May 2014

Opportunities, Risks and Rewards – a balancing act

An investor survey of the Indonesian oil and gas industry

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Contents

1 Introduction

Opportunities, Risks and Rewards – a balancing act.

Indonesia has a long history in the oil and gas industry with a diversity of geological basins which continue to offer sizeable oil and gas potential. However, Indonesia's crude oil production has continued to decline over the last decade due to the natural maturing of producing oil fields, a slower reserve replacement rate and arguably, insufficient exploration and investment. The Government of Indonesia (GoI) continues to put effort into increasing Indonesia's oil production and attracting investment from new and existing players, but in practice this has proven to be challenging. Our survey respondents were however more optimistic about the prospects for further gas finds in Indonesia. Some respondents took the time in their written comments to point out the need for investment in appropriate gas infrastructure to complement the further development of gas.

This is the sixth edition of our survey of the Indonesian oil and gas industry, and where applicable we have analyzed the collective trends in survey participants' responses using the current and prior reports. The survey responses come from 106 respondents from 90 different companies currently operating in the Indonesian oil and gas sector and therefore can be used to draw credible conclusions about the issues preventing the industry from reaching its full potential. The survey shows that there have been improvements in some areas, but also suggests that new regulations, contract sanctity, uncertainty over cost recovery and interference from other government agencies continue to stifle investment.

The level of interest in this 2014 survey, and the effort taken with detailed written comments, demonstrates a huge passion amongst participants to see this industry develop and further underpin Indonesia's energy future.

We trust that this report will prove informative and would like to thank all the individuals who took the time to participate.

2 Executive Summary


Photo source: PT Chevron Pacific Indonesia

Supply and demand for oil and gas

Not surprisingly, survey participants believe that the demand for oil and gas will continue to grow, both globally and in Indonesia. Similar to our 2012 and 2010 survey results, the demand for gas is expected to increase at a greater rate than the demand for oil. Survey respondents were divided equally as to whether or not there are still significant oil reserves to be discovered in Indonesia. In regard to gas, they were more optimistic with 66% of respondents expecting further significant gas fields. Expectations are high for discoveries in Eastern Indonesia (Papua, Maluku, etc.). Most respondents suggested their companies would continue to explore for both gas and oil.

Almost three-quarters of survey respondents (72.5%) indicated that the price of crude oil would remain in the US$101-120 per barrel range for 2014, but only 50% believe it would stay in that range by 2016. While 14% of respondents said the oil price would be above US$120 in 2016, 36% forecast it would fall to US$100 or below.

Employment

In line with the continued increase in global demand for oil and gas, the demand for employees working in the oil and gas industry in Indonesia is likely to increase over the coming years. Expatriate numbers are not expected to increase, despite an apparent need for deepwater and unconventional expertise, largely due to the new expatriate utilisation regulations adding some conditions on the employment of foreign workers for the upstream and services sectors. As in the 2012 survey results, a large portion of the survey participants expect difficulties in attracting sufficient (skilled) human resources. One of the reasons behind this is the fact that a

significant proportion of skilled local employees seek employment abroad (mostly in the Middle East) in search of higher compensation.

Capital Expenditure

The participants' general view seems to be that capital spending will stay the same or even increase over the coming five years. This is more or less consistent with the 2012 survey results and consistent with the increased lifting costs for mature fields and development of deepwater assets. Disappointingly, 48% of respondents suggested their appetite for further investment in Indonesia was declining.

Challenges facing the industry

Our survey indicated that the five most critical challenges facing the industry are as follows:

1. **Interference from other government agencies, such as the tax authorities**
2. **Contract sanctity**
3. **Confusion as the roles of the central, provincial & regional government**
4. New regulations
5. **Uncertainty over cost recovery and SKK Migas/ BPKP audit findings**

The challenges highlighted in bold above were also included in the top five challenges in our 2010 and 2012 surveys.

We noted that survey participants were slightly optimistic on the anticipated developments on a number of challenges over the longer term as they expect some improvements within the coming five years.

In written comments to the survey a number of respondents flagged their concerns over the need to resolve the status of the pending revision of the Oil and Gas Law. Some also expressed or implied frustration with the perceived lack of consistency or coordination between the various GoI Ministries.

Competitiveness

From this survey, the five most competitive features of the Indonesian oil and gas industry are as follows:

1) Political stability
2) Trained workforce
3) Ease of foreign ownership
4) Environmental regulation
5) Geological opportunities

Critically we note that foreign ownership (read as access to acreage and being open for business) remains a competitive and positive feature of the Indonesian upstream sector. We note also that geological prospectivity, although still regarded as good, is no longer regarded as the most competitive feature of the Indonesian upstream sector.

Other challenges

Survey respondents were divided as to whether the 2014 elections would have significant ramifications for the sector, but were in agreement that the upstream procurement regulations were and would continue to have a negative impact on their business.

There was overwhelming support from respondents for the GoI to provide incentives to support the development of unconventional gas (90% of recipients), but serious concern as to whether Indonesia had the knowledge and expertise to extract and produce unconventional gas.

On a concluding note, despite most respondents indicating that they were not satisfied with the returns of their investment, the majority (consistent with our past three surveys) had never considered leaving Indonesia.

3 An overview of the oil and gas industry in Indonesia

Photo source: Talisman (Asia) Ltd.

Introduction

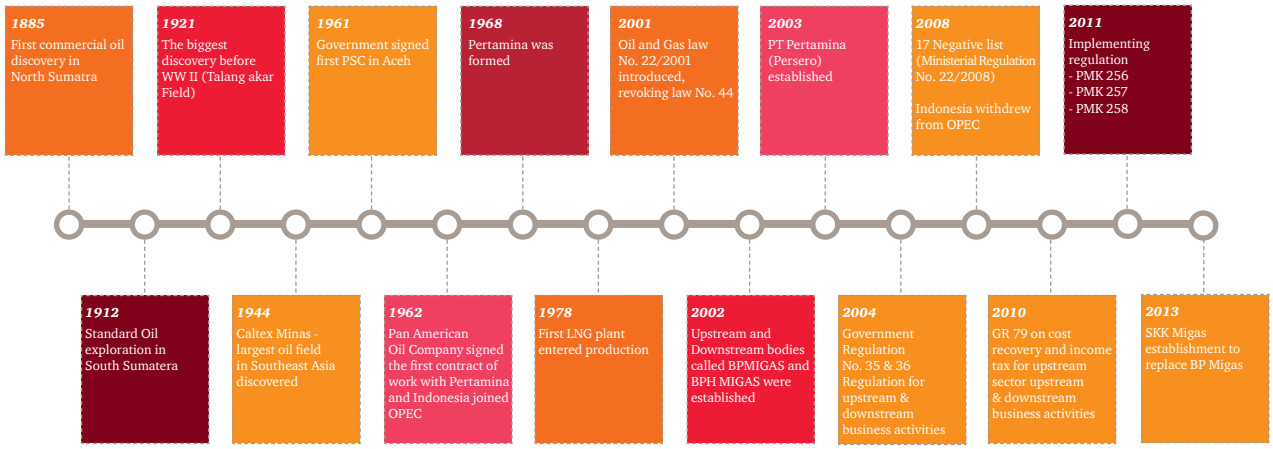
The landscape of the oil and gas industry, both in Indonesia and globally, has experienced dramatic changes in recent years. The industry experienced a significant resurgence in investment coinciding with the run up in crude oil prices which peaked at approximately US$145 per barrel in mid 2008. This was then tempered with the onset of the global financial crisis and ensuing global recession which gained momentum in the latter half of 2008. From its peak in mid-2008, the oil price collapsed by more than 70% and ended 2008 at approximately US$40 per barrel. With market confidence returning crude prices recovered somewhat in 2009 to approximately US$75 per barrel. Prices have increased to average (on an annual basis) approximately US$94-98 a barrel (WTI) in the period from 2011 to 2013.

Despite ongoing regulatory changes, investment in the oil and gas industry in Indonesia reached US$16.1 billion in 2012 and US$19.3 billion in 2013 and contributed around 12% of total state revenue. In 2012 there were 25 new oil and gas contracts entered into along with a further 14 in 2013. Most recently, in February 2014, seven new contracts were signed.

Global Context

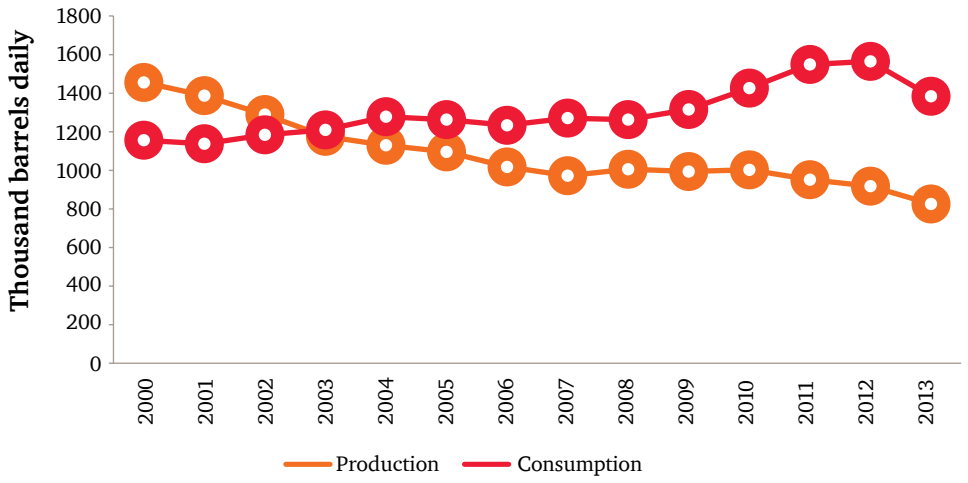
Indonesia has been active in the oil and gas sector for nearly 130 years after its first oil discovery in North Sumatra in 1885, and continues to be a significant player in the international oil and gas industry.

Significant events in the history of Indonesia's Oil and Gas Sector



Indonesia holds proven oil reserves of 3.6 billion barrels and ranks 20th among world oil producers, accounting for approximately 1.1% of world oil production. Declining oil production and increased consumption resulted in Indonesia becoming a net oil importer in late 2004. This factor, along with high oil prices in 2004-2008, led the Government to substantially scale back the domestic fuel subsidy in 2008 and to decide to temporarily withdraw from the Organisation of Petroleum Exporting Countries (OPEC) – an organisation representing approximately 45% of world oil production. As the only Asian member of OPEC since 1962, the Government has indicated it will consider rejoining OPEC if the country's oil production can be increased and it can become a net exporter again.

Indonesia Oil Production and Consumption



Source for 2000 - 2012: BP Statistical Review of World Energy
Source 2013: Energy Information Administration, US Government

Indonesia is ranked 10th in world gas production, with proven reserves of 104 trillion cubic feet in 2012. This ranks Indonesia as 11th largest in the world and the second largest in the Asia Pacific region[1] after China. Indonesia's gas industry is also being transformed by more competitive liquefied natural gas (LNG) markets, new pipeline exports, and increasing domestic gas demand. Indonesia's natural gas production has decreased in recent years (Indonesia supplied 2.6% of the world's marketed production of natural gas in 2010 and 2.1% in 2012[2]) and the country is facing a declining global LNG market share to LNG producers in Qatar. After announcing its 2006 policy to re-orient natural gas production to serve domestic needs, Indonesia dropped from its status as world's largest exporter of LNG in 2005 to the world's fourth largest exporter of LNG in 2012, behind Qatar, Malaysia and Australia. It exports to South Korea, Japan, China, Taiwan, Mexico and India around 8% of the world's LNG exports.

Resources and Production

Key Indicators - Indonesia's oil and gas industry

Indicator	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Reserves											
Oil (Million Barrels)	8,610	8,630	8,930	8,400	8,220	8,000	7,760	7,730	7,262	N/A	N/A
Proven	4,300	4,190	4,370	3,990	3,750	4,300	4,230	4,040	3,740	4,000	3,600*
Potential	4,310	4,440	4,560	4,410	4,470	3,700	3,530	3,690	3,660	N/A	N/A
Gas (TCF)	188.34	185.80	187.10	165.00	170.10	159.63	157.14	152.89	150.70	N/A	N/A
Proven	97.81	97.26	94.00	106.00	112.50	107.34	108.40	104.71	103.35	108.4	104*
Potential	90.53	88.54	93.10	59.00	57.60	52.29	48.74	48.18	47.35	N/A	N/A
Production											
Crude oil (BOPD)	1,130	1,096	1,018	972	1,006	994	1,003	952	918	826	798**
Natural gas (MMSCFD)	7,986	7,823	7,660	7,283	7,460	7,962	8,857	8,415	7,110	6,825	7229**
New contract signed	17	23	5	28	34	34	21	31	39	N/A	7

Source:
2004-2012 Oil Proven and Potential Reserves: ESDM
2004-2012 Gas Proven and Potential Reserves: ESDM
2013-2014 Oil and Gas Proven Reserves: Energy Information Administration, US Government
2004-2012 Crude Oil and Natural Gas Production: BP Statistical Review of World Energy
2013-2014 Crude Oil and Natural Gas Production: SKK Migas – IPA Technical Division presentation, 30 April 2014
New contracts: ESDM

MBOPD: Thousand Barrels per Day
MMSCFD: Million Standard Cubic Feet per Day
* estimate
** target

1 BP Statistical Review of World Energy June 2013
2 BP Statistical Review of World Energy June 2013

Indonesia struggles to maintain LNG production levels and continues to feel the pressure of balancing revenues from gas exports with meeting stronger demand from its domestic market and it is likely to increase LNG imports in 2014. Indonesia's three existing LNG facilities are based in Arun in Aceh, Bontang in East Kalimantan, and Tangguh in West Papua (which commenced first production in mid 2009). The Lampung LNG facility is expected to start-up in 2014 while Pertamina has planned full decommissioning of Arun LNG in order to convert it into an import terminal.

Oil and Gas Contribution to Domestic Revenues

Year	Domestic Revenue	Oil/Gas Revenue	% of contribution
	Rp Trillion		
2004	403	85	21.09 %
2005	494	104	21.05 %
2006	636	158	24.84 %
2007	706	125	17.71 %
2008	979	212	21.65 %
2009	847	126	14.88 %
2010	992	153	15.42 %
2011	1205	193	16.02 %
2012	1338	206	15.38 %
2013*	1502	181	12.02 %
2014*	1667	197	11.79 %

Source: Ministry of Finance (MoF)
* Budget

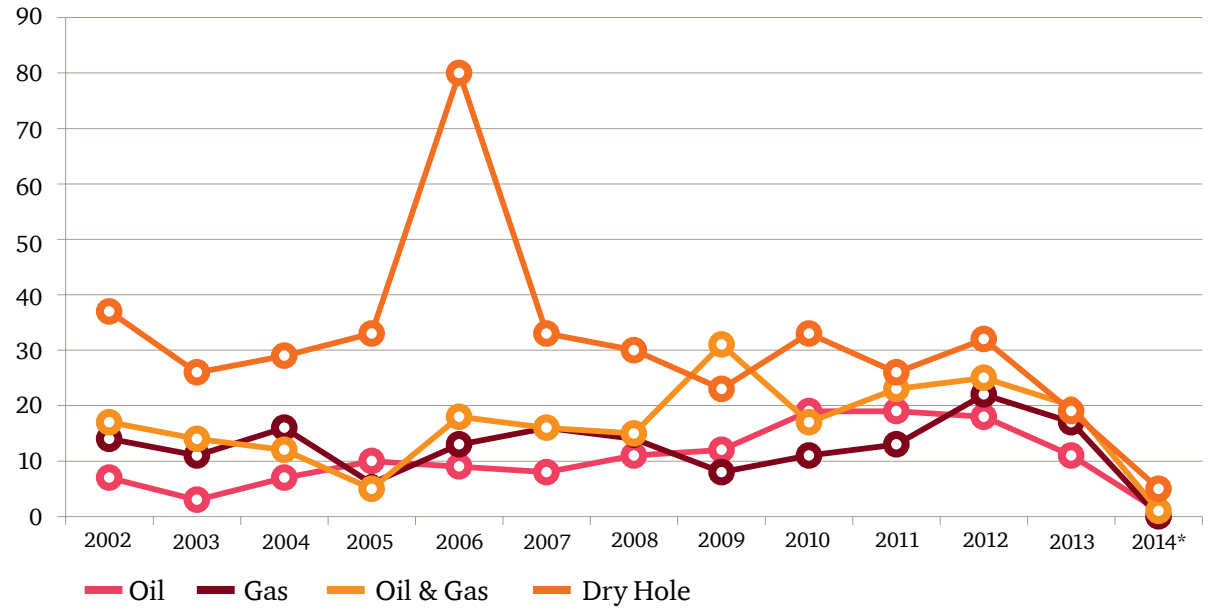
Indonesia has a diversity of geological basins which continue to offer sizeable oil and gas reserve potential. Indonesia has 60 sedimentary basins including 36 in Western Indonesia that have been well explored. Fourteen of these are producing oil and gas. In under-explored Eastern Indonesia, 39 tertiary and pre-tertiary basins show rich promise in hydrocarbons.

About 75% of exploration and production is located in Western Indonesia. The four oil-producing regions are Sumatra, the Java Sea, East Kalimantan and Natuna and the four main gas-producing regions are East Kalimantan, Arun (North Sumatra), South Sumatra and Natuna.

Indonesia's crude oil production declined over the last decade due to the natural maturation of producing oil fields combined with a slower reserve replacement rate and decreased exploration/ investment. During 2012, Indonesia's total crude oil production,although up slightly from 2011 at 0.918 million barrels per day, was around two-thirds of its 2001 daily production. The national oil production target for 2014 is 1.01 million barrels per day. Despite this target, actual production for 2013 was 0.826 million barrels per day and the expectation for 2014 is 0.798 barrels per day.

The number of wells completed in Indonesia dropped substantially in 2013 and there has been only two productive wells completed (in addition to five dry holes) up until the end of April 2014.

Wells Completed



Source:
SKK Migas – IPA Technical Division presentation, 30 April 2014
* 2014 data is as of 25 April 2014

Unconventional Oil and Gas

Indonesia's coal bed methane (CBM) reserves are estimated to be 453 Tcf which is larger than Indonesia's estimated natural gas resource and ranks 6th in the world. Its CBM reserves are spread across the archipelago but are predominantly located in South Sumatra, South Kalimantan, and East Kalimantan. The first CBM contract was signed in 2008 and by the end of 2012 there were 54 CBM cooperation contracts in place. In 2013, four CBM production pilots began selling gas to independent power producers. The Government has set daily production targets of 500 mmcf by 2015 rising to 1,000 mmcf by the year 2020 and 1,500 by the year 2025.

Indonesia's shale gas reserves are estimated to be 574 Tcf, which is even greater than its CBM reserves. As at the end of 2013, the Government had received 75 proposals spread across Sumatra, Sulawesi, Kalimantan and Papua and five, including Pertamina, had completed a Joint Study. Pertamina signed the first unconventional oil & gas (MNK) PSC for a work area in North Sumatra (Sumbagut).

4 Survey approach


Photo source: PwC

Survey background

This is the sixth edition of the Indonesian oil and gas survey. The purpose of the survey is to help inform the public and private sectors in Indonesia and abroad about Indonesia's upstream petroleum industry and to highlight some of the challenges attracting optimal investment and achieving its full potential. Where possible, we have compared current results with the results from prior surveys to highlight trends and to assess whether conditions are deteriorating or improving.

Survey coverage

The 2014 report is based on the results of a confidential comprehensive survey circulated by PwC Indonesia to senior management (including Country Managers, CFOs, COOs, Finance Managers and Operations Executives) of a wide range of companies operating in the Indonesian oil and gas industry (E&P, drilling, oil field services and seismic analysis companies). Refer to charts 4.1 and 4.2 for background on the survey participants. The survey questionnaire included both quantifiable and qualitative data sections. Because of the incomplete nature of certain quantifiable data responses we have been unable to utilise this data in its entirety in our report.

The survey questionnaire was sent to individuals working for more than 150 different companies. We received 106 responses (representing 90 different companies currently active in the Indonesian oil and gas sector). Responses from several companies were aggregated and therefore represent the combined views of several executives. Completed surveys came from companies representing almost 80% of Indonesia's petroleum production in 2013 and several recent entrants to the

Indonesian oil and gas sector that are currently in the exploration stage. As such, the views expressed by the survey participants can be viewed as representative conclusions on issues that may be preventing the industry from reaching its full potential, and to make credible observations about investment and spending trends.

Chart 4.1

Survey Participants' background

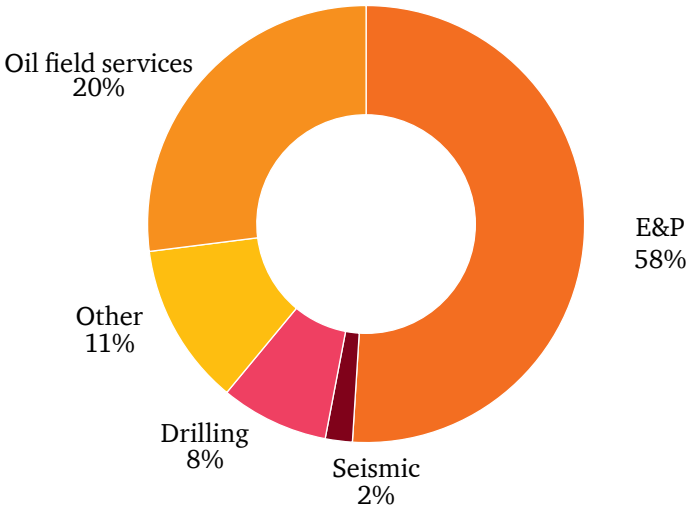
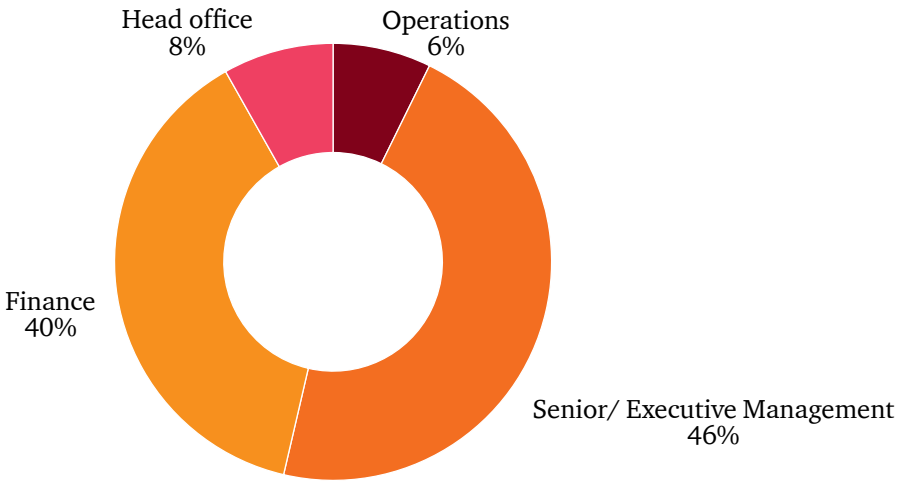


Chart 4.2

Survey participants' functional role



5 Supply and demand for oil and gas

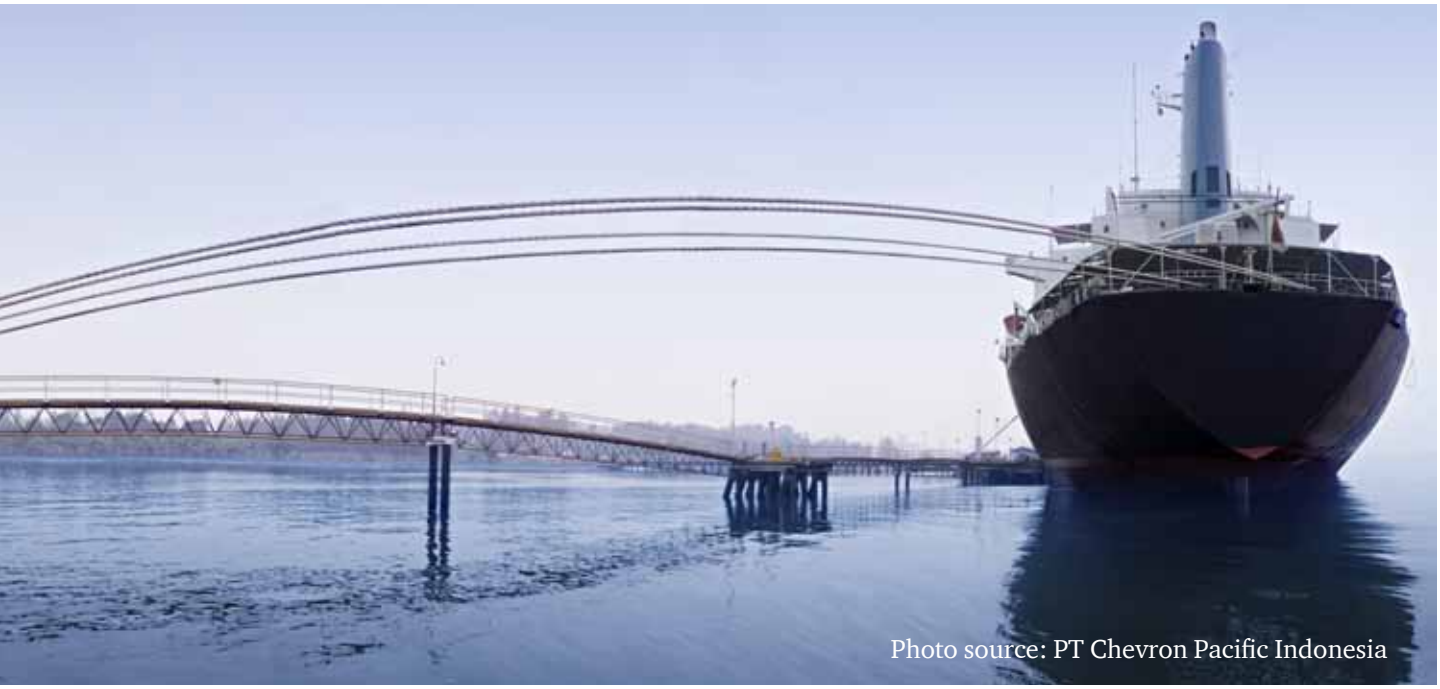


Photo source: PT Chevron Pacific Indonesia

As expected, almost all survey respondents are of the opinion that the demand for oil and gas will continue to (significantly) increase in the next five years (see charts 5.1 and 5.2). Although oil prices have come down from the historical highs reached in 2008, the current commodity prices still allow difficult-to-reach areas and reservoirs to be economically viable. As was also the case in our 2012 survey, none of the participants expect the global demand for oil or gas to decrease. As can be seen on chart 5.2, the survey participants indicated that the demand for gas, both globally and in Indonesia, would significantly increase in the next five years. This may be an indication of a shift towards cleaner energy. It is interesting to note that survey participants expected the global demand for oil to increase more than the demand for oil in Indonesia. This may be due to the continuing increase in demand for oil in countries like India and China.

"[Energy] Demand will continue to increase [while] supply [will] be limited with little real incentives offered to foreign investors, hence the gap will widen."

Survey participant comment

A. Will Indonesian and world oil and gas demand rise or fall over the next five years?

Chart 5.1 Indonesian and world oil demand

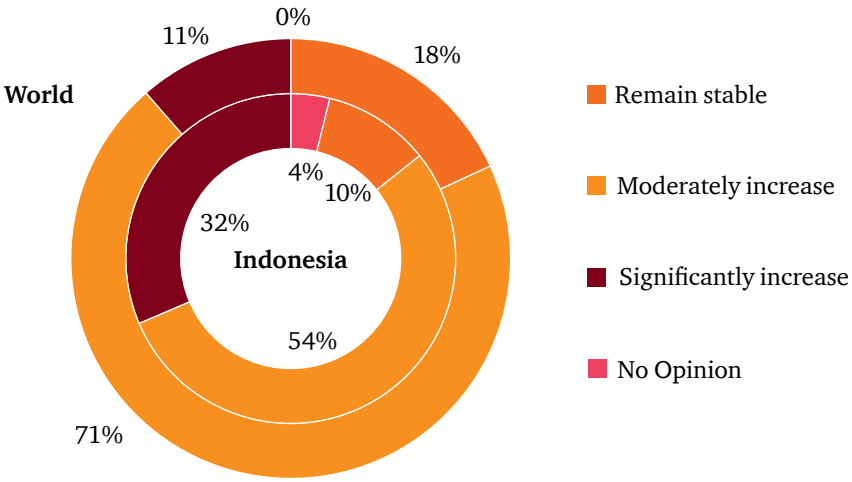
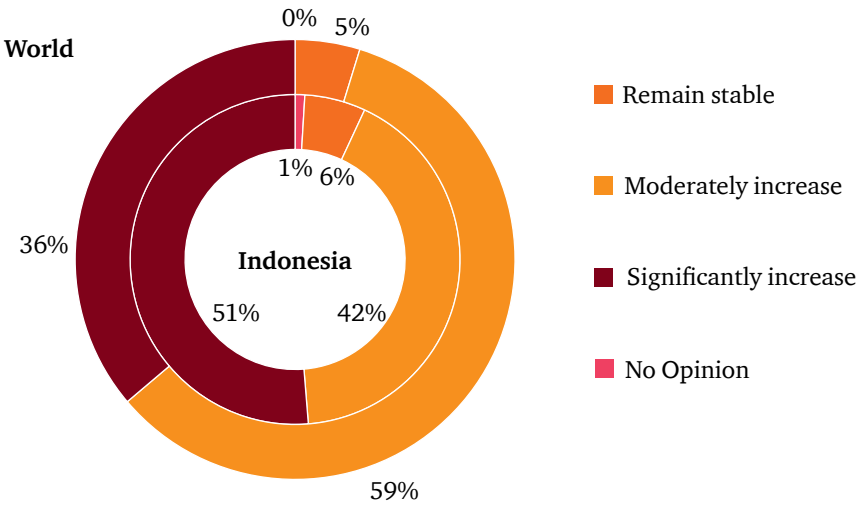


Chart 5.2 Indonesian and world gas demand



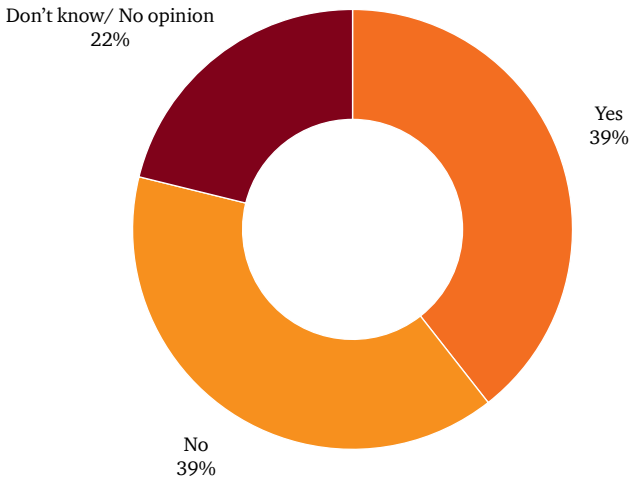
"The rise of industrial nations such as China and India will be the main drive to increased demand in gas, particularly for industrial and power generation sectors."

Survey participant comment

B. Are there significant Indonesian oil reserves yet to be discovered?

Chart 5.3

Significant oil reserves will be discovered?



"If there are significant untapped oil reserves, it would be in challenging locations such as deep seas."

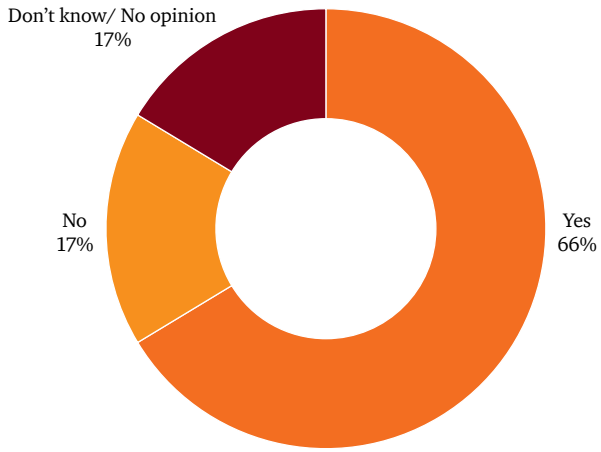
Survey participant comment

Excluding those participants with no opinion, the responses were split equally between whether there would be significant new oil reserves (yes: 39%) or not (no: 39%).

C. Are there significant Indonesian gas reserves yet to be discovered?

Chart 5.4

Significant gas reserves will be discovered?



"The world's population continues to grow and the developing economies are building a higher standard of living. All this requires more energy. Oil and gas are a key part of that mix. Indonesia has some mature basins and the easy fields have been found. But there is a still lot of potential for smaller finds. This requires lots of exploration."

Survey participant comment

"Many difficult wells need to be developed."

Survey participant comment

Whilst only 39% of the survey respondents indicated that they believed that there are still significant oil reserves to be discovered in Indonesia, 66% of respondents thought there were significant gas reserves untapped, especially in Eastern Indonesia (Papua, Maluku, etc.). We note that sentiment has weakened significantly since the 2012 survey, when still 72% and 97% of the participants believed there would be (significant) oil and gas reserves to be discovered (respectively), noting that at the time geological opportunities were regarded as Indonesia's most attractive aspect.

"Gas discoveries in Africa and potentially [the] unlocking of [the] Artic will significantly increase world oil and gas reserves."

Survey participant comment

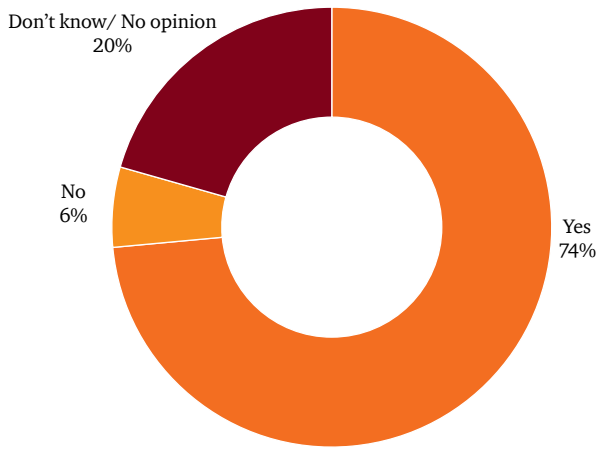
"Alternative energy, e.g. gas, needs to be developed further."

Survey participant comment

D. Are there significant oil and gas reserves will be discovered globally?

Chart 5.5

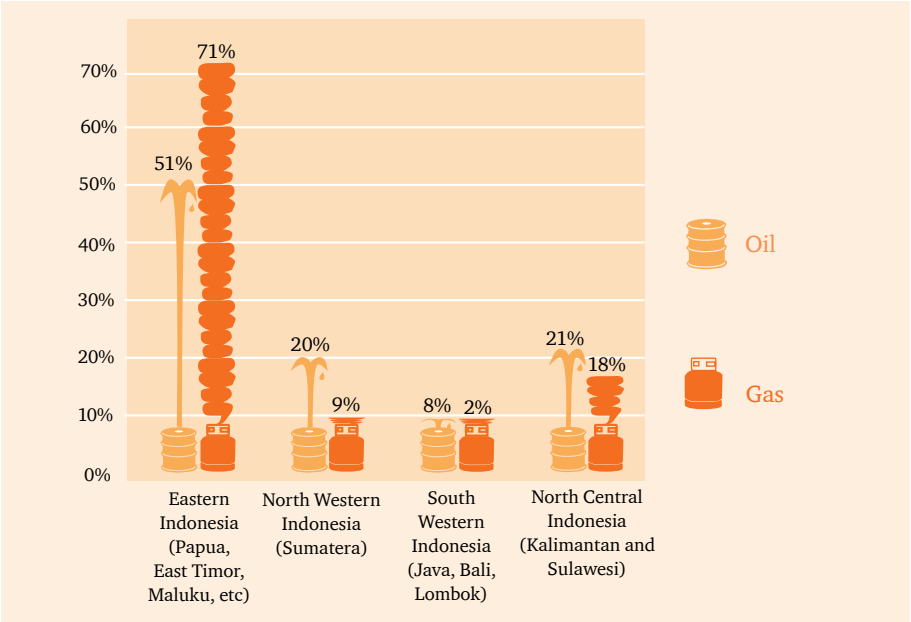
Significant oil and gas reserves will be discovered globally?



E. Which of the following areas offer the greatest potential for new discoveries of crude oil and gas reserves?

Chart 5.6

Potential for new reserves

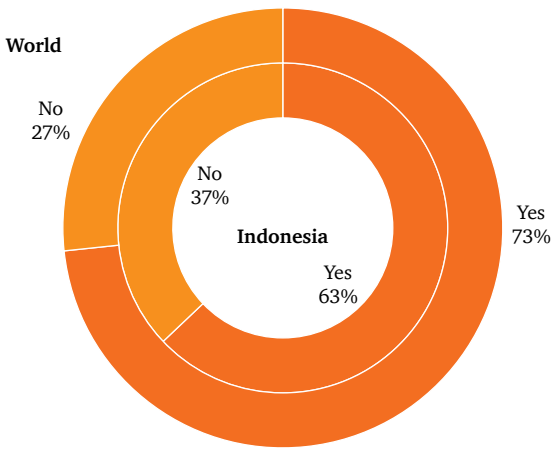


As can be seen in chart 5.6 above, the majority of oil and gas reserves are believed to be in Eastern Indonesia (Papua, East Timor, Maluku, etc.) followed by North Central Indonesia (Kalimantan, Sulawesi). Consistent with prior surveys, participants are less optimistic about finding new oil reserves in North Western Indonesia (Sumatra) notwithstanding that this basin provides a large percentage of the country's current oil production. In our 2012 survey, 50% of the survey participants indicated that new oil discoveries would be in Eastern Indonesia, this percentage has now increased to 51%, whereas in 2014 only 20% of survey participants believed new oil discoveries are expected in North Western Indonesia (2012: 24%). The expectations for South Western and North Central Indonesia have remained more or less the same with our 2010 and 2012 survey results.

The high expectations for gas in Eastern Indonesia is a very promising feature of the industry feedback.

F. Will your company increase its explorations activities in the next three years?

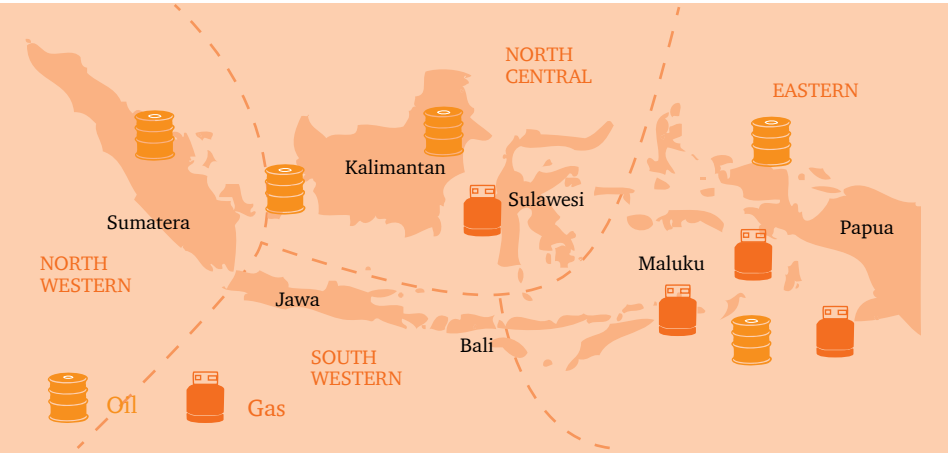
Chart 5.7 Increase explorations activities



"Government must build gas infrastructure from upstream to downstream which provides a good incentive for foreign and local investors."

Survey participant comment

Map of Indonesia



"With the new [Oil & Gas] Law and its uncertainties looming, plus an unwelcome crackdown on foreign expert workers, this very prospective country for Oil & Gas exploration finds it hard to attract investment and capabilities."

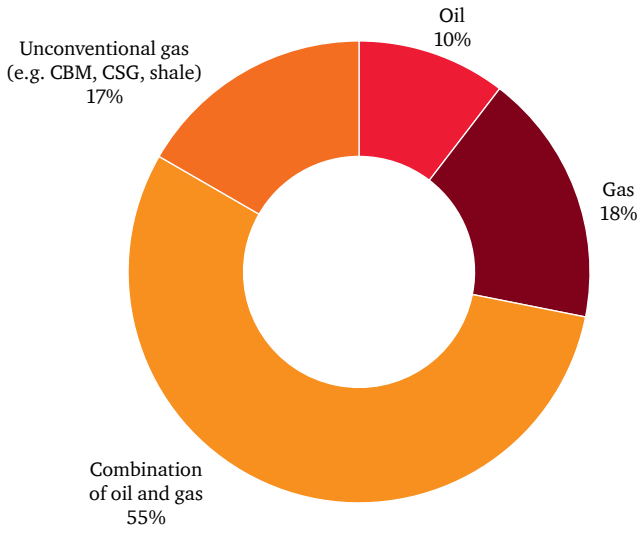
Survey participant comment

G. What will be the focus of your company's Indonesian exploration activities for the next three years?

Given the expectations of survey participants that there are still significant undiscovered oil and gas reserves in Indonesia, it is not surprising that the majority of the participants indicated that they will focus on a combination of oil and gas exploration for the next three years. This is generally consistent with prior surveys. Participants also indicated that they will focus, albeit it to a lesser extent, on unconventional gas (e.g. CBM, CSG and shale).

Chart 5.8

Focus of exploration activities



"The demand for gas will be significantly increased when the infrastructure for gas transportation becomes available."

Survey participant comment

6 Employment


Photo source: PwC

"Still lots of competition for skilled staff in the industry. Therefore every country needs to look outside to supplement. Indonesia [is] no different although Indonesia has a bigger pool of experienced people than many countries, given the size and age of its industry."

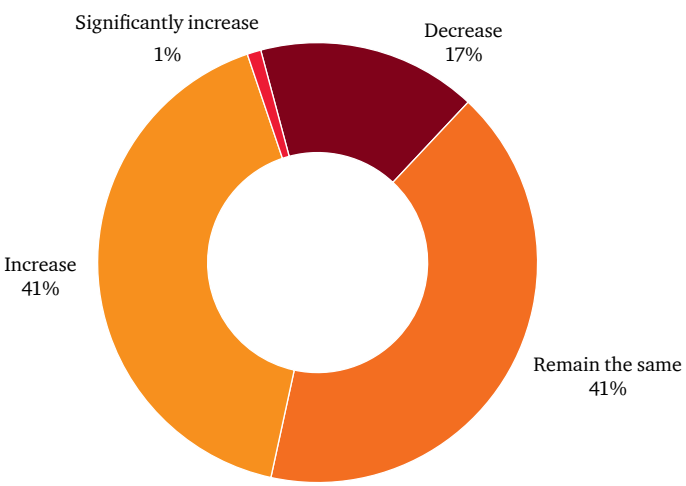
Survey participant comment

A. Compared to last year, will the level of employment in the oil and gas industry in Indonesia increase or decrease?

The belief that significant undiscovered oil and gas reserves exist in Indonesia, undoubtedly gives rise to the high percentage of survey participants who think that employment in the Indonesian oil and gas industry will increase over the coming years. More than 42% of the participants believe that employment will increase however, the percentage is lower when compared to the 2012 survey (52 %). The balance of the participants indicated that they think employment will remain stable (41%) or decrease (16%).

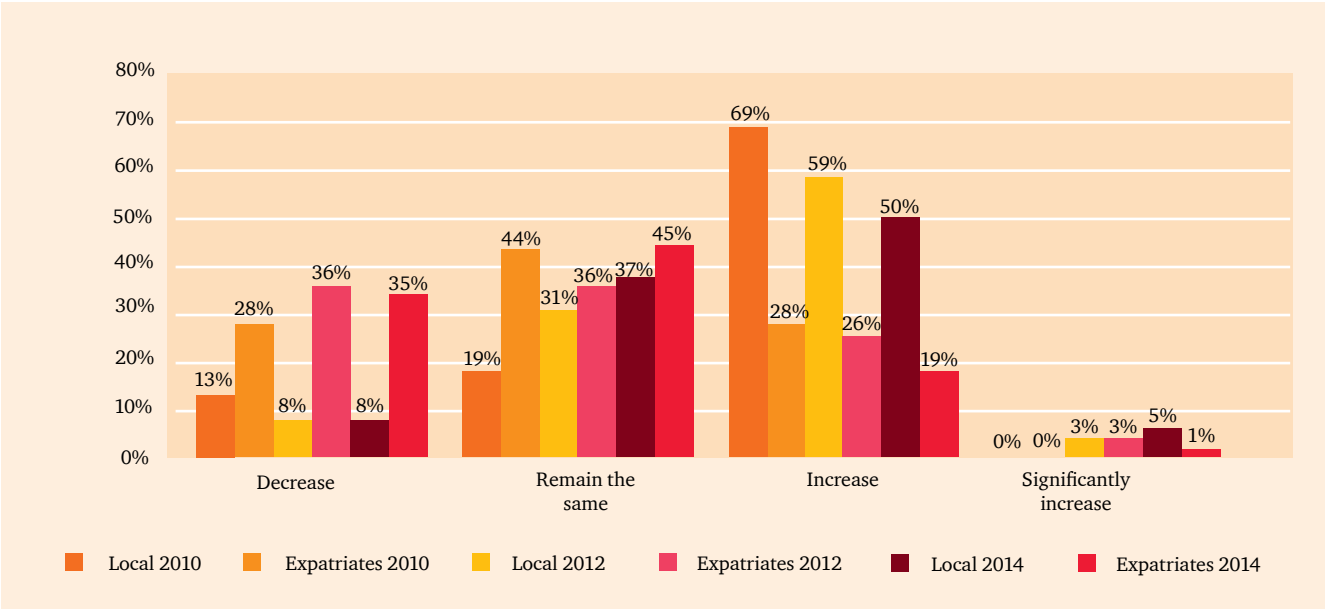
Chart 6.1

Employment in oil and gas industry



B. Compared to last year, will the number of employees in your company increase or decrease?

Chart 6.2 Employee numbers



"The international market, particularly the Middle East, attracts many of the skilled Indonesians because of higher pay. This leaves the local industry short of highly skilled technical resources. Further restrictions on Expat labour makes it difficult to bring in skilled technical resources, thus slowing industry activity."

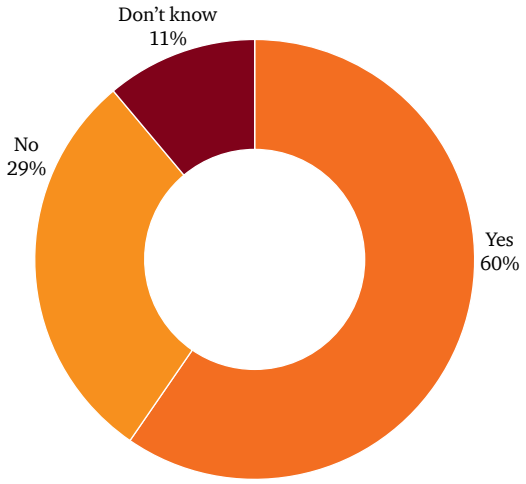
Survey participant comment

In regards to expatriate headcount, there has been a shift towards expecting numbers to "remain the same", or even "decrease". A number of survey participants commented that the decrease in expatriate numbers is a worry as they have a wealth of experience. One of the reasons for this decrease could be the age limit now imposed by the Ministry of Energy and Mineral Resources (MoEMR). A large percentage of survey participants indicated that they expect to increase their hiring of local staff. However, a recurring theme in the comments made by survey participants was that they consider attracting qualified and talented staff to be one of the most significant challenges facing the industry in Indonesia and across the globe, both now and in the future. Consistent with our 2010 and 2012 surveys, several respondents commented on the trend for skilled (national) employees to leave Indonesia to work in other locations (mostly the Middle East).

C. Do you expect the industry to encounter difficulties in hiring and retaining employees in 2014?

Chart 6.3

Difficulties in hiring and retaining employees



"It is very hard to get competent staff anywhere, but in Indonesia the new max age and length of stay restrictions are hopelessly damaging. Compare e.g. with Malaysia which is retaining international talent through 10 year Talent Pass work permits including spouse employment."

Survey participant comment

D. Does the Indonesian oil and gas industry have a sufficient number of skilled staff to perform these activities?

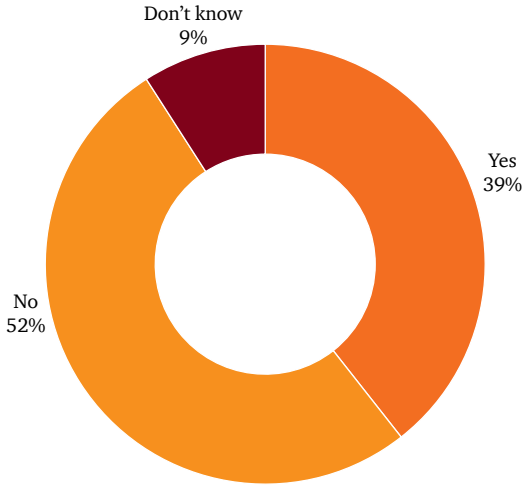
"Retirement ages [are] too low and [it is] too difficult to get work permits for highly skilled and experienced expats over 55."

Survey participant comment

That more than half (54%) of survey participants (Chart 6.4) still believe that the Indonesian oil and gas sector lacks a sufficient number of skilled staff, combined with the fact that 60%(Chart 6.3) also expect difficulties in hiring and retaining employees, is not a positive sign for the industry. A number of survey participants named the newly issued manpower regulations (MoEMR issued Decree No.31/2013 on Expatriate Utilisation and the Development of Indonesian Employees in the Oil and Gas Business, dated 24 October 2013) as a partial cause of the issues mentioned above.

Chart 6.4

Sufficient skilled staff



"Developing skilled staff requires commitment and a long term plan. At this time there is just mixed signals that impact foreign investor commitment. Bureaucracy and red tape as well as complicated employment laws are discouraging for foreign investors."

Survey participant comment

Capital expenditure

7

Photo source: PwC

"There are a number of mega projects in the process or trying to get launched (IDD, Jangkrik, Tangguh 3, Cepu, Masela) which are run by IOCs. This is where the largest capital will come from. These companies want to invest in these projects. Longer term, the late 60's PSC will expire and SOE/NOC's will play a bigger role by taking over these big old PSCs."

Survey participant comment

A. What are your company's plans for capital spending compared to last year?

As can be seen in Chart 7.1 on the next page, the participants' general view seems to be that capital spending will stay the same or even increase over the coming five years. This is more or less consistent with the 2012 survey results. However, a far bigger portion of the survey participants now indicate that there will be no change, or even a decrease. This pessimistic view unfortunately comes at a time when the GoI is keen to see an increase in investment in the Indonesian oil and gas industry. Some survey participants indicated that they will not spend any money in Indonesia going forward, as no budget has been allocated to Indonesia and their companies had decided to spend their investment funds elsewhere. This is a trend that started in 2012 and does not augur well for Indonesian reserve replacement.

Chart 7.1 Capital spending in Indonesia and internationally

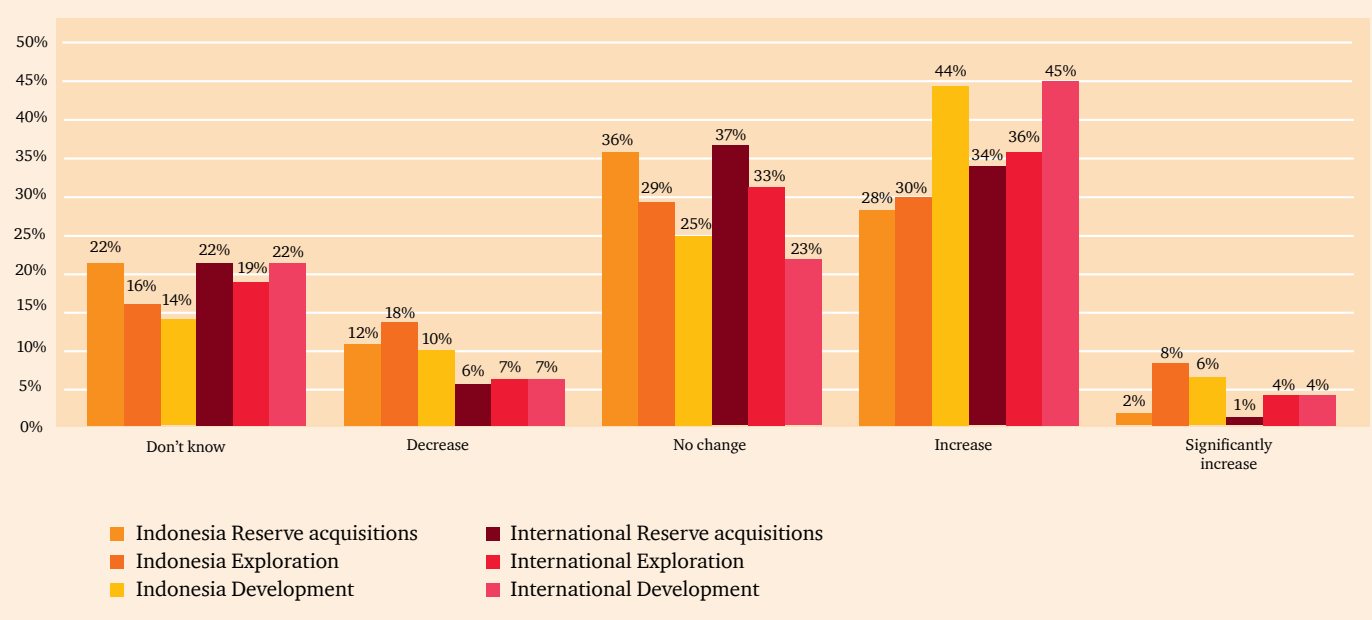
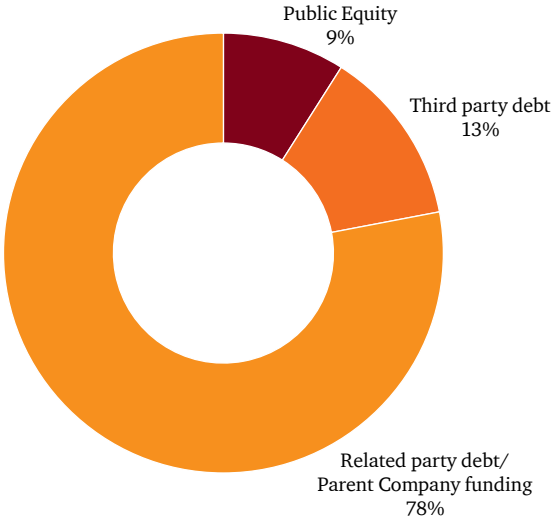


Chart 7.2 Source of capital



B. What will be the primary source of capital for the Indonesian oil and gas industry over the next five years?

As can be seen in Chart 7.2, the primary anticipated source of capital continues to be related party debt/ parent company funding, which is consistent with prior year surveys and not surprising as the industry is dominated by a few large international players. The use of third party debt seems to have increased slightly compared to the 2012 survey. Given recent low interest rates, we would have expected the use of third party debt to play a more substantial role. It is interesting to see that the anticipated increase in the use of public equity as a primary capital source has been identified by respondents (from 5% in 2012 to 9% in 2014).

C. Compared to 2012, how will the Indonesian oil and gas industry's need for capital change over the next five years?

Not surprisingly a majority of the industry participants believe that the need for capital will continue to increase over the next five years. The anticipated increase in capital spending is likely to be a result of the increased expenditures on mature fields and the focus on more remote (i.e. difficult) exploration/ deepwater activities which are more costly to run/operate. The fact that industry participants still expect the need for capital to increase, but at the same time almost half of respondents are indicating less investment appetite for Indonesia, is a red flag for the Indonesian upstream sector.

Chart 7.3 Need for capital

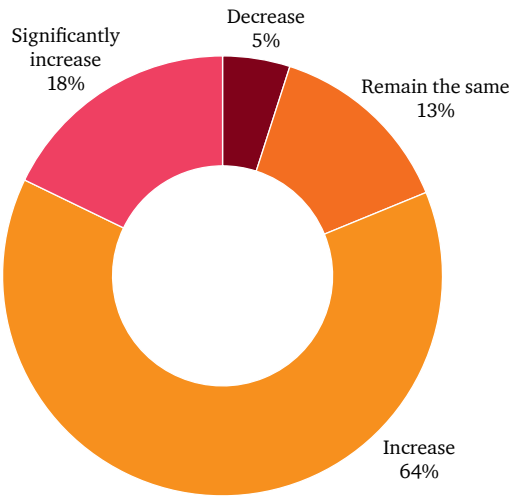
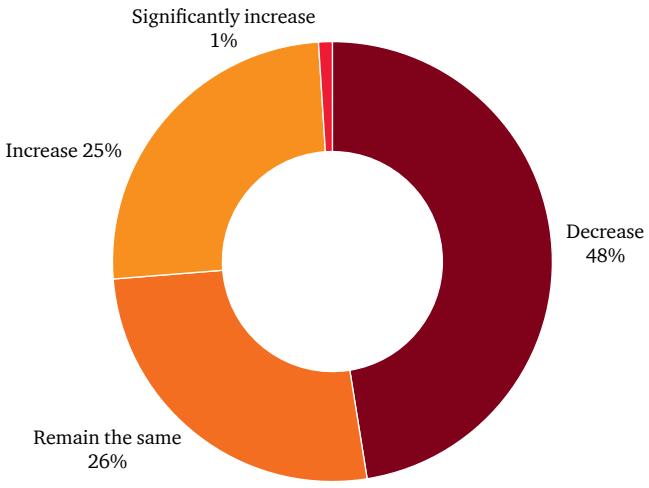


Chart 7.4 Investment appetite



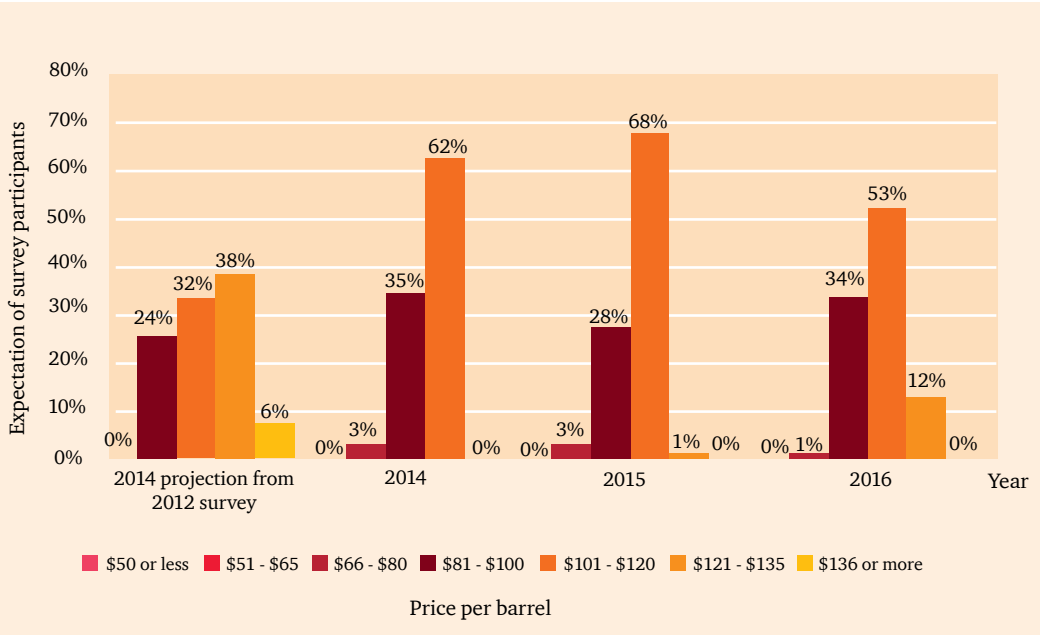
"The looming [new Oil & Gas] law and related changes will make it very hard to make investment decisions until this is fully clarified. Also the proposed mandatory participation of regional authorities investment vehicles in new PSCs is a major obstacle and is highly likely to frustrate progress."

Survey participant comment

D. What do you anticipate to be the average US$ price in per barrel of crude oil in 2014, 2015 and 2016?

Chart 7.5

Average price in US$ per barrel of crude oil



The vast majority of the survey respondents indicated that they expect that the price of crude oil would remain in the US$101–120 per barrel range for 2014 but either increase to US$ 120–135, or decrease to US$ 81–100 per barrel in 2015 (the survey was undertaken in early 2014 when oil prices ranged between US$101 and US$120 per barrel). Not surprisingly, the further into the future the projection is carried, the wider the range of responses from respondents. Although some of the respondents thought that the price of oil would go below US$81–100 per barrel, none of them thought that the price of oil would exceed US$135 per barrel in 2016.

8 Challenges facing the industry


Photo source: PwC

To gain an understanding of the most critical challenges facing the industry we asked survey participants to rate 15 different challenges confronting the Indonesian oil and gas industry, as well as indicating any other challenges they deemed relevant. On a scale of 1 to 5 (1 being "Significantly Important", 3 being "Moderately Important" and 5 being "Not Important at All") survey participants were asked to rate the following challenges.

Table 8.1

Critical Industry Challenges	
Confusion as to the roles of the central, provincial and regional governments	Local government relations
Interference from other government agencies, such as the tax authorities	Confusion as to the role of SKK Migas and the Ministry of Energy and Mineral Resources
SKK Migas performance	Contract sanctity
Community relations	Confusion over Law No. 22/Implementing regulation and GR 79/2010
Security of assets, people and ownership rights	Confusion over SKK Migas regulations/"grand fathering" of prior Pertamina rulings
Labour regulations	Confusion over energy policy and supporting blueprints (gas utilisation etc.)
Upcoming presidential election	Uncertainty over cost recovery and SKK Migas / BPKP audit findings
New regulation (such as: Land and Building Tax on PSCs)	

"Contract Sanctity is most important for an investor, any change of law/regulation will not supersede [the] rights and obligations [of the] PSC. The new law/regulation should be applicable to new PSC instead [of] unilaterally force into effect to [an] old PSC."

Survey participant comment

Top five challenges facing the industry

Table 8.2

Challenge	2014 survey % of responses rated issue as "1 - Significantly Important"	2012 survey % of responses rated issue as "1 - Significantly Important"	2010 survey % of responses rated issue as "1 - Significantly Important"
Interference from other government agencies, such as the tax authorities	59%	49%	55%
Contract sanctity	51%	54%	48%
Confusion as the roles of the central, provincial & regional government	49%	42%	38%
New regulations	48%	-	-
Uncertainty over cost recovery and SKK Migas/ BPKP audit findings	44%	48%	48%

The challenges highlighted above in Table 8.2 were also included in the top five challenges in our 2012 and 2010 surveys.

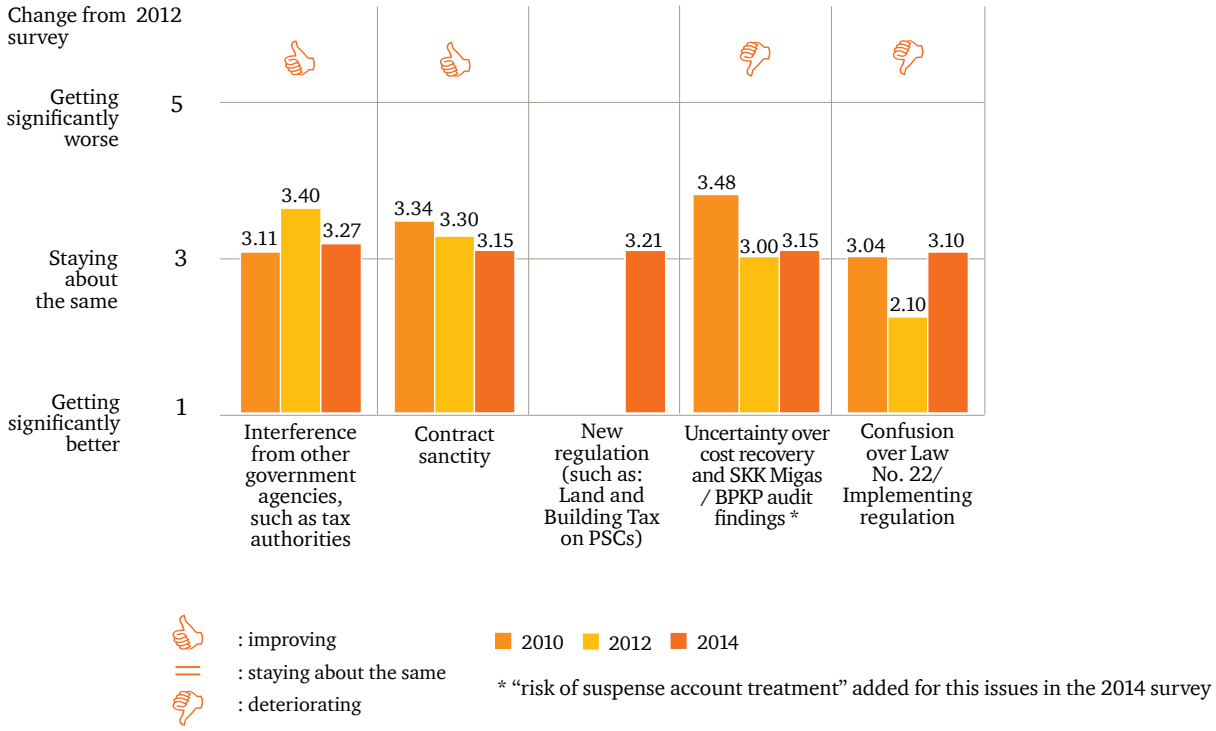
The newcomer (i.e. new regulations) in the top 5 of the significantly important challenges in the 2014 survey results is probably not surprising given the recently issued regulations related to Land and Building Tax on PSCs, as well as the manpower regulations for the upstream and oilfield service sector which stipulates the maximum age for foreign workers at 55 years. The 2014 survey participants are clearly aligned with the past two surveys in terms of the other areas which continue to be significantly important to the industry: interference from other government agencies, such as the tax authorities; Contract sanctity; confusion as to the roles of the central, provincial and regional governments; and uncertainty over cost recovery and SKK Migas/BPKP audit findings.

"New oil and gas law should stimulate the industry to invest [in] oil and gas in Indonesia."

Survey participant comment

Chart 8.1

Survey participants' views on the development of challenges over the next 12 months

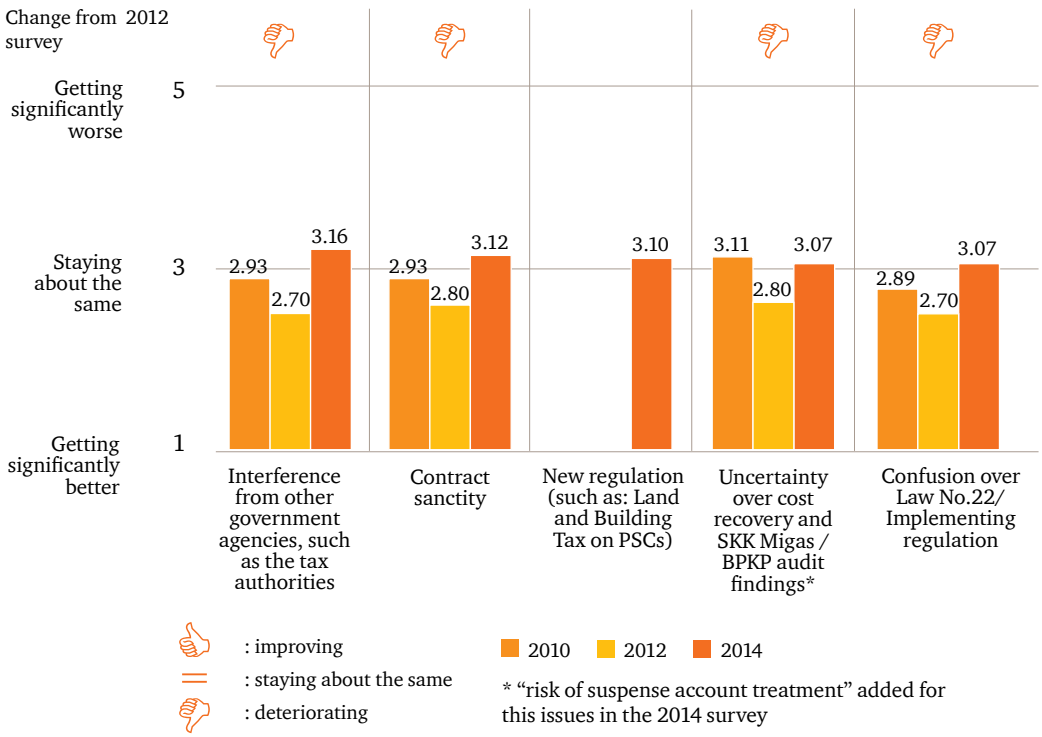


"Although not directly impacting oil and gas, the changes in mining regulations and the many disputes regarding ownership have a major impact on investor sentiment and therefore the ability to raise funds to invest in Indonesian oil and gas projects. The rule of law needs to be strengthened."

Survey participant comment

Chart 8.2

Survey participants' views on the likely status of challenges over the next one to five years



"Costs [are] rising as industry matures, so [the] government responds by increasing micromanagement which increases … costs further"

Survey participant comment

As can be seen in Chart 8.1, survey participants were generally neutral on the likely developments in these challenges over the next 12 months. We noted that survey participants expected some improvement in the development of these challenges over the longer term although they were more pessimistic about the pace of improvement compared to the views of respondents in the 2012 survey (Chart 8.2). We suspect that the main reasons behind this cautious view may be that many of the challenges confronting Indonesia, such as regulatory reform, require consistent coordination between multiple Ministries in the GoI – a behavior which has not necessarily been observed in recent years.

A. Over the next 12 months what will happen to the level of government regulation which affects the industry?

As can be seen in Chart 8.3 below, the majority of respondentsbelieve that the government regulations will remain the same or actually improve or significantly improve. It is difficult to assess whether respondents have factored in the proposed new Oil and Gas Law in forming their view.

Chart 8.3 Government regulation

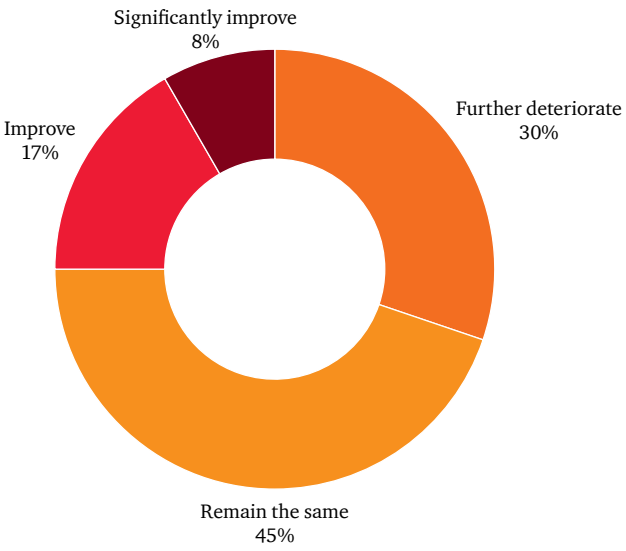


Photo source: PwC

9 Competitiveness


Photo source: ExxonMobil Oil Indonesia Inc.

Indonesia's petroleum industry has for decades been viewed by international petroleum investors as an attractive destination for investment, however for some years now there has been concern that the country's competitiveness is slipping. To gauge the accuracy of this concern we asked the survey participants to rate Indonesia's competitiveness compared to other countries on the following features (1: highly competitive, 3: neutral, 5: not competitive at all):

Table 9.1

Feature	
Geological opportunities	Infrastructure
Trained workforce	Risk premium
Political stability	Regulatory framework
Environmental regulations	Contract and project approval process
Ease of foreign ownership	The existing fiscal framework

What are the most attractive features of investing in Indonesia?

Table 9.2

Feature	2014 Score	2012 Score	Change from 2012 survey
Political stability	2.6	2.8	
Trained workforce	2.5	2.4	
Ease of foreign ownership	3.0	2.9	
Environmental regulation	2.9	2.8	
Geological opportunities	2.3	1.9	

Please note that all of the above features were also highlighted as the top 5 competitive features in the 2012 survey.

As can be seen in Table 9.2, survey participants indicated that Indonesia's most attractive features for investment have remained almost the same compared to the last survey. Although its geological opportunities has historically always been regarded as Indonesia's best feature for oil and gas activities, this feature has been ranked lower now, albeit it is still considered one attractive feature. It is interesting to note that political stability is getting more recognition as one of Indonesia's most attractive features and this reflects positively on the GoI leadership in this young democracy. Against a backdrop of political unrest and uncertainty in many other emerging markets as of 2014, Indonesia remains open for foreign investment in the upstream sector. Although an NOC exists, it has not crowded out Indonesian and foreign investors.

What are the least competitive features of investing in Indonesia?

Table 9.3

Feature	2014 Score	2012 Score	Change from 2012 survey
Contract and project approval process	3.5	3.5	=
Existing fiscal framework	3.4	3.5	👍
Regulatory frame work	3.6	3.4	👎
Infrastructure	3.3	3.2	👎
Risk Premium	3.3	3.2	👎

Please note that the above features were also highlighted as the 5 least competitive features in the 2012 survey.

The fact that the views on the regulatory framework have deteriorated is not surprising given the recent regulatory developments around the "suspense account" process, land and buildings tax and the conditions on hiring of expatriate labour in the upstream and oilfield service sectors. This may also be the reason why risk premium scored lower compared to our 2012 and 2010 surveys.

In addition, we asked survey participants their views on the developments they expected in the competitiveness of these features. As shown in charts 9.1 and 9.2, survey participants indicated that they believe that Indonesia's most competitive features will slightly improve or stay the same at best over the coming 12 months and Indonesia's less competitive features will remain the same, or get slightly worse.

However it should be noted that, as in our 2010 and 2012 surveys, participants remain relatively optimistic regarding the development of all features over the coming five years.

Comparing the results of our past surveys in 2005, 2008, 2010 and 2012 with our 2014 survey suggest that there has been little positive change in features described as problematic.

Chart 9.1
Development of competitiveness (within 12 months)

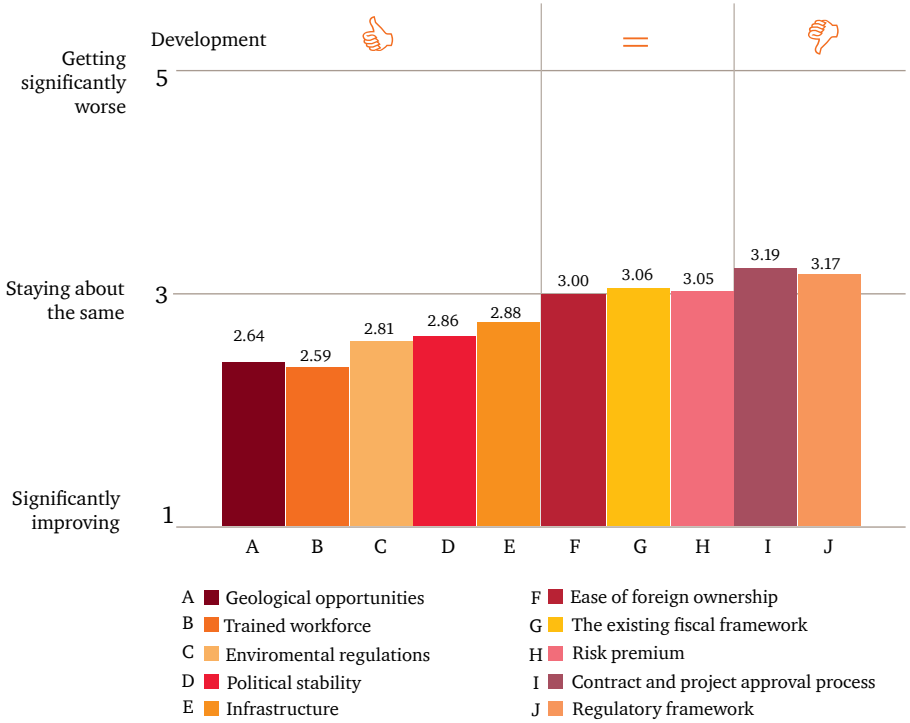
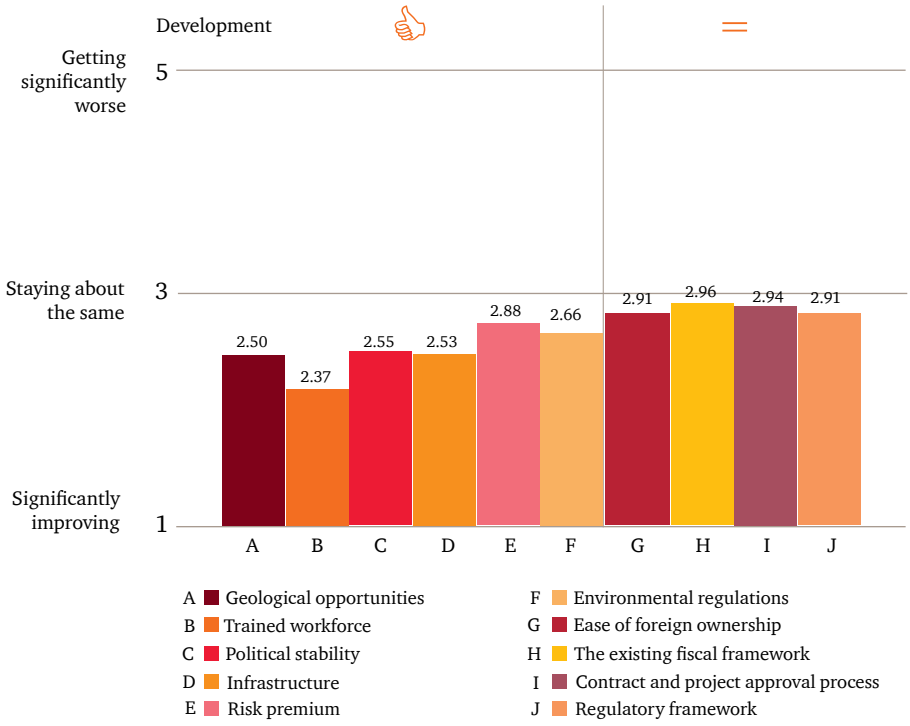


Chart 9.2
Development of competitiveness (within 1- 5 years)



Although no significant changes were noted compared to the 2012 survey results, it seems that survey participants are slightly less optimistic and expect less improvement on certain challenges during the 1 - 5 year window. Again this may be because the majority of these challenges are regarded as structural and require ministerial coordination.

Indonesia's competitiveness compared to other oil & gas producing countries

Survey participants were also asked to rate the relative competitiveness of different countries in comparison with Indonesia on four different features, namely geological opportunities, infrastructure, political stability and regulatory framework. Please see the map on the inside of this fold out page for the results.

Chart 9.3

Norway	2012	2014
Geological prospects (including access to acreage)	=	👍
Infrastructure	=	👍
Political stability	👍	👍
Regulatory framework	👍	👍

China	2012	2014
Geological prospects (including access to acreage)	=	👍
Infrastructure	=	👍
Political stability	👍	👍
Regulatory framework	=	=

Vietnam	2012	2014
Geological prospects (including access to acreage)	=	=
Infrastructure	=	👎
Political stability	👍	👍
Regulatory framework	=	=

USA	2012	2014
Geological prospects (including access to acreage)	👍	👍
Infrastructure	👍	👍
Political stability	👍	👍
Regulatory framework	👍	👍

Thailand	2012	2014
Geological prospects (including access to acreage)	=	👎
Infrastructure	=	👍
Political stability	=	👎
Regulatory framework	=	👍

Malaysia	2012	2014
Geological prospects (including access to acreage)	👍	👍
Infrastructure	👍	👍
Political stability	=	👍
Regulatory framework	👍	👍

Venezuela	2012	2014
Geological prospects (including access to acreage)	=	👍
Infrastructure	👎	👎
Political stability	👎	👎
Regulatory framework	👎	👎

Australia	2012	2014
Geological prospects (including access to acreage)	=	👍
Infrastructure	=	👍
Political stability	👍	👍
Regulatory framework	=	👍

Nigeria	2012	2014
Geological prospects (including access to acreage)	👍	👍
Infrastructure	=	👎
Political stability	👎	👎
Regulatory framework	👎	👎

Angola	2012	2014
Geological prospects (including access to acreage)	👍	👍
Infrastructure	=	=
Political stability	=	👎
Regulatory framework	=	=

UAE	2012	2014
Geological prospects (including access to acreage)	=	👍
Infrastructure	👎	👍
Political stability	=	👍
Regulatory framework	👎	👍

👍 : More competitive than Indonesia

= : Same as Indonesia

👎 : Less competitive than Indonesia

As can be seen in chart 9.3 on the previous page, based on survey responses Indonesia appears to be losing its competitive edge over other oil and gas countries. Of the countries included in the survey, Norway, Australia, Malaysia, China, the USA and the UAE are seen as competitive or better than Indonesia across the four features of geological prospects, infrastructure, political stability and regulatory framework.

Indonesia remains more competitive than Nigeria, Venezuela and Angola in all but geological prospects. Compared to Thailand, Indonesia is thought to have better geological prospects and political stability (which we assume is a reflection of the ongoing political issues in Thailand), whilst perception is that Indonesia now lags Thailand in terms of infrastructure and regulatory framework.

For completeness and balance, please note that the survey respondents were also asks to comment on other features, including Indonesia's relative position in regard to ease of foreign ownership and having a trained workforce. In these two areas Indonesia is regarded as having slightly more favourable conditions than other traditional oil and gas investment destinations.

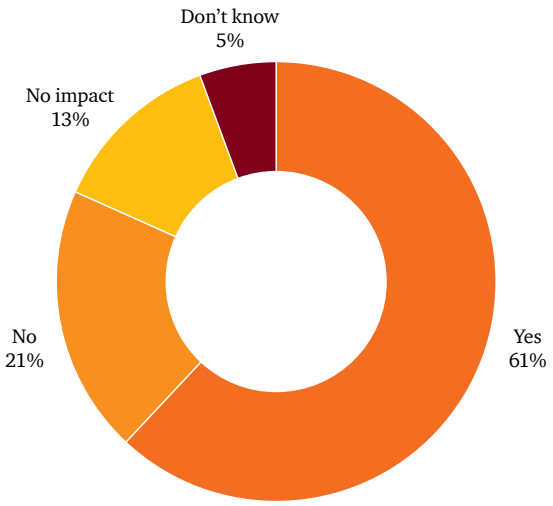
10 Other Challenges


Photo source: PwC

A. There have been several high profile arrests in relation to corruption. Do you think that these will improve the perception of Indonesia's commitment to fighting corruption?

Chart 10.1

Do the recent arrests have a positive impact on the perception around the commitment to fighting corruption?

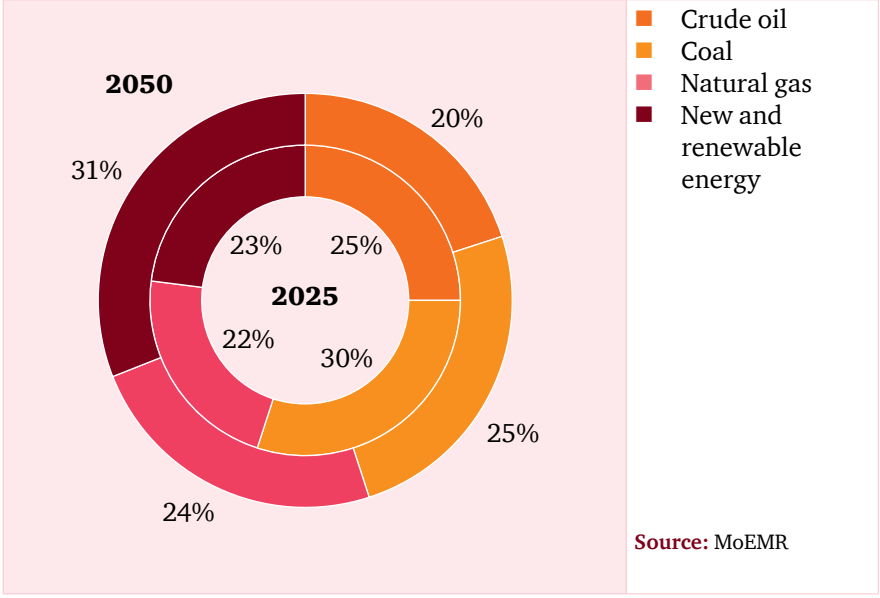


As can be seen in chart 10.1, the majority (61%, 2012: 58%) of the survey participants indicated that the recent high profile arrests in relation to corruption are having a positive impact on the perception of Indonesia's commitment to fighting corruption. However, it should be noted that a substantial 34% of respondents are still of the opinion that the GoI's approach has no impact or no positive impact on perceptions of commitment to fighting corruption. This may be an indication that survey participants are remaining skeptical about the effectiveness of the GoI's approach to fighting KKN.

"Indonesia has all the resources to save its oil and gas for export and [in its] own market develop CBM and geothermal power plants to deliver electricity to the entire country at a very low kW rate."

Survey participant comment

2025 and 2050 Targeted Energy Mix

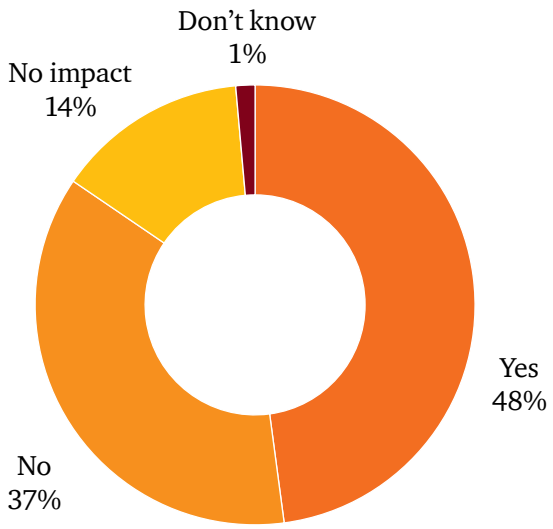


Source: MoEMR

B. This year (2014) Indonesia will hold general elections and presidential elections. Do you anticipate significant changes in the industry after the elections?

Chart 10.2

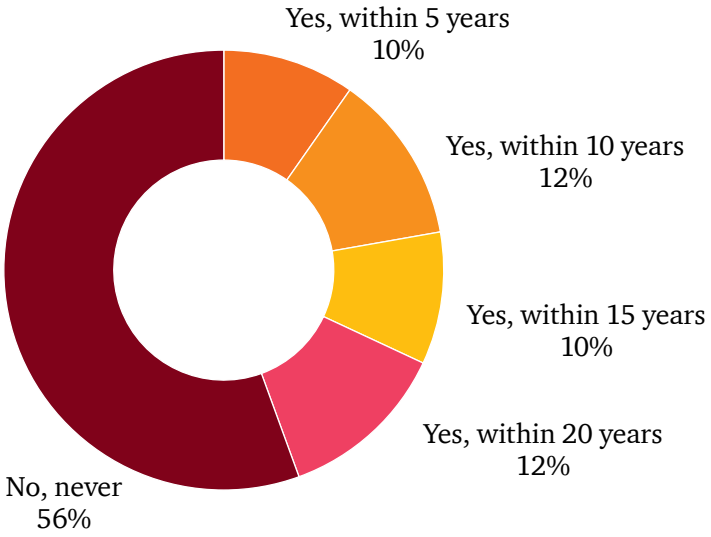
Do you anticipate significant changes in the industry after the elections?



As shown in Chart 10.2, almost half of the survey participants believe that there will be significant changes (positive or negative) after the 2014 elections, whereas 51% of the participants indicated no (significant) impact as a result of the elections on the industry.

C. Do you foresee Indonesia being a net exporter of hydrocarbons in the future?

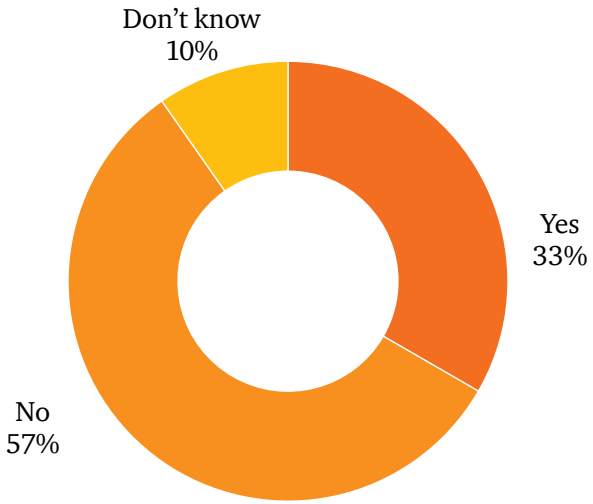
Chart 10.3



Declining oil production and increased consumption resulted in Indonesia becoming a net oil importer in late 2004. This factor, along with high oil prices in 2004-2008, led the Government to substantially scale back the domestic fuel subsidy in 2008 and to decide to "temporarily" withdraw from the Organisation of Petroleum Exporting Countries (OPEC) – an organisation representing approximately 45% of world oil production. As the only Asian member of OPEC since 1962, the Government indicated at the time that it will consider rejoining OPEC if the country's oil production can be increased and it can become a net exporter again. We asked the survey participants whether they foresee Indonesia becoming a net exporter of hydrocarbons again in the future. More than half (56%) indicated that they didn't think that Indonesia would ever become a net exporter of hydrocarbons again.

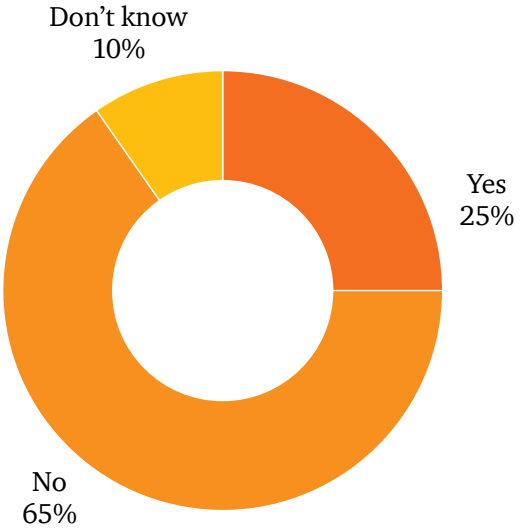
D. Do you think Indonesia is ready for unconventional gas (eg. CBM/CSG, shale gas)?

Chart 10.4



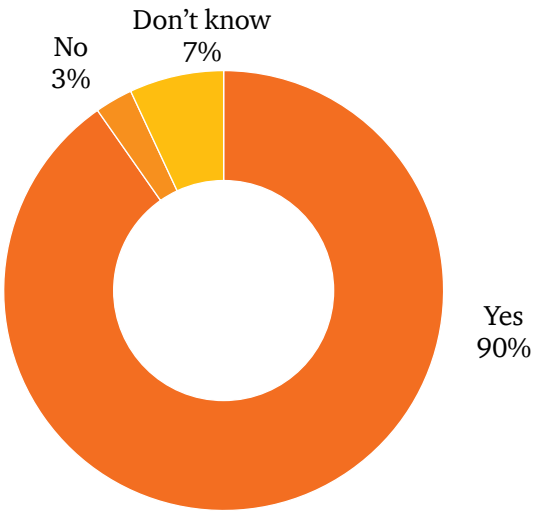
E. Do you think Indonesia has the knowledge and expertise to extract and produce unconventional gas?

Chart 10.5



F. Should the government provide more incentives for unconventional gas?

Chart 10.6

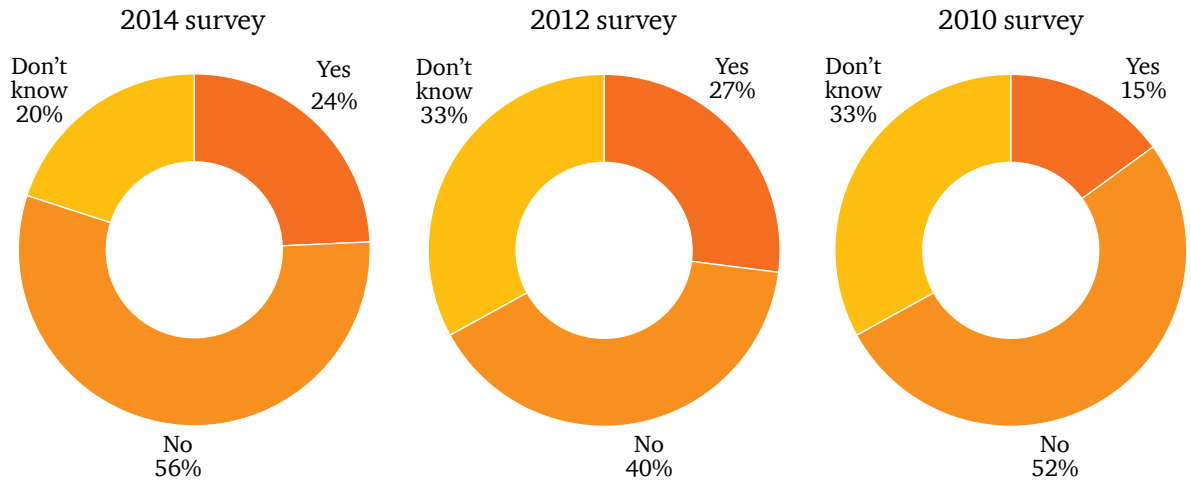


Survey participants clearly see that unconventional gas is a viable alternative for conventional oil and gas. In order to stimulate the development of unconventional resources, they indicated that the GoI should provide more incentives. As can be seen in Chart 10.6, 90% of the survey participants indicated that they believe that more incentives for unconventional gas should be given. Noting that 65% of survey participants indicated that they don't think that Indonesia has the knowledge and/or expertise to extract and produce unconventional gas(as illustrated in Chart 10.5) one queries whether the recent changes in the 2014 Negative Investment List under the Investment Law will have an impact. The amendments close a number of oilfield service sectors to new foreign investment (eg. onshore drilling) and may impede the accessibility of unconventional drilling and well expertise if not available locally.

G. Has your company ever considered leaving Indonesia because of the issues described earlier?

Chart 10.7

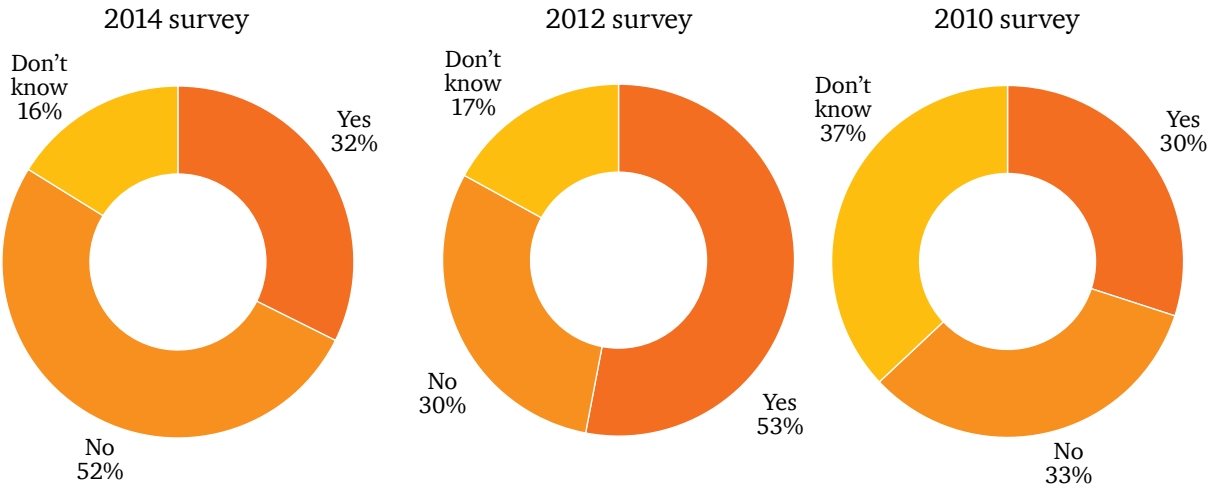
Ever considered leaving Indonesia?



H. Are you satisfied with the current return on investment you are getting from your operations in Indonesia?

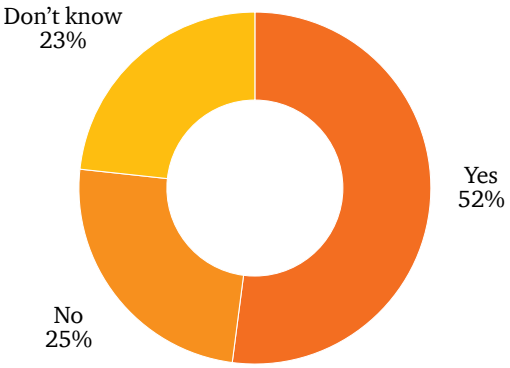
Chart 10.8

Satisfaction with return on investment



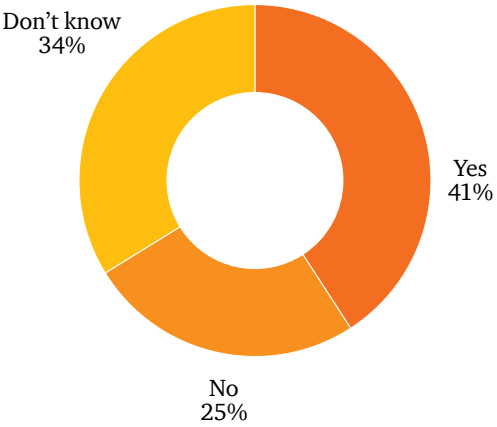
I. Do you think that potential new investors are aware of the issues the industry is facing?

Chart 10.9



J. Do you think that the "Open Access Policy" on oil and gas pipelines will have any impact on your current production plans?

Chart 10.11

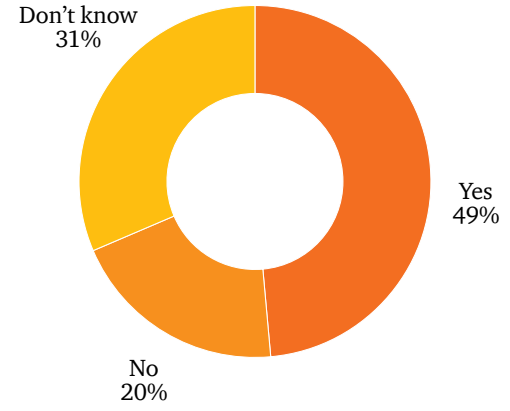


"All stakeholders need to support any effort to combat the decline of mature fields and government needs to give competitive fiscal terms and support for development of stranded fields and for exploration activities."

Survey participant comment

K. Do you think that the "Open Access Policy" on oil and gas pipelines will have any impact on your decision to invest in the Indonesian oil and gas industry?

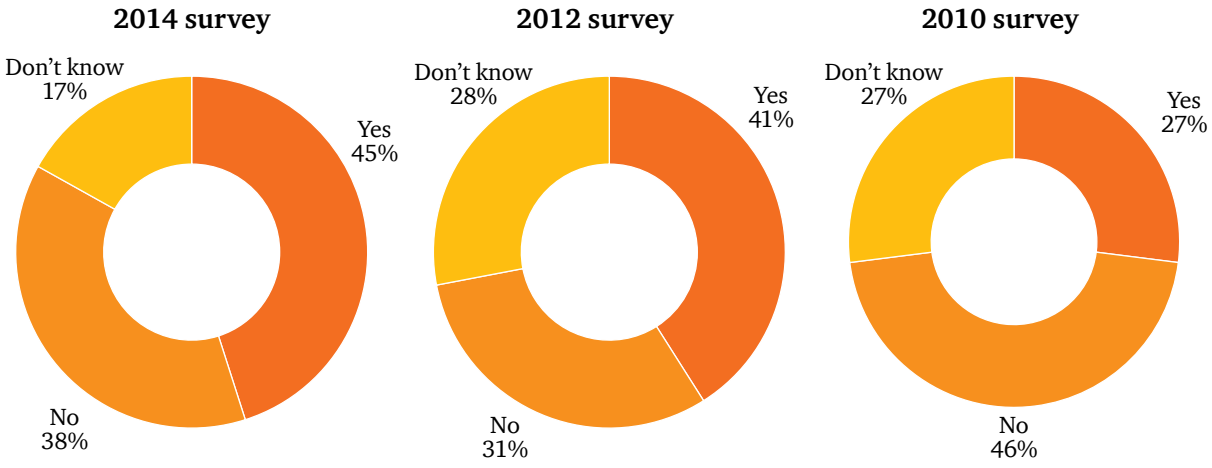
Chart 10.12



L. Do you anticipate a significant improvement in the oil and gas industry investment environment over the next 5 to 10 years?

Chart 10.13

Improvement in returns expected?



"The problem is land access and coordination with the regional governments. When it takes a year or so to permit a well, it is not possible to execute an unconventional program."

Survey participant comment

Despite the problems and issues noted in the earlier sections of the survey, investors are not currently considering leaving Indonesia even though a growing percentage of respondents were not satisfied with their return on investment (52%, Chart 10.8). We assume investors choose to stay mainly due to Indonesia's political stability and its remaining good geological prospects. Note however on an optimistic note, and consistent with a desire to stay in Indonesia, 45 % of the participants indicated anticipated improvements in the return from the oil and gas industry in Indonesia. In 2012 this percentage was only 41%. In addition, the participants who indicated "don't know" have decreased from 28% in 2012 to only 17% in 2014 suggesting again a mood of cautious optimism.

Photo source: PwC

About PwC

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Photo source : PwC

Why PwC?

As the world's largest professional services network and one of the big four accountancy firms, PwC firms provide Industry-focused assurance, tax and advisory services for public and private companies. Close to 184,000 people in 157 countries connect their thinking, experience and solutions to build trust and enhance value for clients and their stakeholders.

A globally integrated firm

Being part of a global network means we can invest in priority clients, sectors and markets and deliver leading edge ideas, products and services more quickly and effectively than our competitors. We work across borders without the constraints of geographic considerations and we work to a global standard and quality. Our global network structure enables quick decision-making and worldwide delivery of the best resources.

We are organised into industry groups, of which the oil and gas industry group is one of the largest. Our industry focus ensures our people have both a broad overview of the marketplace and a deep understanding of the industries and markets in which they specialise.

Our oil and gas industry group has priority status in terms of investment and resources in all key markets including Indonesia, reflecting our worldwide dominance in this market.

Our strength in the oil and gas industry is one of which we are proud. This means we are the most committed firm to achieving oil and gas client's needs and actively participate in the industry in all countries in which the industry is active. We work closely with our oil and gas clients, offering the benefits of our experience, to help achieve their goals.

PwC Indonesia

PwC Indonesia's (PwC or we) oil and gas team brings together local knowledge and experience with international oil and gas expertise. Our strength in serving the oil and gas industry comes from our skills, our experience and our network of partners and managers who focus 100% of their time on understanding the oil and gas industry and working on solutions to oil and gas industry issues. Detailed oil and gas knowledge and experience ensures that we have the background and understanding of industry issues and can provide sharper, more sophisticated solutions.

PwC is organised into four Lines of Services, each staffed by highly qualified experienced professionals who are leaders in their fields. The lines of service are:

- Assurance Services which provide innovative, high quality, and cost-effective services related to an organisations' financial controls, regulatory reporting, shareholder value and technology needs.
- Tax Services which provide a range of specialist tax services in three main areas: tax consulting, tax dispute resolution, and compliance. Some of our value-driven tax services include:
  - International tax restructuring
  - Mergers and acquisitions
  - Compliance services
  - Dispute resolution
  - Indirect taxes
  - Transfer pricing; and
  - Tax process reviews
- Advisory services which provide comprehensive advice and assistance relating to transactions, performance improvement and crisis management, based on long-term relationships with clients and our financial analysis and business process skills.
- Consulting Services help you to improve your financial and operational procedures and internal controls in a wide variety of areas within your organisation. Our Consulting practice has the following sub-divisions:
  - Financial Effectiveness
  - Forensics
  - Operations
  - People & Change
  - Sustainability
  - Technology

For companies operating in the Indonesian oil and gas sector, there are some compelling reasons to choose PwC as your professional services firm:

- We are the leading advisor in the industry, both globally and in Indonesia, working with more explorers, producers and related service providers than any other professional services firm. In particular, PwC audits over 60% (in terms of production) of the oil and gas producers in Indonesia under Production Sharing Contract agreements, and provides other professional services such as taxation and advisory services to oil and gas producers in all stages of their development.
- We have operated in Indonesia since 1971 and have over 1,600 professional staff, including 51 Indonesian national partners and expatriate technical advisors, trained in providing assurance, advisory, consulting and tax services to Indonesian and international companies.
- Our Energy, Utilities and Mining (EU&M) practice in Indonesia comprises over 300 dedicated professionals across our four Lines of Service. This body of professionals brings deep local industry knowledge and experience with international mining expertise and provides us with the largest group of industry specialists in the Indonesian professional market. We also draw on the PwC global EU&M network which includes some 3,400 qualified industry experts.
- Our commitment to the oil and gas industry is unmatched and demonstrated by our active participation in industry associations in Indonesia and around the world, and our thought leadership on the issues affecting the industry. Through our involvement with the Indonesian Petroleum Association (IPA) we help shape the future of the industry.
- Our client service approach involves learning about the company's issues and seeking ways to add value to every task we perform. Detailed oil and gas knowledge and experience ensures that we have the background and understanding of industry issues and can provide sharper, more sophisticated solutions that help clients accomplish their strategic objectives.

PwC Indonesia (www.pwc.com/id)

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13 Glossary

BOPD	Barrels of Oil per Day
BPH Migas	*Badan Pengatur Hilir Minyak dan Gas Bumi* (Oil and Gas Downstream Regulatory Agency)
BPKP	*Badan Pengawasan Keuangan dan Pembangunan* (Government Audit Body)
CFO	Chief Financial Officer
COO	Chief Operating Officer
EU&M	Energy, Utilites, and Mining
GoI	Government of Indonesia
IPA	Indonesian Petroleum Association
KKN	Corruption, Collusion and Nepotism
LPG	Liquified Petroleum Gas
MoEMR	Ministry of Energy and Mineral Resources
Pertamina	*Perusahaan Pertambangan Minyak dan Gas Bumi Negara* (The Indonesian State Oil Company)
PSC	Production Sharing Contract
SKK Migas	*Satuan Kerja Khusus Pelaksana Kegiatan Usaha Hulu Minyak* (Government Executive Agency for Upstream Oil and Gas Business Activities)
US$	United States Dollar
VAT	Value Added Tax

Cover photo courtesy of: PwC