

# The Impact on Maritime Logistics in East Asia by Changes in Major Logistics Corridors

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# Change of World Logistics Corridors

## Opening the Northern Sea Route(NSR)

- If use NSR Max 10 days shortened than the Suez Canal route to Rotterdam from Korea
- In particular, bulk cargo



## Suez Canal Expansion

- The total length - Extend from 50km to 122km long
- When completed, the vessel waiting time decrease from 11 hours to 3 hours

## Kra Canal Construction

- Possible option in Asia canal

## Nicaragua Canal Expansion

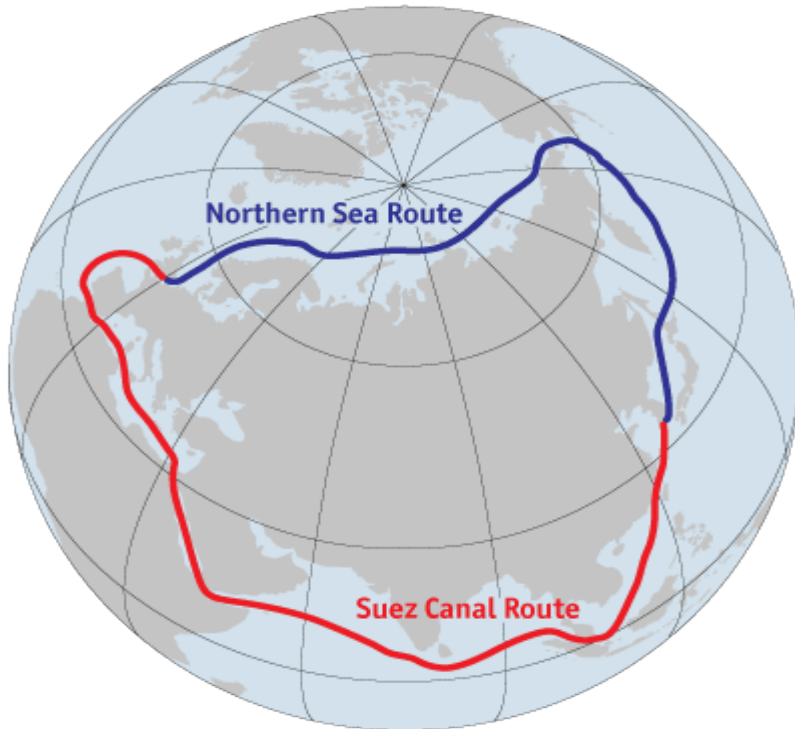
- A new competitor of Panama Canal
- 900km shorter than Panama Canal in sailing from the West to the East of the USA

## Panama Canal Expansion

- 12,000 TEU available (Used to be Max 4,500 TEU)

# Opening NSR

## Northern Sea and Suez Canal routes



Source : economist.com

- The Northern Sea Route is a sea lane from the Kara Sea to the Pacific Ocean specifically running along from Kara Gates straight between the Barents sea and the Kara Sea, along Siberia, to the Bering Strait

- 24 days taken to Rotterdam through Suez canal from Busan in Korea (20,000km)
- If NSR used, it takes only 14 days
- Only available time to use the lane is for 4 months (Jul-Oct)

- It is expected that in 2050, the warmer sea in NSR would open up new channels across the region

# Nicaragua Canal Expansion



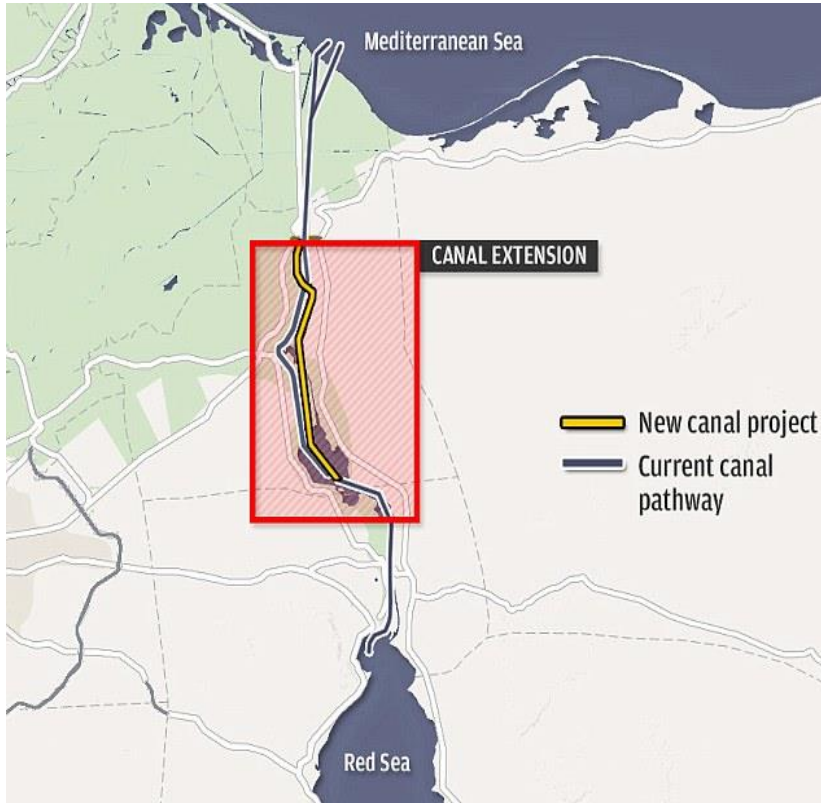
Source : BBC.com

- The Nicaraguan Canal is a planned shipping lane to connect the Caribbean Sea with the Pacific Ocean through Nicaragua

- 900km shorter than Panama Canal in sailing from the West to the East of the USA
- HKND Group (Hong Kong Nicaragua Canal Development Investment Company) headed by Wang Jing granted a 50 year concession

- The construction will be completed in 2020
- No significant construction has taken place yet
- A new competitor of Panama Canal if opened

# Suez Canal Expansion



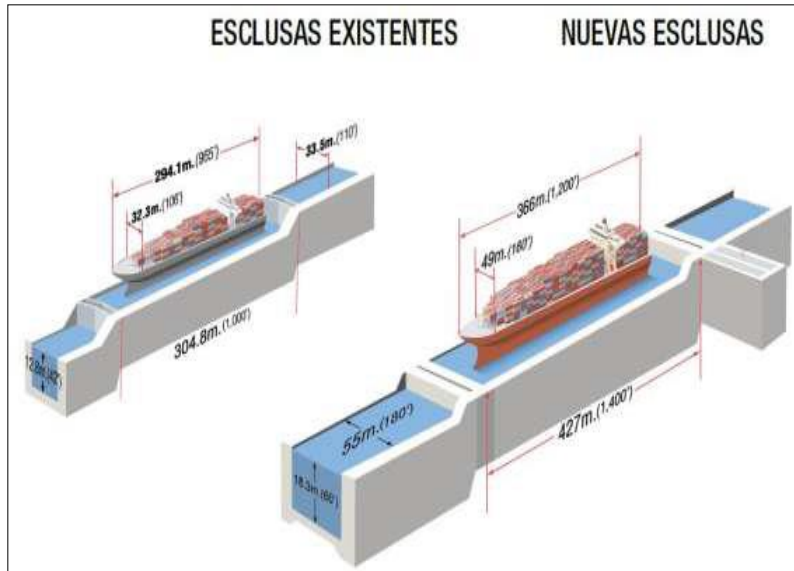
Source : dailymail.co.uk

- The Suez Canal in Egypt is an artificial waterway, connecting the Mediterranean Sea to the Red Sea

- In Aug 2014, construction was launched to expand and widen the Ballah Bypass, for 35km, costing \$8.4 billion

- According to the authority of the canal, the capacity can be doubled by the construction from 49 to 97 ships/day

# Panama Canal Expansion



	Panamax	Post-Panamax
<b>Capacity:</b>		
Containers(TEUs)	4,500	12,000
<b>Dimensions:</b>		
Beam	32m (106')	49m (160')
Length	294m (965')	366m (1,200')
Draft	12m (39.5')	15m (50')

Source : Panama Port Authority

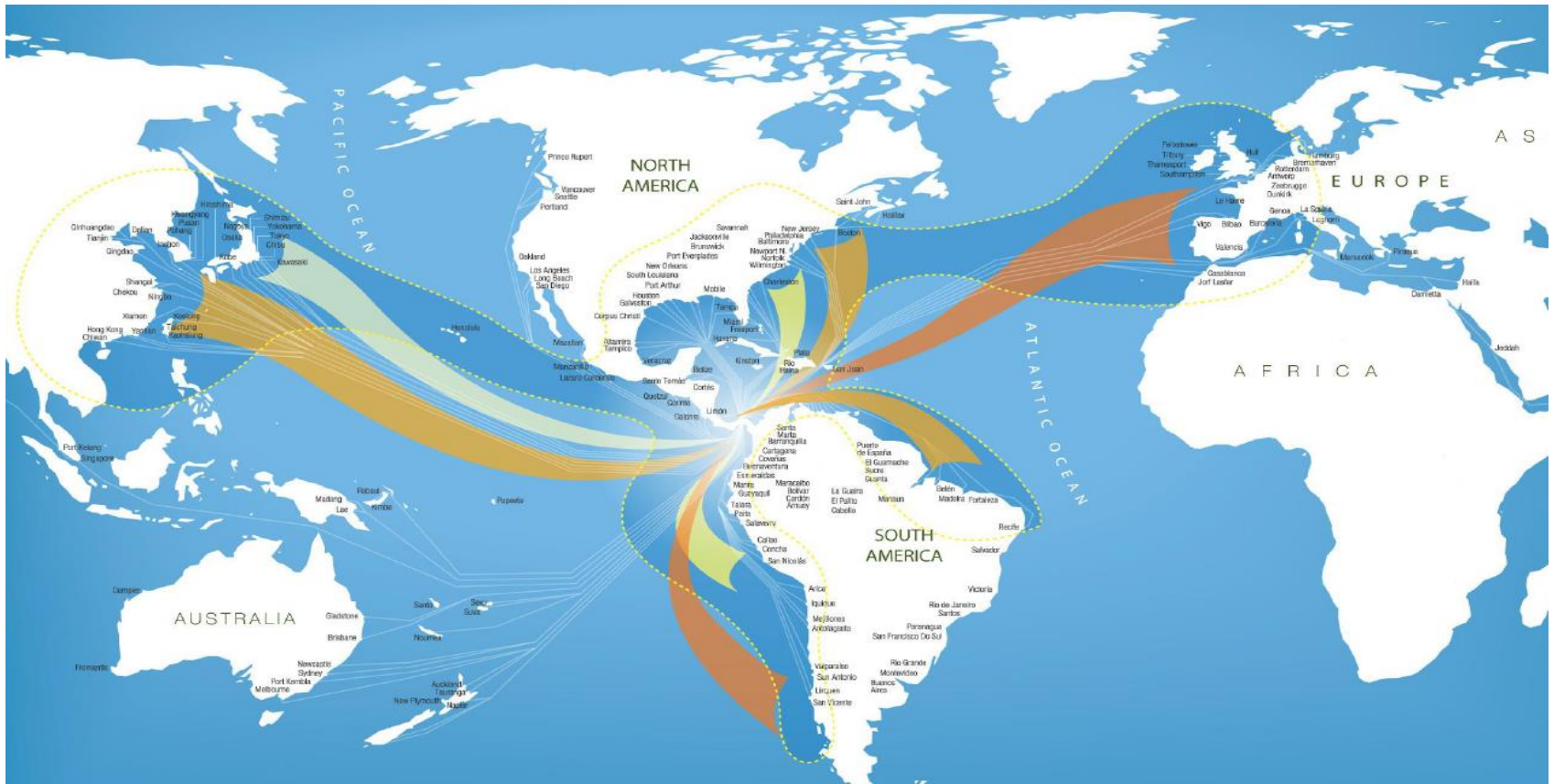
- The Panama Canal Expansion Project is intended to double the capacity of the Panama Canal by 2016

- Creating a new lane of traffic and allowing more and larger ships
- the new lock gates can handle 49m(160 feet) width ships
- The new canal can accommodate 14,000 TEU

- It can contribute to the positive economic impacts by saving shipping time of larger ships

# Panama Canal Connectivity

- Panama Canal connects more than 140 trade routes with 1,700 ports in 160 countries



Source : Panama Port Authority (2015) Panama Canal Update & Outlook

# Panama Canal Main Routes

- 5 main routes accounts for about 70% of all the ship tonnages through Panama Canal



Main Trade Route	Ship tonnage (LT)	Share(%)
<b>Asia-East/Gulf coast US</b>	86.2 M	55.6% (38.3%)
West Coast South America – East Coast US	33.4 M	21.5% (14.9%)
West Coast South America – Europe	12.6 M	8.1% (5.6%)
West Coast Central America – East Coast US	12.0 M	7.7% (5.3%)
South America Intercostal	10.9 M	7.0% (4.8%)
<b>Total – 5 routes (FY2014)</b>	<b>155.1 M</b>	<b>100%</b>
<b>Total – All trades (FY2014)</b>	<b>224.9M</b>	-

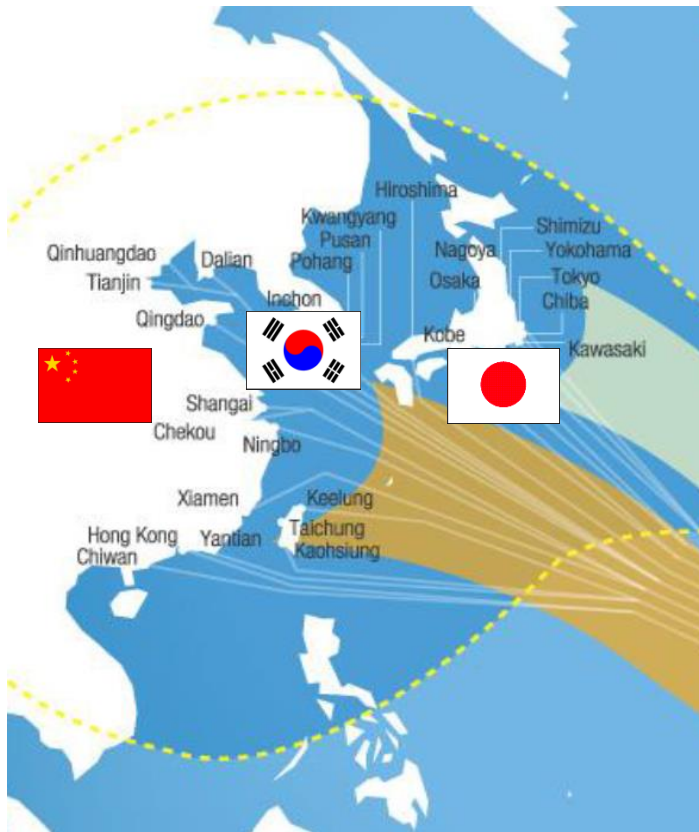
\*) indicates shares from all trades

Source : Panama Port Authority (2015) Panama Canal Update & Outlook



# Panama Canal Total Cargo Movement by Country

- East Asia including China, Japan, and Korea accounts for 41% of all cargo movements



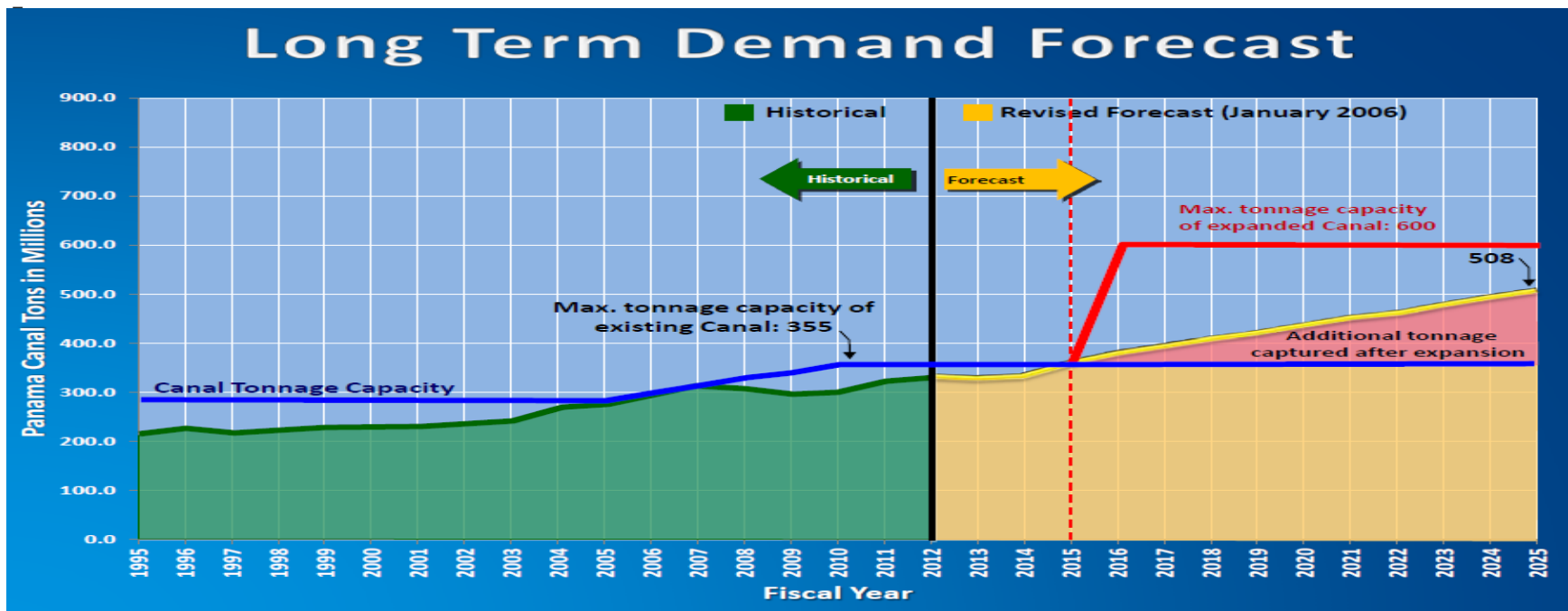
Total Cargo Movement	FY2013	FY2014	Share(%)
United States	136.5	154.1	68.5
<b>China</b>	<b>46.4</b>	<b>51.5</b>	<b>22.8</b>
Chile	29.0	29.5	13.1
<b>Japan</b>	<b>20.0</b>	<b>21.7</b>	<b>9.5</b>
Colombia	17.5	19.2	9.6
<b>South Korea</b>	<b>16.8</b>	<b>19.1</b>	<b>8.5</b>
<b>C-J-K</b>	<b>83.2</b>	<b>92.3</b>	<b>41.0</b>
<b>Total – All trades (FY2014)</b>	<b>224.9M</b>	<b>224.9M</b>	<b>100%</b>

\*Units : Million Long Ton (Ship tonnage basis)

Source : Panama Port Authority (2015) Panama Canal Update & Outlook

# Long Term Demand Forecast of Panama Canal

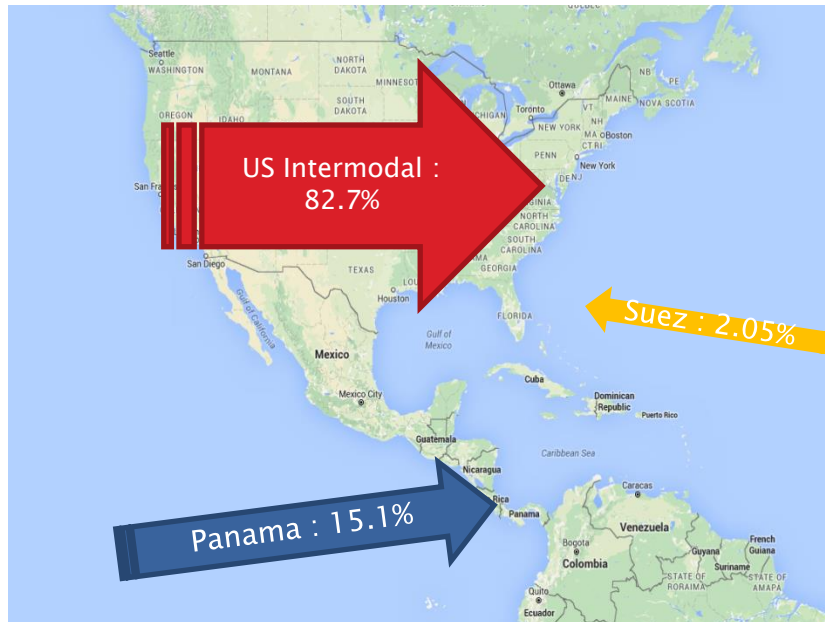
- By expanding the canal, the capacity of it will increase to approximately 600 m/year
- In 2025, the cargo movement would reach at 508m/year
- If the proportion of East Asia range from 20% to 40%, then the cargo movements in terms of the weight would be 102m for 20%, 152m for 30% and 203m for 40%



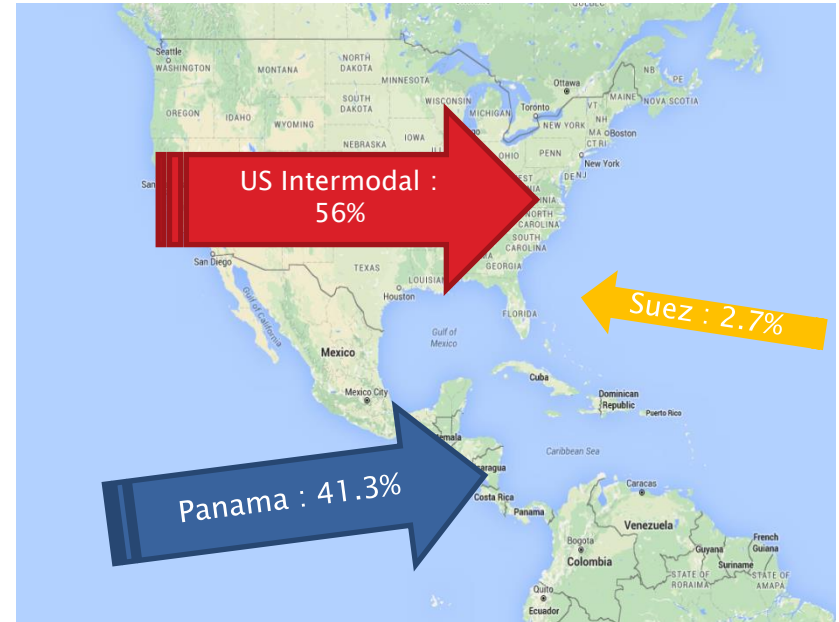
Source : Jorge L. Quijano (2013) The Importance of the Panama Canal to Logistics and Trade, Panama Port Authority

# Share by transport route (Panama vs. Intermodal)

- In terms of the cargoes transported by US intermodal system almost halved in FY 2010 compared to FY 2000
- Once the expansion of the canal will be done, then the trend might be accelerated



Share by transport route (FY 2000)



Share by transport route (FY 2010)

Source : 1. Google Map

2. Alberto Aleman Zubieta (2012), Global Leadership Lecture Series: The Impact of the Panama Canal on Global Shipping, MIT

# Panama Canal vs. Suez Canal Routes

- If Panama Canal is used rather than Suez route, distance, time and cost can be saved from East Asia to NY

## < Hong Kong-New York All-water Route(Distance & Time) >

Origin	Distance(NM)		Time(Day)	
	Via Panama	Via Suez	Via Panama	Via Suez
Tokyo	9,723	13,487	22.5	31.2
Busan	10,063	12,617	23.3	29.2
Shanghai	10,513	12,749	24.3	29.5
<b>Hong Kong</b>	<b>11,174</b>	<b>11,983</b>	<b>25.9</b>	<b>27.7</b>
Singapore	-	10,573	-	24.5

## < Hong Kong-New York All-water Route(Unit: Cost/TEU) >

Ship Size	Via Panama	Via Suez	Cost difference
4,600	1,006	-	
8,600	744	759	15
10,000	709	723	14
<b>13,000</b>	<b>642</b>	<b>652</b>	<b>8</b>

\* Source : Lee, et.al, Effect of logistics map based on changing international corridors, 2015.

# Suez Canal Routes vs. TSR vs. NSR

- Comparing shipping costs from Port of Busan to European destinations sea routes are more competitive than TSR in terms of cost, but TSR is more competitive in terms of travel time

## < Distance & Time & Cost Comparison >

From	Via		Destination 1	Destination 2	Destination 3	Destination 4
Busan	Suez		Hamburg	Berlin	Brest	Moscow
		Distance (km)	20,475.7	20,835.0	21,611.8	22,654.8
		Time (Day)	25.6	25.8	27.4	30.8
		Cost (\$)*	900	1,170	1,752	2,253
	NSR		Hamburg	Berlin	Brest	Moscow
		Distance (km)	14,456.7	14,816.0	15,592.8	16,635.8
		Time (Day)	18.1	18.3	19.9	23.3
		Cost (\$)	634	903	1,486	1,986
	TSR (Vostochny Port)		Hamburg	Berlin	Brest	Moscow
		Distance (km)	12,481.9	12,122.6	11,345.8	10,302.8
		Time (Day)	15.5	15.3	13.7	12.7
		Cost (\$)	6,590	6,321	5,738	5,238

\* Source: Lee, et al., Effect of logistics map based on changing international corridors, 2019.

\* Comparison of costs was made for each route based on ocean freight, port THC, and railway transportation cost

# Potential impacts on East Asia after the expansion

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- Since the canal can accommodate and handle larger ships, the larger ships will be directly entered into the route and ports which used be dominated by SM(Small-Medium) sized ships in East Asia
- Therefore, more port facilities and operational efficiency should be installed and improved in order to handle more cargoes carried by the larger ships
- Ports in Asia are required to deepen channel depth and increase berth size etc so as to address the limitations of Asian ports

Thank you