出國報告（出國類別：國際會議）

OECD 「造船工作小組」第 124 次會議

服務機關：經濟部工業局
姓名職稱：盧文燦科長
派赴國家：法國巴黎
出國期間：中華民國 106 年 4 月 16 日至 4 月 21 日
報告日期：中華民國 106 年 5 月 26 日

摘　　要

OECD 理事會造船工作小組（WP6）旨在逐步建立產業的正常的競爭環境，鼓勵經由數據收集和分析的透明度，尋求擴大全球造船大國與非 OECD 經濟體間於造船產業政策之溝通討論平台。

本(124)次「WP6」會議於 2017 年 4 月 18~19 日法國巴黎召開，我國由盧科長文燦率領船舶中心陳處長明忠及台船劉執行長傳璋代表出席。會議主席為挪威常駐 OECD 代表-- Ms. Elin Østebø JOHANSEN 大使，與會各國成員總共有 68 位代表出席。主要討論議題包括造船市場供需分析、政策發展、綠色船舶、政府補貼及支持措施、補償(修正)總噸及建造能力量測、拆船、產能過剩、自製率要求規定、全球價值鏈等議題。

以上議題，與我國較有相關者有二項，其一是「補償(修正)總噸及建造能力量測」，係有關於以船價作為船舶修正總噸計算之基礎，可影響我國未來造船排名及地位之排名；另一個是「綠色船舶」，重點在探討 EEDI(Energy Efficiency Design Index，定義是船舶單位載重，單位航速的碳排放)對貨櫃船、散裝貨船和油輪等三種主要航運船隻，未來燃料消耗和相關二氧化碳排放的影響，及如何改變設計以達到 EEDI 燃料(CO2)減量的要求。我方宜持續關注上述兩項議題及可能訂定的國際標準，以利後續我國船舶產業之發展。

下次會議預計於本(106)年 11 月下旬舉辦，同時辦理首屆 OECD 海洋週活動，出席下次造船工作小組會議各國代表，屆時均將獲邀出席 OECD 海洋週之各項活動，瞭解全球造船市場發展與變化。建議我國仍持續與會，以提供政府、國內產官學研及廠商之國際訊息，因應國際造船發展趨勢，進一步擬定我國的造船策略與發展方向，與各國代表溝通及交流國際造船市場資訊及發展趨勢，打開我國造船產業於國際知名度，尋求開展與共同合作契機。

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壹、前言

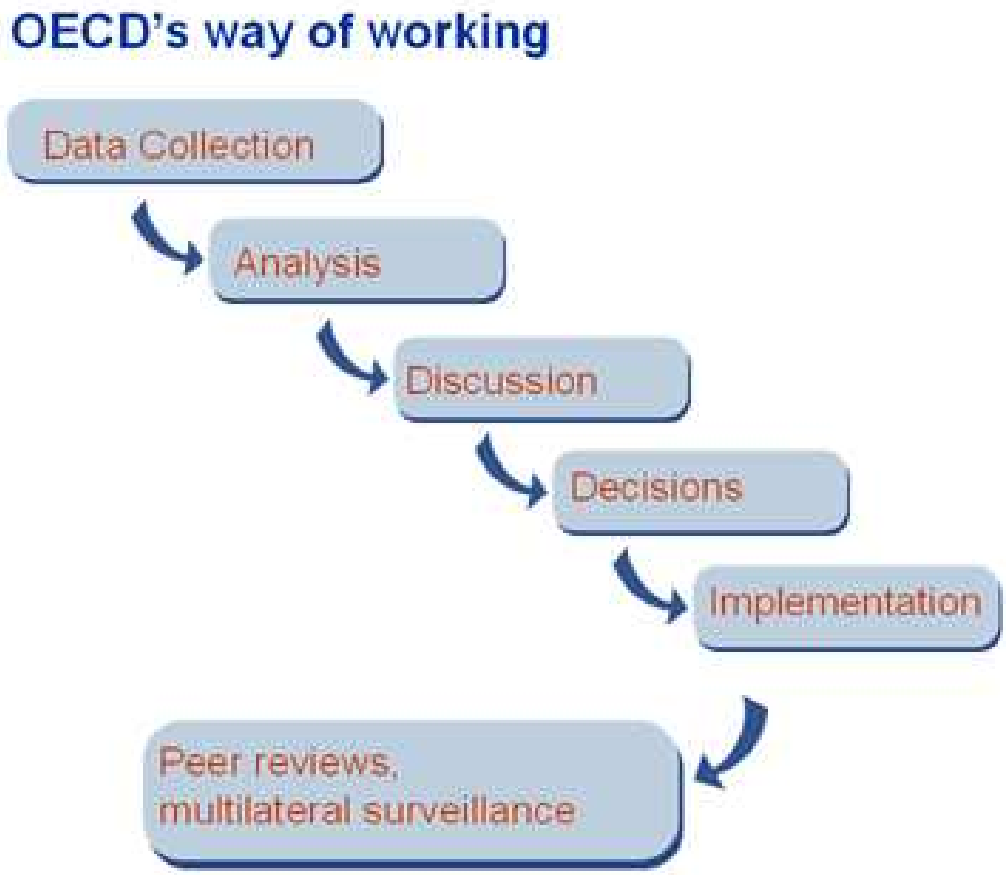
一、經濟合作與發展組織簡介

經濟合作與發展組織(OECD, Organization for Economic Co-operation and Development)，簡稱為經合組織，設立的目標是建立好的政策，提供好的生活，其推動的架構是由理事會、委員會及秘書處所組成，如下圖所示：

- 理事會：經合組織理事會是負責決策權。它是由每個成員國的一名代表，以及歐盟委員會的代表組成。理事會是經合組織常駐代表，定期舉行會議，以共識決方式訂定決策。這些會議由經合組織秘書長主持。理事會亦每年召開部長級會議討論關鍵問題，並為 OECD 工作訂定優先次序。理事會的推動工作則授權經合組織秘書處執行。
- 委員會：由 34 個經合組織成員國的代表組成，透過召開專業委員會議，對先進理念和具體政策領域進行審查，如經濟，貿易，科技，就業，教育和金融市場的進展。目前委員會約有 250 個工作小組和專家小組，每年皆要求來自各國行政部門，約 40,000 位高級官員至經合組織委員會開會，並幫助 OECD 秘書處審查及開展工作。
- 秘書處：由安吉爾古里亞領導經合組織秘書處，由一名或多名副秘書長協助工作。秘書處設於巴黎，由 2500 名員工組成，支撐委員會的活動，工作人

員包括經濟學家，律師，科學家和其他專業人士。

經合組織的運作方式為資料收集、分析、討論、決定、執行同儕檢視及多邊監督。



二、造船工作小組(WP6)簡介

「造船工作小組」(Council Working Party on Shipbuilding,簡稱 WP6）直屬 OECD 理事會，其位階相當於委員會層級，係 OECD 現存以單一產業為探討主題的兩個委員會之一(另一個產業委員會為鋼鐵委員會)。

OECD 理事會造船工作小組（WP6）旨在逐步建立產業正常的競爭環境，鼓勵經由數據收集和分析的透明度，尋求擴大全球造船大國與非 OECD 經濟體間於造船產業政策之溝通討論平台。期望經由多邊談判建立國際造船市場之規範，塑造公平的競爭環境。

造船工作小組的主要優先工作項目為建立全球造船產業之正常競爭環境，消

除造船市場扭曲因素，鼓勵藉由產業資訊透明度及各國間之同儕檢視，以避免政府對其造船產業之不適當補貼支持措施。

本次工作小組主席為挪威常駐 OECD 代表-- Ms. Elin Østebø JOHANSEN 大使，與會成員包含丹麥、芬蘭、德國、意大利、日本、韓國、挪威、波蘭、葡萄牙、土耳其、歐盟、蘇聯、南非、台灣、克羅地亞、菲律賓、羅馬尼亞、越南、貿易聯盟諮詢委員會(TUAC)、韓國造船協會(KSA)及 Sea Europe 等產業公會或組織代表和 OECD 工作小組，總共有 68 位代表出席會議(各國參與單位及名單如附件一)。

三、2012 至 2016 年造船工作小組會議

時間	主題	會議內容
2012 年 6 月 21~22 日	第 114 次造船小組會議	船舶市場扭曲確實會造成不公平競爭，包括如船舶鋼板價格與船東貸款問題，與各國分享經驗、進行討論及資訊交流。
2012 年 11 月 29~30 日	第 115 次造船小組會議	全球造船業造船產業的發展趨勢和未來發展進行討論，並進行日本政府造船產業支持措施之同儕檢視。
2013 年 6 月 17~18 日	第 116 次造船小組會議	討論有關出口信貸、綠色船舶、國營企業角色等議題，並進行葡萄牙政府造船產業支持措施之同儕檢視。
2013 年 11 月 27~28 日	第 117 次造船小組會議	討論各界(各國、組織、公司)對於在造船全球價值鏈對產業、船舶設備、航運、船廠員工等方面之影響進行報告研討。
2014 年 6 月 12~13 日	第 118 次造船小組會議	討論有關造船產業政策發展、產業政策評價、海洋經濟(更新版)、SSU 最新發展、綠色船舶、WP6 計劃更新、造船產業供需分析。
2014 年 11 月 24~25 日	第 119 次造船小組會議	討論造船產業領域發展趨勢、機會及挑戰，並說明海洋經濟發展情形。

2015 年 6 月 11~12 日	第 120 次造船小組會議	討論有關政策發展、出口信貸造船部門瞭解書--最新發展、綠色船舶、造船產業之新金融型態、國際運輸論壇之大型貨櫃船報告、供應與需求分析、公平競爭之措施回顧、後續造船及離岸產業發展、WP6 計畫更新等議題。
2015 年 11 月 9~10 日	第 121 次造船小組會議	主要匯集政府、產業代表及專家共同討論交流有關全球造船產業供給及產能過剩議題，及 OECD 及非 OECD 會員共同探討各國政府造船政策發展及挑戰、同儕檢視、出口信貸造船部門瞭解書(SSU)最新發展、綠色船舶等事項。
2016 年 5 月 23~24 日	第 122 次造船小組會議	討論造船政策發展圓桌會議、造船產業新型態資金支援、政策發展、供應與需求分析、綠色船舶、未來海洋經濟計畫等議題，邀請各國產、官及組織代表共同討論造船相關產業之發展趨勢、機會及挑戰，並進行經驗分享。
2016 年 12 月 1~2 日	第 123 次造船小組會議	主要匯集政府、產業代表及專家共同探索全球造船產業與其它海事產業(如航運、離岸及海事設備)之關連性並尋求產業挑戰之整體解決方案，而非只解決單一產業間之問題，及各國政府造船政策發展、全球造船產業供需分析、造船產業出口補貼、造船工作小政策工具、綠色船舶及 106 年度工作規劃等議題。

2017 年 4 月 18~19 日	第 124 次造船小組會議	主要討論議題包括造船市場供需分析、政策發展、綠色船舶、政府補貼及支持措施、補償(修正)總噸之探討等

貳、團員及任務分工

一、本次會議於法國巴黎 OECD 總部舉行

二、會議地點：2,rue Andre’-Pascal, 75775 Paris Cedex 16, France

三、會議時間：106 年 4 月 18 日及 19 日。全部行程為 106 年 4 月 16 日至 4 月 21 日(返抵台灣) ，為期 6 天。

四、行程表

日期	內容
106/04/16	臺北-法國巴黎
106/04/17	抵達法國巴黎，與會前資料準備
106/04/18	出席第 124 次造船工作小組會議
106/04/19	出席第 124 次造船工作小組會議
106/04/20	法國巴黎-臺北
106/04/21	抵達臺北

五、我國出席人員及分工如下：

參加團員			**任務分工**
單位	**職稱**	**姓名**	
經濟部工業局	科長	盧文燦	全盤綜理 OECD 事務
財團法人船舶暨海洋產業研發中心	處長	陳明忠	蒐集我國造船會議資料及處理出席會議行政事務，填覆問卷「造船補貼及支持措施」
台灣國際造船股份有限公司	執行長	劉傳璋	蒐集我國造船政策推動會議資料及處理出席會議議題資料

此次經合組織造船工作小組會議，經濟部國貿局未派員，駐法國代表處經濟組賴作松組長及梅碧琦小姐，除在各種行政支援上大力協助，並與 OECD 工作小組緊密連繫，梅碧琦小姐亦全程出席本次會議。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參、會議時程表

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Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development 07-Apr-2017

English - Or. English

COUNCIL
WORKING PARTY ON SHIPBUILDING

C/WP6/A(2017)1/REV1
For Official Use

Draft Agenda: 124th Council Working Party on Shipbuilding (COUNCILWP6)

18-19 April 2017

Paris, France

Please note that the start time of the meeting on Tuesday, 18 April is now 10:00.

Laurent C DANIEL, Head of Unit - Senior Economist/Policy Analyst, +(33-1) 45 24 18 69, E-mail: LaurentC.DANIEL@oecd.org

JT03412175

English - Or. English

Draft Agenda: 124th Council Working Party on Shipbuilding (WP6)

18 - 19 April 2017
Paris, France

Tuesday, 18 April 2017

10.00-10.05	**1.**	**Adoption of the Agenda** ***Action(s):*** Delegates are invited to ***adopt*** the agenda.	C/WP6/A(2017)1/REV1
10.05-10.10	**2.**	**Approval of the summary record of the 123rd session** ***Action(s):*** Delegates are invited to ***adopt*** the summary record.	C/WP6/M(2016)2
10.10-12.00	**3.**	**Supply and demand analysis** This item focuses on the issue of industry supply and demand and overcapacity. i) Presentation by Mr. François Cadiou (Barry Rogliano Salles - BRS) on some of the findings of the 2017 BRS' annual review notably on shipbuilding capacity cuts. ii) Update by the Secretariat on the report [C/WP6(2016)6/REV1] on Imbalances in Shipbuilding. iii) Update by the Secretariat on the project with China's Development Research Centre (DRC) on Industrial upgrading for green growth in China, and in particular on the recommendations on how to efficiently manage industrial restructuring and address excess capacity issues in China. iv) Use and revision of the compensated gross tonne (cgt) system: Presentations by the Secretariat based on the responses to a questionnaire, and by shipbuilding industry experts on possible approaches to revise cgt coefficients. Experts will notably be invited to explain in more details the methodological and data aspects as well as the use and purposes of the cgt unit. • Presentation by Secretariat on the responses to a questionnaire on cgt issues sent to delegates and on the possible establishment of an informal working group on cgt and capacity measurement • Presentation by Ms. Jenny Braat (Danish Maritime). ***Action(s):*** Delegates are invited to ***discuss*** which options to follow to revise the cgt system and possibly to establish an informal working group on capacity measurement and cgt.	Room document 1 : Summary of the answers to the cgt questionnaire Room document 2 : Terms of reference for the establishment of an informal working group on cgt and capacity measurement

12.00-13.00 **4. Policy developments** C/WP6(2017)4

This item provides an opportunity for delegates to share recent policy information. C/WP6(2017)5

C/WP6(2017)6

i) WP6 Inventory of subsidies and other support measures and report on support measures in other countries

- Presentation by OECD Secretariat of the 2017 update of the Inventory [C/WP6(2017)4], of the report on support measures of selected countries not participating in the WP6 Inventory [C/WP6(2017)6] and a proposal to extend the WP6 Inventory coverage to the provision of finance by governments (including SOEs) more widely. [C/WP6(2017)5].

13.00-14.30 LUNCH

14.30-16.30 **4. Policy developments (continued)** C/WP6(2017)7

ii) Roundtable on policy developments

Room document 3 : List of submitted questions for the roundtable on policy developments

a) Presentation by the Secretariat of a proposal on a structured process regarding the questions and answers on policy developments affecting the shipbuilding industry in selected economies. C/WP6(2017)7

b) Presentation by Korea on selected policy developments in Korea following written questions received.

c) Presentation by EU on selected policy developments in Spain following written questions received.

d) Oral questions and answers on latest policy developments affecting the shipbuilding sector

Action(s): Delegates are invited to ***discuss*** the policy developments.

16.30-18.00 **5. Green ships** C/WP6(2017)8

i) Effect of international regulations on the developments of greener ships.

- Presentation by Mr. Edwin van Hassel (Antwerp University) of the report [C/WP6(2017)8] on the emission reductions of the three main shipping segments given international regulation (notably the EEDI) and other market and policy factors.

Room document 4: recent IMO regulatory developments

ii) Presentation by the Secretariat on possible items to be discussed at the next WP6 workshop

Following a request by WP6 Bureau members, the Secretariat prepared a room document with a tentative list of possible items to be discussed at the next WP6 workshop.

Room document 5 : potential issues to be discussed at the next WP6 workshop

Action: Delegates are invited to ***discuss*** the report and the possible topics to be discussed at the future WP6 workshop should the WP6 decides to choose "green ships" for its topic

18.00-19.30 COCKTAIL

Wednesday, 19 April 2017

9.00-9.45 **6. SSU - latest developments**

WP6 delegates agreed at the December 2016 meeting to continue monitoring closely the work of the IWG and to continue the suspension of the Informal Expert Group (IEG), with further more in-depth consideration to take place at the WP6 April 2017 meeting, notably accounting for the outcome of the discussions at the March 2017 meeting of the Participants to the OECD Arrangement on Export Credits.

- Presentation by the EU on the latest deliberations of the IWG.

The WP6's Informal Expert Group (IEG) on the Sector Understanding on Expert Credits for Ships (SSU) is currently suspended, pending developments in the multilateral export credit discussions taking place under the International Working Group (IWG). This item offers delegates the opportunity to share information on the IWG's deliberations, with a view to decide on the IEG's status.

- Update by the OECD Secretariat (Export Credit Group) on the discussions and possible decisions at the March 2017 meeting of the Participants to the Arrangement on the Officially Supported Export Credits regarding the issues related to providing support for ships under standard Arrangement terms and SSU terms.

Action(s): Delegates are invited to ***share information*** and ***decide*** whether to continue the suspension of the IEG.

09.45-11.15 **7. WP6 Instrument Review** C/WP6(2017)8

At the December 2016 WP6 meeting, delegates agreed to conduct a thorough revision of the 1983 instruments. Some delegates also asked the Secretariat to provide additional elements regarding the possibilities to restart the negotiations of the Shipbuilding Agreement (SBA). The OECD Secretariat will present a document C/WP6(2017)8 including notably several issues for discussion for the revision of the 1983 WP6 instruments and about the Shipbuilding Agreement.

Action(s): Delegates are invited to ***discuss*** the report and ***decide*** which options to follow regarding the revision of WP6 Instruments.

11.15-12.20 **8. Discussion on the ongoing and future WP6 projects**

This agenda item is dedicated to the discussion on WP6's work in 2017 and 2018, notably the theme of the 20 November workshop which would be part of the first OECD Ocean Economy Week which will take place on 20-24 November 2017.

- Presentation by the Secretariat (Environment Directorate) of the the Task Force for the 2017 OECD Green Growth & Sustainable Development (GGSD) Forum on "Greening the Ocean Economy"

- Presentation by the Secretariat of the Economic Analysis and Statistics Division of the Directorate for Science, Technology and Innovation (STI) of selected work on Global Value Chains relevant for the WP6.

- Update by the Secretariat on ongoing and future WP6 projects, including ship recycling, excess capacity, local content requirements, global value chains, timetable for WP6 mandate renewal, and contribution to the OECD Ocean Economy Week.

- Discussion on the potential theme of 2017 Workshop, possibly "green ships" .

Action(s): Delegates are to ***discuss*** the ongoing and future WP6 projects

Room document 6 : Invitation letter to join the Task Force for the 2017 OECD Green Growth & Sustainable Development (GGSD) Forum on "Greening the Ocean Economy"

Room document 7 : draft annotated agenda for the GGSD forum on Greening the ocean economy

12.20-12.25 **9. Other business**

12.25-12.30 **10. Dates of next meeting**

Shipbuilding workshop on Monday 20 November 2017, followed by a WP6 meeting on 21 November.

Action(s): Delegates are invited to ***note*** the dates of the next meetings.

12.30 Close of meeting

肆、工作內容

一、配合 OECD WP6 會議之前置作業

本次 OECD「WP6」會議召開前已先行問卷調查出席會議各國政府對造船補貼及其他支持措施(Subsidies and other support) ，我國政府對造船補貼及其他支持措施，主要是經濟部技術處之造船研發計畫及工業局之船舶產業輔導計畫經費。提供調查之資料如下：

REPORTING QUESTIONNAIRE　　REFERENCE YEARS: 2015-2017

Country/Economy:　CHINESE TAIPEI

1. Type of the measure of support *[see Explanatory Note 1)]*			
K:　Support for Research and Development			
2. Authority/agency responsible for the measure and legal authority *[see Explanatory Note 2)]*			
Ministry of Economic Affairs (MOEA)			
3. Outline/explanation of the measure *[see Explanatory Note 3)]*			
MOEA grants research funds to a non-profit research firm, the Ship and Ocean Industries R&D Center (SOIC). Its purpose is to promote the general technical capability (through technology transfer) of local small and medium-sized ship and boat builders.			
4a. Monies actually committed each year *[see Explanatory Note 4)]*	Year 2015	Year 2016	Year 2017
National Currency	86.853	43.204	43.111
USD	2.8	1.2935	1.369
Exchange rate [/USD]	31.41	33.397	31.5
4b. Maximum financial exposure at end of each year			
National Currency	0	0	0
USD	0	0	0
Exchange rate [/USD]	0	0	0
5. Start and end date	Start date; [7] 1991 / End date; on-going		
6. Notes (if any)			

二、會議內容

本次會議主要討論議題包括造船市場供需分析、政策發展、綠色船舶、政府補貼及支持措施、補償(修正)總噸之探討等。茲就各討論議題之內容報告如下：

(一) 造船政策發展圓桌會議(Roundtable of policy development)會議於各參加代表同意 OECD「造船工作小組」第 124 次會議紀錄及摘要報告後進行。

(二) 造船工作小組對修正總噸(Compensated Gross Tonnage, CGT)以及建造能力量測(Measurement of Capacity)報告

OECD 在本屆的造船政策發展，有一項重要的造船建造量量測標準建立，從 2015 年到 2016 年許多會員對造船修正總噸(CGT)標準訂定的需求。2016 年 12 月 2 日會議中，參加人員希望找出一個簡單的公式，能夠有效表達出修正總噸的量測標準。為此，OECD 秘書處於 2017 年 2 月還發出了一份電子問卷交由會員處理。

過去 OECD 制定出修正總噸的簡單計算公式，廣為各造船廠作為工作量與效率的重要參考資料，其公式如下表：

舊修正總噸(Compensated Gross Tonnage, CGT)係數

船舶種類	從	到	係數(A)	船舶種類	從	到	係數(A)
單殼油輪(載重噸)	0	4,000	1.70	一般貨船(載重噸)	0	4,000	1.85
	4,000	10,000	1.15		4,000	10,000	1.35
	10,000	30,000	0.75		10,000	20,000	1.00
	30,000	50,000	0.60		20,000	30,000	0.85
	50,000	80,000	0.50		30,000	以上	0.70
	80,000	160,000	0.40	冷藏貨船(載重噸)	0	4,000	2.05
	160,000	250,000	0.30		4,000	10,000	1.50
	250,000	以上	0.25		10,000	以上	1.25
雙船殼油輪(載重噸)	0	4,000	1.85	貨櫃船(載重噸)	0	4,000	1.85
	4,000	10,000	1.30		4,000	10,000	1.20
	10,000	30,000	0.85		10,000	20,000	0.90
	30,000	50,000	0.70		20,000	30,000	0.80
	50,000	80,000	0.55		30,000	50,000	0.75
	80,000	160,000	0.45		50,000	以上	0.65
	160,000	250,000	0.35	Ro-ro Ships (dwt)	0	4,000	1.50
	250,000	以上	0.30		4,000	10,000	1.05
成品油輪及化學品船(載重噸)	0	4,000	2.30		10,000	20,000	0.80
	4,000	10,000	1.60		20,000	30,000	0.70
	10,000	30,000	1.05		30,000	以上	0.65
	30,000	50,000	0.80	汽車船(載重噸)	under	4,000	1.10
	50,000	80,000	0.60		4,000	10,000	1.75
	80,000	以上	0.55		10,000	20,000	0.65
乾散貨船	under	4,000	1.60		20,000	30,000	0.55

(載重噸)	4,000	10,000	1.10		30,000	and over	0.45
	10,000	30,000	0.70	渡輪(總噸)	under	1,000	3.00
	30,000	50,000	0.60		1,000	3,000	2.25
	50,000	80,000	0.50		3,000	10,000	1.65
	80,000	160,000	0.40		10,000	20,000	1.15
	160,000	以上	0.30		20,000	以上	0.90
Combined Carriers (dwt)	0	10,000	1.60	旅客船(總噸)	0	1,000	6.00
	10,000	30,000	0.90		1,000	3,000	4.00
	30,000	50,000	0.75		3,000	10,000	3.00
	50,000	80,000	0.60		10,000	20,000	2.00
	80,000	160,000	0.50		20,000	40,000	1.60
	160,000	以上	0.40		40,000	60,000	1.40
液化石油氣船(載重噸)	0	4,000	2.05		60,000	以上	1.25
	4,000	10,000	1.60	漁船 (總噸)	0	1,000	4.00
	10,000	20,000	1.15		1,000	3,000	3.00
	20,000	30,000	0.90		3,000	以上	2.00
	30,000	50,000	0.80	其他非貨運船舶(總噸)	0	1,000	5.00
	50,000	以上	0.70		1,000	3,000	3.20
液化天然氣船(載重噸)	0	4,000	2.05		3,000	10,000	2.00
	4,000	10,000	1.60		10,000	以上	1.50
	10,000	20,000	1.25				
	20,000	30,000	1.15				
	30,000	50,000	1.00				
	50,000	以上	0.75				

資料來源：OECD

舊的 CGT=A x GT，A=船別係數，GT 為船舶總噸位。

上表係數係將總噸位(Gross Tonnnage, GT)轉換為修正總噸(Compensated Gross Tonnnage, CGT)，以量測造船廠製造產量及生產力之用。

2016 年由歐洲船廠協會(Community of European Shipyards Associations, CESA,前身為Association of West European Shipbuilders, AWES)、日本船廠協會(Shipbuilders' Association of Japan, SAJ)及韓國船廠協會(Korean Shipbuilders Association, KSA)所共同制定新版修正總噸(CGT)系統，前三者船廠產量約佔全球 75%的市佔率；如往常一般，此一新系統已經由 OECD Council Working Party on Shipbuilding 所採用及公佈，此一新系統將取代舊的修正總噸係數表格，並於 2007 年 1 月 1 日正式生效。

修正總噸的制定是總噸基礎上考慮船種及船舶建造複雜程度等因素的單位，修正總噸不僅比過去使用載重噸、總噸更能正確反映造船工作量大小，同時還在一定程度上反映出船價高低和產值大小。因此，修正總噸

能比較正確地表示造船產量、造船工作量和造船能力。

新版修正總噸與舊的修正總噸系統的差異在於：

1．捨去現行取決於載重噸之修正總噸係數表，改採用一方程式來計算修正總噸。

2．不同於早期以載重噸(DWT)為基礎，新、舊系統都改以總噸(GT)為計算方式。

新版修正總噸方程式為 $CGT=A \times GT^{B}$

其中(A：船別係數)，(B：指數係數)，係數 A 與船種有關，係數 B 則受船隻大小所影響，請參照下表：

Ship type	A	B
Oil tankers (double hull)	48	0.57
Chemical tankers	84	0.55
Bulk carriers	29	0.61
Combined carriers	33	0.62
General cargo ships	27	0.64
Reefers	27	0.68
Full container	19	0.68
Ro ro vessels	32	0.63
Car carriers	15	0.70
LPG carriers	62	0.57
LNG carriers	32	0.68
Ferries	20	0.71
Passenger ships	49	0.67
Fishing vessels	24	0.71
NCCV	46	0.62

於此須注意的事為油品輪在舊系統中歸類於化學船，而在新系統則歸類為油輪。

若分別比較部份貨櫃船及散裝貨船之新、舊系統之修正總噸的差別如下：

	Old CGT System				New CGT System			
	DWT	GT	Factor	CGT	A	B	GT	CGT
Bulk carriers	77000	41000	0.5	20500	29	0.61	41000	18888
	202500	105000	0.3	31500	29	0.61	105000	33522
Full container	18900	15200	0.9	13680	19	0.68	15200	13256
	21700	15700	0.8	12560	19	0.68	15700	13551
	51300	43500	0.65	28275	19	0.68	43500	27097
	67680	65600	0.65	42640	19	0.68	65600	35830

上表可以看出有些船舶 CGT 變小，也有船舶 CGT 變大。

2016 年起，造船工作小組(WP6)再度為修正總噸的制定，要會員提出建議，尤其是將在 2017 年 6 月 8 日所召開的 JECKU(為日本 Japan、歐盟 European Union、中國 China、韓國 Korea，以及美國 U.S.造船協會的國際會議名稱)會議中進行討論；以及由 WP6 成立非正式工作小組於 2018 年底前規畫提出新量測方式。

(三) 法國 BRS 公司報告世界造船能力衰退及下一個十年如何復甦，首先我們看到造船市場歷史的背景：

1950 年代：世界造船量歐洲及亞洲 50%/50%平分。

1973 年：第一次全球石油危機發生。

1978 年：第二次全球石油危機發生。

1970 年代末期：造船市場嚴重衰退，新船價格大跌。

1980 年代：歐洲及日本船廠接受大量補助，韓國造船業快速成長。

1980 年代中期~1980 年代末期：造船業經過幾年得深度衰退，造船業開始重整。

歐洲：政府開始減少對造船業的補貼，許多國家造船業開始放棄：英國、瑞典、法國、波蘭…..，許多大型及中型船廠關閉，不再營運，只剩下小型及特種船舶建造船廠繼續營運。

日本：第一波船廠重整，緊縮建造能量，一些新船建造轉型為修船廠。

1990 年代：韓國造船能量繼續提升。

2000 年代：中國造船能量開始大幅擴充。

2000~2008 年：新造船活動開始大幅增加，造船訂單開始過量。其中：

2008 年：船廠手持訂單達到營運船隊的 36%。造船產能開始大幅擴張，遠超過需求。

2008 年：雷曼兄弟倒閉，全球金融風暴迅速延燒，全球造船泡沫化。

2008~2017 年：造船新單需求急降、新船價格大幅衰退。

2010 年代：中國及韓國許多船廠關門，日本船廠再度合併。

許多中國船廠造船廠因經驗不足、生產力低落而關廠，造成中國造船業危機，政府提供有限的政策協助於部分船廠，主要以國營企業優先。

1. 建造巨型油輪(Very Large Crude Carrier, VLCC)船廠

(1) 韓國

韓國船廠總共有 6 家，具有建造巨型油輪船塢，分別是現代重工蔚山(Ulsan)船廠 5 個造船塢，現代重工三湖(Samho)船廠 2 個造船塢，現代重工尾浦(Mipo)船廠 4 個造船塢，大宇造船巨濟島玉浦(Okpo)船廠 2 個造船塢，三星重工巨濟(Geoje)船廠 2 個造船塢、2 個浮塢，世騰(STX)船廠 1 個造船塢，總共有 18 個造船塢及浮塢可以建造巨型油輪，如圖 1 所示。

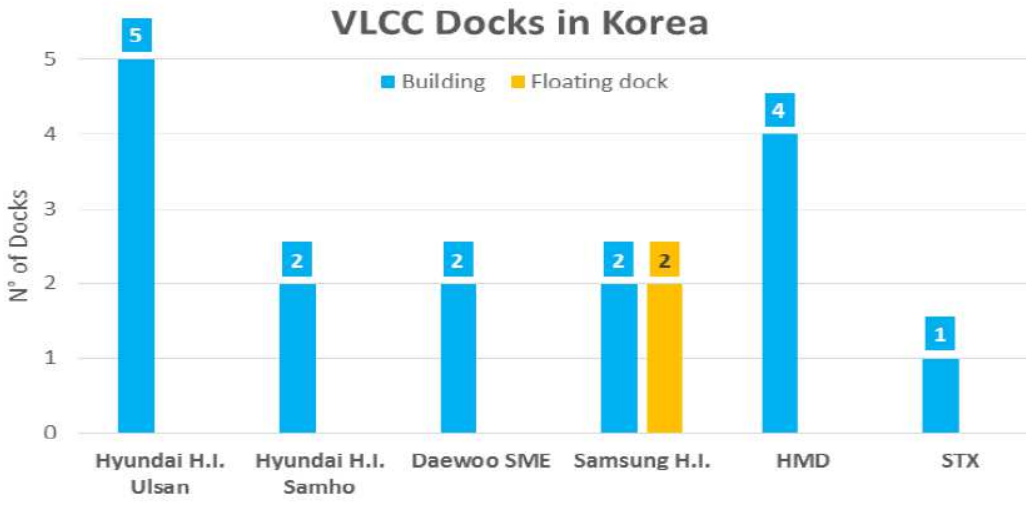

圖 1 韓國船廠具有建造巨型油輪船塢船廠及數量，來源：OECD。

(2) 中國

中國大陸在 1994 年由大連造船廠開始建造巨型油輪，到 2017 年已有 50 個可以建造巨型油輪的船塢，如圖 2 所示。

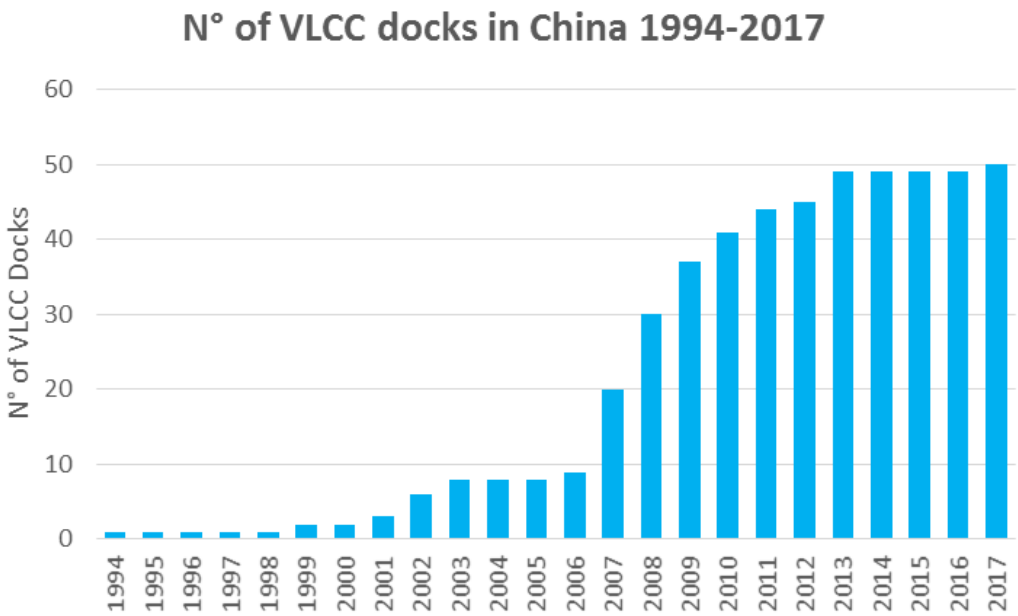

圖 2 1994~2017 年中國大陸造船廠可以建造巨型油輪船塢成長，來源：OECD。

目前中國大陸已有 29 家船廠可以建造巨型油輪，有 50 個造船塢；但目前已有 3 家關廠，有 6 個造船塢關閉。，如圖 3 所示。其中江蘇東方重工、江蘇熔盛重工、STX 大連已經關廠，但關廠設施轉賣後仍可造船。

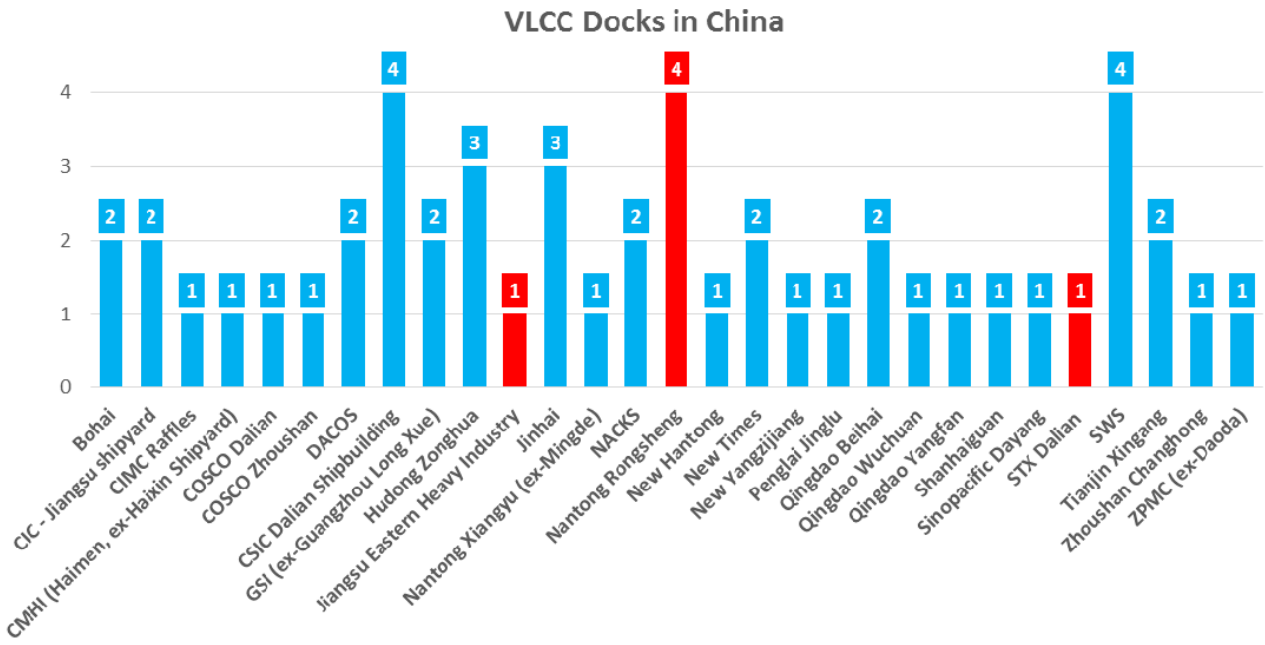

圖 3 中國大陸可以建造巨型油輪的造船廠，來源：OECD。

(3) 日本

日本有 11 家造船廠，總共有 25 個可以建造巨型油輪的造船塢或修船塢，如圖 4 所示。

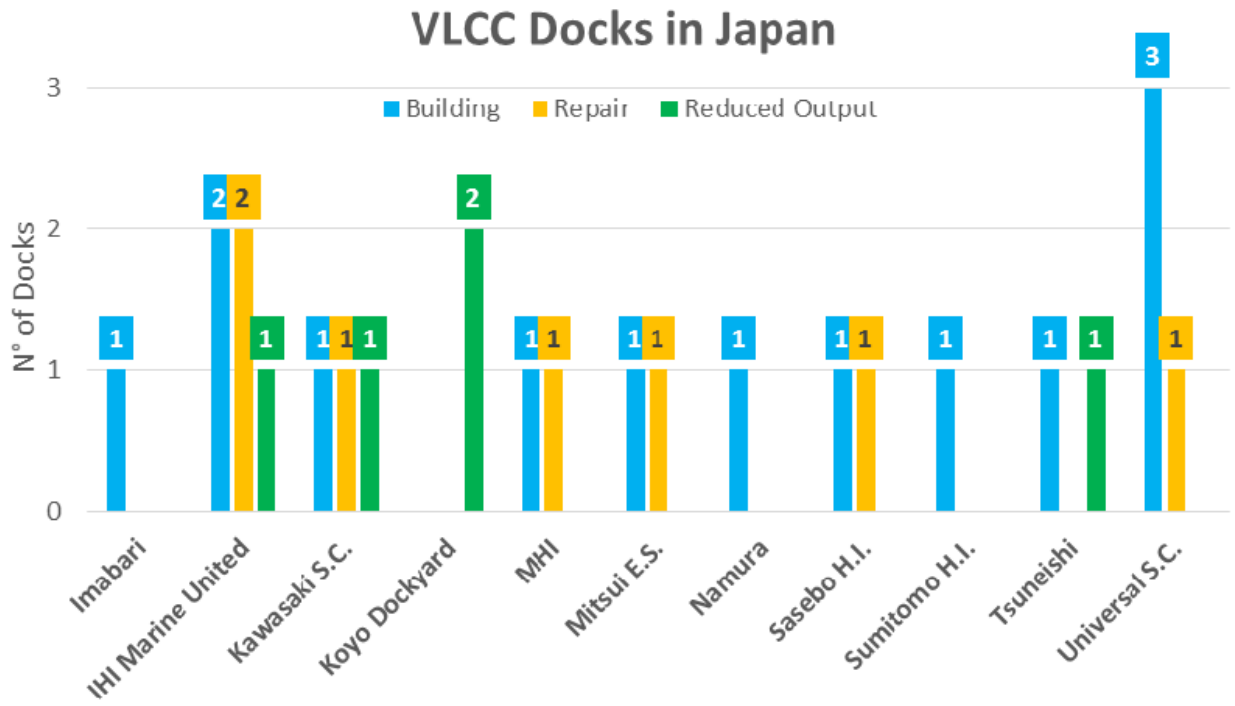

圖 4 日本可以建造巨型油輪的造船廠及船塢數量，來源：OECD。

(4) 中日韓可以建造巨型油輪的造船廠及船塢，如圖 5 所示。

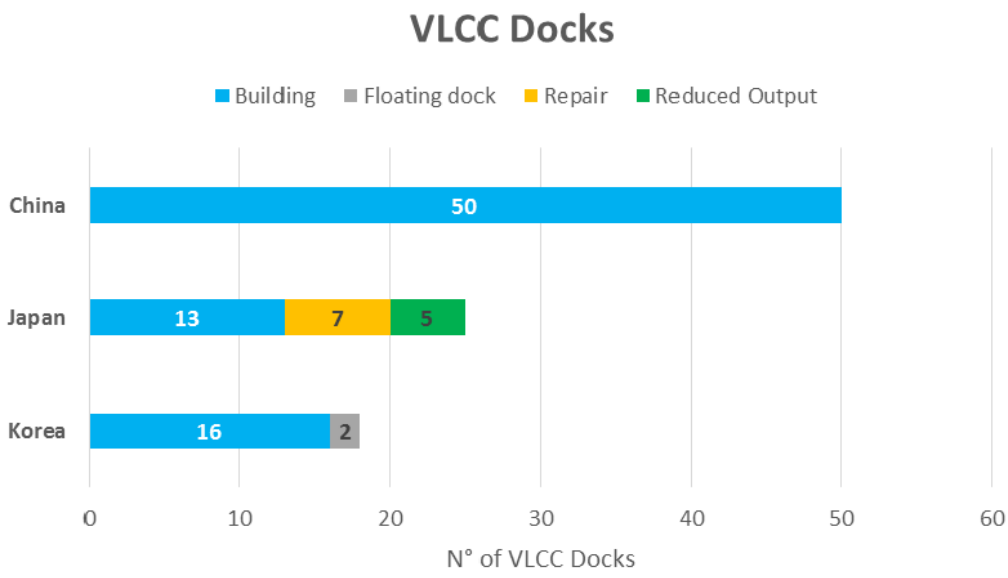

圖 5 中日韓可以建造巨型油輪的造船廠及船塢，來源：OECD。

從 1990~2016 年造船訂單的分布來看，2016 年全年僅有 511 艘新船訂單，這是從 1990 年以來最低的訂單量，如圖 6 所示。

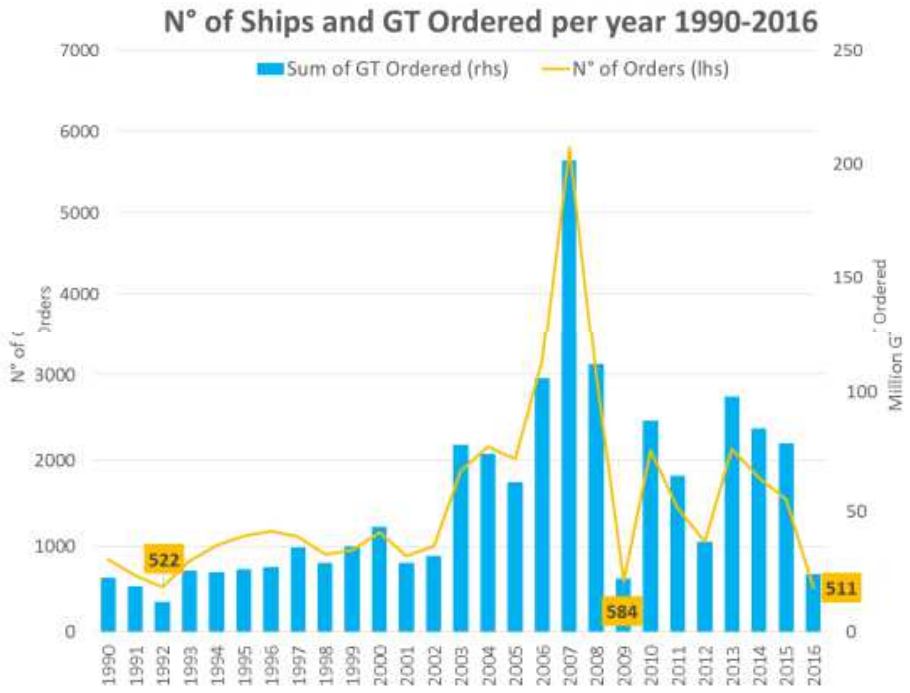

圖 6 從 1990~2016 年造船訂單的分布，2016 年訂單量最低，來源：OECD。

對韓國船廠年度交船量來看，以載重噸位(dwt)計算，2011 年為最高峰，2016 年衰退達到 33%，如圖 7 所示。

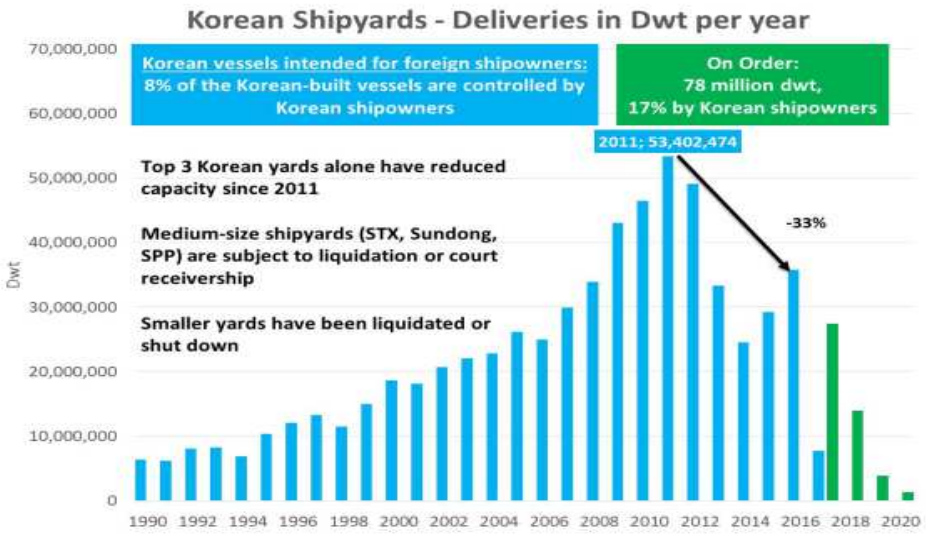

圖 7 對韓國船廠年度交船量，以載重噸位(dwt)計算，來源：OECD。

造船全盛時期，韓國有 33 家船廠，目前仍有 16 家船廠營運中。從 2008 年到 20107 年 3 月，韓國造船廠目前營運概況：

1. 21世紀造船(21ST CENTURY) (關廠)
2. 大鮮造船(DAE SUN)(營業中，目前停工)
3. 大韓造船(DAEHAN HAENAM) (營業中，目前停工)
4. 大宇造船(DAEWOO)(營業中)
5. DONGBANG(關廠)
6. 韓進釜山船廠(HANJIN BUSAN)(營業中)
7. 現代重工群山船廠(HYUNDAI GUNSAN) (營業中，6月起停工)
8. 現代重工尾浦船廠(HYUNDAI MIPO) (營業中)
9. 現代重工三湖船廠(HYUNDAI SAMHO) (營業中)
9. 現代重工蔚山船廠(HYUNDAI ULSAN) (營業中)
11. ILHEUNG(關廠)
12. JINSE HI(關廠)
13. KOREA YANASE TONGYEONG(關廠)
14. MOKPO S&E (關廠)

15. ORIENT SHIPYARD (關廠)

16. POSCO PLANTEC (關廠)

17. SAMHO SB(關廠)

18. SAMKANG M&T (營業中)

19. 三星重工(SAMSUNG)(營業中)

20. SEKO HI (關廠)

21. SEKWANG HI MOKPO(關廠)

22. SEKWANG HI ULSAN (關廠)

23. SHINA SB (關廠)

24. SHINAN (關廠)

25. SLS SB (關廠)

26. SPP GOSEONG (營業中，目前停工)

27. SPP SACHEON (營業中，目前停工)

28. SPP TONGYEONG (營業中，目前停工)

29. STX O&SB BUSAN (營業中)

30. STX O&SB JINHAE (營業中)

31. SUNGDONG (營業中)

32. TK HEAVY (關廠)

33. YS HEAVY (關廠)

對中國船廠年度交船量來看，以載重噸位(dwt)計算，2011 年為最高峰，2016 年衰退達到 48%，如圖 8 所示。

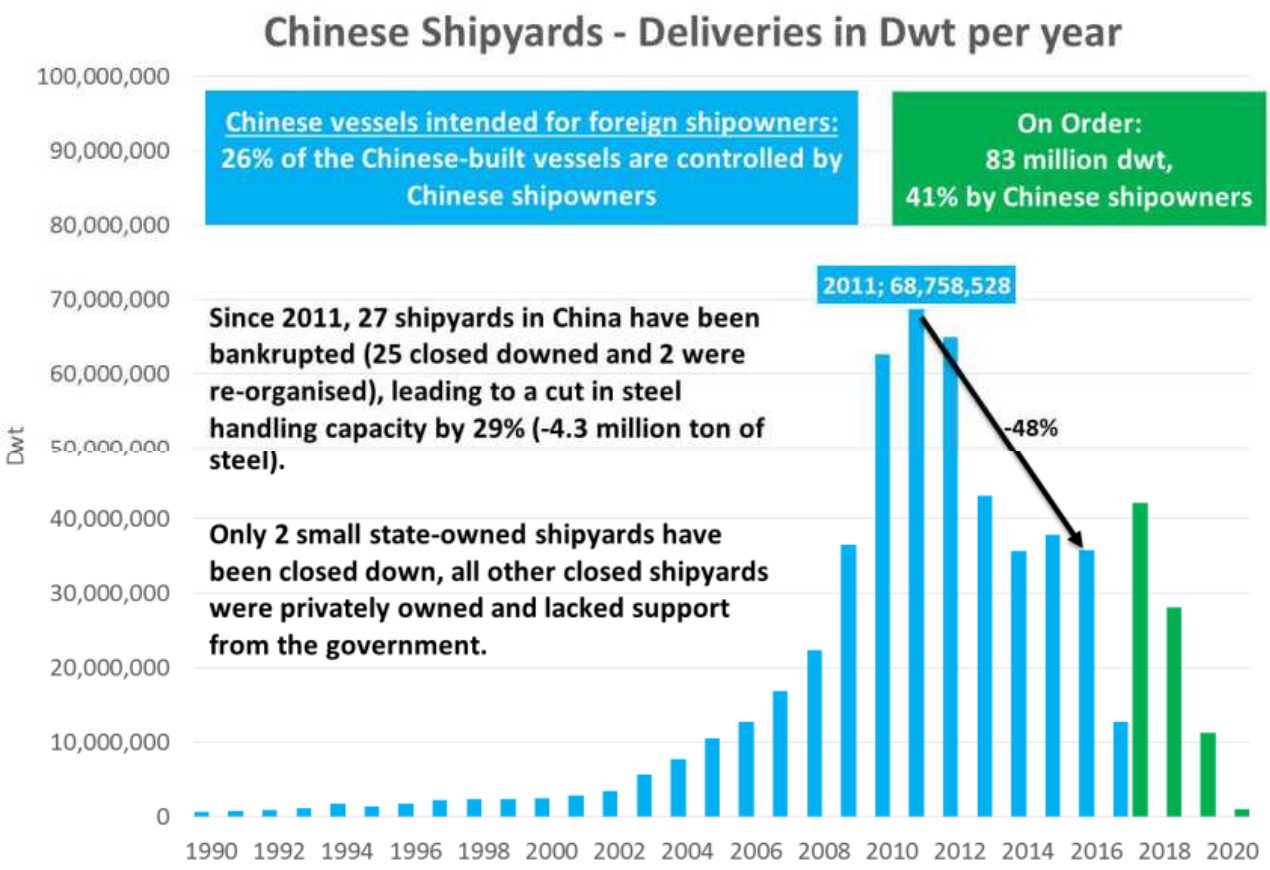

圖 8 對中國船廠年度交船量，以載重噸位(dwt)計算，來源：OECD。

中國船廠從 2011~2016 年關廠的訊息如下

2011年關廠

Blue Sky Shipyard(浙江省)

Jiangsu Shenghua(江蘇省)

Nantong Huigang(江蘇省)

Zhejiang Hengyu(浙江省)

2012年關廠

Nantong Qiya(江蘇省)

Zhejiang Jingang (浙江省)

Zhejiang Judger (浙江省)

2013年

Hubei Jiangyan (河北省)

Zhejiang Haitian (浙江省)

Zhejiang Haoyou (浙江省)

2014年

Fujian Guanhai(福建省)

STX Dalian(遼寧省)

Sugang (江蘇省)

Suopu (江蘇省)

Rushan(山東省)

Shandong Huahai(山東省)

Shengfei (re-organized) (山東省)

Weihai Samjin (re-organized) (山東省)

Yangzhou Huamei (江蘇省)

2015年

Jiangsu Eastern (江蘇省)

Mingde（江蘇省）

Rongsheng（江蘇省）

Zhejiang Zhenghe（浙江省）

2016年關廠

Sainty Marine（State-Owned)(江蘇省)

Yangzhou Guoyu(江蘇省)

Zhejiang Wuzhou（國營）(浙江省)

Zhoushan ZCHI(浙江省)

對日本船廠年度交船量來看，以載重噸位(dwt)計算，2010 年為最高峰，2016 年衰退達到 34%，如圖 9 所示。

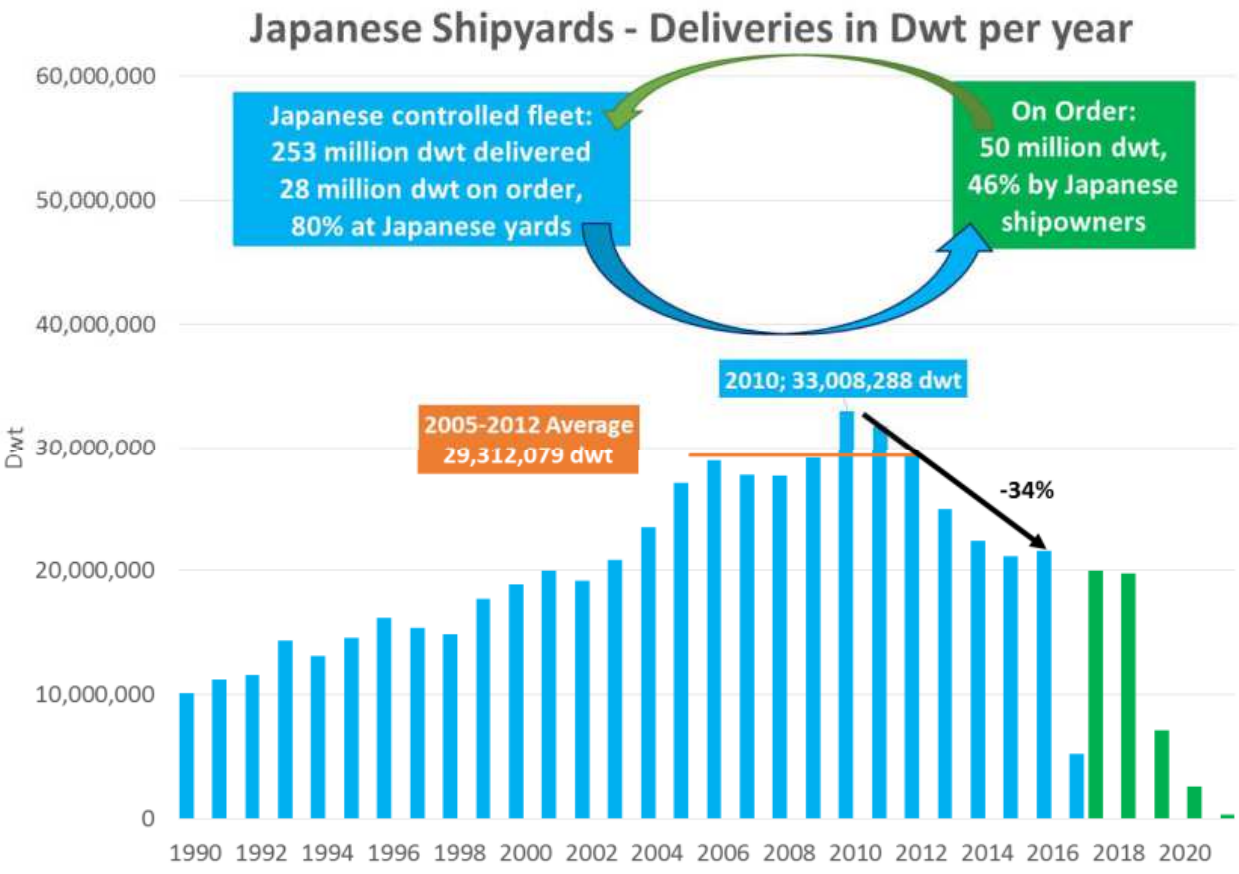

圖 9 日本船廠 1990-2016 年度交船量

相對日本船廠來說，造船不景氣年代，日本船廠採合併及合作模式，以及向外國投資新廠，來渡過造船低迷期。其中僅有日本中

型船廠今治造船在大幅擴充產能及併購船廠，目前產能為日本最大船廠。

另外，日本 JMU 造船集團於 2013 年 1 月 1 日成立，由日本四大造船公司逐步合併產生，目前在日本造船業務量僅次於今治造船，是日本第二大的造船集團。

JMU 造船集團的歷史最早可以追溯到 1853 年，當時日本成立石川島(Ishikawajima Shipyard)造船廠，隨後在 1893 年更名為石川島造船及工程，1960 年在併購播磨船廠成為石川島播磨重工業公司(Ishikawajima-Harima Heavy Industries, IHI)，亦是具有知名度的 IHI 造船；1995 年再併入日本另一大造船公司的住友重工艦艇建造部門，再更名為 IHI Marine United (IHI MU)公司，其中住友重工造船的發展始於 1893 年成立的 Uraga 船廠。

另一個造船集團的發展，於 2002 年成立的環球造船公司(Universal Shipbuilding Corp.)，是結合了 1881 年在大阪櫻島成立的大阪鐵工廠，1943 年更名為日立造船公司(Hitachi Zosen)；以及 1912 年成立的日本鋼管公司(Nippon Kokan, NKK)，1940 年經併購鶴見鐵工廠(Tsurumi Iron & Steel Works)後並加入鶴見在公司名稱中，復於 1988 年再恢復日本鋼管公司(NKK)原名。2002 年日本鋼管以母公司 JFE 及日立造船兩大造船公司正式合併為環球造船公司。

2013 年 1 月 1 日，這三大造船公司再度合併成為日本第二大造船企業 JMU 造船集團，旗下主力船廠分別是 IHI MU 的吳市(Kure)船廠，日立造船的有明(Ariake)船廠，以及日本鋼管的津(Tsu)船廠，JMU 造船集團如圖 10 所示。

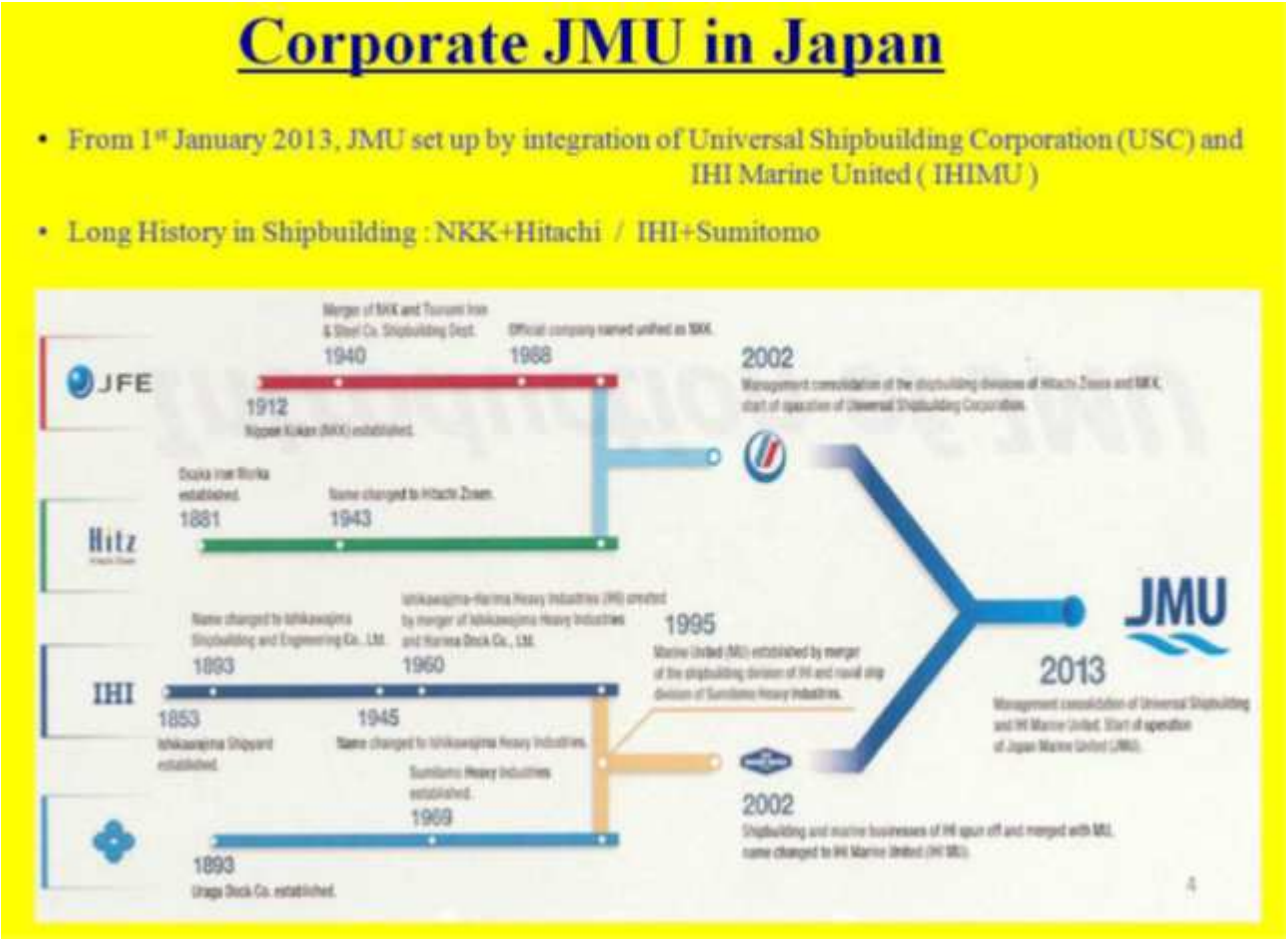

圖 10 日本 JMU 造船集團的歷史發展圖

由於國際造船市場仍面臨船舶過剩、新船需求偏少，以及船價偏低影響，對船廠來說，轉型或縮減產能在未來十年更為明顯，預計韓國將減低 50%的造船產能、中國將減低 20%的造船產能、日本將減低 30%的造船產能。

過去中日韓船廠在關廠後，新投資者加入或會繼續造船，與歐洲於 1970~1980 年關廠的船廠來說，已沒有再回頭造船的先例。對於未來造船市場來看，還有後起之秀包括越南、菲律賓、印度等國家，開始大力推動造船產業，對市場仍有衝擊。

造船市場仍是供需的關係，未來十年的發展，仍然是供需在互相角力的現象，由於目前造船市場仍是供過於求，一般預測在 2018 年以前，造船仍將會持續低迷一陣子。

(四) 政府協助造船產業

造船工業是一個國際性競爭極強的行業，加上船舶市場的變化莫測、波動頻繁與激烈，更加深各造船國之間的競爭力道。為協調

各造船國家之間的衝突，OECD 特別成立造船工作小組(WP6)，是世界上最大的一個國際性造船組織，亦是政府間討論國際造船工業問題的最主要單位，各界期望都很深。

造船工作小組(WP6)成立後，首先制定與通過了三個要點：

1.「關於船舶出口信貸的諒解(Understanding on Export Credits for Ships)」，於 1969 年通過，經 1970 年、1974 年、1979 年三次修改。
2.「關於造船工業逐步取消影響正常競爭障礙的總協定(General Agreement for the Progressive Removal of Obstacles to Normal Competitive Conditions in the Shipbuilding Industry)」，1972 年通過，1983 年修改。
3.「關於政府造船政策的一般指導原則(General Guideline for Government Policies in the Shipbuilding Industry)」，於 1976 年通過，經 1983 年修改。

WP6 所通過的三個要點，一直是國際造船協定的基礎，雖然缺乏法律約束力和懲罰、制裁手段，但也對世界造船工業在歷經 1970 年代能源危機導致造船艱困後，產生相當的影響力，特別是「關於船舶出口信貸的諒解」，至今仍得到各成員國廣泛承認和普遍遵守；但另外兩點卻未能發揮多大的實值作用。由於這些要點僅寬鬆的執行，讓許多新興造船國肆無忌憚的對造船工業大力扶助，許多規定沒有得到實際的執行，引起包括美國在內的一些造船國強烈的不滿。

經過長期的開會與協商，造船工作小組終於制定了「關於商船造修業正常競爭條件的協定(Agreement Respecting Normal Competitive Conditions In The Commercial Shipbuilding And Repair Industry)」，全文約 53 頁。由於協定是在 OECD 組織範圍內談判及簽字，國際上又稱為「OECD 造船協定」，或是「國際造船協定」。

國際造船協定內容相當的廣泛，是對 OECD 造船工作小組原先三點的概括與總結，內容上也有進一步的提升與延伸。是 OECD 造船工作小組成立以來，所達成最重要的一個造船協定，亦是世界造

船史上迄今為止最有影響力的一個協定。它的簽署與生效，對於促進各締約國取消造船扶植政策、穩定世界造船工業與市場秩序、建立比較公平的國際競爭環境，可以產生深遠的影響。可惜最後在美國國會不批准造船協定的簽訂的狀況下，而功虧一簣。

1996 年，在美國國會不批准造船協定談判的簽字，導致造船協定談判的破裂，但隨著韓國造船業的崛起，韓國政府的大力支持度，導致歐盟和日本的造船國不滿。在歐盟和日本的推動下，OECD 造船工作小組在 2002 年 12 月在法國巴黎重新啟動國際造船協定談判。

至今美國及中國大陸政府對於造船扶植政策仍然很積極，亦是他們不加入 OECD 造船工作小組成為會員的主因。

(五) 政府造船扶植造船產業政策

本次開會，會議中也提到一些國家仍然對造船扶植政策的概況作了分析。

1.中國大陸

中國大陸一帶一路政策，敘述政府為推廣一帶一路，提供了船廠財務必要的協助，使其能夠獲得所需的新船訂單，內容包括：計畫在 2020 年前要獲得 40%世界高端船舶訂單、35%世界海工訂單，以及前十大船廠要獲得中國國內 70%船舶訂單等。

依據 OECD 造船工作小組本次調查資料顯示，包括中國 10 大國內融資銀行，於 2016 年提供超過 150 億美元的造船租賃，其中 64 億美元用於提供船廠訂造新船的租賃，剩下的 51 億美元用於直接購買新船，再透過租賃方式提供航商使用。另外，中國大陸銀行亦提供 30 億美元作為船廠還款保證用。

其中另一項協助，為中國大陸進出口銀行(China Export Import Bank, CExim)與中國大陸遠洋海運集團(China COSCO Shipping)於 2016 年 8 月簽訂合作協議，提供 180 億美元資金，作為建造超過 50 艘船用途。其他還有中國大陸進出口銀行提供 10 艘超大型散裝貨輪(VLOC)抵押貸款(Mortgage Finance)，每艘船價約在 8 千 3 百萬美元，以提供國內造船廠造船。另外，中國大陸銀行亦提供低利融資(如提供 1.85 億美元給孟加拉航運公司 20 年期、

2%的年利率)給國外航商在其國內造船。以及提供拆船補貼，2016年補助達到 2.3 億美元，其中中國大陸招商局集團就獲得 1.16 億美元拆船補貼。

2.美國

制定美國海事能源法(Energizing American Maritime Act)，要求在 2020 年以前美國 15%液化天然氣(LNG)及原油運輸，必須使用美國籍(US Flagged)船舶，2025 年要達到 30% (不過本項法案仍待美國眾議院同意)，未來還要立法要求這些船舶在美國建造。

3.其他

包括印度、法國、巴西等國家，都有不同程度的政府協助措施。

(六) 韓國政府是否支持大宇造船重整

本次 OECD 會議，對於韓國政府將援助大宇造船，日本和歐盟再次提出質疑。

日本及歐盟認為，韓國政府對大宇造船的援助方案是不公正的，違反了 WTO 的規則。他們指出，作為韓國的政策銀行，韓國產業銀行和韓國進出口銀行在 2015 年向大宇造船提供了 4.2 兆韓元的資金援助、在今年又以債務調整為前提提供了第二輪的追加資金支援，這種行為違反了 WTO 的政府補助金支付規定。

而在2016年11月底巴黎舉行的經合組織(OECD)造船工作小組(WP6)例會上，日本和歐盟均質疑大宇造船接受的資金支援具有政府補貼性質。日本政府表示，韓國政府在大宇造船的財務重組中扮演了關鍵角色，作為韓國產業銀行和韓國進出口銀行均為大宇造船的債權人和股東。日本政府認為，這種援助已經加劇了造船市場的產能過剩和供需失衡問題。

而德國船舶工業協會(VSM)秘書長 Reinhard Luken 表示，韓國政府用政府財政補貼幫助大宇造船海洋的做法不妥。歐洲造船工業協會(CESA)秘書長 Douwe Cunningham 指出，儘管歐洲船企與大宇造船之間不存在直接競爭關係，但在目前全球造船產能過剩的背景下，為了能促進船企公平競爭，CESA 反對韓國政府援助大宇造船海洋。

面對質疑，韓國政府表示，對大宇造船提供支援的決定是債權

人的商業判斷。作為大宇造船的主要債權人，如果大宇造船出現問題，韓國產業銀行和韓國進出口銀行將蒙受巨大損失，因此這兩家銀行決定為大宇造船提供支援。

106 年 4 月韓國產業銀行(KDB)和韓國進出口銀行(K-EXIM)表示，作為大宇造船的債權人，將再向處境困難的大宇造船提供新的援助計畫，共計 6.7 兆韓元(約合 59.8 億美元)；這是韓國產業銀行和韓國進出口銀行為大宇造船提供的第二輪援助計畫。根據此計畫，如果貸款方和債券持有人同意以大宇造船 2.9 兆韓元的債務換取新股份，大宇造船將能夠獲得 2.9 兆韓元的新貸款。援助計畫還包括為 9,000 億韓元的無抵押貸款提供 3 至 5 年的債務寬限期。

在會議中，韓方代表作了以下的答辯：

1. 從 2015 年以來，韓國產業銀行(KDB)提供大宇造船 0.3 兆韓元貸款、0.4 兆韓元注資，以及 1.8 兆韓元債轉股協助。韓國進出口銀行(K-EXIM)提供大宇造船 0.3 兆韓元貸款以及 1.0 兆韓元債轉股協助。民營投資或是銀行均自願參與財務協助計畫。
2. 韓國政府對於大宇造船重整計畫：
   (1) 政府沒有介入。
   (2) 由參與公司自行決定救援計畫。
   (3) 由債務人自願同意債務調整
   (4) 所有的考量均為商業行為。

(七) 綠色船舶

綠色船舶研究的主要目的對三個主要航運船隻貨櫃船、散裝貨船和油輪確定 EEDI 在未來的減排措施。在這項研究中，不僅確定每噸每海浬或每 TEU 每海浬的排放量，也考慮了總船隊的總排放量。

主要研究問題是：在船舶設計中可以發現哪些演變和實施哪些減排技術可以獲得所需的 EEDI 值？

考慮 2020 年，2025 年和 2030 年在航運上燃料消耗(以及相關的二氧化碳排放)對 EEDI 的影響。

從方法論上進一步探討三個主要方面：

(1)EEDI 對未來燃料消耗和相關二氧化碳排放的影響。

(2)為達到 EEDI 的要求而影響到計之改變。

(3)燃料(CO2)減量技術。

三、下一次會議時程

OECD 第 125 次造船工作小組(WP6)會議時間訂為 2017 年 11 月 20 日~21 日舉行。

伍、結論與建議

一、結論

(一) 本次造船工作小組會議討論造船市場供需分析、政策發展、綠色船舶、政府補貼及支持措施、補償(修正)總噸以及建造能力量測、拆船、產能過剩、自製率要求規定、全球價值鏈等議題。

(二) 以上議題，與我國較有相關者有二項，其一是補償(修正)總噸(Compensated Gross Tonnage, CGT)以及建造能力量測(Measurement of Capacity)報告：修正總噸是在總噸基礎上，考慮船種及船舶建造複雜程度等因素的噸位單位。修正總噸不僅比過去使用載重噸、總噸更能正確反映造船工作量大小，同時還在一定程度上反映出船價高低和產值大小。因此，修正總噸能比較正確地表示造船產量、造船工作量和造船能力。調整修正總噸的定義可影響我國未來造船排名及地位之排名。

(三) 另一個與我國較有相關是貨櫃船、散裝貨船和油輪等三種主要航運船隻「綠色船舶」議題，重點在以方法論探討 EEDI(Energy Efficiency Design Index，定義是船舶單位載重，單位航速的碳排放)對未來燃料消耗和相關二氧化碳排放的影響，及探討如何改變設計以達到 EEDI 燃料(CO_2)減量的要求。

(四) 我方宜持續關注上述兩項議題及可能訂定的國際標準，以利後續我國船舶產業之發展。

(五) 下次會議預計於本(106)年 11 月下旬舉辦，同時辦理首屆 OECD 海洋週活動，屆時除造船工作小組於 11 月 20 日主辦之研討會外，21 至 22 日將舉行本年綠色成長及永續發展論壇-本年以「綠色海洋經濟(Greening the Ocean Economy」為主，23 至 24 日舉行海洋經濟之衡量研討會。出席下次造船工作小組會議各國代表，屆時均將獲邀出席 OECD 海洋週之各項活動。

(六) 本次會議與會代表，均盼爭取中國大陸參與。目前中國大陸為 OECD 之「關鍵夥伴(key partner)」，由於中國造船量影響全球產業供應鏈，造船工作小組秘書處已多次邀請其出席會議，惟尚未獲其同意，我方宜密切注意中國大陸是否出席會議，及其後續效應。

二、建議

(一) 當前船舶修正總噸計算系統的挑戰為，由於技術變革和法規更新使得船廠生產之產品組合(貨櫃船、油輪等)隨著時間發生變化，船舶之種類及船型大小日趨複雜化，新的船舶類別(如海上和巨型遊艇）的建造過程皆不同於現有之船種，使得原有系統難以應付當前之狀況，目前會議中又提出以船價作為船舶修正總噸計算之基礎，由於關係到我國未來造船排名及地位之排名，我方宜持續關注此議題之發展。

(二) 關於貨櫃船、散裝貨船和油輪三種主要航運船隻「綠色船舶」議題，我方宜持續關注 EEDI 對未來燃料消耗和相關二氧化碳排放的影響，及探討如何改變設計以達到 EEDI 燃料(CO2)減量的要求

(三) 有關本年 11 月 20 至 21 日召開之造船工作小組研討會，以及 OECD 海洋週相關活動，由於係涉及海洋經濟各層面議題，除造船業外，還包括航運、漁業、環保、創新、投資、旅遊等不同行業；屆時將可瞭解 OECD 及相關國際組織和個別國家在「海洋經濟」相關議題之研究成果、國際規範及未來討論或發展趨勢，建議駐法國代表處未來可洽邀相關單位派員參加此類會議。

(四) 歷年來我國以「獲邀國(invitee)」身分，受邀參加造船工作小組會議，為能持續獲得 OECD 造船工作小組的邀請，除了應積極參與造船工作小組的各項活動與會議，並應與 OECD 秘書處及各國互動良好關係與，同時應適時提供我國對相關議題之回饋意見，以確保我未來能繼續受邀與會。

陸、檢附相關資料

附件一：會議正式邀請函

駐法國代表處經濟組　函

機關地址：75bis Av. Marceau 75116
Paris France
承 辦 人：梅碧琦
聯絡電話：+33(0)1 5689 8103
傳　　真：+33(0)1 5689 8101
電子郵件：bcmei@orange.fr

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速別：最速件
密等及解密條件或保密期限：普通
附件：如文，共 12 頁(10600001090R.docx)

裝

主旨：有關 OECD 造船工作小組會議秘書處請各國提供造船業支持措施等資訊案，敬請查照惠辦。

說明：

一、庚續本組 3 月 2 日法經字第 10600000750 號函辦理，另本組本(106)年 3 月 27 日致貴局電子郵件諒達。

訂

二、OECD 為籌備本(第 124)次會議，籲請出席國家提供下列資訊：

(一)補貼及其他支持措施(Subsidies and other support measures)：為瞭解造船各國政府提供造船業支持措施最新資訊，OECD 秘書處請出席造船工作小組會議國家填復 2014 至 2016 年對造船業補貼及其他支持措施問卷(詳如附件)，本次問卷並要求提供執行該等支持措施之起訖日期(詳參本組上(105)年 5 月 31 日法經字第 10500002440 號函說明五)；本節請於本年 3 月 31 日前提供。

線

(二)標準貨務船換算噸數(compensated gross tonnage system，CGT)資訊：為瞭解各國造船業工作能量，OECD 請各國於 4 月 7 日前提供個別 CGT 資訊；此節請逕於

OECD 本節電子問卷網頁填復，詳參 http://survey.oecd.org/Survey.aspx?s=42dc98231e7847e3a74fd03cee1b2335。

(三)綠色船舶營造及營運政策(government policies encouraging the construction and operation of green ships)資訊：為討論如何有效推動綠色船舶，OECD盼各國於4月7日前，提供與綠色船舶建造及營運相關之個別或區域性政策措施資訊；此節請逕於 OECD 本節電子問卷網頁填復，詳如 http://survey.oecd.org/Survey.aspx?s=d49ea07a90db43c292242836f9246466&forceNew=true&test=true。

三、敬請協助配合辦理。

正本：經濟部工業局
副本：經濟部國際貿易局、財團法人船舶暨海洋研發中心、台灣國際造船股份有限公司

駐法國代表處經濟組

附件二：本次會議各國出席名單

Participants List for Council Working Party on Shipbuilding
(COUNCILWP6)
Liste des Participants pour Groupe de travail du Conseil sur la construction navale (CONSEILGT6)

18/4/2017 - 19/4/2017

All Sessions

Denmark/Danemark

Ms. Stine OLSEN	*Head of Section* *Blue Growth and Maritime Policy* *Danish Maritime Authority*

Finland/Finlande

Mr. Janne PELTOLA	*Counsellor (Competitiveness)* *Permanent Representation of Finland to the EU*
Mr. Juho KORTENIEMI	*Counsellor (Industry, Energy and Regional Development)* *Permanent Delegation of Finland to the OECD*

Germany/Allemagne

Ms. Anne JACOBS-SCHLEITHOFF	*Head of Division* *Maritime Industry and Coordinating office of the German Federal Government* *Federal Ministry for Economic Affairs*

	and Energy (BMWi)
Ms. Ariane KIESOW	*Office of the Federal Government Coordinator of the Maritime Industry Maritime Industry Task Force Federal Ministry for Economic Affairs and Energy (BMWi)*

Italy/Italie

Ms. Luciana MANCINI	*Government Official Division 4, Department of Navigation and Maritime and Air Transport Ministry of Infrastructures (MIT)*
Mr. Andrea PIANTINI	*Director Assonave Fincantieri S.p.A.*

Japan/Japon

Mr. Tomokazu KITAMURA	*Counsellor Permanent Delegation of Japan to the OECD*
Mr. Mitsuhiko IDA	*Deputy Director Shipbuilding and Ship Machinery Division, Maritime Bureau Ministry of Land, Infrastructure, Transport and Tourism (MLIT)*
Mr. Hiroshi IWAMOTO	*Counselling Staff Japan Marine United Corporation*
Mr. Takehide KIKUCHI	*Chief, Shipbuilding and Ship Machinery Division Maritime Bureau*

	Ministry of Land, Infrastructure and Transport (MLIT)
Mr. Sadaharu KOGA	*Deputy Director* *OECD Division, Economic Affairs Bureau* *Ministry of Foreign Affairs (MOFA)*
Mr. Takanori MAEDA	*Director* *Maritime* *Japan Ship Center (JETRO)*
Mr. Masato SATO	*First Secretary* *Embassy of Japan in France*
Mr. Takeo SUZUKI	*Director* *Shipbuilding Industry* *The Shipbuilders' Association of Japan*
Mr. Akihiro TAMURA	*Director* *Maritime* *Japan Ship Centre JETRO London*

Korea/Corée

Mr. Sanghee PARK	*Counsellor* *Permanent Delegation of the Republic of Korea to the OECD*
Ms. Uira JEONG	*Deputy Director* *Shipbuilding and Pland Division* *Ministry of Trade, Industry and Energy*
Mr. Kam-chan KANG	*Director* *Offshore and Shipbuilding Industry Division* *Ministry of Trade, Industry, and Energy (MOTIE)*
Mr. Bong-Ki KWON	*Senior Manager* *Korea Offshore & Shipbuilding*

	Association
Ms. Su Jung PARK	*Assistant* *Korean-English-French* *CONFERENCE INTERPRETER*

Norway/Norvège

Ms. Kristine PEDERSEN	*Senior Adviser* *Maritime Department* *Ministry of Trade, Industry and Fisheries*
Ms. Elin Østebø JOHANSEN	*Ambassador, Permanent Representative* *Permanent Delegation of Norway to the OECD and UNESCO*
Mr. Rolf HELMICH PEDERSEN	*Senior Vice President* *Export Credit Norway*
Mr. Johan MOWINCKEL	*Head of Strategy and International Relations* *Guarantee Institute for Export Credits (GIEK)*

Poland/Pologne

Mr. Damian BOROWIK	*Department of Maritime Economy* *Ministry of Maritime Economy and Inland Navigation*
Mr. Jerzy CZUCZMAN	*Director* *The Association of Polish Maritime Industries*
Ms. Agnieszka KURASZYK	*Department of Maritime Economy* *Ministry of Maritime Economy and Inland Navigation*

Mr. Maciej STYCZYNSKI	*Ministry of Maritime Economy and Inland Navigation*

Portugal

Ms. Maria do Rosário PENEDOS	*Expert* *Strategy Department* *Directorate General for Maritime Policy*

Turkey/Turquie

Mr. Güven DURAN	*Deputy Director General* *General Directorate of Shipyards and Coastal Structures* *Ministry of Transport Maritime Affairs and Communication*
Mr. Oral ERDOGAN	*Adviser on Economics and Education to the Executive Board* *Maritime Chamber of Commerce, Turkey*
Mr. Ayhan KAYATURK	*Director* *YATGIAS, Turkey*
Mr. Ercan OZOKUTUCU	*Deputy Secretary General* *General Secretariat* *GISBIR, Turkey*
Mr. Ö.Umut SENTURK	*Head of Department* *General Directorate of Shipyards and Coastal Structures* *Ministry of Transport Maritime Affairs and Communication*

EU/UE

Ms. Maria MADRID-PINA	*Policy Officer* *DG TRADE G3 - Market Access, Industry, Energy and Raw Materials* *DG Trade*

Russian Federation/Fédération de Russie

Ms. Iuliia GORIUNOVA	*Consultant* *Trade Representation of the Russian Federation in France*
Mr. Oleg SAVELYEV	*Assistant Professor Trade Policy Chair* *Higher School of Economics*

South Africa/Afrique du Sud

Ms. Zukiswa KIMANI	*Chief Director* *Industrial Policy - Industrial Development Division* *Department of Trade and Industry*

Chinese Taipei/Taipei chinois

Mr. Ming-Jung CHEN	*Division Director* *Ship and Ocean Industries R&D Center*
Mr. Chwan-Chang LIU	*CEO* *Innovation and Research Center* *CSBC Corporation*
Mr. Wen-Tsan LU	*Section Chief, Metal and Mechanical Industries Division*

	Industrial Development Bureau *Ministry of Economic Affairs*
Ms. Antonia MEI	*Deputy Division Director* *Economic Division* *Taipei Representative Office in France*

Croatia/Croatie

Mr. Robert BLAŽINOVIC	*Head of Sector for Industry and Investments* *Sector fot Industry and Investments* *Ministry of Economy*
Mr. Siniša OSTOJIC	*General Manager* *Croatian Shipbuilding Corporation*

Philippines

Mr. Ramon HERNANDEZ	*Director, Shipyards Regulation Service* *Maritime Industry Authority* *(MARINA)*
Mr. Reynaldo LIGNES	*Shipbuilding Champion* *Manufacturing Industries Service* *Board of Investments*

Romania/Roumanie

Mr. Paul ILICENCO	*Executive Vice President* *President of ANCONAV* *Daewoo Mangalia Heavy Industries*
Mr. Ion ILIE	*Senior Counsellor*

Division for Industrial Policies and Energy Transport
Ministry of Economy, Trade and Relations with Business Environment

Viet Nam

Mr. Bui Thien THU — *Deputy Administrator*
Viet Nam Maritime Administration (VINAMARINE)
Ministry of Transport of Viet Nam

Mr. Nghiem Quoc VINH — *Deputy Director*
Hai Phong Maritime Administration (VINAMARINE)
Ministry of Transport of Viet Nam

Trade Union Advisory Committee (TUAC)/Commission syndicale consultative (TUAC)

Mr. Kan MATSUZAKI — *Director, ICT, Electrical and Electronics*
Shipbuilding and Shipbreaking
IndustriALL Global Union

Mr. Akira YAKUSUE — *Assistant General Secretary*
Japan Federation of Basic Industry Workers' Unions-JBU

Korea Shipbuilder's Association (KSA)/Association coréenne des constructeurs de navires (KSA)

Mr. Oh-Yoon KWON — *Senior Manager*

International Cooperation Department
Korea Shipbuilders' Association

Barry Rogliano Salles

Mr. François CADIOU *Vice-President*

Danish Maritime

Ms. Jenny BRAAT *Managing Director*

SEA Europe, Ships & Maritime Equipment Association

Mr. Dario BAZARGAN

University of Antwerp

Dr. Edwin VAN HASSEL *Senior Researcher*
Faculty of Transport and Regional economics

Verband Für Schiffbau und Meerestechnik E.V.

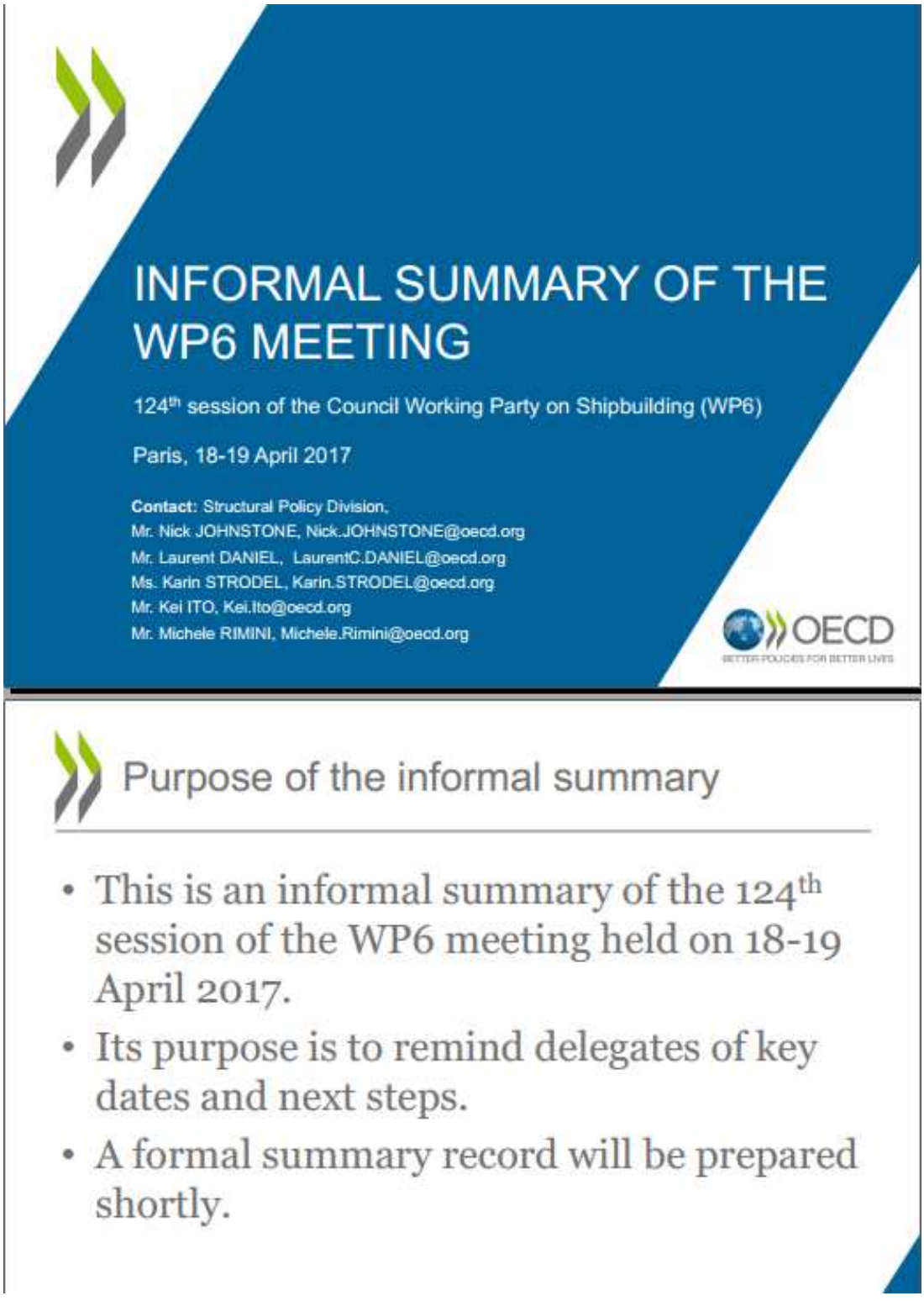
Mr. Reinhard LÜKEN *General Managing Director*
(German Shipbuilding and Ocean

Industries Association)

OECD/OCDE

Ms. Sanela BAJROVIC	*Assistant* *STI/SPD/STEEL*
M. Laurent C DANIEL	*Head of Unit - Senior Economist/Policy Analyst* *STI/SPD/SHIP*
Ms. Karin GOURDON	*Junior Economist/Policy Analyst - Shipbuilding* *STI/SPD/SHIP*
Mr. Kei ITO	*Economist/Policy Analyst* *STI/SPD/SHIP*
Mr. Nick JOHNSTONE	*Head of Division* *STI/SPD*
Mr. Dirk PILAT	*Deputy Director* *STI*
Mr. Michele RIMINI	*Junior Policy Analyst* *STI/SPD/STEEL*
Ms. Renske SCHUITMAKER	*Consultant* *IEA/STO/ETP/EDT* *IEA*
Mr. Andrew WYCKOFF	*Director* *STI*

附件三：會議簡報內容


INFORMAL SUMMARY OF THE WP6 MEETING
124th session of the Council Working Party on Shipbuilding (WP6)
Paris, 18-19 April 2017
Contact: Structural Policy Division,
Mr. Nick JOHNSTONE, Nick.JOHNSTONE@oecd.org
Mr. Laurent DANIEL, LaurentC.DANIEL@oecd.org
Ms. Karin STRODEL, Karin.STRODEL@oecd.org
Mr. Kei ITO, Kei.Ito@oecd.org
Mr. Michele RIMINI, Michele.Rimini@oecd.org
OECD
Purpose of the informal summary
• This is an informal summary of the 124th session of the WP6 meeting held on 18-19 April 2017.
• Its purpose is to remind delegates of key dates and next steps.
• A formal summary record will be prepared shortly.

Outline of the informal summary

1. Adoption of the Agenda
2. Approval of the Summary Record
3. Supply and demand analysis
4. Policy developments
5. Green ships
6. SSU
7. WP6 Instrument review
8. Future WP6 projects
9. Other business
10. Dates of next meetings

3

Item 1 – 2: Agenda, Summary Record

- Item 1: Agenda
  - WP6 adopted the **agenda** including additional presentation by Vietnam and Japan at session 4 ii)
- Item 2: Summary record
  - WP6 **approved** the **summary record** of the 123rd session.

Item 3. Supply and demand analysis (1/3)

- Mr. François Cadiou (Barry Rogliano Salles - BRS) presented some of the findings of the 2017 BRS' annual review notably on shipbuilding capacity cuts. He notably highlighted in this presentation the severity of the current crisis.
- Ms. Karin GOURDON updated delegates on the report [C/WP6(2016)6/REV1] on Imbalances in Shipbuilding.
  - The WP6 agreed on the proposal by the Secretariat to include two methodologies to calculate capacity
  - The Chair concluded that the WP6 agreed on the declassification of the report including comments expressed at the meeting and to be sent to the Secretariat by 14 May.

Item 3. Supply and demand analysis (2/3)

- Mr. Nick Johnstone updated the WP6 on the project with China's Development Research Centre (DRC) on Industrial upgrading for green growth in China, and indicated notably that the Policy brief and the Synthesis report would be released after July.

Item 3. Supply and demand analysis - cgt (3/3)

- Mr. Michele RIMINI updated the WP6 on the results of the questionnaire on the CGT system (room doc 1), while Mr. Laurent DANIEL introduced the proposal to establish an informal working group on CGT and capacity measurement (room doc 2).
- Ms. Jenny Braat (Danish Maritime) presented the cgt system. She notably mentioned that cgt is a unit of measurement intended to provide a common yardstick to reflect the relative output of merchant shipbuilding activity in large aggregates.
  - She supported the establishment of an OECD working group on cgt to decide how to make a revision of the existing system and to make it.
- Delegates expressed their wish to clearly set the objectives and ensure the participation of China, and asked the Secretariat to invite the major shipbuilding economies to participate in the process and possibly draft revised Terms of reference for the informal working group.
- The Secretariat will report on the progress made at the next WP6 meeting.

Item 4. Policy developments i) (1/2)

WP6 Inventory of subsidies and other support measures and report on support measures in other economies:

1. Mr Kei ITO (OECD Secretariat) presented the 2017 update of the Inventory [C/WP6(2017)3].
   - Japan asked the Secretariat to add a table in Annex 1 showing the measures reported including measures that have been withdrawn.
2. Ms Karin GOURDON (OECD Secretariat) presented the report on support measures of selected economies not participating in the WP6 Inventory [C/WP6(2017)5].
   - Delegates made several requests to improve the report including suppressing paragraph 15, contacting relevant governments, checking properly sources and information reported, including possibly elements from the EU market access database, and including measures that distort free trade. The Secretariat will prepare the next edition of the report according to the proposals made in its presentation and the remarks by delegates for the consideration of delegates at the spring 2018 WP6 meeting.

Item 4. Policy developments i) (2/2)

- Mr Kei ITO presented a proposal to extend the WP6 Inventory coverage to the provision of finance by governments (including SOEs) more widely. [C/WP6(2017)5].
  - Japan tentatively supported the option 2. Korea asked some clarification on what means « non confidential information » and mentioned that it has no mandate to decide and it should differ its decision. EU proposed to submit to the Secretariat some information on the *de minimis* threshold stipulated in the EU State Aids Rules. Sea Europe asked a question on how we can define more favorable conditions when there is no other forms of financing.
  - The Chair concluded that the Secretariat should prepare a revised version of the document 5 on the basis of the comments by delegates for a new discussion at the 21 November WP6 meeting.

Item 4. Policy developments ii) Roundtable on policy developments (1/2)

a) Presentation by the Secretariat of a proposal on a structured process regarding the questions and answers on policy developments affecting the shipbuilding industry in selected economies. C/WP6(2017)7
  - Delegate agreed on the proposal in the document [ClWP6(2017)7] except on the fact that the answers should be necessarily "in writing".
  - The Secretariat noted that the first sentence in the c) of the paragraph 5 in the document should be moved to the b) of the same paragraph.
  - Delegates decided that questions on the market situation will be discussed at a specific session on recent developments in the shipbuilding market.

Item 4. Policy developments
ii) Roundtable on policy developments (2/2)

b) Presentation by Korea on selected policy developments in Korea following written questions received.

- Korea presented the answers to the questions by Japan and EU. Korea suggested to engage more emerging shipbuilding economies in WP6 work, and to further discuss WP6's future work, including sharing best practices and future oriented topics notably autonomous ships, green ships, etc.
- The Secretariat took well note of Korea's suggestions and mentioned that they could be included in the future discussion on the new WP6 mandate
- Following a suggestion from Japan, the Secretariat will prepare a summary of the discussion in the Q&A sessions and bring it into the context of the instrument review.

c) Presentation by EU on selected policy developments in Spain following written questions received.

- EU answered the questions by Norway. Korea asked why European shipbuilding industry performed so well last year. EU mentioned that it was because of the good performance of the cruise ship segment.

d) Presentation by Japan on selected policy developments following written questions received.

- Japan answered to the questions by Korea

e) Oral questions and answers on latest policy developments affecting the shipbuilding sector

- Vietnam presented the recent policy development in the Vietnamese shipbuilding industry

Item 5. Green Ships

1. Mr. Edwin VAN HASSEL (Antwerp University) presented the main findings of the report [C/WP6(2017)8] on the emission reductions of the three main shipping segments given international regulation (notably the EEDI) and other market and policy factors.
2. Mr. Kei ITO presented possible items to be discussed at the 2 November WP6 workshop
   - Delegates decided to discuss at the session 8 after having heard the presentation on the GGSD

- Turkey notified the delegates about their report on the Competitiveness of the Shipbuilding Industry in Turkey,

Item 6. SSU – latest developments

- The EU provided information on the most recent meeting of the International Working Group (IWG).
  - Ms. Madrid mentioned that the latest WP6 meeting in Brasilia was attended by 7 OECD economies and all BRIC countries. She said that various issues were discussed including the job description of the IWG's Secretary General, the scope of the shipbuilding guidelines, and maximum repayment terms. The next meeting will take place in Washington DC next week.
- The ECG provided information on the discussion at the March 2017 meeting of the Participants to the Arrangement on the Officially Supported Export Credits.
  - It was notably mentioned that comments from Canada, the US, Japan and Norway were received, and 2 issues were to be discussed at the technical expert group (TEP) of the participants to the OECD Arrangement on export credits which will take place in June.
  - Delegates asked the secretariat to clarify the possibility to discuss on the revision of the SSU at the WP6 (not IEG meeting). LEG mentioned that it would be possible if participants to the SSU are at the table.
- Delegates agreed to continue monitoring closely the work of the IWG and to continue the suspension of the Informal Expert Group (IEG), with further consideration to take place at the WP6's next meeting.

Item 7. WP6 Instrument review

- The secretariat presented the discussion paper on the Instrument review.
- Delegates insisted that the process on instrument review needs to involve China. Some delegates commented that the establishment of the *ad hoc* group and/or discussion on legally binding instruments have to be conditional upon the China's participation.
- Delegates asked secretariat to prepare a summary on changes in the recent shipbuilding market and on the past discussions of the SBA negotiation group.
- Delegates agreed on the process that;
  - Delegates will give their initial views on the questions in the document [C/WP6(2017)7] by 19 May
  - Secretariat will prepare an official letter from the secretariat to be sent to Non-

Item 8. Ongoing and future WP6 projects

- Karin and Laurent made an update on ongoing and future WP6 projects, including ship recycling, excess capacity, local content requirements, global value chains, timetable for WP6 mandate renewal, and contribution to the OECD Ocean Economy Week. They asked inputs and comments from delegates on these projects.
  - Delegates expressed various views on the different work items notably ship recycling and local content requirements. The Secretariat will take into account of the comments (to be mentioned in details in the summary record) in the ongoing and future projects.
- Nori from the Secretariat of the Economic Analysis and Statistics Division of the Directorate for Science, Technology and Innovation (STI) presented selected OECD work on Global Value Chains relevant for the WP6.
- Jaco from the OECD Environment directorate presented the 2017 OECD Green Growth & Sustainable Development (GGSD) Forum on "greening the ocean economy".
- Discussion on the potential theme of 2017 Workshop. Delegates agreed on the theme proposed by the Secretariat for the 2017 Workshop (green growth of maritime industries). Japan supported the inclusion in the agenda of the ideas from Korea (notably smart ships, autonomous shipping, ...). The Chair concluded that the Secretariat will prepare a draft agenda for the workshop including ideas mentioned by WP6 delegates.

21-Apr-2017

15

Item 9. Dates of next meetings

- The next WP6 workshop and meeting will be held in Paris on 20 November and 21 November 2017.

Item 10. Other business

- The Chair thanked Mr Akihiro Tamura (Vice Chair from Japan) who served twice as Acting Chair of the WP6 for his contribution to the WP6. The designation of a new Vice Chair will be done via written procedure.

The decline in global shipbuilding capacity What to expect in the next decade?

OECD COUNCIL WORKING PARTY ON SHIPBUILDING

PARIS, 18 APRIL 2017

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The decline in global shipbuilding capacity
What to expect in the next decade?

1. Some Historical Background p.4
2. Market Shares 1990-2017 p.7
3. VLCC Dock Evolution p.9
4. Current Shipyard Status p.14
   - Korea
   - China
   - Japan
5. Outlook p.26

HHI, South Korea

Some historical background (1)

- **1970s:** Shipbuilding market split 50/50 between Europe and Japan
- **1973:** First oil shock
- **1978**: Second oil shock
- **Late 1970:** fall in demand - fall of newbuilding prices
- **1980s:** European and Japanese yards heavily subsidized – South Korean yards growing

Some historical background (2)

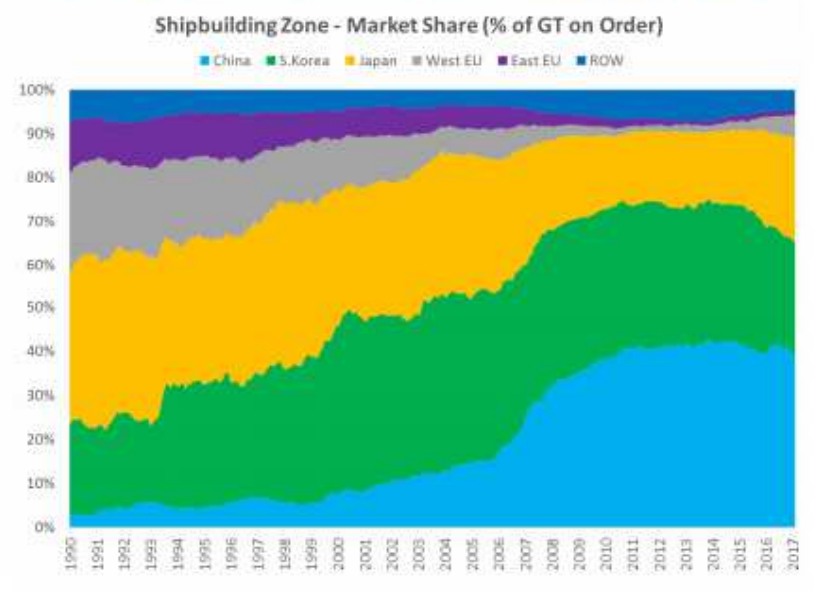
- **Mid 1980s – late 1990s:** after several years of deep crisis, the shipbuilding industry restructures itself:
  - **In Europe:**
    - Countries are giving up: UK, Sweden, France, Poland… with Governments reducing the amount of subsidies to the shipbuilding industry
    - Large and medium-sized yards will never re-open
    - Only European shipyards focusing on small and/or specialised vessels survived
  - **In Japan:**
    - First wave of mergers
    - Capacities mothballed
    - Some newbuilding yards turned to ship repair
- **1990s:** South Korea shipbuilding capacity grows
- **2000s:** Chinese shipbuilding capacity expands (see slide 7 with number of VLCC docks put in service)

Some historical background (3)

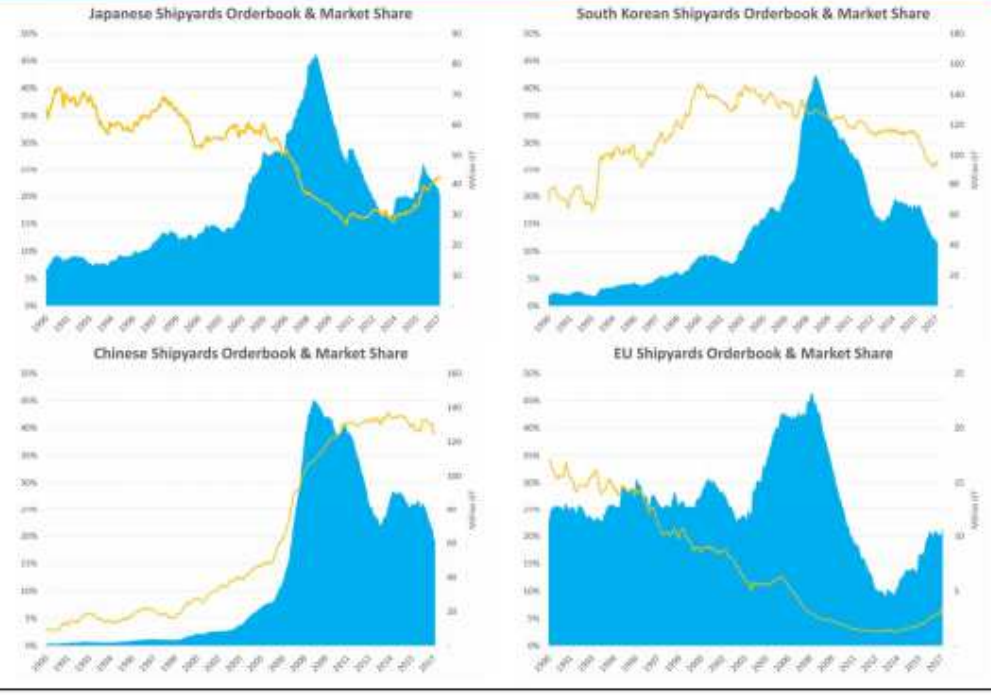
- **2000-2008:** Boom in newbuilding activity – Over-ordering
  - In 2008: the number of ships on order accounts for 36% of the existing fleet !
  - Significant increase in shipbuilding capacity
- **2008:** Lehman Brothers failure – the bubble burst
- **2008 – 2017:** fall in demand – fall in newbuilding prices
- **2010s:** yard closures in Korea and China – mergers in Japan
  - Chinese shipbuilding industry vulnerable due to the inexperience and unproductivity at several shipyards. New government programs are limited to support only a handful of viable shipyards (and especially state-owned shipyards)

SHIPBUILDING MARKET SHARES

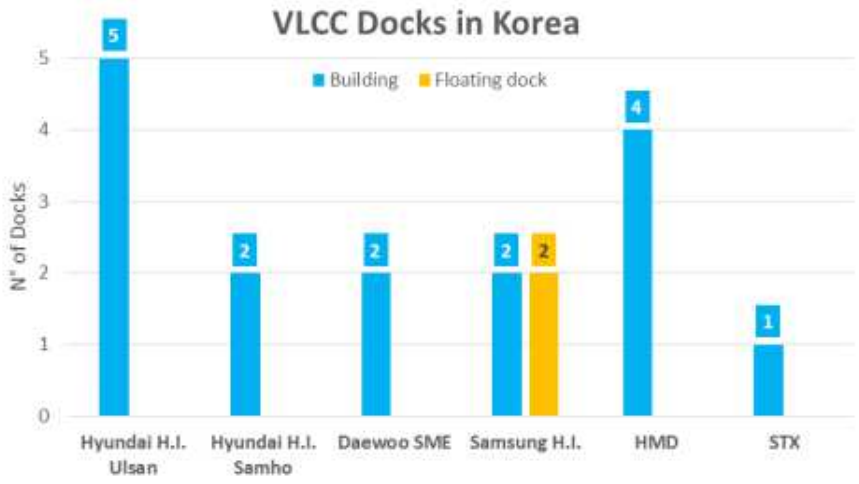
SHIPBUILDING MARKET SHARES 1990-2017



SHIPBUILDING MARKET SHARES

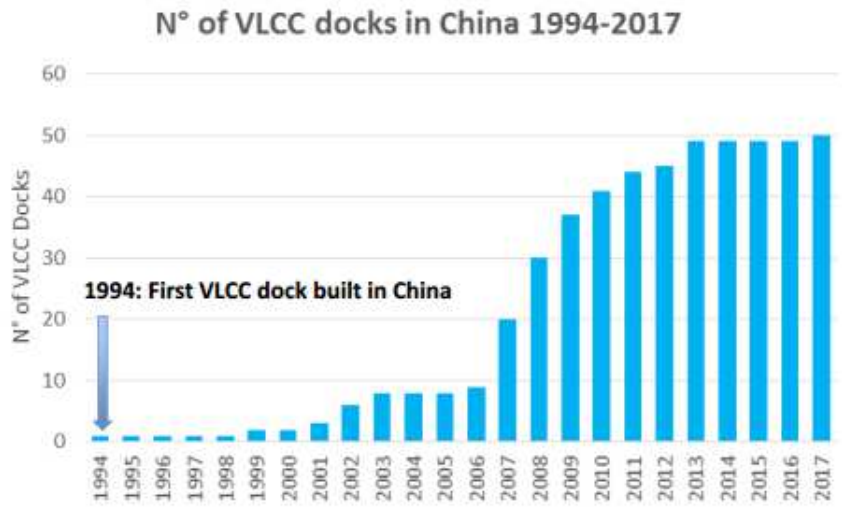


BRS | VLCC DOCKS IN KOREA

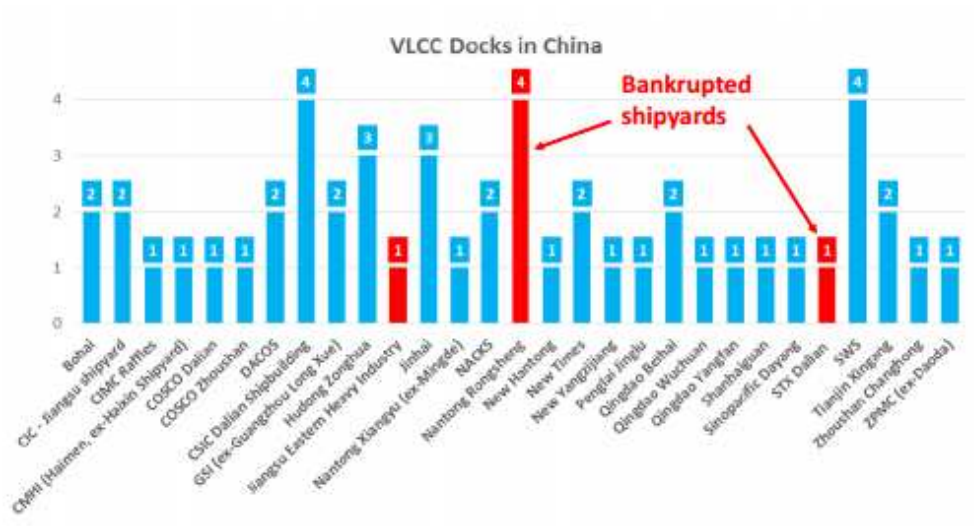


BRS | EVOLUTION OF VLCC DOCKS

Evolution of VLCC docks

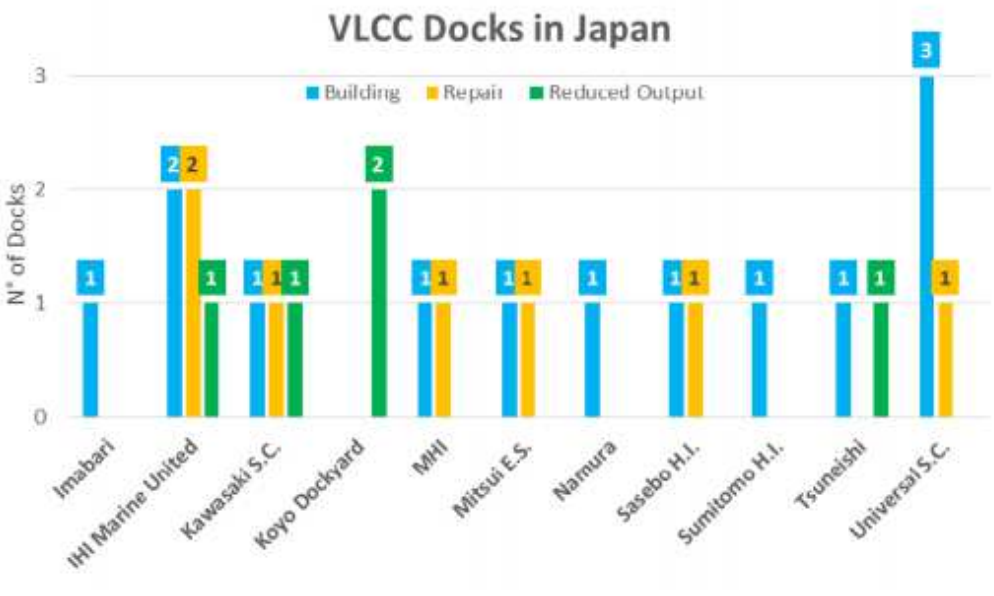


VLCC DOCKS IN CHINA



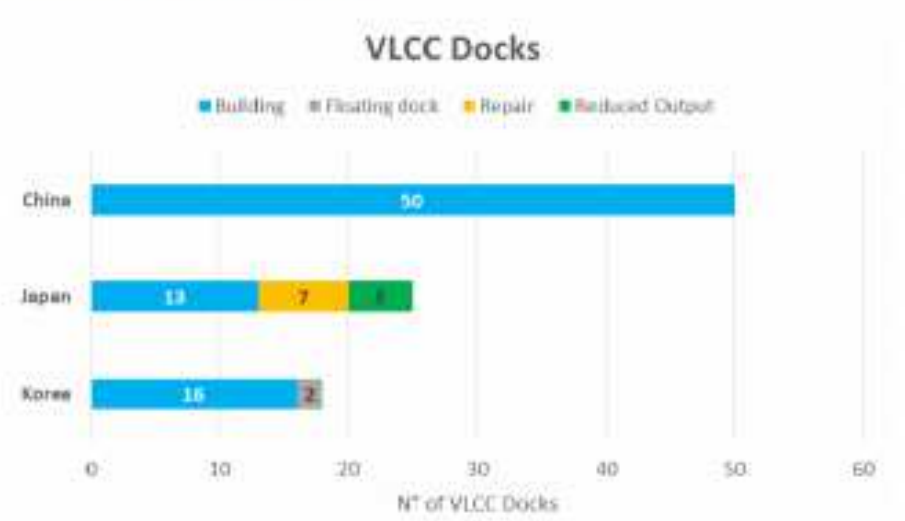
Bankrupted shipyards: VLCC docks could probably be purchased and put into use again

VLCC DOCKS IN JAPAN



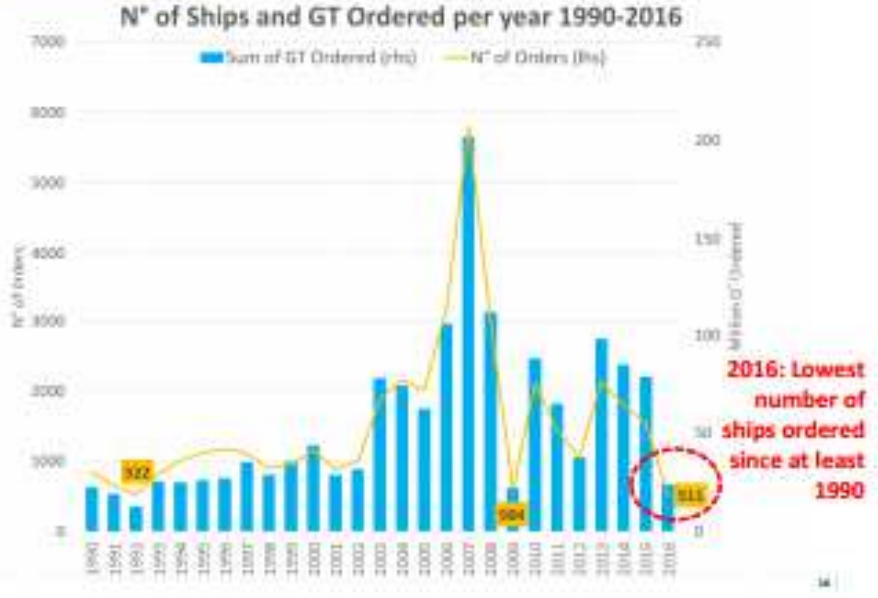
VLCC DOCKS

Result of expansion



SITUATION TODAY

Situation Today




BRS
STATUS OF THE KOREAN YARDS
Top 3 Korean shipyards post massive losses due to offshore downturn
HHI lost $523m on delayed orders
Korean yard backlog hits 12-year low
South Korea steps in with $9.5bn bail-out fund
Eximbank says Korean yard slump to last into 2017
Shell cancels huge $4.6bn FLNG order at Samsung
Korean banks' bad loans hit 15-year high
STX collapse set to reduce tanker orderbook


BRS
STATUS OF THE JAPANESE AND CHINESE SHIPYARDS
Japan
Japanese yards battle hard to survive
Tsuneishi ponders closure of its largest Japanese yard
Mitsubishi Heavy seeks four-way shipbuilding alliance
Kawasaki Heavy Industries consider closing its shipbuilding business
China
One-Third of China Shipyards Face Closure as Orders Slump
China shipbuilders urged to merge to stay afloat
State-owned Chinese yards put pressure on private players
Chinese shipyards facing collapse
Another 30% yard capacity in China needs to disappear
18 Nov 2016, Seatrade Maritime

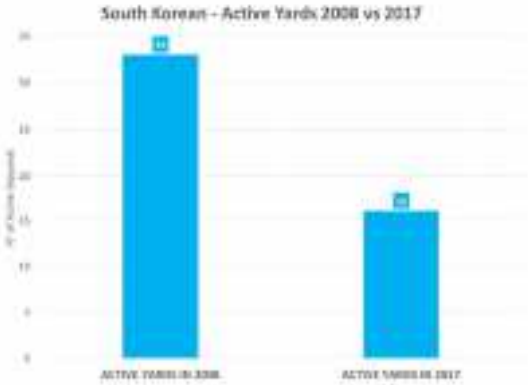
KOREA

Korean Shipyards - Deliveries in Dwt per year

KOREAN SHIPYARD CONSOLIDATION

Korean Shipyard Consolidation

ACTIVE YARDS IN 2008	STATUS IN MARCH 2017
21ST CENTURY SB	CLOSED
DAE SUN	ACTIVE
DAEWOO MAEMAN	ACTIVE
DAEWOO	ACTIVE
[illegible]	CLOSED
HANJIN SUBAKI	ACTIVE
HYUNDAI GUNSAN	ACTIVE
HYUNDAI MIPO	ACTIVE
HYUNDAI SAMHO	ACTIVE
HYUNDAI ULSAN	ACTIVE
IL HEUNG	CLOSED
JINSE HI	CLOSED
KOREA YANGHE TONGYEONG	CLOSED
MOKPO SBF	CLOSED
ORIENT SHIPYARD	CLOSED
PONDO PLANTSE	CLOSED
SAMHO SB	CLOSED
SAMKANG SBT	ACTIVE
SAMSUNG	ACTIVE
SHIN HI	CLOSED
SHINWANG HI MOKPO	CLOSED
SHINWANG HI ULSAN	CLOSED
SHIPLA SB	CLOSED
SHINYAN	CLOSED
SLS SB	CLOSED
SPP-GOMDONG	ACTIVE
SPP SACHEON	ACTIVE
SPP TONGYEONG	ACTIVE
STX OSAB BUSAN	ACTIVE
STX OSAB JINHAE	ACTIVE
SUNGDONG	ACTIVE
TK HEAVY	CLOSED
TK HEAVY	CLOSED



Korean Shipyard Consolidation

Active Shipyards – (Latest upgrades)

- HHI ulsan (expanded docks 9 and 10 opened in the mid 1990s)
- HHI Samho (new yard established in 1996 – ex Halla)
- HHI Gunsan (new yard established in 2006/2007)
- HMD (switched from repairs to newbuilding gradually from 1997 to 2005)
- DSME (one or two additional floating docks)
- HANJIN (new yard in the Philippines in 2006)
- SHI (third VLCC dock opened in mid 1990s)
- DAEHAN (new yard started in mid 2000s)
- SUNGDONG (new yard opened in mid 2000s)
- SPP (new yard established in mid 2000s)
- STX (one new VLCC dock opened in late 1990s)
- DAESUN

Closed Shipyards

- SLS
- SAMHO
- 21C
- C&H
- HEUN WOO STEEL
- JINSE DONGHWA
- IL HEUNG
- SHINAN
- KOREA shipyard
- KS Shipbuilding
- KY HI
- Mokpo
- Myung Il
- Samjin
- Sinan

Chinese Shipyards - Deliveries in Dwt per year

Since 2011, 27 shipyards in China have been bankrupted (25 closed downed and 2 were re-organised), leading to a cut in steel handling capacity by 29% (-4.3 million ton of steel).

Only 2 small state-owned shipyards have been closed down, all other closed shipyards were privately owned and lacked support from the government.

JAPANESE SHIPBUILDING CONSOLIDATION

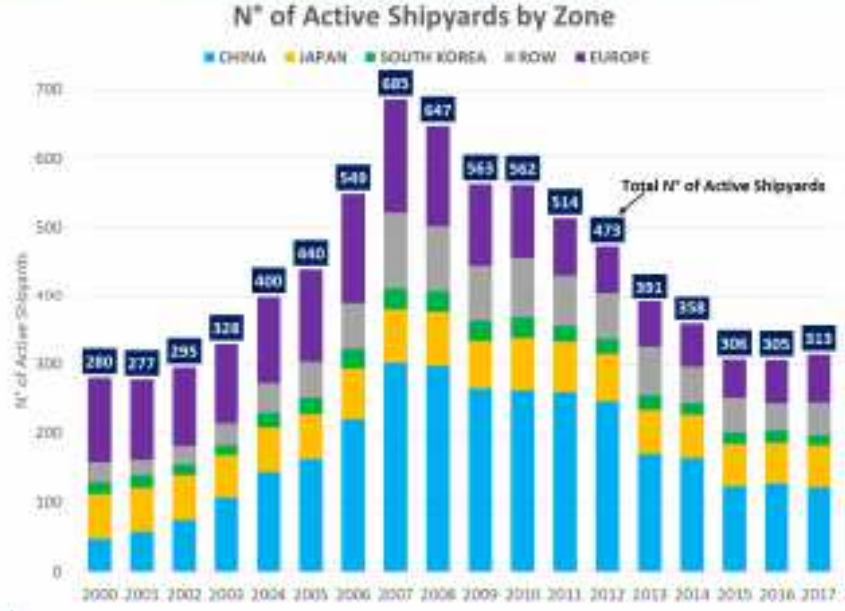
Mergers in Japan to reduce capacity

- Only one single yard open in Japan (Imabari)
- However some expansions abroad:
  - Tsuneishi (The Philippines) and China
  - Kawasaki (China) (Yards and Docks)
- Some steel bloc factories (Imabari)
- Following the merger between Universal and IHI MU to form JMU, there are discussions about mergers between Imabari, MHI, Mitsui and KHI

Tsuneishi Heavy Industries – Cebu Island, Philippines

Japanese Mergers: The JMU case

BRS | Global Yard Capacity



BRS | OUTLOOK

What to expect end 2010s/early 2020s? (1)

We estimate that capacity reductions will continue in the three main shipbuilding areas and could reach up to:

- 50% in Korea
- 20% in Japan
- 30% in China

Will shipyards re-open?

- Some probably, fewer in Korea and Japan than in China
- European yards which closed in 1980s and 1990s never reopened

What to expect end 2010s/early 2020s? (2)

Will there be a new China ?

- Vietnam ? India ? Africa ?
- That remains doubtful taking into account experience in the boom 2000s years

Impact on shipping markets ?

- Newbuilding prices will rise ...
- In 1987, a VLCC newbuilding could be purchased for less than $40m; just four years later, the same VLCC cost $100m
- No Chinese boom in the meantime...just imbalance between supply and demand...but only the future will tell!

ITEM 3.2: UPDATE ON THE REPORT ON IMBALANCES IN THE SHIPBUILDING INDUSTRY

Document: C/WP6(2016)6/REV1]

124th session of the Council Working Party on Shipbuilding (WP6)

Paris, 18-19 April 2017

Contacts: Structural Policy Division,
Mr. Laurent DANIEL, LaurentC.DANIEL@oecd.org
Ms. Karin GOURDON, Karin.GOURDON@oecd.org
Mr. Ito KEI, Kei.ITO@oecd.org

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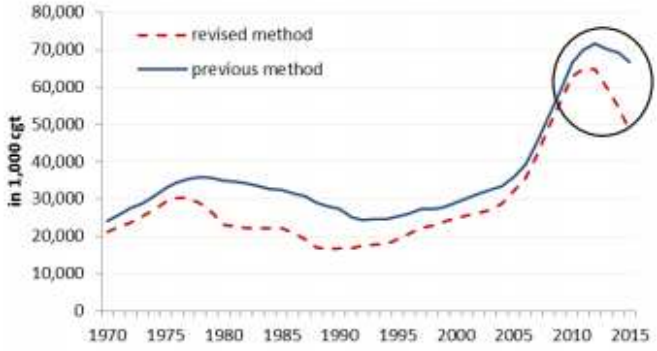
Comments on capacity estimations

- Demand to use same approach as Clarkson's Forecast Club: highest yard output over the preceding two years*
  - Leading to lower capacity estimates as it assumes that the capacity installed in the years of economic upturn (before the economic crisis) has been reduced or dismantled until today.
  - Same conclusions on global overcapacity and low capacity utilization rates of yards.

*capacity_t=max(capacity)_t,t-2)
e.g. capacity in 2015 is the highest output in the preceding two years, notably 2013 and 2014, and the year 2015 itself.
Our previous approach was based on the maximum output during the previous 15 years.

Change in **capacity** estimates compared to previous approach

Global capacity results of previous vs. revised method, 1970-2015



Source: OECD based on IHS Seaweb and Clarkson World Fleet Register.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Difference in gt	(3,705)	(3,724)	(3,380)	(2,870)	(3,088)	(3,712)	(5,072)	(6,933)	(10,241)	(14,636)	(18,249)
in % of previous results	-10%	-9%	-8%	-6%	-5%	-6%	-7%	-10%	-15%	-21%	-27%

- Lower capacity levels with new approach due to the fact that the output during the years of strong economic activity is not included in the capacity estimates after 2010.

Change in **capacity utilisation rates** compared to previous approach

Global capacity results of previous vs. revised method, 1970-2015

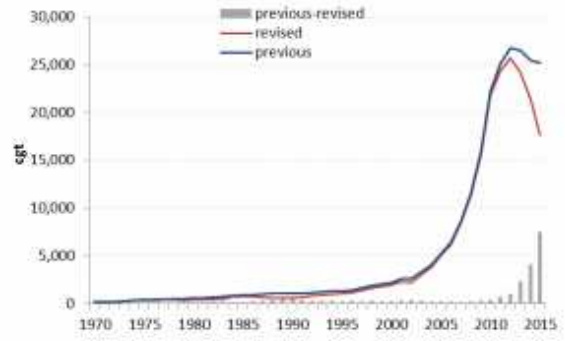
Source: OECD based on IHS Seaweb and Clarkson World Fleet Register.

Capacity Utilisation Rates		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Difference in percentage points to previous results	IHS	9.1	8.5	7	5.3	4.3	4.9	6.3	7.5	9.8	14.3	21.4
	Clarkson	12.6	12.6	10.5	7.3	6.2	5.2	6.8	8.8	10.1	15.9	23.1

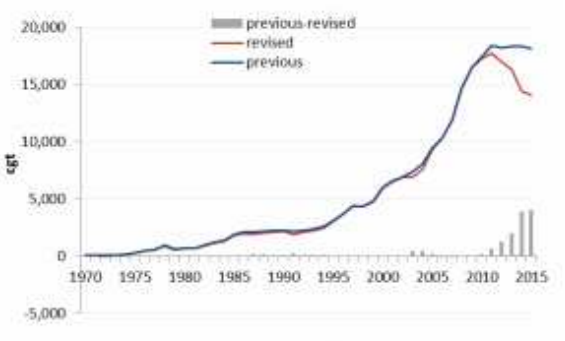
- Lower capacity utilisation rates with new approach.

China and Korea

China: capacity estimates, 1970-2015



Korea: capacity estimates, 1970-2015



Source: OECD based on IHS Seaweb.

-30% in 2015

-22% in 2015

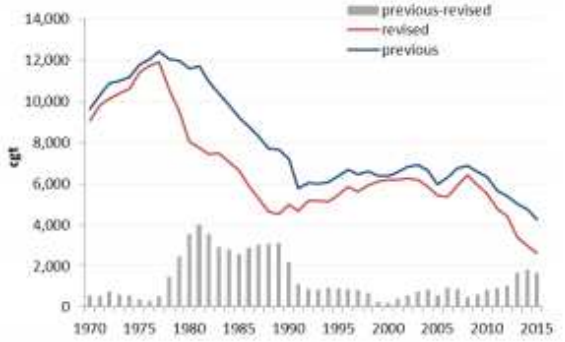
20/04/2017

5

Japan and EU28

Japan: capacity estimates, 1970-2015

EU28: capacity estimates, 1970-2015



Source: OECD based on IHS Seaweb.

-21% in 2015

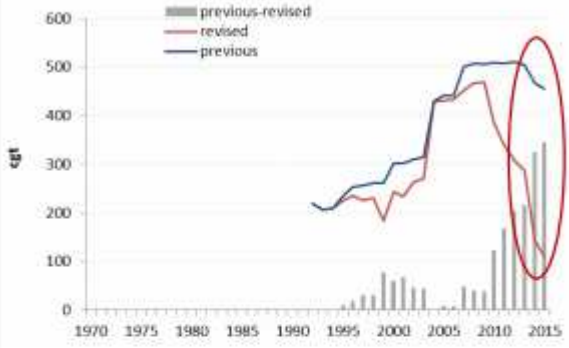
-38% in 2015

20/04/2017

6

Croatia and Italy

Croatia: capacity estimates, 1970-2015



Italy: capacity estimates, 1970-2015

Source: OECD based on IHS Seaweb.

-76% in 2015

-56% in 2015

Poland and Germany

Poland: capacity estimates, 1970-2015

Source: OECD based on IHS Seaweb.

Germany: capacity estimates, 1970-2015

-17% in 2015

-38% in 2015

Australia and Finland

Australia: capacity estimates, 1970-2015

Finland: capacity estimates, 1970-2015

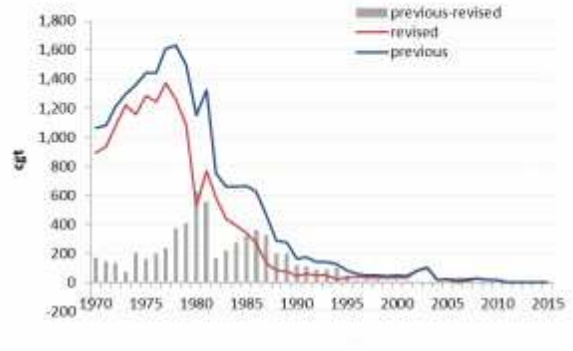
Source: OECD based on IHS Seaweb.

-44% in 2015

Same in 2015

Sweden and France

Sweden: capacity estimates, 1970-2015



France: capacity estimates, 1970-2015

Source: OECD based on IHS Seaweb.

Same in 2015

-25% in 2015

USA and Brazil

USA: capacity estimates, 1970-2015

Source: OECD based on IHS Seaweb.

-15% in 2015

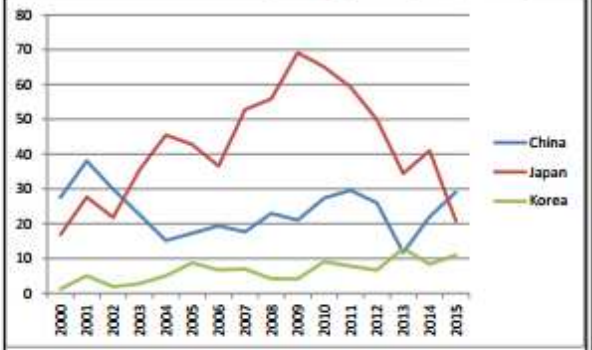
Brazil: capacity estimates, 1970-2015

-19% in 2015

Comment on graph about domestic orders

National owners' orders at national yards as share of total national owners' orders at global yards by order year, country

National owners' orders at national yards as share of total orders at national yards by order year, country



Note: Share of each country's owner placing orders at their own countries' yards based on order year is calculated by each country's owners' orders to their own country's shipyards (in gt) divided by each country's total orders (in gt)
Source: OECD based on IHS Seaweb (2016).

- Previous graph (lhs) shows demand side and that mostly Chinese and Korean owners place orders at their national yards.
- Small shipping industry in Korea compared to China and Japan.
- Revised graph (rhs) shows supply side and highlights that Korean yards are less dependent on Korean demand but foreign demand.

Thank you.

Changes of capacity utilization rates from previous approach

Change in Capacity Utilisation Rates, 2005-2015

Database	CUR	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IHS	Previous	78.9	82.5	82.0	84.7	78.7	80.1	75.7	69.5	56.2	53.7	56.6
	Revision	88	91	89	90	83	85	82	77	66	68	78
Difference Rev to Previous		**9.1**	**8.5**	**7.0**	**5.3**	**4.3**	**4.9**	**6.3**	**7.5**	**9.8**	**14.3**	**21.4**
Clarkson	Previous	73.4	77.4	78.5	82.7	78.8	78.8	74.2	67.2	54.9	52.1	55.9
	Revision	86	90	89	90	85	84	81	76	65	68	79
Difference Rev to Previous		**12.6**	**12.6**	**10.5**	**7.3**	**6.2**	**5.2**	**6.8**	**8.8**	**10.1**	**15.9**	**23.1**

Source: IHS Seaweb and Clarkson World Fleet Register.

- Higher CURs with new approach that amount to around 78% in 2015.

INDUSTRIAL UPGRADING AND GREEN GROWTH IN CHINA

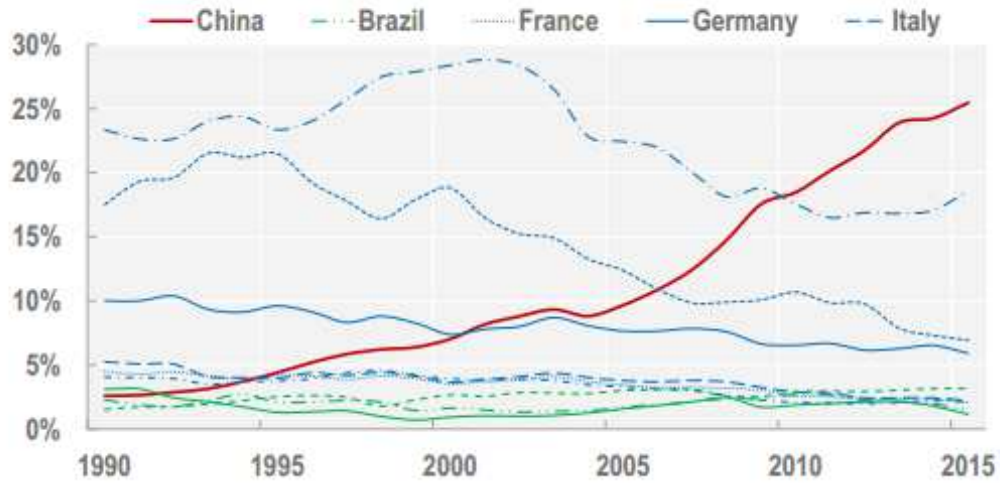
Progress Report

WP6 – 18-19 April, 2017

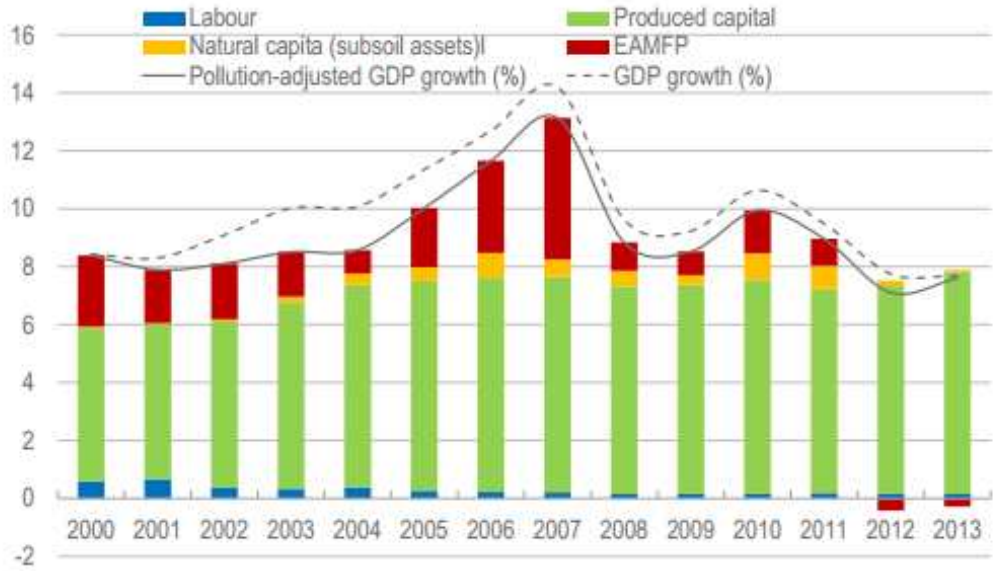
OECD
BETTER POLICIES FOR BETTER LIVES

The Rise of Factory China

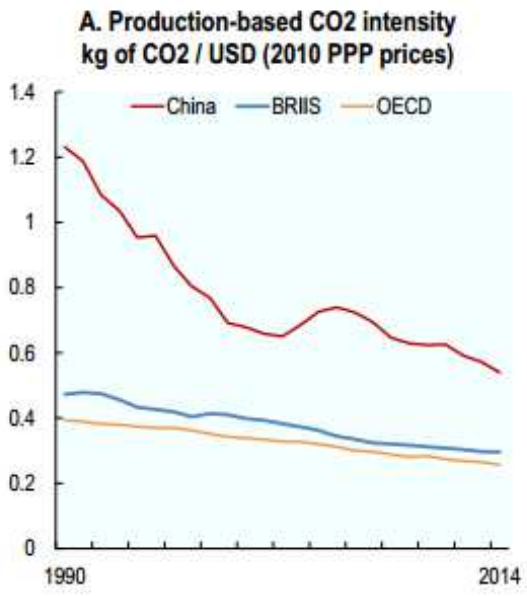
Percentage share of total world manufacturing value added, 1990-2015

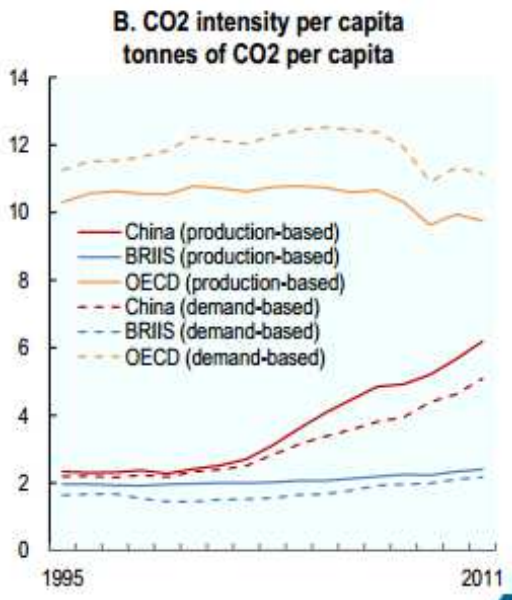


Diminishing Returns? Environmentally-Augmented MFP in China

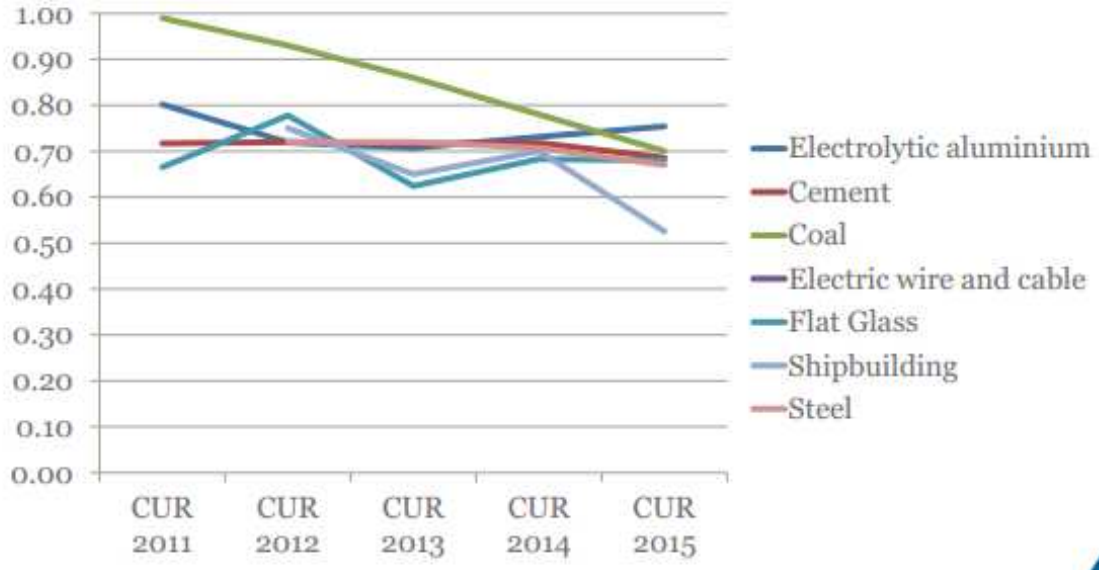


Green growth in China (and ROW)?

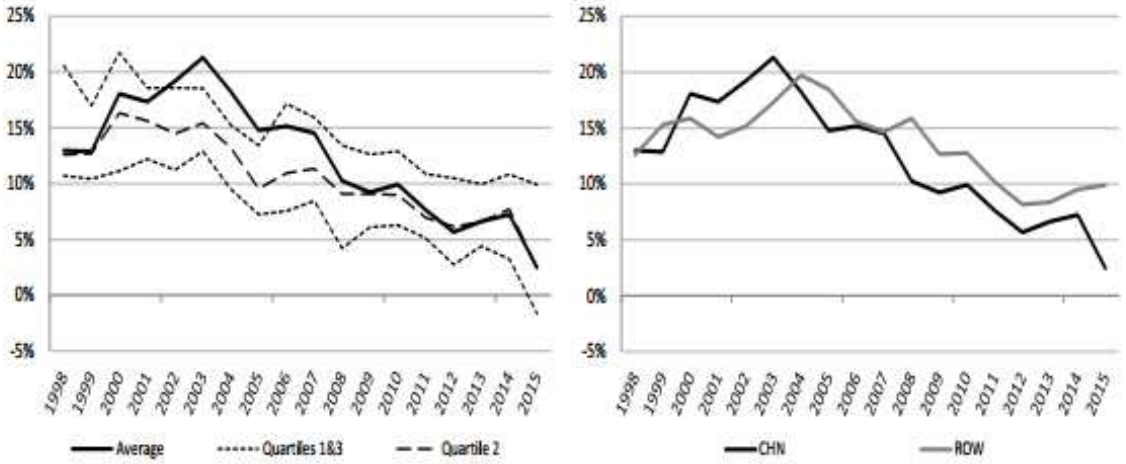




Capacity Utilisation in China – Heavy Industry

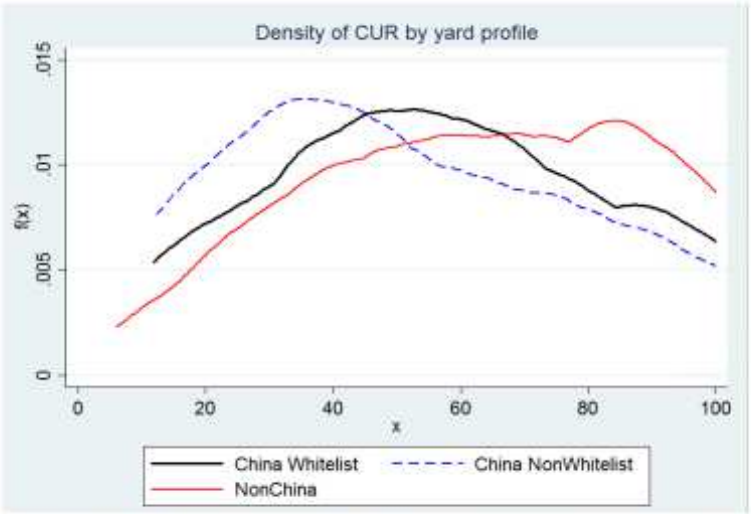


Evolution of operating profits of Steel-making firms in China and the rest of the world, 2000-2015



The "White List" and CUR of shipyards

Capacity utilisation rates by yard profile, 2014



- Non-white listed yards with lower CUR than white-listed and non-Chinese yards.

20-Apr-2017

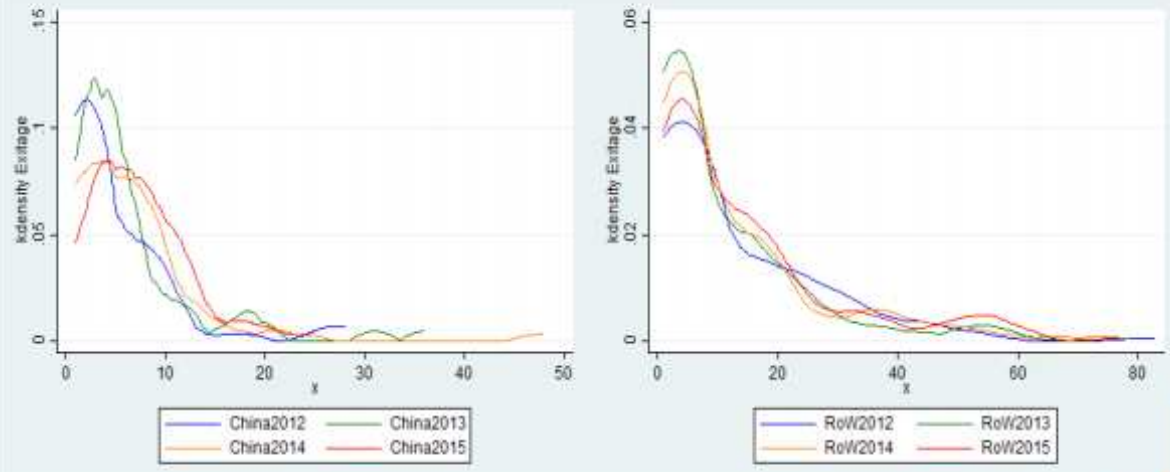
Source: OECD based on IHS Seaweb (2016)

7

But Who Exits? And How Much?

Distribution of exit age by yard profile, 2012-2015

(a) Exit age of Chinese yards (b) Exit age of non-Chinese yards



Source: OECD based on IHS Seaweb (2016)

Note: Exit age is calculated by subtracting the year the yards became non-active from the year the yard recorded first completion

8

Preliminary Policy Lessons (General)

1. General framework conditions and removal of explicit or implicit support which prolong the life of less productive (and more polluting) plants
2. Address the social costs of restructuring – and encourage the efficient reallocation of labour and capital within and across sectors
3. Improve the provision of information of value to financial markets (including risks – environmental and other)
4. Assess and evaluate the effects of policy measures – and particularly those whose impacts are likely to be more indirect (e.g. supporting M&A).
5. Environmental policy can also help – take away the "rent" from polluting incumbents

Preliminary Policy Lessons (Specific)

1. Properly and resolutely address the problem of "zombie enterprises":
   - For those zombie firms which are also responsible for the delivery of certain public services, promote restructuring that allows a separation of the commercial from the social functions and thereby ensure fair competition.
   - Develop a timetable to stop supporting zombie firms in order to allow market discipline to force them to exit.
2. Facilitate the exit of less productive and more polluting firms:
   - Strengthen enforcement of environmental protection, quality and safety standards, and urge non-compliant firms to exit the market, in accordance with laws and regulations.
   - Ensure the efficient allocation of support for dismantling of fixed capital to encourage firms to reduce capacity and mitigate environmental damage.
   - Reinforce the responsibility of local governments in providing social safeguard and re-employability of displaced workers. Integrate laid-off workers affected by plant closure in the local employment service schemes so as to share the burden with companies.
   - Eliminate all sorts of barriers to exit, including those potentially arising from inefficient bankruptcy law.

CGT

SEA Europe
Ships & Maritime Equipment Association

The compensated gross tons CGT system

CEO Jenny Braat, Danish Maritime

History

SEA Europe
Ships & Maritime Equipment Association

- The Development in the CGT system
  - 1968
  - 1977
  - 1982
  - 1984
  - 1994
  - 2007
  - 201?

OECD WP VI on Shipbuilding 18. April 2017

Why

The scope and definition of compensated tonnage has been unchanged: "compensated gross tonnage, cgt, is a unit of measurement intended to provide a common yardstick to reflect the relative output of merchant shipbuilding activity in large aggregates such as "World", "Regions" or "Groups of many yards".

The cgt-system is a statistical tool developed in order to enable macro-economic evaluations of shipbuilding workload to be made at a more correct basis than is possible on a pure dwt- or gt-basis.

Base ship

Base ship:

Dwt	15,000	metric ton
Gt	10,000	ton
Engine output	6,000	PS (MCR)
Service speed	14.0	knots
Complements	25	persons
No. of holds	5	
Cargo handling	10 x 10 ton derricks	
Ship form	aft. engine, aft. bridge, 'tween decker.	

Content

a. Only direct working hours used for erecting steel hulls (hull structures and outfittings)and for installing and performing trial runs of machinery and/or equipment on board a ship in the premises of a shipyard are taken into consideration. Working hours used to manufacture prime movers, auxiliary machineries, outfittings and raw materials are thus excluded.

Productivity

b. Productivity differences from yard to yard, company to company or country to country are ignored. By hypothesis, the productivity is supposed to remain constant at an average level all over the world. Sistership effect (cost reduction derived from series construction of more than one ship having same type, size and specifications) and/or scale effect (cost savings caused by mass production

CGT system from 1994

SEA Europe
Ships & Maritime Equipment Association

KOPI

Intermediate OECD CGT coefficients by 1 January 1994

SHIP TYPE	- 4,000	4,000 - 10,000	10,000 - 30,000	30,000 - 50,000	50,000 - 90,000	90,000 - 160,000	160,000 - 250,000	250,000 & over	REMARKS
Crude oil tankers	1.70	1.15	0.75	0.60	0.50	0.40	0.30	0.25	
Crude oil tankers	1.85	1.30	0.85	0.70	0.55	0.45	0.35	0.30	
Product carriers & chemical carriers	2.30	1.60	1.05	0.80	0.60	0.55			
Bulk carriers	1.60	1.10	0.70	0.60	0.50	0.40	0.30		
Combined carriers			0.90	0.75	0.60	0.50	0.40		
General cargo ships	1.85	1.35	1.00	0.85	Apply same coefficient as for "Double hulled oil tankers"				
Reefers	2.05	1.50	1.25						
Full container ships and high speed liners		1.20	0.90	0.80	0.75	0.65			
Ro/Ro vessels	1.50	1.05	0.80	0.70	0.65				
Car carriers	1.10	0.75	0.65	0.55	0.45				
L.P.G. carriers	2.05	1.60	1.15	0.90	0.80	0.70			
L.N.G. carriers	2.05	1.60	1.25	1.15	1.00	0.75			
Ferries	3.00	2.25	1.65	1.15	0.90				
Passenger ships	6.00	4.00	3.00	2.00	1.60	1.40	1.25		
Other non-carrying cargo ships: Fishing	4.00	3.00	2.00						
Other non-carrying cargo ships: Others	3.00	3.20	2.00	1.50					

2007 CGT-system

SEA Europe
Ships & Maritime Equipment Association

$$cgt = A * gt^{B}$$

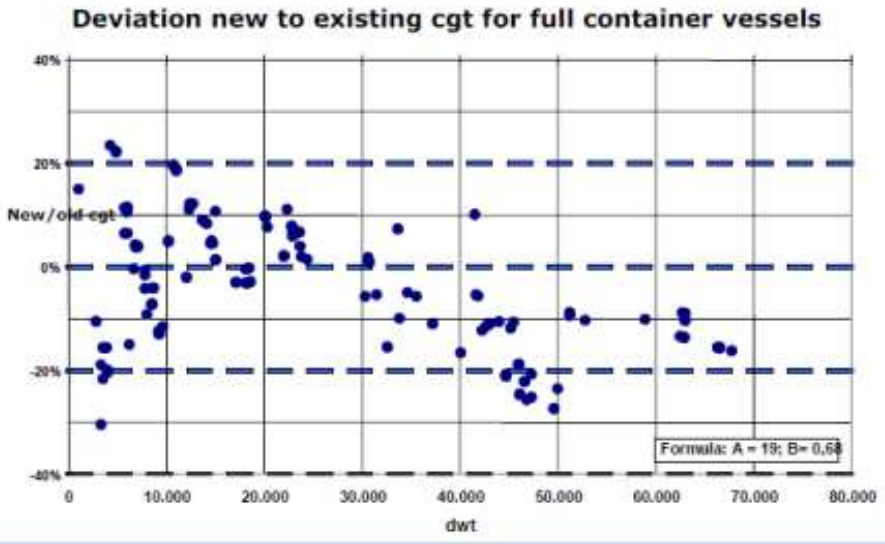
OECD WP VI on Shipbuilding 18. April 2017

A & B factors

The A and B factors are shown in the table below.

Ship type	A	B
Oil tankers (double hull)	48	0.57
Chemical tankers	84	0.55
Bulk carriers	29	0.61
Combined carriers	33	0.62
General cargo ships	27	0.64
Reefers	27	0.68
Full container	19	0.68
Ro ro vessels	32	0.63
Car carriers	15	0.70
LPG carriers	62	0.57
LNG carriers	32	0.68
Ferries	20	0.71
Passenger ships	49	0.67
Fishing vessels	24	0.71
NCCV	46	0.62

Method



Comparison

SEA Europe
Ships & Maritime Equipment Association

Full container ship comparison between old and new cgt

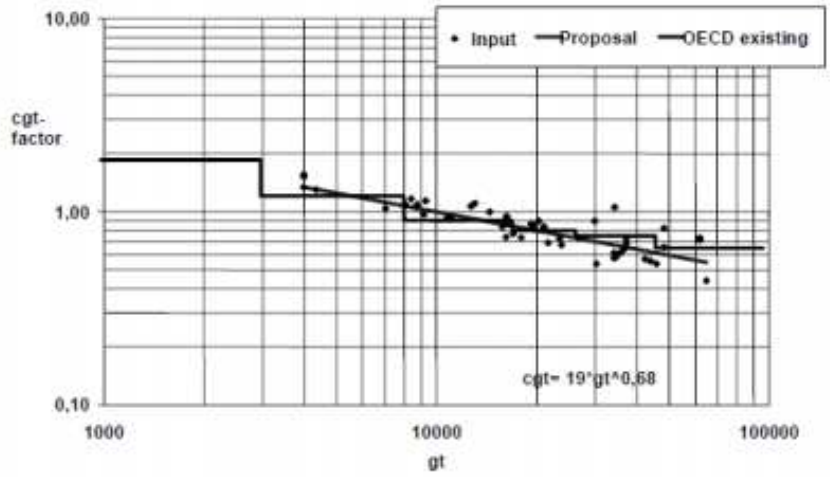


Fig. 3: Deviations between sample-cgt and formula-cgt.

Other Non Cargo Carrying Vessels

Cgt – what could be done

- Revise the current system
  - same methodology
  - historically comparable
  - not change history
- A totally change of the cgt system
  - historically comparable
  - the present system works for the purpose
- Change to value in USD
  - will it reflect capacity or production ?
- Delete the system
  - there is no alternative

Suggestion for future

- An OECD working group on cgt should be etablish
  - Members needs to be market and industry experts
  - The four large shipbuilding regions should be involved

The task for the group should be to decide how to make a revision of the existing system and to make it.

ITEM 3.4: USE AND REVISION OF THE COMPENSATED GROSS TONNE (CGT) SYSTEM

124th session of the Council Working Party on Shipbuilding (WP6)

Paris, 18-19 April 2017

Contacts: Structural Policy Division,
Mr. Laurent DANIEL, LaurentC.DANIEL@oecd.org
Mr. Michele RIMINI, Michele.RIMINI@oecd.org

OECD
BETTER POLICIES FOR BETTER LIVES

Background

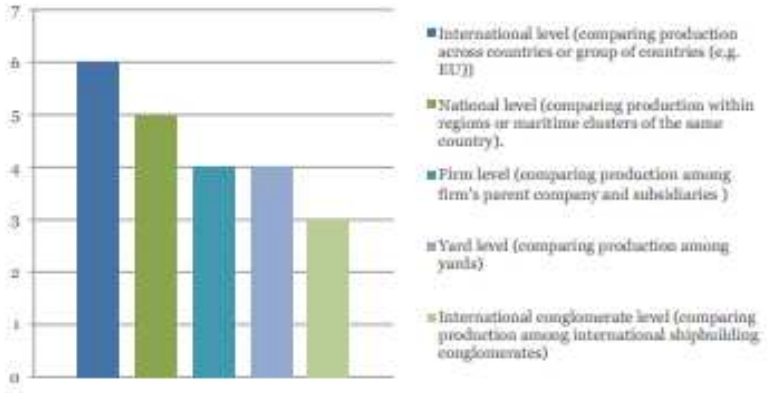
- The need for a revision of the current CGT system was highlighted during the WP6 workshop on 9 November 2015 (C/WP6/M(2016)1)
- The Secretariat explored alternative approaches based on second hand sale prices (C/WP6(2016)3) discussed at the 122nd and 123rd session of the WP6
- WP6 delegates asked the Secretariat to consult with maritime experts to better understand the use of CGT in practice so that the system can be revised by taking into account current uses and its original purpose
- The Secretariat developed an electronic questionnaire to shed lights on the different uses made by countries, shipbuilding associations and shipyards of the CGT system
- Distributed between February and April 2017 to WP6 delegates. **11** answers submitted of which **3** from governments and **8** from industry associations

Questionnaire results: using CGT to inform policy

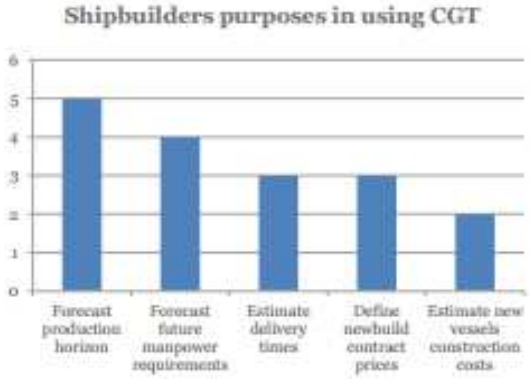
- CGT often used in capacity related discussions, particularly in the case of Portugal, Italy, Croatia, Romania and Poland
- Croatia and Poland use CGT as a measure to fix capacity reduction targets, while Japan and Turkey have used CGT for this purpose in the past
- In the majority of countries CGT is employed to discuss market imbalances, while in Croatia and Turkey CGT is also used to decide upon the allocation of government support
- CGT also used for market analysis, measuring industry productivity, estimates of the fleet's value
- CGT also useful to understand the complexity of ships built in an economy

Reported use and original purpose

Level of aggregation at which CGT is most frequently used



Results: shipbuilders use of CGT



- CGT also used to compute KPIs relative to productivity and profitability
- CGT used as one of the metrics to evaluate strategic decisions such as change in the production mix or conversion into shipbreaking activities

Establishment of an informal working group on capacity measurement and cgt (1/2)

- 2 December 2016: WP6 delegates decided to follow a light approach for the revision of cgt : Technical work would be needed
- Draft ToR for the establishment of an informal working group on capacity measurement and cgt
- Possible participation of China
  - MIIT asked WP6 to collaborate informally on capacity measurement and cgt
  - Bureau members indicated that the participation of China is a prerequisite to establish the informal working group

Establishment of an informal working group on capacity measurement and cgt (2/2)

- Proposals for practical arrangements
  - Each WP6 delegation would have the possibility to nominate 1 or 2 participants
  - The Secretariat would deal with organizational matters
    - Resources and WP6 PWB implications
  - The informal working group would be allowed to decide collectively to invite other ad-hoc participants
  - The WP6 will choose the frequency of informal working group meetings
    - Possibly back-to-back with WP6 meetings and/or with the meetings of JECKU's market group - 8 June in Denmark?
  - The informal working group would be established until the end of 2018.

Thank you.

ITEM 4.1. INVENTORY UPDATE FOR 2017

Document: C/WP6(2017)4REV1

124th session of the Council Working Party on Shipbuilding (WP6)

Paris, 18-19 April 2017

Contact: Structural Policy Division,
Mr. Laurent DANIEL, Laurent.C.DANIEL@oecd.org
Ms. Kei ITO, Kei.ITO@oecd.org

OECD
BETTER POLICIES FOR BETTER LIVES

Inventory of support measures

- **Objectives**
  - Provide transparency of support measures in the shipbuilding industry.
- **Questionnaire**
  1. Type of the measure
  2. Authority/agency responsible
  3. Outline
  4. Volume of support measures
  5. Start/end date

*Data are available from 2004 in the current format; https://community.oecd.org/community/inventory

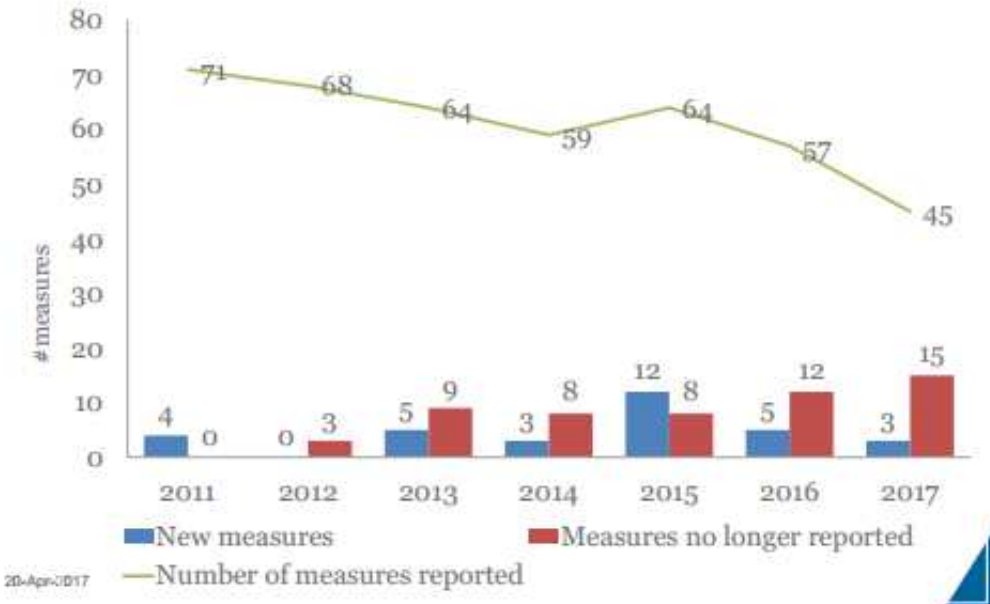
Inventory update in 2017

- 13 economies submitted inventory updates
- 45 measures are included in total

	#Measures	#Economies
A. Direct transfer of funds by Governments	3	2
B.Indirect transfer of funds by Governments	1	1
C. Loans on terms and conditions more favourable than those commercially available	2	2
D. Loan guarantees that support loans on terms and conditions more favourable than those commercially available	2	2
E. Export or Home Credits	21	9
G. Government acquisition of interest in a yard or yards	1	1
H. Government revenue that is foregone or not collected	3	1
K. Support for Research and Development	12	8
Total	**45**	**13**

*Measures categorized in F, G, I, J. L. M. N. O are not included in the submission from any economies

The number of reported measures



20-Apr-2017

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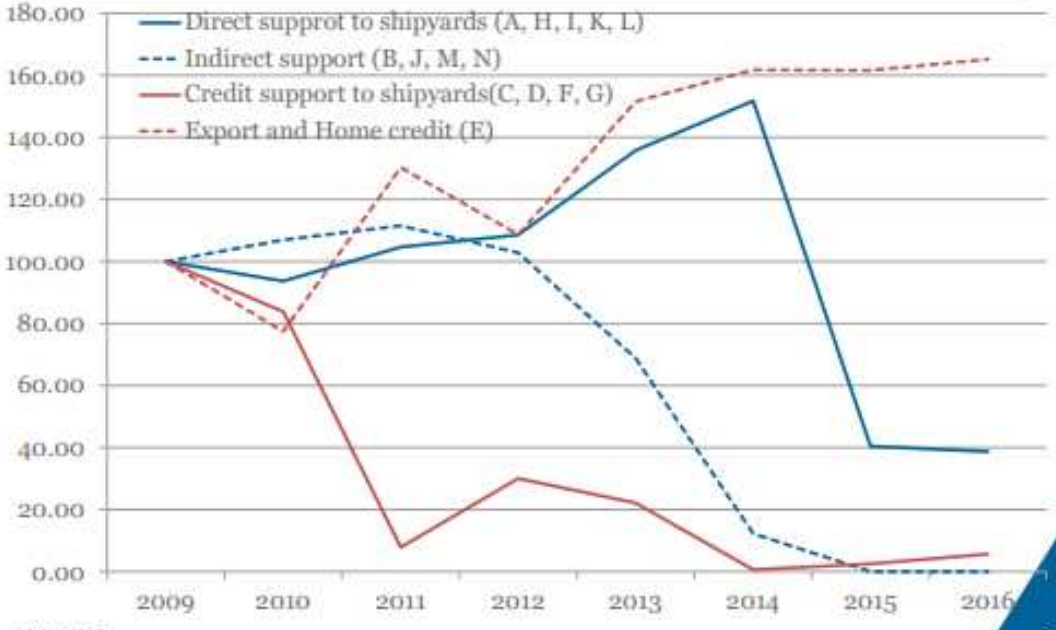
Support measure volume index (100 in 2009)



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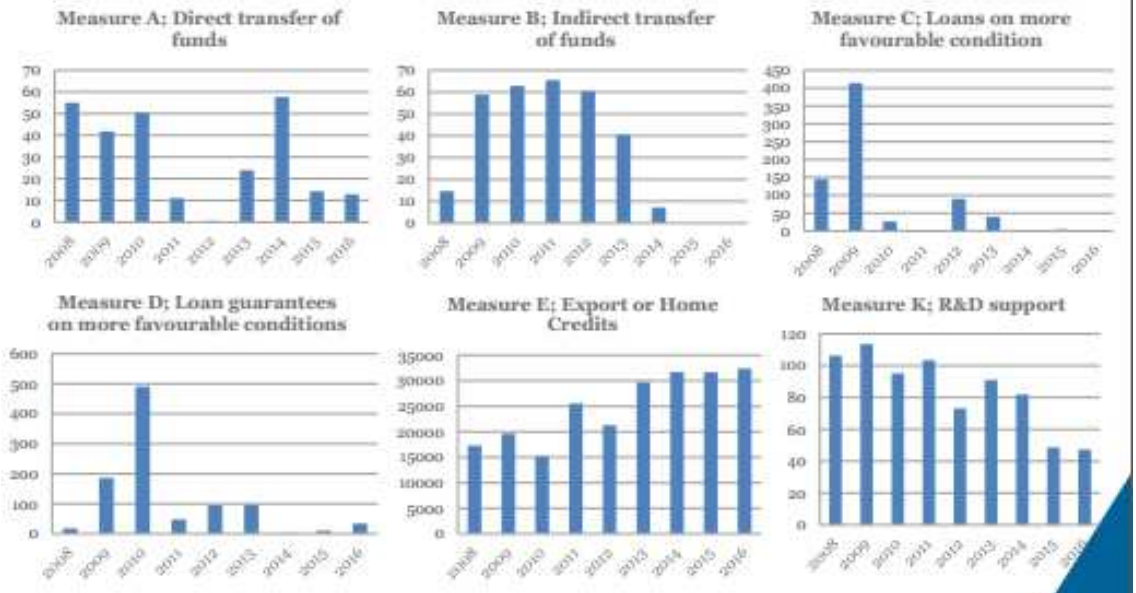
Volume of support by type of measures, in million USD



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6

Clarification on Start date and End date

- Start date; the year [and month] in which the measure became valid
- End date; the year [and month] in which the measure was no longer in place

e.g. a subsidy provided between April 2008 and March 2015; Start date is April 2008 and End date is March 2015

Thank you.

ITEM 4.2: SUPPORT MEASURES OF SELECTED COUNTRIES NOT PARTICIPATING IN THE WP6 INVENTORY

Document: C/WP6(2017)6

124th session of the Council Working Party on Shipbuilding (WP6)

Paris, 18-19 April 2017

Contacts: Structural Policy Division,
Mr. Laurent DANIEL, LaurentC.DANIEL@oecd.org
Ms. Karin GOURDON, Karin.GOURDON@oecd.org
Mr. Ito KEI, Kei.ITO@oecd.org

OECD
BETTER POLICIES FOR BETTER LIVES

Background & Goal

11-12 June & 9-10 November 2015 WP6 meeting:

- WP6 agreed on list of support measures not reported in the WP6 Inventory with a focus on the largest economies not participating in the Inventory by using public and specialised sources.

Document C/WP(2017)6:

- Selection of measures sourced from public and specialized sources.
- Measures could potentially be covered by the Inventory definition.
- Items are only for discussion.
- Not exhaustive list of measures.
- Descriptions of measures may be inaccurate and/or some measures may not have been introduced yet or may have since been rescinded.

Support categories of the Inventory

TYPE	DESCRIPTION
A	Direct transfer of funds by Governments
B	Indirect transfer of funds by Governments
C	Loans on terms and conditions more favourable than those commercially available
D	Loan guarantees that support loans on terms and conditions more favourable than those commercially available
E	Export or Home Credits
F	Governments taking over, or otherwise absolving the industry from debts
G	Government acquisition of interest in a yard or yards
H	Government revenue that is foregone or not collected
I	Provision by government of infrastructure (other than general infrastructure), goods or services on non-commercial conditions
J	The purchase of goods or services from the industry by government at above market rates
K	Support for Research and Development
L	Any form of income or price support
M	Protection of the domestic market
N	Domestic build or domestic content requirements
O	Other official regulations and practices

Measures in China (1/4)

China:

1. **One Belt, One Road initiative [n/a]**
   - China Development Bank intends to support Cosco Shipping with USD 26 bn from 2017 to 2021 to maintain the company's financial stability & promote its products range.
   - Target by 2020: 40% share of global high-end vessel market; 35% of global offshore market; Top 10 yards should construct over 70% of China's ships.
   - Aim to expand overseas through M&A, infrastructure investments, development of R&D facilities.
   - Promoting innovations at yards, use of ICT and Internet of Things to move into high-value added segments of the shipbuilding industry (e.g. luxury yachts, cruise ships, 7th generation deep water drilling platforms).
   - Support from financial institutions to provide flexible credit policies to meet yards' financing requirements (e.g. direct financial support, public fund raising by IPO, cross-border financing policies).

**For an assessment of this policy please see the report on Industrial upgrading for green growth in China which will be released jointly by OECD and DRC*

1. Lloyds List, 16 June 2016 at https://www.lloydslist.com/ll/sector/dry-cargo/article528138.ece
2. Lloyds List, 13 January 2017 at https://www.lloydslist.com/ll/sector/ship-operations/article547138.ece

Measures in China (2/4)

China:

1. **China's Development Bank Financial Leasing Co. [n/a]**
   - Agreement between FMG and CDB Leasing to finance 8 VLOCs (total of USD 556 million) to be delivered between November 2016 and mid 2018.
   - CDB Leasing finances 85% of the costs (USD 473 million) for twelve years with an option of three additional years.
   - Lease agreement including early buyouts (from the 4th year) and dollar buyout at maturity.
2. **China's financial leasing in 2016: USD 11.5 billion[n/a]**
   - China's top 10 financial leasing companies in ship finance come to over USD 11.5 bn drawdowns in 2016 (see graph)
   - In addition, Sinosure's insured amount of new shipping business in 2016 amounts to around USD 3 bn.

1. Marine Money, November 17, 2016 VOLUME 16 ISSUE 45
2. Tradewinds, 8 November 2016, " China's financial leasing in 2016: $11.5bn"
   at: http://www.tradewindsnews.com/finance/1189039/chinas-financial-leasing-in-2016-usd-115bn

Measures in China (3/4)

China:

1. **Nationwide VAT & Consumption Tax Refunds on Exported Vessels under Financial Leasing [H]**
   - Reclaim part of expenditures on inputs for all vessel-leasing and marine structure contracts to foreign renters with a minimum duration of 5 years
   - Eligible are companies registered in China and exporting vessels and marine structures.
2. **China Export Import Bank (CExim) has signed an USD 18 billion financing agreement with China Cosco Shipping [E]**
   - USD 18 billion financing agreement between Cexim and Cosco Shipping in August 2016 for a construction of more than 50 vessels.
3. **CExim looks to finance 10 more Valemaxes [E]**
   - China Merchants Group (CMG) uses traditional mortgage finance through Cexim for its 10 Valemax newbuildings (around USD 83 million each*).

1. Global Trade Alert, 11 May 2015 at
2. TXF news, 26 August 2016.
3. TradeWinds, 22 December 2016 and
   *https://www.wsj.com/articles/chinese-shipping-majors-splash-2-5-billion-for-30-giant-valemax-vessels-1457631278

Measures in China (4/4)

China:

1. **China/Bangladesh: Bangladesh Shipping Corp (BSC) secures CExim loan to fund fleet growth plans [C]**
   - USD 185 million for a long-term loan for BSC from Cexim to finance its newbuildings to be delivered in 2018, encompassing three bulkers and three tankers.
   - 20 years loan with 2% annual interest.
2. **Cosco Corp's parent to buy out its shipyard businesses [n/a]**
   - China Cosco Shipping Group's acquisition of Singapore listed Cosco Corp's assets: Cosco Corp's equity interests in Cosco Shipyard Group (Nantong) and Cosco (Dalian) Shipyard
   - The assets are currently under valuation.
3. **Scrap-and-build subsidy* [A]**
   - Total support between 2015 and 2016: USD 230 million whereof China Merchants Energy Shipping (CMES) received half of it (USD 116 mio.)

20-Apr-2017

1. TradeWinds, 25 August 2016
2. Lloyds List, 2 March 2017; The Business Times, 24 February 2017

Measures in USA & Brazil

USA:

1. **Energizing American Maritime Act [N]**
   - Requirement of 15% of LNG and crude oil exports to be transported on US flagged vessels starting in 2020. From 2025 onwards, the threshold increases to 30% (Note: action is awaited as bill at House of Representatives).
   - Further legislation would require that these ships are built at American yards (H.R. 6454)

Brazil:

2. **Relaxing local content requirement (LCR) policy [N]**
   - As of September 2017: LCR for Brazil's oil industry is expected to be reduced by half with exploration of offshore oil fields requiring 18% of local content.

ROUNDS	DEEP WATER		SHALLOW WATER		ONSHORE	
	Exploration	Development	Exploration	Development	Exploration	Development
1st - 4th	0	0	0	0	0	0
5th - 6th	30%	30%	50%	40%	70%	70%
7th - 9th	37% to 55%	55% to 75%	55% to 80%	65% to 70%	70% to 80%	77% to 85%
10th	*	*	*	*	70% to 80%	77% to 85%

20-Apr-2017

1. 115th Congress (2017-2018); Garamendi, 7 December 2016
2. Reuters, 22 February 2017

Measures in France

France:

1. **US Royal Caribbean Cruises receives loan for STX order [E]**
   - French export credit agency, Coface, provides loan equal to 80% of two vessels' purchase prices (estimated of ~ USD 1.4 bn per vessel)
   - Vessels delivery scheduled for fall 2018 and first half of 2020
   - 3.225% interest rate with semi-annual amortization, 12 years maturity
2. **Amendment to state guarantees [n/a]**
   - Extension of 2006 scheme until end of 2025 with amendments regarding risk ceilings (raised from EUR 2 to EUR 3 bn per project), max. length of guarantee (now project specific; previously 4 years)
   - Initial scheme offers construction financing, down-payment guarantees and performance bonds worth between EUR 40 and 900 million.

1. TradeWinds, 28 June 2016
2. Global Trade Alert, 10 August 2016

Measures in India

India:

1. **Indian yards win special status - Financing costs to fall as government classes shipbuilders as 'infrastructure' [C]**
   - New status of yards makes access to long-term financing cheaper (current interest for loans are 14-15%).
   - These tax benefits would enable yards to invest in capacity expansion to give a boost to the Indian shipbuilding industry.

1. TradeWinds, 4 May 2016 and Hellenic Shipping News, 26 July 2016

Possible expansion of scope & inputs from WP6 participants?

Expansion of scope?

- Including shipbuilding economies beyond the largest 9 specified?
- Including Inventory participants?

Inputs from WP6 participants:

Please feel free to forward us articles of support measures which you came across and would like to include in the document.

Thank you.

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http://www.tradewindsnews.com/finance/1201746/cexim-looks-to-finance-10-more-valemaxes

115th Congress, "H.R. 1240 - Energizing American Maritime Act", at: https://www.congress.gov/bill/115th-congress/house-bill/1240/text

ITEM 4 .3. OPTIONS FOR THE POSSIBLE IMPROVEMENT OF THE WP6 INVENTORY

C/WP6(2017)5

OCDE
DES POLITIQUES MEILLEURES POUR UNE VIE MEILLEURE

Background

- At the 124th meeting, Japan pointed out that inventory coverage need to be clearer
- Notably the word “favourable conditions” in categories C, D and “usual investment practices” in G can be interpreted in different ways by each country

Type of measures

C; Loans on terms and conditions ***more favourable*** than those commercially available

D; Loan guarantees that support loans on terms and conditions ***more favourable*** than those commercially available

G; Government acquisition of interest in a yard or yards (g1 Provision of equity capital ***inconsistent with usual*** investment practices)

Can a "possibly more favourable" be screened?

- Screen "possibly more favourable"
  - CIRR system* can be one of the example to screen the "possibly more favourable" loans/guarantees as a reference of commercial interest rate

* the Arrangement for Officially Supported Export Credit

  - Share of government credit supports can be a possible threshold**

* SOE guidelines are applied to enterprises if the state is the ultimate beneficiary owner of the majority of voting shares

Possible options

- Option 1; covers all credit support
- Option 2-4; may cover also possibly more favourable credit supports by screening with certain thresholds
  - Option 2; does not cover if a private entity is the largest creditor (for loans) or the largest shareholder (for equity infusions)
  - Option 3; does not cover loans/guarantees to shipyards with an interest rate higher than Commercial Interest Reference Rates (CIRR)
  - Option 4; does not cover only in the event that both of option 2 and 3 are applicable.

	More favourable	Possibly more favourable
Current coverage	Covers a few credit supports based on self-declaration	Does not cover
Option 1	Covers all credit supports	Covers all credit supports
Option 2-4	Covers majority	Covers majority

Thank you.

ITEM 4.4. OPTIONS FOR DEVELOPING A STRUCTURED PROCESS FOR THE QUESTIONS AND ANSWERS SESSION

C/WP6(2017)7

OCDE
DES POLITIQUES MEILLEURES POUR UNE VIE MEILLEURE

Background

- The WP6 agreed, at its 123rd session, on having a structured procedure for the questions and answers session
- 4 key elements included in the proposal
  - Timelines
  - Scope of questions
  - Contents to be included in the answers
  - Documents to be distributed at WP6 meetings

Questions and answers (3/4)

- Proposal: contents to be included in answers:
  - Elements on the potentially market distorting nature of the questioned measure should be included if possible in the answer. Delegates questioned may provide a ***non-confidential summary**** on the measures if the requested information is confidential. These summaries are expected to be sufficiently detailed to allow a reasonable understanding of the substance.

*"Non-confidential summary" can be same meaning which is described in the WTO ASCM and anti-dumping agreement.
*i.e. confidential figure "21.1%" can be described "approximately 20%"

Questions and answers (4/4)

- Proposal: documents to be distributed at a WP6 meeting;
  - The secretariat will prepare a room document which includes;
    i. questions and answers submitted by delegates; and
    ii. the list of past questions to which the answers have not been submitted.

VINAMARINE

POLICY DEVELOPMENTS OF VIETNAM'S SHIPBUILDING INDUSTRY

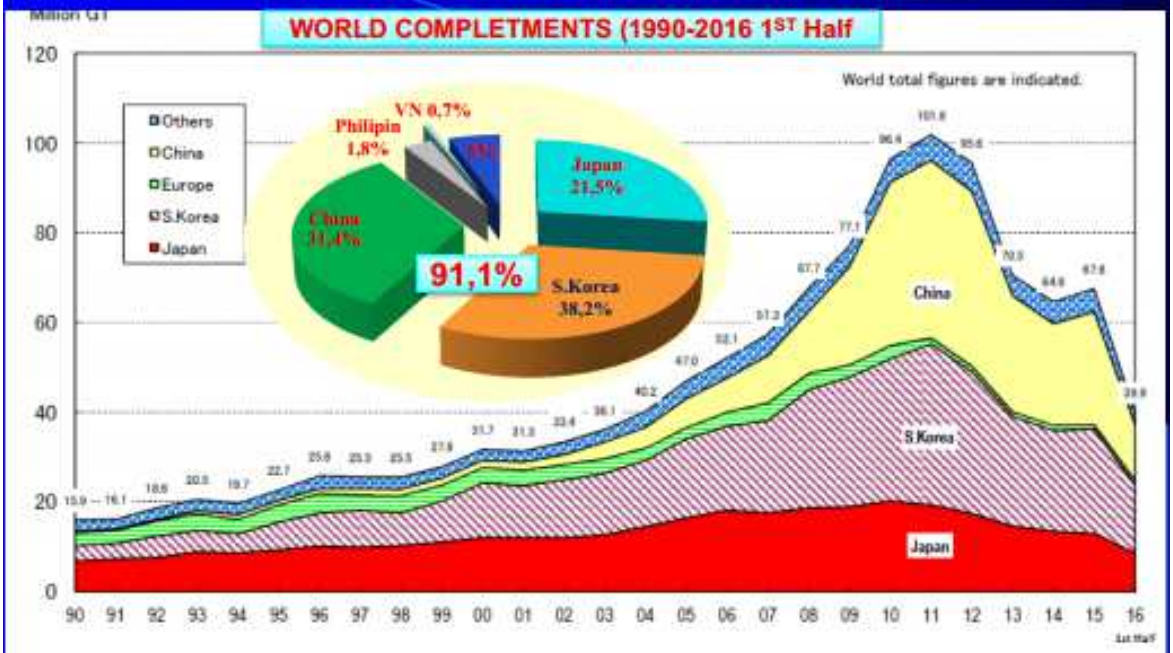
Paris, Apirl 2017

CONTENT

1 "SWOT" ANALYSIS

2 MAIN SOLUTION

Market Shares of Viet Nam Shipbuilding Industry



(Note) 1. Data Source: IHS "World Fleet Statistics", "World Shipbuilding Statistics" for preliminary figures in 2016.
2. Ship Size Coverage: 100 GT and over.

Shipbuilding Market Shares by Capacity

Year	2012			2013			2014			2015			2016 1st half		
Nation	No.	'000 GT	Share (%)	No.	'000 GT	Share (%)	No.	'000 GT	Share (%)	No.	'000 GT	Share (%)	No.	'000 GT	Share (%)
Japan	586	17,426	18.2	540	14,588	20.7	522	13,421	20.8	540	20.579	26.9	289	8.583	21.5
S. Korea	474	31,583	33.0	386	24,504	34.8	341	22,455	34.8	276	23.634	30.9	221	15.235	38.2
China	1448	39,003	40.8	1073	25,903	36.8	906	22,682	35.2	730	25.284	33.0	424	12.525	31.4
Taiwan	33	790	0.8	25	483	0.7	47	600	0.9	25	369	0.5	12	329	0.8
Philippines	38	2,506	2.6	26	1,331	1.9	45	1,878	2.9	43	2.269	3.0	18	738	1.8
Vietnam	105	884	0.9	75	542	0.8	92	375	0.6	85	556	0.7	47	284	0.7
World Tota	3,696	95,575	100.0	3,089	70,480	100.0	2,939	64,442	100.0	2.197	76.570	100.0	1.357	39.882	100.0

"SWOT" ANALYSIS VIETNAM SHIPBUILDING INDUSTRY

STRENGTHS

1. Favorable natural conditions
2. Policies
3. Master plan up to 2030
4. Basic infrastructure formed;
5. Investment Encouraged
6. Labor force,
7. Private investors

WEAKNESSES

1. Almost facilities for building, lack for repair;
2. Shipyards are scattered; Low localization rate; Lack of skilled laborers;
3. Weak automation, low productivity; no R&D; weak design
4. Inadequate & weak in management & organization

OPPORTUNITIES

1. High demand in ship repair
2. South Korea, Japan interested in Viet Nam;
3. Import tariffs of spare parts for shipbuilding to be abolished (FTA, EPA)

THREATS

1. Higher labor cost than Chinna
2. Affected by Vinashin;
3. Difficulty in new orders.
4. Difficulty to access EU, US markets
5. Small domestic market;
6. Low competitiveness capacity
7. Low quality education

STRENGTHS

- ✓ Favorable natural conditions
- ✓ Policies
- ✓ Master plan up to 2030
- ✓ Basic infrastructure formed
- ✓ Investment Encouraged
- ✓ Labor force
- ✓ Private investors

CURRENT STATUS (2016)

- 68 Shipyards (2013: 120)
- Shipbuilding: up to 70,000 DWT
- Ship-repairing: up to 400,000 DWT
- Total design capacity: 2.6 mill DWT/year
- Actual capacity: 0.8 – 1.0 mill DWT/year (150-200 units/year). Export: 0.5 – 0.6 mill DWT.

Human resources:

- labor: abt 40.000, low productivity (2010: abt 100.000)
- Design Engineer

CURRENT STATUS

- SBIC (state-owner company, 08 shipyards):

  re-structuring

- Private shipyards (local company)
- Foreign –invested shipyards

SBIC
Shipbuilding Industries

WEAKNESSES

- lack for repair

- Shipyards are scattered;
- Low localization rate
- Lack of skilled laborers
- Weak automation, low productivity; no R&D; weak design

- weak in management & organization

supporting industries:

- ❖ remains slow;
- ❖ investment;
- ❖ localization rate low (under 5%)

- ❖ Supporting industries: too small (steel, engine, material…)
- ❖ Repair capacity can meet only abt 40% of demand

OPPORTUNITIES

- High demand in ship repair
- South Korea, Japan interested in Viet Nam
- Import tariffs of spare parts for shipbuilding to be abolished (FTA, EPA)

THREATS

- Higher labor cost than Chinna
- Affected by Vinashin
- Difficulty in new orders
- Difficulty to access EU, US markets
- Small domestic market;
- Low competitiveness capacity
- Low quality education

PLAN BY 2020

To turn shipbuilding into a spearhead industry; choose products suitable; Regain trust for shipbuilding industry:

- Value growth rate will be 5 - 10%;
- About 80% of total products serve socio-economic development, 3 - 10% of total products will be exported (1.67 - 2.16 million tons/year);

PLAN BY 2020

Specific tasks:

- New shipbuilding:

- Forming 3 linked shipbuilding clusters;

- Selecting one yard to enter into a joint venture with a strategic partner;

- Focus on the group of ships with a tonnage of between 30,000 and 50,000 DWT

Specific tasks:

- **For repair:**

- Building 3 centers for repair of low- and medium-class ships in regions;

- Acquired to repair ships of a tonnage of 100,000 - 300,000 tons when the demand is high;

- Intermediary targets: Meeting 90% of the low-class and 60-70% of the medium-class ship repair demand.

PLAN BY 2020

Developing support industries:

- Tax policies:

- Tax incentives;

- Customs and tax procedures;

- Creation of a credit mechanism

- Reduction of expenses for accessing and borrowing capital

- Building of strategic partnership;

- Application of international standards.

PLAN BY 2020

Human resources and R&D:

- Training of high-quality human resources;
- Regarding training funds.
- Build one R&D center in the North.

OBJECTIVES BY 2030

- To meet the market demand (domestics, export);
- To form some center of shipbuilding (meet intenational quality standard, large economic value);


Thank you!
VIETNAM MARITIME ADMINISTRATION
No. 8 Pham Hung Str, Mai Dich.W, Cau Giay District, Ha Noi
Tel : 84-4-3768.3060 / Fax: 84-4-3768.3058
Website:www.vinamarine.gov.vn

124th OECD WP6

April 2017

Republic of Korea

Ⅰ. Answers to Japan's questionnaire

Q1) Please provide the track records of financing to DSME by KDB, KEXIM and private entities since 2015

[Unit: Trillion Won]

Entity	Type of financial instruments		
	Loan	Capital Injection	Debt to Equity Swap
KDB	0.3	0.4	1.8
K-EXIM	0.3	-	1.0
Private Entities	NA		

Q2) Newly reported bailout plan for DSME ~~by the Korean government~~

Q2-1) Is the reported bailout plan actually being considered?

- Currently all creditors try to voluntarily adjust the type and condition of the existing loans
- Whether to execute the reported bailout plan **is yet to be decided**
- The plan has been made not as a state intervention measure, but **as a commercial decision** by its creditors

Q2-2) If so, is there any private entity involved in the bailout plan?

- Private creditors are to voluntarily participate in loan adjustment.

Q2-3) Overview of the bailout plan: the amount and type of financing by respective entities

- Yet to be determined

II. Answers to EU's questionnaire

Q1) Can you confirm media reports on the South Korean Financial Services Commission's plan to provide additional 3 trillion won support to DSME?

- Currently all creditors try to voluntarily adjust the type and condition of the existing loan
- Whether to execute the reported bailout plan **is yet to be decided**
- Any decisions over DSME will be made by DSME's creditors, not by FSC

Q2) If so, how do you justify this additional support?

- Please refer to the answer to Q 1

Q3) How will the support be granted and when?

- Yet to be determined

Q4) What is the current general situation of DSME?

- Currently facing a temporary liquidity shortage ; sluggish market situation, delay of delivery by buyers, unfair contract conditions, etc.
- Still sits on the world's largest orderbook
- the world's no.1 competitiveness in LNGC, large tanker, mega containership tech, etc.

Q5) How do you evaluate DSME's profitability? Does it match the forecast made in your presentation at WP6 2016?

- Suffered losses till 2015, but will turn around in the near future

Ⅱ. Restructuring policy of the Korean government

1. **No government intervention**
2. **Self-rescue measures by a company**
3. **Voluntary loan adjustment by creditors**
4. **All decisions based on commercial consideration**

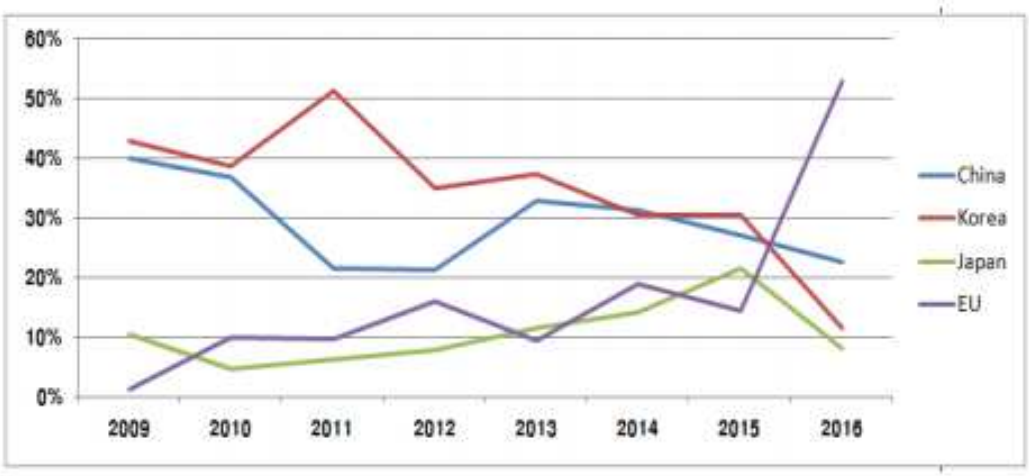
[EX] World's no.7 **Hanjin Shipping Company** went into bankruptcy under this principle

* Does DSME really distort global shipbuilding market ?

Contracting								
mCGT	2009	2010	2011	2012	2013	2014	2015	2016
China	8.5	22.2	12.4	8.8	25.6	16.7	11.8	4.3
Korea	4.4	12.5	14.5	8.6	18.4	12.8	10.7	1.8
Japan	2	5.9	4.4	4.2	10.1	9.5	12.2	1.4
EU	0.7	2.7	2.2	2.2	2.5	3.8	2.6	3.5
World	17.1	46.6	35.8	26.1	61.0	44.8	39.5	11.6
%	2009	2010	2011	2012	2013	2014	2015	2016
China	50%	48%	35%	34%	42%	37%	30%	37%
Korea	26%	27%	41%	33%	30%	29%	27%	16%
Japan	12%	13%	12%	16%	17%	21%	31%	12%
EU	4%	6%	6%	8%	4%	8%	7%	30%
World	100%	100%	100%	100%	100%	100%	100%	100%

Source : Clarkson, World Shipyard Monitor

* Does DSME really distort global shipbuilding market ?



Source : Clarkson, World Shipyard Monitor

Ⅱ. WP 6's Way forward

1. Strengthen representativeness of WP6

- World's shipbuilding hegemony changed → **"Declining Europe-Growing Asia"**
- But, member countries remain unchanged (Market share below 50%)

* M/S (GT) : ('1960) Europe(66%), Japan(22%) / ('2017) china (22.3%), ROK (25.3%), Japan(13.3%)

2. Further discuss WP6's way forward

- Share best practices of each country's policy developments
- Future oriented topics ; Unmanned autonomous ships, green ships, etc.

  Ex) EU MUNIN project, Japan ASSAP, etc.

Thank you

THE IMPLEMENTATION AND EVALUATION OF THE EEDI

THE FUTURE EMISSION MITIGATION OF THREE MAIN SHIPPING SEGMENTS

Dr. ir. Edwin van Hassel

TPR
Department of Transport and Regional Economics
University of Antwerp

Content

1. SETTING AND BACKGROUND
2. METHODOLOGY
3. EMPIRICAL ANALYSIS
4. SENSITIVITY ANALYSIS
5. CONCLUSIONS

SETTING AND BACKGROUND

The main purpose of this study is to determine future emission mitigation of EEDI on three main shipping segments, i.e. container, bulk and tanker shipping.

In this study not only the emissions per ton.nm or TEU.nm are determined, but also the total emissions of the total fleets considered.

The main research questions of this paper are:

- Which evolutions can be found in the vessel designs and which abatement technologies could be implemented to obtain the required EEDI values?
- What is the effect of the EEDI on fuel consumption (and related CO_2 emissions) in the years 2020, 2025 and 2030 for the considered shipping segments?

METHODOLOGY (1)

The methodology of this paper further examines three main aspects:

1) **Calculate the impact of the EEDI on the future fuel consumption and related CO_2 emissions**
2) **Incorporate the impact of design changes to fulfil the EEDI requirements**
3) **Include the aspect of the fuel (CO_2) reducing techniques**

1) *Impact of EEDI on fuel consumption*

a) The OECD has provided a future forecast of shipping capacity expressed in GT
b) Calculating EEDI values of existing fleet (based on Clarksons data, 2015) and new fleet (EEDI reference lines)
c) The fuel consumption will be based on 2015 bunker fuel volume (Transparency Market research (2014) corrected for EEDI changes and future fleet development

METHODOLOGY (2)

2) Evolution of design parameters

Reworked EEDI formula

$$EEDI = \frac{\left((75\% \times \frac{1}{C_{ad}} \times \Delta^{2/3} \times V_{ref}{}^{2} + \frac{P_{AE}}{V_{ref}}) - \frac{\sum_{i=1}^{N_{ME}} f_{eff} \times P_{eff}}{V_{ref}} \right) \times C_f \times sfc}{f_v \times (\Delta - LWT)}$$

	Parameter	Unit	Meaning	Effect on EEDI
Design evolutions	1/Cad	[tonne2/3.knots3/kW]	Admiralty constant	Linear proportional
	sfc	[g/kWh]	Specific fuel consumption	Linear proportional
	LWT	[tonnes/m3]	Lightweight as ratio to the main dimensions	Inversely proportional
Design choice	V	[knots]	Design speed	Quadratic proportional

3) Fuel (CO_2) reducing techniques

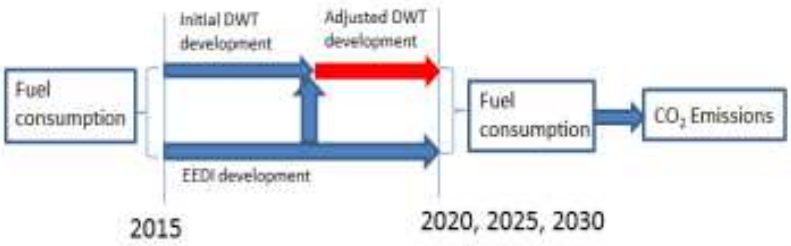
There are different technologies for the abatement of CO_2 emissions which can be ranked according to the marginal abatement cost curve. (DNV, 2010 ; MEPC 59, 2009; MEPC 62, 2011 ; ICCT, 2011)

METHODOLOGY (3)

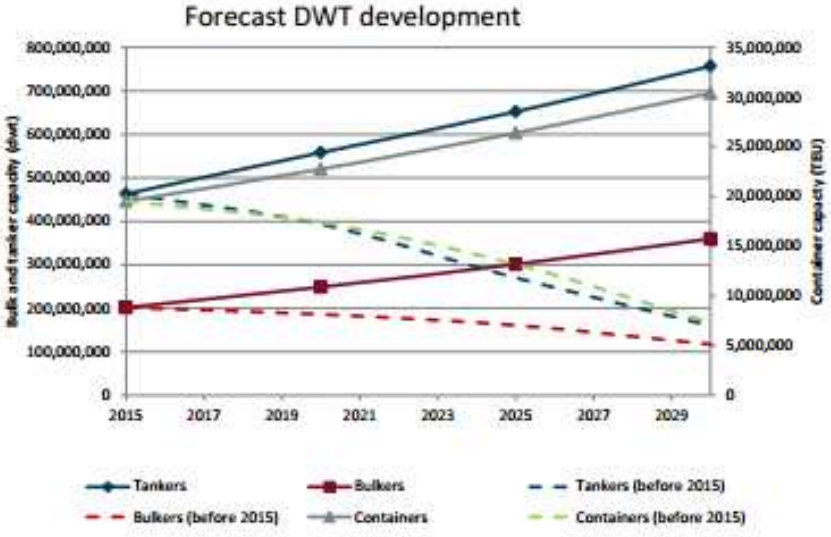
If all the available technologies are applied and a future EEDI is still lower than the target value, the design speed will be lowered.

Impact of design speed on needed shipping capacity

$$DWT_{VC,X} = \frac{V_{ave,VC}}{V_{X,VC}} \times DWT_{VC,X\,initial} \Leftrightarrow V_{X,VC} \leq V_{ave,VC}$$



EMPIRICAL ANALYSIS (1)

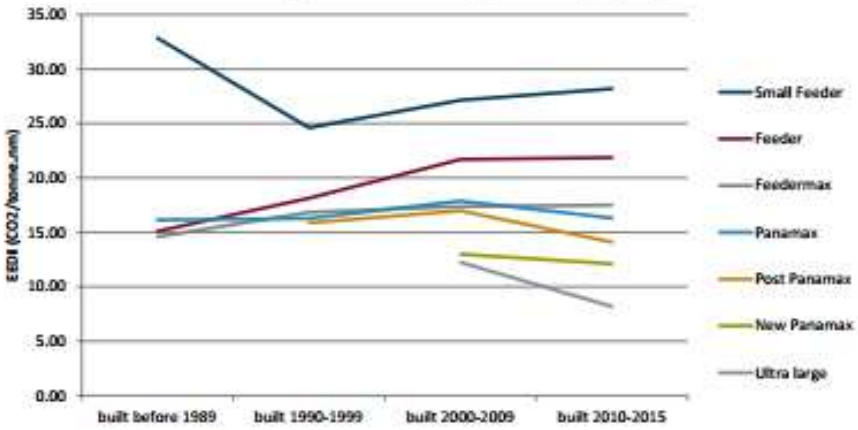


The OECD forecast is based on the forecast of growth in seaborne trade (ITF) + the replacement demand of demolished vessels (OECD Council Working Party (WP6) Secretariat).

EMPIRICAL ANALYSIS (2)

Historical EEDI evolutions

Container vessels (other vessel types: see paper)



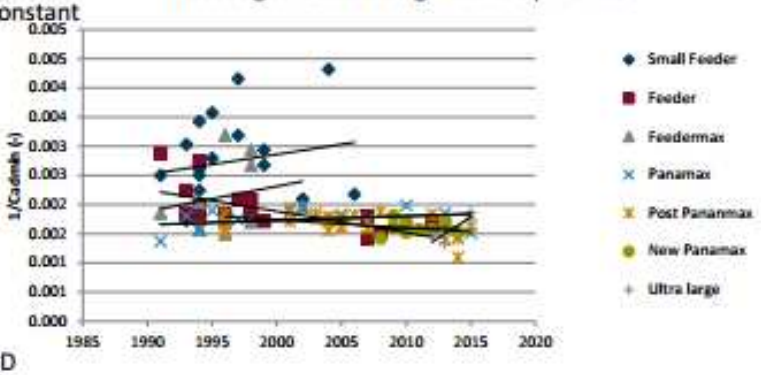
For container vessels, the EEDI evolution is very heterogeneous
→ For the smallest vessel types, an increase in average EEDI can be observed, whereas for the largest vessels, a decrease is observed

EMPIRICAL ANALYSIS (3)

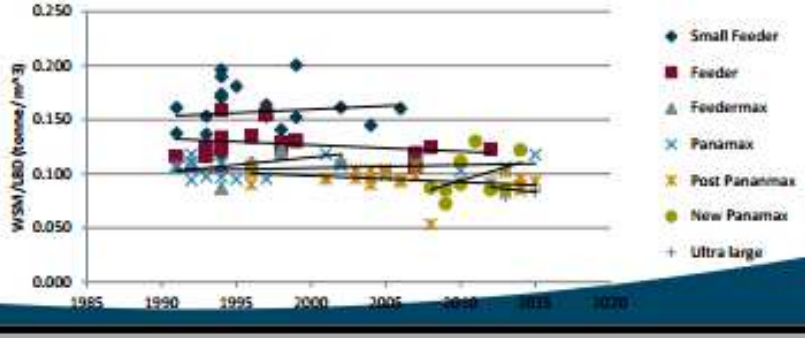
Design evolutions container vessels (other vessel types: see paper)

Heterogeneous design developments

Inverse Admin Constant



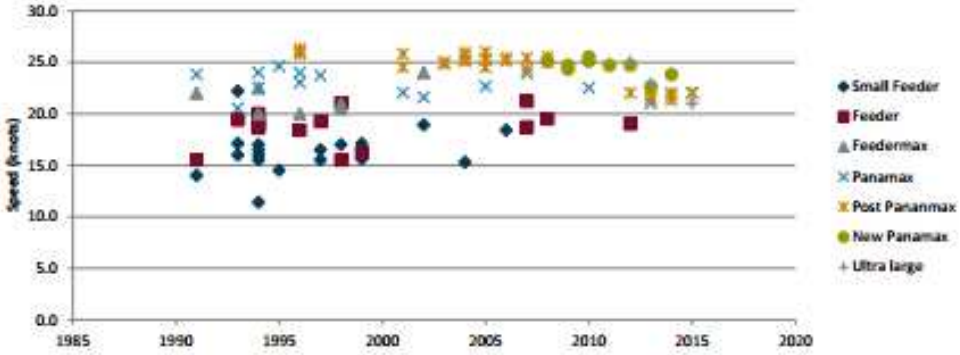
Lightweight / LBD



EMPIRICAL ANALYSIS (4)

Design evolutions container vessels (other vessel: see paper)

Design speed evolution



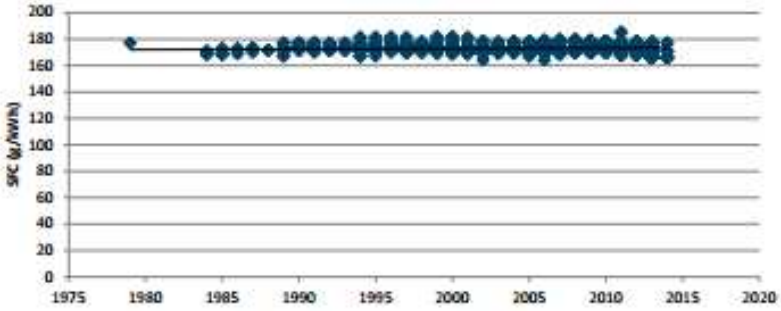
For the largest vessels a design speed reduction can already be observed.
For smaller vessels this effect is less, design speed was already lower.

→ This effect is mostly due to the influence of the length of the vessel (wave making resistance)

EMPIRICAL ANALYSIS (5)

Design evolutions container vessels (other vessel types: see paper)

SFC evolution

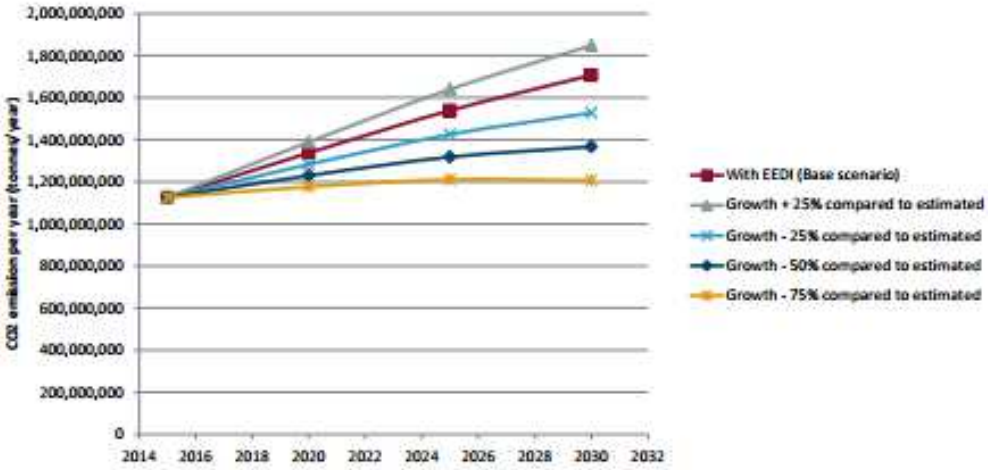


For the two largest classes, not enough data are available to determine sufficient long-term trends in design changes

		Container vessels						
		Small Feeder	Feeder	Feedermax	Panamax	Post Panamax	New Panamax	Ultra large
$1/C_{wp}$	[%]	-6.01	6.95	n.a.(6.95)**	-2.57	3.01	n.a*.	n.a.*
Displ	[%]	-	-	-	-	-	-	-
Average V_{design}	[knots]	16.7	18.7	21.4	21.0#	21.5#	22.5#	21.0#
Sfc	[%]	0	0	0	0	0	0	0
P_{aa}	[%]	-	-	-	-	-	-	-
L.W./LBD	[%]	-4.66	2.6	n.a (2.6)**	-1.41	8.05	n.a*.	n.a*.
C_t	[%]	-	-	-	-	-	-	-
F_n	[%]	-	-	-	-	-	-	-

SENSITIVITY ANALYSIS (2)

CO_2 emissions with a variation in DWT forecasts



A strong limit in fleet growth will lead to only a limited growth in CO_2 emissions.
→ 75% reduction in fleet growth in 2030 will lead to a limited growth in CO_2 emissions (7%)

CONCLUSIONS (1)

There are two types of vessels that can be distinguished:

- The first ones are vessels in which $1/C_{ad}$ and W_{sm}/LBD increased from 1990 to 2015.
- The second type of vessels are those vessels from which the main design parameters ($1/C_{ad}$ and Wsm/LBD) have decreased over time.

In order to continue the same trend of reducing these design factors (or to improve), more research is needed. Fields of research that should be taken into account are:

- improve the hydromechanics of the vessels (reduce resistance)
- improve the total propulsion efficiency (propellers efficiency, shaft bearings, etc.)
- reduce the lightweight of the vessels
- reduce the fuel consumption of the main engine
- improve the efficiency of the emissions reducing technique

Lessons learnt from these analyses can also be incorporated in the designs of the first group of vessels, improving the fuel efficiency even further.

CONCLUSIONS (2)

Main design improvements went relatively slowly.
→ Additional incentives may be necessary to facilitate the introduction of new technologies to improve these design factors.

It can be concluded that the EEDI regulation is not strict enough to reduce the CO_2 emissions in absolute terms in 2030.
- by making the reduction values higher (more strict) the effectiveness of the measure is reduced, if new radical design improvements are not developed.
- if these radical design improvements are not developed, more additional policies are required to complement the EEDI in order to reduce the absolute CO_2 emissions.

The results of this analysis indicate that the EEDI is not sufficient to reduce GHG emissions on its own.
- The IMO at its MEPC 60 (Doc MEPC 60/22) has discussed the use of market-based measures. However, members of IMO have not agreed to their introduction.
- Therefore the EEDI has been introduced as second-best solution and further complementary measures are currently discussed at IMO in the context of its *Roadmap*.

Questions?

Edwin van Hassel
Prinsstraat 13, 2000 Antwerpen
@ www.uantwerpen.be/tpr
edwin.vanhassel@uantwerpen.be

TPR
Department of Transport and Regional Economics
University of Antwerp

ITEM 5.2. POTENTIAL ISSUES TO BE DISCUSSED AT THE 20 NOVEMBER WP6 WORKSHOP

Room document 5
124th Session of the Council Working Party on Shipbuilding (CWP6)

OCDE
DES POLITIQUES MEILLEURES POUR UNE VIE MEILLEURE

Background

- Annual WP6 workshop since 2011;
  - 2016 Maritime Clusters and Global Challenges
  - 2015 Supply and Demand in the Shipbuilding Industry
  - 2014 Shipbuilding and the Offshore Industry
  - 2013 Global Value Chains in Shipbuilding
  - 2012 The Future of Shipbuilding
  - 2011 Green Growth in Shipbuilding
- Points to be considered
  - The workshop theme should be related to the WP6 PWB for 2017 (i.e. green ships)
  - the Green Growth and Sustainable Development (GGSD) Forum will be held on 21-22 November 2017 on the theme "Greening the Ocean Economy"

Proposal on the Workshop theme "Green Growth of maritime industries"

1. **Introduction on international agreement on environmental effort** (i.e. Paris Agreement)

2. **Impact of the international regulation,** inter alia:
   - the Energy Efficiency Design Index (EEDI) regulation;
   - SOx, NOx (including Emission Control Area);
   - Ballast water; and/or
   - Oil Spills

3. **National/Regional level measures**
   - Regional level measures (i,e. EIB's Green ship loan/guarantee scheme)
   - National level measures on promoting the construction and operation of greener vessels

4. **Private sector and industry initiatives** (i.e. Port fee discount scheme implemented by Green Award)

Report on Green ship

- The secretariat will prepare background paper(s) for some items to be discussed at the workshop.
  - Notably a report on the *Role of policies in promoting the construction and operation of "green ships"*

ITEM 7: WP6 INSTRUMENT REVIEW

C/WP6(2017)8

OCDE
DES POLITIQUES MEILLEURES POUR UNE VIE MEILLEURE

Background

- 123rd session (December 2016)
  - WP6 delegates agreed to move forward in accordance with the option 2 "thorough revision" mentioned in the document C/WP6(2016)11
  - Some delegates stressed the importance of involving China in the process
  - Some delegates showed interest for having more information for a possible negotiation of a Shipbuilding Agreement
- 124th session (yesterday)
  - Delegates asked secretariat to prepare a summary of previous Q&A sessions

Main discussion points

1. Participation of non-members
2. Legal nature (including a possible negotiation of a Shipbuilding Agreement)
3. Substantial issues (including summarising Q&A sessions)

Main discussion points

1. Participation of non-members
2. Legal nature (including a possible negotiation of a Shipbuilding Agreement)
3. Substantial issues (including the discussion at the Q&A sessions)

Possible options for the institutional arrangement of the discussions

Option 1; at the WP6

Option 2; in an *ad hoc* negotiation group formally separated from the WP6

Expected timetable

Option 1; at the WP6		Option 2; in an ad hoc negotiation group formally separated from the WP6	
19 May 2017	Deadline for comments	19 May 2017	Deadline for comments
		End of June	Draft Mandate sent to interested Members and non-Members
			Secretariat collects interest in the group, including possible visit China MIIT
October	WP6/Council process to send invitation letters to non-Members	October	Secretariat report back to WP6 members on interest
21 November	Discuss at the 125th WP6 meeting (the Secretariat will prepare a draft new instrument)	21 November	Discuss the draft Mandate at the 125th WP6 meeting or "Preparatory meeting for *ad hoc* negotiation group"

Main discussion points

1. Participation of non-members
2. Legal nature (including a possible negotiation of a Shipbuilding Agreement)
3. Substantial issues (including the discussion at the Q&A sessions)

Legal nature of OECD instruments

	Legal nature	Range of applications
International agreement	**Legally binding**	**Adherents** (interested Members and non-Members)
Decision	**Legally binding**	**All OECD Members** (but open to non-OECD Members)
Recommendation	Non-legally binding	**All OECD Members** (but open to non-OECD Members)
Ad hoc instrument (e.g. Arrangement, Guidelines)	Non-legally binding	**Adherents** (interested Members and non-Members)

Issues for discussion

Legal nature and format:

- Should the 1983 instruments aim at a legally-binding instrument?
- ~~If yes,~~ should the Secretariat prepare a draft mandate for discussion and approval by WP6 members [and other interested countries] ?

Main discussion points

1. Participation of non-members
2. Legal nature (including a possible negotiation of a Shipbuilding Agreement)
3. Substance (including the discussion at the Q&A sessions)

Issues for discussion

- Objectives
- Scope of "obstacles" to normal competitive conditions

  *illustrated in the 1983 instruments (the Revised General Arrangement)
- Mechanisms for ensuring transparency
- Excess capacity
- Resources implications

Main discussion points in Q&A sessions

- What is the scope of the "government" (e.g. state-owned entities) and how "government involvement" can be defined?
- How can commercial terms and conditions be defined?
  - In particular, how can commercially reasonable terms and conditions be defined when finance is provided only by a government or government controlled entities?
- How can support to shipping companies be considered in terms of their potential benefit to shipyards?
- How can market distortions be defined?
  - This discussion point can be broken down into sub-items

Type of interventions raised in Q&A sessions

- Capital reduction without refund
- Loans
- Guarantees on bonds/loans
- Debt equity swap
- Capital injection
- Advance payment refund guarantee (APRG)
- Tax exemptions

Next steps

- Delegates are invited to answer the questions in the document [C/WP6(2017)8] in writing by 19 May 2017.
- Secretariat will prepare a summary of Q&A sessions

Thank you.

Issues for discussion (2/6)

Objectives: The current objectives of the 1983 instruments are to remove "Obstacles" to normal competitive conditions as well as to address excess capacity and structural adjustment.

- Should the 1983 instruments have additional objectives?
  - If so, what should be the additional objectives of new instrument(s)?

Issues for discussion (3/6)

Scope of "obstacles" to normal competitive conditions:

- Should the obstacles to normal competitive conditions in the shipbuilding industry be listed in the 1983 instrument?
  - If yes, should the current list be updated? What criteria for inclusion should be used? Should the criteria be designed to select measures which are likely to distort the shipbuilding market?
  - If no, how can "Obstacles" to normal competitive conditions be removed?

Issues for discussion (4/6)

Mechanisms for ensuring transparency:
The WP6 increases transparency in the shipbuilding market through the Inventory of support measures, peer reviews, and the questions and answers exercise.

- What mechanisms should be included in 1983 instruments to ensure transparency in the shipbuilding market?

Issues for discussion (5/6)

Recommendation related to measures addressing excess capacity: The Revised General Guidelines encouraged measures addressing excess capacity. More recently, some policy recommendations were developed in the WP6 report on imbalances in the shipbuilding market [C/WP6(2016)6/REV1].

- Which recommendations of the WP6 report on imbalances in the shipbuilding market [C/WP6(2016)6/REV1] should be incorporated in the new instrument?

Issues for discussion (6/6)

Resources implications:

- Do WP6 delegates agree to commit resources to conduct the instrument revision?

The 2017 GGSD Forum

The objectives of the GGSD Forum since 2012 are to provide:

- dedicated space for multi-disciplinary dialogue
- interactive platform that brings together experts from different policy fields and disciplines and facilitates discussion
- valuable supplement to the work undertaken in individual government departments and ministries
- meeting point for policy makers, academics and experts to exchange experiences, policy tools and best practices

1

The 2017 GGSD Forum

The Green Growth and Sustainable Development Forum
"Greening the Ocean Economy" 21-22 November 2017 will focus on

- Investment, innovation and employment aspects of the fast-growing ocean-based industries;
- Exploring how economic development and conservation needs can be balanced successfully through innovations in established and emerging ocean industries, as well as marine spatial planning instruments;
- The role of science and technology (including digitalisation), responsible business conduct and waste management.

2


2017
GGSD
Forum
The 2017 GGSD Forum
The Green Growth and Sustainable Development Forum
"Greening the Ocean Economy" 21-22 November 2017
will draw on work by
the Scientific and Technological Policy Committee (CSTP), the Fisheries Committee (COFI), EPOC's Working Party on Biodiversity, Water and Ecosystems, the Council Working Party on Shipbuilding (WP6), the Investment Committee (IC), DAC/ENVIRONET as well as the International Transport Forum (ITF) and the International Energy Agency (IEA).
5


2017
GGSD
Forum
The 2017 GGSD Forum
The Green Growth and Sustainable Development Forum
"Greening the Ocean Economy" 21-22 November 2017
will contain 3 parallel sessions focussing on:
1) Sectors using living marine resources, 2) Sectors using non living marine resources and 3) Ocean governance including marine spatial planning
AND
3-4 parallel sessions on 1) monitoring progress of SDG 14 implementation, 2) pollution and waste management (marine litter) 3) illicit activities at sea (illegal trade in endangered species, illegal waste dumping, illegal unreported fishing, 4) impact of tourism /green growth
5


OECD
BETTER POLICIES FOR BETTER LIVES
For additional information:
Kumi.Kitamori@oecd.org
Claire.Jolly@oecd.org
Jaco.Tavenier@oecd.org
http://www.oecd.org/greengrowth/ggsd-forum.htm

ITEM 8.2: DISCUSSION ON ONGOING & FUTURE WORK

124th session of the Council Working Party on Shipbuilding (WP6)

Paris, 18-19 April 2017

Contacts: Structural Policy Division,
Mr. Laurent DANIEL, LaurentC.DANIEL@oecd.org
Ms. Karin GOURDON, Karin.GOURDON@oecd.org
Mr. Ito KEI, Kei.ITO@oecd.org

OECD
BETTER POLICIES FOR BETTER LIVES

WP6 Projects for 2017 and 2018

1. **Ship Recycling Industry (2017)**
2. *Construction and operation of "green ships" (2017) [Presentation by Kei ITO]*
3. **Excess supply and capacity (2018)**
4. **Local Content Requirements (2018)**
5. *Global Value Chains (2018) [Presentation by EAS]*
6. **Role of ship finance (2018)**
7. **WP6 Mandate Renewal (2018)**
8. **OECD Ocean Economy Week (2017)**

WP6 Projects for 2017 and 2018

1. **Ship Recycling Industry (2017)**
2. *Construction and operation of "green ships" (2017) [Presentation by Kei ITO]*
3. **Excess supply and capacity (2018)**
4. **Local Content Requirements (2018)**
5. *Global Value Chains (2018) [Presentation by EAS]*
6. **Role of ship finance (2018)**
7. **WP6 Mandate Renewal (2018)**
8. **OECD Ocean Economy Week (2017)**

1. Ship Recycling Industry

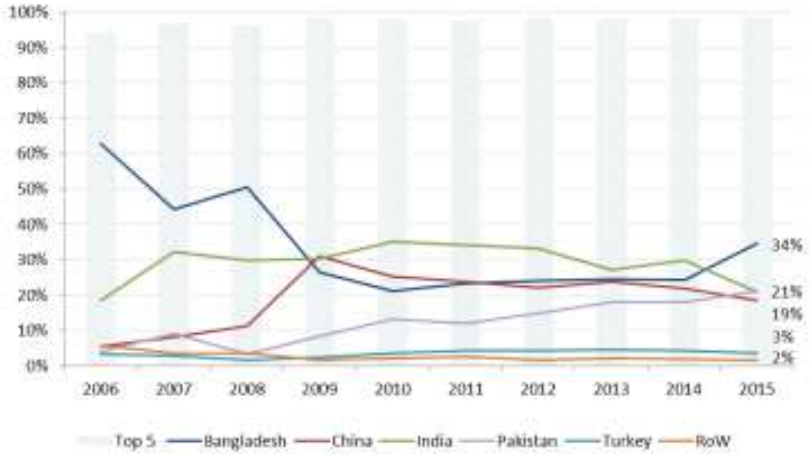
- Conversion of end-of life ships into steel & other recyclable items as important part of the ship life cycle.
- **Concerns** about health, safety and environmental (HSE) standards in major ship breaking countries:
  - Vessels as large and complex structures containing many toxic substances (e.g. mercury, lead, asbestos, PVCs etc.)
  - More than 2/3 of ship breaking conducted on tidal beaches which often do not support heavy lifting machinery
  - Often informal workers, i.e. no clear contractual relations
  - Weak regulations on labour safety: workers often lack necessary equipment, expertise & training
  - Limited access to health services, sanitary facilities & welfare
  - Limited environmental enforcement, e.g. no waste management systems

➢ High number of fatalities, injuries, work-related diseases.

➢ Toxic substances often dumped into soil and coastal waters.

Since 2009: Top 5 recycling countries account for 98% of global demolition volume

Annual demolition volume by ship recycling country, 2006 - 2015



Source: IHS Maritime & Trade

- Ship breaking on **tidal beaches** mostly in Bangladesh, India and Pakistan (2/3 of ship breaking volume).

Example: Ship breaking in Chittagong, **Bangladesh**

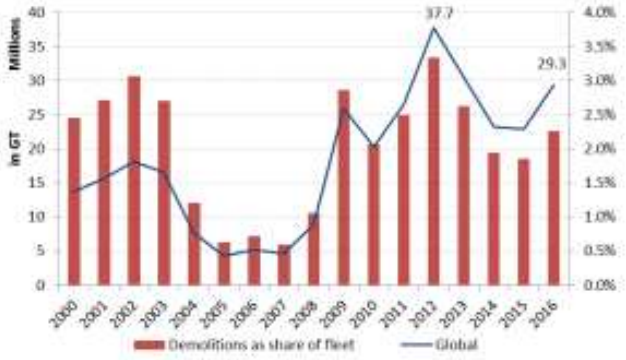
Source: Environmental Justice Atlas at: https://ejatlas.org/conflict/dirty-and-dangerous-shipbreaking-in-chittagong

- Chittagong one of the largest shipbreaking locations in the world.
- Criticism on contaminating the environment and exposing low-paid workers to high risks.
- **In Bangladesh, children count for ~25% of ship breaking workforce.**

Source: FIDH, at: https://www.fidh.org/IMG/pdf/bgpaper.pdf

Over the last 5 years ~7,000 vessels scrapped

Annual demolition volume and demolitions as share of fleet, 2000 - 2015



Source: IHS Seaweb.

Number of vessels scrapped, 2000 - 2016

year	# of vessels
2000	904
2001	935
2002	1,010
2003	1,138
2004	911
2005	640
2006	746
2007	645
2008	870
2009	1,631
2010	1,523
2011	1,769
2012	**1,816**
2013	1,618
2014	1,338
2015	1,092
2016	**1,066**

Source: IHS Seaweb.

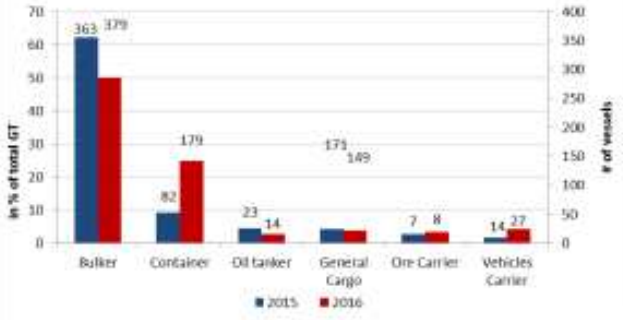
- **In 2016:** scrap volume of 29.3 million GT ~ 2.3% of global fleet.
- In the same year, a total of **1,066 vessels scrapped**
- In the peak year 2012 this number was **70% higher** (1,816 vessels).

21/04/2017

7

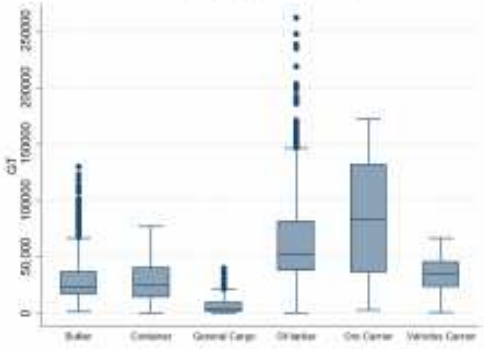
Huge ocean-going vessels of up to 250,000 GT

Demolitions by ship type in % of total GT and # of vessels, 2015 and 2016



Source: IHS Seaweb.

Size of major ship types demolished, 2000 - 2016



Source: IHS Seaweb.

- **Major ship types demolished in 2015 & 2016 by gt:** bulker, container, oil tankers, general cargo, ore carrier and vehicles carrier.
- A low number of oil tankers and ore carriers due to their huge size.
- **Example:** ore carrier of 150,000 GT equals the same square metres as of two soccer fields.

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8

International & regional conventions, regulations and guidelines (1/3)

1. **Basel Convention (1989):** Controlling transboundary movements of hazardous wastes and their disposals.
   - Difficulties to determine the exact moment when a ship becomes a waste hinder the application of the Basel Convention to shipbreaking.
2. **ILO "Safety and health in shipbreaking: Guidelines for Asian countries and Turkey" (2004):** Assisting shipbreakers and competent authorities to implement relevant provisions of ILO standards, codes of practice and other guidelines on occupational safety and health and working conditions.
3. **EU regulation on waste shipments (2006):** establishes procedures and control regimes for the shipment of waste, depending on the origin, destination and route of the shipment, the type of waste shipped and the type of treatment to be applied to the waste at its destination.

International & regional conventions, regulations and guidelines (2/3)

3. **IMO Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships (2009):** a control system with obligations for flag States, ship owners, recycling States and recycling facilities.
   - Parties to the Convention have an obligation to **prohibit and/or restrict the installation/use of hazardous materials;**
   - All ships are required to have on board **a ship specific inventory of hazardous materials** (updated throughout the ship's life)
   - **Authorized ship-recycling facilities** under the Convention, i.e. are able to undertake all the recycling activities, prepare a recycling plan, outline plans detailing how to prevent hazardous conditions (e.g. explosions, fire, accidents, spills, emissions etc.) that can harm human health and/or the environment, waste management, emergency preparedness and response, worker safety and training, reporting on incidents/accidents/occupational diseases etc.
   - **Countries having ratified HKC** (as of 21 March 2017)**:** Belgium, France, Norway, Panama and the Republic of Congo accounting for ~ **56,000 gt** in annual recycling volume (**Goal: 15 million gt** which would be reached with the ratification of the 5 biggest recycling states)

WP6 Projects for 2017 and 2018

1. **Ship Recycling Industry (2017)**
2. *Construction and operation of "green ships" (2017) [Presentation by Kei ITO]*
3. **Excess supply and capacity (2018)**
4. **Local Content Requirements (2018)**
5. *Global Value Chains (2018) [Presentation by EAS]*
6. **Role of ship finance (2018)**
7. **WP6 Mandate Renewal (2018)**
8. **OECD Ocean Economy Week (2017)**

3. Excess supply and capacity (2018)

- Collaboration with Prof. Kalouptsidi (Harvard university)
- **New database** consisting of yard financials (ORBIS), yard features (e.g. location, status) and detailed characteristics of vessels produced (IHS Seaweb)
- **Potential research work:**
  - Effect of policies on yard dynamics, yard productivity (e.g. measured in total factor productivity) across regions, countries, ship markets
  - Analysing characteristics of yards that exit vs that stay in the market
  - Role of overcapacity and subsidies in yard survival
  - Relation between capacity utilization rates and financial health of yards

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4. Local Content Requirements (2018) *Description*

About Local Content Requirements (LCR)

- A non tariff measure (NTM) that requires domestic industries to source a specified percentage of intermediate goods/supplied services locally.
- Fiscally neutral way to promote domestic industry and employment during times of stagnating or falling demand.
- Creates incentives to the development of industries by protecting domestic markets against free imports of goods.

Local Content Requirements
Effects of LCR - Empirical evidence

Grossmann (1981) in perfectly competitive markets:

- Suboptimal allocation of resources, reducing efficiency, increased prices, decline in local production and welfare as opposite effects intended by LCR policy.

- Distortion of trade flows due to changes of the country's exchange rate, increase in costs of domestic production, and transfer of higher prices to consumers (Hufbauer et al. 2013).

1. Assuming that prior to the LCR each producer was free to choose from the most cost-effective source (whether it be domestic or foreign). Thus, an LCR is a government mandated decision to choose a less efficient supplier with higher costs than foreign suppliers due to lower technological levels.

Assessment of LCRs and subsidy schemes using TAD's Trade model

- Collaboration with **OECD's Trade & Agriculture Department (TAD)** and use of its computable general equilibrium (cge) model
  - Examination of impact of policy or other change (external shock) on the whole economy

Selection of LCRs having potentially an impact on the shipbuilding industry:

1. **US** Jones Act (1920)
2. **US** Energizing American Maritime Act (2020)
3. **Brazil:** LCR in oil and gas sector (1999)
4. **China:** Scrap and build subsidy (2010)
5. **Russia:** Regulation on the use of ships for the exploration and exploitation of mineral and other inanimate resources (2007)

1. US Jones Act (1920)

US Jones Act (1920): Vessels qualified to engage in US coastwise trade must be built in the US, owned by US entity, equipped by 75% with US crew and US flagged.

- **What would happen if the Jones Act was abolished today?**
  - Increase of productivity levels of US companies to international levels.
  - Change in demand for non-US ships (cheaper).
  - Demand for services under non-US flag.
- **Effect to be studied:** shipbuilding & water transport, with indirect implications on other sectors

2. US Energizing American Maritime Act (2020)

Energizing American Maritime Act (2020):

- From 2020: 15% of LNG and crude oil exports to be transported on US flagged vessels.
- From 2025: threshold will be raised to 30%.
- To be intended: requirement of ships being locally built.

- **What would happen if the Act was implemented today?**
  - Change in demand for US ships
  - Change in demand for services under US flag
- **Effect to be studied:** impact on shipbuilding & water transport, with indirect implications on other sectors

3. Brazil: LCR in oil and gas sector (1999)

Oil and Gas sector (1999):

- Contractual commitments as part of concession contracts (e.g. oil licenses) require oil companies to procure this minimum percentage of equipment and services from local suppliers.
- As of September 2017, LCRs will be reduced by half.

- **How does the decrease in LCR affect the shipbuilding industry?**
- **How would an oil price shock impact Brazil's economy with and without the LCR?**
  - Change in local production
- **Effect to be studied:** shipbuilding, with indirect implications on other sectors

4. China: scrap and build subsidy (2010)

Scrap and build subsidy (2010):

- Promotion of demolition of Chinese owned vessels which have not reached the statutory service life and new-orders of vessels built at Chinese yards.
- In 2014 the subsidy rate was raised by 50% .

- **How does the increase of 50% in subsidy affect the shipbuilding industry?**
  - Decrease in purchase price for buyer (shift in demand function to be estimated)
- **Effect to be studied:** shipbuilding, with indirect implications on other sectors

5. Russia: Exploration and exploitation of minerals (amendment of 2007)

Regulation on the use of ships for the exploration and exploitation of mineral and other inanimate resources:

- oil produced in the Arctic zone of the Russian Federation shall be transported by Russian flagged ships and vessels built at Russian shipyards

- **What would happen if the Regulation was abolished today?**
  - Change in demand for non-Russian ships (cheaper).
  - Demand for services under non-Russian flag.
- **Effect to be studied:** shipbuilding & water transport, with indirect implications on other sectors

WP6 Projects for 2017 and 2018

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6. Role of ship finance and impact of new financing forms on industry's development

Project description in PWB for 2018:

- How ship financing differs from other sectors.
- Studying the role of speculation

Recent developments/other ideas

- Difficulties of banks linked to the write-downs of their shipping portfolio
- Evolving regulation on ship finance ?
- Ship finance as a tool for competitive advantage
- New needs in terms of financing tools for ship owners / shipbuilders

Your interest and suggestions are welcome

WP6 Projects for 2017 and 2018

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Expected schedule for the renewal of the WP6 mandate

April 2017	The Secretariat will announce the draft schedule for the renewal of the WP6 mandate which will expire at the end of 2018.
November 2017	The Secretariat will prepare a discussion paper and will invite delegates to give their views.
March 2018	The Secretariat will prepare the draft revised WP6 mandate and will ask delegates to submit comments by written procedure.
May/June 2018	The Secretariat will invite delegates to discuss the updated revised mandate at the Spring meeting.
July 2018	The Secretariat will invite delegates for comments on the revised version by written procedure.
September/October 2018	Approval of the revised WP6 mandate by the Council

WP6 Projects for 2017 and 2018

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Table 6. Impact of binding local content requirements [a,b]

Summary of outcomes, percentage change

	Argentina	Brazil	Indonesia	India	Russia	United States	Venezuela	Kazakhstan	China	Rest of G20	Rest of OECD	European Union	Rest of World
Coal, Oil and Gas													
Production	0.09	-0.27	-0.04	3.45	-0.21	0.01	-0.03	-0.36	0.00	0.01	0.02	0.04	0.00
Production Cost	0.14	-0.36	-0.06	2.75	-0.37	0.01	-0.04	-0.37	0.01	0.02	0.03	0.04	0.01
Exports	-0.03	-0.83	-0.07	-0.03	-0.52	0.10	-0.05	-0.49	0.03	0.00	0.01	0.04	-0.02
Imports	0.06	1.06	-0.03	5.04	0.38	0.00	0.05	-8.28	0.00	0.00	0.03	0.03	0.01
Labour Demand	0.12	-0.37	-0.05	4.10	-0.30	0.01	-0.04	-0.47	0.00	0.02	0.03	0.05	0.00
Communications													
Production	0.02	0.15	0.01	-0.17	0.03	-0.01	0.03	0.79	-0.02	-0.02	-0.01	-0.02	0.00
Production Cost	-0.02	0.03	0.00	-0.04	-0.06	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00
Exports	0.17	-0.63	-0.06	-0.42	-0.53	0.00	-0.05	-0.29	0.00	0.02	-0.01	0.01	0.00
Imports	-0.02	-4.28	-0.29	0.32	-4.82	-0.04	0.07	1.71	-0.01	-0.05	-0.01	-0.03	0.00
Labour Demand	-0.01	0.18	0.01	-0.22	-0.04	-0.02	0.04	0.98	-0.02	-0.02	-0.02	-0.02	0.00
Electricity													
Production	-0.01	0.07	0.01	-0.36	0.16	-0.01	0.03	0.48	-0.02	-0.01	-0.01	-0.01	0.01
Production Cost	0.03	0.03	-0.01	0.33	-0.11	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00
Exports	0.14	-0.97	-0.06	-0.29	-0.54	0.10	0.57	-0.57	0.06	0.07	0.02	0.05	0.11
Imports	-0.17	1.18	0.07	-48.88	0.83	-0.04	0.13	1.21	-0.02	-0.05	-0.03	-0.04	-0.03
Labour Demand	0.03	0.10	0.00	0.16	0.04	-0.02	0.04	0.51	-0.01	-0.01	-0.01	-0.01	0.01
Food Products													
Production	0.11	-0.11	0.06	-0.12	-0.27	-0.01	0.02	4.26	-0.02	-0.01	-0.01	-0.01	0.01
Production Cost	0.04	0.00	0.01	-0.01	-0.08	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Exports	0.27	-0.98	-0.01	-0.62	-2.41	0.01	-0.06	1.79	-0.01	0.03	0.00	0.00	0.00
Imports	-0.10	1.05	-0.51	0.58	0.33	-0.07	0.04	5.66	-0.09	-0.09	-0.03	-0.06	-0.04
Labour Demand	0.15	-0.11	0.07	-0.14	-0.36	-0.01	0.04	4.26	-0.02	-0.01	-0.01	-0.01	0.01
Insurance													
Production	0.41	0.11	0.06	-0.18	-0.07	-0.02	0.03	0.94	-0.02	-0.01	-0.02	-0.02	0.00
Production Cost	-0.01	0.03	0.00	-0.03	-0.02	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00
Exports	0.05	-0.67	-0.03	-0.44	-0.62	-0.01	-0.03	-0.04	-0.01	0.02	-0.03	0.00	0.00
Imports	-34.77	0.79	0.07	0.42	0.70	-0.03	0.07	1.51	-0.05	-0.06	-0.02	-0.04	-0.01
Labour Demand	0.40	0.15	0.06	-0.21	-0.10	-0.02	0.03	1.05	-0.02	-0.02	-0.02	-0.02	0.00
Motor Vehicles													
Production	-3.76	3.89	-0.30	-0.16	19.22	-0.09	1.32	20.11	-0.07	-0.43	-0.34	-0.29	-0.31
Production Cost	-0.19	-0.06	-0.01	-0.07	2.39	0.02	-0.12	-6.97	0.03	0.05	0.01	0.03	-0.11
Exports	-6.47	2.16	-1.02	-1.00	29.66	-0.41	0.09	16.98	-0.56	-0.67	-0.75	-0.44	-1.00
Imports	-3.43	-29.09	-1.36	0.62	-36.13	-0.10	-2.44	22.56	-0.11	-0.37	-0.33	-0.26	-0.01
Labour Demand	-4.00	3.81	-0.31	-0.25	22.81	-0.07	1.16	9.65	-0.04	-0.38	-0.32	-0.25	-0.45
Other Minerals													
Production	0.11	-0.23	0.01	-0.97	0.31	0.00	0.04	0.03	0.04	0.05	0.04	0.02	0.05
Production Cost	0.05	-0.12	-0.02	0.76	-0.16	0.00	-0.01	-0.13	0.01	0.00	0.00	0.01	0.00
Exports	0.12	-0.34	0.02	-1.14	0.06	0.03	0.05	0.10	0.04	0.09	0.06	0.03	0.07
Imports	-0.87	1.07	-0.04	-0.09	1.05	0.00	0.13	-2.27	0.00	0.01	0.04	0.00	0.05
Labour Demand	0.12	-0.26	0.01	-0.82	0.28	0.01	0.03	0.01	0.04	0.05	0.04	0.02	0.04
Water Transport Sector													
Production	0.04	0.07	2.55	0.71	-0.19	-0.03	-0.07	0.56	-0.03	-0.06	-0.13	-0.16	-0.14
Production Cost	-0.01	-0.01	-0.01	-0.03	-0.04	0.00	0.01	0.06	0.00	0.00	0.00	0.00	0.01
Exports	0.07	-0.60	1.85	0.17	-0.66	-0.06	-0.15	-0.27	-0.06	-0.07	-0.14	-0.17	-0.20
Imports	-0.03	1.17	2.87	1.54	0.71	-0.06	0.07	-0.11	-0.04	-0.10	-0.13	-0.18	-0.18
Labour Demand	0.03	0.06	2.04	0.66	-0.26	-0.03	-0.06	0.67	-0.03	-0.06	-0.12	-0.16	-0.13

a) For the individual sector results exports refer to the commodity exports of the sector and imports refer to total intermediate commodities imported to that sector
b) The exchange rate is in price notation, thus a decrease indicates an appreciation in respect to the reference region (Rest of G20).
Source: Author's calculations.

20-24 November 2017, First OECD Ocean week, Three events back-to-back

- **20 November : WP6 workshop**
- **21-22 November : Green Growth and Sustainable Development Forum (GGSD) on Greening the ocean economy**
  - ***22 November : Most interesting GGSD sessions for WP6 delegates*** to avoid conflict of agenda with the 21 November WP6 meeting
  - Please refer to the ***presentation by Jaco Tavenier*** (WP6 delegates invited to join a task force on the GGSD agenda)
  - A session on "Greening" of Ocean-Based Industries: Case of sectors (including ***shipbuilding***) based on non-living marine resources and infrastructure
- **23-24 November : Symposium on measurement issues for the ocean economy**
- WP6 delegates will be also be invited to the GGSD and Symposium
- Cooperation with ENV and Ocean in terms of preparation of the events and communication.

Discussion and Q&A

Your interest and your ideas on the topics are more than welcome.

GLOBAL PRODUCTION NETWORKS OF SHIPBUILDING INDUSTRY USING HARMONISED INDUSTRIAL DATABASE

Norihiko Yamano and Ali Alsamawi

OECD Directorate for Science, Technology and Innovation

OECD124th session of the Council Working Party on Shipbuilding (WP6)

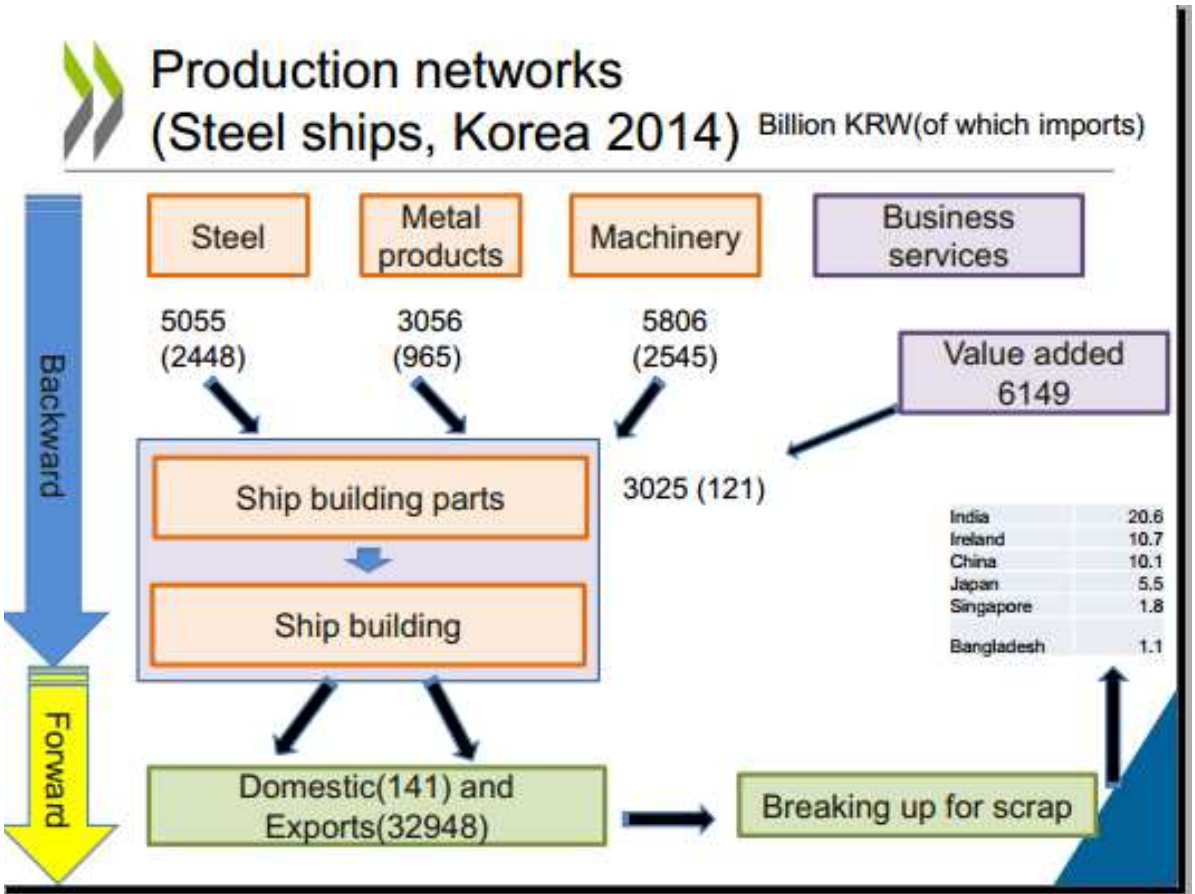
18-19 April 2017

OECD
BETTER POLICIES FOR BETTER LIVES

Available data sources

- Bilateral trade statistics
  - Timely, 160+ countries, detail product
- Input-output database
  - Detail and timely info available for some countries
- Trade in Value added
  - Inter-country relationship

2



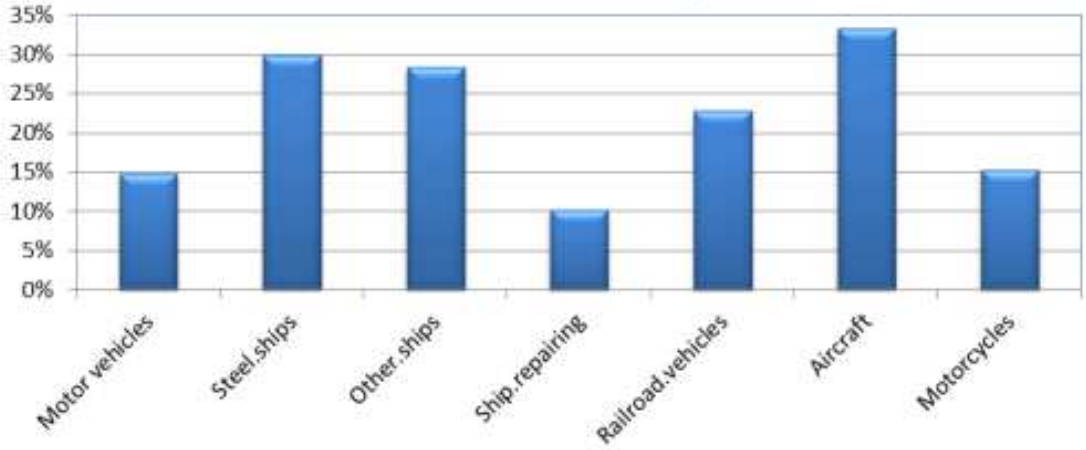
Input structure of shipbuilding sector (Billion KRW - Korea 2014)

	Domestic	Imports	Total
General machinery	3,262	2,545	5,806
Iron and steel	2,607	2,448	5,055
Other manufacturing	3,192	21	3,213
Other transport equip.	3,025	121	3,146
Metal products	2,092	965	3,056
Other	5,233	1,429	6,662
VA: Compensation of employees	4,393		
VA: Operating surplus	(1,346)		
VA: Depreciation of fixed capital	3,046		
VA: Other net taxes	57		
Output	33,089		

Source: Bank of Korea, Input-Output Table

National IO structure: Input structure of shipbuilding sector

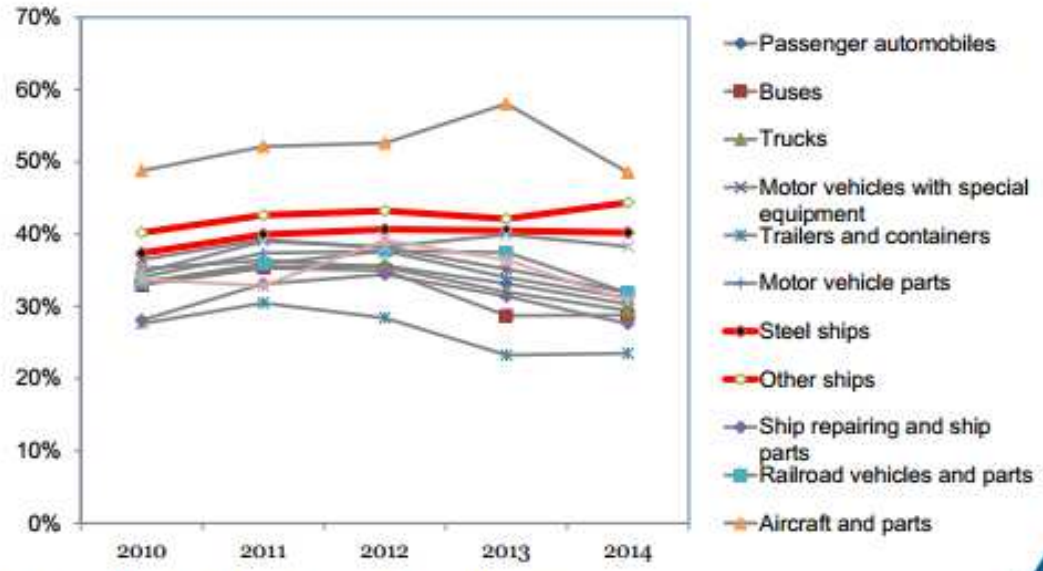
Import penetration of intermediate inputs
% of total intermediate inputs



Source: Bank of Korea, Input-Output Table 2010

5

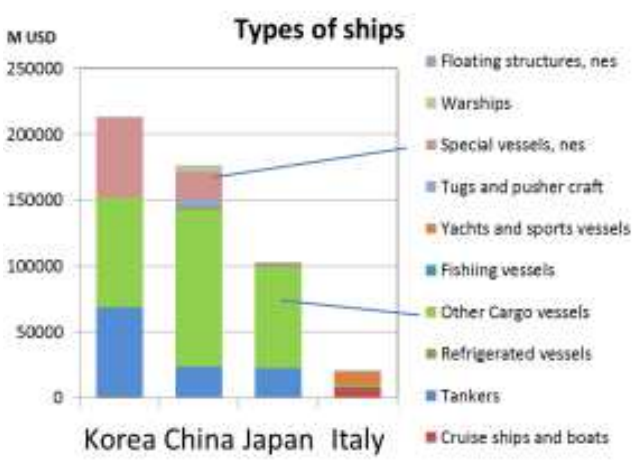
National IO structure: Import contents share of exports

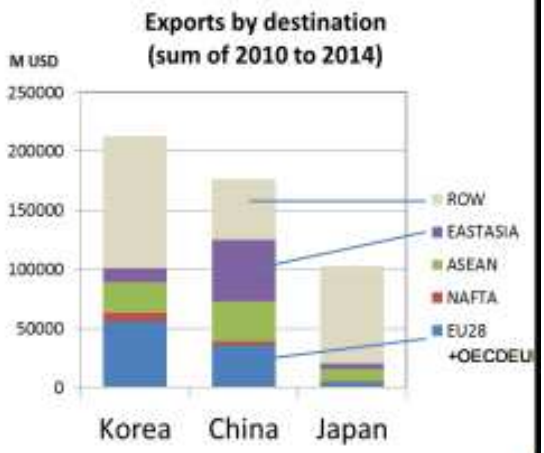


Source: Bank of Korea, Input-Output Table

6

Exports of ships by type and destination (selected major exporters, 2010-2014)

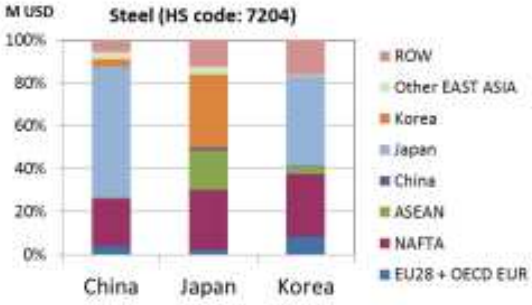


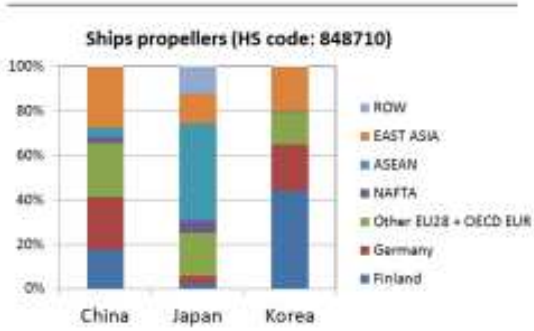


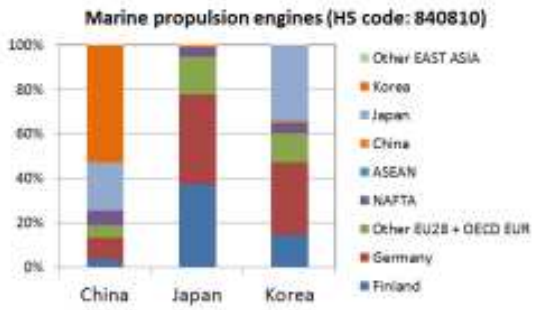
Source: UN Comtrade.

7

Imports of major supplies for shipbuilding



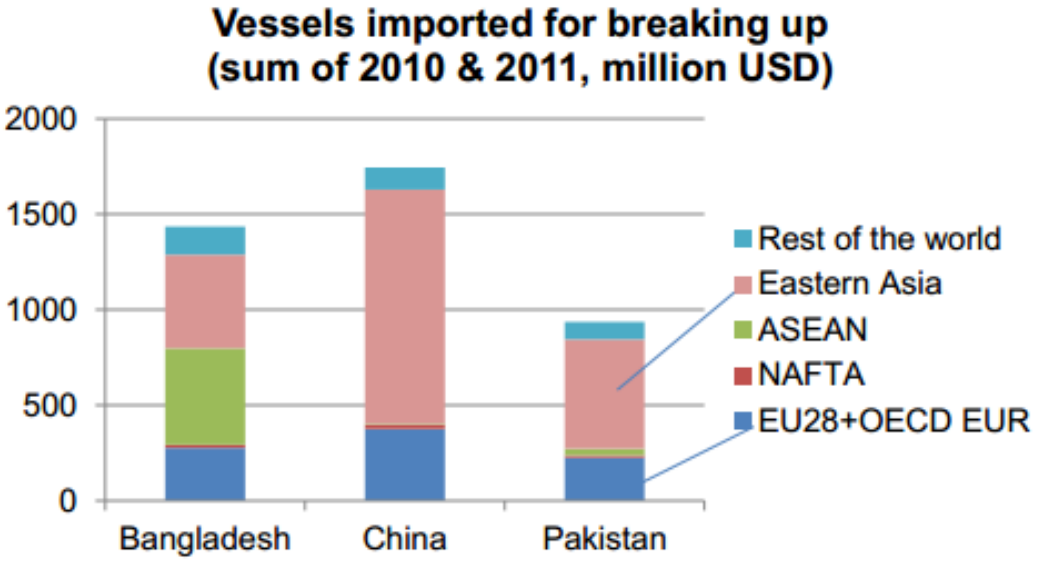




Source:
UN Comtrade

8

Trade in ships for breaking up



9

What is TiVA?

An Alternative view of trade relationships across countries ...

... measuring international flows of value added and providing new insights into:

- Global **interconnectedness**
- Direct and indirect economic effects of trade

http://oe.cd/tiva

10

Examples of TiVA indicators

- *Foreign value added content of gross exports* i.e. backward linkages in GVCs to upstream countries, and their industries
- *Domestic value added content of foreign exports* i.e. forward linkages in GVCs to downstream countries
- Distribution of services value added embodied in gross exports of manufactured goods
- Decomposition of gross exports (value added of exporting industry, indirect impacts from other domestic industries, foreign value added)
- Country and industry origin of value added in final demand goods and services

11

Coverage

- The core of TiVA project is construction of an Inter-Country Input-Output model (ICIO)
- 63 individual countries/economies + rest of the world (covering OECD, EU, G20, S.E. Asia)
- 34 industries
  of which: 16 manufacturing sectors including
  "Other transport equipment "
- Heterogeneity within industry
  Processing firms (China, 72)
  Global manufacturing (Mexico, 52)
- Annual 1995 to 2011

12

Summary

- Increased foreign dependency
  - Domestic VA sustained by foreign demand; and exports per total VA
  - Foreign contents in steel production
- Shipbuilding industry has relatively high foreign content and is more dependent on foreign economic demand than other transport equipment industries
- Further extensions to enhance quality of ICIO-based analysis:
  - Disaggregate the shipbuilding sector (ISIC3-351) from total other transport equipment (ISIC3-35)

    e.g. Australia, Germany, Japan, Korea, Mexico, United States, China, Philippines and Thailand
  - Transactions of scrap and changes in inventories

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THANK YOU

More information at

http://oe.cd/tiva
http://oe.cd/i-o

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Appendix: Industry list (ICIO2016)

Shipbuilding separated in data source	Australia, Germany, Japan, Korea, Mexico, China, Philippines, Thailand, United States	
Agriculture, Mining	Agriculture [01,05], Mining [10,14]	
Manufacturing	Food products [15,16], Textiles & apparel[17,19] Wood [20] Paper print publishing [21,22] Coke, petroleum[23] Chemicals[24] Rubber & plastics[25] Non-metallic minerals[26]	Basic metals[27] Fabricated metals[28] Machinery [29] ICT & electronics [30,32,33] Electrical machinery [31] Motor vehicles [34] Other transport equipment [35] Other manufacturing [36,37]
Utility and Construction	Utilities [40T41], Construction [45]	
Business services	Wholesale & retail [50,52] Hotels & restaurants [55] Transport & storage [60-63] Post & telecoms [64] Finance & insurance [65-67]	Real estate [70] Renting of machinery [71] IT services [72] Other business services [73,74]
Other services	Public admin [75]; Education [80]; Health [85];	Other services [90-93]; Private households [95]

[ISIC Rev.3 code]