CANAL DE PANAMÁ

Update on the Panama Canal Expansion

Rodolfo Sabonge
EVP, Planning and Business Development

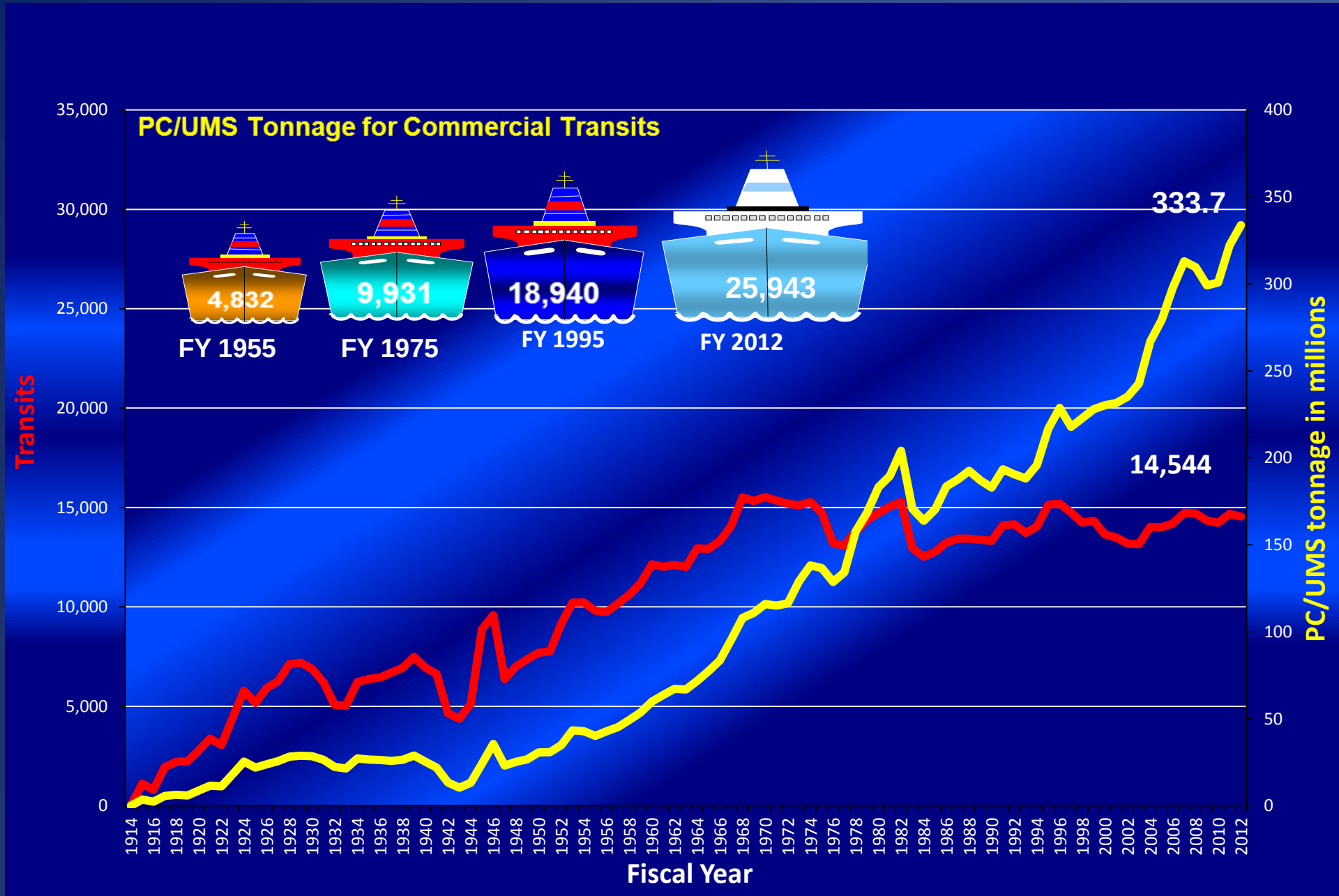
AAPA
January 24, 2013

Agenda

- Canal Traffic Update
- Panama Canal Expansion Update (video)
- Macro and Micro Drivers
- Potential Impact of the Expansion
- Canal New Business Development

Transits vs PC/UMS Tonnage

FY 1914 – FY 2012



Principal Users of the Panama Canal
FY 2011 and FY 2012

USERS	FY 2011*	FY 2012*	FY2012 (%)
United States	144.4	141.9	65
China	53.1	52.7	24
Chile	28.9	28.0	13
Japan	22.6	22.4	10
European Union	24.2	17.5	9
South Korea	19.1	17.0	8
Colombia	14.6	14.9	7

65% of the cargo that transits the Panama Canal has the United States as its origin or destination.

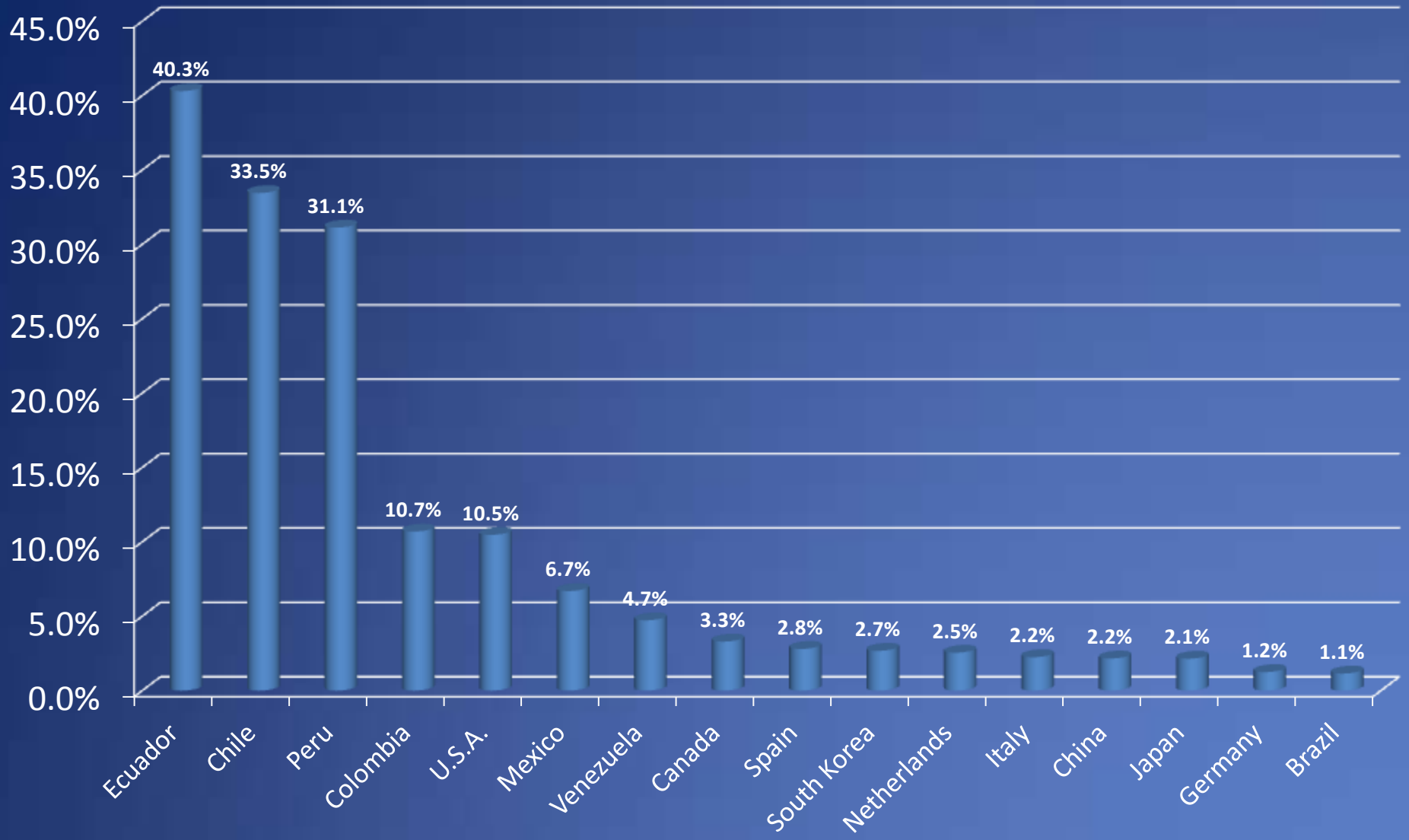
** In Million long tons*

Principal Trade Routes – FY 2012

Total: 218.1 M Long Tons

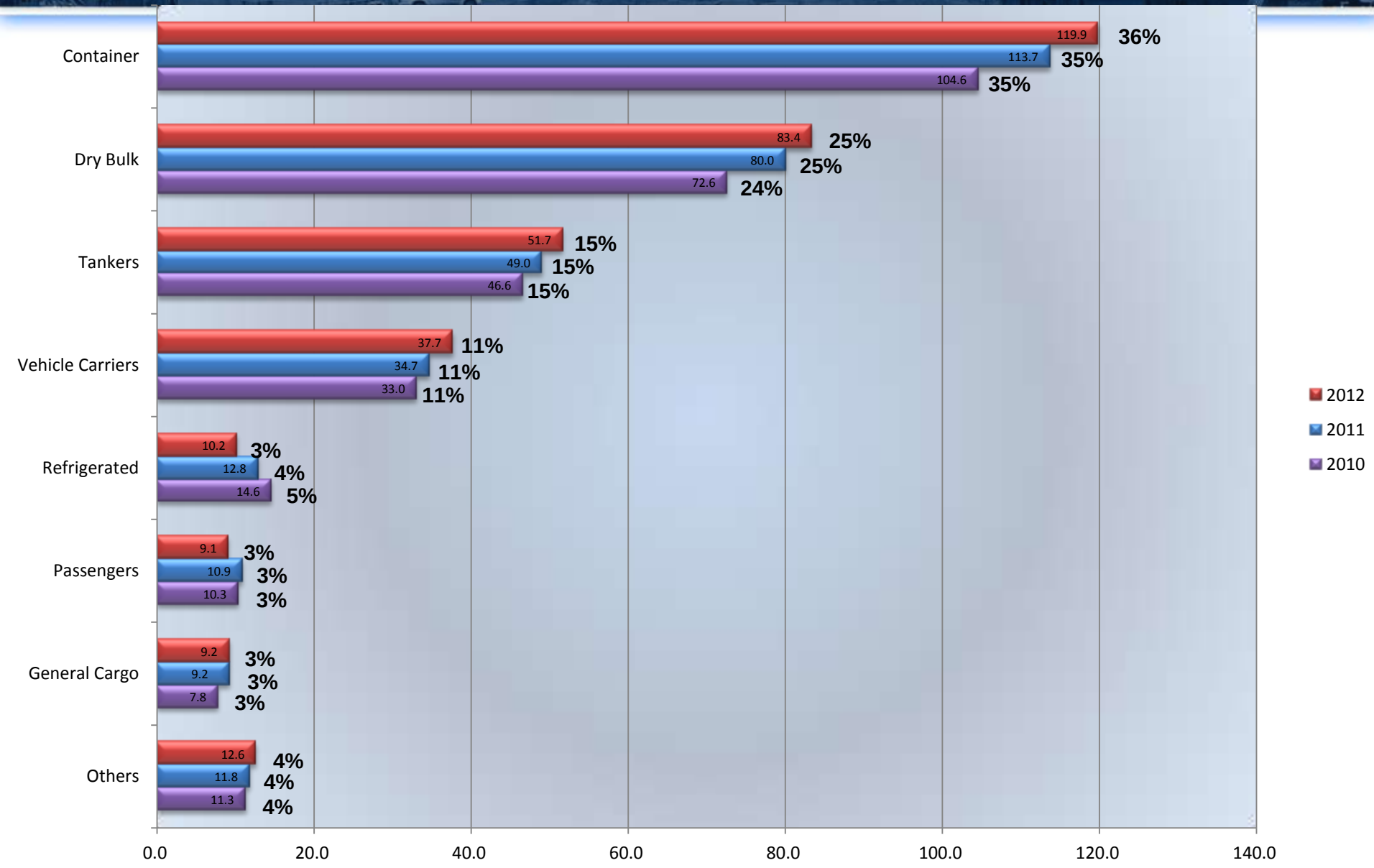
East coast U.S. - Asia	84.3M
West coast S. America - East coast U.S.	27.6M
West coast S. America - Europe	14.4M
West coast U.S. – Europe	9.7M
West Coast C. America – East coast U.S.	12.2M

Relative Importance of the Canal on the International Seaborne Trade of Selected Countries

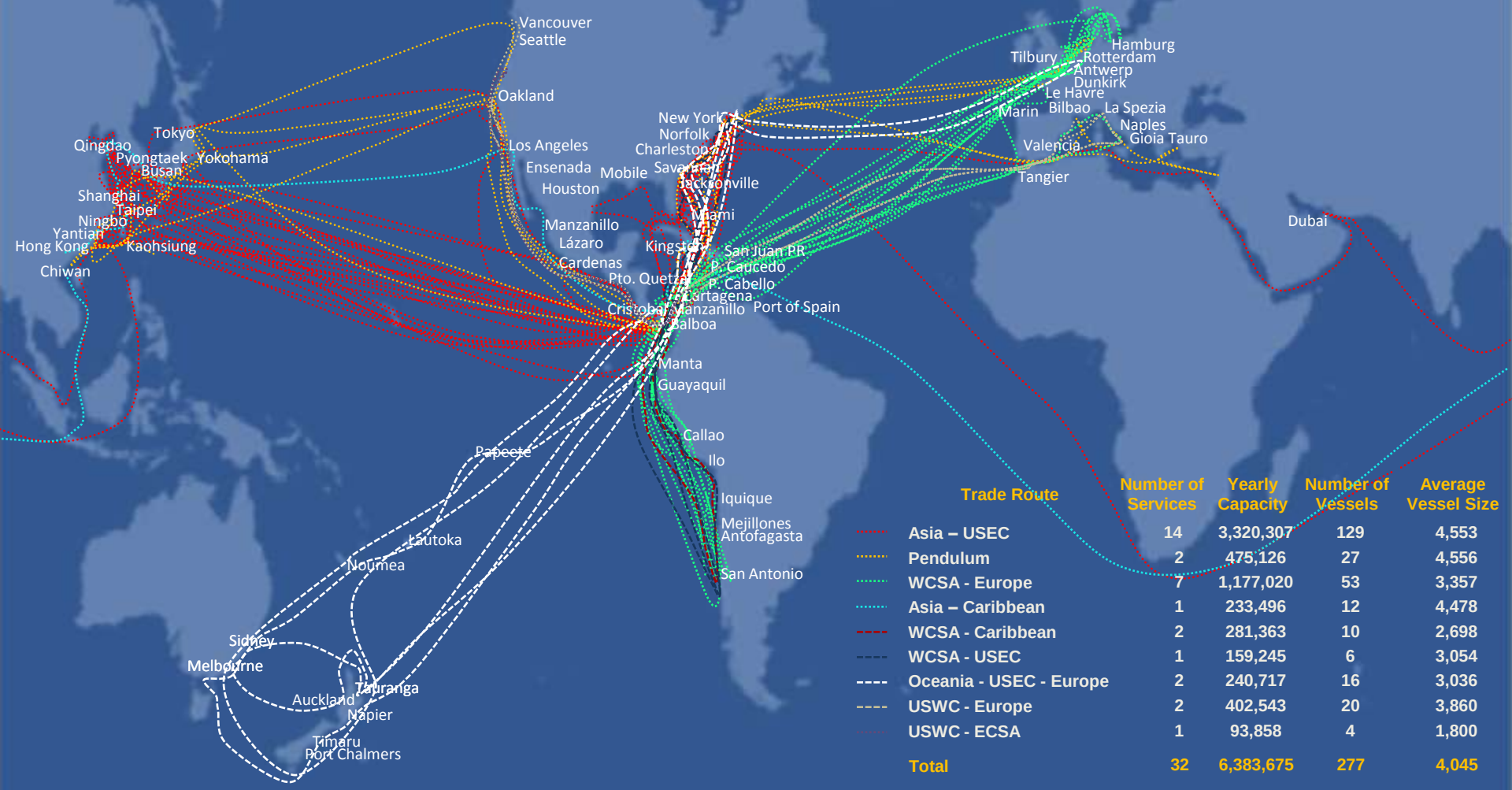


Source: ACP with information of IHS, Oct 2012

PCUMS '97 Tonnage (Million Tons)

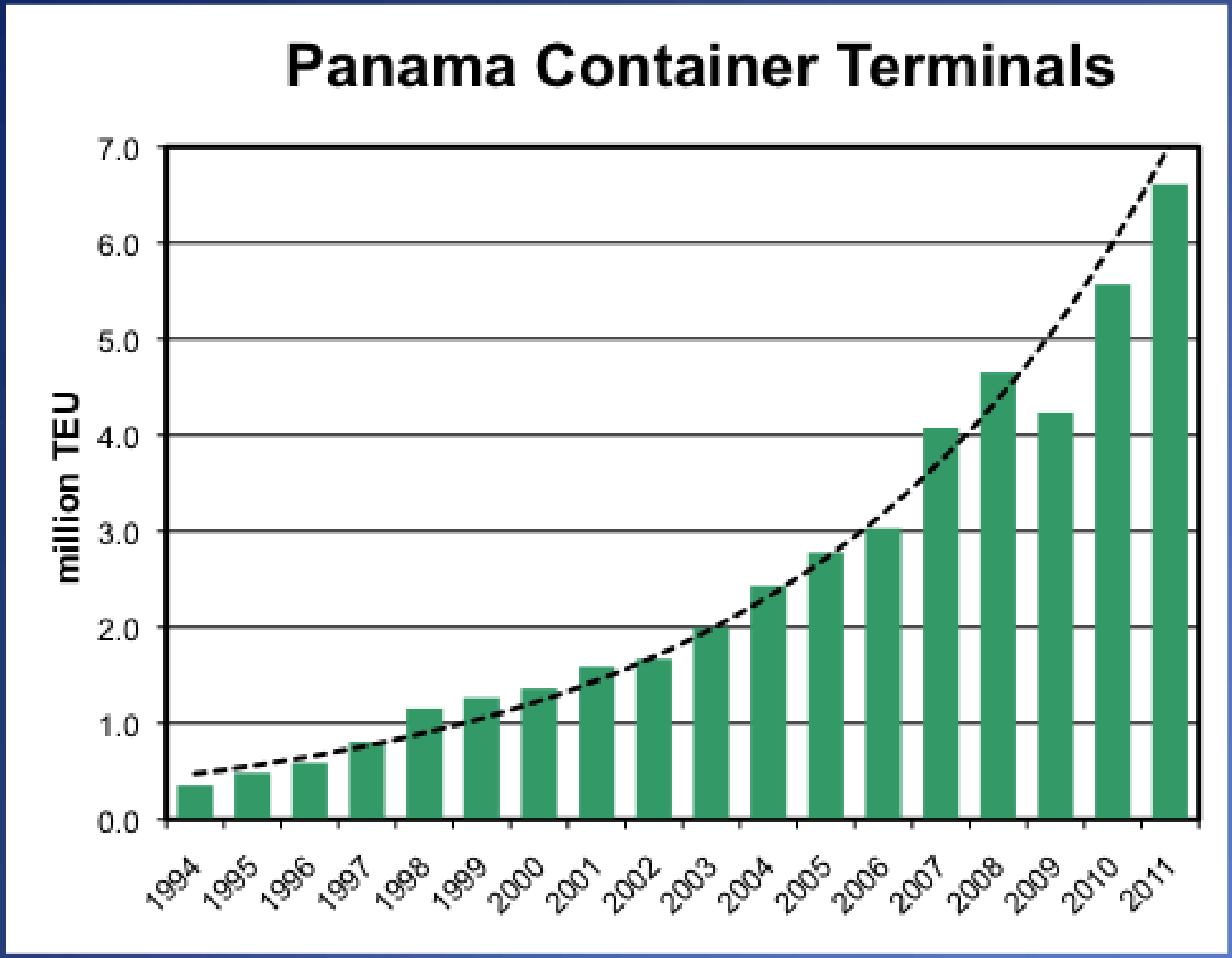


Liner Services Through The Panama Canal



Trade Route	Number of Services	Yearly Capacity	Number of Vessels	Average Vessel Size
Asia – USEC	14	3,320,307	129	4,553
Pendulum	2	475,126	27	4,556
WCSA - Europe	7	1,177,020	53	3,357
Asia – Caribbean	1	233,496	12	4,478
WCSA - Caribbean	2	281,363	10	2,698
WCSA - USEC	1	159,245	6	3,054
Oceania - USEC - Europe	2	240,717	16	3,036
USWC - Europe	2	402,543	20	3,860
USWC - ECSA	1	93,858	4	1,800
Total	32	6,383,675	277	4,045

Source: Compair Data, October 2012



6.5 million TEU, 18.5%

Port Development in Panama

1996: 235K TEUs
2010: 5.6M TEUs
2011: 6.5M TEUs
2015: 8.4M TEUs
2020: 12.4M TEUs

Panama Ports Company – Cristobal

PSA

Colon Container Terminal

Manzanillo International Terminal (MIT)

Panama Ports Company - Balboa

Inventory of Gantry Cranes - Panama

	Panamax	PPmax*	SPPmax**	Total
PPC-Balboa	8	10	6	24
PPC-CRI	6	5		11
CCT	5	5		10
MIT	2	6	9	17
PSA	3			3
	24	**26**	**15**	**65**

Source: Panamanian Ports, September 2012.

* PPmax=PosPanamax

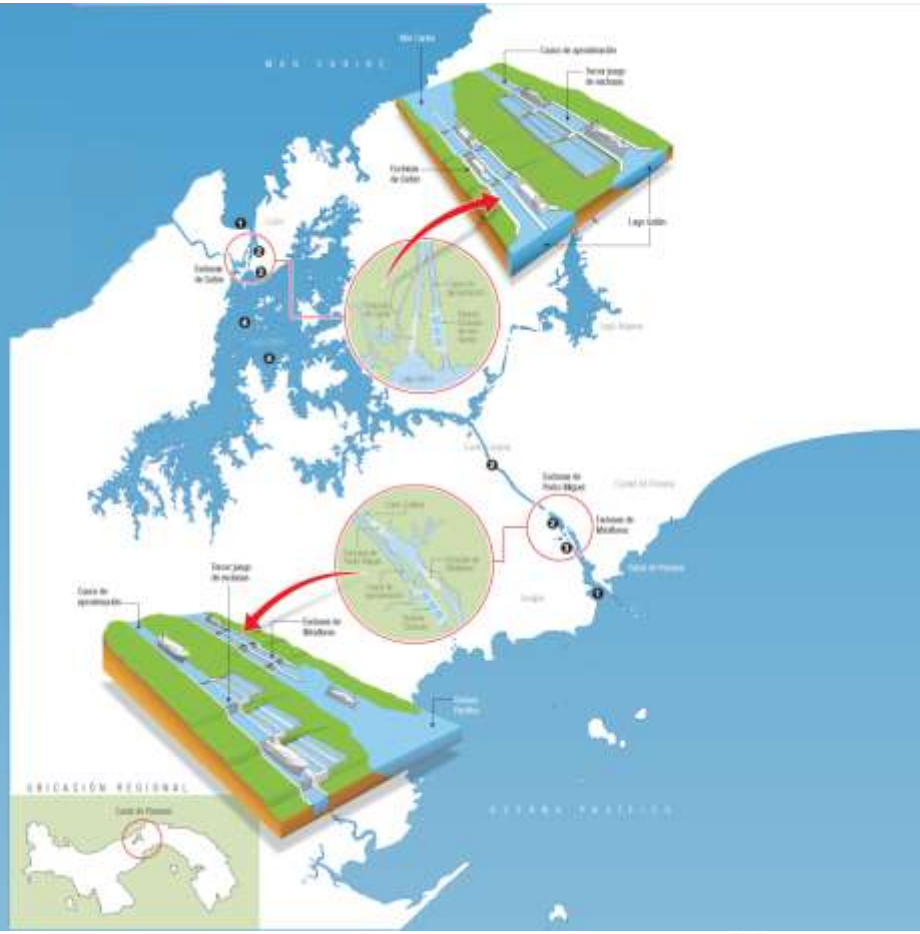
** SPPmax=SuperPosPanamax

Agenda

- Canal Traffic Update
- Panama Canal Expansion Update (video)

Canal Expansion Program Components

- Deepening of Pacific and Atlantic entrance channels
- Deepening and widening of the Gatun Lake navigation channel
- Construction of new access channel for Pacific Locks
- Construction of new Post Panamax Locks and water saving basins in the Atlantic and the Pacific
- Increase the maximum operating level of Gatun Lake



CANAL DE PANAMÁ

NEW LOCKS

CANAL DE PANAMÁ

Agenda

- Canal Traffic Update
- Panama Canal Expansion Update (video)
- Macro and Micro Drivers

Seaborne Trade Change Drivers

Macro Fundamentals:

- Population growth and demographics
- Slow economic growth – developed countries
- Globalization and faster growth of developing countries

Microeconomic Paradigms and Trends:

- Volatility in fuel costs and charter rates
- Environmental pressures to reduce emmissions
- Increase in logistics costs
- Supply chain: key differentiator
- Risk management: diversification/ flexibility
- Improve Service: flexibility, reliability
- Strong move to E-Commerce: Explosion of Multimodal Transport (sea-air-surface)

Seaborne Trade Change Drivers

Maritime Industry Response:

- Bigger and More Efficient Ships
- Better Use of Technology in Ship Management
- Improve Vessel Utilization / Asset Management
- R & D: Use of Cleaner Fuels (LNG)
- Improvements to Port Infrastructure and Suprastructure
- Growth in Transshipment
- Improved Connectivity (Rail/Road)
- Better Tracking / Controls

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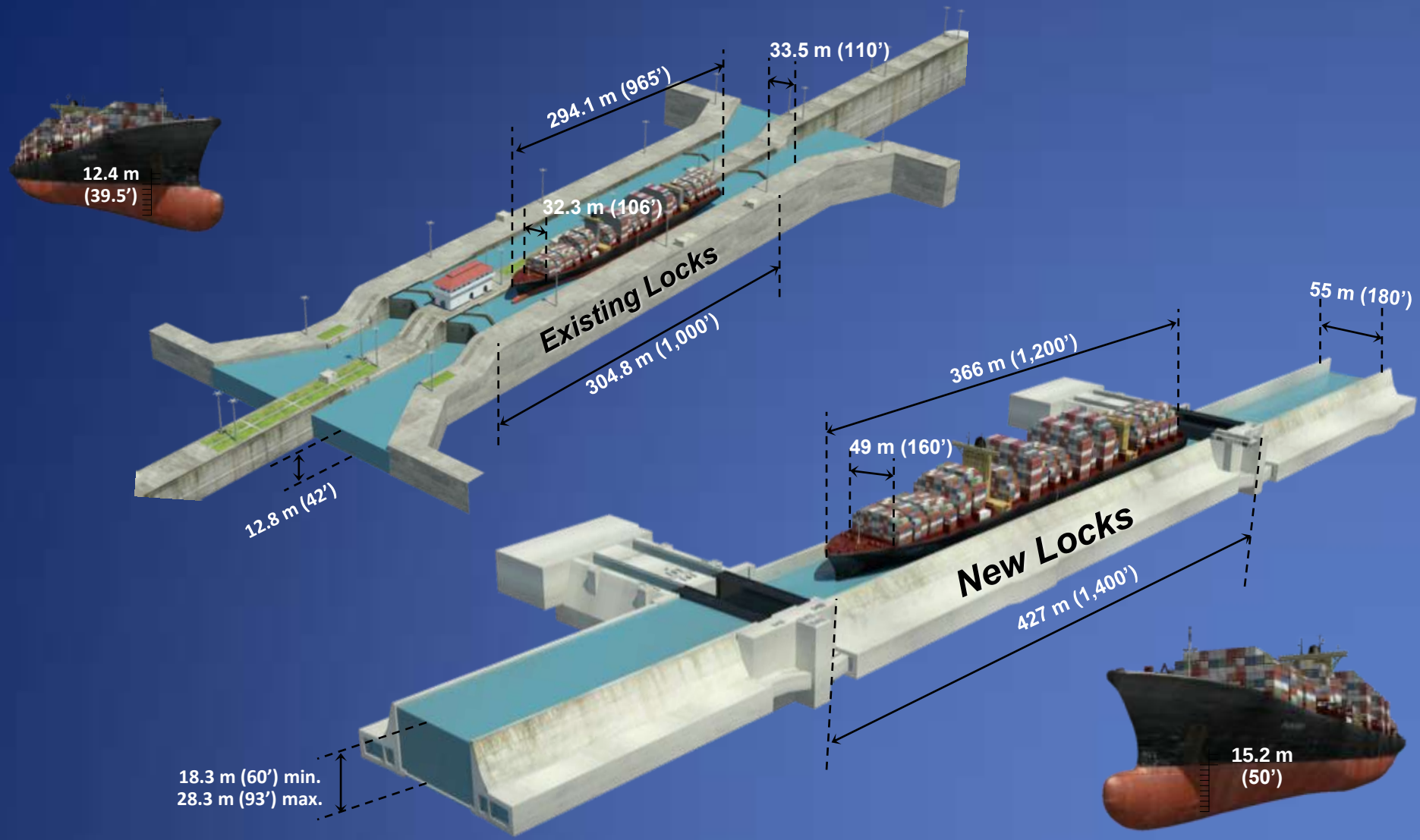
- Macro and Micro Drivers
- Potential Impact of the Expansion

Dimensions of Locks and Ships

Maximum size of vessels in existing Locks: ***4,400 TEU***



Maximum size of vessels in new Locks: ***13,200 TEU***

■ CONTAINER – 13,000 TEU

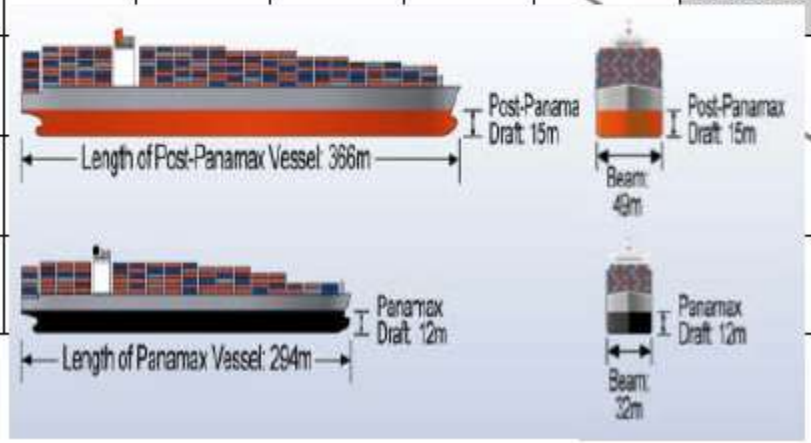
- **Main Dimension**
  - . LOA x B x D : 366.0 x 48.2 x 29.8 m
  - . Draft at Td / Ts: 14.0 m / 15.5 m
- **Ship's Capacity**
  - . Deadweight at Ts : 143,500 Ton
  - . Container Capacity : 13,200 TEU
- **Main Engine & Speed**
  - . Max. Power : 54,200 kW x 77 RPM
  - . Service Speed : 23.5 kts
- **Complement**
  - . Crew 30P + Suez 6P
- **Navigation & Communication**
  - . 1-INS / 2-Radar Plant
  - . 2-DGPS
  - . 1-Auto Pilot / 2-Gyro compass

Container – Main Dimension Study

❖ Matrix of Ship's Length & Beam

— Guideline to Expaned Panama Canal (Plan)

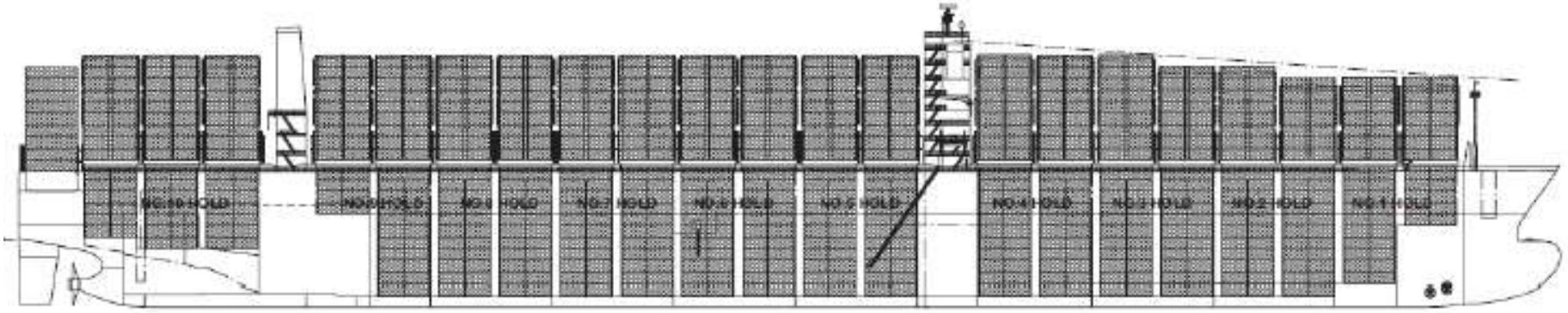
LOA / Beam	277m	285m	300m	316m	334m	350m	366m	383m	399m	414m	430m
40 m	5,800 TEU	6,300 TEU	6,800 TEU								
42.8 m		6,900 TEU	7,400 TEU	8,000 TEU							
45.6 m			8,100 TEU	8,550 TEU	9,200 TEU						
48.2 m					11,400 TEU	12,200 TEU	13,000TEU				
51.2 m						13,200 TEU	14,000TEU	14,700TEU			
54.0 m							14,400 TEU	15,200TEU	16,000TEU		
56.5 m									17,000TEU	18,000TEU	
58.0 m									18,000TEU	19,000 TEU	20,000TEU



■ CONTAINER – 14,000 TEU

- **Main Dimension**
  - . LOA x B x D : 366.0 x 51.2 x 29.9 m
  - . Draft at Td / Ts: 14.5 m / 15.5 m
- **Ship's Capacity**
  - . Deadweight at Ts : 154,000 Ton
  - . Container Capacity : 14,100 TEU
- **Main Engine & Speed**
  - . Max. Power : 72,240 kW x 104 RPM
  - . Service Speed : 24.2 kts
- **Complement**
  - . Crew 31P + Suez 6P
- **Navigation & Communication**
  - . 1-INS / 2-Radar Plant
  - . 2-DGPS
  - . 1-Auto Pilot / 2-Gyro compass

Size matters - but efficiency is important too !

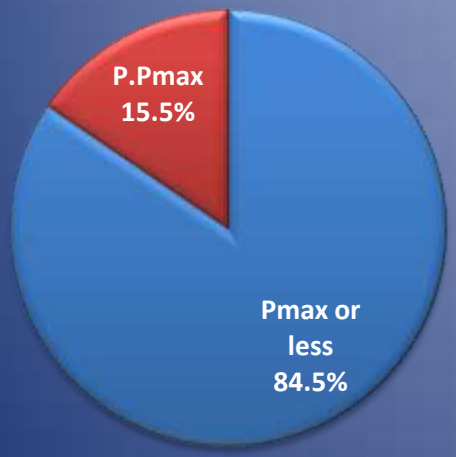


Container Vessel Type	Daewoo 14000 built 2010/2011	Hyundai 13800 2013/2014	9600 Class 2013/2014
Length over all	365,50 m	368,00 m	332,00 m
Beam	51,20 m	51,00 m	48,20 m
Draught	14,00 m	14,50 m	14,00 m
DWT	165.300 mt	152.300 mt	123.500 mt
Main Engine	MAN B&W	MAN B&W	MAN B&W
Output	72.000 kW	53.000 kW	40.500 kW
Container capacity	14.000 teus	13,800 teus	9600 teus
@ 14 tons hom.	10.650 teus	10.250 teus	7950 teus
Bunker consumption (18 kts)	152 mt IFO/Day	101 mt IFO/day	83 mt IFO/day
Consumption per nm per ton dwt	2,37 g IFO	1,62 g IFO	1,75 g IFO

Fleet Capacity and Vessel Size Composition

Containership Fleet 2000

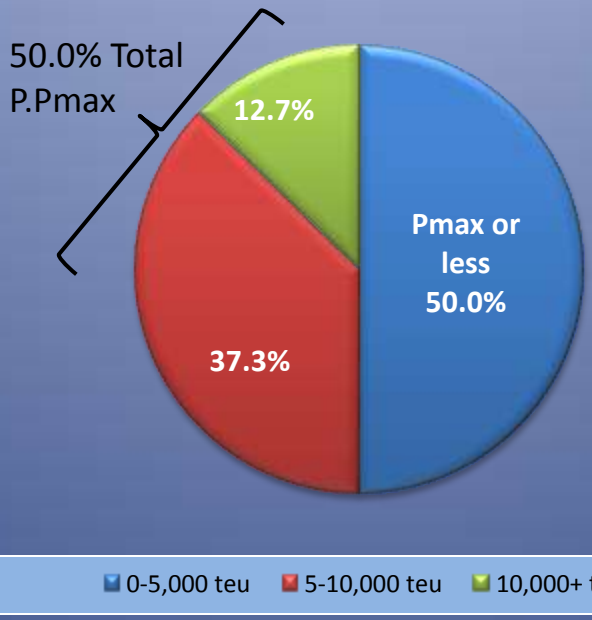
(4.79 million TEU)



371 Panamax vessels
134 Post Panamax vessels

Containership Fleet 2012

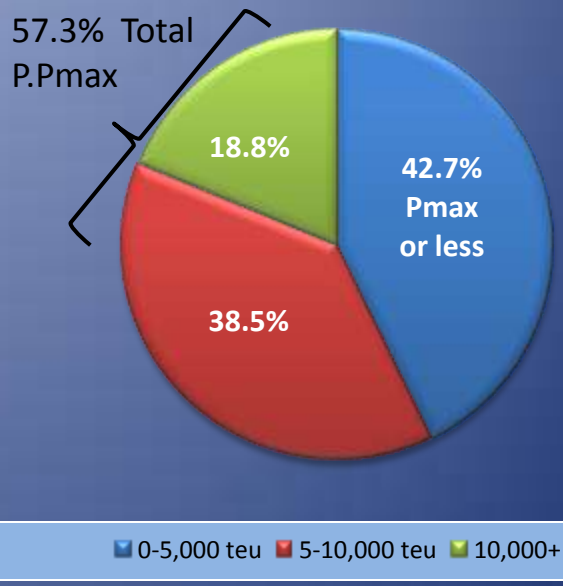
(16.2 million TEU)



949 Panamax vessels
1,048 Post Panamax vessels

Containership Fleet 2016

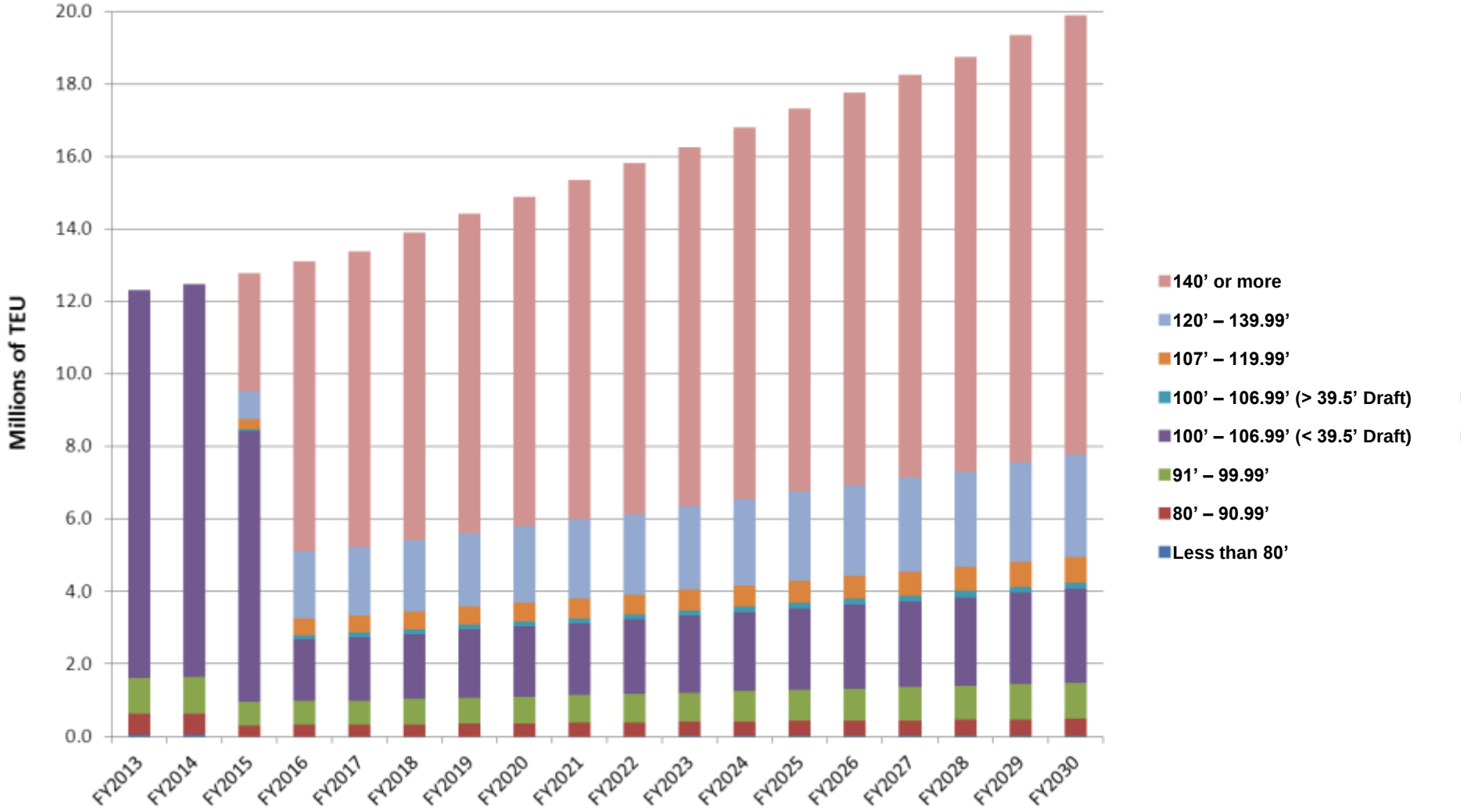
(19.7 million TEU)



974 Panamax vessels
1,397 Post Panamax vessels

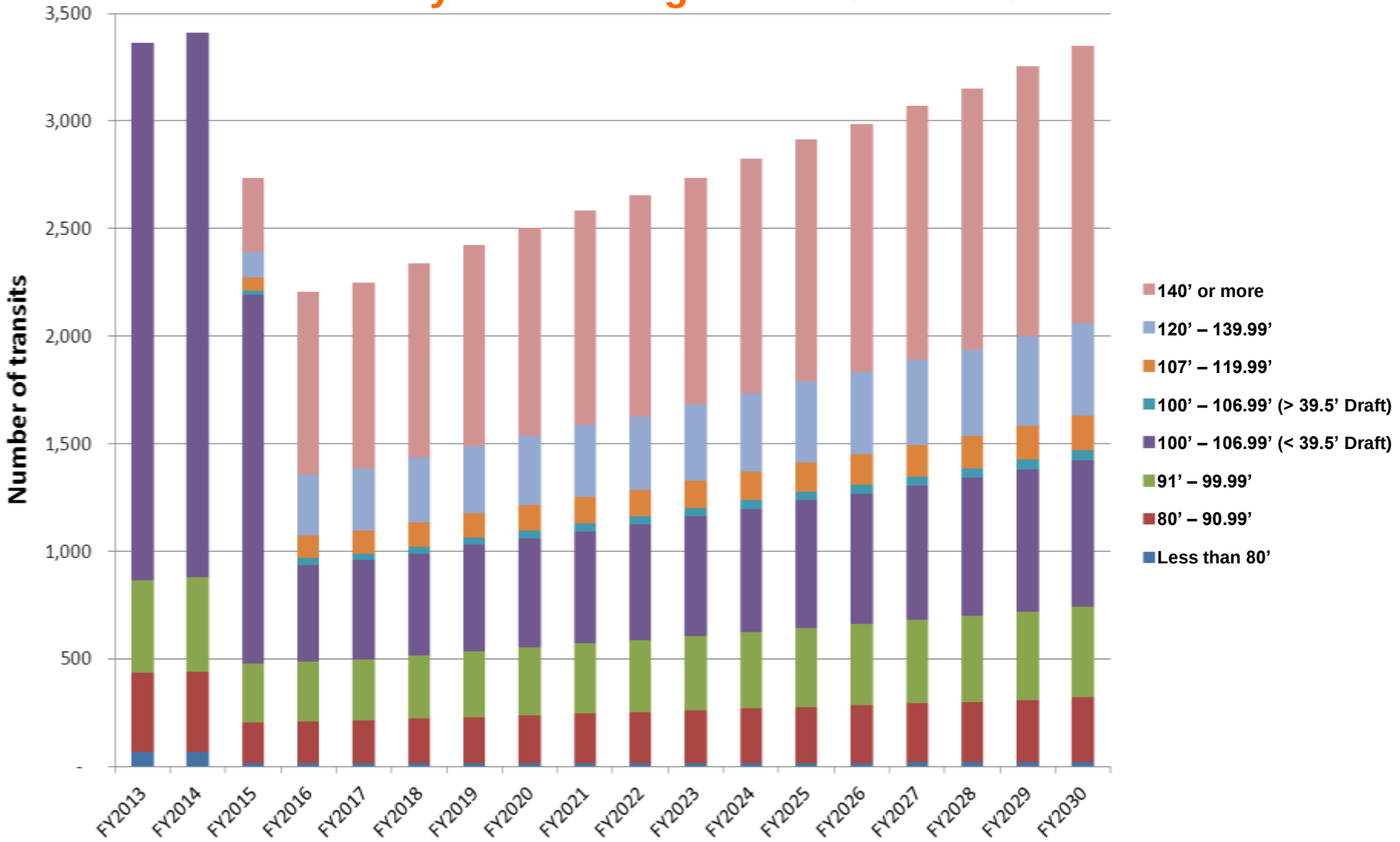
Source: Clarkson's Research Studies-December 2012

Canal Forecast (Estimated TEU Distribution) by Beam Range FY2013 - FY2030



Source: Container Market Segment and Transshipment Study, October 2012, ACP/M&N.

Canal Forecast (Estimated Transit Distribution) by Beam Range FY2013 - FY2030



Source: Container Market Segment and Transshipment Study, October 2012, ACP/M&N.

It is all about economies of scale, improving efficiency, productivity, and profitability

- Operational Efficiency
- Fuel Efficiency
- Improve Vessel Utilization
- Competitiveness
- Environmental Sustainability
- Value of Ships - Charter Rates

Ripple Effects and Other Factors

Ports: Ready/not Ready
Adequate Rail/Road Connections
Land Value: Adjacent to Ports
Transshipment (Caribbean Triangle)
Logistics/Supply Chain (Near Sourcing)

The Panama Canal: Market Segment Analysis and Pricing Structure

Full Containers

Full Container Vessels
Cost per TEU (Asia – U.S. East Coast)
Headhaul and Backhaul - FY2015
Increasing Vessel Utilization Scenario

ASIA - UNITED STATES EAST COAST (Headhaul)

Vessel Size	Vessel Utilization	Fuel	Charter Rate	Ports	Canal	Cargo Handling	Total Cost Per TEU Loaded	Canal Cost Impact (%)	Savings due to Economies of Scale
4500	75%	356.76	325.82	52.75	**129.25**	480.66	1,345.25	10%	
6000	80%	310.00	228.56	45.23	**124.96**	510.70	1,219.46	10%	**-125.79**
8000	85%	267.82	179.04	39.61	**112.50**	480.66	1,079.62	10%	**-265.63**
10000	90%	212.20	179.73	35.73	**103.80**	480.66	1,012.12	10%	**-333.13**
12000	90%	203.54	162.08	34.62	**101.39**	480.66	982.30	10%	**-362.95**

UNITED STATES EAST COAST - ASIA (Backhaul)

Vessel Size	Vessel Utilization	Fuel	Charter Rate	Ports	Canal	Cargo Handling	Total Cost Per TEU	Canal Cost Impact (%)	Savings due to Economies of Scale
4500	35%	612.23	558.91	70.15	**267.81**	401.38	1,910.49	14%	
6000	40%	497.88	362.10	55.87	**240.93**	401.38	1,558.16	15%	**-352.33**
8000	45%	408.17	269.16	46.01	**205.38**	401.38	1,330.10	15%	**-580.39**
10000	50%	308.35	257.30	39.44	**180.44**	401.38	1,186.92	15%	**-723.57**
12000	50%	293.91	231.55	38.13	**176.10**	401.38	1,141.08	15%	**-769.41**

Assumptions for FY2015:
Panama Canal tolls based on $74/TEU capacity and $8/TEU loaded

CANAL DE PANAMÁ

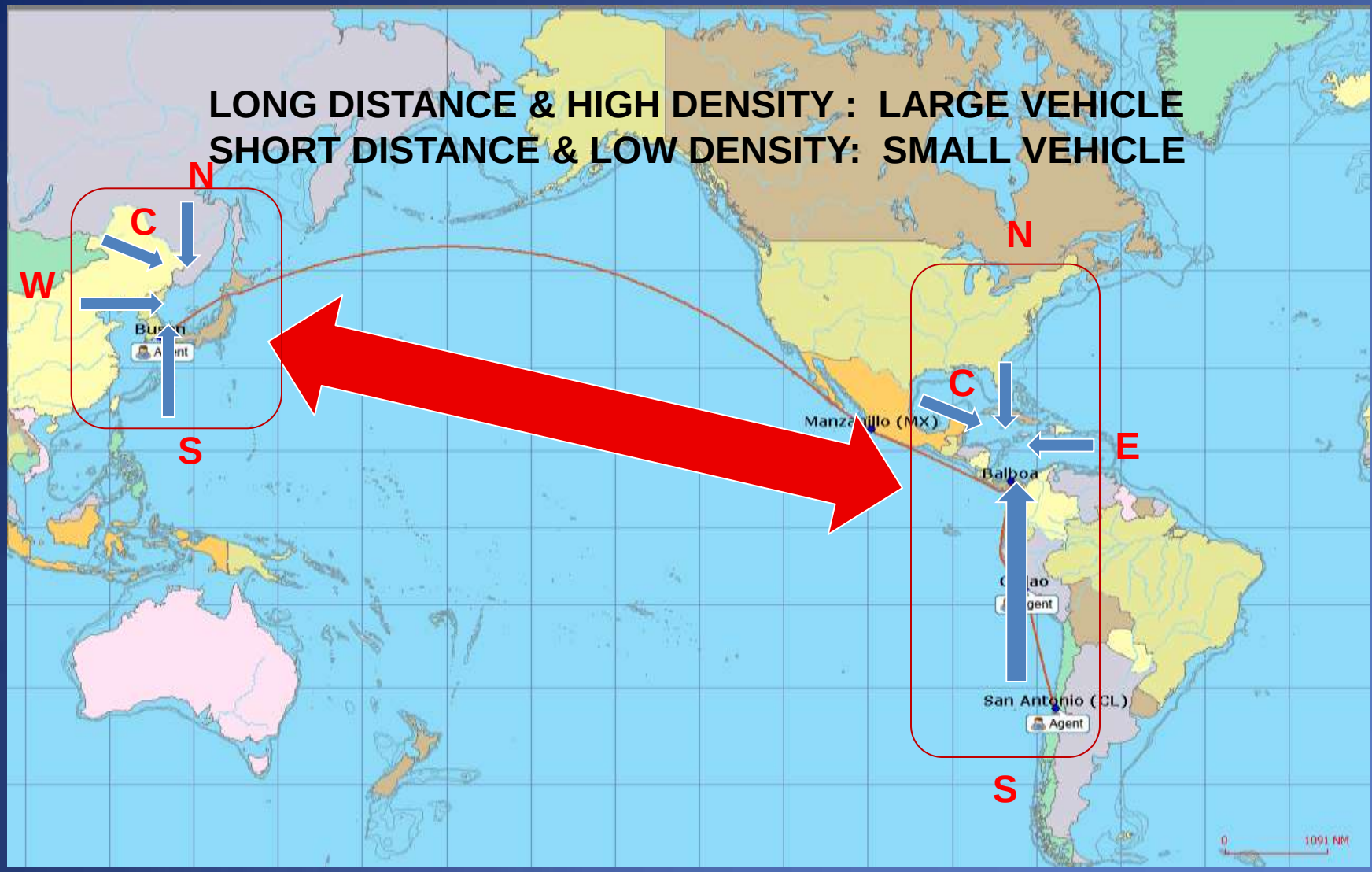
Impact of Expansion on Container Services (Lines Perspective)

- Cost Based on:
  - 4000 TEU Vessel
  - Canal Tolls proposal January 2011
  - $ 467/ MT Bunker (HFO)
  - Actual Charter Rate

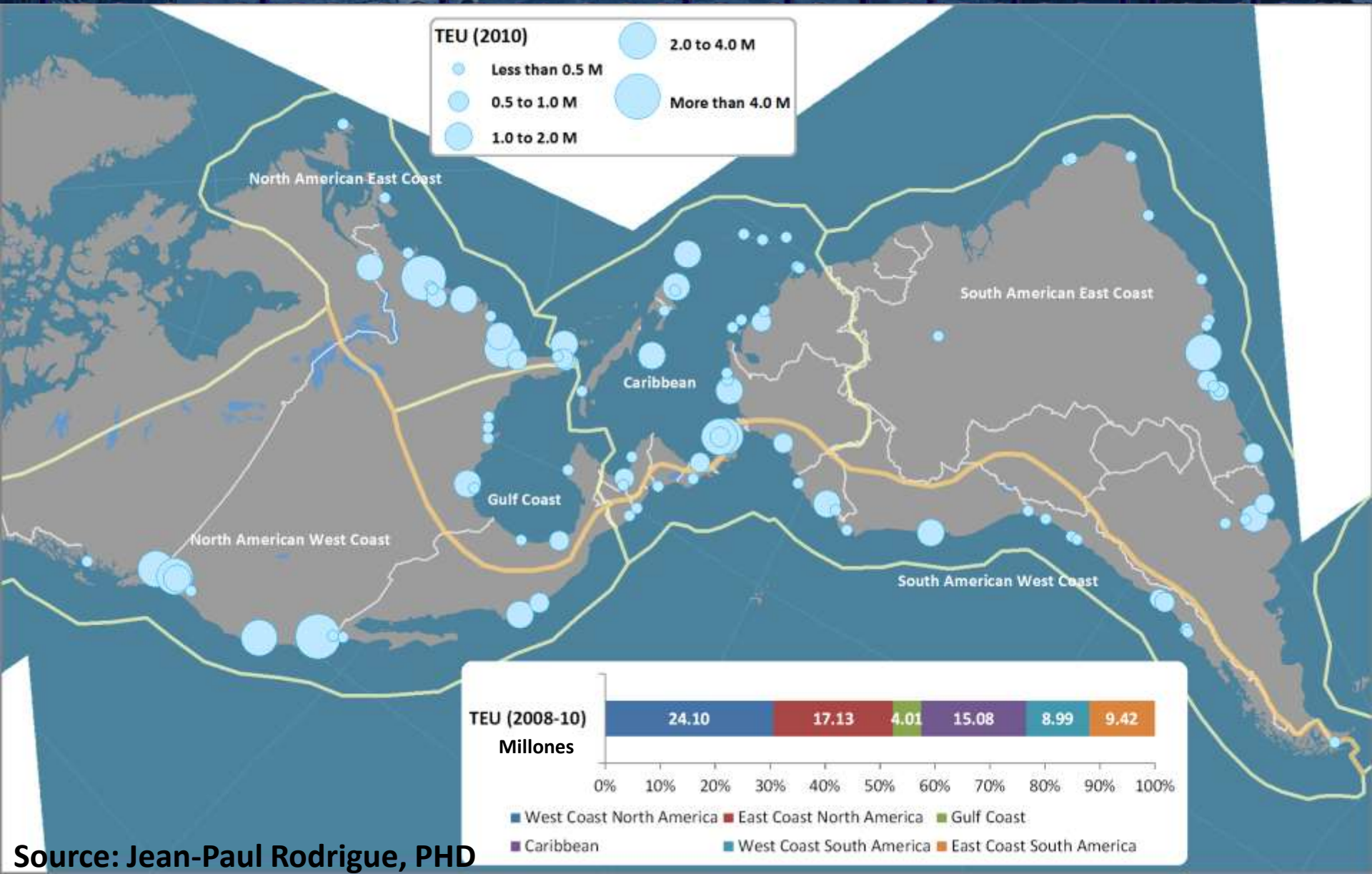
- Cost Based on:
  - 8000 TEU Vessel
  - Canal Tolls proposal January 2011
  - $ 467/ MT Bunker (HFO)
  - Actual Charter Rate

International Ports Connected through the Panama Canal every Week

Network Economies

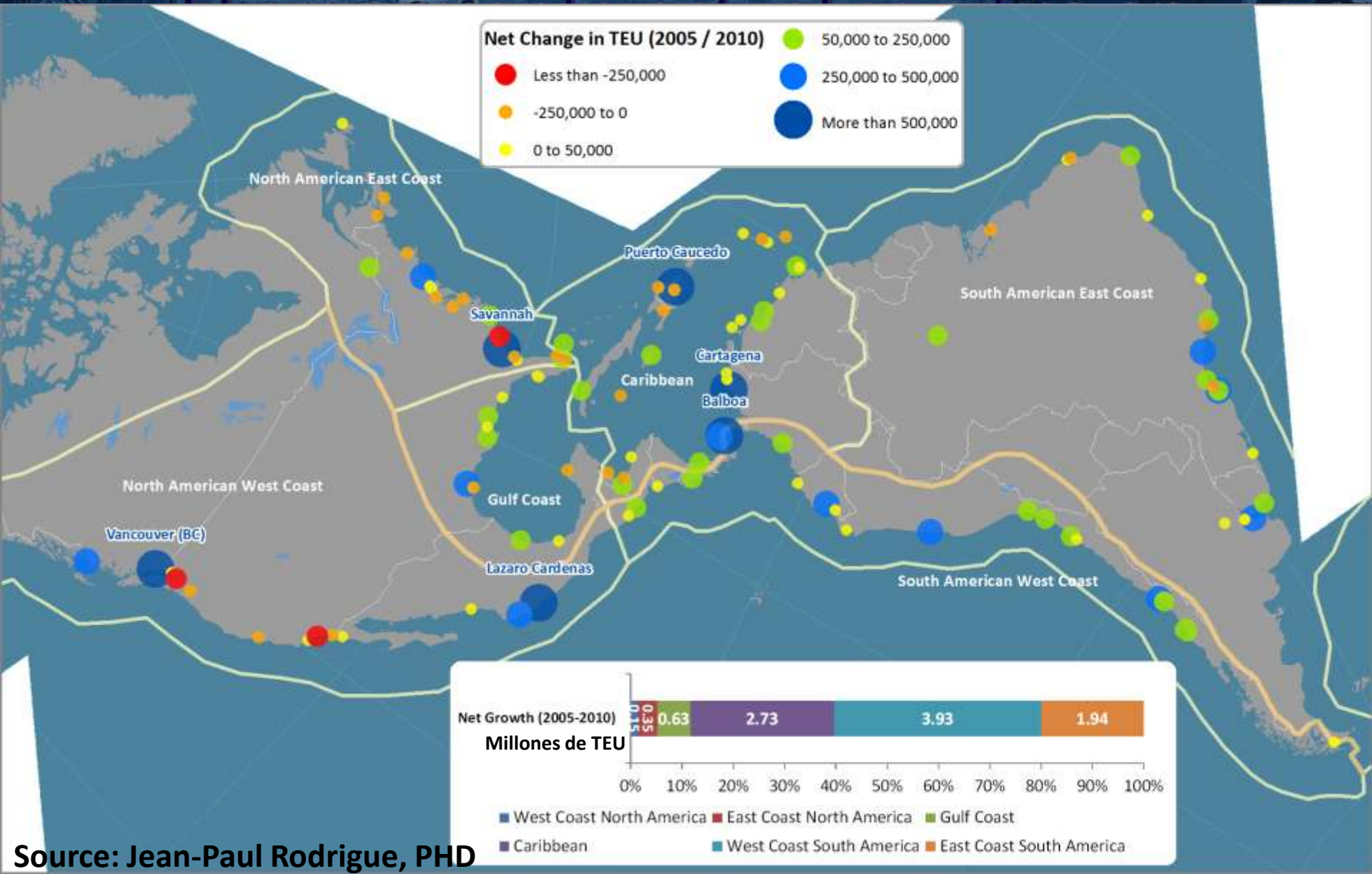


TEU Movement and Regional Hinterlands



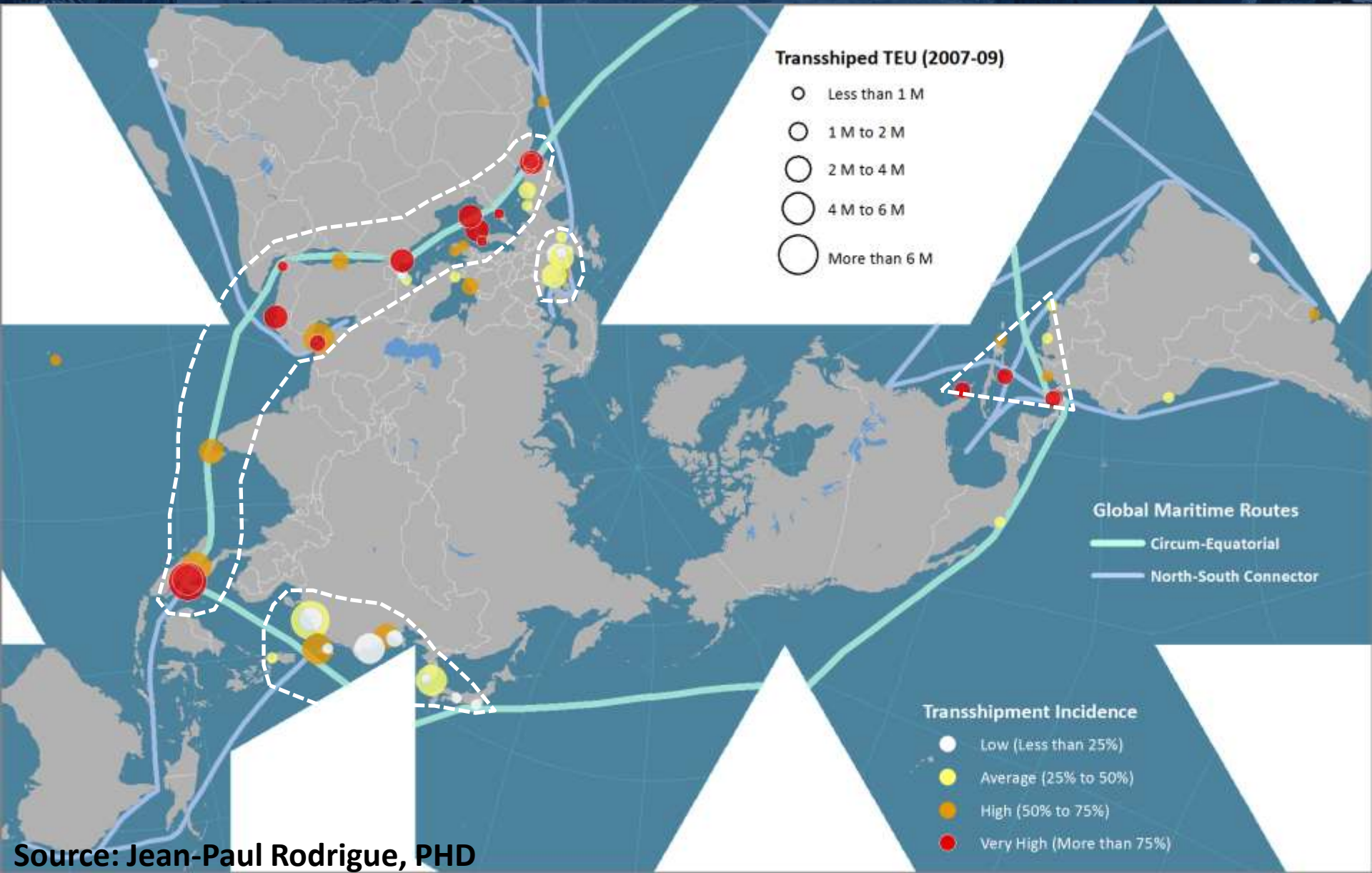
Source: Jean-Paul Rodrigue, PHD

Growth in TEU Movement



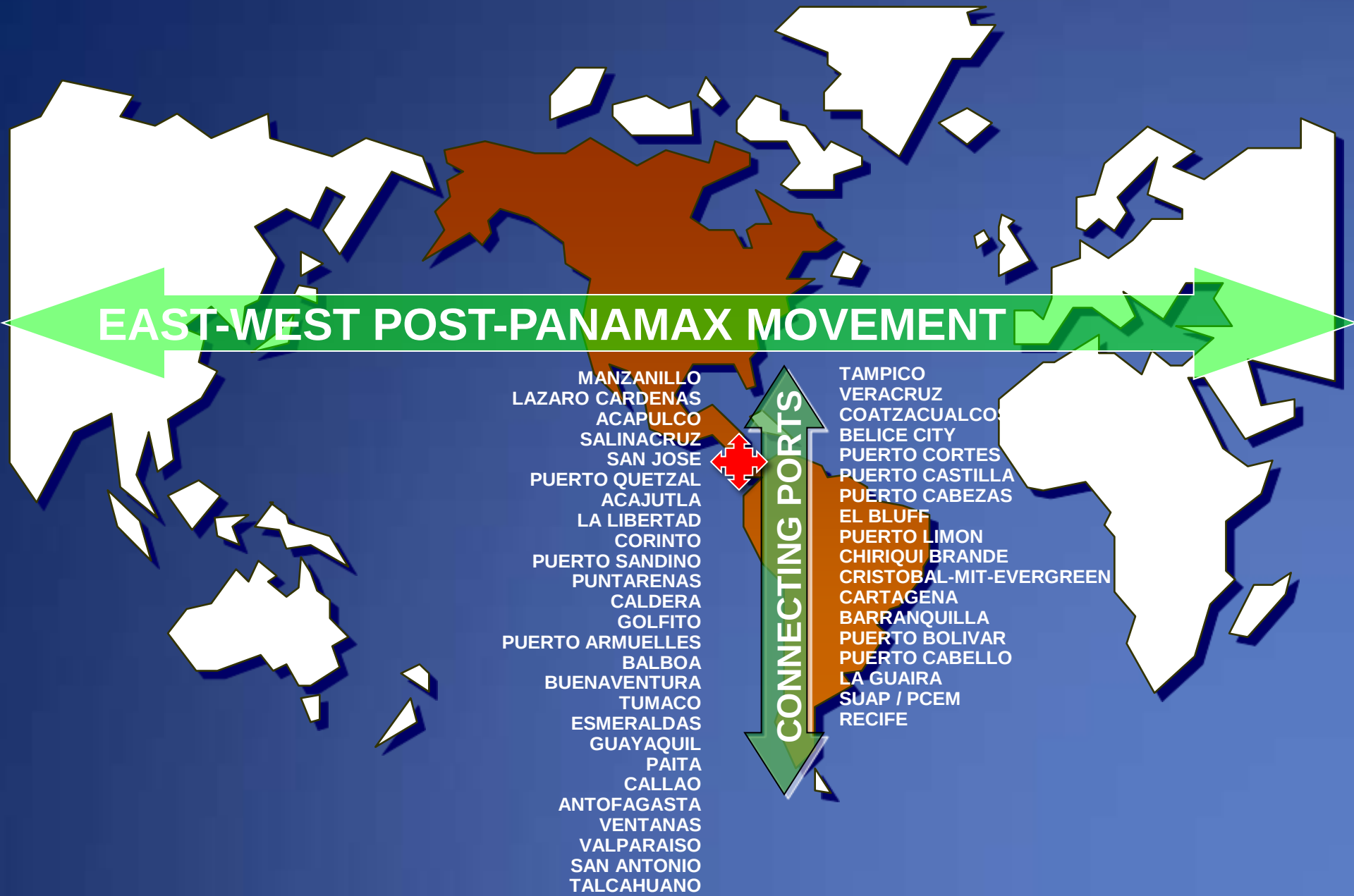
Source: Jean-Paul Rodrigue, PHD

Transshipment volumes, 2007-2009



Source: Jean-Paul Rodrigue, PHD

Short Sea Shipping Network



Latin America By The Numbers

- 59% of retailers said their supply chains include distribution to and from Latin America
- 25% currently have retail operations in Latin America
- 30% currently have distribution operations in Latin America
- **58% consider entering or expanding Latin American operations in the next five years**

Source; Casey Chroust, RILA Survey

Goods Movement Transformation

"It's all about speed to market, so there's a great focus on how we eliminate dwell time."

-Respondent, RILA 2012 State of Retail Supply Chain Study

89% of RILA Logistics Executives said the canal expansion has value for their worldwide supply chain

Source: Case y Chroust, RILA Survey

The Impact of Canal Expansion on Dry Bulks

1. The USG-Asia grain trade will become more competitive through the use of larger vessels.

2. Potential for increased trade of coal to Asia/China.

Potential Post Panamax Trade
US Grain Exports

95K DWT
Mini Capesize

Grains :US Gulf. – China

Panama: 10,069 nm
Cape of Good Hope: 15,353 mn

Savings 5,284 nm, 14 knots, 16 days less

Potential Impact of the Expansion Soybeans

55K DWT
Handymax

Soybeans: East Coast of South America - China

Panama: 11,597 nm
Cape of Good Hope: 13,109 nm

Savings 1,512 nm, 14 knots, 4.5 days less

Potential Post Panamax Trade Coal

180K DWT
Capesize

Coal: US East Coast – China

Panama: 10,389 nm
Cape of Good Hope: 14,688 nm

Savings 4,299 nm, 14 knots, 13 days less

Potential Post Panamax Trade Coal

180K DWT
Capesize

Coal: East Coast South America - China

Panama: 8,975 nm
Cape of Good Hope: 13,972 nm

Savings 4,997 nm,14 knots, 15 days less.

Potential Impact of the Expansion
Iron Ore

55K DWT
Handymax

Iron Ore: East Coast South America - China

Panama: 10,931 nm
Cape of Good Hope: 12,234 nm

Savings 1,303 nm, a 14 knots, 4 days less

The Impact of Canal Expansion on Liquid Bulks

1. Canal expansion will make Ecuador – USG crude shipments more competitive vs alternative sources .

2. The expanded Canal will be the first route choice for LNG trades between Trinidad-Chile and Peru-USG and for Shale Gas exports coming out of the U.S. destined to Asia.

Potential Post Panamax Trade
Crude Oil

117,055 DWT
Aframax

Crude oil: Ecuador – US Gulf

Panama: 2,047 nm
Magellan Strait: 10,972 nm

Savings 8,925 nm,15 knots, 26 days less

Potential Post Panamax Trade LNG

Cargo capacity:
145,000 m3

LNG: Trinidad & Tobago – Quintero, Chile

Panama: 3,782 nm
Magellan Strait: 6,750 nm

Savings 2968 nm, 19.5 knots, 6.3 days

Potential Post Panamax Trade LNG

Cargo Capacity:
137,100 m3

LNG: Peru – Spain

Panama: 5,839 nm
Magellan Strait: 9,579 nm

Savings 3,740 nm, 19.5 knots, 8 days less

Potential Post Panamax Trade LNG

Cargo Capacity:
137,100 m^3

LNG: US Gulf– Japan

Panama: 9,214 nm
Suez: 14,570 nm

Savings 5,356 nm, 19.5 knots 11.4 days less

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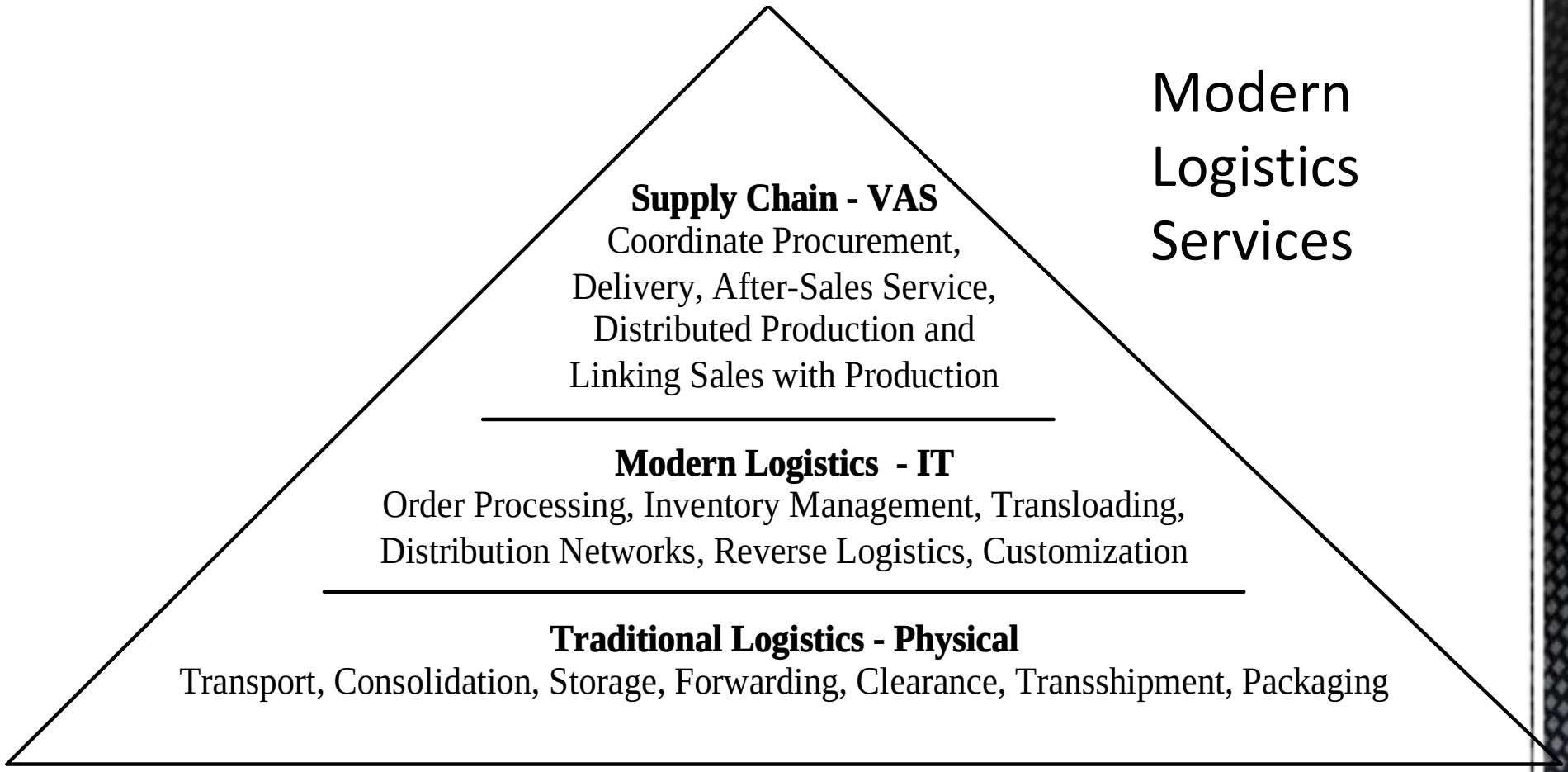
Panama: The transportation and logistics hub of the Americas

Modern Logistics Services



PORT CONTAINER TRAFFIC IN LATIN AMERICA AND THE CARIBBEAN 2011, BY PORT
(Thousands of TEUs)

	Port	Country	2009	2010	2011	Percentage change
1	Colón (MIT, Evergreen, Panama Port)	Panama	2 210 720	2 810 657	3 371 714	20.00
2	Balboa	Panama	2 011 778	2 758 506	3 232 265	17.20
3	Santos	Brazil	2 255 862	2 715 568	2 985 922	10.00
4	Cartagena (inc. S.P.R, El Bosque, Contecar,ZP)	Colombia	1 237 873	1 581 401	1 853 342	17.20
5	Buenos Aires (inc. Exolgan)	Argentina	1 412 462	1 730 831	1 851 687	7.00
6	Manzanillo	Mexico	1 110 356	1 511 378	1 762 508	16.60
7	Kingston	Jamaica	1 728 042	1 891 770	1 756 832 [a]	-7.10
8	Callao (inc. DPW/ APM)	Peru	1 089 838	1 346 186	1 616 165	20.10
9	Guayaquil	Ecuador	884 100	1 123 098	1 405 762	25.2
10	Freeport	Bahamas	1 297 000	1 125 000	1 116 272	-0.80
11	Itajai (inc. Navegantes)	Brazil	593 359	957 130	983 985	2.80
12	Valparaiso	Chile	677 432	878 787	973 012	10.70
13	Caucedo	Dominican Republic	906 279	1 004 901	960 000 [b]	-4.50
14	Lazaro Cárdenas	Mexico	591 467	796 023	953 497	19.80
15	San Antonio	Chile	729 033	870 719	928 432	6.60
16	Limón-Moin	Costa Rica	748 029	858 176	901 330	5.00
17	Montevideo	Uruguay	588 410	671 952	861 164	28.20
18	Buenaventura (inc. SPR, TCBUEN and ZP)	Colombia	647 323	662 821	748 305	12.90
19	Veracruz	Mexico	564 315	662 537	732 538	10.60

Source: Gabriel Pérez Salas, Infrastructure Services Unit, Natural Resources and Infrastructure Division (NRID), ECLAC, United Nations, 2012.
Note: The ranking is prepared using public information or data provided by ports themselves or national organizations to ECLAC. The most up-to-date version of this ranking is available on line at: http://www.ECLAC.org/id.asp?id=45897.
a Estimate.
b Provisional.

Panama and the World rank

Quality of port infrastructure

1. Netherlands
2. Singapore
3. Hong Kong
4. **Panama**
5. UAE
6. Belgium
7. Finland
8. Iceland
9. Germany
10. Bahrain
11. Sweden
12. United Kingdom
13. Denmark
14. Spain
15. Malta

Well developed and efficient by international standards

Affordability of financial services

1. Hong Kong
2. **Panama**
3. Luxembourg
4. Taiwan, China
5. Singapore
6. Qatar
7. Bahrain
8. Switzerland
9. Finland
10. Norway
11. Malaysia
12. Puerto Rico
13. United States
14. Saudi Arabia
15. United Kingdom

Ensure the provision of financial services at affordable prices

Soundness of banks

1. Canada
2. South Africa
3. New Zealand
4. **Panama**
5. Australia
6. Finland
7. Hong Kong
8. Singapore
9. Norway
10. Barbados
11. Chile
12. Lebanon
13. Malta
14. Brazil
15. Mauritius

Generally healthy with sound balance sheets

FDI and technology transfer

1. Ireland
2. Qatar
3. **Panama**
4. Singapore
5. Costa Rica
6. UAE
7. Luxembourg
8. Saudi Arabia
9. Slovak Republic
10. Hong Kong
11. Bahrain
12. Hungary
13. Uruguay
14. Israel
15. Mexico

Foreign direct investment (FDI) bring new technology

Business impact of rules on FDI

1. Ireland
2. Singapore
3. Bahrain
4. Hong Kong
5. **Panama**
6. Luxembourg
7. Uruguay
8. Slovak Republic
9. Mauritius
10. Malaysia
11. Taiwan, China
12. Chile
13. United Kingdom
14. UAE
15. Estonia

Rules governing foreign direct investment (FD)

Copa Airlines

Hub of the Americas
P A N A M A

All Destinations

North America

Cancun, Mexico
Chicago, USA
Guadalajara, Mexico
Las Vegas, USA
Los Angeles, USA
Mexico DF, Mexico
Miami, USA
Monterrey, Mexico
New York, USA
Orlando, USA
Toronto, Canada
Washington, USA

Central America

Guatemala City, Guatemala
Liberia, Costa Rica
Managua, Nicaragua
Panama City, Panama
San Jose, Costa Rica
San Pedro Sula, Honduras
San Salvador, El Salvador
Tegucigalpa, Honduras

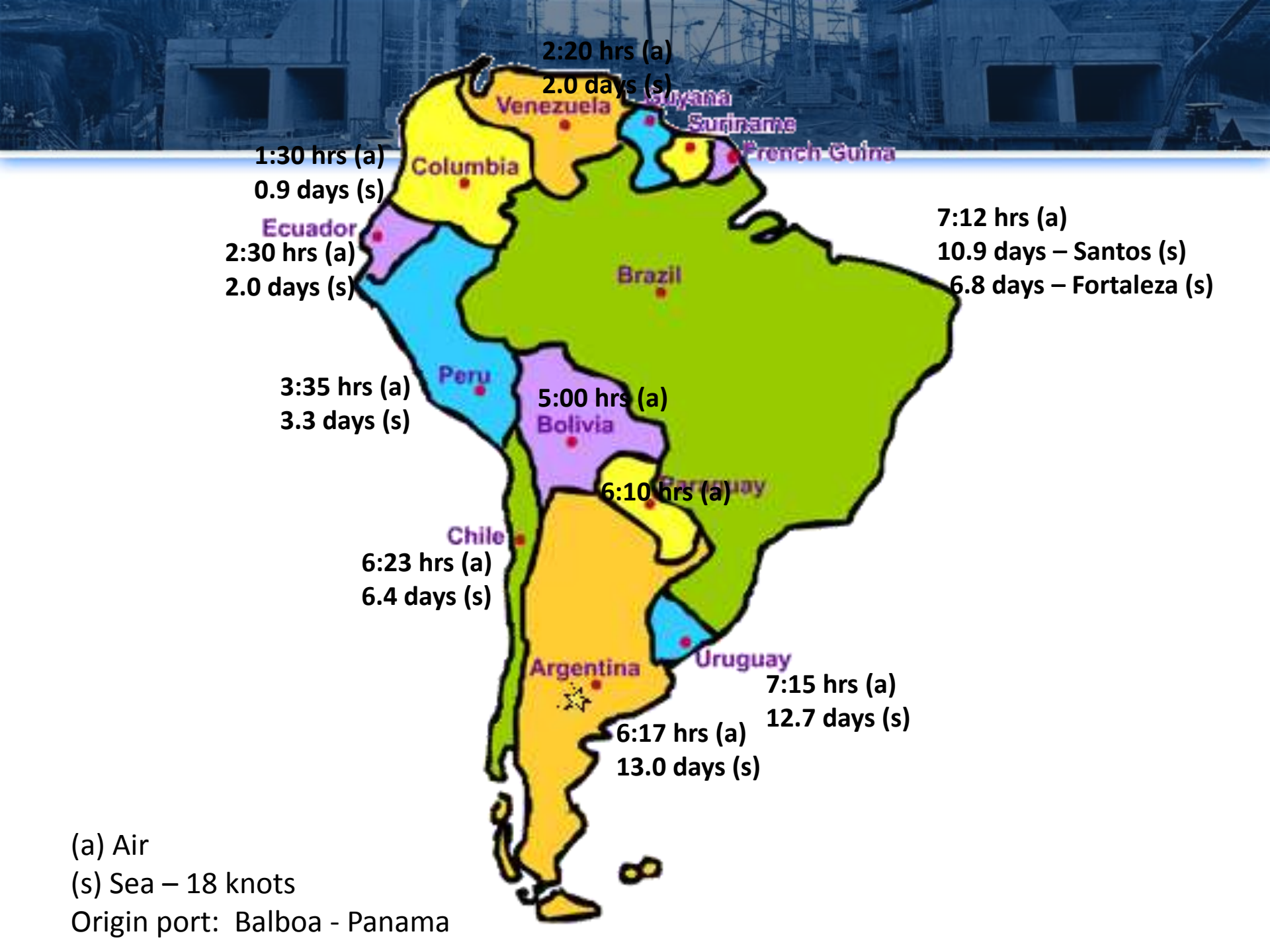
South America

Asuncion, Paraguay
Barranquilla, Colombia
Belo Horizonte, Brazil
Bogota, Colombia
Brasilia, Brasil
Bucaramanga, Colombia
Buenos Aires, Argentina
Cali, Colombia
Caracas, Venezuela
Cartagena, Colombia
Cordoba, Argentina
Cucuta, Colombia
Guayaquil, Ecuador
Iquitos, Peru
Leticia, Colombia
Lima, Peru
Manaos, Brazil
Maracaibo, Venezuela
Medellin, Colombia
Montevideo, Uruguay
Pereira, Colombia
Porto Alegre, Brazil
Quito, Ecuador
Recife, Brazil
Rio de Janeiro, Brazil
San Andres, Colombia
Santa Cruz, Bolivia
Santa Marta, Colombia
Santiago, Chile
Sao Paulo, Brazil
Valencia, Venezuela

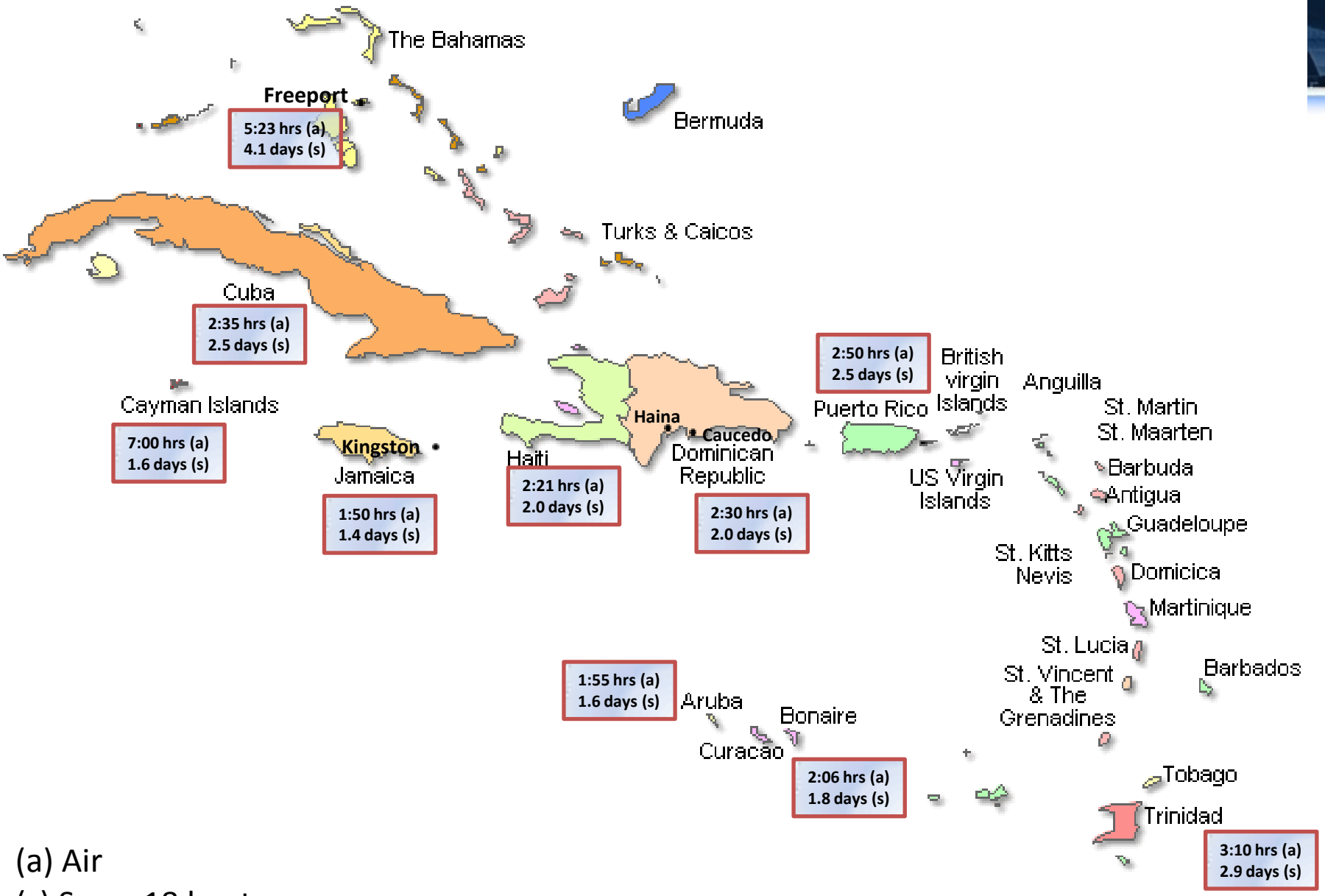
Caribbean

Curaçao, Netherlands Antilles
Havana, Cuba
Kingston, Jamaica
Montego Bay, Jamaica
Nassau, Bahamas
Oranjestad, Aruba
Port au Prince, Haiti
Port of Spain, Trinidad & Tobago
Punta Cana, Dominican Republic
San Juan, Puerto Rico
Santiago de los Caballeros, Dominican Republic
Santo Domingo, Dominican Republic
St Maarten, Netherlands Antilles

(a) Air
(s) Sea – 18 knots
Origin port: Balboa - Panama



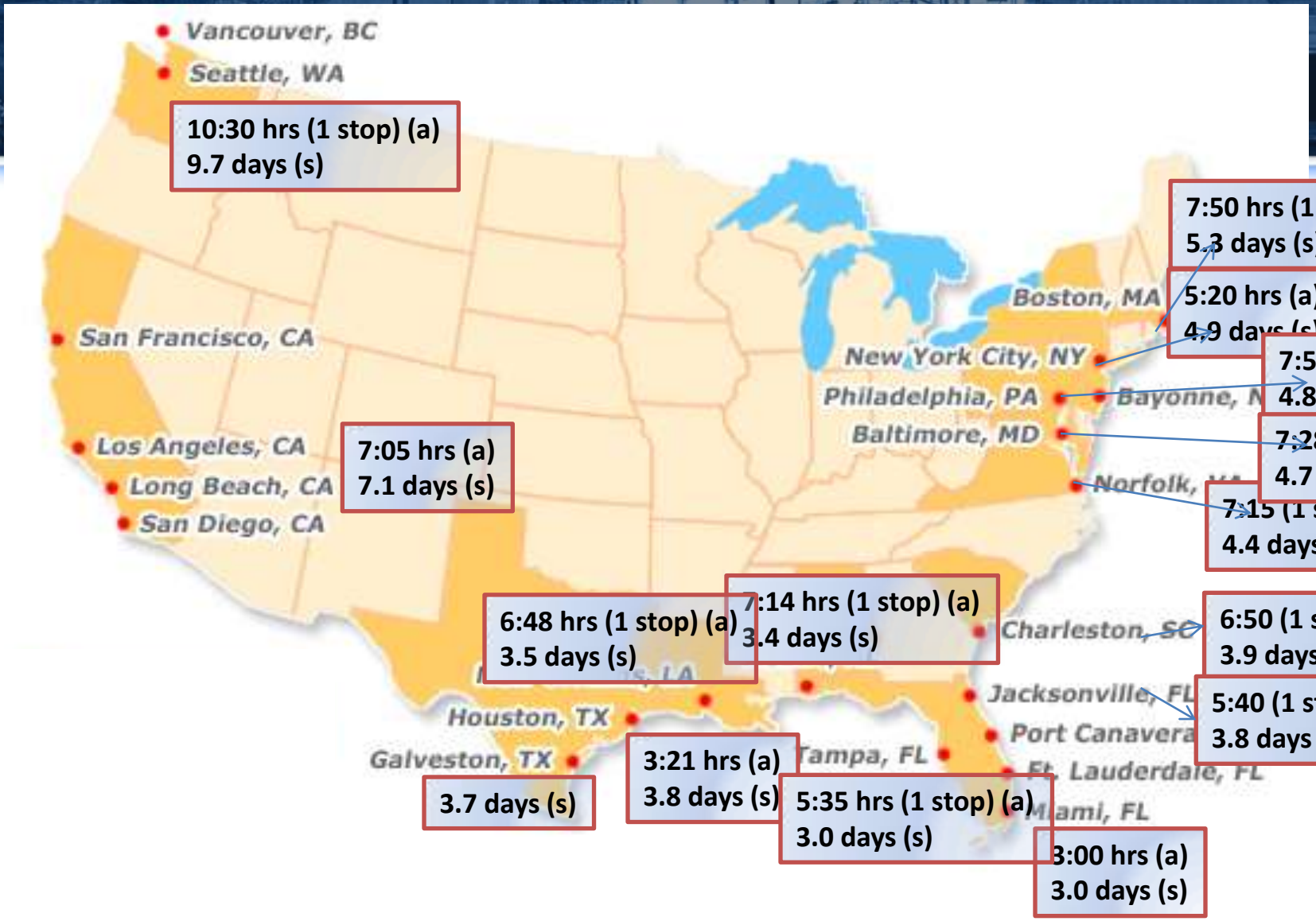
(a) Air
(s) Sea – 18 knots
Origin port: Balboa - Panama



(a) Air

(s) Sea – 18 knots

Origin port: Balboa - Panama



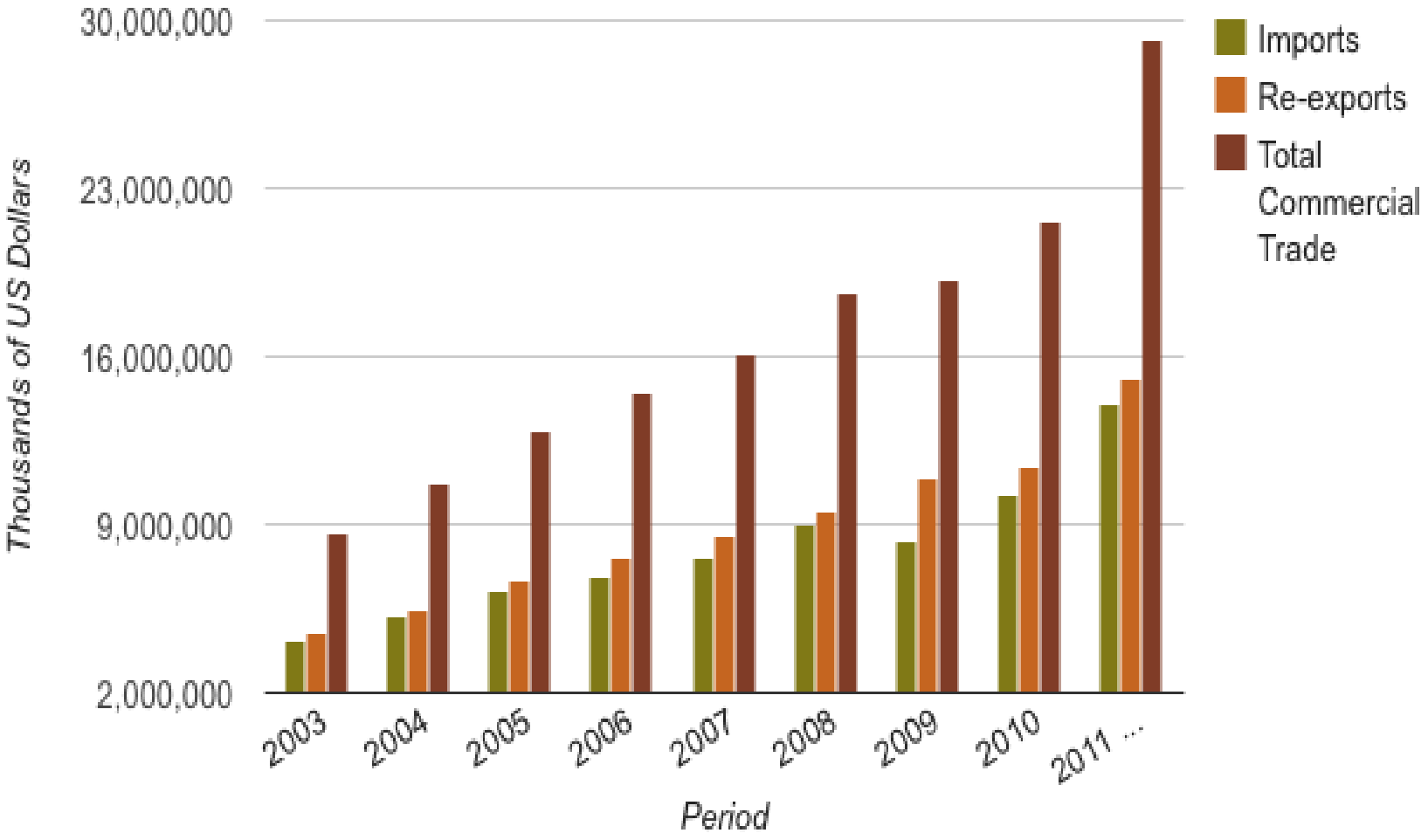
(a) Air

(s) Sea – 18 knots

Origin port: Balboa - Panama


CCT
491K
TEU
Railroad
MIT
Logistics
MIT
Heavy
Equipment
MIT
1.9 M
TEU
Free
Zone
France Field
Airport
MIT
Heavy
Equipment
P. Cristobal
980K TEU
Free Zone
Free Zone

Colon Free Zone




Calle Broberg
Paseo Andrews
Calle Hains
Avenue Canfield
Calle Diablo
Avenida Roosevelt
Balboa, Panama
El Prado
Morgan Ave.
Mindi St.
Pacific Side

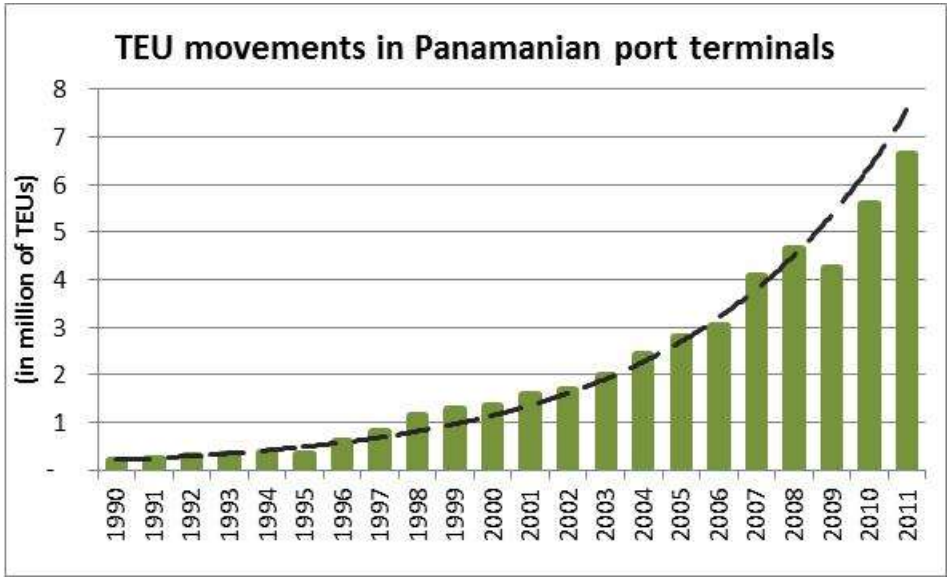
<u>Panama Canal Railway Company</u>:

- Provides intermodal service between the Pacific and Atlantic ports of Panama.
- Joint venture between Kansas City Southern and MI-Jack Products.
- Installed capacity: 500,000 containers per year.

Potential for a new Port on the Pacific

116 Hectares

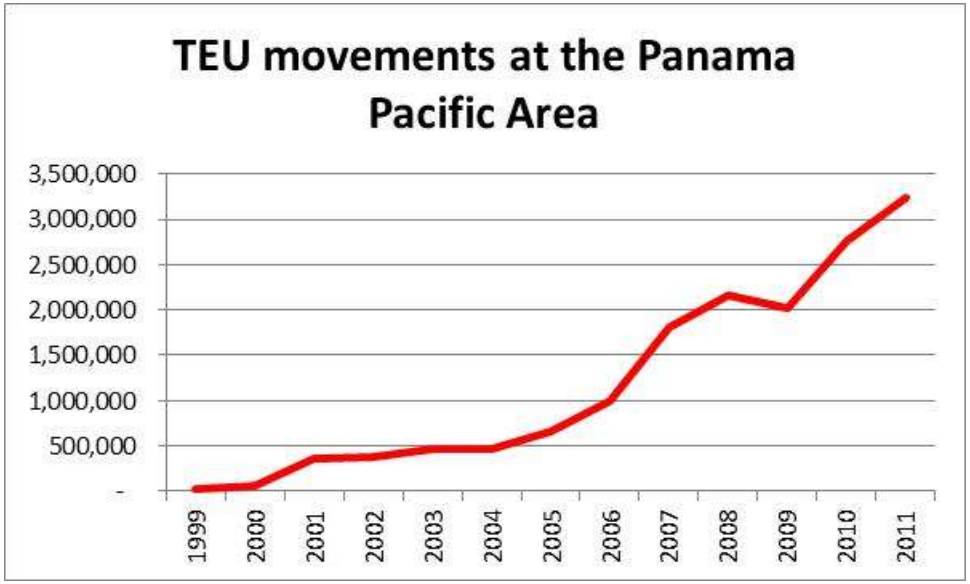
Rationale for Corozal Port Terminal



Source: Panama Maritime Authority

Total TEU movements in Panama are rapidly approaching 7 M TEU, putting pressure into the port system.

- *Current port capacity is limited and the demand for transshipment will increase after the Panama Canal expansion*

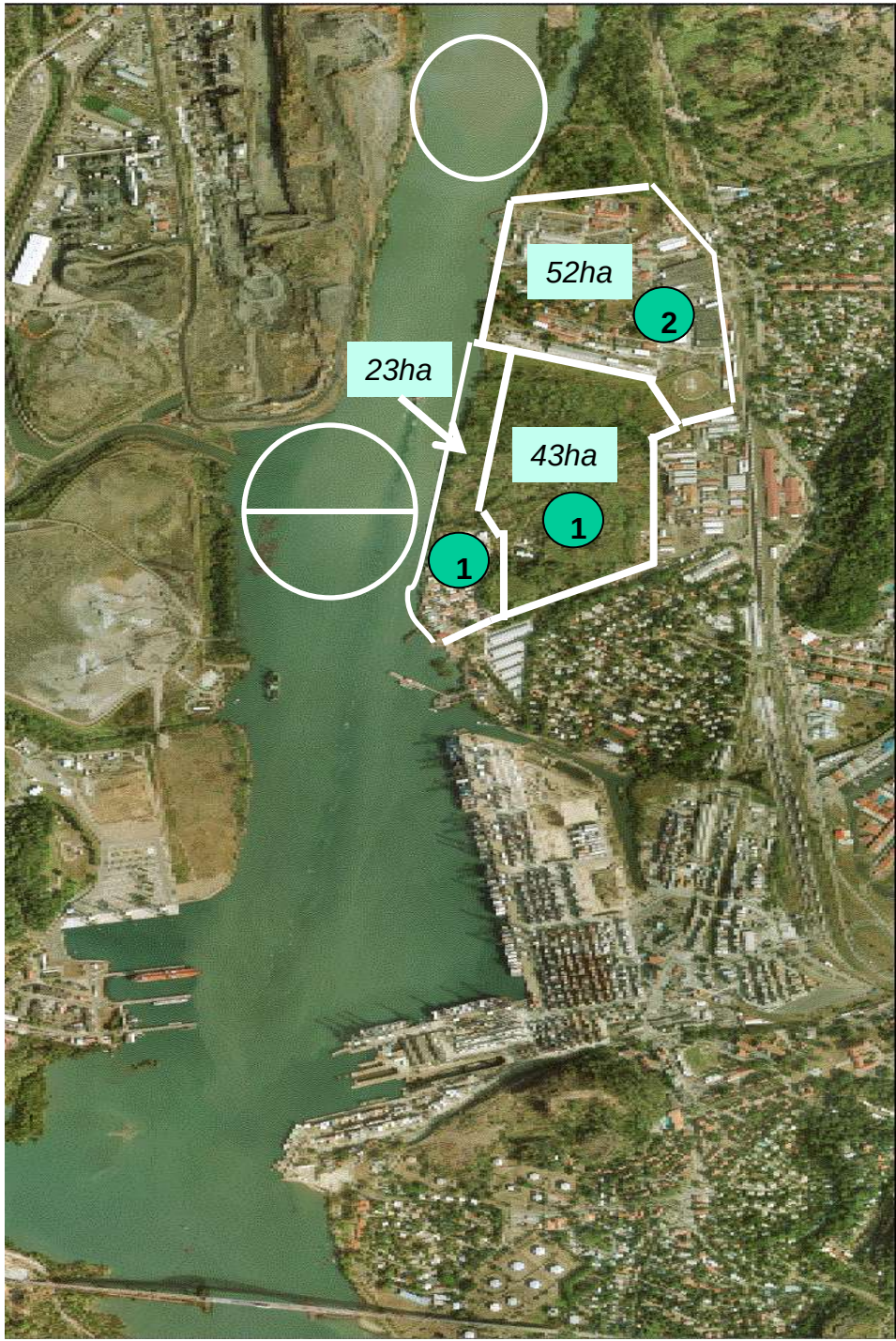


Site location and development

1 *Phase I: 66 has*

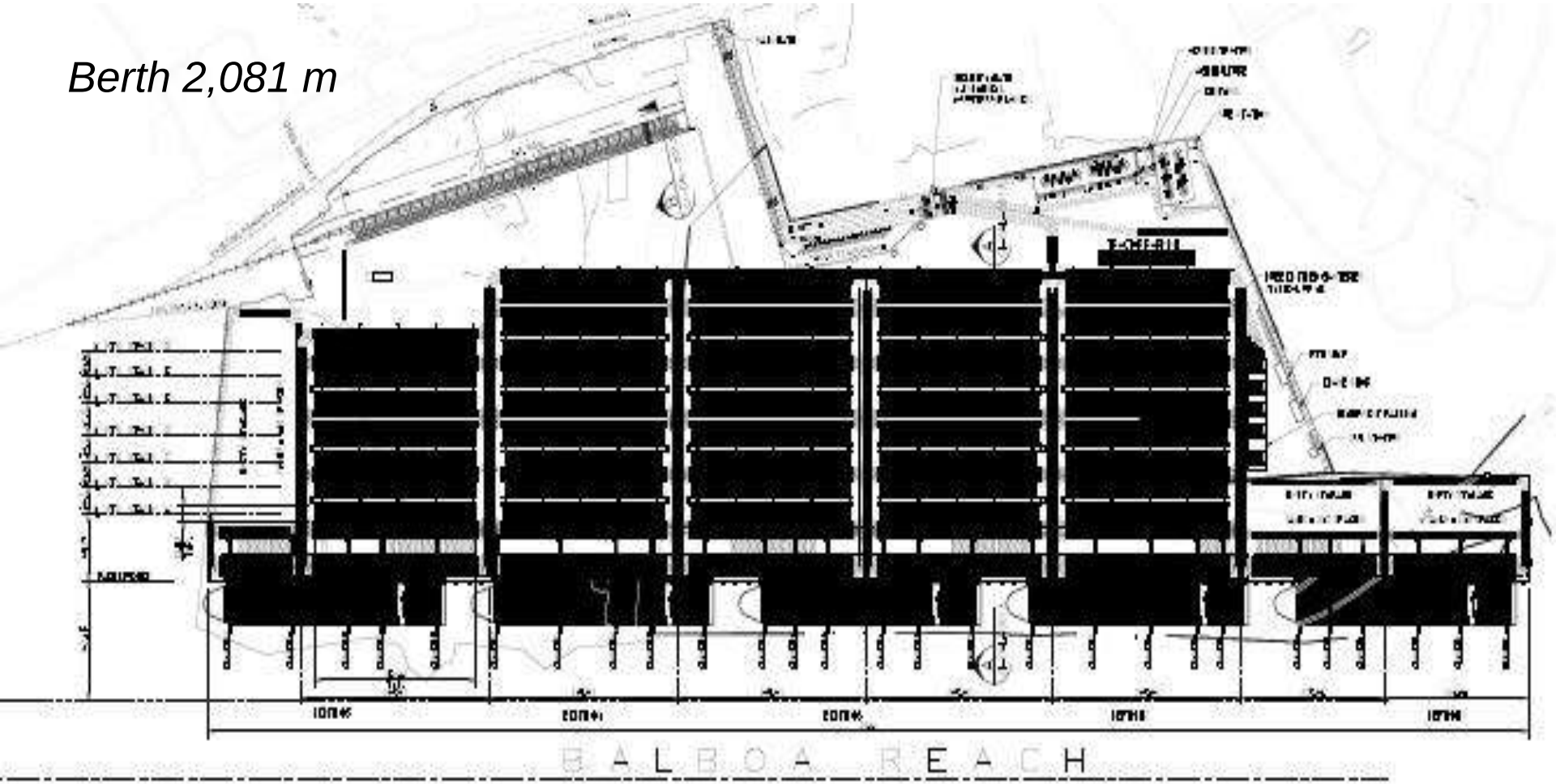
2 *Phase II: 52 has*

Concept	Phase 1	Phase 2	Total
Total Area	66 has	52 has	118 HA 98 for CY
Estimate Capacity (M TEUs)	2.4	1.5	3.9
STS cranes			27
Quay (m)	1,350	731	2,081
Draft (m)			16.3



Proposed layout of the terminal

Berth 2,081 m



Potential for Special Economic Zone Development

980 Hectares of Reclaimed Land

PANAMA PACIFICO

Panamá-Pacífico:

- Special Economic Area located in the former Howard Air Force base in the Pacific.
- Operated by the international real estate developer London & Regional.

Onsite Schools:

- Howard Kids Academy
- Licée Francais Paul Gauguin
- Magen David Academy
- Panama Pacifico Academy

Study Program for YR 1

- **Contract Program Management**
- **Demand, Capacity and Feasibility Studies**
  - Bunkering
  - Transshipment Ports
  - Container on Barge
  - Logistic Parks
  - Ship Repair
  - LNG Bunkering for Ships and Tugs
  - RoRo Terminal for Vehicles, Pacific Side
  - Top-off operations for Dry Bulks
- **Economic Studies**
  - Logistic Costs and Impact on Competitiveness
  - Regional Logistics Observatory (IDB)

COMING SOON

MARITIME & LOGISTICS

WORLD OUTLOOK 2014

HARD ROCK HOTEL

PANAMA CITY, REPUBLIC OF PANAMA

THANK YOU!