Key trends in international refrigerated cargo flows & reefer fleet
## International seaborne trade (million tons loaded)

### Volumes up by 2.1% in 2015

10.47 billion tons; + 80% of world trade by volume & +70% by value

<table>
<thead>
<tr>
<th>Year</th>
<th>Oil and gas</th>
<th>Main bulks</th>
<th>Other dry cargo</th>
<th>Total (all cargoes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1,440</td>
<td>448</td>
<td>717</td>
<td>2,605</td>
</tr>
<tr>
<td>1980</td>
<td>1,871</td>
<td>608</td>
<td>1,225</td>
<td>3,704</td>
</tr>
<tr>
<td>1990</td>
<td>1,755</td>
<td>988</td>
<td>1,265</td>
<td>4,008</td>
</tr>
<tr>
<td>2000</td>
<td>2,163</td>
<td>1,295</td>
<td>2,526</td>
<td>5,984</td>
</tr>
<tr>
<td>2005</td>
<td>2,422</td>
<td>1,709</td>
<td>2,978</td>
<td>7,109</td>
</tr>
<tr>
<td>2006</td>
<td>2,698</td>
<td>1,814</td>
<td>3,188</td>
<td>7,700</td>
</tr>
<tr>
<td>2007</td>
<td>2,747</td>
<td>1,953</td>
<td>3,334</td>
<td>8,034</td>
</tr>
<tr>
<td>2008</td>
<td>2,742</td>
<td>2,065</td>
<td>3,422</td>
<td>8,229</td>
</tr>
<tr>
<td>2009</td>
<td>2,642</td>
<td>2,085</td>
<td>3,131</td>
<td>7,858</td>
</tr>
<tr>
<td>2010</td>
<td>2,772</td>
<td>2,335</td>
<td>3,302</td>
<td>8,409</td>
</tr>
<tr>
<td>2011</td>
<td>2,794</td>
<td>2,486</td>
<td>3,505</td>
<td>8,785</td>
</tr>
<tr>
<td>2012</td>
<td>2,841</td>
<td>2,742</td>
<td>3,614</td>
<td>9,197</td>
</tr>
<tr>
<td>2013</td>
<td>2,829</td>
<td>2,923</td>
<td>3,762</td>
<td>9,514</td>
</tr>
<tr>
<td>2014</td>
<td>2,825</td>
<td>2,985</td>
<td>4,033</td>
<td>9,843</td>
</tr>
<tr>
<td>2015</td>
<td>2,947</td>
<td>2,951</td>
<td>4,150</td>
<td>10,047</td>
</tr>
</tbody>
</table>
Developing countries account for the majority of world seaborne trade

1970 - 2015
Annual growth of the world fleet (2000 - 2015, % dwt)

UNCTAD, RMT 2016
Globalized production of "maritime transport services"

1. Building: Republic of Korea, China and Japan (91.3%)
2. Ownership: Greece, Japan, China, Germany and Singapore (50%)
3. Registration: Panama, Liberia, Marshall Islands, HK, China, Singapore (57%)
4. Scrapping: India, Bangladesh, China and Pakistan (95%)
5. Ship operation: Denmark and Switzerland
6. Seafaring: Philippines and Indonesia
7. Container terminal operators: HK, China, Singapore, the NTL, & UAE
8. Financing, Classification, Insurance (P&I): UK and Scandinavia
Globalized production of MTS - Shipbuilding (2015)

- Shipbuilding (repair/conversions/retrofitting) & supplies highly international

- Shipbuilding dominated by few large shipyards: 4 largest by orderbook are located in the Republic of Korea, Japan and China (91.3%)

- New players: India, Vietnam, the Philippines and Brazil

- Europe is in stronger position in terms of value. Dominates in specialized segments (e.g. cruise, offshore & luxury yachts)

- Leaders: Germany, Italy, Netherland, Romania - (Turkey)

- Repair and conversion: repair centres located on key shipping routes

- Yards dominated by Asia. But at the buyer side a high concentration in Europe
Globalized production of MTS - Ownership

Figure 2.4 Share of vessel ownership by country grouping, 2016 (Percentage)

- Developing countries in Asia: 36.24%
- Developed countries: 59.49%
- Developing countries in Oceania: 0.10%
- Countries with economies in transition: 1.45%
- Developing countries in the Americas: 1.49%
- Developing countries in Africa: 1.23%
Owners of orderbook by value, 2016

- Europe: 35
- Asia: 36
- North America: 21
- Middle East: 2
- Other: 6

Clarksons Research Services, World Shipyard Monitor, Feb 2017
Owners of newbuilding deliveries by value, 2016

Europe: 32.5
Asia/Pacific: 26.7
North America: 12.8
ME&SA: 2.6
S and C America: 1.8
Africa: 1.3

Clarksons Research Services, World Fleet Monitor, Feb 2017
Globalized production of MTS - Registration

- **Under foreign flag = 70.2% of world total**
- Most owners in developed world
- **Over 76% of world fleet is registered in developing countries**
- **Open registries** (e.g. Marshall Islands/Liberia)
- Panama, Liberia and the Marshall Islands = **41.0% of world tonnage**
- **Top 10 registries** accounted for **76.8% of world fleet** (dwt)
Globalized production of MTS - Scrapping

- Scrapping/recycling: **Bangladesh, China, India & Pakistan = 95% share**

- Demolitions increased in 2015/16; Low oil prices: less incentive to scrap old, inefficient capacity

- The 2003 IMO Guidelines on Ship Recycling (A. 962 (23)); The 2009 Hong Kong Convention (and the EU Regulation on Ship Recycling)

  ✓ All ships over 500 GRT to maintain Inventory of Hazardous Material (IHM)
  ✓ States (flag & recycling facilities), shipyards/builders, shipowners, marine equipment suppliers, classification societies
Refrigerated cargo: conventional ships & containers
(tons and %, 2000 - 2015)

Total (144.2 million tons); Seaborne (105.5 million tons)
(1.5% of dry cargo & 1.1 % of total seaborne trade)
AAGR 4% 2006-2014; Until 2020, up by 4% to 5% annually

- Fishery Products: 14%
- Fruit: 42%
- Meat: 19%
- Vegetables: 23%
- Dairy: 2%
Main importers and exporters of refrigerated goods
(% share in reefer trade, 2015)

Trade of refrigerated cargoes by route, 2015

Drewry, Reefer Shipping Market Review & Forecast 2016/17
Fleet: conventional vessels and containers

- **Reefer ships** and **refrigerated boxes**: Refrigerated box/container taking over from the conventional reefer ship (specialist)

- **Over 50%** of conventional reefer vessels scrapped & limited ships ordered

- **Reefer container capacity increased** by 6.5%/y-o-y (2.6 million TEU)

- 1980: **33%** of reefer transport capacity was containerized; **72%** in 2013

- Specialist reefers: average **age of 26 years** and limited orderbook

- Reefer containership fleet: average **age of 12 years** and growing orderbook
Reefer vessel vs. reefer container (2000-2015)

Main importers and exporters of fishing vessels

Main exports, fishing vessels (share of world value, 2015)

Main importers, fishing vessels (share of world value, 2015)

ITC, based on comtrade statistics
Marine equipment subsector: some features

- Shipbuilding and shipyard operations evolved with technological advances

- Marine equipment account for 50-70% of value; higher share in the case of specialized segments

- Close links between marine equipment suppliers & shipyards (link to IHM)

- Marine equipment subsector is heterogeneous/SMEs (+11,500 worldwide)

- Average market size: estimated at $160 billion (2006-2010); internationally/export oriented sector

- **Demand:** China, Republic of Korea, Japan, United States, Singapore, Norway, Italy, India, Germany, France. **China and the Republic of Korea** account for over 50% of global demand
Marine equipment supply: market shares

Western Europe; 36%
Asia; 49%
North America; 14%
Other; 1%

Douglas-Westwood data for 2005 (turnover value)
Summary

- Looking at shipbuilding from a country perspective (developed/developing countries) does not capture the full picture.

- Growing tendency toward globalization and internationalization.

- Shift in main players in shipbuilding and specialization by market segment.

- Europe key player in marine equipment supplies; Asia is catching up.

- Marine supplies market is globalized (licenses for Asian manufactures by European companies) - important for shipbuilding and for after sale.

- Ship repair and conversion centres are located on shipping routes.

- Refrigerated cargo trade small in % of global seaborne trade, but volumes set to grow; maritime is the main transport mode of refrigerated cargo.

- Shift in reefer fleet and implications for the scrapping of old reefer vessels.
THANK YOU/QUESTIONS?

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