

OIL AND GAS INDUSTRY MULTIPLIER EFFECT

Upstream oil and gas sector has a multiplier effect on the growth of the national economy, ranging from the use of local products to transactions through national banking. This sector is one of the major contributors to the national economic growth reaching US\$ 23.7 billion in 2016.

CONTRIBUTION OF UPSTREAM OIL AND GAS SECTOR TO GDP



Every investment of

US\$ 1 MILLION



Creating added value of
US\$ 1.6 MILLION



Additional GDP of
US\$ 0.7 MILLION

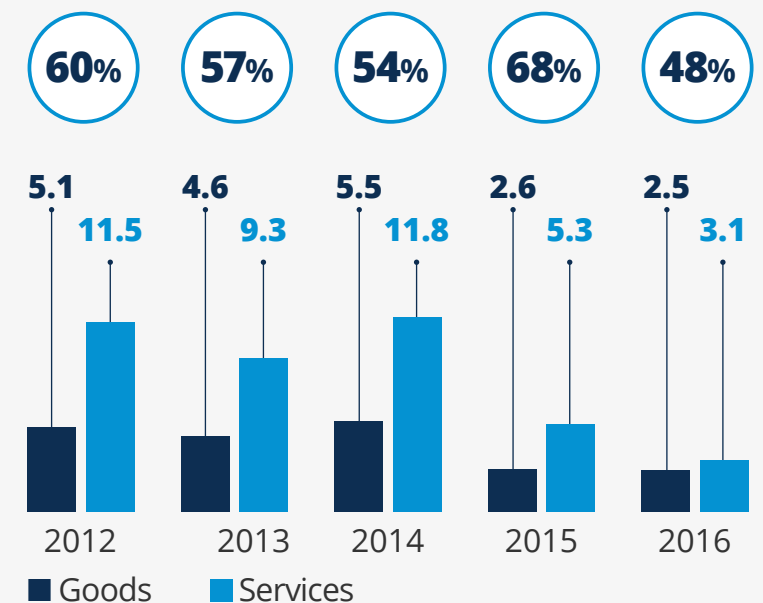


Creation of job opportunity of
± 100 PEOPLE

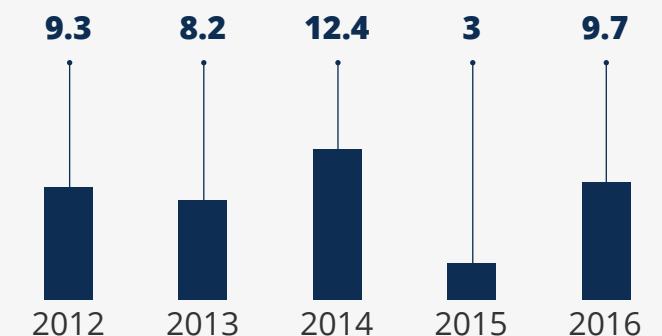
Upstream oil and gas GDP in 2016

US\$ 23.7 BILLION
contributing **3.3%** to GDP

Local Procurement (US\$ billion)



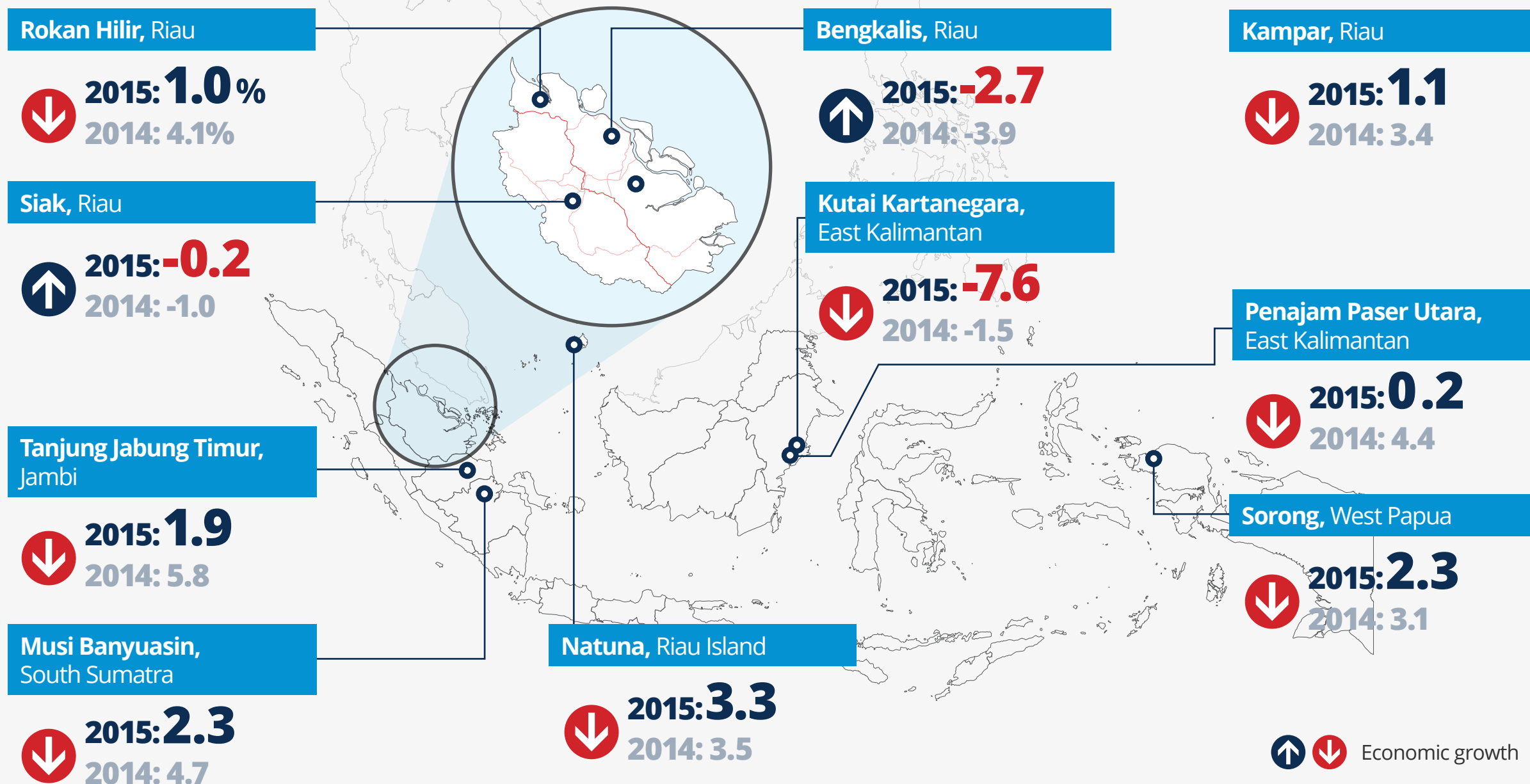
Transactions through the National Banking System (US\$ billion)



SOURCE: SKK MIGAS, BANK INDONESIA

OIL AND GAS INVESTMENT DECREASES REGIONAL ECONOMIES SLOW DOWN

Oil and gas sector has caused an economic slowdown in a number of producing regions in which this sector is a major contributor to the economic growth.

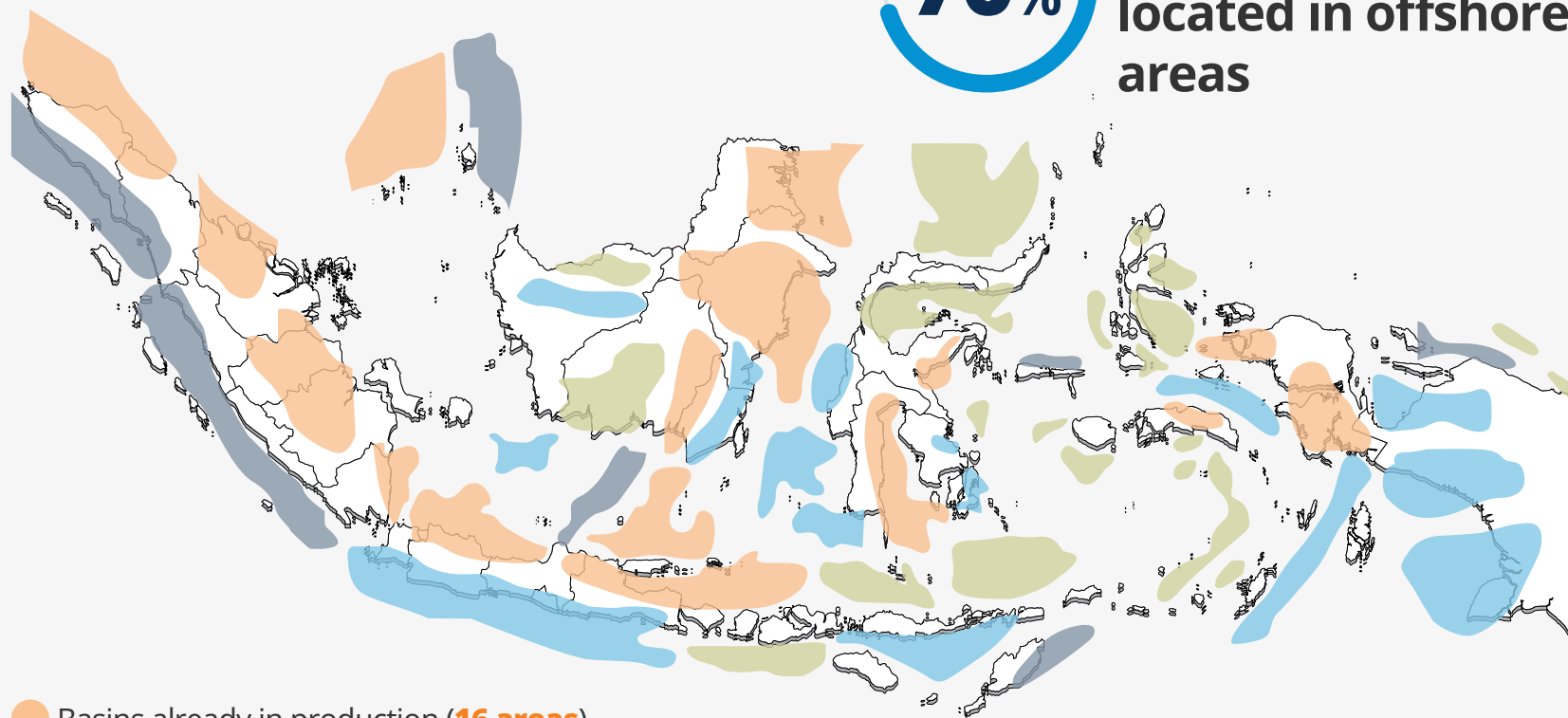


SOURCE: BPS, MINISTRY OF FINANCE

OIL AND GAS EXPLORATION SHIFTS TO DEEPWATER AREAS

Upstream oil and gas activities in Indonesia have begun to shift from old onshore fields to offshore and deepwater areas. Most oil and gas reserves potential is still largely unexplored, although over the last three years, offshore oil and gas working areas (WK) have always dominated the Government auction.

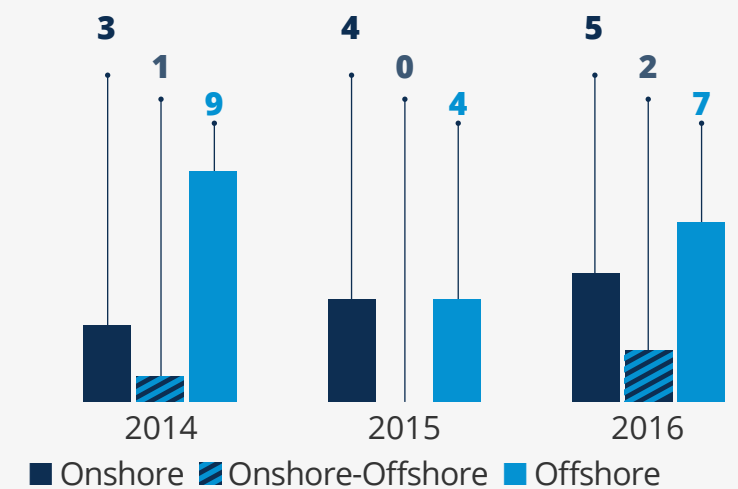
INDONESIA'S HYDROCARBON POTENTIAL



- Basins already in production (**16 areas**)
- Basins with hydrocarbons found, not yet in production (**7**)
- Basins not yet explored (**22**)
- Drilled basins, hydrocarbon not yet found (**15**)

70% of oil and gas reserves are located in offshore areas

Conventional Work Areas Offered



Deep Sea Exploration Challenges

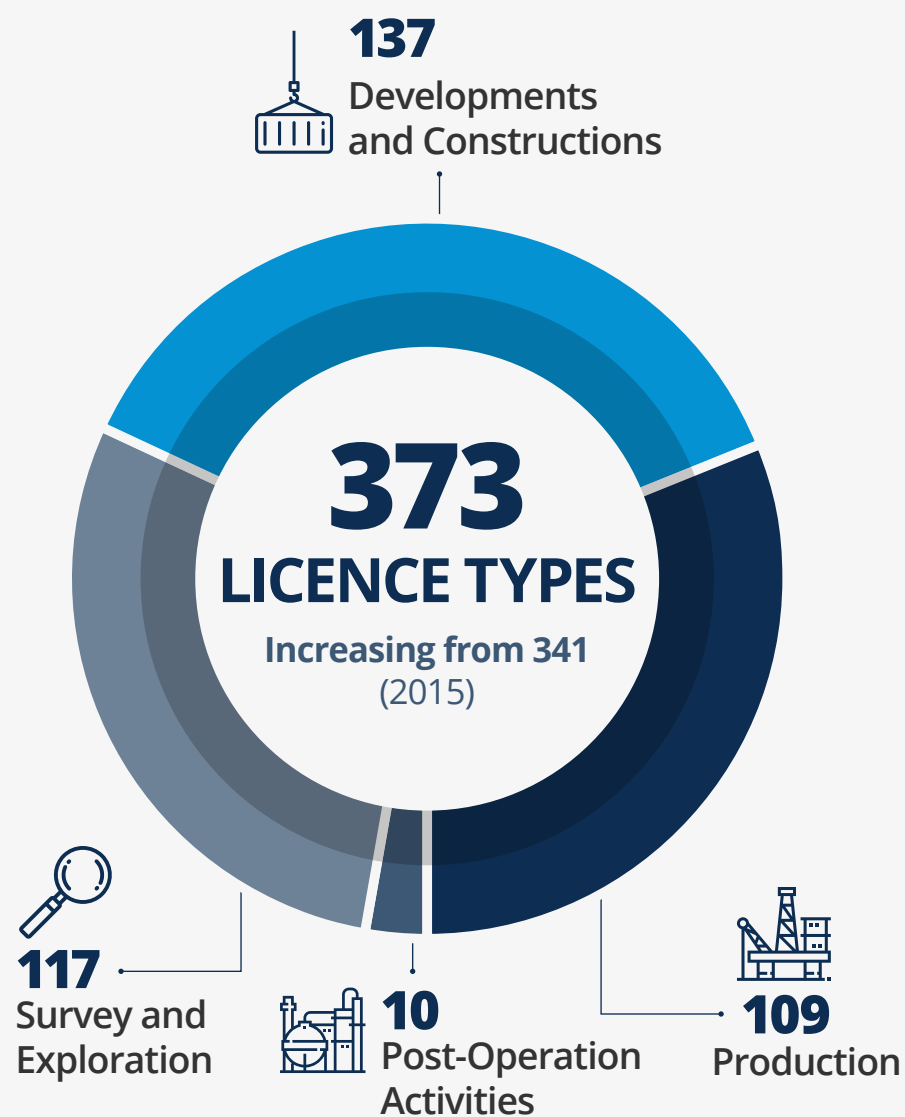
- Expensive investment cost**
Drilling of one well costs US\$ 80-100 million
- Low investment rate of return (IRR)**
IRR projects in Indonesia are 55% lower than the average IRR of 30 global deepwater gas projects
- Long exploration period**
10 years

SOURCE: MEMR, WOOD MACKENZIE, REUTERS, KATADATA

LICENSING ISSUES HAMPER OIL AND GAS INVESTMENT

Licensing is one of the major barriers to investment in the upstream oil and gas sector. In addition to the large number of licences required, the procedures to obtain them take a long time. Data from The Coordinating Ministry for The Economy, as of February 2017, indicates 373 types of licences needed from 19 central and regional institutions.

LICENCE COMPLEXITY



FROM MINISTRIES/AGENCIES

• Increased

							
MEMR	Transportation Min.	Finance Min.	Labour Min.	Navy	Defense Min.	Public Works Min.	MMAF
74 (52)	76 (58)	16 (14)	16 (14)	9 (2)	4 (3)	2 (-)	2 (-)

Note: () in 2015

• Stayed the Same

						
Police	Information Min.	Law Min.	Land Min.	Industry Min.	Nuclear Agency	Private Land Owner
19	11	4	3	3	3	2

• Reduced

			
Regency/City	Province	Environment Min.	Trade Min.
53 (66)	29 (35)	36 (40)	11 (12)

Note: () in 2015

Impacts of Complex Licensing

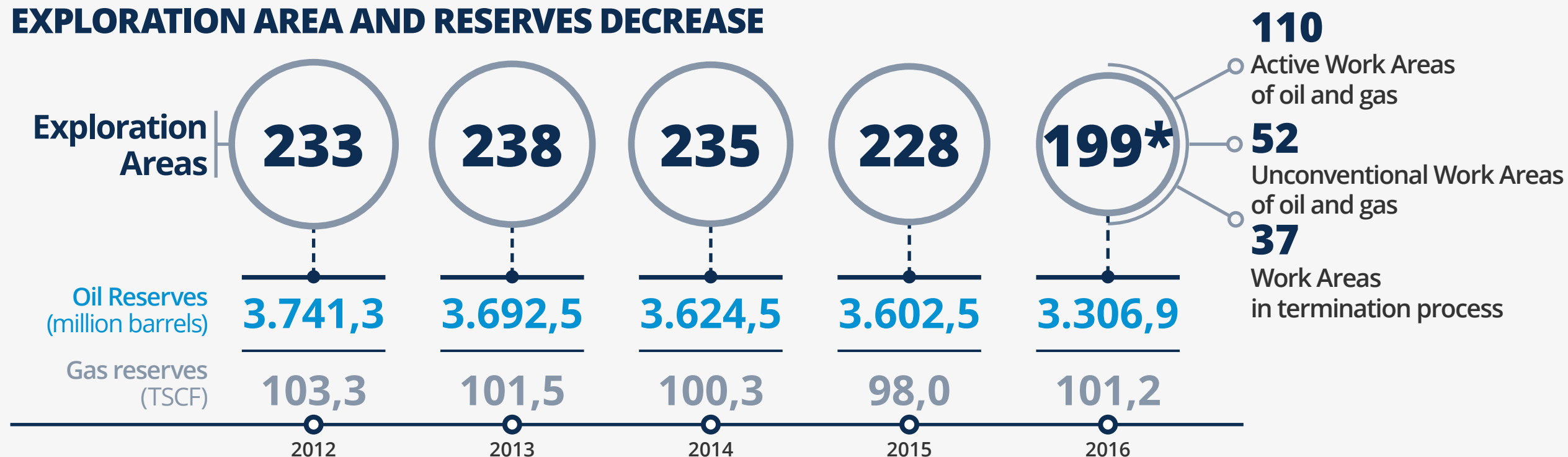
-  Expensive production cost
-  Increase of Cost recovery
-  Prolonged production activities

SOURCE: THE COORDINATING MINISTRY FOR THE ECONOMY, SKK MIGAS

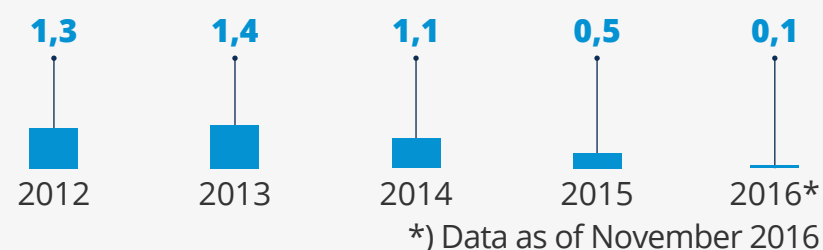
INVESTMENT DECREASES, OIL AND GAS RESERVES SHRINK

The fall in crude oil prices occurring since mid-2014 caused oil and gas contractors to improve efficiency, including by reducing investment spending. As a result, the national oil and gas reserves decreased due to the lack of exploration activities.

EXPLORATION AREA AND RESERVES DECREASE



Exploration Investment Decreases (US\$ Billion)



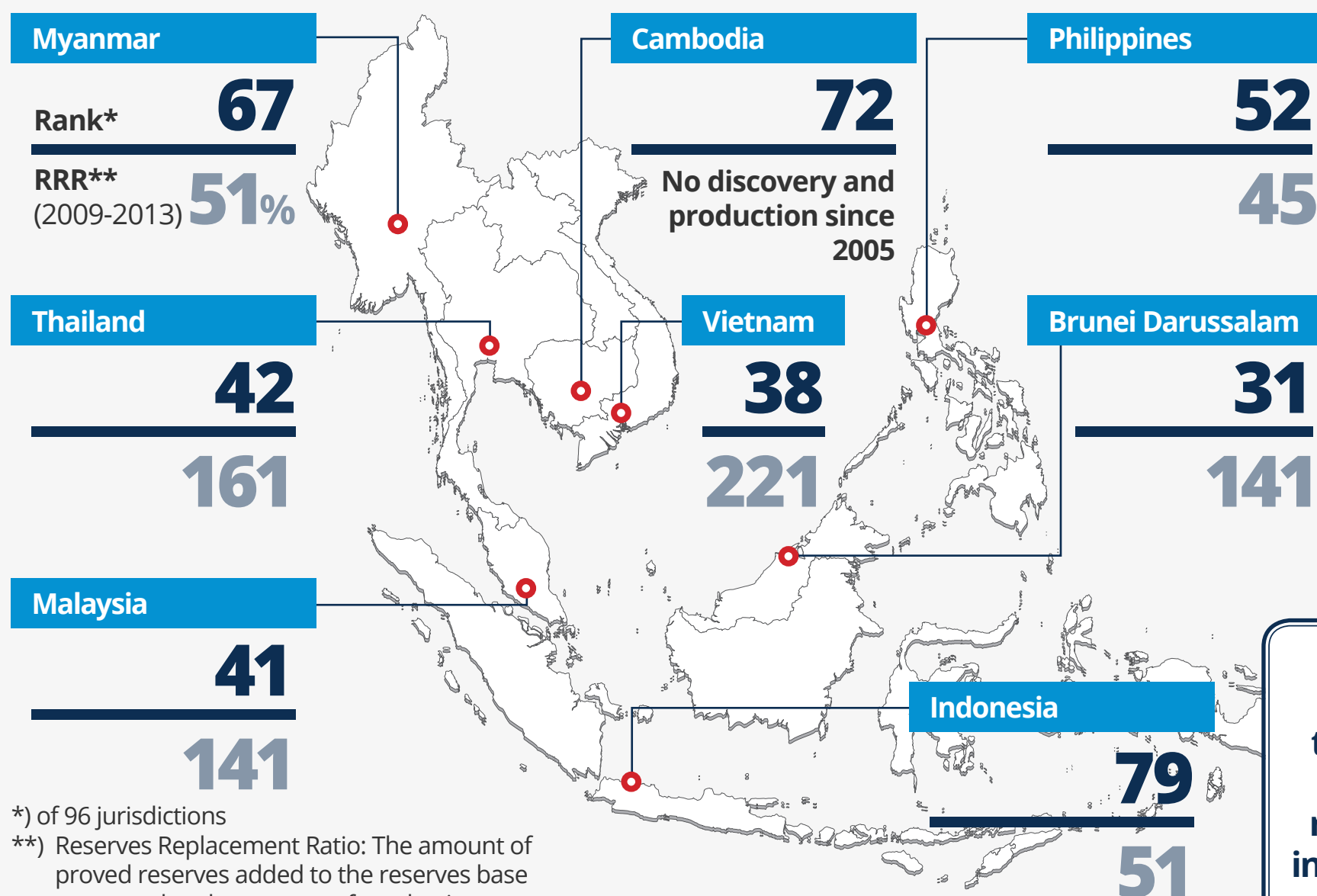
Causes of Investment Decline

- Oil price decline
- Period of discovery to production takes 15 years
- Land acquisition constraints and lengthy licensing bureaucracy
- Low in return
- Constraints in extension of the working areas and legal certainty
- Low ratio between reserve replacement and successful exploration.

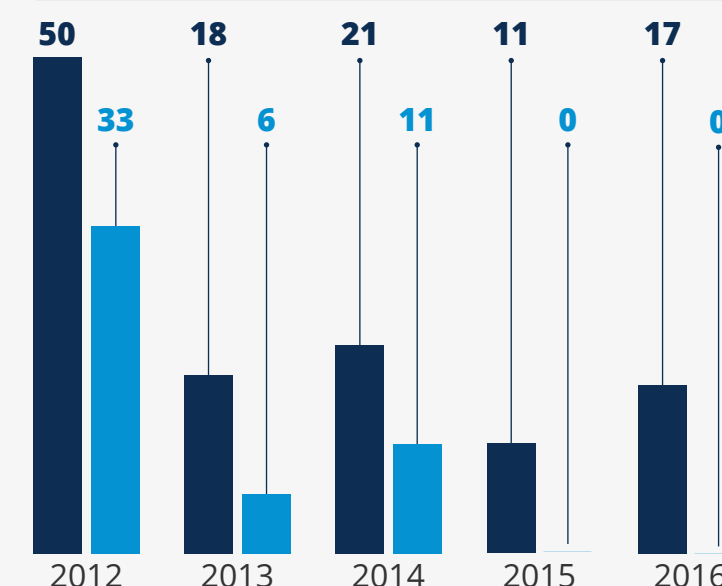
SOURCE: SKK MIGAS. MEMR

INDONESIAN OIL AND GAS INVESTMENT CLIMATE RANKS THE LOWEST IN ASEAN

The 2016 Policy Perception Index Survey released by the Fraser Institute shows the oil and gas investment climate in the country is less competitive compared to neighbouring countries. The declining attractiveness of the investment climate can be seen from the reducing number of parties interested in the auction of oil and gas working areas (WK) in the last two years.



WK Auction Lacks Enthusiasts*



■ Total number of areas offered
■ Total number of winners
) Conventional and unconventional

Factors that are being evaluated among others include high taxes; the burden of regulatory obligations; uncertainty of environmental regulations and upstream oil and gas industry regulations; and also concerns about political and security stability.

*) of 96 jurisdictions

**) Reserves Replacement Ratio: The amount of proved reserves added to the reserves base compared to the amount of production

SOURCE: MEMR, WOOD MACKENZIE, FRASER INSTITUTE, SKK MIGAS, MEDIA COVERAGE

LARGE FUNDS NEEDED TO MAINTAIN PRODUCTION

The Ministry of Energy and Mineral Resources has handed over to Pertamina the management of eight oil and gas Blocks of which contract period expires in 2017-2018 and these eight Blocks require a lot of funds. Up until 2021, there are 17 other Blocks that will be terminated.

7. North Sumatra Offshore

PHE NSO
October 15th, 2018
0,1 thousand bpd
20,2 mmscfd
US\$ 13,26 million

bpd : barrel per day
mmscfd : million standard cubic feet per day

5. South East Sumatra

CNOOC SES Ltd
September 5th, 2018
30,9 thousand bpd
70,9 mmscfd
US\$ 229,5 million

Note: —
Operator Oil Estimated operating expenses in a year
End of Contract Gas

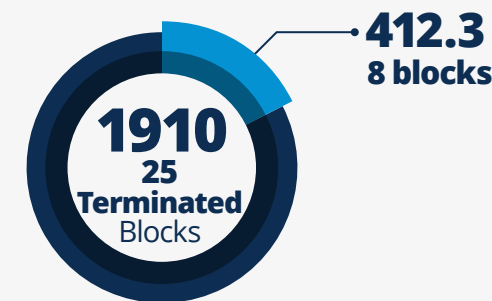
2. Ogan Komering

JOB Pertamina - Talisman Ogan Komering
February 28th, 2018
2,1 thousand bpd
6,3 mmscfd
US\$ 1,1 million

8. East Kalimantan

Chevron Indonesia Company
October 25th, 2018
12,1 thousand bpd
68,1 mmscfd
US\$ 56,4 million

Funds Needed (US\$ MILLION)



1. Attaka

INPEX Corporation
March 31st, 2017
6,6 thousand bpd
n/a
US\$ 4,9 million

3. Tuban

JOB Pertamina- Petrochina East Java Ltd
February 28th, 2018
3,4 thousand bpd
2,3 mmscfd
US\$ 1,7 million

4. Sanga-Sanga

Virginia Indonesia Company (VICO)
August 7th, 2018
14,9 thousand bpd
200,2 mmscfd
US\$ 105,4 million

6. Tengah

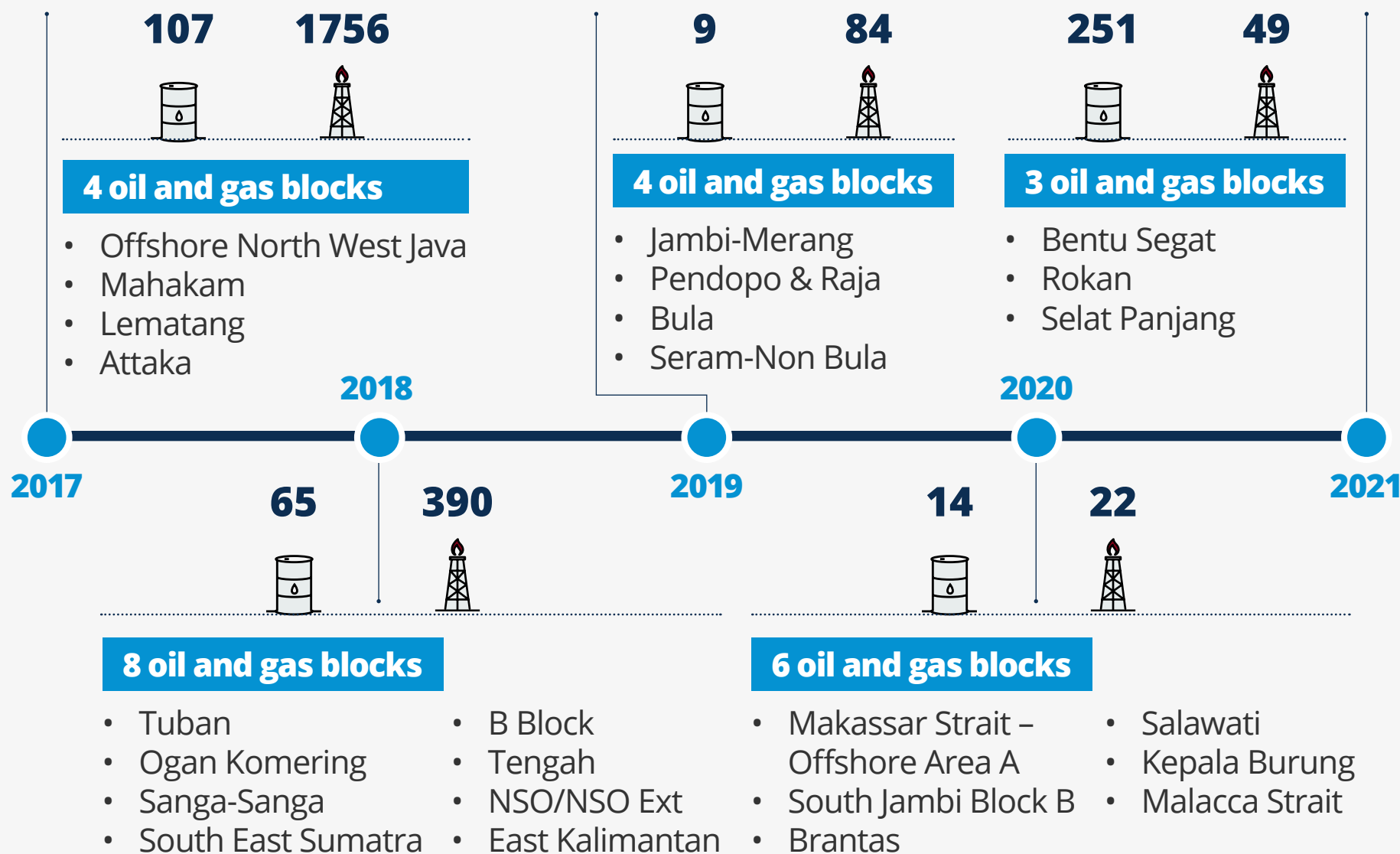
Total E&P Indonesia
October 4th, 2018
n/a
n/a
n/a

SOURCE: MEMR, WOOD MACKENZIE, KATADATA

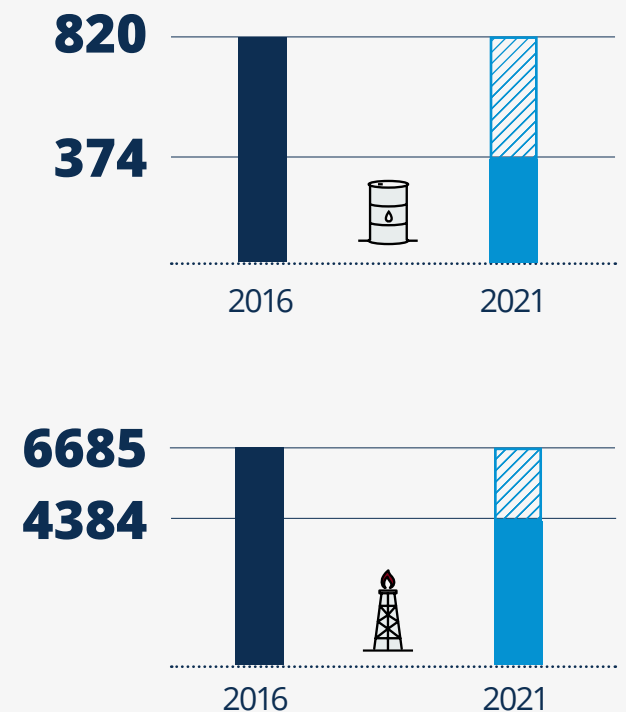
OIL AND GAS LIFTING THREATENED BY FURTHER DECLINE

In the next 5 years, as many as 25 oil and gas blocks will end their contract period. If the transfer process for the Blocks is not prepared now, this situation has the potential to decrease the national oil and gas daily lifting rates.

POTENTIAL DECLINE IN OIL & GAS LIFTING



LIFTING PORTION OF 25 TERMINATED OIL AND GAS BLOCKS



Note:

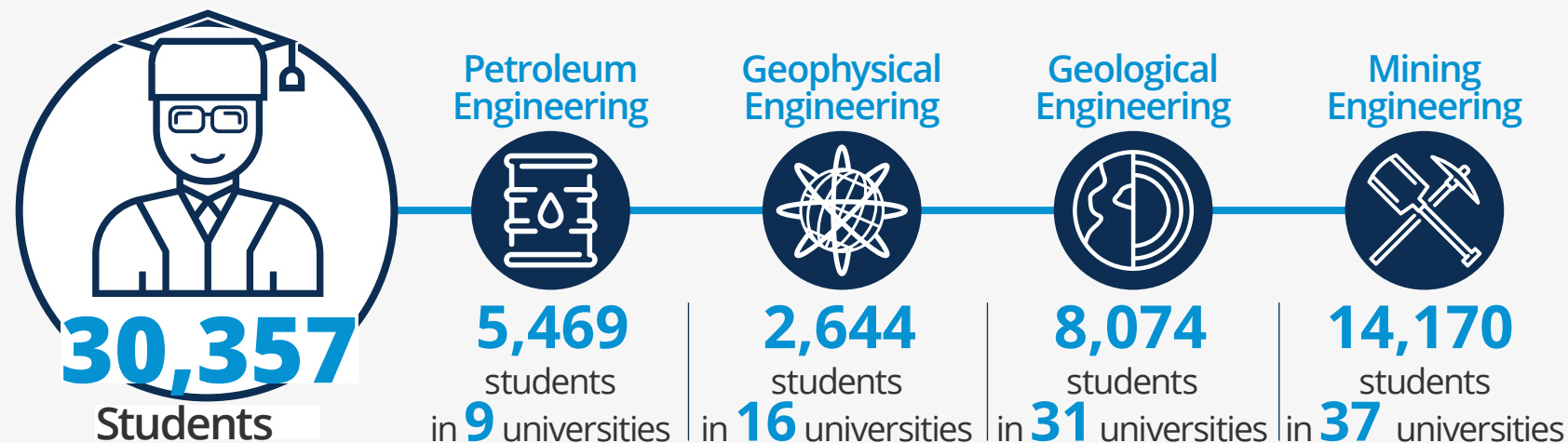
- Oil** (thousand barrels per day)
- Gas** (million cubic feet per day)

SOURCE: MEMR, SKK MIGAS

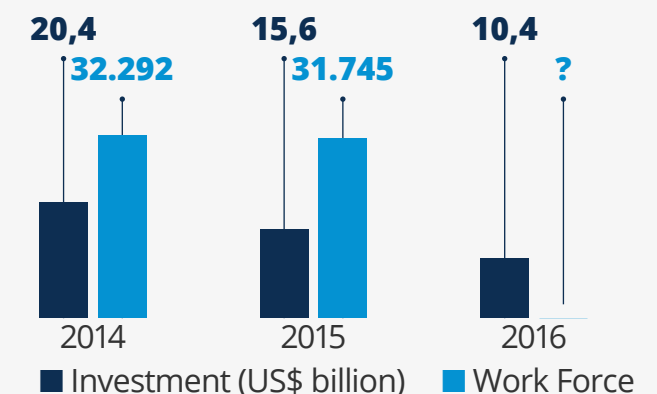
OIL AND GAS JOB OPPORTUNITIES ARE SCARCE

The declining interest in oil and gas investment in Indonesia has resulted in a decrease in the recruitment of new workers in the sector. As a result, graduates with technical qualifications in the field of oil and gas have slim chance to work and fulfill their potential. The same situation has also occurred overseas as many global oil and gas companies have been carrying out efficiency measures.

INDONESIA'S MINING STUDENTS 2016



Reduced Investment, Limited Employment



GLOBAL DRILLING ACTIVITIES DROP



Causes of Investment Reduction

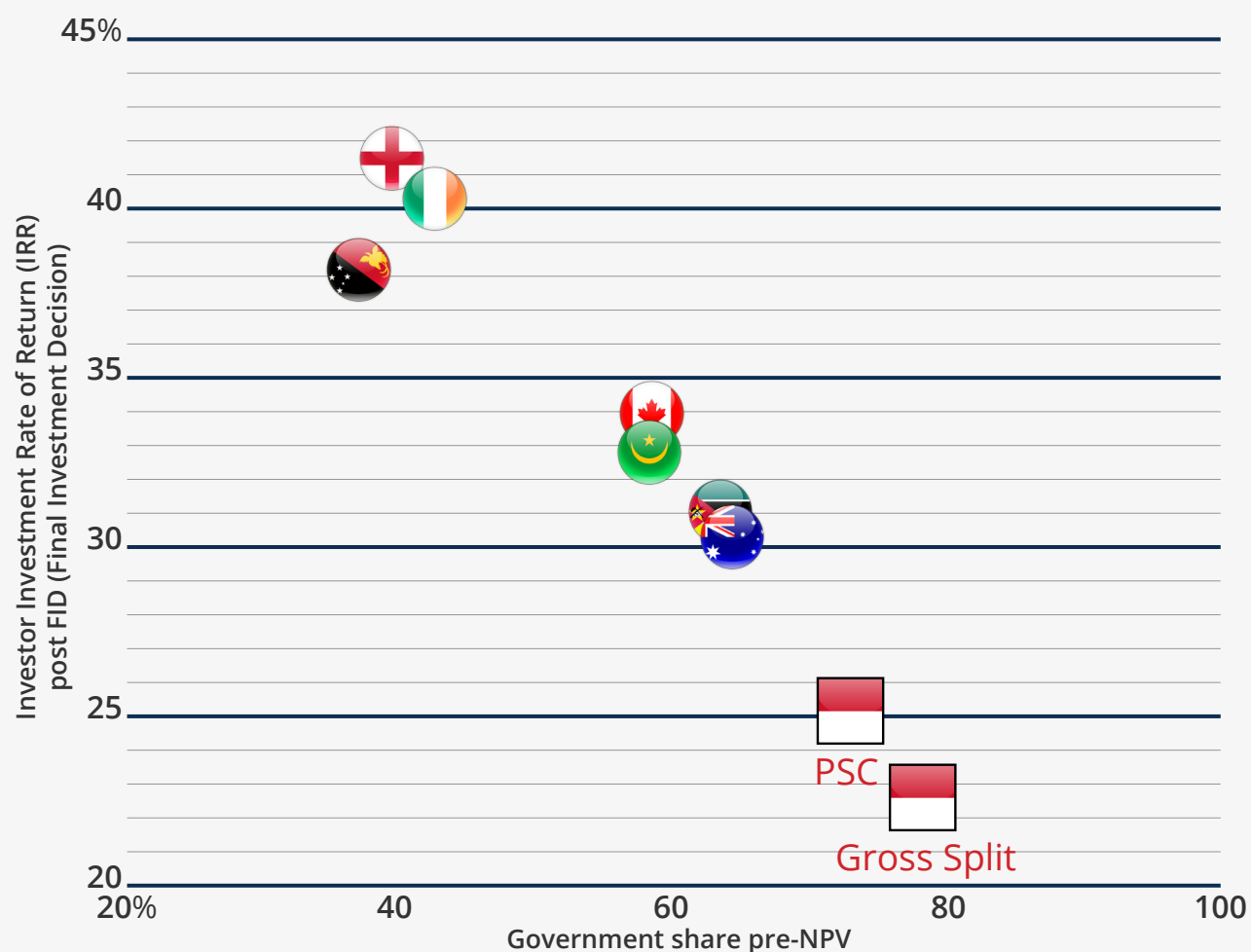
- Efficiency
- Low oil prices
- Less attractive investment climate
- Selective investing

SOURCE: MINISTRY OF TECHNOLOGY RESEARCH AND HIGHER EDUCATION, SKK MIGAS, BAKER HUGHES

INDONESIA'S FISCAL INCENTIVES LESS COMPETITIVE

Oil and gas exploration targets in Indonesia have been shifting from onshore to deepwater offshore locations which are much more expensive. Oil and gas producing countries must offer fiscal incentives to attract investment in a low oil price environment. From a global investors perspective, Indonesian deepwater prospects are less attractive compared to other countries.

INDONESIA LESS ATTRACTIVE



Top 10 Deepwater Destinations*

Country	Deepwater acreage awarded (000 km ²)
Canada	27,778
Papua New Guinea	14,750
Cyprus	11,665
Cote d' Ivoire	9,300
Ireland	8,963
Australia	8,248
Norway	7,218
Mozambique	5,288
Mauritania	4,300
UK	3,527
...	...

Indonesia 0

*Since 2016, only BP, Chevron, Eni, ExxonMobil, Shell, Statoil, Total

SOURCE: WOOD MACKENZIE