



# Scenario of the first half of 2014

## Contents

Presentation

Results and prospects

Oil, product and gas tankers

Offshore support vessels

Production platforms

Drilling rigs

Maritime and river transportation

Shipyards and shipbuilding centers

Human resources

Technology and innovation

World scenario

Conclusions



*Dragão do Mar* oil tanker  
Delivered in 2014 by EAS (PE)

## Cenário do 1º Semestre de 2014

### Presentation

Increasing Brazilian oil and gas production is among Brazil's strategic objectives.

It is a target that all agree with and which has a positive impact on the country, beginning with the Shipbuilding Industry which generates more than 80 thousand jobs.

### Summary of shipyard order books

| Type of construction                  | No.        |
|---------------------------------------|------------|
| Oil tankers                           | 34         |
| Gas tankers                           | 8          |
| Drilling rigs                         | 29         |
| Production platforms                  | 16         |
| Maritime support vessels              | 61         |
| Container ships and bulk carriers     | 4          |
| Ships and barges for river navigation | 220        |
| Patrol ships for the Navy             | 4          |
| Submarines                            | 5          |
| <b>Total</b>                          | <b>381</b> |

## Cenário do 1º Semestre de 2014

### Presentation

Various countries are strengthening their Shipbuilding capacity, given the forecast increase in maritime transportation, with volume set to grow from the current level of 10 billion tons per year to 19 billion tons in 2030.

The demand for oil and its products will remain strong until 2040 according to the IEA (*International Energy Agency*).



FPSO P-58, delivered by QGI, in 2013.

It is currently operating in the Parque das Baleias (ES) field

## Cenário do 1º Semestre de 2014

### Results and prospects

The Merchant Navy Fund (FMM), managed by the Ministry of Transport, informs that 357 vessels and five shipyard construction or expansion projects, have been completed since 2007.

Ship delivery █  
 Shipyards projects █



## Cenário do 1º Semestre de 2014

### Results and prospects

#### **Shipbuilding sector has grown 19.5% a year since 2004**

The IPEA (Institute for Applied Economic Research) informs in the book “Re-emergence of the Shipbuilding Industry in Brazil - 2000-2013”, that Brazil’s Shipbuilding Industry has grown 19.5% a year since 2004.

#### **The Libra Field boosts oil investments**

The BNDES (Brazilian Economic and Social Development Bank) mapped forecast investments in various sectors of the Brazilian economy and concluded that the the largest investments will be made in the oil and gas industry.

## Cenário do 1º Semestre de 2014

### Oil, product and gas tankers

#### PROMEF

Seven ships were delivered to Transpetro between 2011 and April 2014.

| Date | EAS (PE)                  | Mauá (RJ)                        |
|------|---------------------------|----------------------------------|
| 2011 | -                         | <i>Celso Furtado</i>             |
| 2012 | <i>João Cândido</i>       | <i>Sergio Buarque de Holanda</i> |
| 2013 | <i>Zumbi dos Palmares</i> | <i>Rômulo de Almeida</i>         |
| 2014 | <i>Dragão do Mar</i>      | <i>José Alencar</i>              |



## Cenário do 1º Semestre de 2014

### Oil, gas and product tankers

#### PROMEAF

Ship delivery schedule:

39 ships under construction and three still to be ordered.

| Shipyards/ Ships                                 | 2014     | 2015     | 2016     | 2017     | 2018     | 2019     | 2020     |
|--|----------|----------|----------|----------|----------|----------|----------|
| <b>EAS (PE)</b>                                  |          |          |          |          |          |          |          |
| 7 Suezmax (+ 3 already delivered)                | 3        | 2        | 2        |          |          |          |          |
| 4 DP Suezmax                                     |          |          |          |          |          | 3        | 1        |
| 5 Aframax  |          |          |          | 2        | 2        | 1        |          |
| 3 DP Aframax                                     |          |          |          |          |          |          | 3        |
| <b>Mauá (RJ)</b>                                 |          |          |          |          |          |          |          |
| 8 product tankers (+ 4 already delivered)        |          | 2        | 3        | 3        |          |          |          |
| 4 <i>Panamax</i>                                 | 3        | 1        |          |          |          |          |          |
| <b>VARD Promar (PE)</b>                          |          |          |          |          |          |          |          |
| 8 gas tankers                                    | 2        | 3        | 3        |          |          |          |          |
| <b>Shipyard to be defined</b>                    |          |          |          |          |          |          |          |
| 3 bunker ships                                   |          |          |          |          |          | 1        | 2        |
| <b>Total</b>                                     | <b>8</b> | <b>8</b> | <b>8</b> | <b>5</b> | <b>2</b> | <b>5</b> | <b>6</b> |
| Source: Petrobras (dates subject to alteration ) |          |          |          |          |          |          |          |

## Cenário do 1º Semestre de 2014

### Offshore support vessels (OSV)

#### PROREFAM (Petrobras)

87 vessels ordered:

- 26 in operation
- 61 under construction

#### Fleet in operation in Brazil (ABEAM)

450 vessels:

- 211 registered in Brazil
- 239 registered abroad

#### Expansion until 2020:

236 more vessels

686 vessels:

- 300 registered in Brazil
- 386 registered abroad



*CBO Ipanema*, built at the Estaleiro Aliança (RJ) and delivered in May 2014.



## Cenário do 1º Semestre de 2014

### Offshore support vessels (OSV)

#### PROREFAM (Petrobras)

- 87 ordered

- 61 under  
construction  
(until March 2014)

- 26 in operation

| Fleet operator       | Shipyard         | State | No. Of ships |
|----------------------|------------------|-------|--------------|
| <b>Astromarítima</b> | EISA             | RJ    | 8            |
| <b>Bram</b>          | Navship          | SC    | 14           |
| <b>Brasil Supply</b> | EISA             | RJ    | 4            |
| <b>CBO</b>           | Aliança / Oceana | RJ    | 6            |
| <b>Consub</b>        | ETP              | RJ    | 2            |
| <b>Galáxia</b>       | ERIN             | AM    | 10           |
| <b>Geonavegação</b>  | Wilson, Sons     | SP    | 3            |
| <b>Norskan</b>       | VARD Niterói     | RJ    | 5            |
| <b>Oceanpact</b>     | Intecnial        | RS    | 4            |
| <b>São Miguel</b>    | São Miguel       | RJ    | 10           |
| <b>Saveiros</b>      | Wilson, Sons     | SP    | 2            |
| <b>Senior</b>        | EISA             | RJ    | 4            |
| <b>Starnav</b>       | Detroit          | SC    | 11           |
| <b>Wilson, Sons</b>  | Wilson, Sons     | SP    | 4            |

## Cenário do 1º Semestre de 2014

### Production platforms

**16 production platforms are currently under construction in Brazil.**

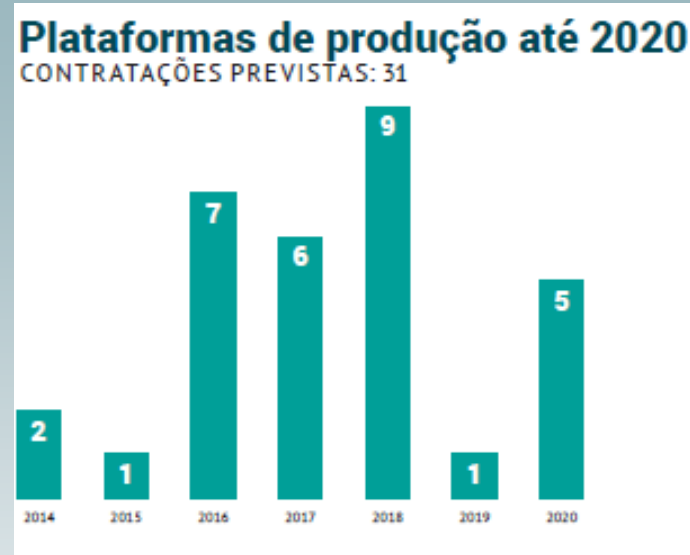
| Platforms   | Shipyards  |
|---|--|
| <b>2013 (platforms delivered)</b>   |  |
| P-55 – SS   | EAS (PE) – Hull / QGI (RS) – Integration                     |
| P-58 – FPSO   | QGI (RS) – Module integration                                |
| P-61 – TLWP   | BrasFELS (RJ) – First in Brasil                              |
| P-62 – FPSO   | EAS (PE) – Module integration                                |
| P-63 – FPSO   | QUIP (RS) – Module integration                               |
| <i>Cidade de Paraty</i> – FPSO  | BrasFELS (RJ) – Module integration                           |
| <b>Forecast delivery</b>  |  |
| <i>Cidade de Mangaratiba</i> – FPSO                                       | BrasFELS (RJ) – Module integration – delivery in 2014        |
| <i>Cidade de Ilhabela</i> – FPSO  | Estaleiro Brasa (RJ) – module integration – delivery in 2014 |
| <i>Cidade de Maricá</i> – FPSO  | Delivery in 2015   |
| <i>Cidade de Saquarema</i> – FPSO   | Delivery in 2016   |
| <b>FPSO platform hulls under construction</b>                             |  |
| Eight hulls: P-66; P-67; P-68; P-69; P-70; P-71; P-72; P-73 (“replicant”) | Estaleiro Rio Grande – ERG 1 (RS)                            |
| Four hulls: P-74; P-75; P-76; P-77 (conversions)                          | Estaleiro Inhaúma (RJ)                                       |

## Cenário do 1º Semestre de 2014

### Production platforms

#### New platforms forecast:

- 31 platforms until 2020  
(16 already under construction)
- 41 platforms until 2030



## Cenário do 1º Semestre de 2014

### Drilling rigs

#### Forecast deliveries

| Shipyards                                   | 2016                                | 2017                            | 2018                         | 2019                                 | 2020               |
|---|-------------------------------------|---------------------------------|------------------------------|--------------------------------------|--------------------|
| <b>ERG (RS)</b><br>3 drillships             | <i>Cassino</i>                      | <i>Curumim</i>                  | <i>Salinas</i>               |                                      |                    |
| <b>BrasFELS (RJ)</b><br>6 semi-submersibles | <i>Urca</i>                         | <i>Frade</i><br><i>Bracuhi</i>  | <i>Portogalo</i>             | <i>Mangaratiba</i><br><i>Botinas</i> |                    |
| <b>EAS (PE)</b><br>7 drillships             | <i>Copacabana</i><br><i>Grumari</i> | <i>Ipanema</i>                  | <i>Leblon</i><br><i>Leme</i> | <i>Marambaia</i>                     | <i>Joatinga</i>    |
| <b>Enseada (BA)</b> 6<br>drillships         | <i>Ondina</i>                       | <i>Pituba</i>                   | <i>Boipeba</i>               | <i>Itapema</i><br><i>Interlagos</i>  | <i>Comandatuba</i> |
| <b>Jurong Aracruz (ES)</b><br>7 drillships  | <i>Arpoador</i><br><i>Guarapari</i> | <i>Camburi</i><br><i>Itaoca</i> |                              | <i>Itaúnas</i><br><i>Siri</i>        | <i>Sahy</i>        |

*Sete Brasil, offshore asset holder, has 29 drilling rigs on order to Brazilian shipyards, with estimated investments of US\$ 25.5 billion.*

Sources: Petrobras – *Sete Brasil*

## Cenário do 1º Semestre de 2014

# Maritime and river transportation

## The challenge of maritime transport

### World fleet: 87 thousand ships

Transportation capacity: 1.6 billion tons per trip.

82% of Brazil's total cargo capacity of 16 million tons, is accounted for by freighted ships registered abroad.

### Main international cargoes

| Type of ship                       | Million tons | Share %       |
|------------------------------------|--------------|---------------|
| Bulk carriers– grain, coal and ore | 665          | 41.40         |
| Oil tankers                        | 491          | 30.57         |
| Container ships                    | 207          | 12.80         |
| Others                             | 166          | 10,33         |
| General cargo                      | 80           | 4.90          |
| <b>Total</b>                       | <b>1.606</b> | <b>100.00</b> |

Source: UNCTAD

## Cenário do 1º Semestre de 2014

# Maritime and river transportation

## The challenge of maritime transportation

The change in the flow of maritime cargoes from the North Atlantic to the Pacific and Indian oceans increases Brazil's isolation in the South Atlantic .



Source: Global Marine Trends 2030

## Cenário do 1º Semestre de 2014

# Maritime and river transportation

## The challenge of maritime transport

Concentration of world container traffic in a few operators.

Five operators concentrate 42.4% of the total.

| Ranking | Fleet Operator | Country     | No. of ships | No. of containers (TEUs) | Share of container transportation % |
|---------|----------------|-------------|--------------|--------------------------|-------------------------------------|
| 1       | Maersk         | Denmark     | 453          | 2.149.524                | 13.4                                |
| 2       | MSC            | Switzerland | 398          | 2.064.118                | 12.9                                |
| 3       | CMA-CGM        | France      | 288          | 1.153.088                | 7.2                                 |
| 4       | Cosco          | China       | 155          | 715.219                  | 4.5                                 |
| 5       | Evergreen      | Taiwan      | 187          | 709.702                  | 4.4                                 |
| 6       | Hapag-Lloyd    | Germany     | 141          | 639.148                  | 4.0                                 |
| 7       | APL            | Singapore   | 127          | 570.497                  | 3.6                                 |
| 8       | CSCL           | China       | 124          | 564.151                  | 3.5                                 |
| 9       | Hanjin         | South Korea | 107          | 555.279                  | 3.5                                 |
| 10      | MOL            | Japan       | 111          | 507.894                  | 3.2                                 |

## Cenário do 1º Semestre de 2014

### Shipyards and shipbuilding centers

The SINAVAL has 50 associated shipyards, with five currently being set up.

#### 9 shipbuilding segments :

- Offshore production platforms
- Drilling rigs
- Offshore support vessels
- Oil, product and gas tankers
- Containers ships
- Bulk carriers
- Barges and pusher craft
- Port tugs
- Military vessels



Source: SINAVAL



## Cenário do 1º Semestre de 2014

# Shipyards and shipbuilding centers

### Large shipyards:

| Shipyard                | State | Order book   |
|-------------------------|-------|--|
| Estaleiro Atlântico Sul | PE    | Big oil tankers, drilling rigs and production platforms                    |
| BrasFELS                | RJ    | Production platforms and drilling rigs                                     |
| Estaleiros Rio Grande   | RS    | Production platforms and drilling rigs                                     |
| EISA                    | RJ    | Bulk carriers, containers ships, maritime support vessels and patrol ships |
| Estaleiro MAUÁ          | RJ    | Oil and product tankers  |
| VARD Promar             | PE    | Gas tankers  |
| QGI                     | RS    | Integration of modules and oil platforms                                   |
| RENAVE                  | RJ    | Ship repairs   |
| BRASA                   | RJ    | Integration of modules and production platforms                            |

Source: SINAVAL

## Cenário do 1º Semestre de 2014

# Shipyards and shipbuilding centers

### Medium-sized shipyards:

| Shipyards               | State        | Order book                                    |
|-------------------------|--------------|---|
| ALIANÇA Indústria Naval | RJ           | Maritime support vessels                      |
| VARD Niterói            | RJ           | Maritime support vessels                      |
| Wilson, Sons            | SP           | Maritime support vessels and port tugs        |
| Estaleiro SÃO MIGUEL    | RJ           | Maritime support vessels                      |
| ARPOADOR Engenharia     | RJ and<br>SP | Maritime support vessels                      |
| DETROIT Brasil          | SC           | Maritime support vessels and port tugs        |
| DSN Equipemar           | RJ           | Maritime support vessels                      |
| ENAVAL Engenharia Naval | RJ           | Maritime support vessels and platform modules |
| Estaleiro NAVSHIP       | SC           | Maritime support vessels                      |

Source: SINAVAL  
(continues)

## Cenário do 1º Semestre de 2014

# Shipyards and shipbuilding centers

### Medium-sized shipyards:

(continued)

|                          |       |   |
|--------------------------|-------|---|
| <b>Estaleiro OCEANA</b>  | SC    | Maritime support vessels                                |
| <b>ETP Engenharia</b>    | RJ    | Maritime support vessels                                |
| <b>INTECNIAL</b>         | RS/SC | Maritime support vessels, pusher craft and river barges |
| <b>KEPPEL Singmarine</b> | SC    | Maritime support vessels                                |
| <b>NAPROSERVICE</b>      | RJ    | Ship and offshore maintenance and repairs               |
| <b>RIO NAVE</b>          | RJ    | Product and gas tankers                                 |
| <b>SERMETAL</b>          | RJ    | Repairs and maintenance                                 |
| <b>UTC Engenharia</b>    | RJ    | Integration of platform modules                         |
| <b>INACE</b>             | CE    | Patrol ships and maritime support vessels               |
| <b>EASA</b>              | PA    | River barges and pusher craft                           |
| <b>Estaleiro BIBI</b>    | AM    | River barges and pusher craft                           |
| <b>RIO MAGUARI</b>       | PA    | River barges and pusher craft                           |
| <b>RIO TIETÊ</b>         | SP    | River barges and pusher craft                           |

Source: SINAVAL

## Cenário do 1º Semestre de 2014

### Shipyards and shipbuilding centers

#### Shipyards being set up :

| Shipyard                   | State | Order book                      |
|----------------------------|-------|---------------------------------|
| Estaleiro JURONG Aracruz   | ES    | Drilling rigs                   |
| ENSEADA Indústria Naval    | BA    | Drilling rigs                   |
| Estaleiros do Brasil - EBR | RS    | Integration of platform modules |
| OSX                        | RJ    | Integration of platform modules |
| CMO Offshore               | SC    | Integration of platform modules |

#### Military shipyards:

| Shipyard                    | State | Order book  |
|-----------------------------|-------|---|
| Arsenal de Marinha          | RJ    | Maintenance and construction of military ships                                |
| ICN – Itaguaí Const. Navais | RJ    | Being set up to build five submarines, one of which will be nuclear propelled |

Fonte: SINAVAL

## Cenário do 1º Semestre de 2014

# Shipyards and shipbuilding centers

## Shipbuilding Centers

A shipbuilding center is characterized by the existence of shipyards and a structure of services and suppliers that operates on a continuous basis.

**Pará and Amazonas Shipbuilding Centers**

**Pernambuco Shipbuilding Center**

**Bahia Shipbuilding Center**

**Espírito Santo Shipbuilding Center**

**Rio de Janeiro Shipbuilding Center**

**Santa Catarina Shipbuilding Center**

**Rio Grande do Sul Shipbuilding Center**



## Cenário do 1º Semestre de 2014

### Human resources

#### Jobs in various regions of the country

| Number of jobs in associated shipyards (excluding the nautical segment) |               |               |               |                   |               |               |               |               |               |               |                   |
|---|---------------|---------------|---------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|
| UF  | 2004          | 2005          | 2006          | 2007 <sup>1</sup> | 2008          | 2009          | 2010          | 2011          | 2012          | 2013          | 2014 <sup>2</sup> |
| RJ  | 10.636        | 12.385        | 17.052        | 24.003            | 20.403        | 23.654        | 25.987        | 25.020        | 29.967        | 30.506        | 35.458            |
| ES  | ---           | ---           | ---           | ---               | ---           | ---           | ---           | ---           | ---           | 410           | 508               |
| SP  | 661           | 781           | 795           | 1.578             | 1.065         | 1.414         | 781           | 721           | 1.604         | 1.782         | 1.838             |
| SC  | 1.046         | 766           | 1.208         | 2.207             | 2.395         | 2.518         | 1.958         | 2.397         | 3.039         | 4.247         | 5.172             |
| RS  | ---           | ---           | ---           | ---               | ---           | 820           | 5.500         | 5.500         | 6.174         | 19.954        | 9.454             |
| PA  | 175           | 190           | 225           | 225               | 341           | 420           | 411           | 371           | 316           | 580           | 810               |
| AM  | ---           | ---           | ---           | ---               | 2.500         | 2.637         | 9.244         | 11.987        | 13.372        | 11.902        | 12.110            |
| CE  | 133           | 320           | 320           | 632               | 960           | 1.500         | 1.300         | 903           | 202           | 702           | 703               |
| SE  | ---           | ---           | ---           | ---               | ---           | ---           | 350           | 345           | 38            | 38            | 58                |
| BA  | ---           | ---           | ---           | ---               | ---           | 523           | ---           | 2.125         | 1.628         | 92            | 100               |
| PE  | ---           | ---           | ---           | 480               | 5.613         | 7.014         | 10.581        | 9.798         | 5.696         | 7.923         | 15.680            |
| <b>Total</b>  | <b>12.651</b> | <b>14.442</b> | <b>19.600</b> | <b>29.125</b>     | <b>33.277</b> | <b>40.500</b> | <b>56.112</b> | <b>59.167</b> | <b>62.036</b> | <b>78.136</b> | <b>81.891</b>     |

<sup>1</sup>2007 until August; <sup>2</sup>2014 until July. Source: SINAVAL

## Cenário do 1º Semestre de 2014

### Human resources

#### The challenge of increasing productivity

The reimbursement of shipyards' investments in HR training should be considered, as occurs in other countries.

In the sphere of public investments, there is an increase in the number of places offered in technical courses:

2010 = 263 thousand students enrolled.

2013= 553 thousand students enrolled

(Source: Ministry of Education)

Following HR needed:

|                                    |
|------------------------------------|
| <b>Ship Boiler Operator</b>        |
| <b>Ship Electrician</b>            |
| <b>Industrial Machine Mechanic</b> |
| <b>Industrial Painter</b>          |
| <b>Grinder/Sander</b>              |
| <b>Marine Pipefitters</b>          |
| <b>Crane Operator</b>              |
| <b>Cargo Movement Operator</b>     |
| <b>Rolling Bridge Operator</b>     |
| <b>Industrial Offshore Painter</b> |
| <b>Ship <b>AT</b> Welder</b>       |
| <b>Ship <b>ER</b> Welder</b>       |
| <b>Ship <b>MAG</b> Welder</b>      |
| <b>Ship <b>TIG</b> Welder</b>      |

Source: SINAVAL

## Cenário do 1º Semestre de 2014

### Human resources

#### The challenge of increasing productivity

##### International agreement

The SENAI and the Japan International Cooperation Agency (JICA) signed an agreement in 2013 to train instructors in Senai units:

- Rio Grande do Sul
- Rio de Janeiro
- Bahia
- Pernambuco.

|  |
|--|
| <b>Japan's investments in local shipyards:</b>                                 |
| <b>JMU – Japan Maritime United:</b><br>25% of the Estaleiro Atlântico Sul (PE) |
| <b>Kawasaki:</b><br>30% of the Enseada Indústria Naval (BA)                    |
| <b>Mitsubishi and associates:</b><br>30% of Ecovix-Engevix (RS)                |
| <b>Toyo:</b><br>Participation in EBR (RS)                                      |



## Cenário do 1º Semestre de 2014

### Technology and innovation

#### Innovation for the Competitiveness of the Shipbuilding and Offshore Network (RICINO)

- SINAVAL
- Brazilian Naval Engineering Society (SOBENA)
- SYNDARMA
- CENO – Naval and Oceanic Engineering Excellence Center (COPPE/UFRJ, IPT, USP and Transpetro).



## Cenário do 1º Semestre de 2014

### Technology and innovation

**The innovation and development of technology for Shipbuilding has programs funded by the Ministry of Science and Technology.**

Three great centers for the Shipbuilding and Offshore Industry: **UFRJ, USP, CENPES**

**CENO – Center of Excellence in Naval and Ocean Engineering**

**Lines of research directed at shipbuilding:**

- Structural analysis of ships and offshore structures
- Experimental analysis of structures
- Fracture mechanics
- Welding and protection against corrosion procedures

## Cenário do 1º Semestre de 2014

### Technology and innovation

| Productivity factors | Elements                                      | Impact   | Benchmarks  |
|----------------------|---|--|---|
| Shipyard equipment   | Lifting capacity.<br>Dry dock. Automation.    | Fewer blocks.<br>Building time.<br>Cutting and welding time.       | 68% automation of the welding process in the Samsung shipyard in South Korea. |
| Qualified personnel  | Building time.<br>Less work .                 | Deadline and budget.   | In South Korea and Europe, the State ensures a supply of qualified personnel. |
| Management systems   | Production.<br>Projects.<br>Supply Chain      | Identify deviations.<br>Improve planning .<br>Deadline and budget. | Continuous improvement in European and Asian shipyards.                       |
| Design detailing     | Designs in sync with modifications.           | Production flow<br>Dimensional control .                           | One of the difficulties in Brazil.  |
| Supply Chain         | Arrival of equipment in sync with production. | Maintenance of production flow.<br>Deadline and budget.            | Challenge of local content.   |

Sources: SINAVAL / Ivens Consult

## Cenário do 1º Semestre de 2014

# Technology and innovation

### Local content:

Public policy to develop local building capacity, create a new industrial sector and train personnel.

| Institutions   | Factors inducing local content development   |
|----------------|--|
| ANP            | Requires local content in the exploration and development phases.  |
| PROMINP / ONIP | Has been performing studies to develop local suppliers since 2003.   |
| BNDES          | Considers local content to define interest rates on loans.   |
| MDIC           | PDP II – Productive Development Policy. Created the ship parts catalogue together with the ABDI, with certified firms. |

## Cenário do 1º Semestre de 2014

# Technology and innovation

### Main suppliers:

| Materials and equipment                       | Supplier  | Local unit |
|---|---|------------|
| Ship steel / thick plate                      | Usiminas-Cosipa   | Yes        |
| Paint and coatings                            | Akzo Nobel, Jotun, WEG  | Yes        |
| Pipe systems                                  | V&M Tubes, Tenaris, Tuper Tubes, Apolo                        | Yes        |
| Cables, networks and panels                   | Prysmian and Nexans, WEG, ABB                                 | Yes        |
| Auxiliary generators and engines              | WEG, Caterpillar, GE, Voith, Scania                           | Yes        |
| Pumping                                       | Sulzer  | Yes        |
| Automation                                    | ABB   | Yes        |
| HVAC – Refrigeration and heating              | Heinen & Hopman   | No         |
| Elastomers                                    | Lanxess   | Yes        |
| Main engine                                   | MAN, Daihatsu, Kawasaki, Mitsubishi, Wärtsillä, MTU, MAN, ABB | No         |
| Command, control, steering and navigation     | Kongsberg, Northrop Grumann, ABB,                             | No         |
| Maritime communication by radio and satellite | Astrium / EADS, Harris CapRock                                | No         |

## Cenário do 1º Semestre de 2014

# Technology and innovation

### Shipbuilding for the Brazilian Navy :

Similarly to other countries, shipbuilding for military purposes favors the development of local technologies, best building practices and the development of qualified personnel

| Design  | Situation   | Importance   | Impacts   |
|---|---|--|---|
| <b>PROSUB<br/>Submarine<br/>Development<br/>Program</b> | Submarine shipyard under construction in Itaguaí (RJ). Five submarines, one of which will be nuclear propelled. | Technology from the French firm DCNS. Only five countries have the capacity to build nuclear submarines. | Development of a network of suppliers. New materials technologies. Management and production control processes. |
| <b>PRM<br/>Navy<br/>Reequipment<br/>Program.</b>        | Being executed by the Ministry of Defense. Structured for 2006 to 2015 and 2016 to 2020.                        | Building of ocean patrol ships.  | Hiring of local shipyards. Perfecting of building systems with military quality.                                |

## Cenário do 1º Semestre de 2014

### World scenario

World exports and gross domestic product:

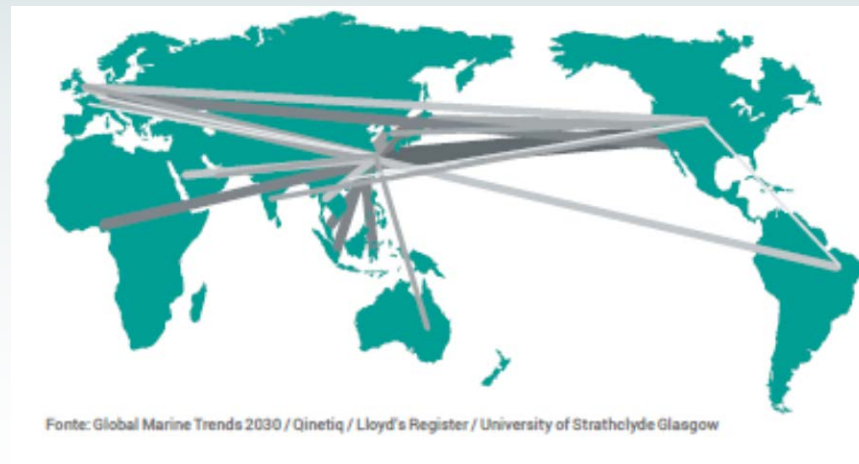
World exports - US\$ 19 trillion

Value added - US\$ 5 trillion

Value of goods - US\$ 14 trillion

Value of countries' annual production: **US\$ 145 trillion**

Source: UNCTAD (United Nations Conference on Trade and Development).



## Cenário do 1º Semestre de 2014

### World scenario

#### Greater interest in maritime transportation:

Increase from the current level of 10 billion tons to 19 billion tons a year in 2030.

Countries are incentivizing their shipbuilding industries.

The building of ships and oil production systems are attracting investments.

Source: GMT 2030 and Clarksons SIN



*Nippon Steel and Sumitomo Metal Corporation* receive iron ore from Vale in Japan. The ship *Vale Brasil*, with a capacity of 400 thousand tons, is one of the biggest in operation in the world.



## Cenário do 1º Semestre de 2014

### World scenario

The order books of international shipyards places Brazil among the world's 10 largest builders of ships and platforms.

In March of this year, 451 international shipyards had a total order book of 5.000 contracts.

Source: Clarksons SIN / SINAVAL

Obs: these figures do not include vessels with less than 1.000 tons of cargo capacity or river vessels.

### Number of units under construction in the 20 main countries

|    |                |       |
|----|----------------|-------|
| 1  | China          | 584   |
| 2  | Japan          | 378   |
| 3  | United States  | 350   |
| 4  | Indonesia      | 203   |
| 5  | Holland        | 197   |
| 6  | Brazil         | 169   |
| 7  | Norway         | 159   |
| 8  | United Kingdom | 131   |
| 9  | Germany        | 125   |
| 10 | Vietnam        | 111   |
| 11 | Turkey         | 109   |
| 12 | Malaysia       | 98    |
| 13 | South Korea    | 96    |
| 14 | Italy          | 94    |
| 15 | Singapore      | 89    |
| 16 | India          | 75    |
| 17 | France         | 74    |
| 18 | Canada         | 58    |
| 19 | Finland        | 31    |
| 20 | Denmark        | 30    |
|    |                | 3.161 |

## Cenário do 1º Semestre de 2014

### World scenarios

#### International distribution of production

##### Asia's strength



**China:** dominates the large bulk carrier market, with 65% of orders, and is increasing the production of oil tankers.



**South Korea:** leader in the construction of oil tankers, with 48% of orders, and in the construction of container ships and gas tankers.



**Japan:** important builder of specialized ships, gas tankers and container ships.



**Singapore:** leader in the production of oil production platforms and drilling rigs.

Source: UNCTAD

## Cenário do 1º Semestre de 2014

### World scenario

#### International competitor shipyards:

| Shipyards                 | Country     | Units in Brazil                                   | Segment                                     |
|---------------------------|-------------|---|---|
| Keppel Offshore Marine    | Singapore   | Yes – Estaleiro BrasFELS (RJ)                     | Platforms, rigs, modules                    |
| Sembcorp Marine           | Singapore   | Yes – Estaleiro Jurong Aracruz (ES)               | Rigs, platforms, modules                    |
| VARD-Fincantieri          | Italy       | Yes– VARD Niterói (RJ) and VARD Promar (PE)       | Specialized OSV and gas tankers             |
| Japan Marine United       | Japan       | Yes – Has a stake in Estaleiro Atlântico Sul (PE) | Oil tankers, rigs, platforms                |
| Hyundai Shipyards         | South Korea | No  | Oil tankers, platforms, rigs, gas tankers   |
| Samsung Heavy             | South Korea | No  | Oil tankers, rigs, platforms                |
| Daewoo (DSME)             | South Korea | No  | Oil tankers, platforms, gas tankers         |
| Cosco                     | China       | No  | Oil tankers, platforms                      |
| China State Shipbuilding  | China       | No  | Oil tankers, specialized vessels, platforms |
| Mitsui Shipbuilding       | Japan       | Yes – Has a stake in Estaleiro Rio Grande (RS)    | Oil tankers, specialized vessels, platforms |
| STX Offshore Shipbuilding | South Korea | No  | Oil tankers, gas tankers, platforms         |
| Toyo Engineering          | Japan       | Yes – Has a stake in EBR (RS)                     | Designs, modules                            |

## Cenário do 1º Semestre de 2014

### World scenario

#### **Shipyards and maritime transport – worldwide protectionist policies:**

A strong protectionist policy defends countries' capacity to have their own fleets in order to exercise a strategic control over the transportation of domestic and international cargoes.

The USA has the recently strengthened hundred-year old Jones Act, which assures transportation along its own coast, by ships built locally and manned solely by American citizens.

China recently denied the right of the P3 consortium, composed of the world's biggest container shippers (Maersk, CMA-CGM and MSC), to operate in its ports.

The P3 consortium dominates 40% of the market and is monitored by the Global Shippers Forum, based in London, to verify practices that prevent free competition in the freight market.

Sources: *World Maritime News*, UNCTAD and specialized publications

## Cenário do 1º Semestre de 2014

### Conclusions

#### **Situation of Brazilian Shipbuilding:**

- A very strong order book
- Demand forecast until 2030
- Challenge of increasing productivity
- Strong international integration
- Policies to support the sector which should be expanded

# SINAVAL board and management team

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LAERSON DE FRANÇA SANTOS  
FINANCIAL DIRECTOR

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EWELIN TAVARES  
ADVISER TO THE PRESIDENT

JORGE ANTONIO DE FARIA  
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ADVISER FOR MARKETING MATTERS

VALMAR PAES  
LEGAL COUNSEL

ARIOVALDO SANTANA DA ROCHA FILHO  
ADVISER FOR HEALTH MANAGEMENT

IVAN LEÃO  
PRESS SECRETARY

## Shipyards associated with SINAVAL

ALIANÇA S. A. – Indústria Naval e Empresa de Navegação

ARPOADOR Engenharia Ltda.

BENETEAU Brasil Construções de Emb. S. A.

BR OFFSHORE S.A.

BRASFELS S. A.

Bravante -Brasbunker Participações – Estaleiro SÃO MIGUEL

CAMARGO CORRÊA Naval Participações Ltda.

CMO Construção e Montagem Offshore S. A.

Construtora QUEIROZ GALVÃO S. A.

DETROIT Brasil S.A.

DOCK BRASIL Engenharia e Serviços S. A.

DOCKSHORE Navegação e Serviços Ltda.

DSN EQUIPEMAR Eng. e Indústria Naval Ltda.

EASA – Estaleiros Amazônia S. A.

ECOVIX – Engevix Construções Oceânicas S. A.

EISA – Estaleiro Ilha S. A.

EJA – Estaleiro Jurong Aracruz Ltda.

Empresa Brasileira de Reparos Navais S. A. – RENAVE

ENAVAL – Engenharia Naval e Offshore Ltda.

ENSEADA Indústria Naval

ERIN – Estaleiro Rio Negro Ltda.

Estaleiro ATLÂNTICO SUL S. A.

Estaleiro BIBI Ltda.

Estaleiro BRASA Ltda.

Estaleiro MAUÁ S. A.

Estaleiro NAVSHIP Ltda.

Estaleiro OCEANA S. A.

Estaleiro RIO MAGUARI S. A.

Estaleiro RIO TIETÊ Ltda.

Estaleiro SÃO JACINTO Ltda. (Grupo Muliceiro)

Estaleiros do Brasil S. A. – EBR

ETP Engenharia Ltda.

ICN – Itaguaí Construções Navais S. A.

INTECNIAL S. A.

KEPPEL Singmarine Brasil Ltda.

NAPROSERVICE Offshore Estaleiros do Brasil Ltda.

OSX Construção Naval S. A.

QGI Brasil S. A.

RG Estaleiros S. A.

RIO NAVE Serviços Navais Ltda.

SERMETAL Estaleiros S. A.

SRD Offshore S. A.

TRIUNFO Operadora Portuária Ltda.

UTC Engenharia S. A.

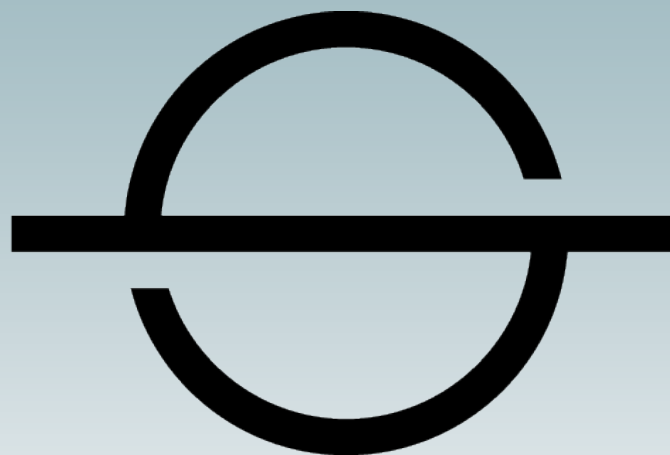
VARD Brazil Electro Ltda.

VARD Niterói S. A.

VARD PROMAR S. A.

VELLROY Estaleiros do Brasil Ltda.

WILSON, SONS – Comércio, Indústria e Agência de Navegação Ltda.



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