

## Conclusions

RPI estimates that oil field services market in Uzbekistan was worth USD 370 million in 2011. The biggest segment was seismic survey estimated at USD 105 million. Large scopes of seismic survey were done in Uzbekistan in 2011 in terms of exploration for major projects. The market of seismic survey did not peak in 2011 despite the fact that seismic survey in terms of most major projects was completed in 2011. The government of Uzbekistan is planning to bring seismic studies to 296.6 thousand km of 2D seismic prospecting and 80.2 thousand square km of 3D seismic survey in 2012- 2030. The annual scopes of seismic survey in Uzbekistan will therefore total 16.4 thousand km for 2D seismic survey and 4.5 thousand square km for 3D seismic survey, which is greater by 10% and 105%, respectively vs. 2011. There are good chances that the state program will be fully implemented as Uzbekistan is facing the problem of mineral base replacement. The plan for developing the oil and gas industry until 2030 provides for increasing hydrocarbon reserves by 120% to 5.6 bln. tons of equivalent fuel vs. 2011. Natural gas reserves will grow to 2.4 tcm, oil reserves - to 132.4 mln. tons and the reserves of condensate - to 102.6 mln. tons.

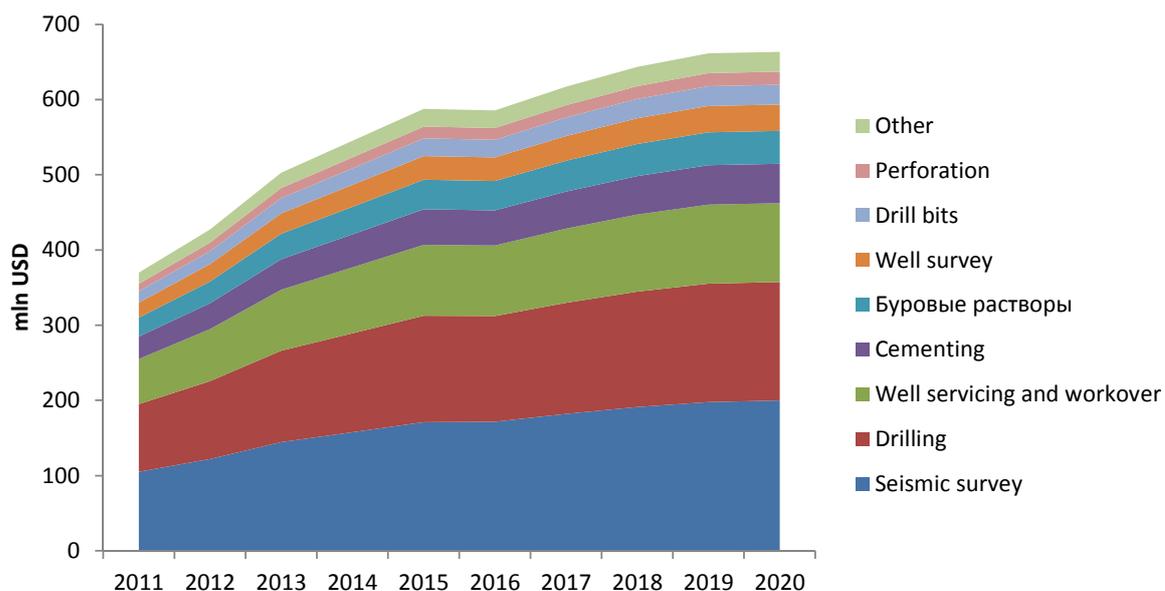
*Table 1. The capacity of the oil field services market of Uzbekistan by segments, USD million, 2011*

<b>Market segment</b>	<b>Market capacity, USD million</b>
Seismic survey	
Drilling	
Well servicing and workover	
Cementing	
Drilling muds	
Well survey	
Drill bits	
Perforation	
Other	
<b>Total</b>	

*Source: RPI analysis*

RPI estimates that in 2012-2020 oil field services market in Uzbekistan will grow from USD 370 million to USD 663 million at average annual rate of 6%. The growth dynamics will vary depending on developments and investment volume.

Chart 1. Forecasts of oil field services market dynamics in Uzbekistan, 2011-2020, USD million.

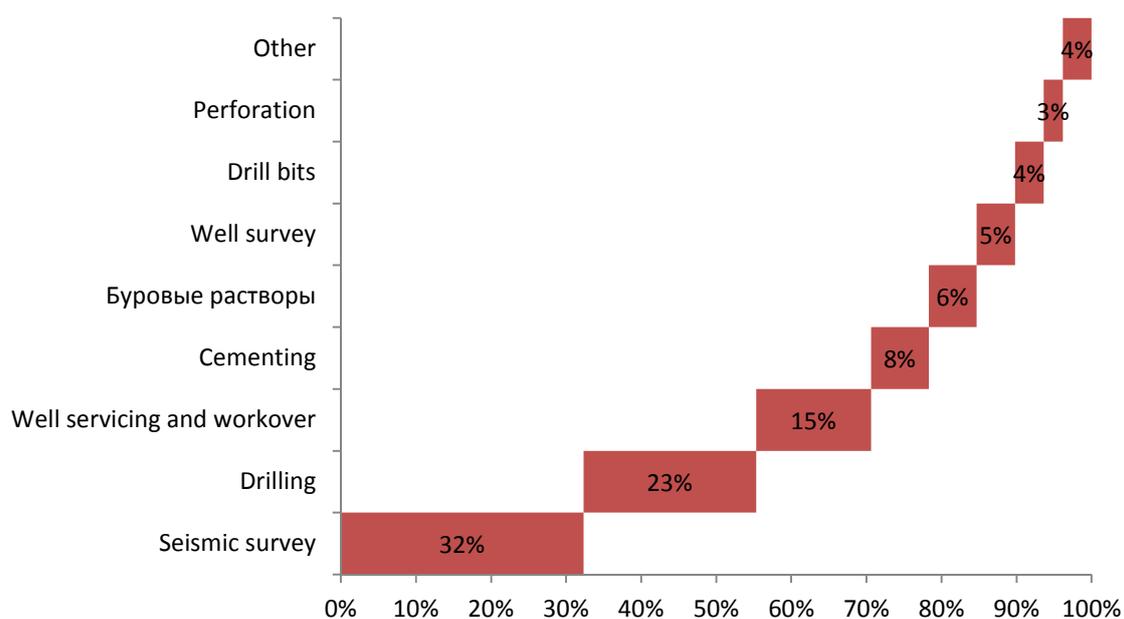


Source: RPI analysis

The main segments driving the growth of the oil field services market in 2012-2020 will be:

- 2D and 3D seismic survey 32% of growth;
- Exploration and prospecting drilling 23%;
- Well servicing and workover 15%;
- Well cementing 8%.

Chart 2. Contributions by segments to the growth of the oil field services market in Uzbekistan, 2012-2020, %



Source: RPI analysis

A brief profile of the oil field services industry of Uzbekistan is given below.

The production drilling market in Uzbekistan is at the peak of growth. The market will start to decline slowly in 2012-2020 mainly after drilling operations are completed at LUKOIL's fields of Kandym-Khauzak-Kungrad-Shady, Southern Gissar. At the same time the authors cannot rule out a second wave of production drilling growth after the completion of geological operations conducted under acting PSAs at the assets of NHC Uzbekneftegaz.

Replenishing its resource base is quite a pressing issue for Uzbekistan as the oil and gas reserves have recently registered a negative growth. The plan is to bring the ratio of hydrocarbon resource growth to production to 120-163% by 2020. The restoration of reserve replacement will be achieved by increasing the prospect drilling, which will reach 3.05 million meters by 2020 according to government plans. Uzbekistan is also planning to expand proven reserves at the fields being developed. NHC Uzbekneftegaz drafted a program for oil production increase for 2011-2020 at the fields being developed. The company estimated initial investment in deep and radial drilling at 235 million USD. The program provides for deep drilling at about 100 locations to obtain an oil production increase of 200 thousand tons per annum.

In spite of considerable growth potential in several segments, such as prospect drilling and geophysical studies, there are also a number of factors that make the oil field services market in Uzbekistan less attractive to independent companies:

- The market is dominated by companies with considerable power base (Eriell, Gazprom International);
- Chinese companies have a considerable presence on the market and they contract with Chinese companies only reducing the scope of opportunity on the market. For instance, CNPC contracts with Xibu exclusively;
- In general, politics influence the distribution of oil field services contracts. For instance, the international JV Aral Sea Operating Company (ASOC), which explores the Aral shelf, hires Xibu of China only. ASOC incorporates CNPC and it hires Xibu as a compensation for the fact that the Russian ASOC shareholder LUKOIL Overseas operates the project;
- Only the companies with state participation may get licenses for certain activities (for instance, explosive operations for geophysical studies).

It therefore makes sense to seek contracts in Uzbekistan having obtained support from the authorities or having offered new technologies the demand for which will certainly be growing. As of now the hi-cost segment of the market requires:

- Radial drilling;
- Construction of horizontal wells;
- Drilling through a salt barrier (a zone where salty water under high pressure overlies a deep lying productive horizon);
- Ultradeep drilling;
- Underbalanced drilling.

Today's ratio of readily retrievable to hard-to-recover reserves in Uzbekistan is 60 to 40. The growth of the hard-to-recover reserves in the mid-term (2012-2020) will increase the demand for new technologies in the oil field services industry. As of now high-tech services (horizontal drilling, coil tubing, hydraulic fracturing, multi-hole wells) meet with practically no demand on the market of Uzbekistan, with the exception of single instances of horizontal and deep well drilling.

Table 2. A brief profile of the oil field services market in the Republic of Uzbekistan

<p><b>Status of the resource base</b></p>	<ul style="list-style-type: none"> <li>• Proven reserves of oil-100 mln. tons;</li> <li>• Proven reserves of gas-1.6 tcm;</li> <li>• Between 2006 and 2011 production of oil was declining by 7.7% owing to the depletion of most of the fields in the republic;</li> <li>• Negative growth of oil and gas reserves;</li> <li>• Operating marginal oil wells with a daily flow rate of less than 5 tons at the old fields is problematical: the Northern Urtabulak field in Bukhara-Khiva province, the Mingbulak field in Ferghana province.</li> </ul>
<p><b>Promising market segments</b></p>	<ul style="list-style-type: none"> <li>• Exploration drilling</li> <li>• Seismic studies</li> <li>• Oilfield geophysics</li> <li>• Well testing</li> <li>• The oil and gas well stock counts 6,625 units. An average of 2,000 well workover operations (30%) and 3,500 well maintenance operations (50%) are annually under way.</li> </ul>
<p><b>Regions promising for oil field services companies</b></p>	<ul style="list-style-type: none"> <li>• Deep deposits in the Bukhara-Khiva region;</li> <li>• Syrdarya region;</li> <li>• Ferghana.</li> </ul>
<p><b>Potential customers</b></p>	<ul style="list-style-type: none"> <li>• <b>LUKOIL:</b> 120 wells to be drilled in 2012-2020 at the Kandym group of fields; 56 fields to be drilled in 2012-2013 at the Southwestern Gissar field in the Ustyurt region;</li> <li>• <b>NHC Uzbekneftegaz:</b> Shurtan project;</li> <li>• <b>CNPC:</b> geological exploration to be conducted in 2012-2015 at 5 investment blocks within the Ustyurt, Bukhara-Khiva and Ferghana oil and gas regions (Samskiy-Kosbulatskiy, Aral Sea, Rometan, Karakul, Gumkhana), production (9 wells) and exploration drilling (64 wells) as part of the Mingbulak project, commercial development of the eastern Alat field to begin in 2015;</li> <li>• <b>Petronas:</b> development of the Baisun block in the Surkhandarya region;</li> <li>• <b>KNOC:</b> geological exploration in the Ferghana region (the Western Ferghana, Chinabad, Choost-Pap and Namangan-Tergach blocks);</li> <li>• <b>KOGAS:</b> geological exploration at the investment blocks within the Uzunkui-Tuarkeyr area of the Ustyurt region; development of the Surgil field in the Ustyurt region;</li> <li>• <b>Aral Sea Operating Company:</b> 3 exploration wells to be drilled by 2015.</li> </ul>
<p><b>Comments</b></p>	<ul style="list-style-type: none"> <li>• The main driver for the growth of production drilling until 2020 will be the projects of LUKOIL, NHC Uzbekneftegaz (Shurtan project), CNPC (Mingbulak project). Further drilling plans depend on seismic exploration results. If successful, they will drive the expansion of the drilling market in Uzbekistan.</li> <li>• The exploration drilling market will be driven by the assets of Uzbekneftegaz. The government is planning to obtain a growth of resources of 700 bcm of gas, 47 mln. tons of oil and 44 mln. tons of condensate in 2012-2020 by drilling 3 million meters of</li> </ul>

	<p>exploration wells.</p> <ul style="list-style-type: none"> <li>The demand for geotechnical operations apart from radial drilling is insignificant at the brown oil fields. Side tracking maintenance supported by coil tubing is practically not applied.</li> </ul>
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Source: RPI research

### 1.1.1 LUKOIL

LUKOIL is involved in three production projects:

- Kandym-Khauzak-Kungrad-Shady
- Aral project
- Southwestern Gissar

Table 2-6. Projects involving LUKOIL in Uzbekistan

Project/Fields	Participants	Reserves	Effective term	Current status	Operations completed as of 2012	Drilling plans
Kandym-Khauzak-Kungrad-Shady	10% Uzbekneftegaz 90% LUKOIL	283-329 bcm of gas, 8 mln. Tons of oil	2004-2039	Production in 2011 totaled 3.1bcm of gas and 10 thousand tons of condensate. Production is to reach 16-18 bcm by 2020.	89 production and exploration wells were drilled. 2D Seismic studies-1900 km. 3D Seismic studies-450 square km.	91 more wells to be drilled.
Aral license block	20% LUKOIL 20% Petronas 20% KNOC 20% CNPC 20% Uzbekneftegaz	1 tcm of gas, 150 mln. Tons of oil	2005-2040 2007-2010 geological exploration operations	geological exploration operations of 2007-2010 are contracted by PetroAlliance	2 exploration wells were drilled (6.8 thousand meters.) 2D Seismic studies-2941 km.	3 more exploration wells to be drilled
Southwestern Gissar	LUKOIL Uzbekistan	100 million tons of equivalent fuel	2007-2043	Seismic studies, production drilling, production. 102 thousand tons of oil in 2011.	49 production and exploration wells Seismic studies 2D-1300 km. Seismic studies 3D-554 square km	56 more production wells to be drilled in 2012-2013

Source: Company data

LUKOIL has far-reaching plans for gas production in Uzbekistan; by 2017 it is planning to produce 17-18 bcm of gas. As of now LUKOIL's gas production in Uzbekistan is restricted by the Khauzak-Shady field commissioned at the end of 2007 and developed as part of the Kandym-Khauzak-Shady project which produced 3.1 bcm of gas in 2011.

In December 2009 LUKOIL completed phase 1 of the project and started gas production at the Dzharkuduk-Yangy-Kyzylcha, Southwestern Gissar block. Few more fields are located in the contract area. These fields include the major condensate Adamtash and Gumbulak field and the predominantly oil bearing Southern Kyzylbairak and Koshkuduk fields.

The proven C1+C2 reserves of the Dzharkuduk-Yangy-Kyzylcha block are 100 million tons of equivalent fuel. An intensive exploration effort started by LUKOIL increased proven reserves by 12 mln. tons of equivalent fuel. Over that time 2D seismic studies were conducted on 1300 km, 3D seismic studies were

done on 554 square km, the geological structure of the block was determined more accurately, the Southwestern Kyzylbairak and Shamoltegmas fields were discovered and the Navruz (Nomsis) structure was prepared for drilling. Drilling is under way at the Shurdarya structure. Three promising areas were identified.

In 2014 LUKOIL is going to increase production at Gissar to 3.5 bcm of gas per annum.