OCDE – 2012 NOV 29\textsuperscript{th}/30\textsuperscript{th}

PRESENTATION OF SINAVAL

Brazilian Union of Shipbuilding, Shiprepair & Offshore Industries
Growth of investment in Brazil is one of the world´s highest

Investments have increased substantially as share in Brazil´s GDP, 2.9 percentage points from 2002 to 2011. This is the fourth highest increase among global economies listed in the graph below. The average annual rate of investment growth also stands out, reaching 8.66 percent between 2004 and 2011.

Increase of Share of Investment in terms of GDP / Growth Rate of Investment and Average Growth Rate (p.p / %)

Data: percentage point and % change
* Between 2002 and 2011
** On a 8-year basis (2004-2011)

Source: World Bank and IFS
Produced by: Ministry of Finance
Low unemployment rate as a result of a consistent creation of jobs

Even in a scenario of lower economic growth, labor market has shown strong dynamism in 2012, expressed by the 5.8 percent unemployment rate of May 2012, the lowest rate for the month since the beginning of the survey.

Data: % share of the economically active population
* June data not available

Source: IBGE
Produced by: Ministry of Finance

![Unemployment Rate Graph]

Unemployment Rate* (% of EAP)

- May 2003
- Oct 2003
- Apr 2004
- Oct 2004
- Apr 2005
- Oct 2005
- Apr 2006
- Oct 2006
- Apr 2007
- Oct 2007
- Apr 2008
- Oct 2008
- Apr 2009
- Oct 2009
- Apr 2010
- Oct 2010
- Apr 2011
- Oct 2011
- May 2012
Declining real interest rates due to good macrofundamentals

Data from the past ten years show a significant decrease in short-term real interest rates in Brazil, from 14 percent in December 2002 to 1.9 percent in the beginning of July 2012. This is a result of credible macroeconomic policies, with good coordination between monetary and fiscal decisions.

Brazil: Real Ex-Ante Interest Rates (% YoY)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>14.0</td>
</tr>
<tr>
<td>2003</td>
<td>9.4</td>
</tr>
<tr>
<td>2004</td>
<td>11.2</td>
</tr>
<tr>
<td>2005</td>
<td>11.4</td>
</tr>
<tr>
<td>2006</td>
<td>7.9</td>
</tr>
<tr>
<td>2007</td>
<td>7.7</td>
</tr>
<tr>
<td>2008</td>
<td>6.9</td>
</tr>
<tr>
<td>2009</td>
<td>5.8</td>
</tr>
<tr>
<td>2010</td>
<td>6.2</td>
</tr>
<tr>
<td>2011</td>
<td>4.5</td>
</tr>
<tr>
<td>2012*</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Average 2002-2005 = 11.5
Average 2006-2010 = 6.9
Average 2011-2012 = 3.1

Data: % change from the preceding year
* 2012: Average August 2012;
2001-2011: December 31

Source: Central Bank of Brazil
Produced by: Ministry of Finance
Brazil attracts long term foreign investments

According to estimates of the Institute of International Finance (IIF), which represents major financial institutions in the world, Brazil continues to be one of the most important destinations of foreign investments. FDI and other long-term investments are expected to reach US$ 139.1 billion in 2012 and US$ 150.1 billion in 2013.

Foreign Investments in Brazil (US$ billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012*</th>
<th>2013*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>43.2</td>
<td>94.9</td>
<td>44.5</td>
<td>91.1</td>
<td>153.8</td>
<td>126.9</td>
<td>139.1</td>
<td>150.1</td>
</tr>
</tbody>
</table>

Data: US$ billion
* IIF Forecast

Source: Institute of International Finance
Produced by: Ministry of Finance
Fighting against currency war

The currency war, one of the consequences of the 2008 financial crisis, caused an appreciation of the Brazilian Real in the following years, due to excessive liquidity injected the market by major central banks, such as ECB and FED. In order to recover the Real’s parity, the Administration implemented a series of economic policies to cope with such liquidity.

Real Effective Exchange Rate Index*

Data: index-number:
Jan 2010 = 100

* Deflator: consumer price indexes for the respective countries. Increasing means appreciation and decreasing means depreciation

Source: BIS
Produced by: Ministry of Finance
Investments in infrastructure growing in the 2012-2015 period

Investments in important economic sectors will reach R$597 billion between 2012 and 2015 according to the Brazilian Development Bank (BNDES). This is a 30 percent increase compared to the amount reported for the period between 2007 and 2010.
SINAVAL is the Brazilian institution that represents the local shipyards installed on different regions around the country.

The key mission is to defend and protect the shipbuilding industries interests and to have representatives in study groups on governments and also on educational and research institutions.
All Brazilian shipyards – 51 sites

- **Small sites** – Supply Vessels (PSV, AHTS, PLSV, TUGS, Pushers)

- **Medium to Large sites** – Tankers Vessels (Suezmax, Aframax, Panamax, Dark/Clear, GLP, Bunkers)

- **Large sites** – Production & Drilling Platforms (FPSO, FSO, Drill ships, SemiSub, Modules)
The Shipbuilding industry recovery on the last 10 years increased significantly the amount of direct jobs in the shipyards.
Investments during the 2012-2016 period: Implementation vs. Evaluation

2012-2016 BP = Under Implementation All E&P projects in Brazil and projects of the remaining segments in phase IV*

- US$ 236.5 Billion
- 980 projects

Under Evaluation Projects for the remaining segments currently in phase I, II and III.

- US$ 208.7 Billion
- 833 projects

- US$ 27.8 Billion
- 147 projects

*Includes budget already designated for projects under evolution for RTM, G&E, Pretrochemical, Distribution, Biofuels and Corporate.
Mauá

Occupancy

- 8 Panamax
- 10 Light Products
- 2 Dark Products
- 1 Building Modules and Integration (FPSO Cidade Ilha Bela)

State

- Rio de Janeiro
- 36,000 tons per year

City

- Niterói
- 334,000 m²

Available Area

- 334,000 m²
- 36,000 tons per year

Steel Processing

Dry Docks

- 1

Quays

- 4

Careers

- 1

Current Situation

In Operation

Labor Peak:
3,950 people in Sep/2014
**Brasfels (Keppel Fels – Singapore)**

**Occupancy**
- 6 Semi-submersible Drilling Rigs
- 1 Hull Construction and Integration (*P-61*)
- 2 Building Modules and Integration (*Replicantes 1 and 4*)
- 2 Integrations (*Cidade São Paulo and Cidade Paraty*)

**State**
- Rio de Janeiro

**City**
- Angra dos Reis

**Available Area**
- 410,000 m²

**Steel Processing**
- 50,000 tons per year

**Dry Docks**
- 1

**Quays**
- 2

**Careers**
- 3

**Current Situation**

**In Operation**

**Labor Peak:**
7,900 people in Aug/2014

*Source: SINAVAL*
OSX (Hyundai – Korea)

**Occupancy**
- 11 Products and 1 PLSV
- 7 Fixed Platforms
- 4 Hull Constructions
- 6 Building Modules and Integration
- 3 Building Modules and Integration (*FPSO Cidade Mangaratiba and Replicantes 2 and 5*)
- 5 Drilling Vessels

**State**
- Rio de Janeiro

**City**
- São João da Barra

**Available Area**
- 2,500,000 m²

**Steel Processing**
- 180,000 tons per year

**Dry Docks**
- 1

**Quays**
- 1

**Careers**
- 8

**Labor Peak(*):**
- 11,500 in Jul/2016

Source: SINAVAL

(*) The peak considers only Petrobras projects
**ERG 1 and ERG 2 (Cosco – China)**

**Occupancy**
- 8 Hull Constructions *(Replicantes 1 - 8)*
- 3 Drilling Vessels
- 1 Building Modules, Topside and Integration *(P-55)*

**State**
- Rio Grande do Sul

**City**
- Rio Grande

**Available Area**
- 834,300 m²

**Steel Processing**
- 120,000 tons per year

**Dry Docks**
- 1

**Quays**
- 2

**Careers**
- 0

**Current Situation**
- In Operation (ERG 1) / Under construction (ERG 2)

**Source:** ENGENHARIA

**Labor Peak:**
7,750 people in Sep/2015
Atlântico Sul (EAS) – (IHI – Japan)

**Occupancy**
- 14 Suezmax
- 8 Aframax
- 1 Building Modules, Conversion and Integration (P-62)
- 7 Drilling Vessels

**State**
- Pernambuco

**City**
- Ipojuca

**Available Area**
- 1.500.000 m²

**Steel Processing**
- 160.000 tons per year

**Dry Docks**
- 1

**Quays**
- 2

**Careers**
- 2

Source: SINAVAL

**Current Situation**

In Operation

**Labor Peak:**
8,000 people in Aug/2016
**Enseada do Paraguaçu (EEP) (Kawasaki – Japan)**

**Occupancy**
- 6 Drilling Vessels

**State**
- Bahia

**City**
- Maragogipe

**Available Area**
- 1,600,000 m²

**Steel Processing**
- 36,000 tons per year

**Dry Docks**
- 1

**Quays**
- 1

**Careers**
- 0

Source: SINAVAL

**Current Situation**

**Under Construction**

**Labor Peak:** 4,200 people in Apr/2016
Espírito Santo

State

Aracruz

City

48,000 tons per year

Steel Processing

825,000 m²

Available Area

1

Dry Docks

1

Quays

0

Careers

Source: SINAVAL

Jurong (Singapore)

Occupancy

• 6 Drilling Vessels

• 2 Building Modules and Integration (Replicantes 3 and 6)

Current Situation

Under Construction

Labor Peak:
4,850 people in Oct/2016
**Inhaúma**

**Occupancy**

- 4 Hull Conversion – Transfer of Rights (P-74, P-75, P-76 and P-77)

**State**

- **Rio de Janeiro**

**City**

- **Rio de Janeiro**

**Available Area**

- **320,000 m²**

**Steel Processing**

- **42,000 tons per year**

**Dry Docks**

- **2**

**Quays**

- **2**

**Careers**

- **0**

*Source: ENGENHARIA*

**Current Situation**

- **In Modernization**

**Labor Peak:**

- **4,800 people in Nov/2012**
**ENAVI-RENAVI**

**Occupancy**

- 3 Bunker Ships
- 2 Dark Products

**State**

- Rio de Janeiro

**City**

- Niterói

**Available Area**

- 200,000 m²

**Steel Processing**

- 40,000 tons per year

**Dry Docks**

- 4

**Quays**

- 1

**Careers**

- 0

**Source:** SINAVAL

**Current Situation**

- In Operation
### Shipyards - 8 FPSO Replicantes Modules

**DM-TKK Consortium – Itajaí (SC) – Total Area of 98.300m² – In Planning**

- 8 Building Fuel Gas and Dehydration Modules
- 8 Building Generation 1 Modules
- 8 Building Generation 2 Modules

**IESA – Charqueada (RS) – Total Area of 359.300m² – Under Construction**

- 8 Building CO² Compression Modules
- 8 Building Gas Compression Exportation Modules
- 8 Building Main Compression and Vapor Recovery Modules
- 8 Building Injection Gas Compression Modules

**Tomé/Ferrostal – Maceió (AL) – Total Area of 77.000m² – Under Construction**

- 8 Building Oil Processing Modules
- 8 Building Launchers, Receivers and Manifolds Modules
- 8 Building Oil Processing and Production Water Treatment Modules
Other Shipyards and Construction Sites

**Occupancy**

- 7 Gas Tankers – Itajaí (SC) Shipyard
- 4 Panamax – EISA (RJ)
- 3 Bunkers – SUPERPESA (RJ)
- 3 Bunkers – São Miguel (RJ)
- 8 GLPs – STX Promar (PE)
- 2 Building Modules (P-58 and P-62) – UTC (RJ)
- 2 Building Modules (P-58 and P-62) – NUCLEP (RJ)
- 1 Building Modules (Cidade Paraty) – EBSE (RJ)

**Occupancy**

- 1 Building and Integration Modules (Cidade Ilha Bela – SBM/Brasa (RJ)
- 2 Building Probe (Jack-up P-59 and P-60) – CRP (BA)
- 2 Building Modules (P-55 and P-63) – Porto Rio Grande (RS)
- 1 Building Modules and Integration (P-58) – Porto Rio Grande (RS)
- 7 Light Products – Rio Nave (RJ) - STX
- 3 Dark Products – Rio Nave (RJ) – STX

Other foreign shipyards:
Wilson, Sons (UK) – Navship (Edison Chouest USA)
Detroit (Chile)
<table>
<thead>
<tr>
<th>Shipping companies in Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>• BOURBON – FRANCE</td>
</tr>
<tr>
<td>• BRAM OFFSHORE – USA</td>
</tr>
<tr>
<td>• DEEP SEA – NORWAY</td>
</tr>
<tr>
<td>• FAROL – USA</td>
</tr>
<tr>
<td>• ELCANO – SPAIN</td>
</tr>
<tr>
<td>• FARSTAD – NORWAY</td>
</tr>
<tr>
<td>• FINARGE – ITALY</td>
</tr>
<tr>
<td>• FLUMAR – NORWAY</td>
</tr>
<tr>
<td>• FUGRO – NORWAY</td>
</tr>
<tr>
<td>• GULF – USA</td>
</tr>
<tr>
<td>• OSM – NORWAY</td>
</tr>
<tr>
<td>• PANCOAST – GREECE</td>
</tr>
<tr>
<td>• SAVEIROS – UK</td>
</tr>
<tr>
<td>• SEACOR – USA</td>
</tr>
<tr>
<td>• SEALION – UK</td>
</tr>
<tr>
<td>• SIEM – NORWAY</td>
</tr>
<tr>
<td>• SOLSTAD – NORWAY</td>
</tr>
<tr>
<td>• STARNAV – CHILE</td>
</tr>
<tr>
<td>• SUB SEA 7 – NORWAY</td>
</tr>
<tr>
<td>• MAERSK – DENMARK</td>
</tr>
<tr>
<td>• MERCOSUL LINE – DENMARK</td>
</tr>
<tr>
<td>• UP – ARGENTINA</td>
</tr>
<tr>
<td>• WILSON, SONS – UK</td>
</tr>
<tr>
<td>• NORSKAN – NORWAY</td>
</tr>
<tr>
<td>• OLYMPIC – NORWAY</td>
</tr>
<tr>
<td>• TECHNIP – FRANCE</td>
</tr>
<tr>
<td>• UP – ARGENTINA</td>
</tr>
<tr>
<td>• LATHO – USA</td>
</tr>
</tbody>
</table>
The future situation of 2020 does not reflect the sum of the current situation with future demand, as there are vessels whose contracts expire by 2020. This demand may be revised as necessary.

Future Demand includes hired demand, demands in hiring phase and yet to be hired demand.

### Current and projected fleet

#### 2020 Strategic Planning

<table>
<thead>
<tr>
<th>Critical Resources</th>
<th>Jan/12 Situation</th>
<th>Future Situation</th>
<th>Accumulated Values (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Future Situation</td>
<td>By 2016</td>
</tr>
<tr>
<td><strong>Tanker Vessels</strong> (DWT x 1000t)</td>
<td>16,000</td>
<td>19,000</td>
<td>24,500</td>
</tr>
<tr>
<td><strong>Large Supply Boats</strong></td>
<td>216</td>
<td>313</td>
<td>358</td>
</tr>
<tr>
<td><strong>Production Units</strong> (SS and FPSO)</td>
<td>45</td>
<td>56</td>
<td>81</td>
</tr>
<tr>
<td><strong>Drilling Rigs</strong> (SWD &gt; 2,000 m)</td>
<td>26</td>
<td>42</td>
<td>65</td>
</tr>
</tbody>
</table>

1. The future situation of 2020 does not reflect the sum of the current situation with future demand, as there are vessels whose contracts expire by 2020. This demand may be revised as necessary.
2. Future Demand includes hired demand, demands in hiring phase and yet to be hired demand.

### Future Demand (2012-2020)

- **+ 88 Tanker Vessels**
- **+ 198 Large Supply Boats**
- **+ 38 Production Units**
- **+ 48 Drilling Rigs**

### Significant equipment demand mapping:

- **Historically imported equipment with potential to attract foreign suppliers**
- **Equipment produced nationally but with potential bottlenecks in production capacity**

Source: Transpetro; PNG 2012-16; Petrobras (E&P-SERV/US-CONT and AB-LO/TM)

* AHTS, ORSV, PSV
** 33 will be constructed in Brazil
**Example of equipment with potential for national development**

- 61 Vacuum Sewage Systems
- 53 Inert Gas Generation Unit
- 72 Life Boats + Davit
- 1,830 Accommodation Cabines

Source: Transpetro; Petrobras (AB-LO/TM)
Example of equipment with potential for national development

- 198 Offshore Cranes
- 198 Vacuum Sewage Systems
- 396 Life Boats
- 55,700 Manual Operated Valves
- 44,550 ton of Pipinp
- 4,800 ton of Fitting

Source: E&P-SERV/US-CONT

**Fleet increase by 2020**

<table>
<thead>
<tr>
<th>Current Petrobras Fleet</th>
<th>Quantity</th>
<th>Future Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AHTS</strong></td>
<td>55</td>
<td>+ 198 Large Supply Vessels</td>
</tr>
<tr>
<td>Maintenance TO’s + DMA’s + New Production Units Instalation + FPSO’s and NT’s Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OSRV</strong></td>
<td>36</td>
<td>until 2020</td>
</tr>
<tr>
<td>Oil Recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PSV</strong></td>
<td>125</td>
<td>(almost the same quantity as the current fleet – 216)</td>
</tr>
<tr>
<td>General Cargo + Oil + Bulk + Cement</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TS</strong></td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Tugs + Oil Recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LH</strong></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SOS Standby + Handling Spy (messenger)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SV</strong></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>SOS Standby</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>UT / P</strong></td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Emergency Cargo / Passenger</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: E&P-SERV/US-CONT
**Fleet increase by 2020**

**Petrobras Drilling Rigs Startup Timeline**

Drilling rigs considered for the equipment demand analysis

**Equipment demand not yet addressed for the 33 drilling rigs to be delivery until 2020**

- 33 Derrick Structure
- 33 Traveling equipment
- 33 Choke and Kill Manifold
- 33 sets of Risers
- 33 BOP (parcial)
- 33 sets Electrical System
- 204 Main Diesel Generators (parcial)
- 33 Emergency generators
- 99 Deck Cranes
- 198 Azimuth Thrusters
- 3,201 Pumps
- 1,089 HVAC System
- 33 Accommodation

* Being negotiated. Estimate will be confirmed at the contract signing

Source: Petrobras; Sinaval
Pre-salt period future employees generation

- 1960: 1,430
- 1970: 18,000
- 1979: 39,155
- 2000: 1,900
- 2006: 19,000
- 2012: 62,000
- 2020: 100,000

The bar chart shows the growth in employees across different years, with a significant increase by the year 2020.
Average data of production in brazilians shipyards

- **Medium Salary**: US$ 2,300 Month
- **Productivity**: 270 Mh Ton
- **Cost**: US$ 23,00 Mh
Labor Requirements
Brazilian Regulatory Norm – NR.34

Requirements: Creation of a tripartite commission between:

Shipyards (safety technicians, safety engineers and medical safety),
Workers and
Labor inspectors

Objective: achieve regulatory actions to the working conditions evolution and collaborate with the labor inspectors on road mapping best practices at work – DECENT WORK

Results: creation and implementation of the NR34, 2009NOV reconized by the ILO.
Thank you

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