EMERGING TRENDS IN MARITIME TRANSPORT & PORT INFRASTRUCTURE DEVELOPMENT

The Transport and ICT Global Practice

Smart Connections for All



Biju Ninan Oommen

Ports & Maritime Transport

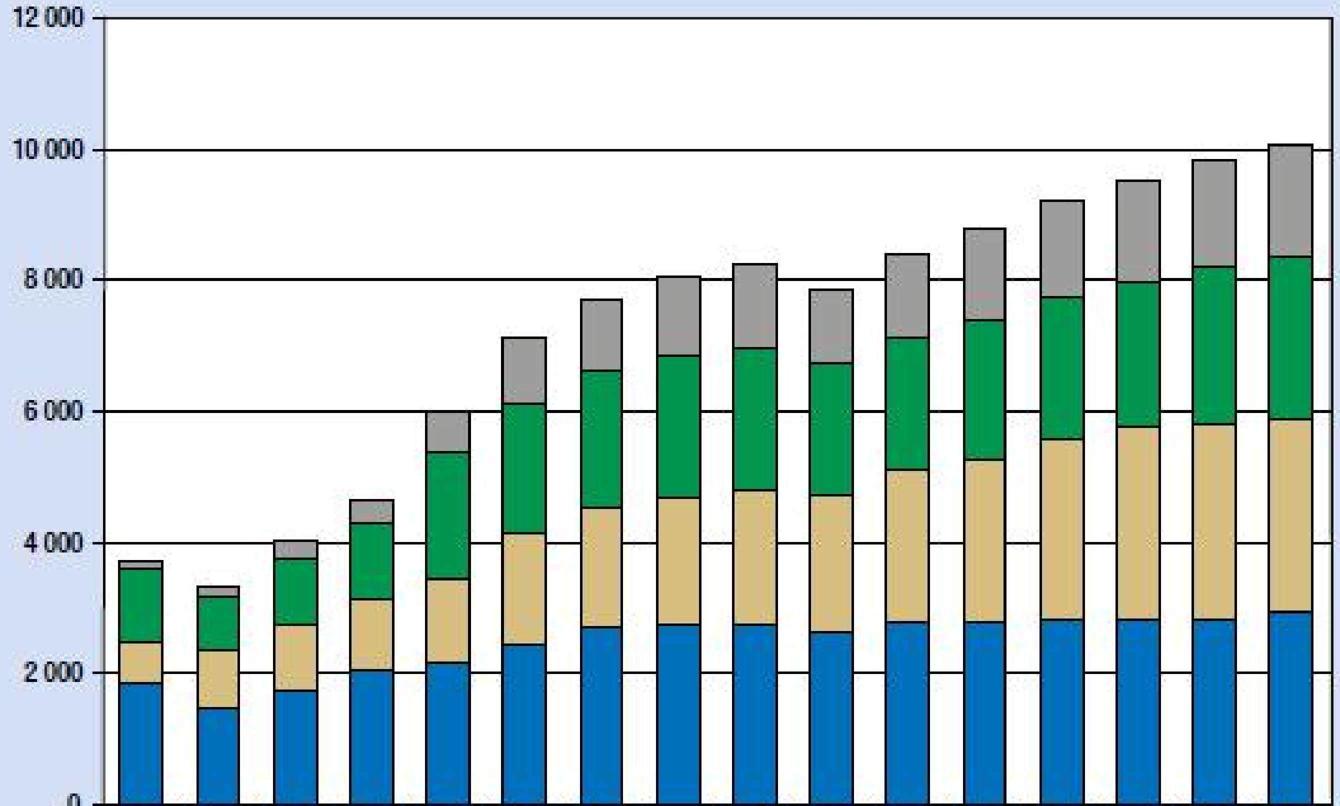
The World Bank

19th May 2017

Agenda

- Current Scenario
- Emerging Trends
- Port Infra Developments
- Role for MDB’s

International Seaborne Trade (million tonnes): 2015

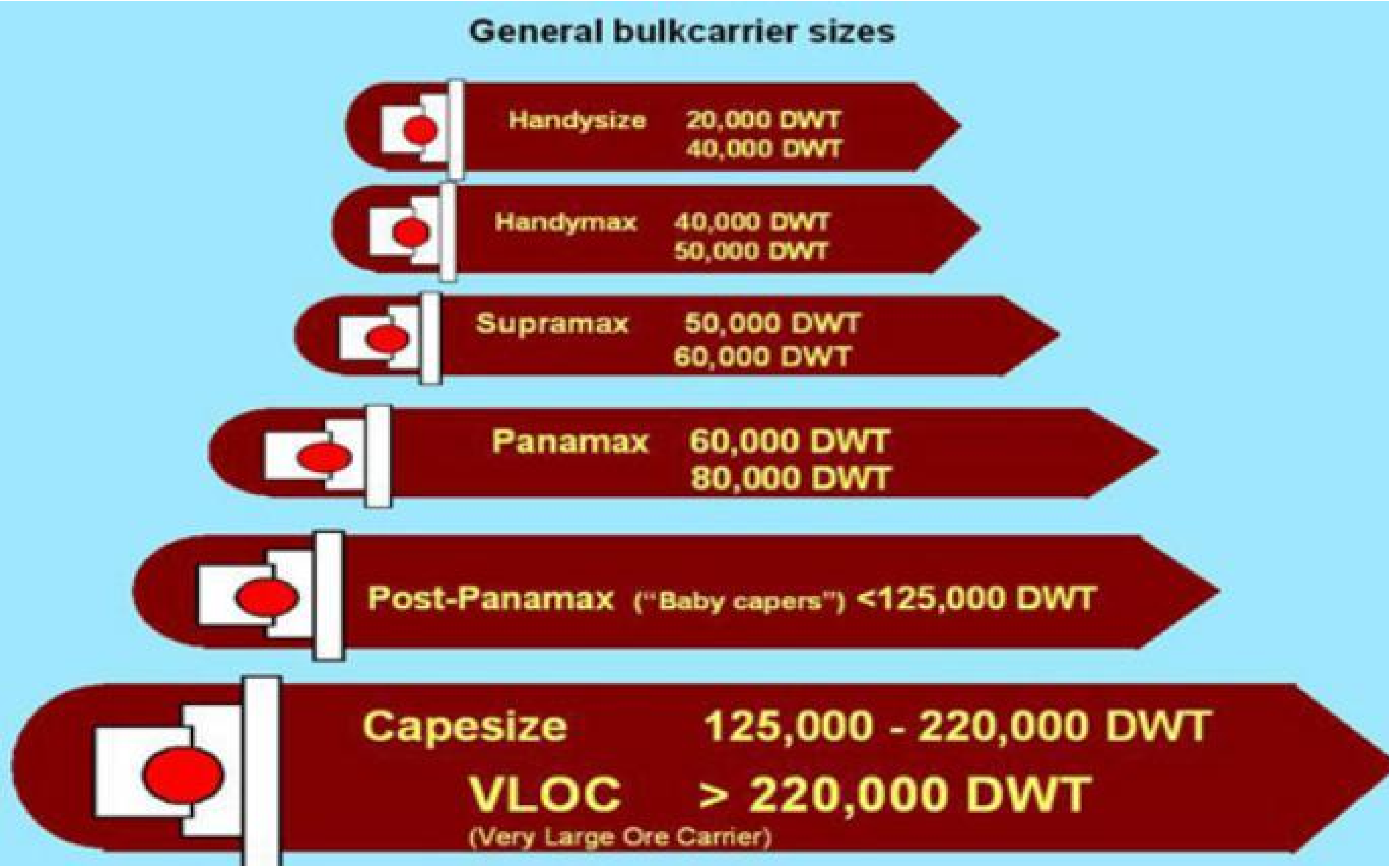


	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Containers	102	152	234	371	598	1 001	1 076	1 193	1 249	1 127	1 280	1 393	1 464	1 544	1640	1687
Dry cargo other than main bulk commodities	1 123	819	1 031	1 125	1 928	1 975	2 112	2 141	2 173	2 004	2 022	2 112	2 150	2 218	2393	2463
Main bulk commodities	608	900	988	1 105	1 295	1 711	1 814	1 953	2 065	2 085	2 335	2 486	2 742	2 923	2985	2951
Oil and gas	1 871	1 459	1 755	2 050	2 163	2 422	2 698	2 747	2 742	2 642	2 772	2 794	2 841	2 829	2 825	2 947

Source: UNCTAD

WORLD BANK GROUP
Transport & ICT

DRY BULK FLEET PROFILE



WORLD BANK GROUP
Transport & ICT

DRY BULK FLEET PROFILE 05/2017 – VLOC (FLEET: 208 ; ORDERBOOK: 60 VESSELS)

WORLD BANK GROUP
Transport & ICT

DRY BULK FLEET PROFILE (Capesize)
(FLEET: 1,080 ; ORDERBOOK: 23 VESSELS)

Length: 292 meters
Draft: 18.2 meters
Beam: 45 meters
DWT: 130k - 200,000 tons

Dry bulk cargoes
Coal
Grain
Iron ore
Bauxite / Alumina
Phosphate Rock

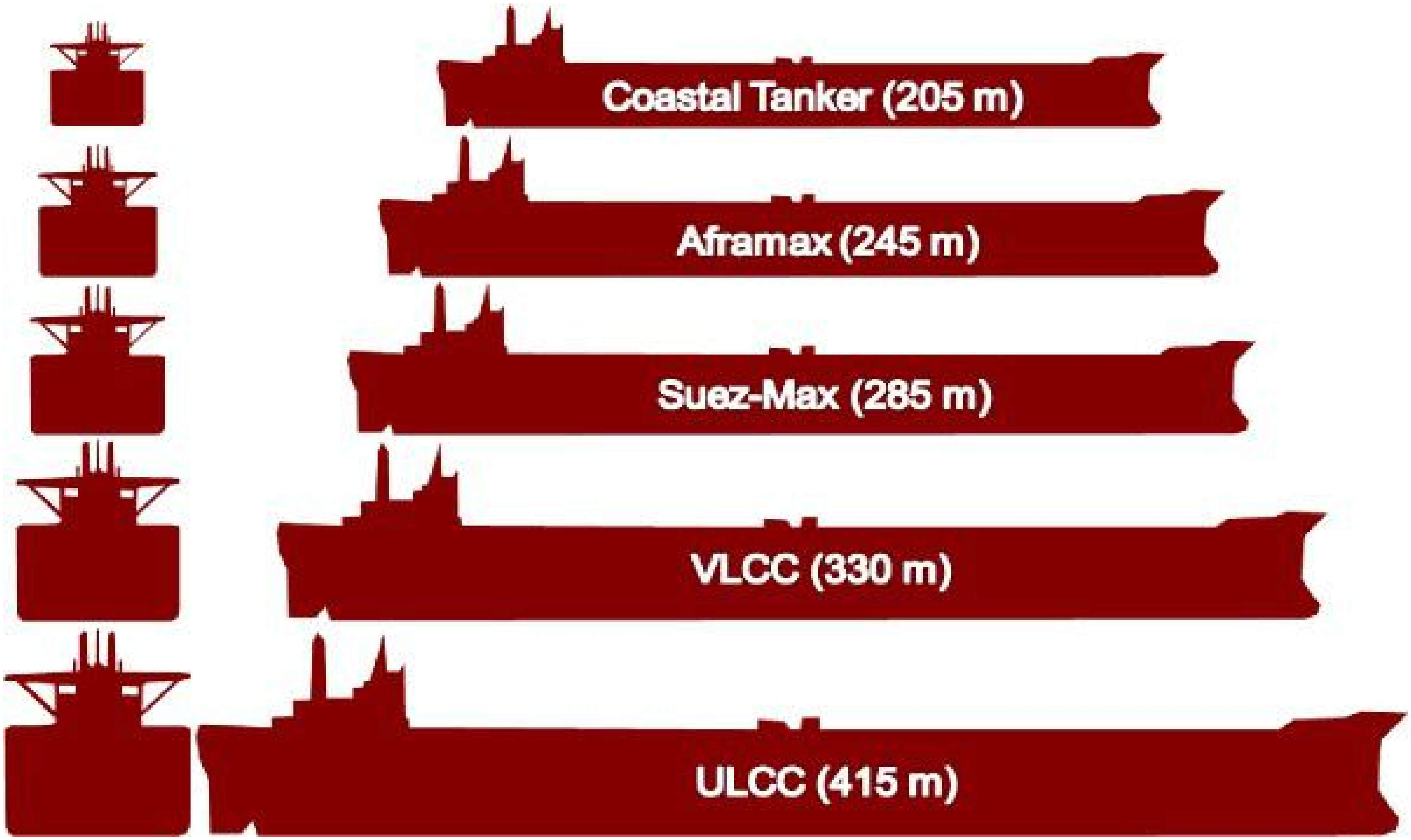
DRY BULK FLEET PROFILE (Supramax)
(FLEET: 1,987 ; ORDERBOOK: 29 VESSELS)

Length: 189 meters
Draft: 13 meters
Beam: 32.5 meters
DWT: 50k - 60,000 tons

Minor dry bulk cargoes
Petroleum Coke
Manganese Ore
Salt, Sugar
Tapioca, Agri products
Steel, Cement

WORLD BANK GROUP
Transport & ICT

TANKER VESSELS: TYPES / CAPACITY



WORLD BANK GROUP
Transport & ICT

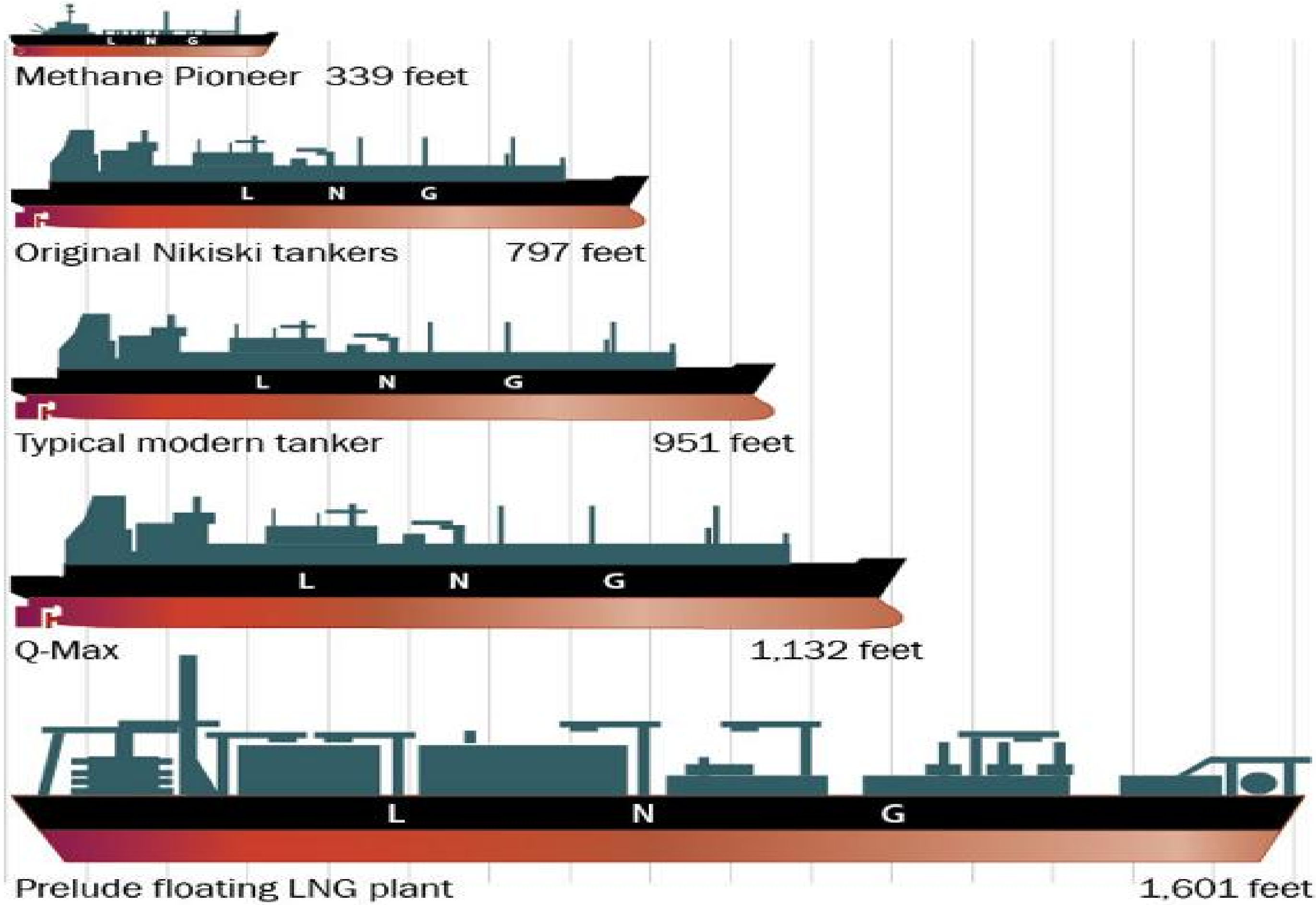
TANKER VESSELS: TYPES / CAPACITY

WORLD BANK GROUP
Transport & ICT

TANKER VESSELS: TYPES / CAPACITY

WORLD BANK GROUP
Transport & ICT

LNG tankers grow in size



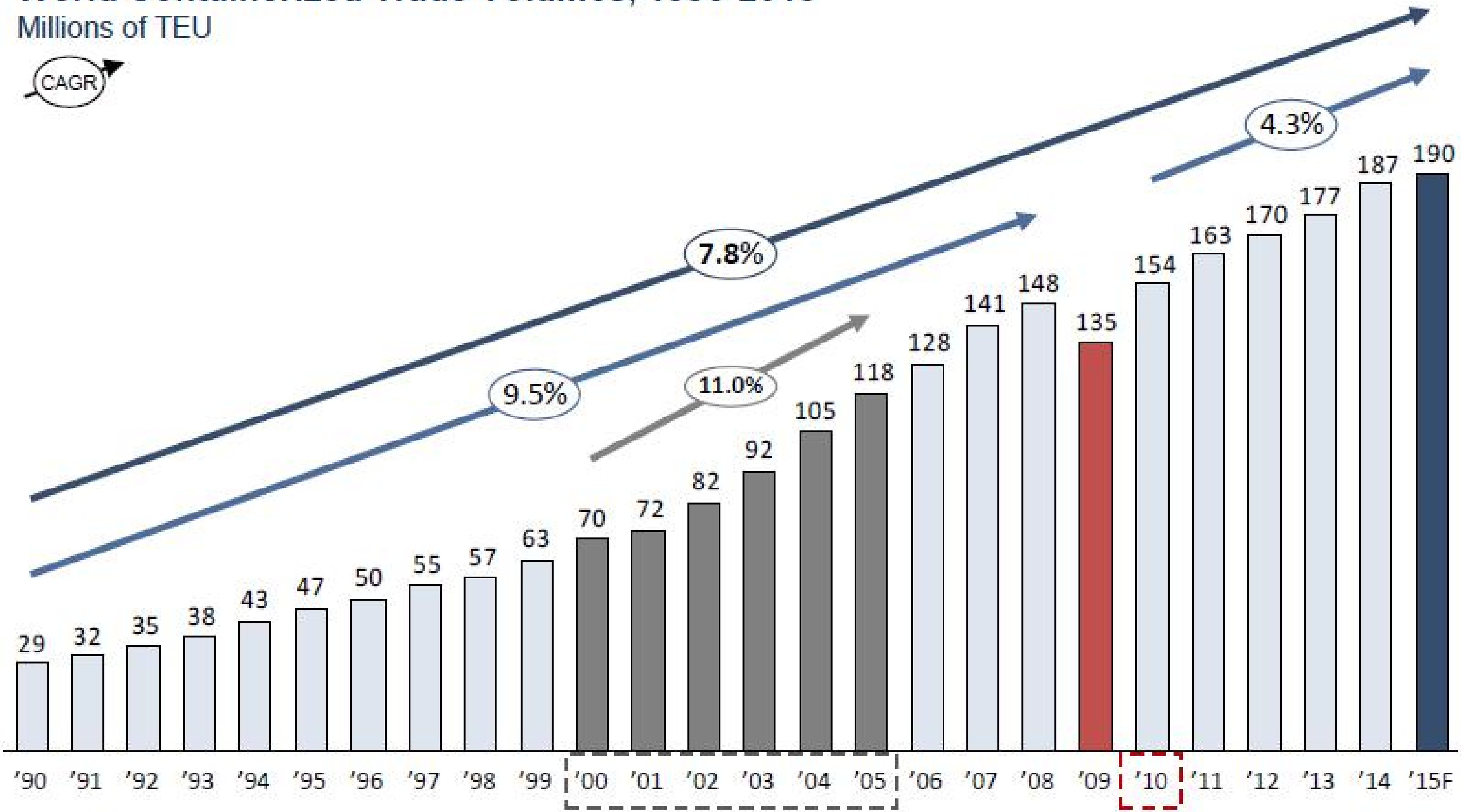
WORLD BANK GROUP
Transport & ICT

LNG VESSELS: TYPES / CAPACITY

WORLD BANK GROUP
Transport & ICT

World Containerized Trade Volumes, 1990-2015

Millions of TEU



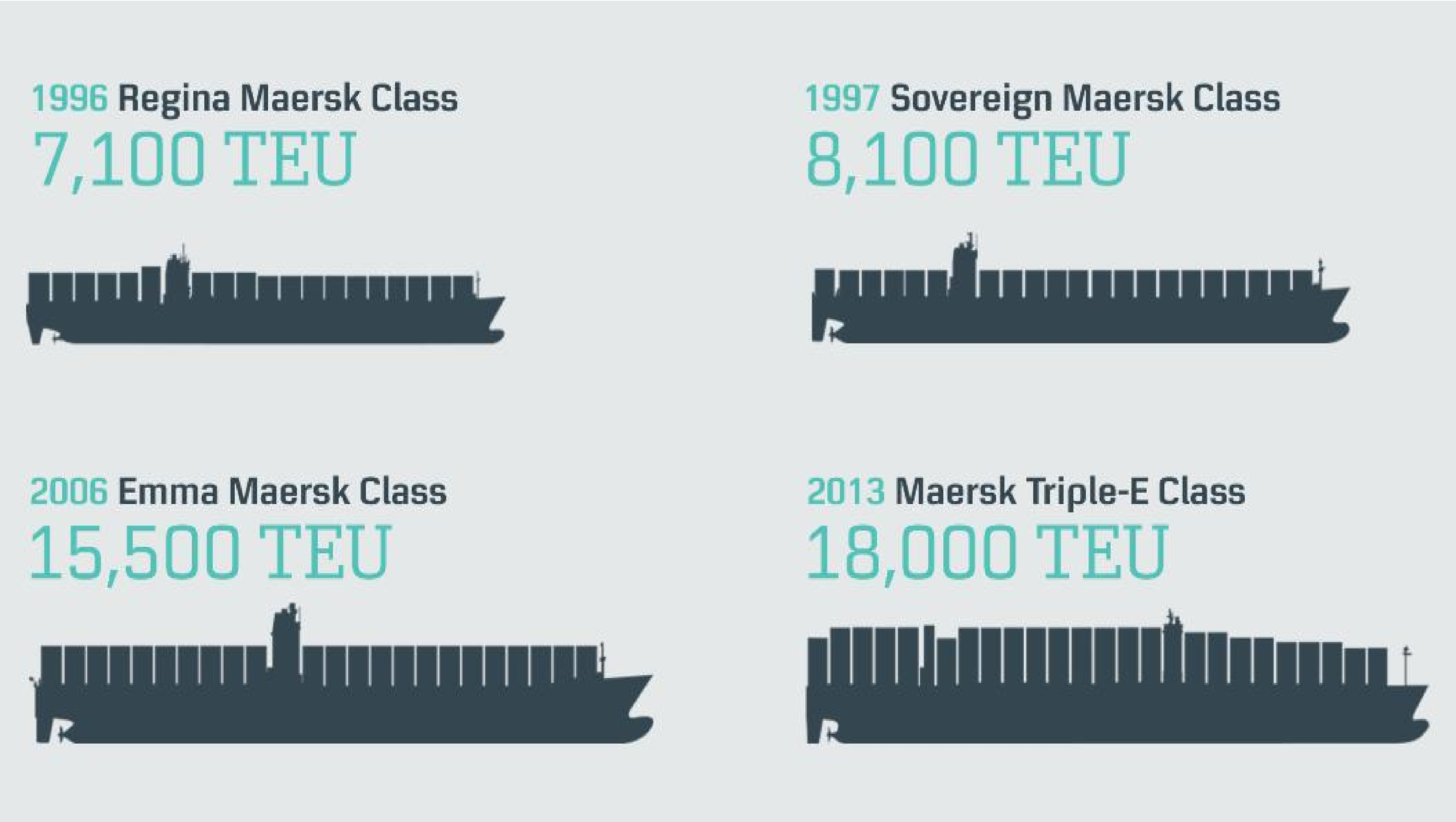
Peak of "network shift" period and China-enabled, international push towards manufacturing globalization (China joined the WTO in 2001)

First year-on-year contraction in global container shipping volumes in industry history

 Source: Drewry, IMF, World Bank analysis & estimates

WORLD BANK GROUP
Transport & ICT

CONTAINER SHIPS: 1995-2015

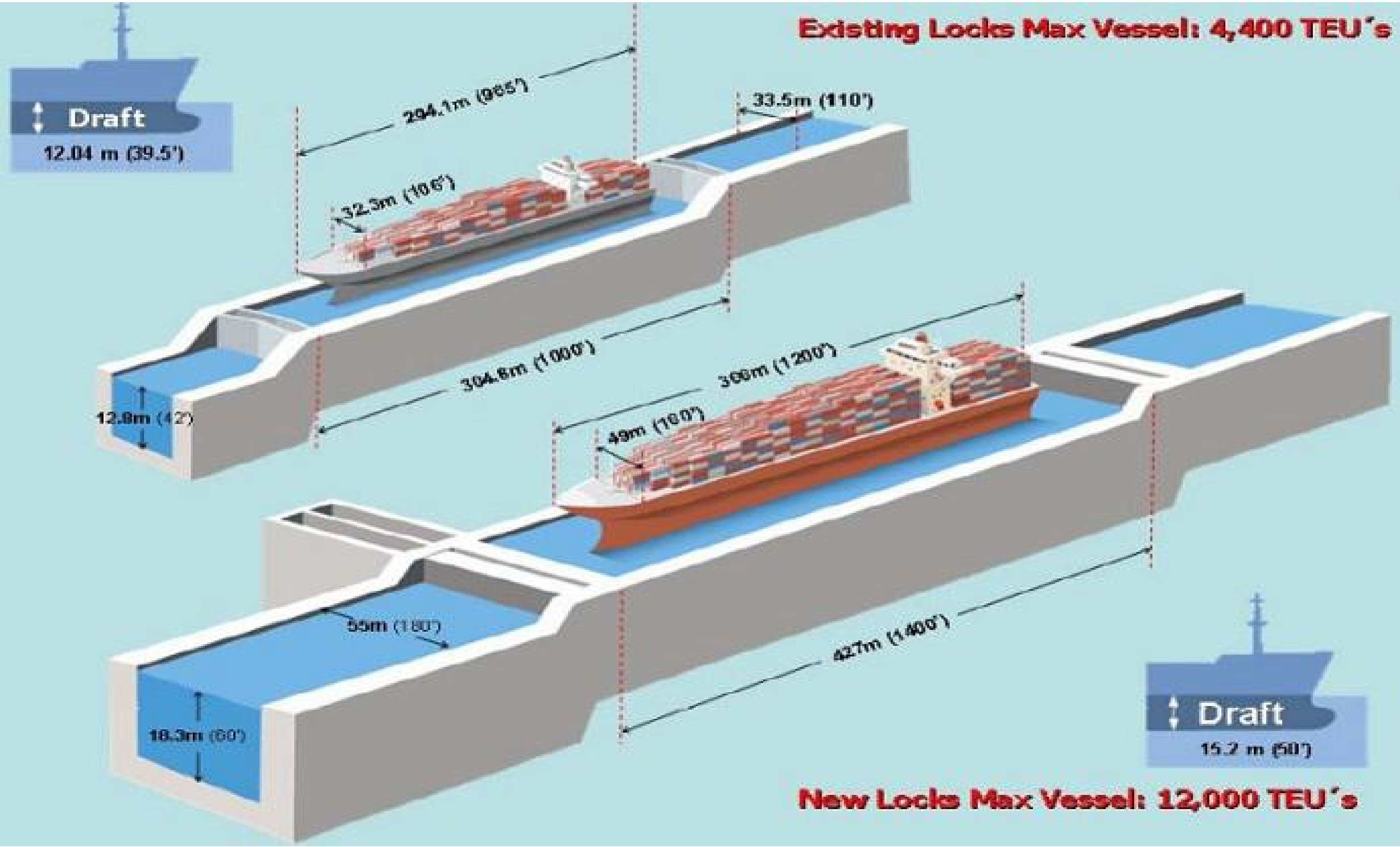


WORLD BANK GROUP
Transport & ICT

THE BIGGEST SHIPS: TYPES / CAPACITY

TYPE OF SHIPS	CAPACITY	LENGTH (LOA) Meters	WIDTH (BEAM) Meters	DRAUGHT Meters
OIL TANKERS - ULCC	320k - 500,000 DWT	415	63	35.0
OIL TANKERS - VLCC	180k - 320,000 DWT	330 - 400	58 - 60	20 - 31
DRY BULK - VALE MAX	400,000 DWT	362	65	23.0
DRY BULK - VLOC	225k - 365,000 DWT	292	45	18.0
CONTAINER - ULCV	200,000 DWT	400	59	14.5
LNG - QMAX	130,200 DWT	346	54	12 - 13.7

PANAMA CANAL: 2017



WORLD BANK GROUP
Transport & ICT

Port Capacity (2015) vs Utilization (1H 2016)

Rank		Port	1H 2016 TEU	Growth % 1H 16/15	1Q 2016 TEU	Growth % 1Q 16/15	Full Year 2015 TEU
1	(1)	Shanghai	17,848,000	-1.0%	8,533,800	-1.7%	36,537,000
2	(2)	Singapore	15,181,400	-5.1%	7,390,200	-9.0%	30,922,300
3	(3)	Shenzhen	11,435,600	-1.0%	5,569,200	-2.6%	24,204,600
4	(5)	Ningbo-Zhoushan	10,790,000	2.8%	5,385,400	5.1%	20,626,000
5	(4)	Hong Kong	9,161,000	-10.5%	4,324,000	-12.1%	20,073,000
6	(6)	Busan			4,807,962	-0.8%	19,433,690
7	(8)	Guangzhou	8,610,200	4.9%	3,985,600	5.3%	17,570,000
8	(7)	Qingdao	8,932,100	4.0%	4,428,400	4.8%	17,435,600
9	(9)	Dubai			3,649,000	-5.9%	15,592,000
10	(10)	LA/LB	7,418,778	2.9%	3,593,438	9.0%	15,352,407
11	(11)	Tianjin	7,261,700	0.3%	3,281,700	-2.1%	14,111,300
12	(12)	Rotterdam			3,004,921	-3.9%	12,234,535
13	(13)	Port Kelang			3,197,098	8.6%	11,866,685
14	(14)	Kaohsiung	5,101,293	-0.2%	2,431,069	-2.7%	10,264,420
15	(17)	Antwerp	5,047,468	4.4%	2,459,847	4.6%	9,653,511
16	(15)	Dalian	4,745,700	1.2%	2,131,400	-1.9%	9,448,600
17	(19)	Tanjung Pelepas			2,199,449	3.1%	9,117,026
18	(18)	Xiamen	4,481,300	2.7%	2,056,800	3.0%	9,182,815
19	(15)	Hamburg			2,224,722	-3.7%	8,852,525
20	(20)	Laem Chabang			1,691,442	4.4%	6,821,336
21	(22)	NY/NJ			1,496,353	2.0%	6,371,720
22	(23)	Yingkou	3,030,900	1.7%	1,525,000	2.6%	5,922,500
23	(21)	Bremerhaven			1,404,721	1.9%	5,546,657
24	(25)	Ho Chi Minh City			1,259,215	-1.2%	5,308,377
25	(24)	Jakarta			N.A.		5,201,118
26	(27)	Colombo			1,399,960	11.5%	5,185,467
27	(26)	Lianyungang	2,653,300	5.4%	1,311,200	3.1%	5,009,200
28	(31)	Valencia			1,138,352	-2.6%	4,615,196
29	(28)	Tokyo			1,122,556	2.5%	4,628,590
30	(30)	Algeciras			1,160,629	14.2%	4,515,768

Rankings based on 2015 throughput (2014 ranking in brackets) including transshipment, empty containers and restows.

Source: Alphaliner

WORLD BANK GROUP
Transport & ICT

Limited port calls by mega ships, larger infra req at mega ports

 Source: Maersk, CMA-CGM

WORLD BANK GROUP
Transport & ICT

Ports serving Ultra Large Container Vessels

Major transshipment hub ports for Mega shipping alliance 2M (Maersk & MSC)

- Asia: China/Ningbo & Yantian; Malaysia/Tanjung Pelepas
- Europe: Netherland/Rotterdam, Germany/Bremerhaven, UK/Felixstowe & France/Le Havre

Source: Liner schedule analysis

Need for Port Infrastructure development in emerging economies

- Chronic port congestion
- Slow turnaround of vessels
- Over reliance on poorly maintained and congested roads / rail networks
- Poor connectivity to demand areas
- Shipments are to be trans-shipped through gateway ports in other countries

Quality of Port Infrastructure Index & Global Competitiveness Rankings 2015 [2014]

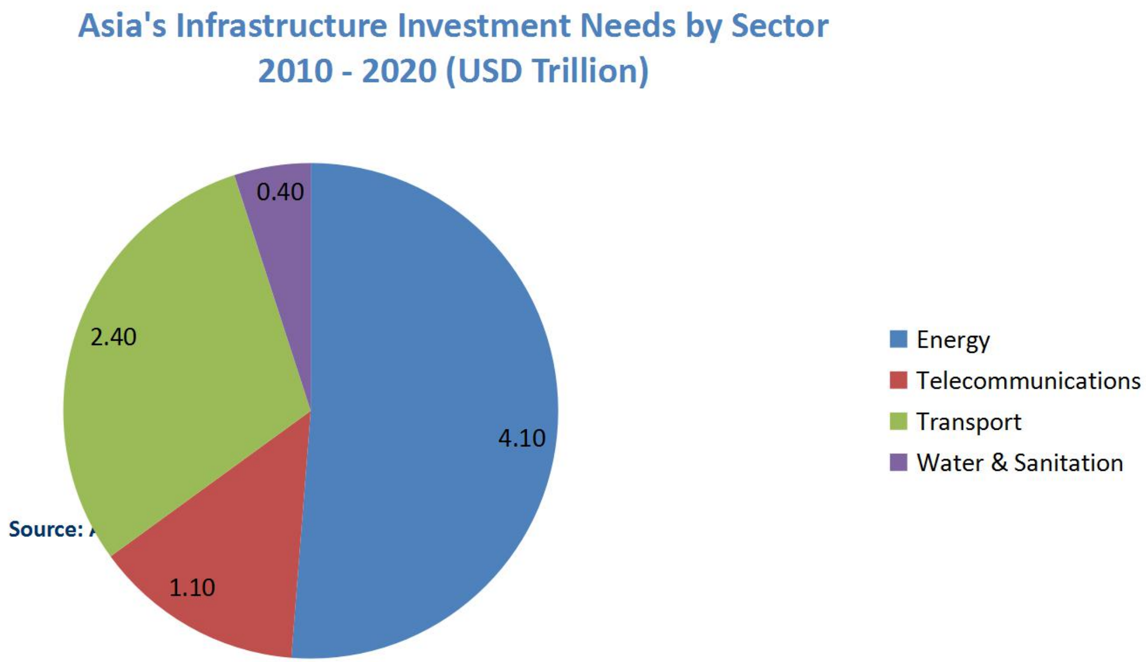
Country	Port Infra Quality Index	Overall Ranking
Singapore	**6.7**	**2 [2]**
Malaysia	5.4	18 [20]
Korea, Rep.	5.2	26 [26]
China	4.6	28 [28]
Thailand	4.2	32 [31]
Indonesia	3.9	37 [34]
Sri Lanka	4.3	68 [73]
Vietnam	3.8	56 [68]
India	4.5	55 [71]
Philippines	3.2	47 [52]
Lao PDR	2.0	83 [93]
Bangladesh	3.5	107 [109]
Pakistan	3.7	126 [129]
Myanmar	2.6	131 [134]
Total No Countries		140 [144]

Source: World Economic Forum Statistics (Min 1.37 extremely underdeveloped, Max 6.77 extensive & efficient)

WORLD BANK GROUP
Transport & ICT

Significant Infrastructure Gap

- USD 8 trillion of investment in Asia 2010 – 2020 (Source: ADB)



- USD 20 trillion up to 2030 (Global Infrastructure Initiative, G20)

Investments in Port Infrastructure Development: 1990-2015

1990 - 2015	No: of Ports	Total Investment (Billion USD)
Total Port Projects	442	$79.08

WORLD BANK GROUP
Transport & ICT

Ongoing Container Port Infrastructure developments in Asia

- Mega ports
    - Singapore – (PPT 3 & 4)
    - Malaysia – Pelepas, Westports, Northport
    - China - Port of Ningbo-Zhoushan
    - Korea – Busan

- Regional Gateway ports
    - Indonesia (Jakarta/Surabaya)
    - Bangladesh (NCT 3&4)
    - India (Nhava Sheva – 4th terminal)

Mega port connectivity: Key to harnessing scale economies

Major transshipment port calls on 2M services between Asia-Europe

- Ningbo – connects Japan/Osaka, Kobe, Nagoya, Tokyo
- Tanjung Pelepas – connects South East Asia & Bay of Bengal ports
- Rotterdam – gateway to the EU

 Maersk/MSC schedule analysis

Port Infra for Connectivity at Mega ports

- Large investments in shore side infra – STS/yard cranes, prime movers
- Reliable short sea feeder network to regional feeder ports - SIN/Malaysia connected with number of ports in SE Asia & South Asia
- Coastal Shipping network (feeding the hub) – INDIA/Nhava Sheva
- Inland Water Transport network – CHINA/Shanghai & Ningbo
- Multimodal connectivity to hinterland - waterways, rail and road network – EU/Rotterdam-Duisberg
- ICT & port systems to deliver integrated services - processing flows from multiple corridors for larger transactions – SIN

Boosting Trade through development of Regional Gateway ports

Gateway ports: primary role - maximize cargo generation thru connectivity to local, hinterland, far-inland, cross-border markets

- Larger port capacity to handle bigger vessels deployed due to cascade effect
- Inland ports – extended gates
- Inland Water Transport network
- Multimodal - waterways, rail and road network
- Coastal Shipping network
- ICT: National platform – logistics, freight transport, PCS

WORLD BANK GROUP
Transport & ICT

Reading the signs…

- Migration of volumes to new production centers & gateway ports

- E-commerce

The trends indicate…

Need to boost Regional & Inland Port Connectivity

- Infrastructure facilities at regional gateway ports
- Coastal Shipping network - feeder / inland ports
- Inland Water Transport – River port development
- Multimodal connectivity: waterways & railways with road networks

The World Bank: Ports & Waterborne Transport sector

- Infrastructure Development
  - National water ways – India / Bangladesh
  - Extended gates – India (Kolkata)
  - River Terminals – China: Yichang (Hubei)
- Multimodal connectivity to hinterland
  - Rail : Dedicated Freight corridor – India/DFC, India/EDFC
  - Waterways: China, Vietnam, India/NW1 & 2
  - Roads: Cambodia-Vietnam
- ICT & port systems to deliver integrated services - processing flows from multiple corridors for larger transactions

Private Participation in Infrastructure: 1990-2015

1990-2015	No: of Ports	Total Investment (Billion USD)
Total Port Projects	442	$79.08
PPP projects	406	$74.57
MDB Supported	56	$12.84
Green Field	193	$44.58

Private participation in Port Infrastructure Development

Project	Investment (Million USD)	Sponsors	Capacity Type	Type of PPI	Contract period & method	Debt Funding (Million USD)
PSA Panama International Terminal - Phase 2	$400.00	PSA Corp (100% / ..)	2 Million TEUS	Greenfield: BOT	20 years, Direct Negotiation	$150.00
Chabahar port development	$235.00	India Ports Global	250,000 TEUS	Brownfield: Build Rehabilitate, Operate & Transfer	10 years	$150.00
Bharat Mumbai Container Terminals Private Limited	$765.10	PSA Corp (100% / Singapore)	4.8 Million TEUS	Brownfield: Build Rehabilitate, Operate & Transfer	30 years, Competitive bidding	$497.30
Matarani Port	$335.00	Grupo Romero (100% / Mexico)	6 Million TEUS	Brownfield: Build Rehabilitate, Operate & Transfer	30 years	$280.00
Karanja Terminal and Logistics Private Limited	$160.80	Skil Ports & Logistics Limited (100% / India)	Lighterage	Greenfield: BOT	30 years, Direct Negotiation	$78.70

Private participation in Port Infra Development with MDB loans

Project	Investment	Sponsors	Capacity Type	Type of PPI	Contract period & method	MDB Loan (Debt Funding)
Kingston Freeport Terminal Limited	$437 M	China Merchant Holdings (International) Co Ltd (49% / ..), CMA-CGM (51% / ..)	3.2 Million TEUS	Brownfield: Build Rehabilitate, Operate & Transfer	30 years, Competitive bidding	$175 M
Manzanillo TEC II (Phase II)	$345 M	International Container Terminal Services Inc. (ICTSI) (100% / ..)	1.4 Million TEUS	Greenfield: BOT	34 years	$260 M
Tuxpan Container Terminal, Veracruz	$370 M	Stevedoring Services of America (SSA) Inc. (71% / United States)	0.9 Million TEUS	Greenfield: BOT	20 years, Competitive bidding	$75 M
Puerto Quetzal Container Terminal	$120 M	Terminal de Contenidores de Barcelona (100% / Spain)	0.34 Million TEUS	Greenfield: BLT	25 years, Competitive bidding	$35 M
Port Lafito	$57 M	Gilbert Bigio Group (100% / Haiti)	70,000 TEUS	Greenfield: BOO	Channel dredging & Terminal	$15 M

Overview of World Bank Group

World Bank

	IBRD International Bank for Reconstruction and Development	IDA International Development Association	IFC International Finance Corporation	MIGA Multilateral Investment and Guarantee Agency	ICSID Int'l Centre for Settlement of Investment Disputes
	Est. 1944	Est. 1960	Est. 1956	Est. 1988	Est. 1966
Role	To reduce poverty by boosting economic growth and reducing inequalities	To reduce poverty by boosting economic growth and reducing inequalities	To promote private sector development	To reduce political investment risk for private sector investors	To settle disputes by arbitration, conciliation or fact finding
Clients	Countries with per capita income between $1,045 and $12,736	Countries with per capita income of less than $1,045	Private companies and governments in member countries	Foreign investors in member countries	Governments and investors can use ICSID to settle disputes
Products	▪ Technical Assistance ▪ Loans ▪ Policy Advice	▪ Technical assistance ▪ Loans/Grants ▪ Policy Advice	▪ Equity/Quasi-Equity ▪ Long-term Loans ▪ Advisory Services	▪ Political Risk Insurance	▪ Dispute Resolution

Shared Mission: Reduce Poverty and Increase Prosperity

THANK YOU!