Enhanced production services form an integral part of the oilfield services industry. This industry plays a major role in providing allied services to the exploration and production sector, also known as the upstream oil and gas sector. With the rapidly rising demand for crude oil and natural gas worldwide, along with issues of depleting existing energy reserves and a dearth of fresh discoveries of reserves, optimizing production from an oil or gas reservoir becomes the major priority.

**Global Oil and Gas Enhanced Production Services Industry Expenditure Expected to Rise Steadily in the Near Future**

The oil and gas enhanced production services expenditure grew consistently from 2000 to 2008 as a result of the rise in demand for and cost of enhanced production services. This is a result of efforts to improve the production efficiency in terms of the percentage recovery of crude oil and natural gas from onshore and offshore reservoirs. From an annual capital expenditure of $XX billion in 2000, the annual spending for global oil and gas enhanced production services grew at an average annual growth rate (AAGR) of XX% until 2008, when the annual capital expenditure was $Xx billion. However, 2009 saw a decline in spending over the previous year by around XX%.

With the improvement in the global economy, the capital expenditure growth picked up pace and registered upward growth in 2010. Consequently, capital expenditure is expected to grow from $XX billion in 2011 to around $XX billion in 2016 at an AAGR of XX%.
1 Table of Contents

1 Table of Contents.................................................................5
1.1 List of Tables...........................................................................8
1.2 List of Figures.........................................................................9
2 Oil and Gas Enhanced Production Services Industry to 2016.....................................10
2.1 Report Guidance......................................................................10
3 Oil and Gas Enhanced Production Services Industry to 2016 - Overview......................11
3.1 Market Definitions.....................................................................11
3.2 Key Segments of the Oil and Gas Enhanced Production Services Industry...............12
4 Oil and Gas Enhanced Production Services Industry - Major Trends.............................13
4.1 Initiatives by Governments and Investments by Oilfield Services Companies Will Boost Global Oil and Gas Enhanced Production Activity Worldwide..................................13
4.2 Advancements in Design of Sand Control Screens for Effectiveness Would Boost Sand Control Services Activity and Expenditure..............................................................13
4.3 Crude Oil and Natural Gas Demand and Prices Largely Dictate the Enhanced Oil and Gas Production Services Market..........................................................14
4.4 Application of Artificial Lift Technique Is Expected to Enhance Oil Production Considerably from Onshore and Offshore Oil and Gas Reservoirs ......................15
4.5 Directional Drilling Services Market Expected to Witness a Boost with Rise in Unconventional Exploration Activity.................................................................15
4.6 Extensive Applications of Enhanced Oil Recovery (EOR) Are Proving to be Major Enhanced Production Technology Applications in Depleting and Ageing Reservoirs....16
4.7 Technological Advancements Such as Thermoplastic Composite Coiled Tubing (CCT) Are Expected to Create Real-Time Data Acquisition Facility With Regard to Coiled Tubing Applications.................................................................16
4.8 Technological Advancements in Electric Submersible Pumps Would Boost Artificial Lift Applications.................................................................................................17
4.9 Rapid Increase in Drilling Activity With Regards to Unconventional Exploration Will Continue to Boost the Coiled Tubing Services Industry...........................................17
4.10 Sand Control Services Are Expected to be Driven by E&P Activity in Mature Oil and Gas Fields...........................................................................................................17
4.11 Aggressive Steps by Malaysian Oil and Gas Industry In the Form of Technological Collaborations Will Boost Investment in the Malaysian Oil and Gas Enhanced Oil Recovery Services Industry .........................................................18
4.12 Improvised Sand Control Technology Is Expected to Better Operational Efficiency and Risk Mitigation Ability of Sand Control Services..............................................18
4.13 Capital Expenditure for Pressure Pumping Services Expected to As a Result of Increased Pressure Pumping Activity Rise Even as Margins Have Reduced.................18
4.14 Logging-While-Drilling Services are Expected to be Driven by Unconventional Exploration and Directional Drilling Activities in the Near Future............................19
5 Global Oil and Gas Enhanced Production Services Industry to 2016..................................20
5.1 Global Oil and Gas Enhanced Production Services Industry, Forecasts to 2016..............20
5.2 Global Oil and Gas Enhanced Production Services Industry, Forecasts to 2016, by Segment......................................................................................................................22
5.3 Key Oilfield Services Deals-Upstream Mergers and Acquisitions.................................24
5.3.1 Key Upstream Deals-Mergers and Acquisitions, 2004-2011..................................24
5.3.2 Major Upstream Deals-Mergers and Acquisitions, 2004-2011, by Region................25
5.3.3 KazMunaiGas Acquires Karpovskiy Severnyi From GazMunaiOnim For $59 Million .................................................................................................................................26
5.3.4 Sinopec International Petroleum Completes Acquisition Of Daylight Energy For $2.1 Billion.......................................................................................................................26
5.3.5 Adina Energy Acquire PetroGreen Energy and Petro 2000 Exploration .....................26
5.3.6 Aspen Exploration Acquire Dilloco Fluid Services.....................................................27
5.3.7 Antol Oil Services Acquire 100% Stake in Jilin Dongxin.............................................27
5.3.8 Dynamic Offshore Resources and Moreno Group Holdings Acquire 75% Interest in SPN Resources from Superior Energy Services.........................................................27
5.3.9 Cadogan Petroleum Acquire Momentum Energy......................................................28
1.1 List of Tables

Table 1: Crude Oil and Natural Gas Prices, $/barrel, 2008-2011........................................... 15
Table 2: Oil and Gas Enhanced Production Services Expenditure, Global, ($bn), 2000-2016 ....21
Table 3: Oil and Gas Enhanced Production Services Expenditure, Global by Segment, ($bn), 2000-2016................................................................. 23
Table 4: Major Upstream Deals, Mergers and Acquisitions, 2004-2011.................................24
Table 5: Major Upstream Deals, Mergers and Acquisitions, By Region, 2004-2011 ............ 25
Table 6: Major Upstream Deals, Mergers and Acquisitions, By Value, 2010-2011 .............. 31
Table 7: Artificial Lift Services Expenditure, Global, ($bn), 2000-2016................................. 50
Table 8: Directional Drilling Services Expenditure, Global, ($bn), 2000-2016....................... 53
Table 9: Coiled Tubing Services Expenditure, Global, ($bn), 2000-2016............................ 56
Table 10: Enhanced Oil Recovery Services Expenditure, Global, ($bn), 2000-2016 .......... 60
Table 11: Sand Control Services Expenditure, Global, ($bn), 2000-2016........................... 64
Table 12: Solids Control Services Expenditure, Global, ($bn), 2000-2016.......................... 68
Table 13: Pressure Pumping Services Expenditure, Global, ($bn), 2000-2016.................. 72
Table 14: Well Servicing Expenditure, Global, ($bn), 2000-2016...................................... 75
Table 15: Logging While Drilling Services Expenditure, Global, ($bn), 2000-2016............ 78
Table 16: Measurements While Drilling Services Expenditure, Global, ($bn), 2000-2016...... 81
1.2 List of Figures

Figure 1: Crude Oil and Natural Gas Prices, $/barrel, 2008-2011 ......................................................... 14
Figure 2: Oil and Gas Enhanced Production Services Expenditure, Global, ($bn), 2000-2016 .......... 20
Figure 3: Oil and Gas Enhanced Production Services Expenditure, Global by Segment, ($bn), 2000-2016 ........................................................ .............................................................. 22
Figure 4: Major Upstream Deals, Mergers and Acquisitions, 2004-2011 ...................................... 24
Figure 5: Major Upstream Deals, Mergers and Acquisitions, By Region, 2004-2011 ..................... 25
Figure 6: Major Upstream Deals, Mergers and Acquisitions, By Value, 2010-2011 .................... 30
Figure 7: Artificial Lift Services Expenditure, Global, ($bn), 2000-2016 .......................................... 49
Figure 8: Directional Drilling Services Expenditure, Global, ($bn), 2000-2016 ............................... 53
Figure 9: Coiled Tubing Services Expenditure, Global, ($bn), 2000-2016 ........................................ 56
Figure 10: Enhanced Oil Recovery Services Expenditure, Global, ($bn), 2000-2016 .................... 60
Figure 11: Sand Control Services Expenditure, Global, ($bn), 2000-2016 ........................................ 63
Figure 12: Solids Control Services Expenditure, Global, ($bn), 2000-2016 ..................................... 67
Figure 13: Pressure Pumping Services Expenditure, Global, ($bn), 2000-2016 ......................... 71
Figure 14: Well Servicing Expenditure, Global, ($bn), 2000-2016 .................................................. 74
Figure 15: Logging While Drilling Services Expenditure, Global, ($bn), 2000-2016 ................. 77
Figure 16: Measurements While Drilling Services Expenditure, Global, ($bn), 2000-2016 .......... 80
2 Oil and Gas Enhanced Production Services Industry to 2016

The oil and gas enhanced production services industry has been playing a vital role as part of the oilfield services industry, boosting hydrocarbon production by enhancing the production efficiency of both offshore and onshore reservoirs. Oil and gas enhanced production techniques, commonly known as tertiary and quaternary recovery techniques, help recover additional amounts of hydrocarbons when conventional or naturally flowing reservoirs are unable to produce hydrocarbons with commercially attractive percentage recovery ratios through the use of primary or secondary recovery techniques.

2.1 Report Guidance

- The chapter begins with an executive summary, which covers the key points of the oil and gas enhanced production services industry to 2016.
- Chapter two provides a report guidance to ‘Oil and Gas Enhanced Production Services Industry to 2016’
- Chapter three provides the market definitions of the sub-segments of the oil and gas enhanced production services industry that are covered in the report.
- Chapter four describes the major trends in the enhanced production services industry.
- Chapter five information on the global oil and gas enhanced production services industry and historical and forecast capital expenditure. Information is provided for the overall market and for the individual market sub-segments. The chapter also provides details of the major Mergers and Acquisitions (M&As) relating to the oilfield services industry, along with profiles of the major oil and gas enhanced production services companies globally.
- Chapter six describes the artificial lift technology, key trends for the segment and forecasts for artificial lift services market
- Chapter seven provides an overview of the technology, major trends, and forecasts for the directional drilling services sub-segment of the oil and gas enhanced production service industry.
- Chapter eight provides an overview of the technology, major trends, and forecasts for the coiled tubing services sub-segment of the oil and gas enhanced production services industry.
- Chapter nine provides an overview of the technology, major trends, and forecasts for the enhanced oil recovery services sub-segment of the oil and gas enhanced production services industry.
- Chapter 10 provides an overview of the technology, major trends, and forecasts for the sand control services sub-segment of the oil and gas enhanced production services industry.
- Chapter 11 provides an overview of the technology, major trends, and forecasts for the solids control services sub-segment of the oil and gas enhanced production services industry.
- Chapter 12 provides an overview of the technology, major trends, and forecasts for the pressure pumping services sub-segment of the oil and gas enhanced production services industry.
- Chapter 13 provides an overview of the technology, major trends, and forecasts for the well servicing sub-segment of the oil and gas enhanced production services industry.
- Chapter 14 provides an overview of the technology, major trends, and forecasts for the logging-while-drilling services sub-segment of the oil and gas enhanced production services industry.
- Chapter 15 provides an overview of the technology, major trends, and forecasts for the measurements-while-drilling services sub-segment of the oil and gas enhanced production services industry.
- Chapter 16 includes an overview of the research methodology, abbreviations, contact details, company details, and a disclaimer for GBI Research.
5 Global Oil and Gas Enhanced Production Services Industry to 2016

The oil and gas enhanced production services industry has been playing a vital role as part of the oilfield services industry, boosting hydrocarbon production by enhancing the production efficiency of both offshore and onshore reservoirs.

Oil and gas enhanced production techniques, commonly known as tertiary and quaternary recovery techniques, help recover additional amounts of hydrocarbons when conventional or naturally flowing reservoirs are unable to produce hydrocarbons with commercially attractive percentage recovery ratios through the use of primary or secondary recovery techniques.

5.1 Global Oil and Gas Enhanced Production Services Industry, Forecasts to 2016

Oil and gas enhanced production services expenditure grew consistently from 2000 through 2008 as a result of the rise in demand and cost of enhanced production services. This occurred as part of an effort to improve the production efficiency in terms of the percentage recovery of crude oil and natural gas from onshore and offshore reservoirs. From an annual capital expenditure of $XX billion in 2000, the annual spending for the global oil and gas enhanced production services industry grew at an average annual growth rate (AAGR) of XX% until 2008, when annual capital expenditure was $XX billion. 2009 saw a decline in spending over the previous year, from $XX billion in 2008, to $XX billion in 2009, representing a decline of around XX%.

With the improvement in the global economy, capital expenditure growth picked up pace and upward growth was experienced in 2010. Consequently, capital expenditure is expected to grow from $XX billion in 2011 to around $XX billion in 2016 at an AAGR of XX%.

Figure 2: Oil and Gas Enhanced Production Services Expenditure, Global, ($bn), 2000-2016

Source: GBI Research
<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditure, $bn</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
</tr>
</tbody>
</table>

Source: GBI Research
15 Appendix

15.1 Market Definition

Asia-Pacific refers to Australia, Azerbaijan, Bangladesh, Brunei, China, India, Indonesia, Japan, Kazakhstan, Kyrgyzstan, Malaysia, Myanmar, New Zealand, North Korea, Pakistan, Papua New Guinea, the Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Turkmenistan, Uzbekistan and Vietnam.

Europe refers to Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, FYR Macedonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Moldova, Romania, Russia, Serbia, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom.

North America refers to the United States of America and Canada.

Middle East and Africa refers to Algeria, Angola, Bahrain, Cameroon, Chad, Cote d'Ivoire, Egypt, Gabon, Ghana, Iran, Iraq, Israel, Jordan, Kenya, Kuwait, Libya, Morocco, Nigeria, Oman, Qatar, Niger, The Democratic Republic of the Congo, Saudi Arabia, Senegal, South Africa, Sudan, Syria, Tunisia, United Arab Emirates, Yemen and Zambia.

South and Central America refers to Argentina, Aruba, Bolivia, Brazil, Chile, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Jamaica, Martinique, Mexico, Netherlands Antilles, Nicaragua, Paraguay, Peru, Costa Rica, Suriname, Trinidad and Tobago, Uruguay, Venezuela and the Virgin Islands.

15.2 Methodology

GBI Research’s dedicated research and analysis teams consist of experienced professionals with a pedigree in marketing, market research, consulting backgrounds in the energy industry and advanced statistical expertise.

GBI Research adheres to the codes of practice of the Market Research Society (www.mrs.org.uk) and the Strategic and Competitive Intelligence Professionals (www.scip.org).

All GBI Research databases are continuously updated and revised. The following research methodology is followed for all databases and reports.

15.2.1 Coverage

The objective of updating GBI Research’s coverage is to ensure that it represents the most up to date vision of the industry possible.

Changes to the industry taxonomy are built on the basis of extensive research of company, association and competitor sources.

The company coverage is based on three key factors: market capitalization, revenues and media attention/innovation/market potential.

- The estimated revenues of all major companies, including private and government, are gathered and used to prioritize coverage.

- Companies which are making the news, or which are of particular interest due to their innovative approach are prioritized.

GBI Research aims to cover all major news events and deals in the energy industry, updated on a daily basis.

The coverage is further streamlined and strengthened with additional input from GBI Research’s expert panel (see below).
15.2.2 Secondary Research

The research process begins with exhaustive secondary research on internal and external sources being carried out to source qualitative and quantitative information relating to each market.

The secondary research sources that are typically referred to include, but are not limited to:

- Company Sources, annual reports, financial reports, broker reports, investor presentations and US Securities and Exchanges Commission (SEC) filings,
- Industry trade journals and other literature,
- Internal and external proprietary databases,
- National government documents, statistical databases and market reports,
- News articles, press releases and web-casts specific to the companies operating in the market.

15.2.3 Primary Research

GBI Research conducts hundreds of primary interviews a year with industry participants and commentators in order to validate its data and analysis. A typical research interview fulfills the following functions:

- It provides first-hand information on the market size, market trends, growth trends, competitive landscape, and future outlook
- Helps in validating and strengthening the secondary research findings.
- Further develops the Analysis Team’s expertise and market understanding.

Primary research involves e-mail correspondence, telephone interviews as well as face-to-face interviews for each market, category, segment and sub-segment across geographies.

The participants who typically take part in such a process include, but are not limited to:

- Industry participants: CEOs, VPs, business development managers, market intelligence managers and national sales managers
- Outside experts: investment bankers, valuation experts, research analysts and key opinion leaders specializing in oil and gas markets.

15.2.4 Expert Panel Validation

GBI Research uses a panel of experts to cross verify research and forecast methodologies and drive its analytical content.

The GBI Research expert panel comprises marketing managers, product specialists, international sales managers from energy companies; academics and geologists from research universities, consultants from venture capital funds and distributors/suppliers of oil and gas goods and services.

Details of the make up of the expert panel can be viewed through website, and are available to clients on request.

15.3 Abbreviations

- **AAGR:** Average annual growth rate
- **Bn:** Billion
- **Boe:** barrels of oil equivalent
- **BHA:** Bottomhole assembly
- **Btu:** British thermal units
- **CAD:** Canadian dollar
- **CAGR:** Compound annual growth rate
- **CCT:** Composite coiled tubing
- **CIS:** Commonwealth of Independent States
15.5 About GBI Research

GBI Research is a leading business information company providing global business information reports and services.

Our highly qualified team of analysts, researchers, and solution consultants use proprietary data sources and various tools and techniques to gather, analyze and represent the latest and the most reliable information essential for businesses to sustain a competitive edge.

15.6 Disclaimer

All Rights Reserved.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher, GBI Research.