SUBSEA CLUSTER
Rio de Janeiro - Brazil
Forecast of Investment in Brazilian Energy Sector to 2035

2013 – 2035
US$90 billion/year

Source: Word Energy Outlook 2013 IEA
Brazil – Prospective Scenarios

Production, Consumption and Export - 2035

Source: Word Energy Outlook 2013 IEA
Subsea Equipments

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2020</th>
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<tbody>
<tr>
<td><strong>Subsea trees</strong></td>
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<tr>
<td>Installed</td>
<td>37%</td>
<td>44%</td>
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<tr>
<td></td>
<td>63%</td>
<td>56%</td>
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<td><strong>FPSOs</strong></td>
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<tr>
<td>Operating</td>
<td>21%</td>
<td>26%</td>
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<td>79%</td>
<td>74%</td>
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25%  50%  75%  100%

Source: Word Energy Outlook 2013 IEA
O&G Cluster RJ: Geographic Area

Already 1.277 companies
Intersted Parties

ANCHORS

Technip
vallorec
FMC
Aker Solutions
Tenaris
subsea
Schlumberger
OneSubsea
CAMERON
HALLIBURTON

INSTITUTIONAL PARTNERSHIP

SUBSEA
RIO

POLICY AND FINANCE INSTITUTIONS

GOVERNO DO RIO DE JANEIRO
CODIN
UK COOPERATION

MDIC
BNDES
AGEDERIO
FINEP
RIO NEGÓCIOS
Prefeitura de Macaé
ApexBrasil
Scottish Development International

INSTITUTIONAL PARTNERSHIP

ibp
SEBRAE RJ
Sistema FIRJAN
ONIP
NOF Energy

Source: UFRJ (2013)
Business Development

Institutional channels for joint actions to attract investments and technology partnerships in the O&G supply chain equipment segment and subsea services to E & P.

**United Kingdom**
- UKTI
  - SUBSEA UK
  - NOF Energy
  - SDI
  - Aberdeen City Council
  - EIC

**United States**
- BRATECC
  - US Commercial Service
  - AmCham
  - USBC

**Norway**
- NCE SUBSEA
  - Subsea Valley
  - INTSOK
  - Greater Stavanger
  - Innovation Norway

**France**
- POLE MER PACA
  - Neopolia
  - UBI France
International Cooperation

Participation in O&G Forums

United Kingdom
- Offshore Europe
- Subsea Expo
- Specific Missions to Local Clusters

United States
- OTC Houston
- Outreach Missions to develop the O&G supply chain

Norway
- UTC Bergen
- ONS Stavanger
- Norshipping - Oslo

Brazil
- Subsea Forum
- Rio O&G
- OTC Brasil
- Brasil Offshore
• Area: 350,000 m²
• Investments: US$ 1.5 billion
• Companies Already Installed: 41
• Employees: over 3 thousand
PETROBRAS RESEARCH & DEVELOPMENT CENTER
1 – First Buoy Support Risers
2 – Steel Catenary Riser (SCR)
3 – Deppest Steel Lazy Wave Riser (SLWR)
4 – Deppest Flexible Riser
5 – First Application of Flexible Riser with Integrated Monitoring
Record Depth in Water Depth for Drilling a Subsea Well with the Technique of Pressurized Mud Cap Drilling (PMCD) with Dynamic Positioning Rig
7 – First Intensive Use of Intelligent Completion in Satellite Wells in Ultra Deep Water
8 – First Separation of CO$_2$ Associated with the Natural Gas in Ultra-Deep Water (2,220 m) - with Injection of CO$_2$ into Production Tanks
9 – Deepest Subsea Well Gas Injection with CO$_2$ (2,200 m) in Water Depth
10 – First Use of Alternate Method of Water and Gas Injection in Ultra Deep Water (2.200 m)
FUTURE!!!
INSTITUTIONALIZATION OF CLUSTER SUBSEA RIO
- Formalization of membership and anchor companies
- Definition of model management and governance
- Improve International technical cooperation

ATTRACTING INVESTMENTS
- Development programs subcontractors
- Road Show
- B2B sessions

WORK PROGRAM AGENDA (2015-2016)
- Prioritizing actions
- Institutional Communication
- Schedule of trade fairs and events

TECHNOLOGICAL DEVELOPMENT
- Study for generation and distribution of underwater electric power
FOCUS AREAS

- Forged Alloys
- Coatings
- Fasteners & special bolts
- Fittings
- Subsea metallic structures
- Fine machining
- Subsea valves (and its parts and components)
- Panels and multiplexed control systems
- ROVs e UOVs (and its parts and components)
- Smart Actuators
- Subsea jumpers and electrical connectors
- Pipe bending & cladding
- Polimers for flexible lines (nylon 11 e 12, PVDF)
- Metallic structures for flexibles
Development Agencies

New Business and Industrial Policy.
Geolocation of New Business Support in implementation and expansion of business Finantial Support
Work with municipalities to provide water, gas, electricity, telecommunications, and others

Credit Transfer from Banco Nacional de Desenvolvimento Economico e Social (BNDES)

- Own resources, or development funds;
- Invest in projects of all sizes;
- Micro, Small, Medium and Large businesses.
Sistema FIRJAN is an important partner for the companies in Rio de Janeiro state in the pursuit of development. The five organizations that compose the Sistema - SESI, SENAI, IEL, FIRJAN and CIRJ - offer solutions and services capable of improving the productivity of companies and the life quality of the employees. For this, has the International Relation Centre (CIN) to strengthen the international action as promoting business and technology transfer.

**MISSION:**
Promote business competitiveness, education and life quality of the worker and society, contributing to the sustainable development of the state of Rio de Janeiro.

**AREAS:**
- Technological Solutions
- Professional Education
- Health, Safety And Environment
The Brazilian Micro and Small Business Support Service (SEBRAE) is a nonprofit private institution whose mission is to promote competitiveness of micro and small enterprises (SME).

Focus:
- Partnerships with the Oil & Gas Industry to maximize the competitiveness of suppliers of goods & services.

Value Proposition to investors in Brazil:
• Identify and develop suppliers to start and operate your projects.
• Improve suppliers’ capability, management and technology, according to the technical and legal requirements of the investment project.
• Support to develop products and technologies to expand the local content in Brazil.
Mission:
To Contribute to increase competitiveness and sustainability of the domestic industry to maximize local content and the generation of employment and income in the Oil and Gas Sector.

Areas of Interest:

- Local Content;
- Qualifiying & Accreditation;
- Business Promotion;
- Thematic Seminars;
- Foreign Trade Promotion Program
- Technological & Inovation Program Development
The Brazilian Institute of Oil, Gas and Biofuels - IBP is a private non-profit that now has more than 200 member companies, and focuses on promoting the development of the national oil, gas and biofuels, aimed at industry competitive, sustainable, ethical and socially responsible.

Its mission is to promote the development of the national oil, gas and biofuels, aiming at a competitive industry, sustainable, ethical and socially responsible. Operates with the following objectives:

- The regulatory environment improvement
- Industry representation
- Dissemination of industry information
- Promotion of technical development
- Environmental protection, safety and social responsibility
 ✓ **Commercial Promotion**
   - Create/maintain the investor web portal as capture and information tool for investors
   - Identify investment opportunities
   - Execute sectoral commercial and promotional campaigns

 ✓ **Facilitation**
   - Follow the stages of realization and implementation of business
   - Assist the institutional relationship with authorities and public administration
   - Identify advisors to businesses: financial, legal, real estate, etc.

 ✓ **Business Intelligence**
   - Consolidate relevant information in strategic sectors
   - Develop customized sectoral diagnoses

 ✓ **Business Environment**
   - Indicate improvements suggested by investors
   - Engage local businesses to support the activities of business attraction
Finep - Innovation and Research - is a public company under the MCTI.

Its mission is to promote economic and social development of Brazil through public promotion of Science, Technology and Innovation in companies, universities, technological institutes and other public or private institutions seeking to transform Brazil through Innovation.

The role of FINEP occurs in the whole chain of innovation, focusing on strategic, structural and impact for the sustainable development of Brazil. The support of FINEP covers the entire S & T and I cycle, from basic research to the development of products, services and processes in companies. His performance is given by:

- reimbursable financings
- Non-reimbursable financing;
- Sector Funds.
Thank You!

Marcelo Vertis
Undersecretary of Energy
Rio de Janeiro State Government

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