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# Myanmar port development— “From river to deep sea”

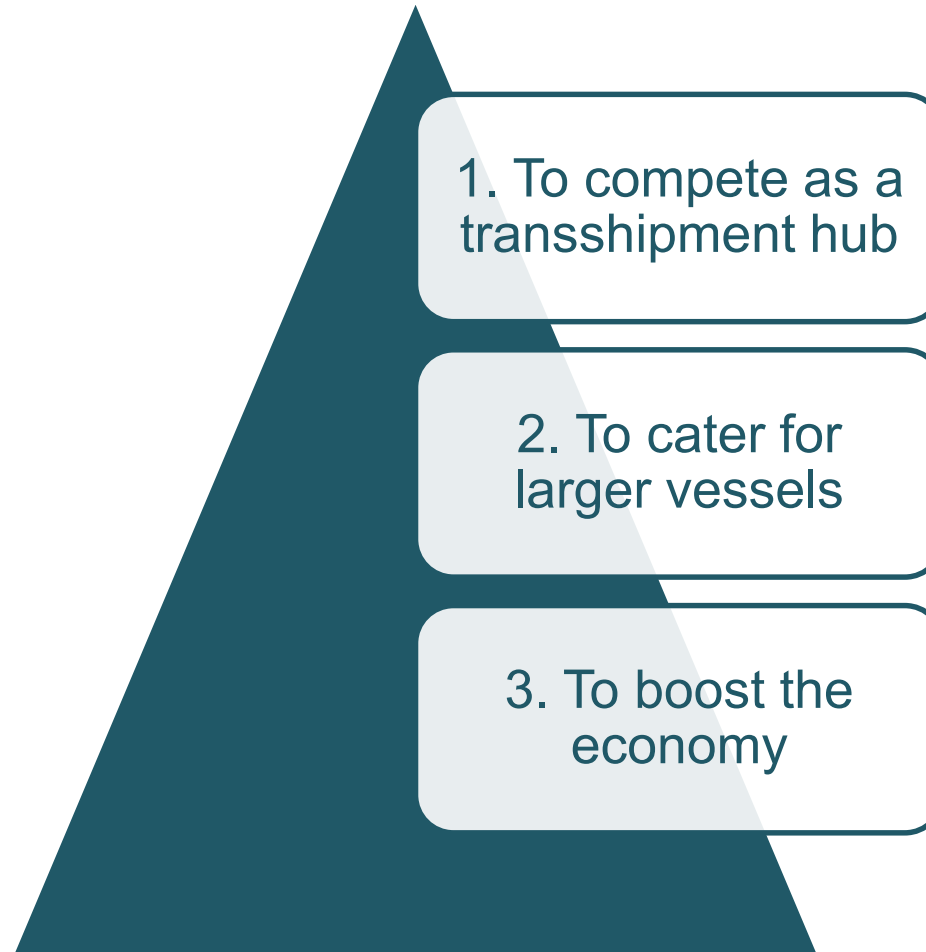
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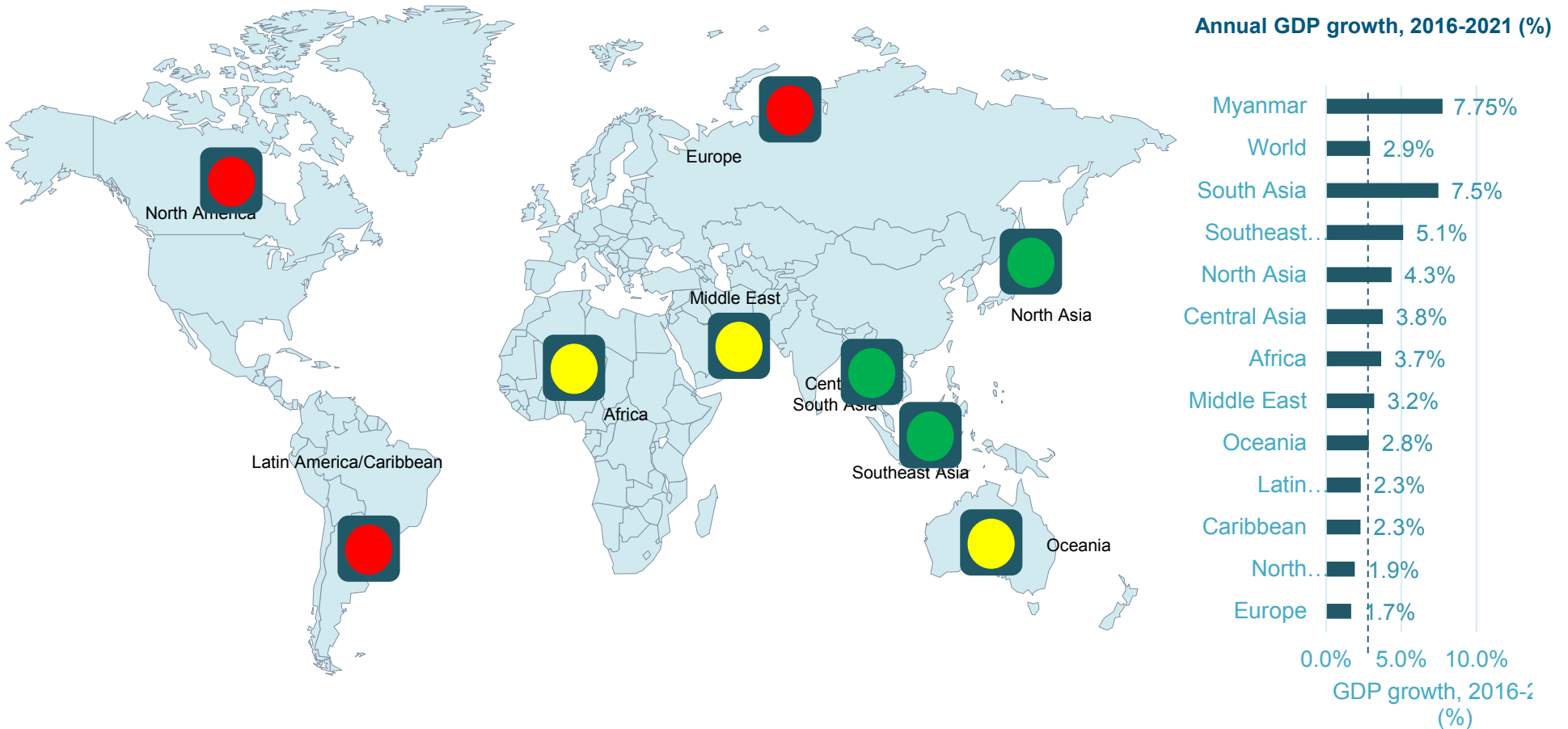
## Common reasons for building a deep sea port

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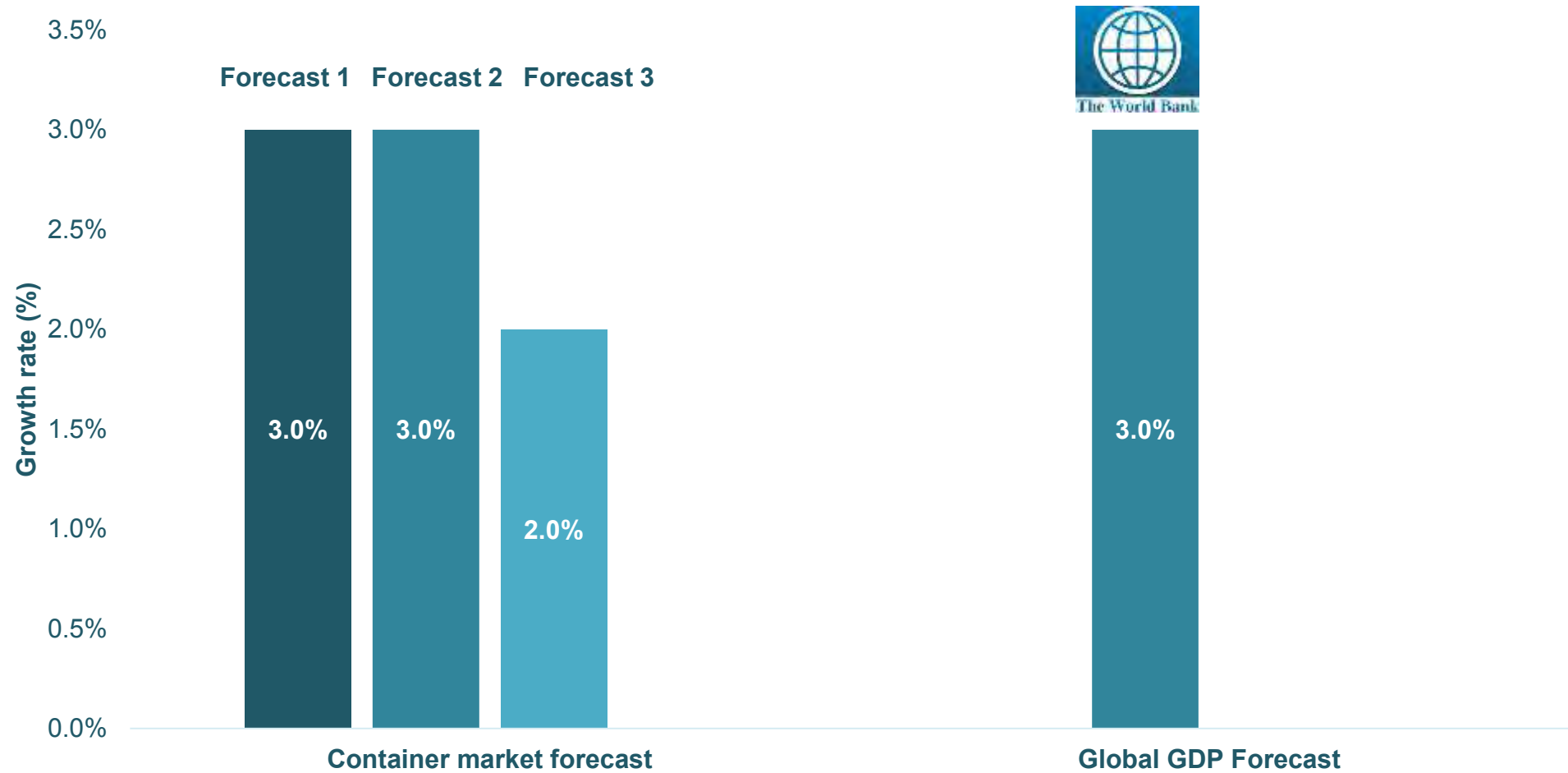


Myanmar port development– “From river to deep sea”

The world economy is projected to grow at 2.9% annually for the next 5 years. Myanmar’s economy projected to grow at 7.8% annually.



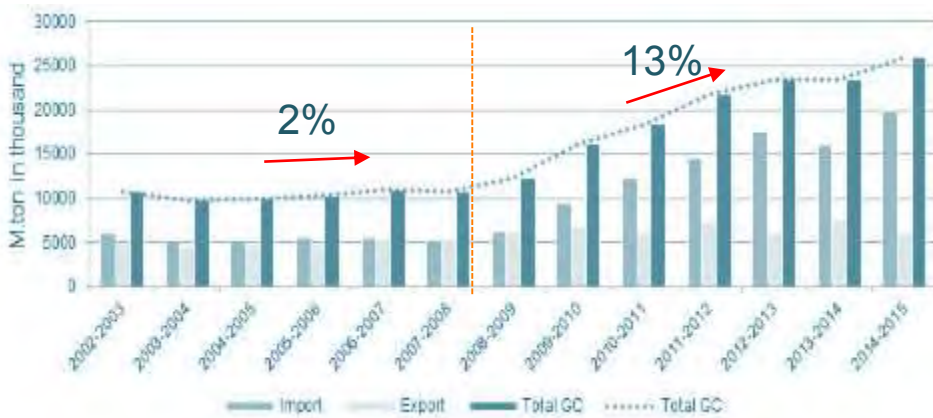
## Analysts are forecasting cargo volume growth of 1X of GDP growth



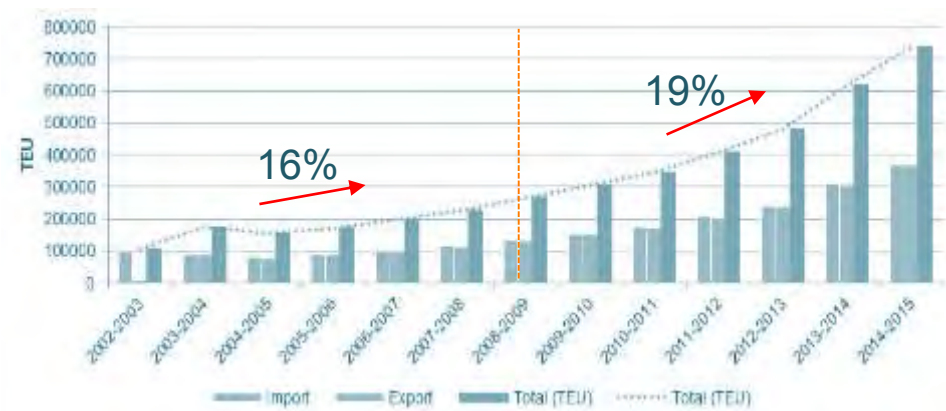
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# Myanmar cargo volume has been growing at 2X of GDP.

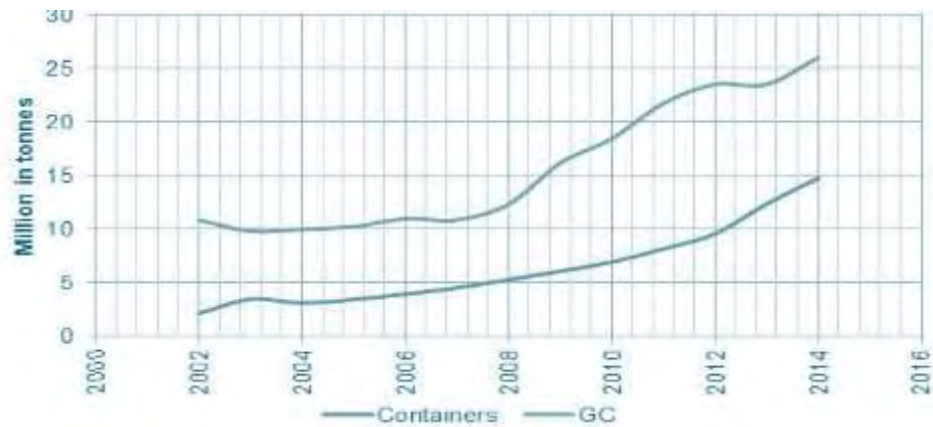
Increased general cargo volume growth



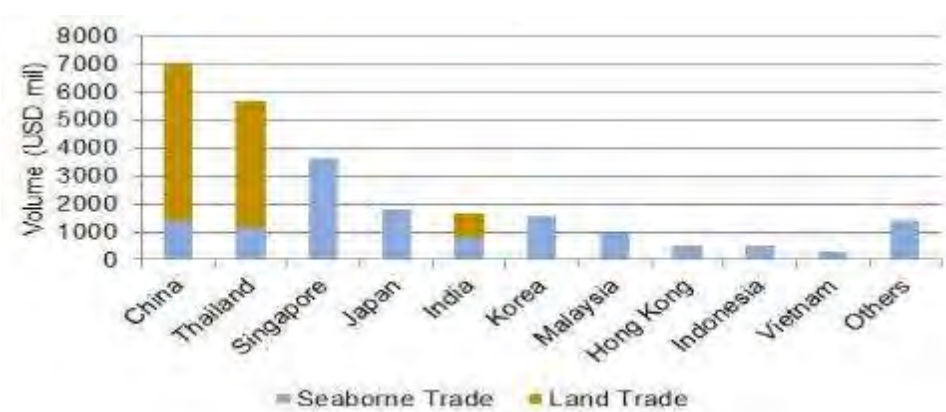
Sustained container cargo volume growth



Strong growth in general cargo and container volume

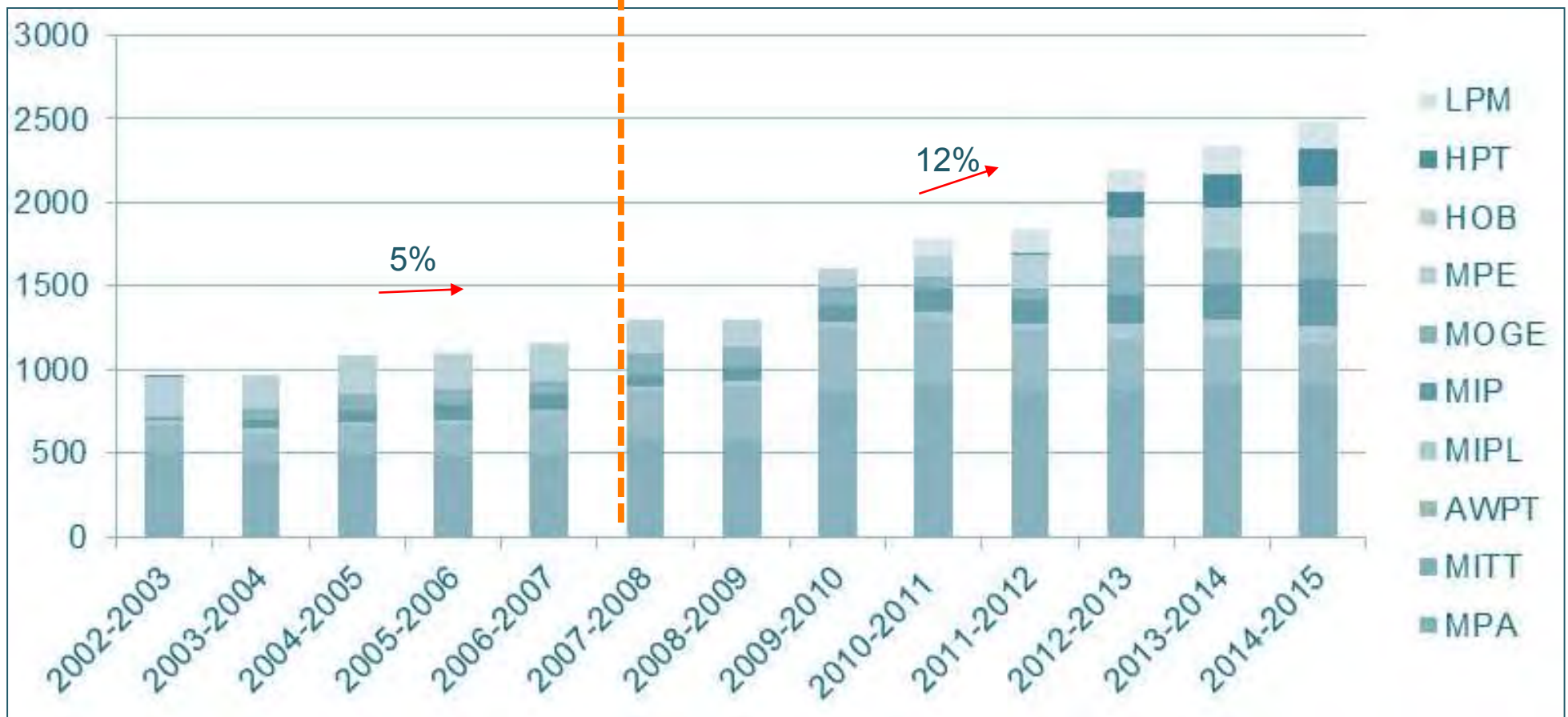


Trade partners are mainly in Asia



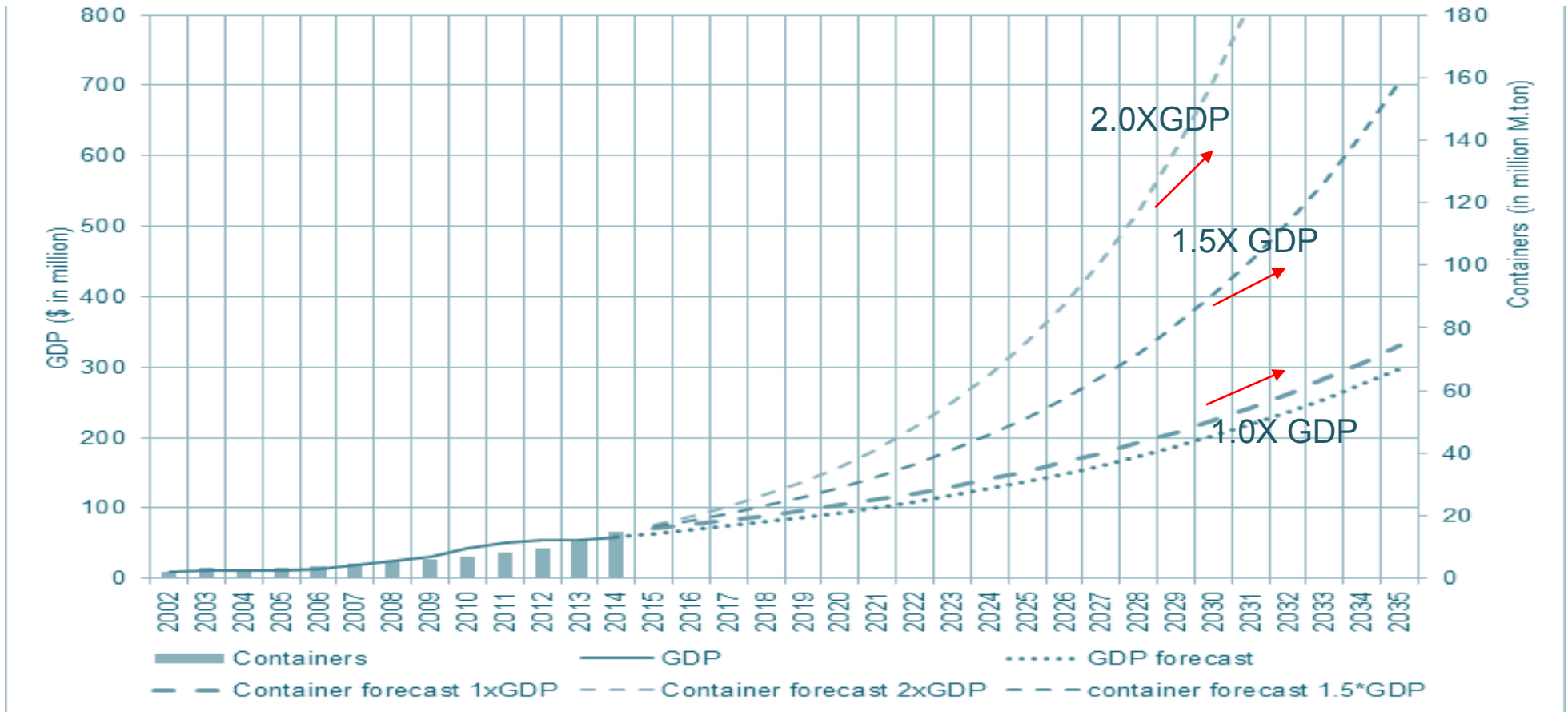
**Vessel calls have increased in line with cargo volume. In most countries, the vessel sizes would increase, resulting in less vessel calls.**

Vessel calls



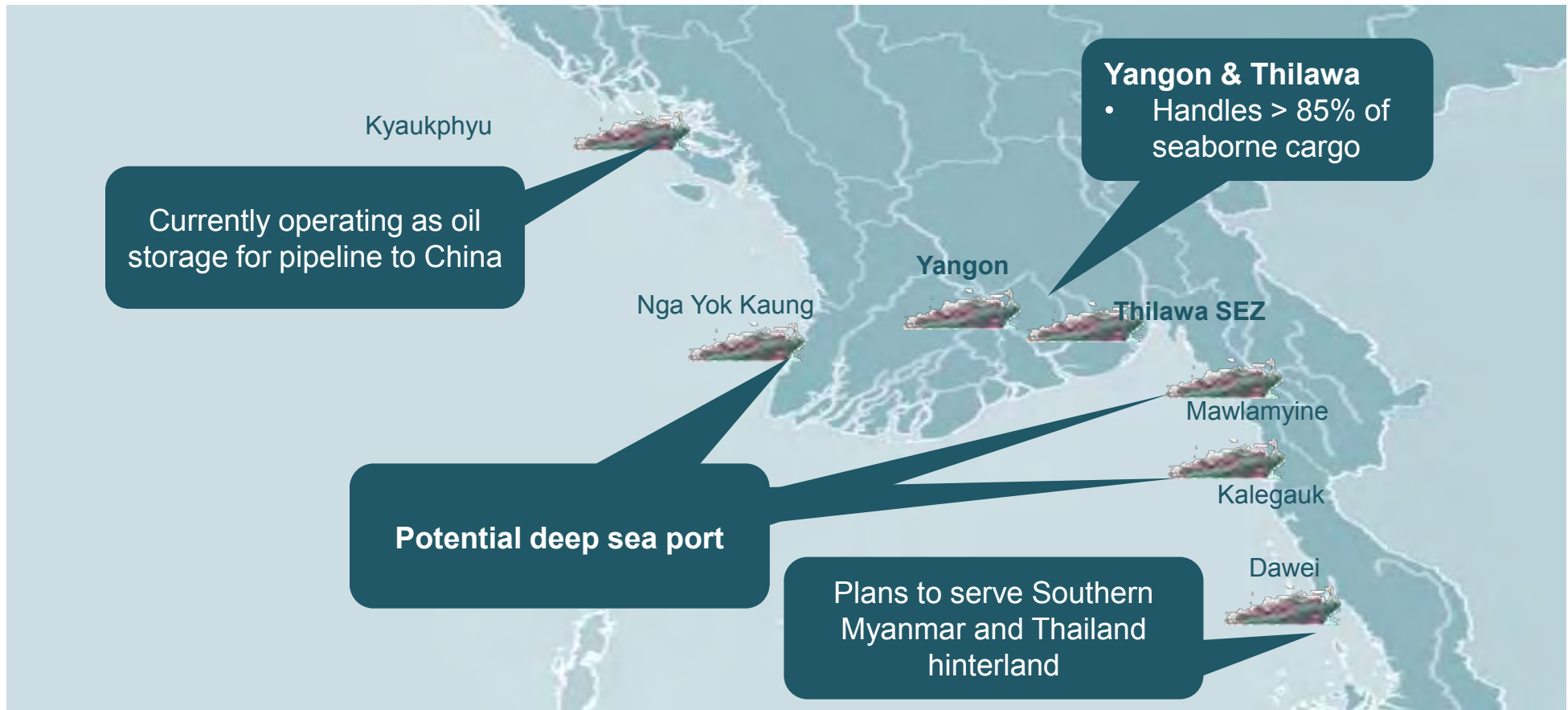
**In a conservative forecast, cargo volumes are projected to double in 9 years. Number of vessel calls will depend on how the ports are developed.**

Volume forecast



## Majority of Myanmar’s seaborne trade is handled at Yangon & Thilawa ports. A long term plan is required on port development.

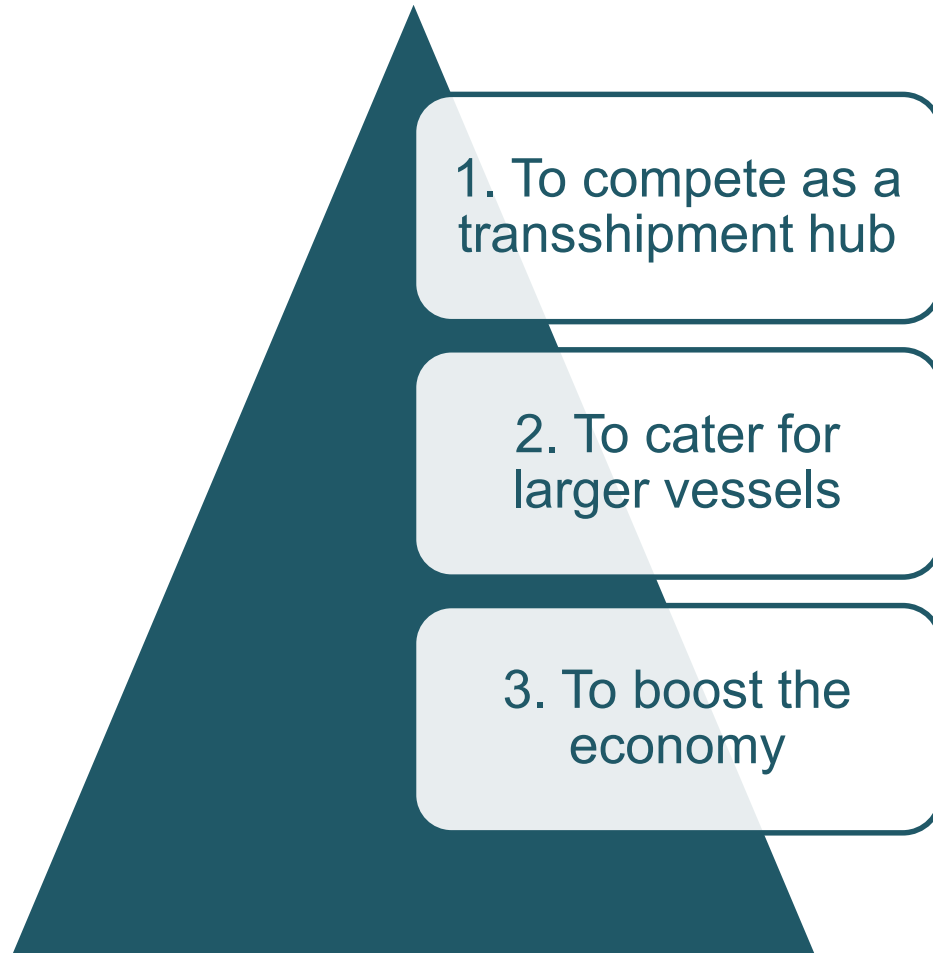
Port locations in Myanmar





## Are these reasons for building a deep sea port valid for Myanmar?

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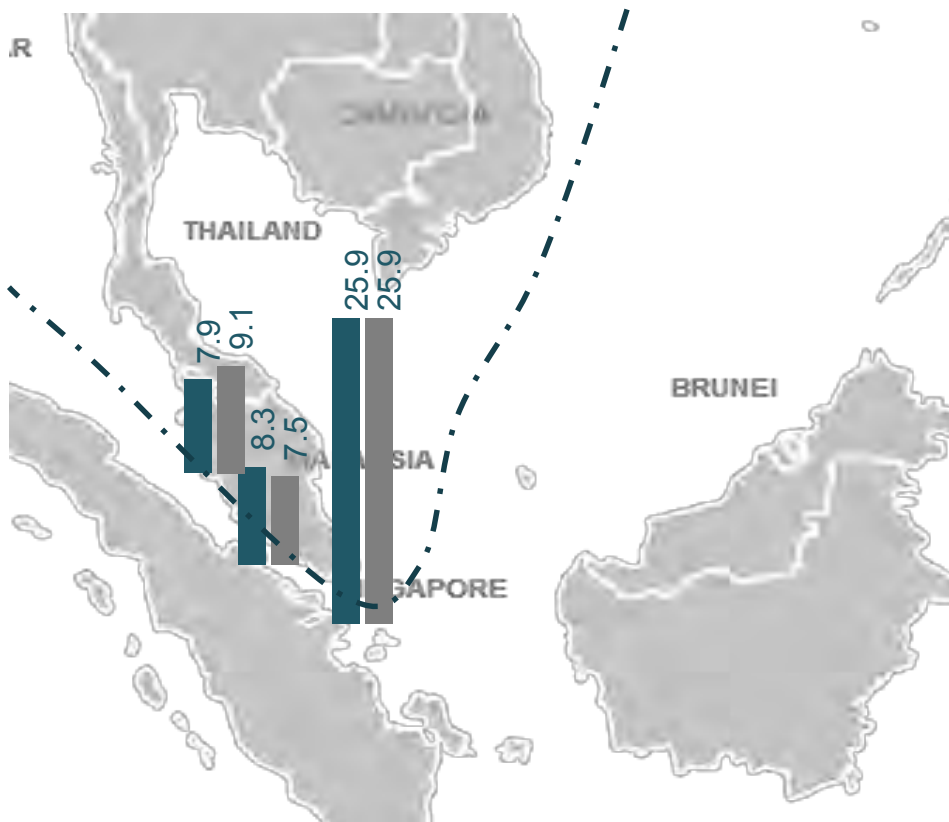
# More than 90% of SEA transshipment is handled along Straits of Malacca. The market has stagnated in the last 3 years.

1. To compete as a transshipment hub

2. To cater for larger vessels

3. To boost the economy

Regional transshipment hub








Regional transshipment volumes, 2008-2016 (MTEU)



## Shipping lines transship at ports which help to lower their operating cost.

- 1. To compete as a transshipment hub
- 2. To cater for larger vessels
- 3. To boost the economy

Vessel cost	Bunker cost	Transshipment stevedoring	Feeder cost	Marine charges
				
Cost of operating and owning a vessel.	Cost of fuel	Cost of handling transshipment cargo at the transshipment hub	Cost of outsourcing the transportation of the container from the hub port to the feeder port	Cost to shipping line for using port facilities; does not include cargo handling
<ul style="list-style-type: none"> <li>Size of vessel</li> <li>Number of vessels</li> </ul>	<ul style="list-style-type: none"> <li>Sailing speed</li> <li>Sailing distance</li> <li>Size of vessel</li> <li>Port stay</li> <li>Waiting time for berthing</li> </ul>	<ul style="list-style-type: none"> <li>Transshipment volume</li> <li>Transshipment stevedoring cost</li> </ul>	<ul style="list-style-type: none"> <li>Operating cost of feeder vessel</li> </ul>	<ul style="list-style-type: none"> <li>Port stay</li> <li>Size of vessel</li> </ul>

# Location is a critical issue in determining the shipping cost. Most of the shipping lines have a preferred hub in the region

- 1. To compete as a transshipment hub
- 2. To cater for larger vessels
- 3. To boost the economy

Shipping distances from main Far East Europe route



2M







Ocean Alliance









THE Alliance













## Container vessel capacity has increased while dimensions (400m by 59m) remain largely unchanged.

1. To compete as a transshipment hub

2. To cater for larger vessels

3. To boost the economy

**2006 - E-Class Maersk**

14,770 TEU, 397m long, 56m beam (22 rows)



- Ports around the world were sized to accommodate the E class Maersk by providing 16m of draft.
- Cranes were upgraded to 22 rows

**2013 – Triple E-Class Maersk**

18,000 TEU, 400m long, 59m beam (23 rows)



- Cranes were extended to 23 rows
- No change required for berth or channel drafts

**2017 -**

21,413 TEU, 400m long, 58.8m beam (23 rows)



- Only possible with deepening of hull.

## Increased vessel sizes required major port capital expenditure.

1. To compete as a transshipment hub

2. To cater for larger vessels

3. To boost the economy

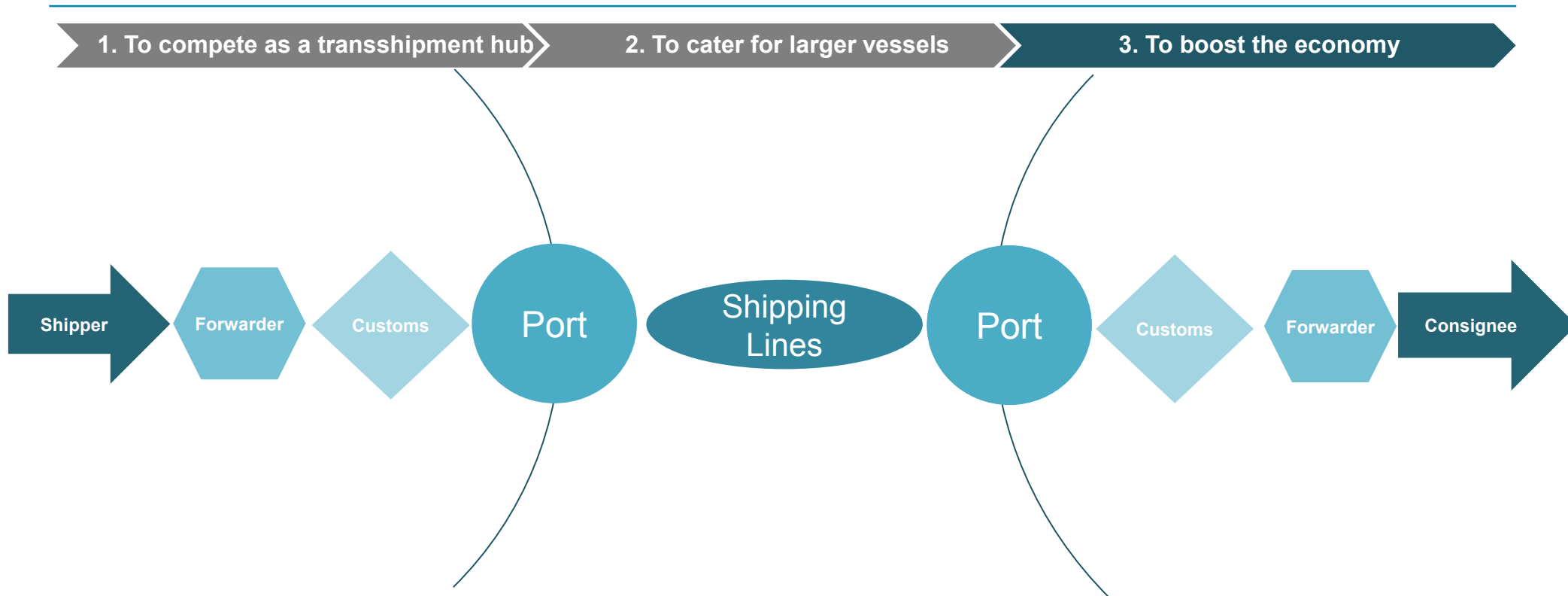
### Equipment upgrades



**What was the increase in volume?**

Area	Current	New	Estimated cost (US\$ millions)
Channel dredging			
Berth deepening			
Berth strengthening			
Equipment upgrades	4 cranes with 18 rows	4 cranes with 23 rows	40
Yard paving	15 ha	20ha	30
<b>Total</b>			<b>76.8</b>

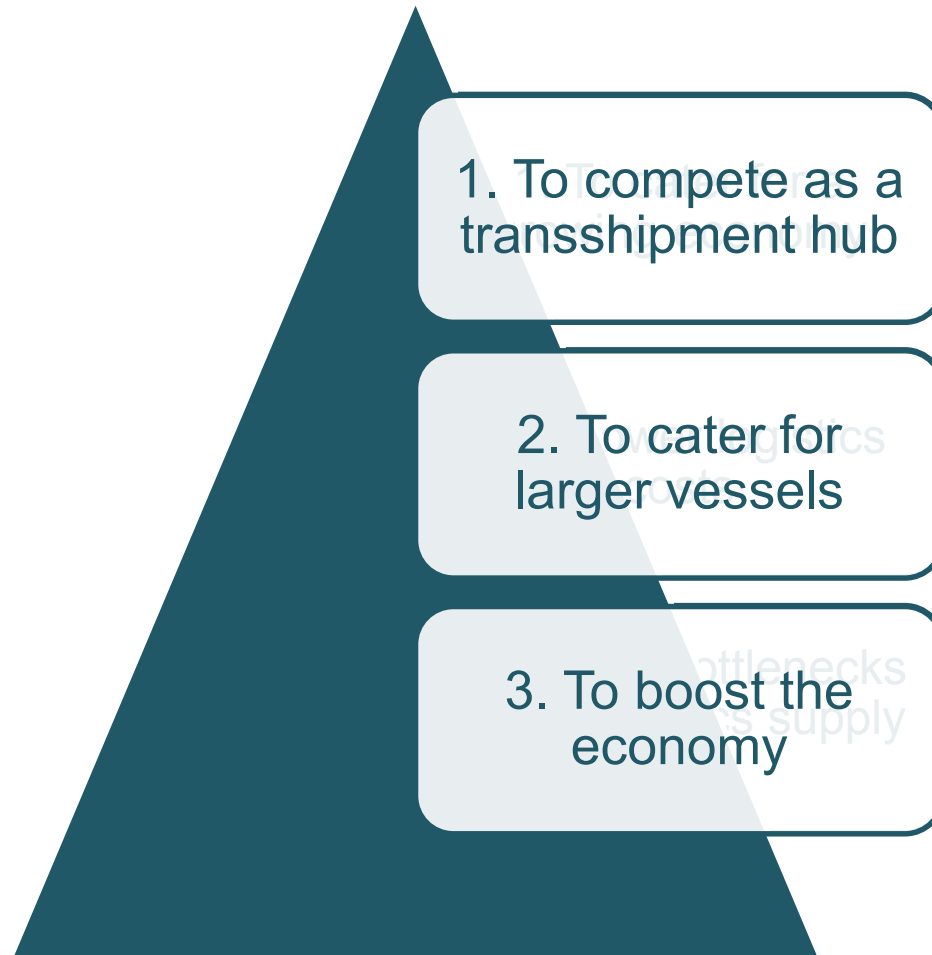
## Ports are important but only a node of a larger supply chain



	Forwarder	Customs	Port	Shipping Lines
Number of entity	100	1	1-5	10
Market Barrier	Low	High	High	Moderate

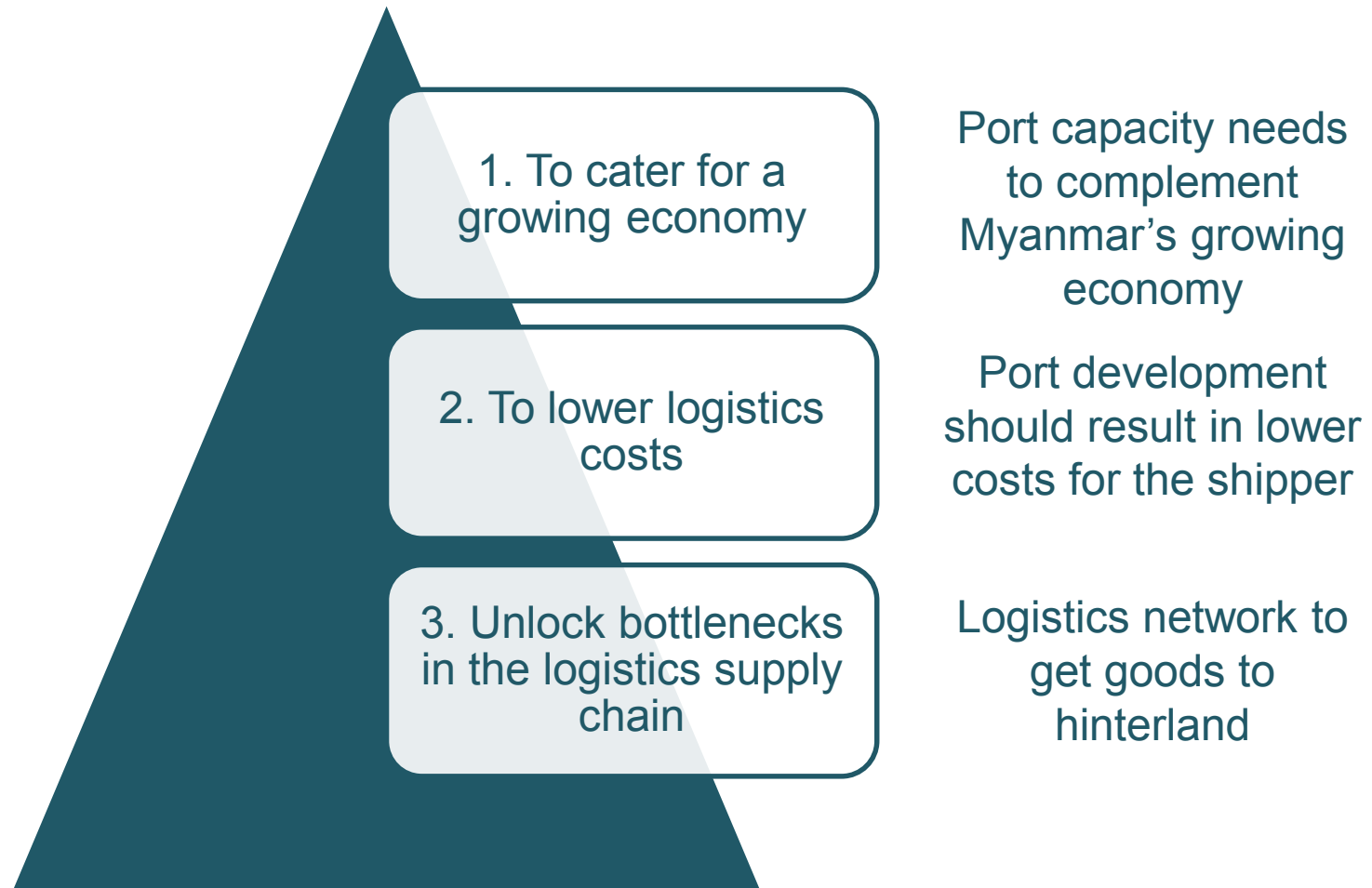
## Aligning the purpose of a deep sea port with the country’s needs

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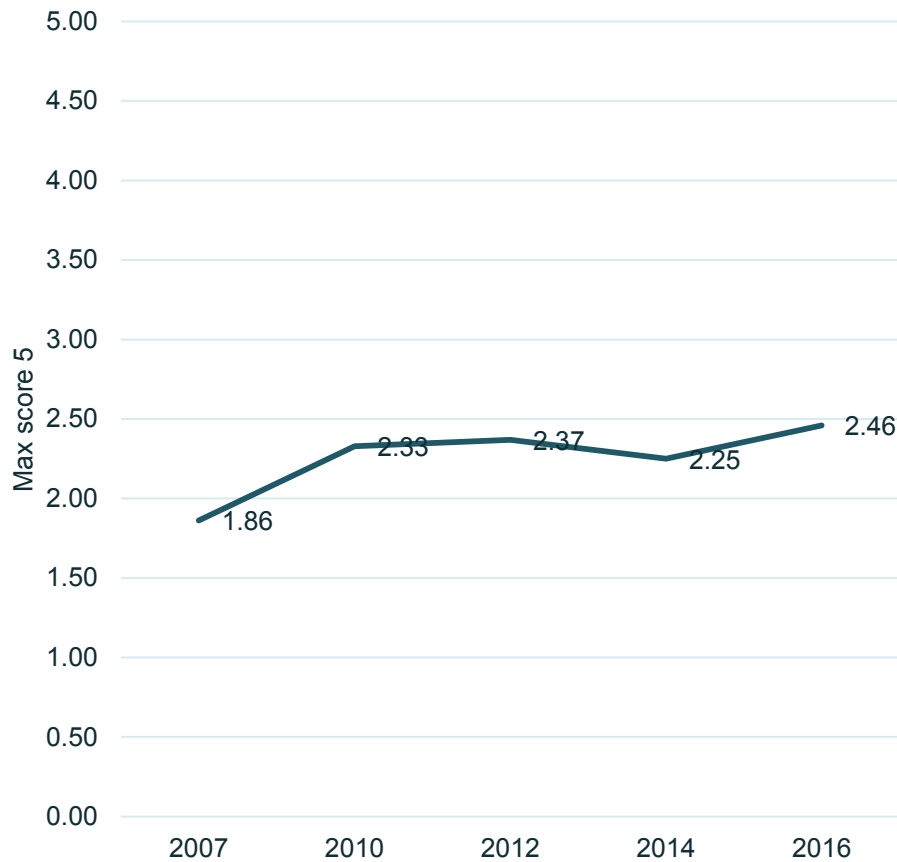


## Aligning the purpose of a deep sea port with the country’s needs

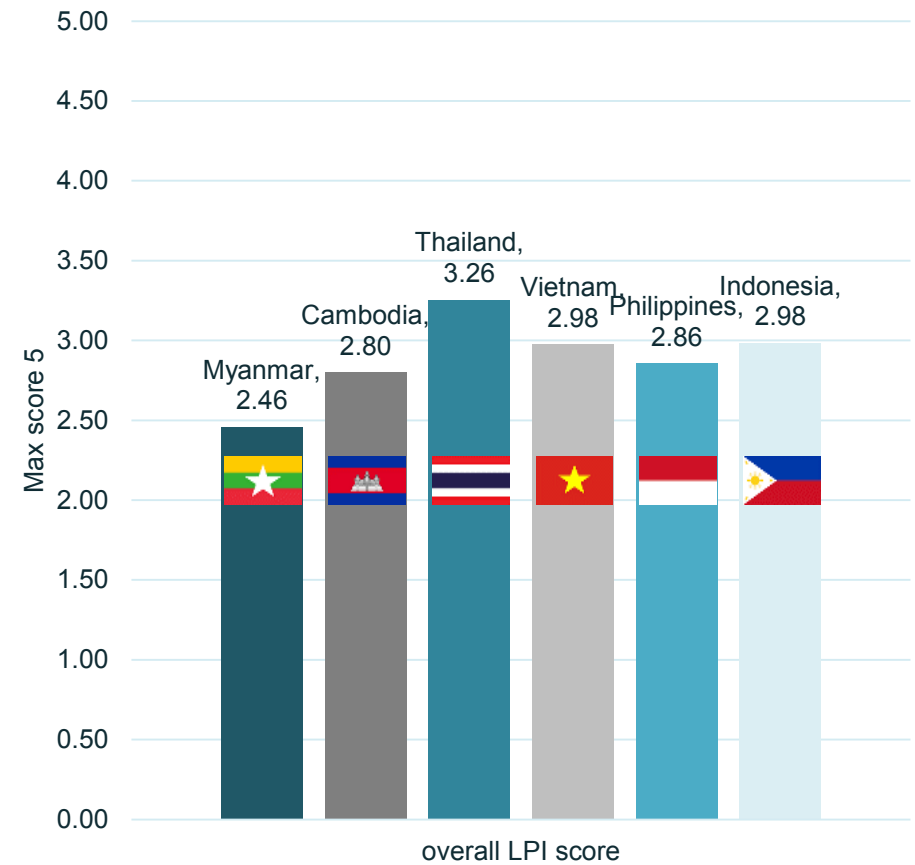


## Myanmar transportation infrastructure have improved in recent decade. Investment (3-5% of GDP) is required to sustain competitiveness.

Myanmar logistics score (max 5)



Regional logistics score



## The aim is to realise a lower unit cost for Myanmar shippers.

### Hardware



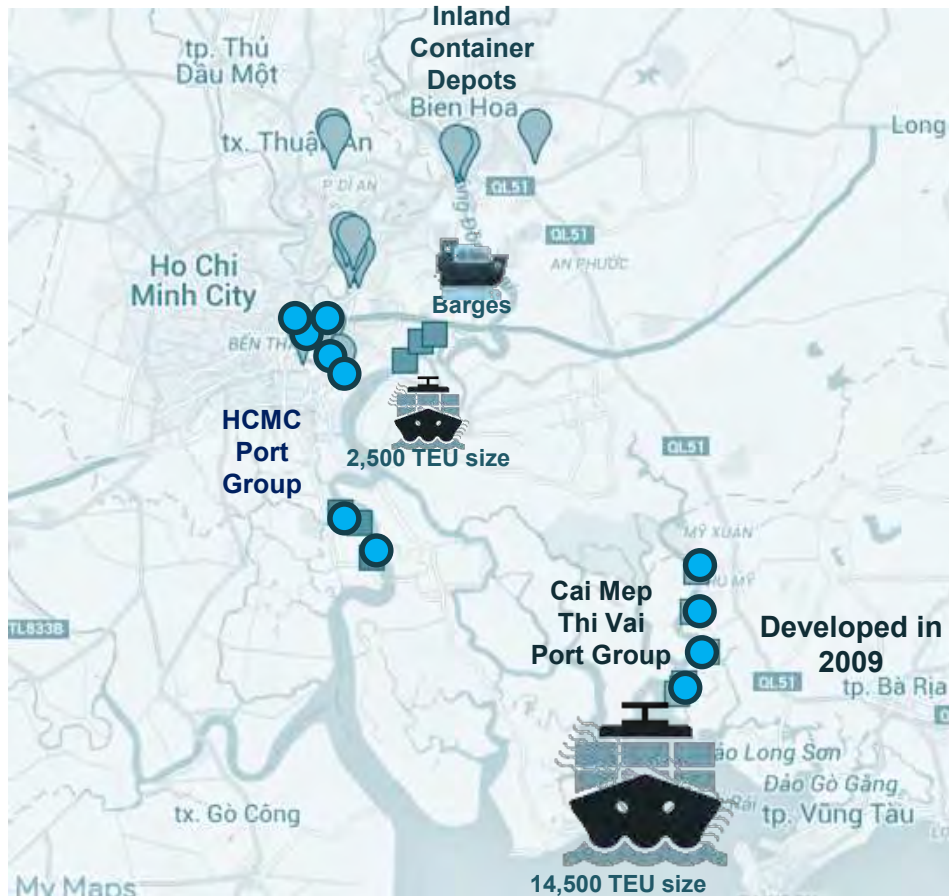
### Software



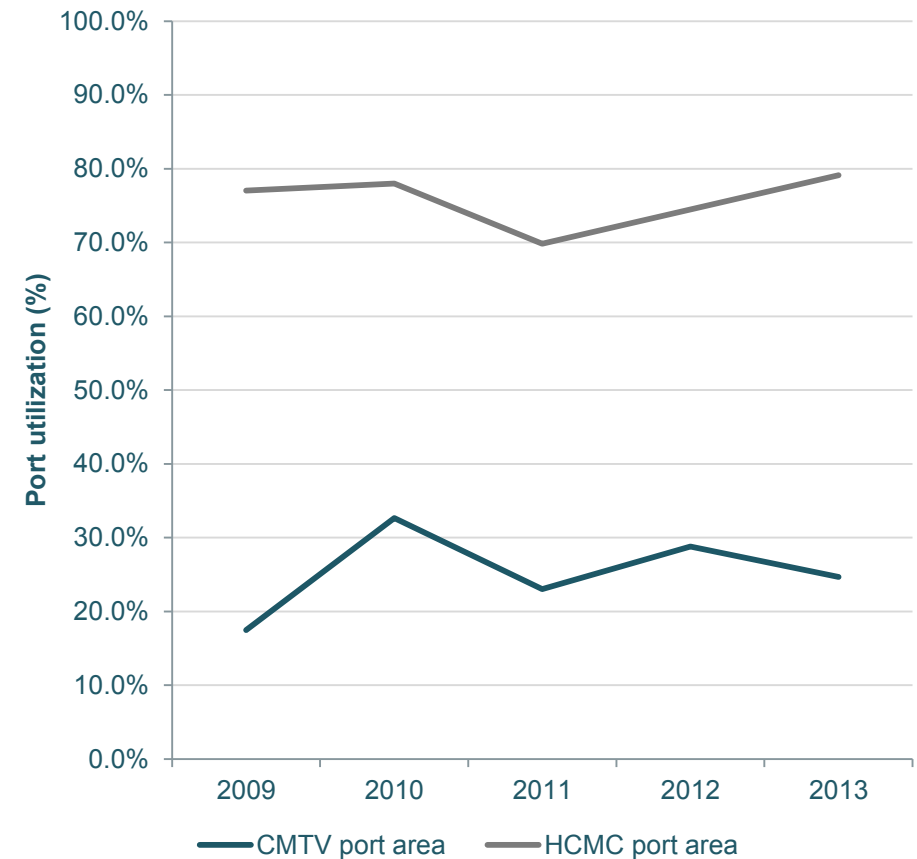
Lower logistics cost

# Case study of South Vietnam: Rapid increase in capacity in 2009 with 7 terminals constructed.

Southeast Vietnam port groups



South Vietnam port capacity utilization



Myanmar port development– “From river to deep sea”

## Case study of South Vietnam: Terminals in Ho Chi Minh City are were operating at full capacity.



### **Port congestion at Cat Lai Terminal**

OOCL website, May 2014

Dear all esteem customers,

We would like to announce that **Cat Lai Terminal in Ho Chi Minh has been in serious congestion**. Many inbound laden containers have been stuck in this terminal or delayed to move to this terminal (after discharged in Cai Mep Port) for delivery.

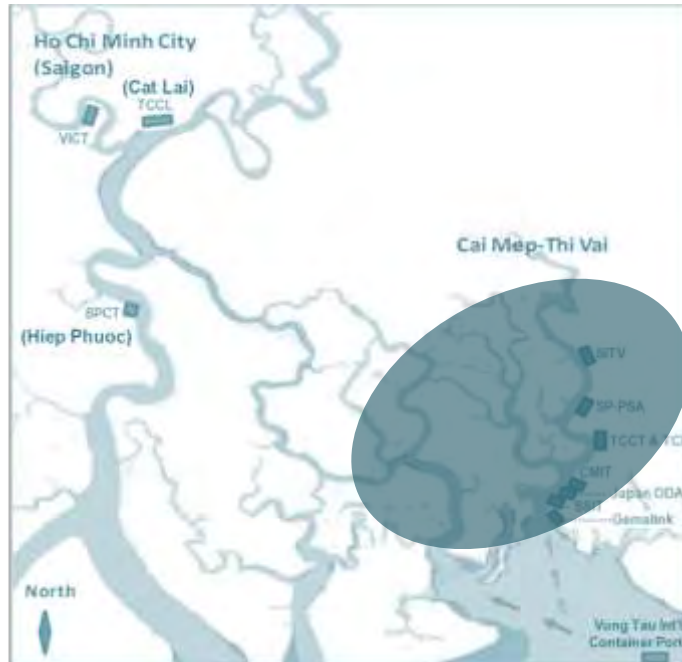
### **Cat Lai Port refuses containers to ease congestion**

Le Anh Jul 2014

HCMC – Cat Lai Port in HCMC’s District 2 **will stop taking containers** from other surrounding ports located in HCMC and Ba Ria – Vung Tau Province from early August **due to its overloaded facilities**.

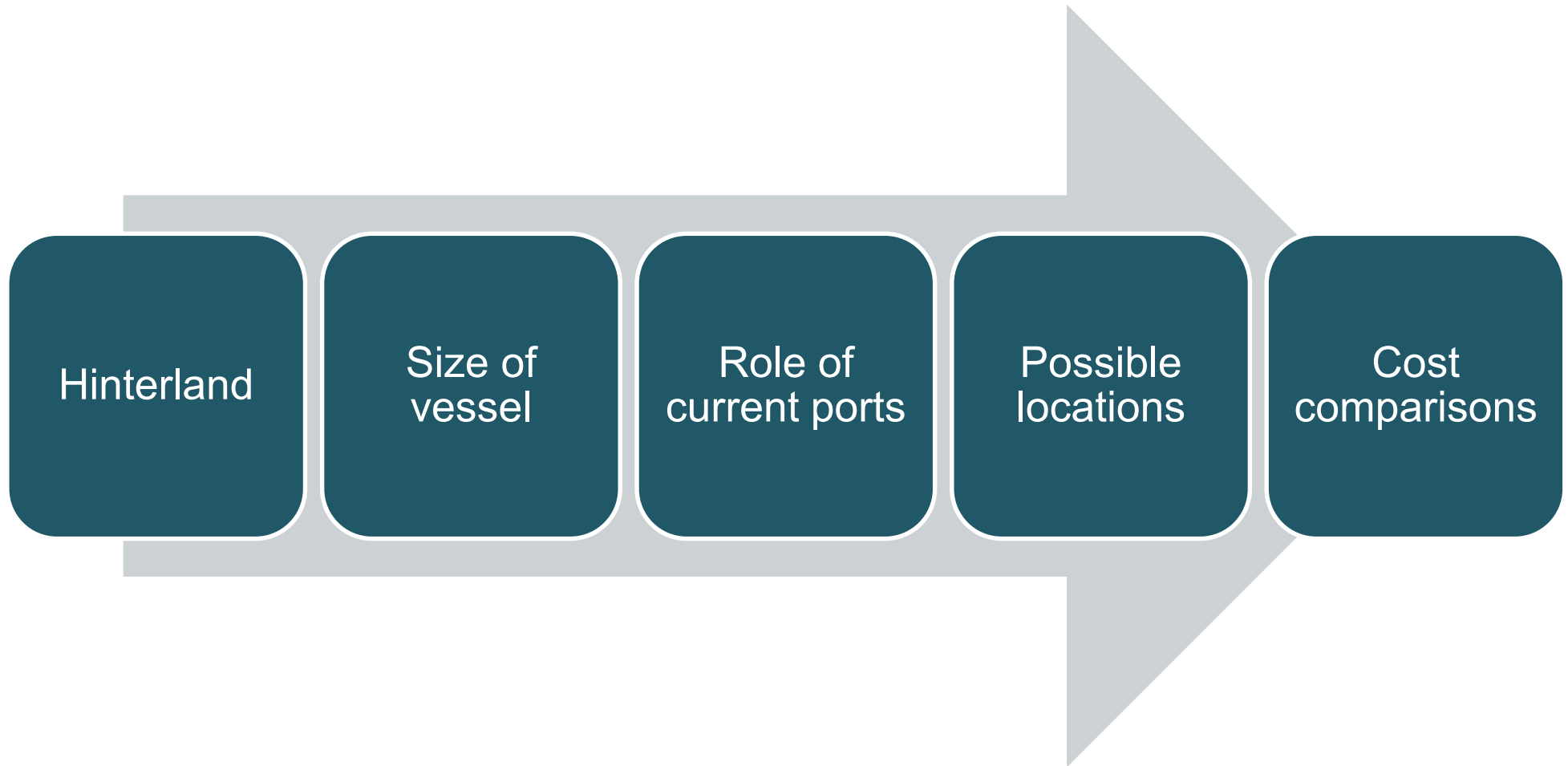
Myanmar port development– “From river to deep sea”

**Four of the seven terminals in the Cai Mep Thi Vai region had no customers. The situation has since improved.**



## Framework to evaluate deep sea port options

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## The bulk of the population is located along the Ayeyarwady River. Yangon is the closest region to the sea.



Myanmar population density map



### Ideal port location (to reduce logistics cost)

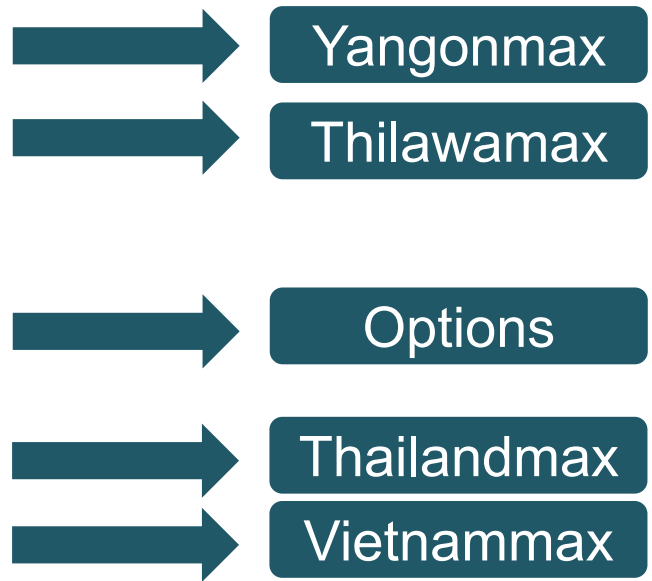
1. Be as close to the hinterland as possible
2. Have lowest cost to connect to hinterland (barge/road/rail)
3. Minimise double handling (transit time)



# The vessel size should be comparable to the sizes deployed in the region in order to realise commercial viability for the shipping lines.



Container Ship Evolution		
<b>Early Containerships (1956)</b> 500-800 TEU		LOA (m) : 137 Beam (m): 17 Draft (m): 9
<b>Fully Cellular (1970)</b> 1000-2500 TEU		LOA (m) : 215 Beam (m): 20 Draft (m): 10
<b>Panamax (1980)</b> 3,000-4,000 TEU		LOA (m) : 250 Beam (m): 32 Draft (m): 12.5
<b>Panamax Max (1985)</b> 3,400-4,500 TEU		LOA (m) : 290 Beam (m): 32 Draft (m): 12.5
<b>Post Panamax (1988)</b> 4,000-5,000 TEU		LOA (m) : 285 Beam (m): 40 Draft (m): 13
<b>Post Panamax Plus (2000)</b> 6,000-8,000 TEU		LOA (m) : 300 Beam (m): 43 Draft (m): 14.5
<b>New Panamax (2014)</b> 12,500 TEU		LOA (m) : 366 Beam (m): 49 Draft (m): 15.2
<b>Post New Panamax (2006)</b> 15,000 TEU & <b>Triple E (2013)</b> 18,000 TEU		LOA (m) : 400 Beam (m): 59 Draft (m): 15.5
<b>New Generation</b> 22,000 TEU		LOA (m) : 430 Beam (m): 59 Draft (m): 15.5



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# Yangon and Thilawa would continue to serve the immediate hinterland, similar to regional ports (river and a deep sea port combination)



Port overview of Thailand, Cambodia and Vietnam



# Option 1: Yangon Deepsea Port

Distance: 56km south of Yangon (road distance)



Port locations in Myanmar



Myanmar port development– “From river to deep sea”

## Option 2: Nga Yok Kaung (NYK) Distance: 240km west of Yangon (road distance)



Port locations in Myanmar



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## Option 3: Kalegauk (KAL)

Distance: 400km southeast of Yangon (road distance)



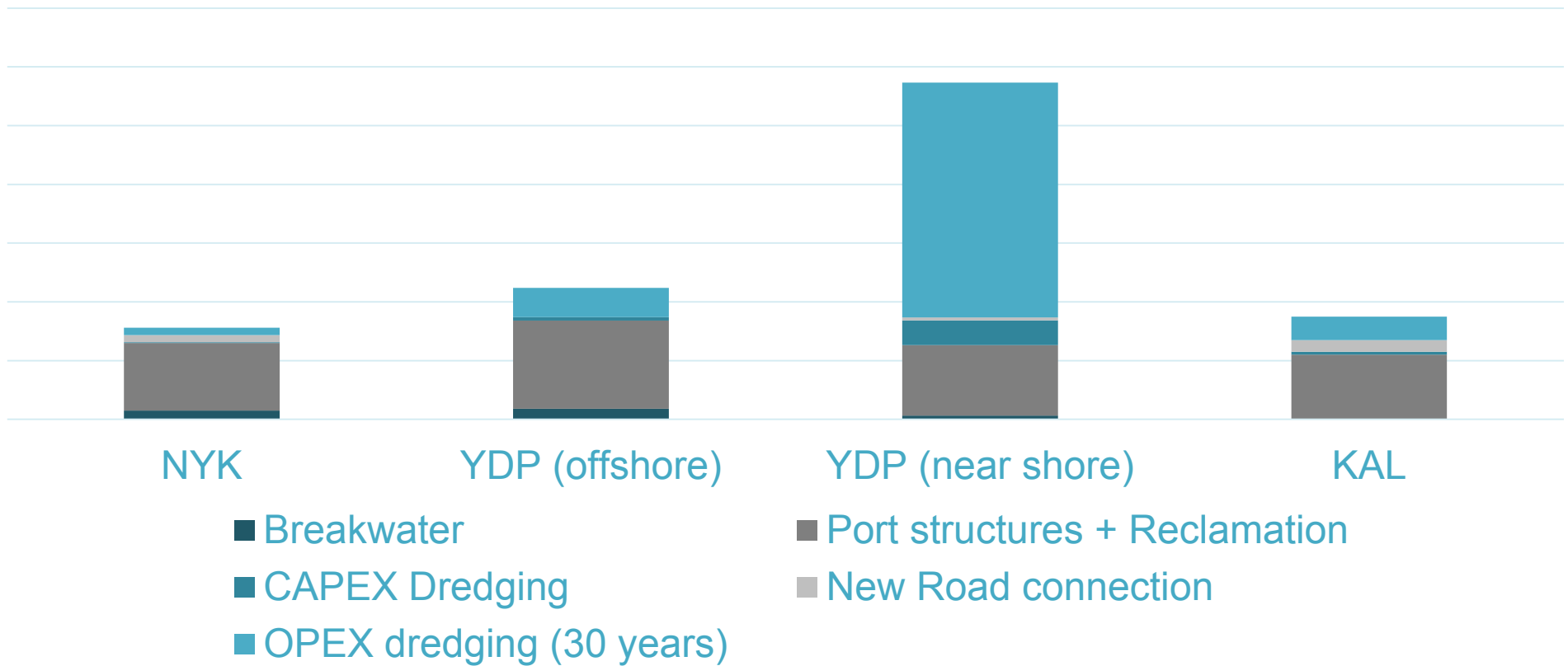
Port locations in Myanmar



The near shore YDP option is likely to be infeasible due to maintenance dredging. YDP offshore option is likely to be lowest cost for shippers.





















Construction cost estimates



## The options were scored based on qualitative factors. Each has its own set of issues.

### Qualitative review

	NYK	YGN	KAL
<b>Total construction cost</b>	 Lowest	 Relatively higher	 Similar to NYK
<b>Constructability</b>	 Good local conditions with a relatively well protected bay.	 Difficult conditions and weather sensitive.	 Construction in a relatively well protected bay.
<b>Environment impact</b>	 Largest relative impact on coast line.	 Relatively least impact.	 Significant impact on coastal mangroves.
<b>Social impact</b>	 Only few villages impacted	 Minimal	 Negative impact on only few villages.
<b>Wealth distribution</b>	 Positive economic impulse for Ayeyarwaddy Division.	 A boost for Yangon Division.	 Positive economic impulse for Mon State.
<b>Logistics cost</b>	 Cheapest for Ayeyarwaddy cargoes and shortest road trip to Yangon.	 Most suitable for cargoes destined for Yangon City and upstream river.	 Beneficial for Mon State and Asian Highways trade, however, longest ride to Yangon.

## Conclusion



The need development of a deep sea port will become more evident as the logistics demand grow with the economy



Development should be part of a port masterplan which takes into account the existing set up and long term needs of the industry.



Choice of location depends a series of factors, not just construction and logistics cost.