Shipbuilding & Ocean Development Business Operation

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MITSUBISHI HEAVY INDUSTRIES, LTD.

Shiro Iijima
Director, Executive Vice President,
General Manager,
Shipbuilding & Ocean Development Headquarters

March 12 Business Briefing Summary

1. Outline of the Shipbuilding & Ocean Development Business

(1) Structure, Employees, Facilities

(2) Major Products

2. Market Environment

(1) Projected Volume of Seaborne Goods Transported

(2) Change in Volume of Completion and in the future supply-demand balance

3. Business Strategy for the Age of Mega-Competition

(1) Further Enhance Technical Capabilities

(2) Bolster Cost Competitiveness

1. Outline of the Shipbuilding & Ocean Development Business
(1) Structure, Employees, Facilities

Technical Headquarters

Shipbuilding & Ocean Development Headquarters

- Nagasaki Research & Development Center
- Nagasaki Shipyard & Machinery Works
- Shimonoseki Shipyard & Machinery Works
- Kobe Shipyard & Machinery Works
- Yokohama Dockyard Machinery Works

* Employees relating to the Shipbuilding & Ocean Development segment

1,100 employees for research and design

Number of employees

	Total number of employees at headquarters	Nagasaki Research & Development Center	Nagasaki Shipyard & Machinery Works	Shimonoseki Shipyard & Machinery Works	Kobe Shipyard & Machinery Works	Yokohama Dockyard Machinery Works
Research	50*					
Design	1,020	562	137	287	12	
Manufacturing	3,704	2,222	516	797	169	
Other	146	33	22	21	5	
Total	4,870	2,817	675	1,105	186	

Facilities

- Towing tank
- Seakeeping & maneuvering basin

Major shipbuilding facilities

Site (m^2)	Nagasaki Research & Development Center	Nagasaki Shipyard & Machinery Works	Shimonoseki Shipyard & Machinery Works	Kobe Shipyard & Machinery Works	Yokohama Dockyard Machinery Works
	Koyagi 1,200,000	Tategami 350,000	130,000	210,000	150,000
Dock (Length (m) x width (m) / Capacity (deadweight tons))	990.0 x 100.0 / 1,000,000	375.0 x 56.0 / 225,000	164.1 x 23.8 / 17,000	301.5 x 43.7 / 160,000	350.0 x 60.0 / 270,000
	400.0 x 100.0 / 500,000	350.0 x 56.0 / 300,000	217.0 x 32.0 / 40,000		270.0 x 60.0 / 120,000
		276.6 x 38.8 / 95,000	82.8 x 16.3 / 4,000		180.0 x 30.0 / 38,000
Berth (Length x width / Capacity (deadweight tons))	–	324.0 x 56.0 / 80,000	185.9 x 53.2 / 33,000	305.0 x 61.4 / 310,000	–
				136.0 x 12.0 / 24,500	
Crane (G: goliath J: jib)	G: 1,200t x 1 G: 600t x 2 J: 50t x 1	G: 300t x 2 G: 150t x 2 J: 150t x 4	J: 150t x 1 J: 80t x 1 J: 50t x 3	J: 200t x 1 J: 120t x 1 J: 100t x 4	J: 80t x 3 J: 40t x 1 J: 16t x 6

1. Outline of the Shipbuilding & Ocean Development Business
(2) Major Products

Escort ship (Nagasaki Tategami)

Submarine (kobe)

Ferry

Pure car and truck carrier

Large container vessel
(6,000 ~ 8,000TEU)

[Defense force ship and other]
20%

[Small Ship]
(Shimonoseki)
10%

[Medium-size ship]
(Nagasaki Tategami, Kobe)
25%

[Large Ship]
(Nagasaki Koyagi)
45%

Moss type LNG carrier

Membrane type LNG carrier

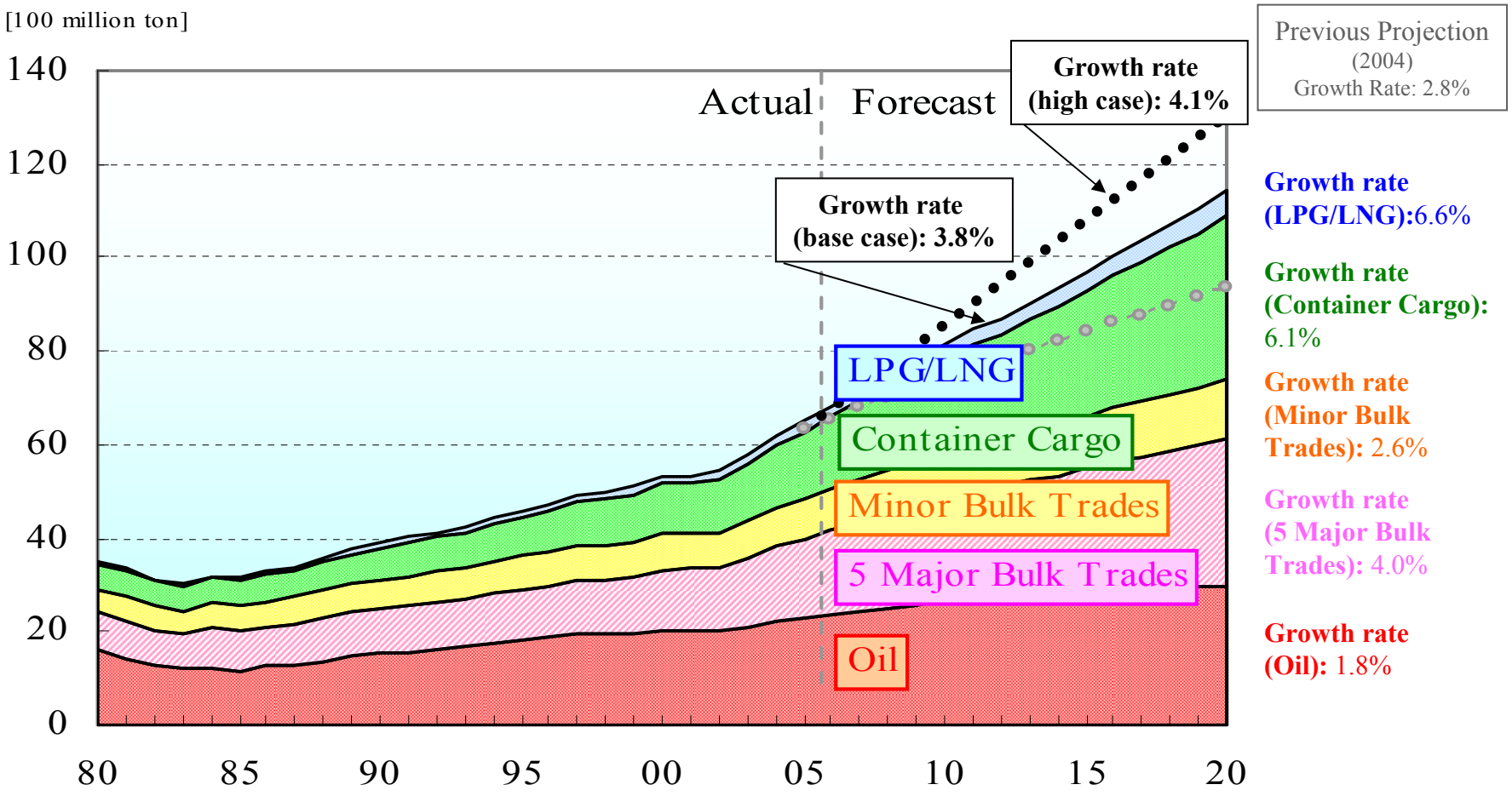
VLCC

Mega container vessel
(larger than 8,000TEUs)

Passenger vessel

2. Market Environment
(1) Projected Volume of Seaborne Goods Transported

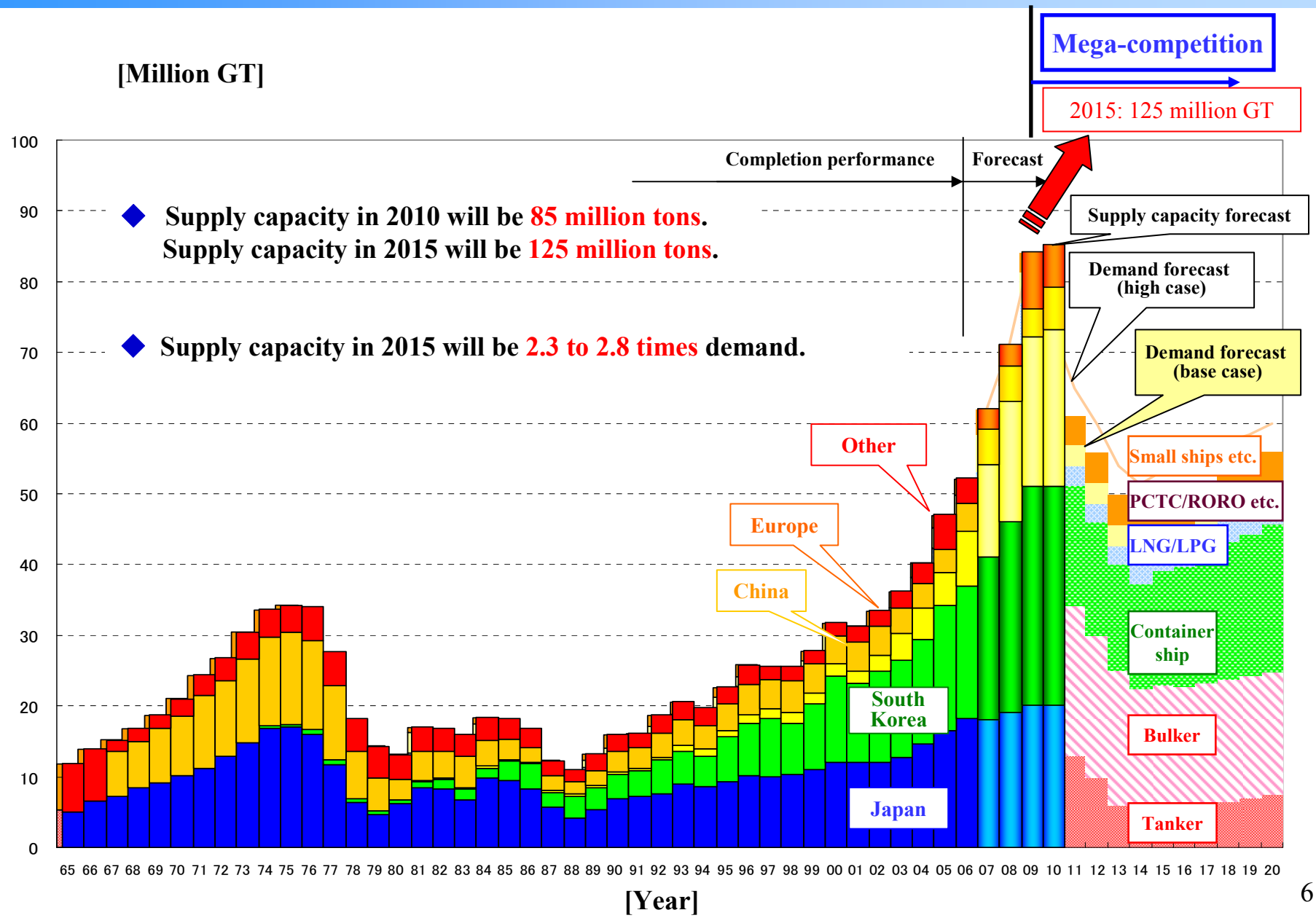
Projected overall volume of goods transported by 2020 is 1.7 to1.8 times that of 2006, representing an annual growth rate of 3.9 to 3.2% across all ship types.



(Note) Five Major Bulk Trades: Iron ore, Coal, Grain, Bauxite and Alumina, Phosphate Rock

2. Market Environment

(2) Change of volume of completion and in the future supply-demand balance



3. Business Strategy for the Age of Mega-Competition

● Structural recession (1975 to 1984)

- Shipbuilding demand was minimal
- Fuel cost: 100 to 200 dollars/ton
- Environmental regulations: None
- Shipyards in accordance with the environment

● Age of mega-competition

- Demand is about twice that at the time of the shipbuilding boom
- Fuel cost: 500 dollars/ton; customers emphasize fuel consumption
- Tightening of regulations on CO2, NOx and SOx
- Emerging shipyards account for the majority of the market

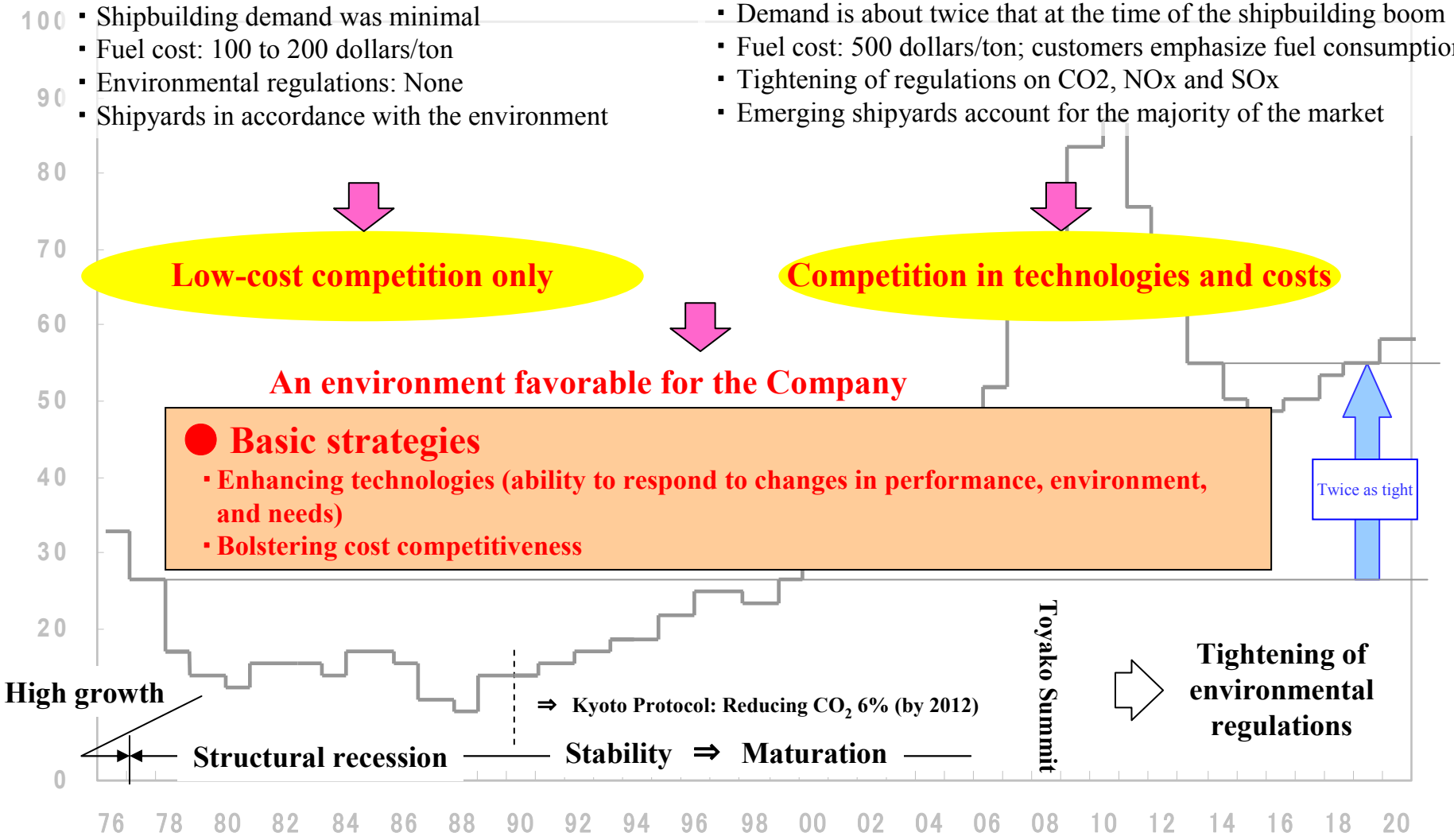
Low-cost competition only

Competition in technologies and costs

An environment favorable for the Company

● Basic strategies

- **Enhancing technologies (ability to respond to changes in performance, environment, and needs)**
- **Bolstering cost competitiveness**



3. Business Strategy for the Age of Mega-Competition

Further Enhance Technical Capabilities

(1) Improved fuel efficiency (lead of over 10%)

(2) Develop technologies conducive to environmental measures

Bolster cost competitiveness: Reduce manufacturing costs by 10%

(1) Production process transformation
(utilizing the MATES shipbuilding system)

- Modernization of management and manufacturing

  1) Shifting of management to IT and towards digitization

  2) Expansion of automation, robotization

  3) Improved precision in manufacturing

(2) Maintenance and enhancement of infrastructure, modernization of equipment

- Over five years from 2006 to 2010: Approx. 50 billion yen in capital investment

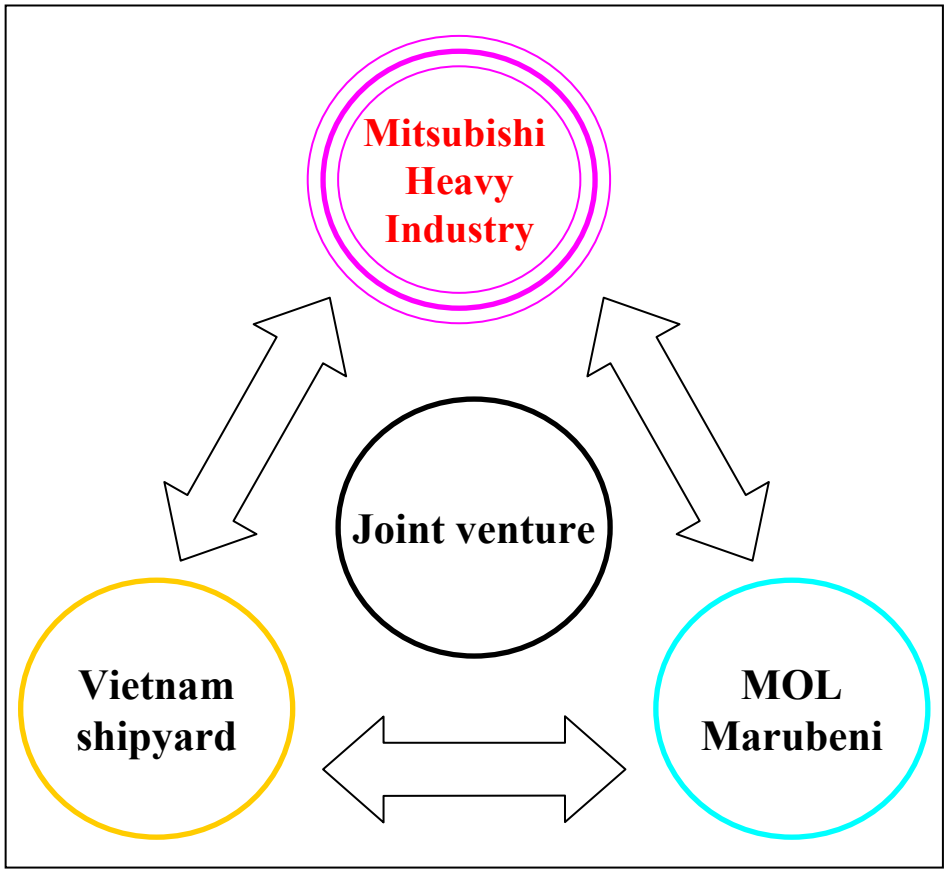
(3) Using external resources (global expansion)

3. Business Strategy for the Age of Mega-Competition

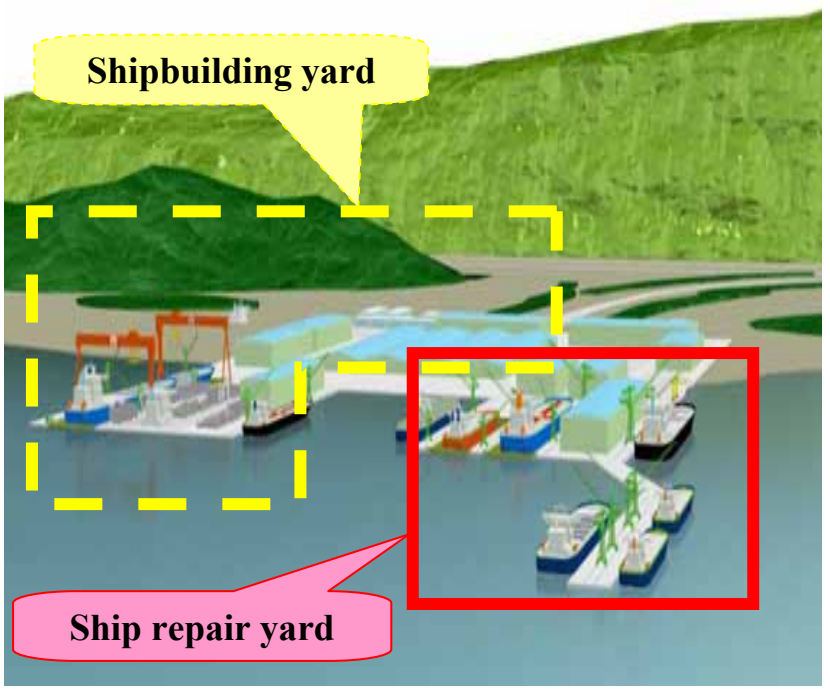
(3) Using external resources (global expansion)

- **Operations are slated to begin in 2010**
- **Shipbuilding operations will be decided based on future market trends**

Ship repair in Vietnam
(Under FS)



Image



June 16 Business Briefing Outline

[Changing Market Environment]

(1) Latest demand & supply forecasts

[Status of Major Initiatives]

(1) Progress of efforts to enhance technical capabilities

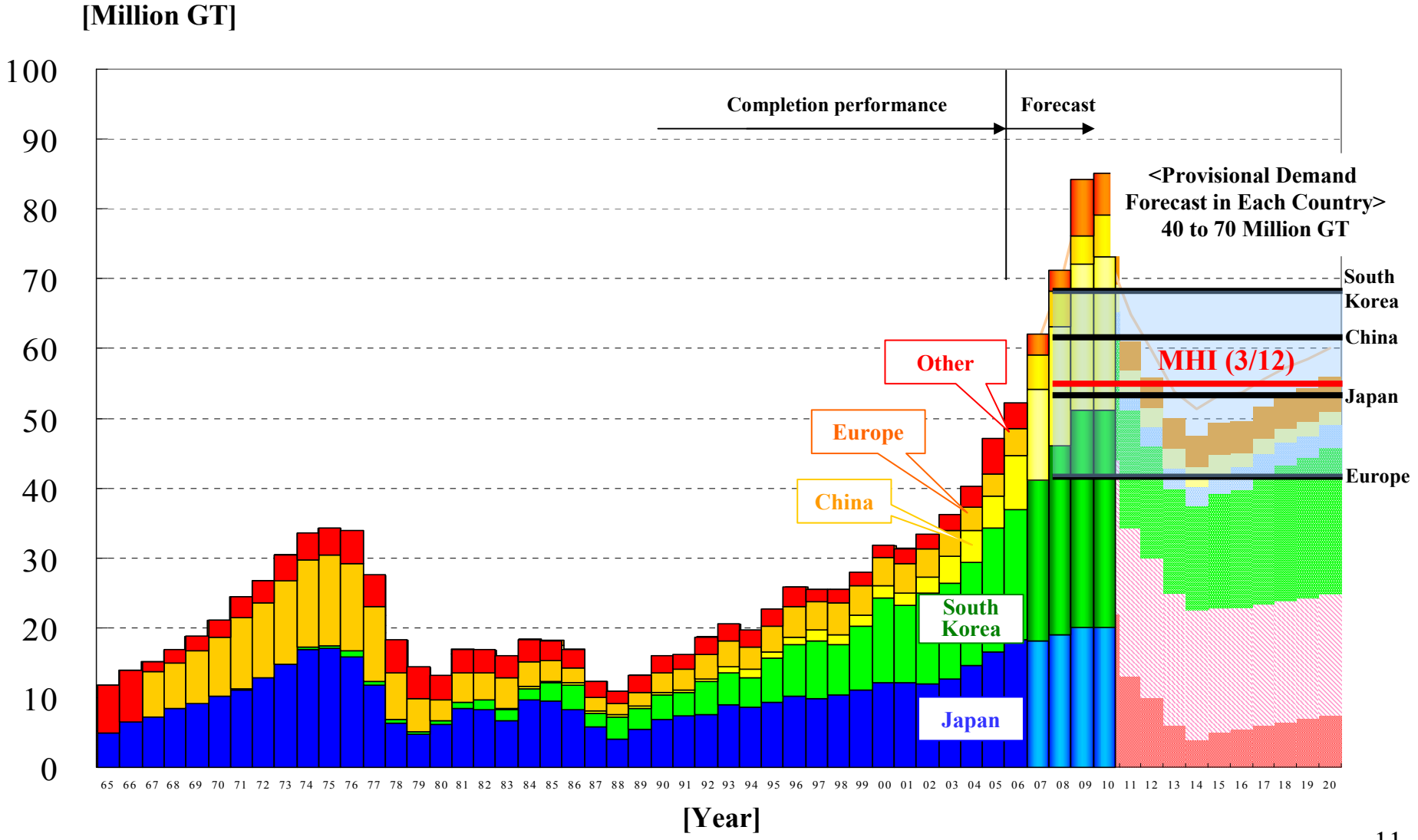
(2) Dealing with machinery and materials as a efforts towards cost competitiveness

(3) Impact of rising steel prices and countermeasures

(4) Progress of efforts in passenger vessel business

4. Last Demand Forecast

(1) Comparison of Provisional Demand Forecasts among Shipbuilders' Associations



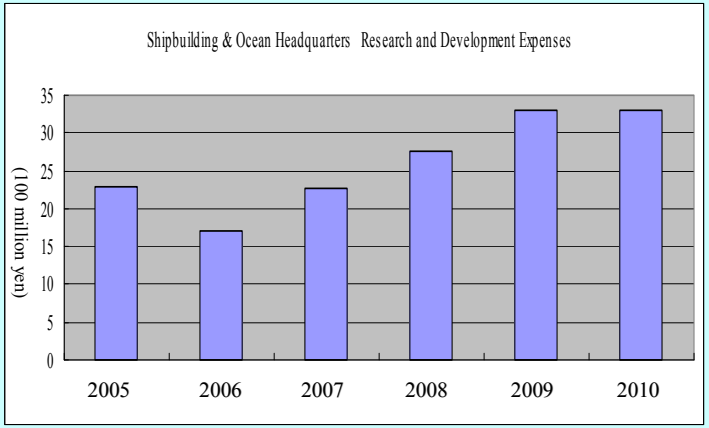
5. Efforts to Enhance Technical Capabilities

View rising fuel costs and the tightening of environmental regulations as opportunities to differentiate our technical capabilities from those of competitors

- **Efforts aimed at improving fuel efficiency: Set the new goal of holding the "No.1 spot in fuel efficiency"**
- **Efforts in response to environmental regulations: "Advanced Development in Environmental Technologies" initiative in collaboration with other MHI headquarters**

[Using and reinforcing technical resources]

Design staff:	1,020 employees
Research staff:	50 employees
Research facilities:	Towing tank, etc.



[Collaboration with other headquarters]

Power Systems Headquarters
(turbine, diesel, and SCR technologies)

Machinery and Steel Structures Headquarters
(SCR technology)

Sustainability Energy & Environment Strategic Planning Department

[Product planning team by ship type]

(Home office)

Sales **Design** **Materials**

Manufacturing **R&D centers**

5. Efforts to Enhance Technical Capabilities

(2) Estimated advantages to be gained due to improvements of fuel efficiency

Rising Cost of Fuel

Cost of Fuel: Over $500/ton …and still rising

Advantages from Improvements to Fuel Efficiency

[8000 TUE Container Vessel, when operating at 25 knots]

Fuel Consumption	Cost of Fuel (500 dollars/ton)
57,000 tons/year	2.85 billion yen/year
Improvement to Fuel Efficiency: -10%	
51,300 tons/year	2.57 billion yen/year

[Advantages for Ship Owners]

Fuel Costs: 280 million yen/year saving

⇒ Over ship lifetime: At 20 years

Savings of approx. 5.6 billion yen

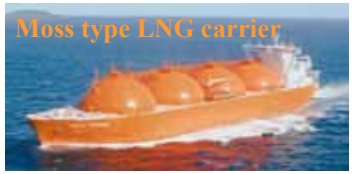
Equivalent of about 1/3 the tonnage value

Ship Owners: Even if a ship costs 2 billion yen more, the will embrace a fuel efficient ship

5. Efforts to Enhance Technical Capabilities

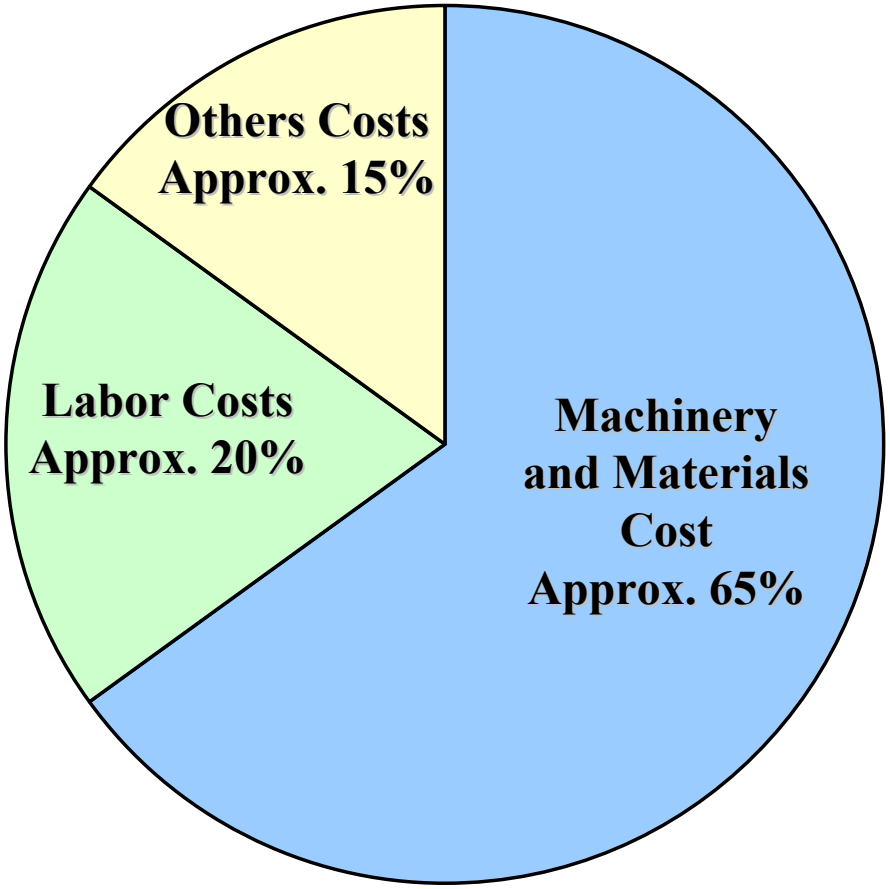
(3) Maintain the No.1 Position in Fuel Efficiency

(Through a redesign of ships, achieve a double-digit fuel efficiency differential of over 10%)

Large ferry		Expand fuel efficiency competitiveness Achieve superior comfort
Pure car and truck carrier		Expand fuel efficiency competitiveness Achieve superiority in loading efficiency
Container ship		Expand fuel efficiency competitiveness Secure superiority in heavy container ships
LNG carrier	 	Continue to build MOSS LNG carriers that offer superior safety Bolster competitiveness by enhancing fuel efficiency 15% or more

6. Dealing with Machinery and Materials

Breakdown of Costs (Example of LNG Carrier)

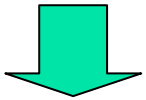


- Modular Design Project
- Technical Collaboration with Suppliers

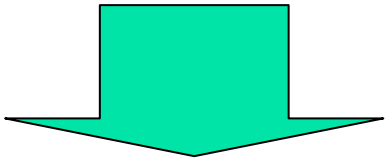
6. Dealing with Machinery and Materials

(1) Modular Design Project

Standardization of Structure, Devices and Fittings



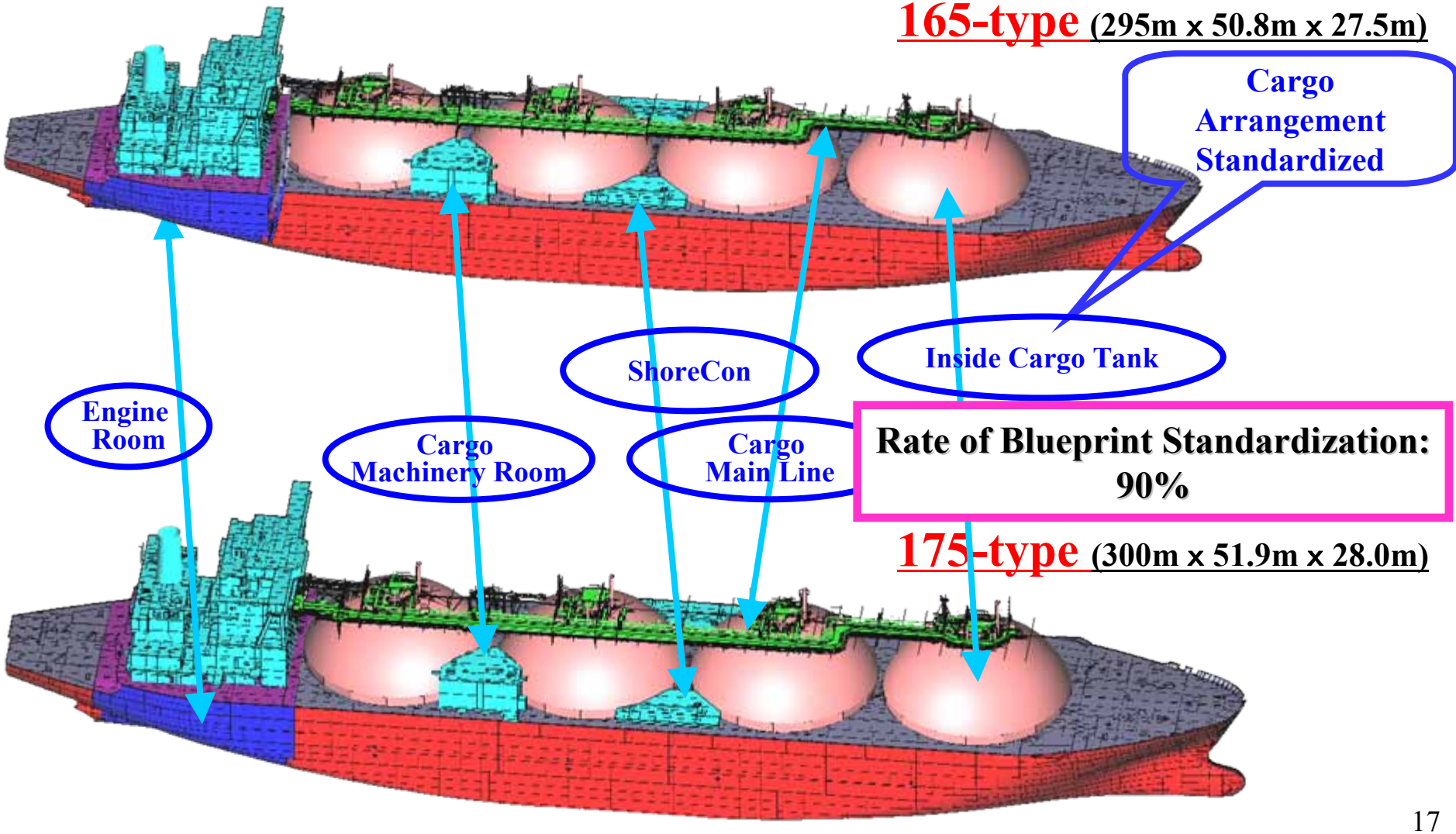
Fixing of Procured Parts and Procurement Sources



- **Forge close ties with suppliers**
  Eliminate suppliers' tendency for over-specification

6. Dealing with Machinery and Materials

<Modular Design Project Example (1)>
Parts standardization regardless of hull size



6. Dealing with Machinery and Materials

<Modular Design Project Example (2)>
Cataloging of Wheel Houses

Rate of Blueprint Standardization : 80%

Pattern 1

Pattern 2

Pattern 3

Traditionally: Differences in customer requests were large, making this area difficult to standardize.

Analysis and patterning of results and future needs

→ Efforts towards cataloging wheel houses in a straightforward manner for customers

6. Dealing with Machinery and Materials

(2) Technical Collaboration

- Changes to environmental regulations, laws and rules such as CO2 emissions
- Enlarged supply capacity for marine equipment from overseas manufacturers

A technical collaboration that allows successful use of the MHI R&D Division

Development of devices and fittings with a high added-value (mutual benefit)

- Collaboration with Nippon Steel Corporation: Development of 47 kgf/mm^2 High Tension Steel
- Collaboration with Hitachi Plant Technologies, Ltd.: Development of Ballast Water Purification System
- Collaboration with Furino Electric Co., Ltd.: Crew safety management through on-board wireless LAN
- Currently proceeding with technical collaborations with eight other companies

7. Impact of rising steel prices and countermeasures

(1) Impact of rising steel prices

Rising Steel Prices

Steel Unit Price Increases: Will prices stop come to a stop at the 30,000 yen/ton level?

Impact of rising steel prices

	[Japan Total]	[MHI]
Steel Consumption:	Approx. 4 million tons/year	Approx. 350,000 - 400,000 tons/year
Amount Affected:	Approx. 120 billion yen/year	Approx. 10.5 billion - 12 billion yen/year

→ **Will this plunge some businesses into the red?**
Huge impact on shipbuilding industry

FY 2008 P&L Forecast (MHI)

Taking into account the effect of rising steel prices: 5 billion Yen

7. Impact of rising steel prices and countermeasures

(2) Topics for Further Discussion on Rising Steel Prices

1) Introduction of an escalating close surcharge

2) Promotion of Economical Design (MD)

3) Productivity improvements to shorten lead time (Construction of nearby berths)

4) Expand orders for ship types with a lower proportion of steel

5) Expansion of ship repair business

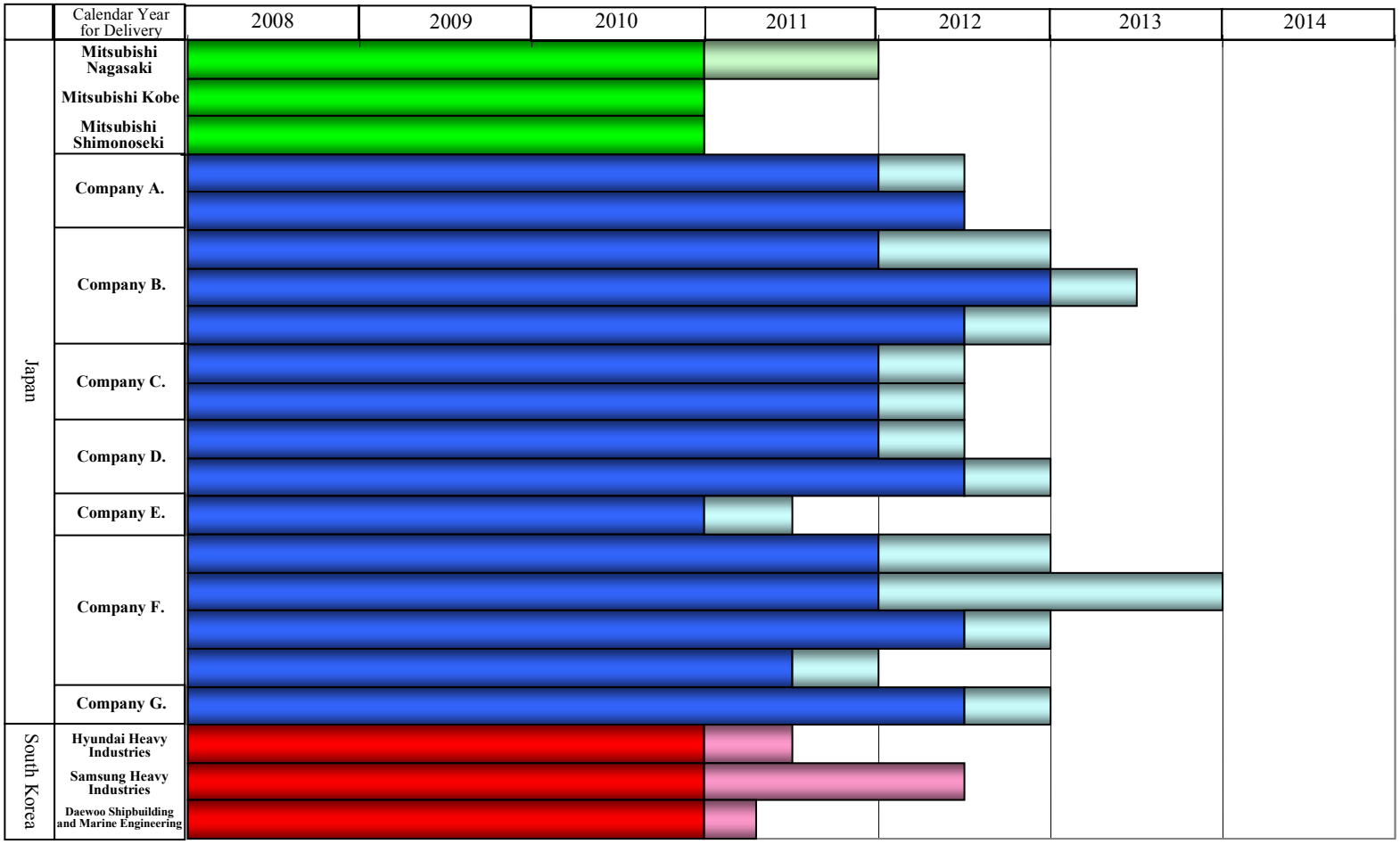
7. Impact of rising steel prices and countermeasures

(2) Status of Berth Constructions Across Companies

Korean shipbuilding yards have three years of outstanding construction orders, with three years for MHI and four years for Japan.

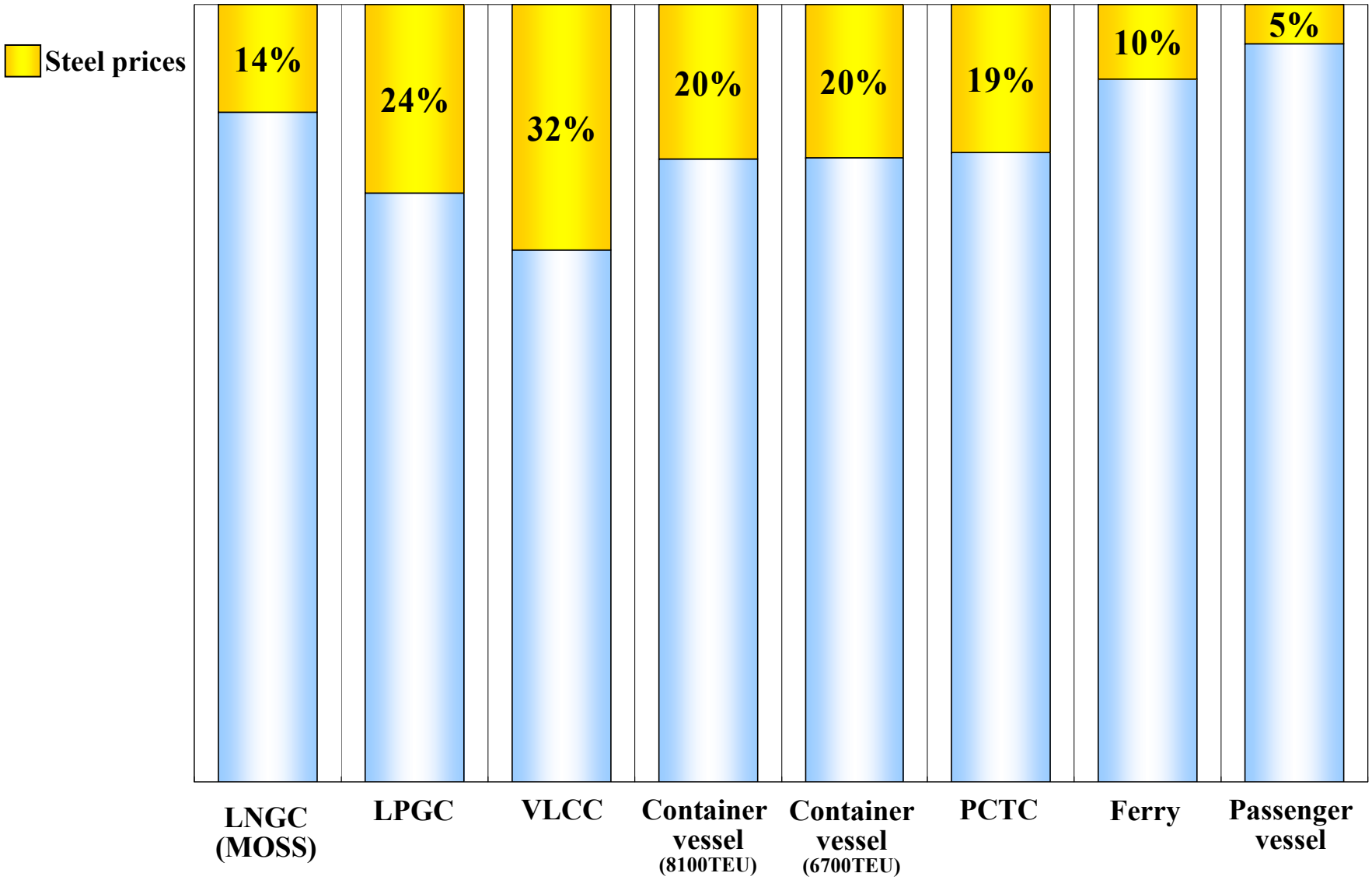
Line Representation of Berth Construction Status for All Shipbuilding Companies

Completion Base as of March 2008



7. Impact of rising steel prices and countermeasures

(2) Proportion of Manufacturing Costs Accounted for by Steel



8. Efforts in Passenger Vessel Business

(1) Appeal of Passenger Vessels

1) The proportion of steel, whose price cannot be locked in at the quotation stage, accounts for less than 4~5% of total production costs.

2) There is a potential for an increased scope of operations and increased profits

   Dry-dock period is approximately 1.6 times (seven months) that of LNG carriers, and four times the price

3) A greater amount of materials are dealt with, greatly contributing to regional development.

4) There is an increased demand for seakeeping performance, vibration absorption technologies, environmental technologies, decorating techniques, and recently also fuel efficiency in passenger vessels, requiring comprehensive engineering capabilities.

This business will stabilize provided there is an ongoing demand

8. Efforts in Passenger Vessel Business

(2) Review and Analysis of Passenger Vessel Construction

Though the ships have been graded as top caliber, planned costs have not been achieved and operations have become unprofitable.

[Features of Passenger Vessels and Introspection on MHI Performance]

1) Vast amount of materials and complex structure

- **Inadequate design accuracy, materials management production management precision**
- **Advanced map reading techniques are required**

2) Sheet metal structure

- **Construction techniques inadequate to cope with the ease of distortion**

3) High-level interiors beyond that of commercial vessels

- **Collection of interior finishing work brought together at the shipbuilder**

8. Efforts in Passenger Vessel Business

(3) Measures being considered to deal with Passenger Vessel Construction

1) Design using MATES (3D-CAD)

- Error-free, high-precision design
- Materials and logistics management, production management through full computerization.
- Move away from the use of construction blueprints with the introduction of printing devices, etc.

2) Develop construction methods and tools to deal with sheet metal structures

3) Promote a GC and consortium framework for interior finishing work

Realize passenger vessel construction free from the need for post-adjustment or re-doing