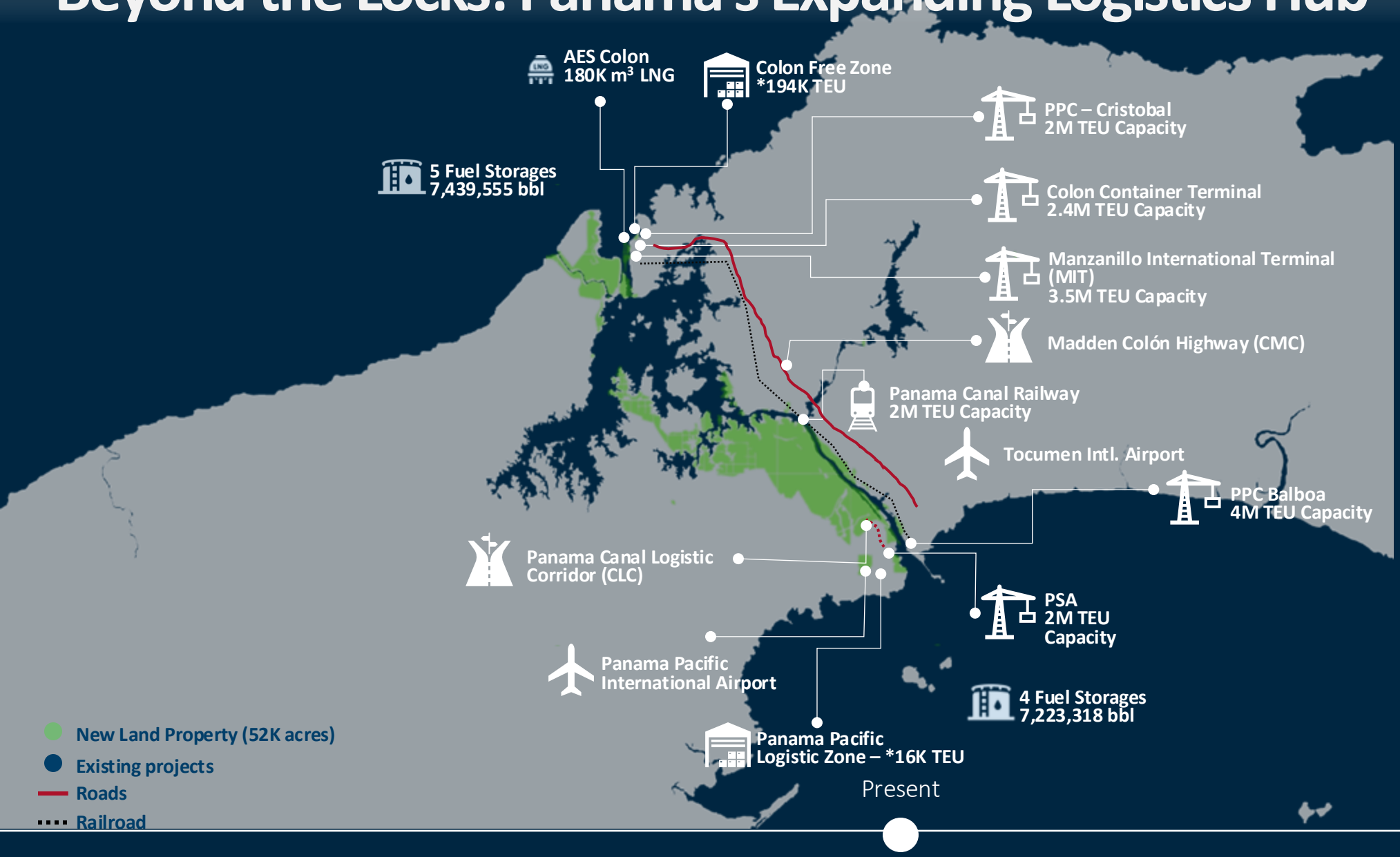
Commercial routes	180
Countries	170
Ports	1920

Main Panamanian Port Infrastructure

Berths	32
Gantry Cranes	82
RTGs	146

Present

Beyond the Locks: Panama's Expanding Logistics Hub



Current Figures (est.)

2023 Container Movements
8.3M TEU

Land Transshipment (est.):
556K TEU

Land for Logistic Use
4,274.9 acres

Colon Free Zone: **1,801.4 acres**
Panama Pacifico: **224.9 acres**
16 Free Trade Zones: **504.1 acres**
24 Logistic Parks: **1,744.6 acres**

Total fuel storage capacity
14,662,873 bbl

Pacific: **7,223,318 bbl**
Atlantic: **7,439,555 bbl**

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*Estimated inbound and outbound TEUs movement in 2023

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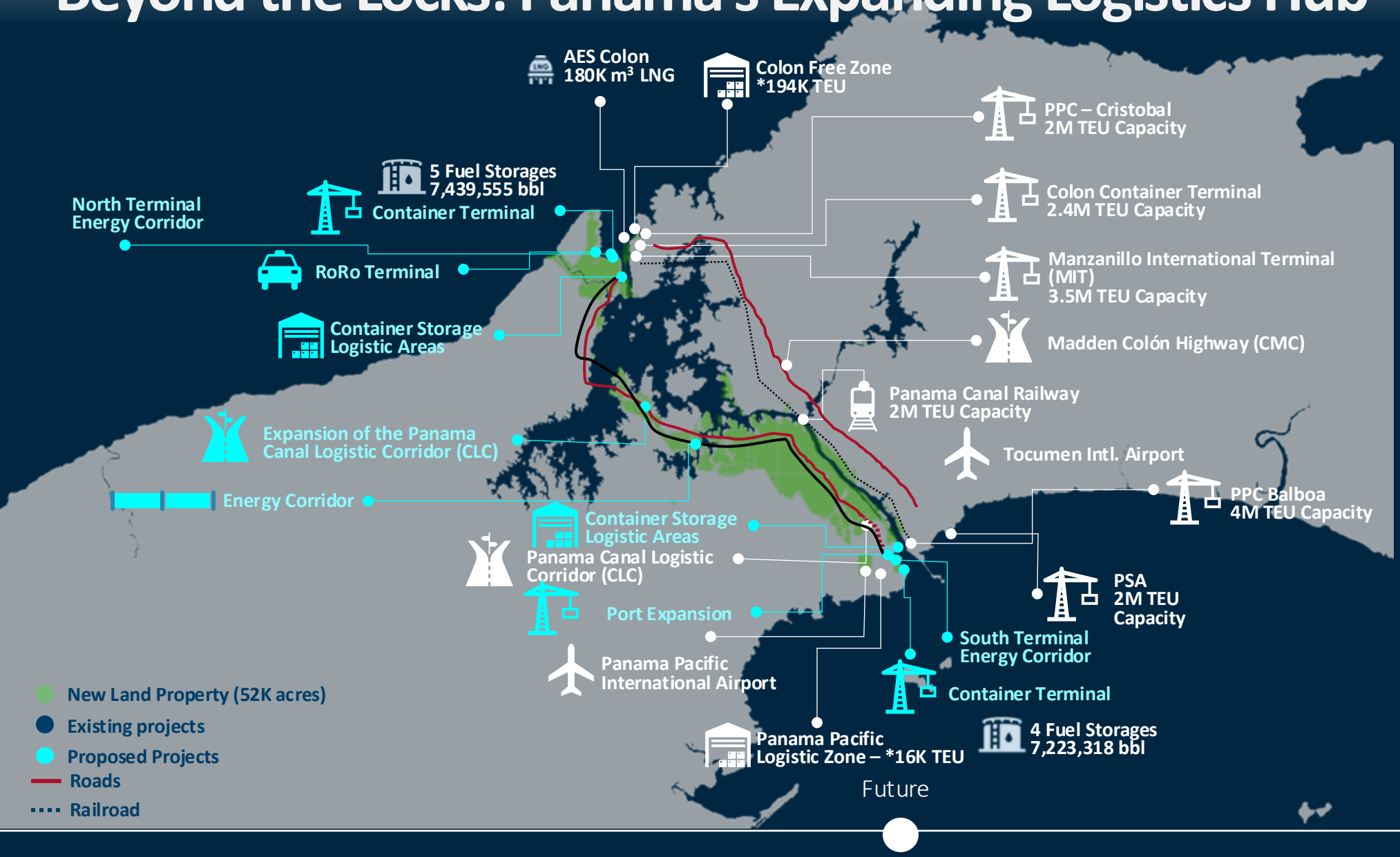
Beyond the Locks: Panama's Expanding Logistics Hub



2045 Future Perspectives

2045 Container Movements

12.1M TEU

Land Transshipment (est.):

1.4M TEU

Available Land for Logistic Use

4,522.0 acres

Colon Free Zone: **1801.4 acres**

Panama Pacifico: **224.9 acres**

16 Free Zones: **504.1 acres**

24 Logistic Parks: **1744.6 acres**

ACP available land for logistics use: **247.1 acres**

Note: Future perspectives are based on 2045 est. baseline scenario

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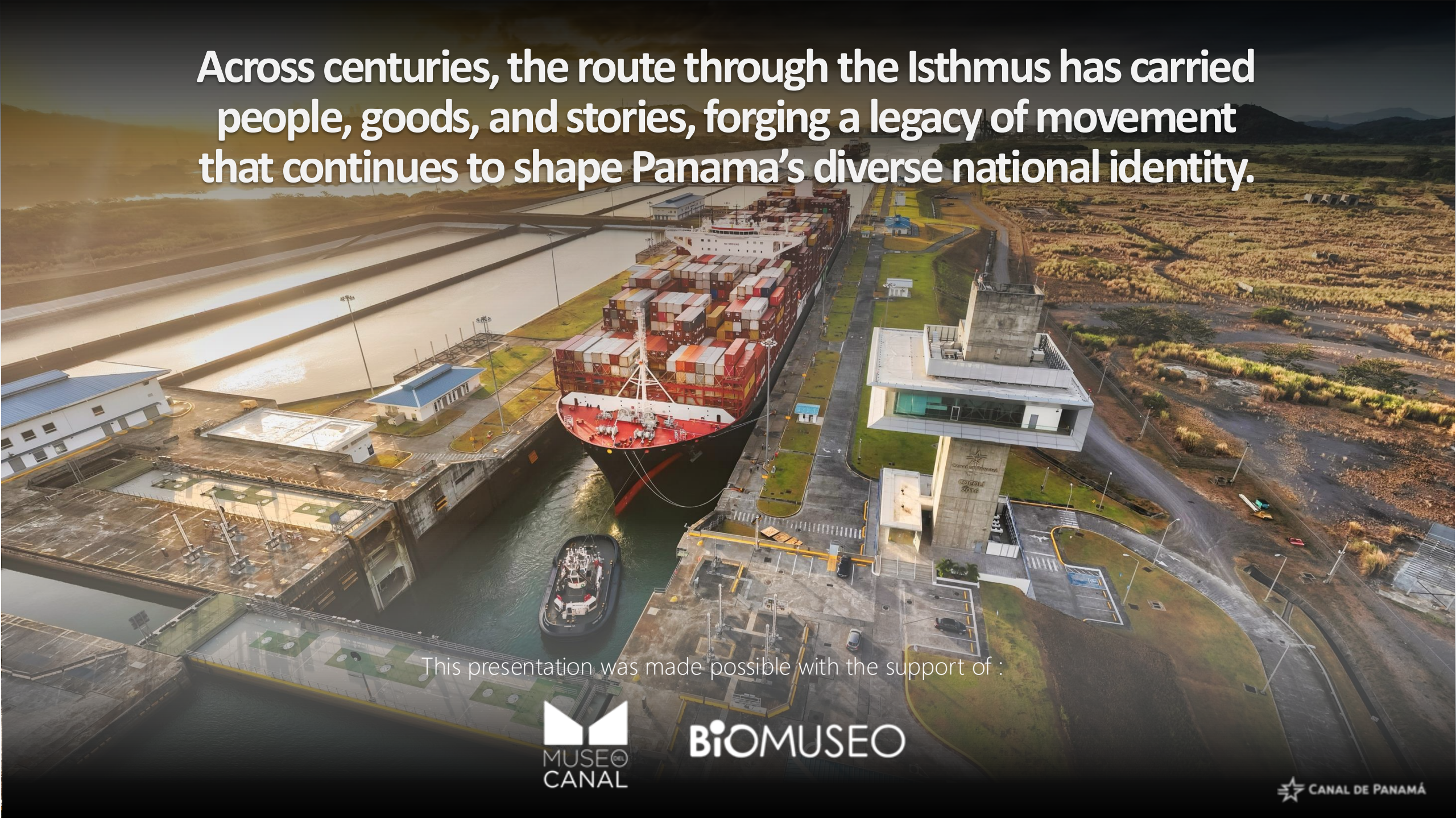
Across centuries, the route through the Isthmus has carried people, goods, and stories, forging a legacy of movement that continues to shape Panama's diverse national identity.
This presentation was made possible with the support of :
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