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Comparison of Potential Transshipment Hub Ports in the Indian Ocean Region

**9th Indian Ocean Ports & Logistics –
Maputo, January 2015**

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Contents

- Setting the scene - Industry trends - ship size revolution
- What is happening to the container fleet?
- Regional fleet developments
- Increase in T/S demand
- “Cascade” effect
- Changes to service patterns
- Historical regional port volumes
- Existing regional container facilities
- Planned regional terminal developments
- Implications for container terminals
- Conclusions

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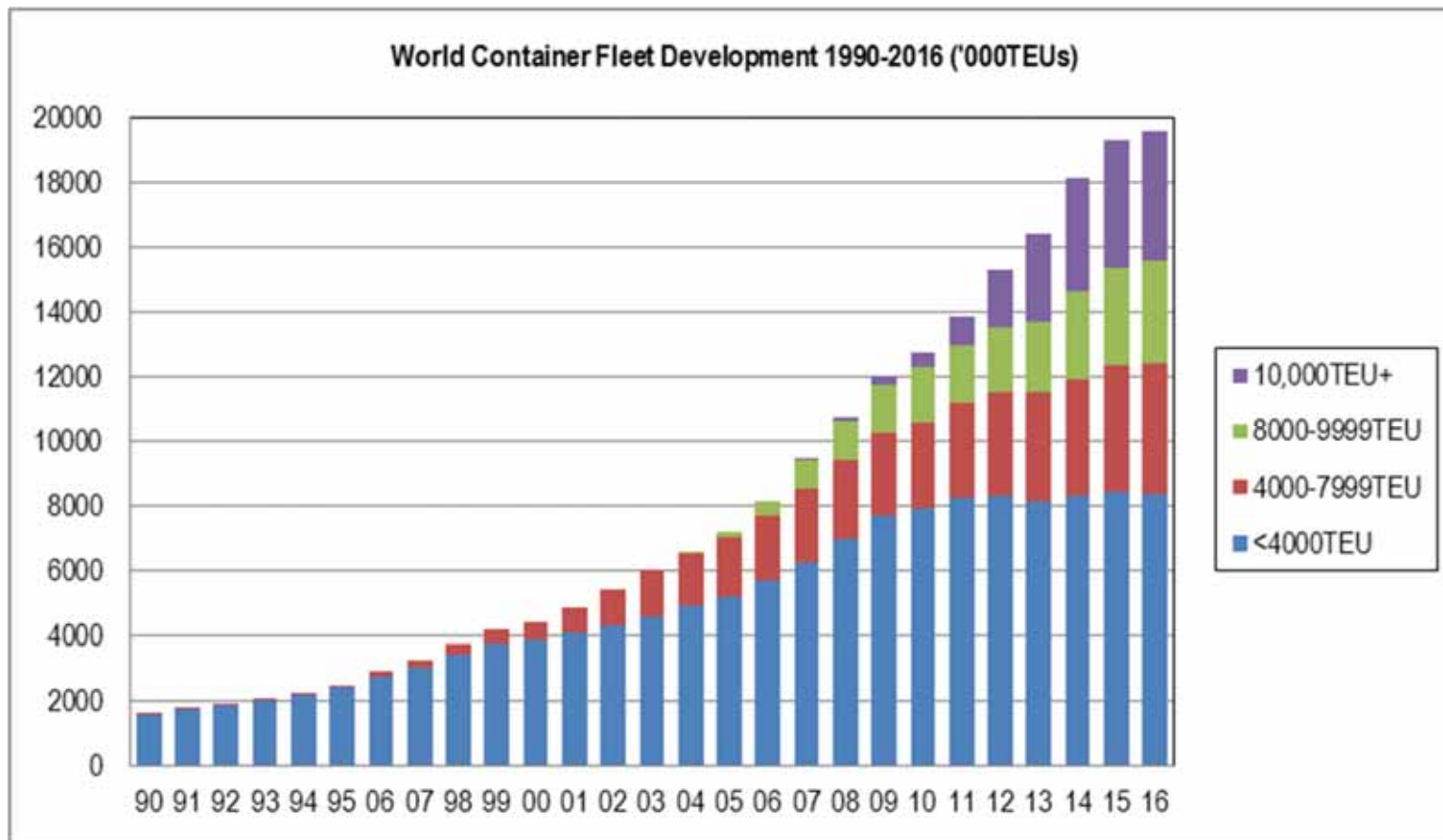


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Industry trends - Ship Size Revolution



Industry Trends–Ship Size Revolution

- Fully cellular containership fleet expanded to >16m TEU.
- Focus remains on larger vessels – 8,000TEU+ sector up by 10.8%.
- Trend for bigger ships well established since 2004 – 18,000TEU+ ships in service.
- Almost all major lines committed to ULCS.



Design Development of Large Containerships

	TEUs	Length overall (m)	Beam (m)	Maximum draught* (m)	Required berth depth (m)*
First generation: 1968	1,100				
Second generation: 1970-80	2-3,000	213	27.4	10.8	12.0
Panamax: 1980-90	3-4,500	294	32.0	12.2	12.8-13.0
Post-panamax: 1988-95	4-5,000	280-306	41.1	12.7	13.5-14.0
Fifth generation: 1996-2005	6,400-8,000	300-347	42.9	14.0-14.5	14.8-15.3
Super post-panamax: 1997->	8,000-11,400	320-380	43-47	14.5-15.0	15.3-15.8
Ultra large container ships: 2006->	14,500	380-400	56.4	15.5	16.3
New-panamax: 2010	12,500	366	49.0	15.2	16.0
Maersk EEE Class	18,270	400	59.0	16.0	16.5
China Shipping UASC newbuils	18,400	400	58.6	16.0	16.3

* Maximum draught is rarely realised, even when vessels are fully laden, so required berth depth is less in practice.

Source: Ocean Shipping Consultants

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- China Shipping and MSC confirmed current orders to be extended to 19,000TEU.
- Expect other lines to follow – Maersk Line, CMA CGM, UASC all committed to larger tonnage.
- Ship cascading will continue to secondary trade lanes in Africa.

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Industry Trends - Ship Size Revolution

Key factors of note for lines operating larger vessels:

- **Port Concentration:**
 - Terminals have to meet needs of larger ships.
 - Potential fewer ports of call.
- **Transshipment:**
 - Intensifying in key locations.
 - Hub & Spoke, Relay/Interlining used.
- **Alliances/Consolidation:**
 - Individual lines lack overall traffic to successfully utilise bigger ships cost-effective – hence alliances.
 - G6 Alliance, 2M Alliance, CKYHE and “Ocean Three” grouping will all continue in major trade lanes.
 - Fewer viable alternatives for customers on main trade lanes.



What is Happening to the Container Fleet?



- The role of 10,000TEU+ vessels has increased dramatically, driven by scale economies and competitive pressures.
- Massive ordering for ULCS and New Panamax vessels.
- Transpacific and Asia-Europe trades cannot absorb all of this tonnage - 'cascade' effect on other routes now being felt and also beginning to impact on Africa and Indian Ocean.
- Development of new 'broad beam' 8,000-10,000TEU vessels for North-South trading, particularly in Africa and South America.
- The overall effect will be further concentration and greater transshipment activity.
- New generation container feeder vessels – 1,800-2,000TEU (and larger) will be typical. Potential for cooperation too.

Future Container Fleet Developments

- The shipping lines desire to maximise the size of vessels, whilst minimising the slot costs looks set to continue with designs for 22,000TEU and 24,000TEU vessels already under discussion.
- New vessel designs offer either an increase in LOA (from 400m to 430-450m) or an increase in beam from 59.0m to 61.5m.
- In all new design option, draught required remains the same as EEE-Class vessels.
- WAFMAX/SAMMAX vessels specifically designed to maximise capacity for use in shallower waters such as in Africa and South America.

Container Vessel Sizes and Rows Across

Type	TEU range	No.of rows
Panamax	4,500-4,900	13
Post Panamax	5,000-6,000	16
	6,000-9,000	17
	9,000-10,000+	18
New Panamax	12,500-13,000	20
Post New Panamax	14,500	23
EEE-Class	18,270	23
New generation	22,000	24
WAFMAX/SAMMAX	7,450-8,700	18

Source: Ocean Shipping Consultants

Regional Fleet / Service Developments

- The increase in liner capacity links in the region as a whole – capacity +142% between 1995 and 2010.
- Focus of expansion in Asian Trades – especially feeding, but also some direct services to regional hubs appearing.
- Switch to cellular vessels – less use of ship's own gear – result of larger tonnage. 10,000TEU already on SAF trades.
- Average vessel sizes of up to 3,000TEU on Asian Trade and 3,500TEU on Europe Trade in 2011 have now increased to 8,500TEU and 6,100TEU respectively. Further increases are also anticipated.
- Indian Sub-Continent Links still expanding.
- Integration with major East-West services via Salalah, Djibouti, Aden , Colombo etc. and increasing number involve direct calls at transshipment hubs in Indian Ocean, South Africa and West Africa.
- Port capacity lags behind demand – a transformation is required to increase capacity and productivity levels.



Increase in Transshipment Demand

- **The development of transshipment demand will be a function of a number of interrelated factors:**
- **The continuing increase in vessel size and further moves to reduce the number of direct calls on deepsea vessels.**
- **Related terminal accessibility for largest vessels.**
- **Adequacy of existing ports for direct calls.**
- **Future development of built-up costs of direct calls v feeder alternatives.**
- **The availability of overall capacity for transshipment operations, as determined by the balance of supply/demand in the regional port markets.**
- **Degree of shipping line investment in terminal developments in dedicated terminals – effectively fixing a shipping line at a particular port.**



Requirements For Transshipment Hubs

- **Geographic location - minimal deviation from main East-West route.**
- **Tariff levels and operating costs.**
- **Performance and service levels.**
- **Labour/workforce arrangements .**
- **Facilities (e.g. physical accessibility, water depth, size/number of cranes).**
- **Availability of capacity.**
- **Avoidance of congestion.**
- **Potential for dedicated facilities/terminal areas.**
- **Priority berthing.**

- **Low degree of bureaucracy at port, especially customs authorities.**
- **Efficient vessel support systems in place – i.e. pilots, tugboats etc.**
- **Other support services and functions.**
- **Value-added services.**
- **Good security and protection coverage at all times.**

“Cascade” Effect on The Region

- The increase in the size of vessels deployed on the main arterial lanes has resulted in a displacement of the vessels that were historically dominant on the Asia-Europe routes, i.e. 6,000-8,500TEU capacity vessels to secondary routes.
- New services such as the “Africa Express” Service operated by MSC, are now operated by vessels of up to 8,500TEU capacity and which serves Indian Ocean and both South and West Africa from Asia via the Cape of Good Hope instead of the Suez Canal.
- These service effectively replacing services that transship in Algeciras by services that offer transshipment opportunities at hubs in the Indian Ocean, South and West Africa.
- Displacement of 2,500TEU vessels by 3,500-4,300TEU vessels on FE-SAF-WAF services as a result of new cooperation.
- When more services of this type are introduced, there will be a likely increase in the average size of vessels handled particularly in the ports in Sub-Saharan Africa and the Indian Ocean region.

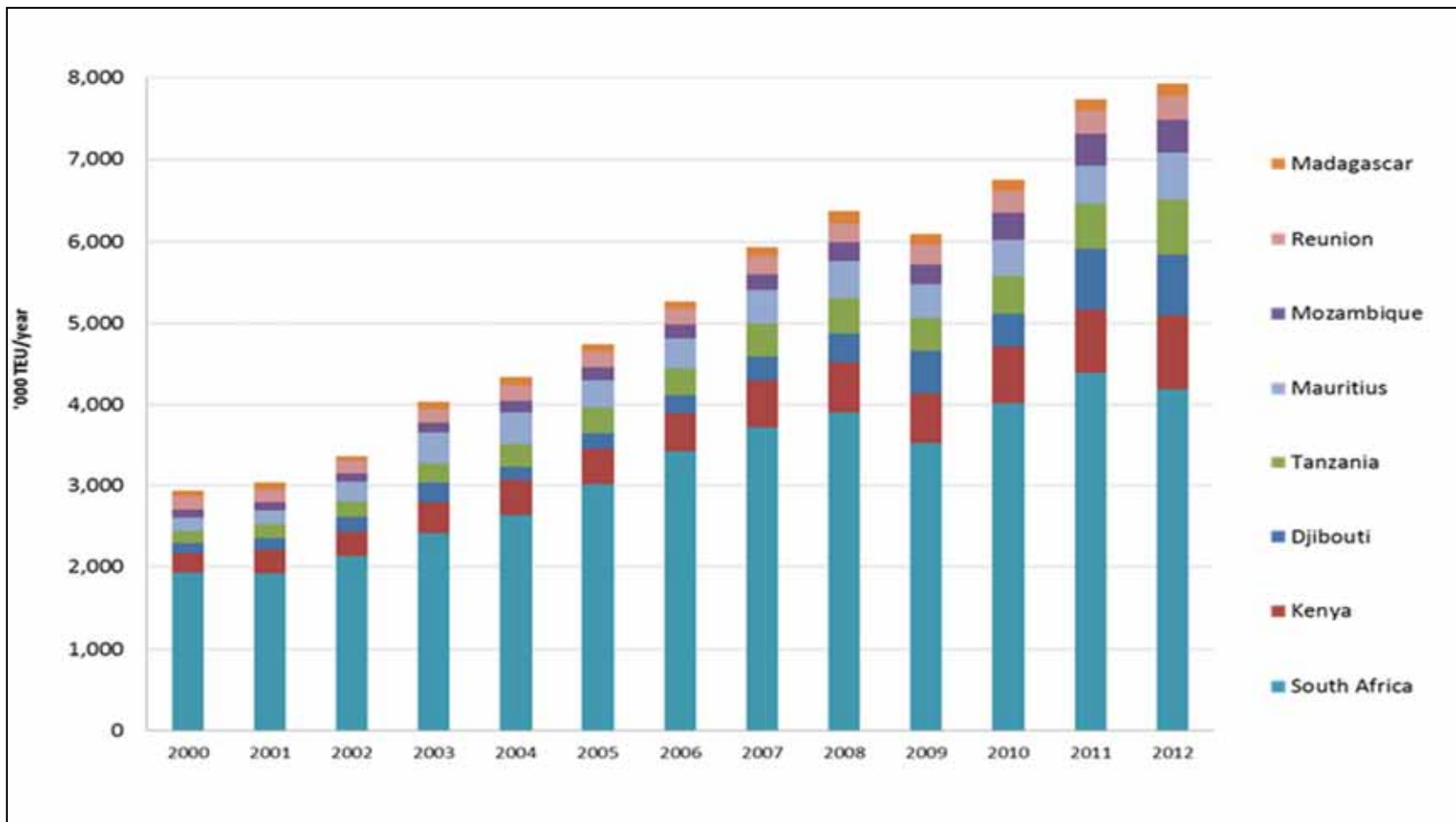


Different Service Patterns Emerging

- MSC's Africa Express has developed as a result of the cascade of vessels from main services that are being replaced by newbuild vessels of 18,000TEU.
- Service has seen vessels increase from 3,400TEU deployed in 2014 to 8,500TEU for 2015 and offers calls at 3 hubs in Indian Ocean, South and West Africa.
- South Africa Asia Express services see expansion in size of vessels deployed as a result of the further cooperation between a number of lines, i.e. Evergreen, Cosco, PIL, K-Line, MOL and now HL increase vessels deployed to 6,300TEU.
- MSC looking to consolidate West Africa services in hub at Lome.
- Maersk reorganising Indian Ocean feeder services via Salalah.
- PIL's SWS and SW2 services are operated by new wide beamed, geared tonnage with vessels up to 4,200TEU capacity.
- New cooperation sees 2,500TEU vessels replaced by 3,500-4,300TEU capacity vessels.



Regional Container Port Volumes



Existing Major Regional Terminal Facilities

Terminal	Length (m)	Max.Depth (m)	STS
Durban - Pier 1	1900	16.0	17
- Pier 2	650	12.5	6
Cape Town	1137	15.5	9
Port Elisabeth	925	14.5	5
Coega (Ngqura)	1310	16.5	8
East London	2512	10.4	MHC
Richards Bay	644	13.5	MHC
Dar-es-Salaam (TICT)	725	12.2	7
Mombasa	964	13.0	4
Tanga	500	14.6	MHC
Maputo	300	11.5	2
Beira	645	12.0	2
Nacala	372	14.0	1
Toamasina (MICT)	307	12.0	MHC
Port Louis	560	14.0	5
Port Victoria	370	13.5	MHC
Port Reunion	510	12.8	3

Source: Ocean Shipping Consultants



Maximum Size of Vessel Accommodatable

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Maximum Vessels Accomodated When Full

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Cape Town	15.5	11,400
Port Elisabeth	14.5	6,400
Coega (Ngqura)	16.5	18,400
Tanga	14.6	6,400
Nacala	14.0	6,400
Port Louis	14.0	6,400

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Planned Regional Port Developments

- Mombasa 2nd Terminal - 1.2m TEU capacity by 2016.
- Lamu – 0.35m TEU capacity by 2018.
- Dar expansion – as much as 10m TEU possible.
- New port is also planned at Tanga.
- Cape Town currently undergoing multi-phased Terminal upgrade. Phase 2 to increase capacity from 1m TEU to 1.4m. Berth deepen to 15.5m and quay extended to 1,137m.



- Coega expansion plan from 2 to 4 berths by Transnet will complete 2nd phase by early 2015 increase capacity from 0.8m – 2.3m TEU.
- CMA-CGM plan to use Reunion more as it Indian Ocean hub and intend to increase berth by 160m and depth to 16m.
- Mauritius extension project expected to be finalised in 2016. Includes the dredging of channel to 16.5m and depth alongside to 13.5m and quay extension of 244m.

Implications for Container Terminals

- Terminals must expand and make better use of existing facilities to handle larger vessels and consignment sizes
- Terminal productivity has improved, but there remain a need for further improvements
- Terminals which do not lift productivity will see market share decline
- Need for dredging – approach channels and berths. Clear planning needed for all terminal developments. Depth alongside is critical to ‘future-proof’ terminals. Channel and approach dredging can follow later.
- Longer berths ; larger terminal area; increased gate pressure
- Larger/Havier Quay Cranes - Longer reach; Taller clearance; Twin/Tandem Lifts
- Increase in load on quay structures and increase in electrical loads and electrical infrastructure



Conclusions

- Major Alliances gives access to markets ahead of notional demand for individual shipping lines
- Increased number of t/s hub options
- Terminals have to become increasingly efficient and look to offer 'something different' to be able to attract calls
- Continued developments in Coega and planned capacity increases in Kenya, Tanzania and Indian Ocean Islands will put pressure on traditional t/s hubs in South Africa
- Also expansion plans in Port Louis and Reunion
- New service structures will see introduction of larger tonnage and consolidation of volumes at major t/s hubs across the region





Thank You

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