

# THE IMPACT OF OIL PRICES ON ASIA

## NAVIGATING THE UNCERTAINTIES

RISK IN FOCUS SERIES



- IDENTIFYING WINNERS AND LOSERS AMONGST PRODUCERS, CONSUMERS AND GOVERNMENTS
- STRESS-TESTING THE ECONOMIC IMPACT OF FURTHER FALL IN OIL PRICES
- PRESENTING TOOLS AND STRATEGIES FOR BUILDING RESILIENCE

# KEY TAKEAWAYS

- 1** Asia's economic growth story will continue and the demand for energy will rise in turn, meaning the region will continue to be susceptible to price volatility.
- 2** Governments and policy-makers will need to make swift and customized responses according to where they stand with respect to their net oil trade positions.
- 3** The oil and gas (O&G) industry in Asia scaled back on new upstream projects and investments by 20 percent between 2015 and 2016, but taking advantage through leveraging technological advances and drilling techniques could lead to operational efficiency gains, even in the low-price environment.
- 4** Energy corporations will need to pay attention to shifting investor preferences and changing shareholder values, which will shape future oil production. For instance, investment portfolio diversification, such as divesting from traditional energy sources into renewables, indicates the growing confidence that renewables will begin to trend and shape the energy market.
- 5** The energy-dependent sectors outside O&G could take advantage of the fall in oil prices, but any gains may quickly be lost in volatile and uncertain times ahead.
- 6** To enhance functional resilience, key decision-makers, both in the government or corporate settings, must take bold, effective actions to innovate and improve efficiency, even though it could mean disrupting current conventions or overcoming institutional inertia.
- 7** Apart from understanding operational processes and systems, stakeholders must identify and mitigate critical financial risks to ensure financial resilience and sustainability while adjusting to the volatile price environment.
- 8** Finally, stakeholders who have the ability to dynamically adapt as circumstances change, while enhancing organizational capacity and capability, are more likely to enjoy continuous success.

# TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>2</b>
<b>SETTING THE SCENE</b>	<b>3</b>
<b>THE CYCLICAL PRICE EVOLUTION</b>	<b>3</b>
LEARNING FROM HISTORY	
KEY DRIVERS OF OIL PRICE VOLATILITY	
ENTERING AN ERA OF UNCERTAINTY	
<b>WINNERS AND LOSERS OF THE FALLING OIL PRICES</b>	<b>6</b>
<b>GOVERNMENTS</b>	<b>8</b>
MACROECONOMIC IMPACTS ON NET-EXPORTERS	
BENEFITS REAPED BY NET-IMPORTERS	
UNEQUAL BENEFITS ACROSS OIL-IMPORTERS	
INCREASED VULNERABILITY OF OIL-IMPORTERS	
<b>OIL AND GAS SECTOR</b>	<b>12</b>
UPSTREAM INVESTMENT CUTS AND PERFORMANCES ARE SEVERE	
OFFSHORE SUPPLIERS ARE NOT SPARED	
<b>ENERGY-INTENSIVE INDUSTRY AND THE FINANCIAL SECTOR</b>	<b>15</b>
HOPEFUL GAINS BY ENERGY-INTENSIVE INDUSTRIES	
LENDING BANKS' DISPROPORTIONATE EXPOSURE	
CONTAGION EFFECTS AND INCREASED COMPETITION FOR INSURERS	
<b>INVESTORS AND SHAREHOLDERS</b>	<b>18</b>
RENEWABLES INVESTMENT AND SHAREHOLDERS' CHANGING VALUES	
<b>SCENARIO ANALYSIS: ASIA'S EXPOSURE TO COMMODITY MARKET DEVELOPMENTS</b>	<b>21</b>
<b>OVERVIEW</b>	<b>21</b>
<b>BASELINE – OIL PRICES STAYING AROUND \$50 PER BARREL</b>	<b>22</b>
<b>SCENARIO – OIL PRICES FALLING TO A LOW OF \$28 PER BARREL</b>	<b>22</b>
<b>ECONOMIC IMPACTS ON ASIA</b>	<b>23</b>
<b>RECOMMENDATIONS: BUILDING RESILIENCE IN A TIME OF OIL PRICE VOLATILITY</b>	<b>25</b>
<b>CONCLUSION</b>	<b>34</b>

# INTRODUCTION

Severe energy price shock ranks as the most prominent risk concern for doing business in the Asia-Pacific (APAC) region, according to executives responding to the Executive Opinion Survey (EOS) 2016.<sup>1</sup> The EOS is published in the World Economic Forum's annual Global Risks Report, which has been supported by Marsh & McLennan Companies since its first edition in 2006. This ranking is unsurprising given APAC's status as a net importer of oil and the implied economic vulnerability to sharp changes in oil prices.

The impact of falling oil prices on specific industries or countries has been covered extensively in academic and commercial analysis in the last few years. This report intentionally takes a broader view of the impact of falling oil prices across a range of stakeholder groups within the APAC's economic ecosystem. While the oil & gas (O&G) industry has had to make many tough decisions to ensure continued operations, consuming industries have theoretically been able to realize significant profits. Governments have had the opportunity to refocus their domestic subsidy schemes and also to consider their long term energy mix strategy.

Lower for longer was the mantra for many, but recent commitments by the Organization of the Petroleum Exporting Countries (OPEC) and others to reduce supply has seen prices creep back up with some feeling optimistic that the price floor has long since been reached. Ultimately nobody can say for sure what will happen to prices in 2017 and beyond. So this report sets out to provide food for thought for members of APAC's economic ecosystem in building resilience in light of future price uncertainty.

This report begins with an assessment of the supply and demand side drivers of the oil price fall over the last few years and places this in the context of historical price changes. The next chapter contains a review of the winners and losers from the price fall with respect to governments, the O&G industry, consumers, financial institutions and investors. Sometimes the answer is clear cut, but for many stakeholders the answer is more nuanced.

The chapter from Oxford Economics contains an analysis of the macroeconomic impacts of a theoretical further fall in oil prices on a number of countries in the region. Heavy commodity producers will be directly impacted, while the effect on some commodity importers is not as obviously clear due to the impact that a price fall would have on global markets.

In closing, a range of tools and strategies to build resilience are considered. Some of these apply to a cross-section of stakeholders, while others are very specific in their application. These tools have been tried and tested by Marsh & McLennan's operating companies with corporates across the region.

The Asia-Pacific Risk Center would like to thank all contributors to this report and note that this is the first in a series of "Risk In Focus" publications that will look in more detail at the key risks and risk trends for the APAC region.

<sup>1</sup> MMC Asia Pacific Risk Center, 2016. Evolving Risk Concerns in Asia-Pacific. Nov 2016

## SETTING THE SCENE

Oil prices have fallen significantly from \$108/barrel (bbl) in June 2014 to the lowest of \$30/bbl in February 2016,<sup>2</sup> one of the worst slumps in history. Low prices impose a wide range of impacts on dynamic Asian economies. Oil importers are set to benefit most from the price drop, saving on energy bills to fuel economic growth; while in oil-exporting countries the price decline will most likely cut economic growth rates.

Overall, the impact of low oil prices is positive and beneficial for the majority of Asia. However, there still remains new challenges for Asian economies, governments, and both energy and non-energy corporations alike. Strategic considerations by key stakeholders will need to identify, assess, and respond to the various risks and opportunities presented by volatile oil prices.

## THE CYCLICAL PRICE EVOLUTION

### LEARNING FROM HISTORY

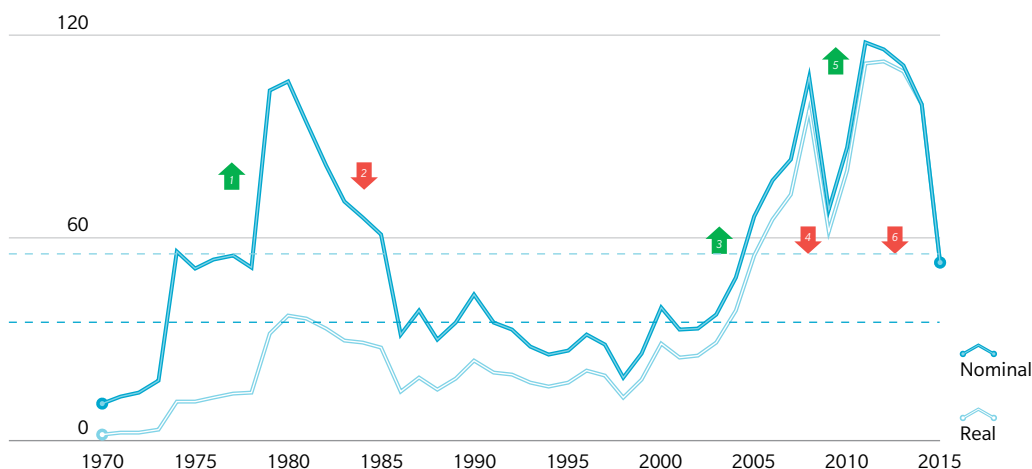
The magnitude of the decline in global oil prices in mid-2014 is not dissimilar to two other episodes in 1986 and 2009. The oil bust of 1986 had resulted from a severe crude oil glut caused by falling demand following the 1970s energy crisis. Global oil prices fell from \$27/bbl to less than \$10/bbl – a 70 percent reduction – over the course of just two quarters in 1986. Fast forward two decades, and the Global Financial Crisis (GFC) caused demand for energy to shrink again in late 2008, with oil prices collapsing almost 80 percent from a high of \$135/bbl in July 2008 to a low of \$35/bbl in January 2009.

Historically, the oil industry has been one of boom and bust cycles. Since the 1970s, oil price disruptions have been demand-driven or triggered by political factors, but the most recent oil price decline in 2014 can be attributed to shifting supply-demand fundamentals (Exhibit 1).

<sup>2</sup> See “Crude oil & natural gas price”. Available at: <https://www.bloomberg.com/energy>

## EXHIBIT 1: CYCLICAL OIL PRICE EVOLUTION FROM 1970 TO 2015

ANNUAL OIL PRICE  
US\$ PER BARREL



**Notes** 1) Boom – Yom Kippur War (1973), Iran Revolution (1979), and the Iraq-Iran War (1980s); 2) 1986 Oil Bust – Economic slowdown and oil glut related to the Kingdom of Saudi Arabia; 3) Boom – Strong US and Asian demand coincided with the Iraqi invasion of 2001; 4) 2008 Great Financial Crisis – Decreasing demand; 5) Boom of 2011-12 – Geopolitical turmoil in the Middle East; 6) 2014 Oil price collapse – Lower economic growth and strong unconventional oil production

**Sources** BP, Bloomberg, US Energy Market Emergency Act of 2008, Oliver Wyman analysis

## KEY DRIVERS OF OIL PRICE VOLATILITY

The fall in oil prices in 2014 was a result of both supply and demand factors. Record levels of production in the Middle East and the United States (US) boosted by shale technology have driven much of the oil production growth, which exceeded consumption growth for the second consecutive year in 2015.<sup>3</sup>

Global demand for crude oil has also been on the decline: The European Union (EU) has been aiming to boost its share of renewables to at least 27 percent of total energy consumption by 2030, while slow economic growth in China has resulted in sharp drops in commodity demand. This has led the International Energy Agency (IEA) to revise its forecast for 2017 downwards to 1.3 million barrels per day (b/d) from the global oil demand growth of 1.4 million b/d in 2016.<sup>4</sup>

Responding to persistent low oil prices since mid-2014, members of the OPEC proposed an agreement in October 2016 to cut production and push up the low crude oil prices. In a surprising landmark deal announced early December 2016, the OPEC members collectively agreed to cut production by 1.2 million b/d from 33.6 million barrels. Non-OPEC member Russia is expected to also support the cut with a reduction of 600,000 b/d.<sup>5</sup> Optimism returned briefly, as crude oil prices edged above the \$50-a-barrel benchmark and markets rallied, after months of persistent doubts about the cartel's ability to strike an agreement and to absorb the excess oil.<sup>6</sup> However, questions still remain about the longer-term impact of the deal and the effective enforcement of the cuts.

3 See "2030 Climate & Energy Framework". Available at: [https://ec.europa.eu/clima/policies/strategies/2030/index\\_en.htm](https://ec.europa.eu/clima/policies/strategies/2030/index_en.htm)

4 See "Oil Market Report: 13 December 2016". Available at: <https://www.iea.org/OILMARKETREPORT/OMRPUBLIC/>

5 See "Oil surges on OPEC deal to cut output". Available at: <http://www.wsj.com/articles/opec-reaches-deal-to-cut-oil-production-1480518187>

6 See "Challenge to OPEC deal sends oil sliding". Available at: <https://www.ft.com/content/014995a8-9d1a-11e6-a6e4-8b8e77dd083a?tagToFollow=ZmFmYTUxOTItMGZjZC00YmJkLWJlZTQtMmY3ZDZiOWZkYmYw-VG9waWNz>

## ENTERING AN ERA OF UNCERTAINTY

The economic outlook remains precarious with heightened uncertainty further exacerbated by recent global events – *Brexit* referendum, US presidential elections, and the recent Italian EU referendum in early December 2016 which sparked fresh fears of a Eurozone break-up. There is also an increasing level of uncertainty around global trade due to the plausible impacts from the Trans-Pacific Partnership coming to disagreements among the countries involved.

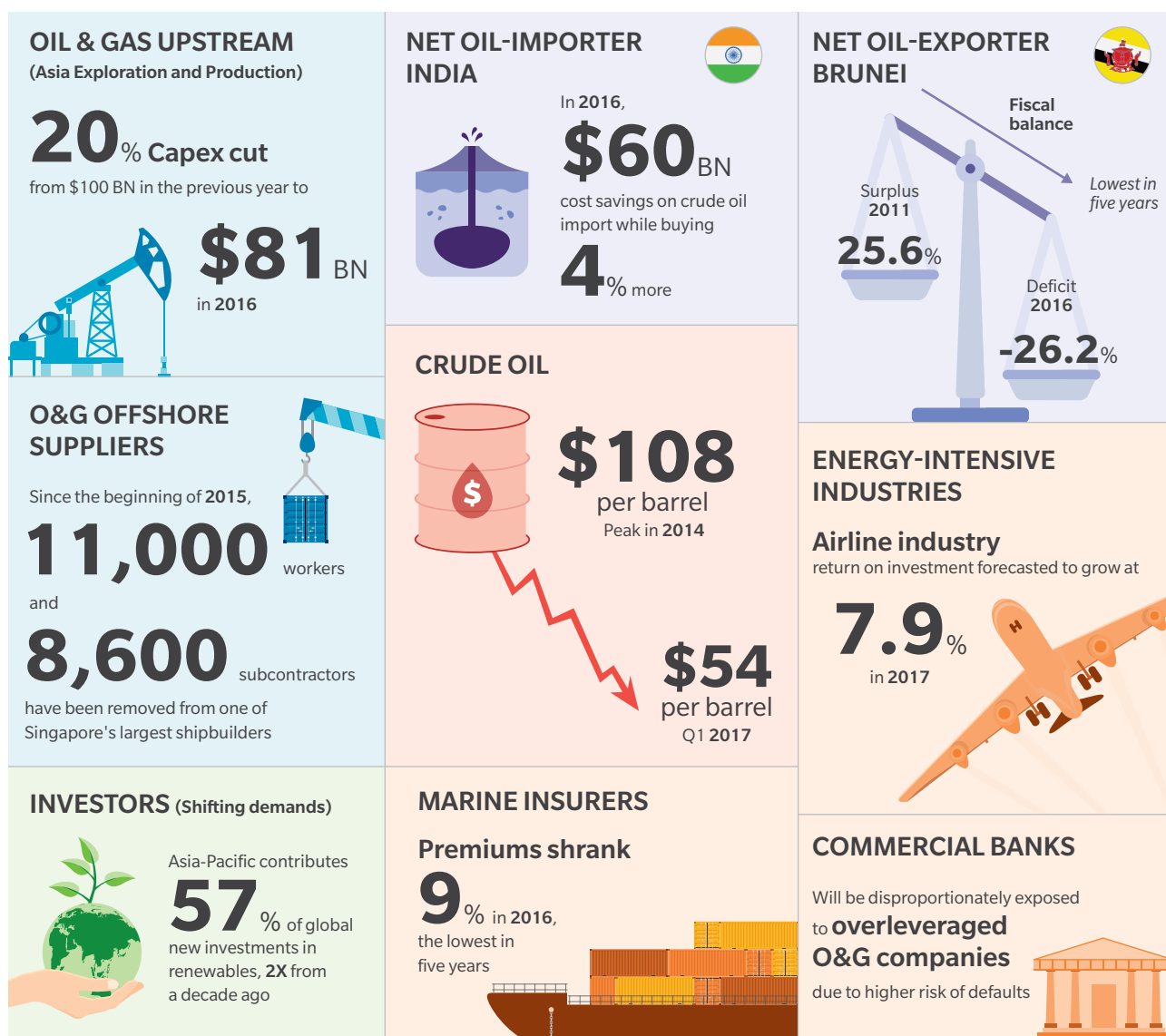
The number of variables to consider affecting oil prices today is far more than in the past – especially as energy policy-makers are increasingly trying to balance the trilemma of energy security, affordability and access to growing populations, and environmental sustainability. As such, in the times ahead, governments will have to tweak public policies, while energy industry operators may need to drastically change investment plans and operational strategies. Meanwhile, they also need to think about their relationships to oil prices in new ways to ensure resilience to energy demand and supply evolutions.

Fossil fuel will remain the backbone of the world's energy usage for the future, but the development at individual country, industry, and company levels will vary. In the section that follows we explore the impacts and implications that the oil price shock has had on key stakeholder groups in greater detail.

# WINNERS AND LOSERS OF THE FALLING OIL PRICES

The O&G industry has typically seen prices fluctuate in cycles driven by factors such as technological advances and geopolitical shifts. Entering an era of market uncertainty and commodity price volatility, it is vital to acknowledge prevailing economic and financial implications on all stakeholders involved, before key considerations are identified to enhance greater resilience in general.

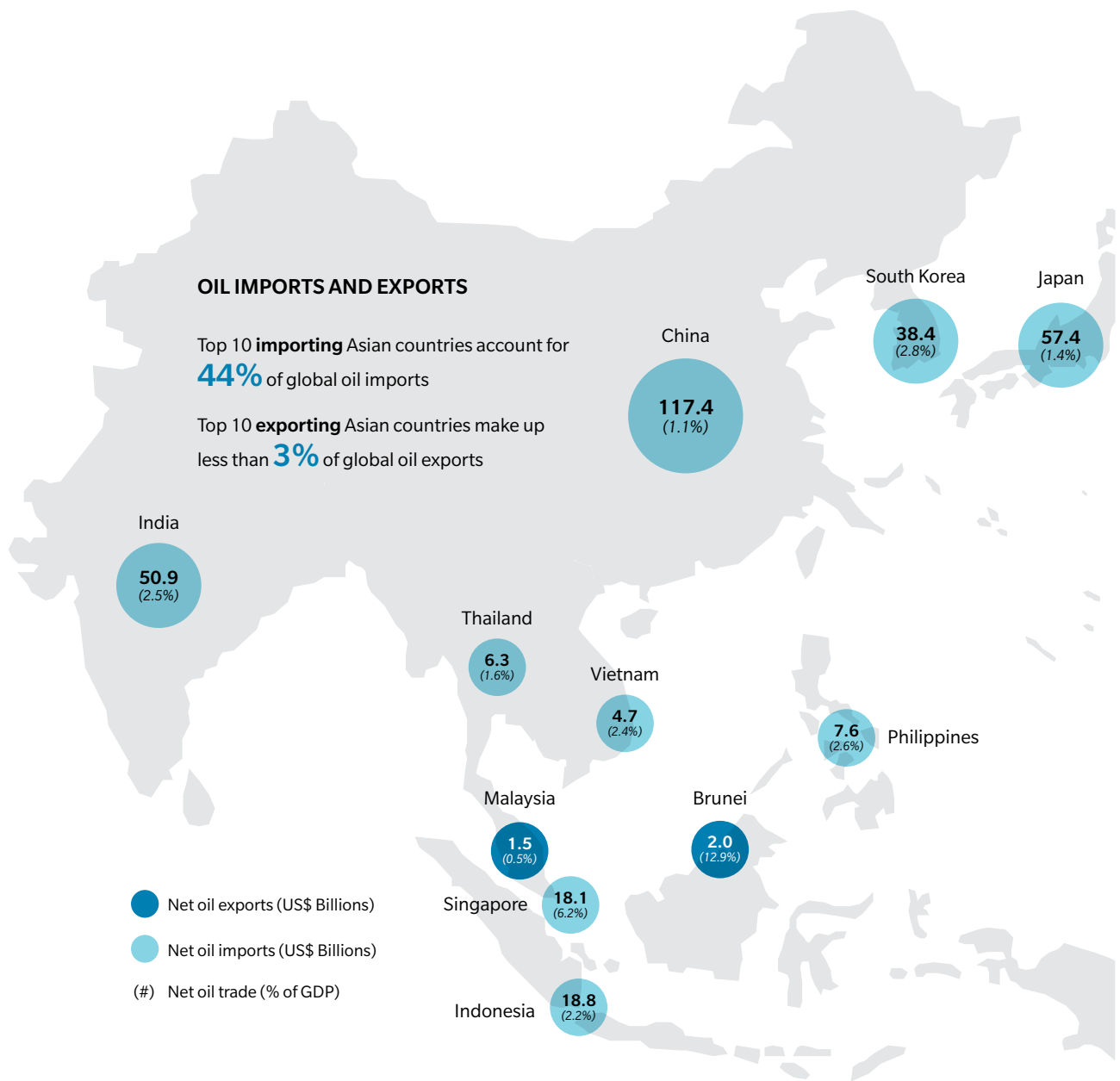
EXHIBIT 2: CRUDE OIL PRICE COLLAPSE AND THE ASSOCIATED KNOCK-ON EFFECTS ON KEY STAKEHOLDERS



Source APRC analysis



EXHIBIT 3: NET OIL TRADE MAP OF ASIA (2015 FIGURES)



Sources APRC Analysis of BMI Research, BP Statistical Review, and the World Factbook (Central Intelligence Agency)

## GOVERNMENTS

### MACROECONOMIC IMPACTS ON NET-EXPORTERS

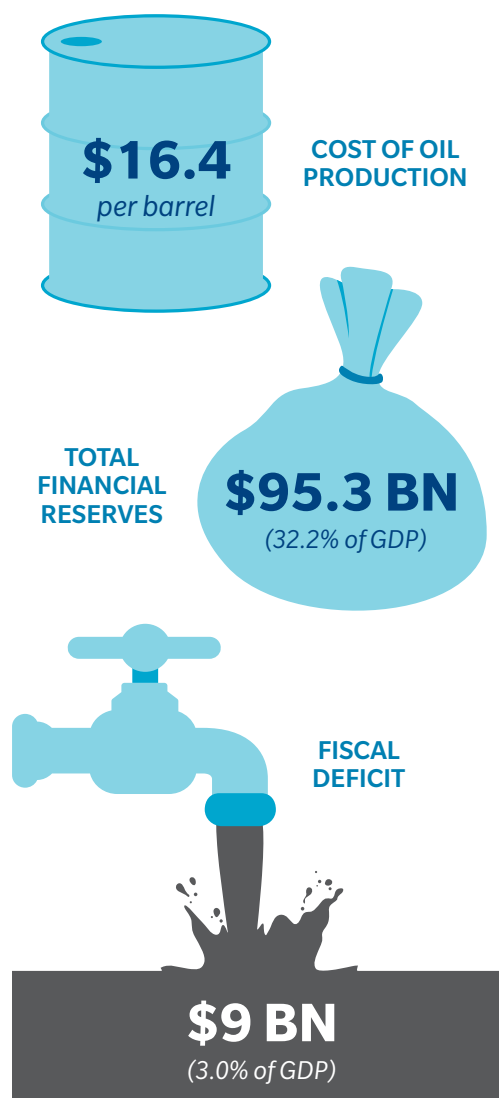
Over the past three decades, domestic oil production in Asia has been largely steady while consumption rates have been escalating rapidly, highlighting the diverging trend of supply and demand. As a result, Asia is a net oil-importing region (Exhibit 3), and it generally benefits from the recent persistent low oil price. Despite this, there are a couple of net-exporting countries that are adversely affected as their economies are heavily oil-dependent. Malaysia, which funds roughly 30 percent of its federal expenditures from oil export revenue, grew at 4.1 percent in 2016, its lowest growth since the GFC.<sup>7</sup> The low oil prices are reflected in the government's falling petroleum-related revenue (Exhibit 4), which has increased government debts to \$170 billion in 2015, one of the largest in the region. In order to maintain debt levels below the self-imposed 55 percent to GDP limit, the Malaysian government may be required to implement additional austerity measures, such as revising budgets down, possibly causing a further slowdown of the sluggish economy.

Brunei has also been negatively impacted by low oil prices; more than 90 percent of Brunei's exports are contributed by the O&G industry. Nominal GDP in 2016 contracted 3.8 percent.<sup>5</sup> The government is warned to drastically cut public spending, as budget deficit is set to reach \$2.65 billion in 2016, the equivalent to 17 percent of GDP<sup>8</sup>. This contrasts greatly to the years of healthy fiscal surplus between 2011 and 2013 as a result of high oil prices hovering at about \$100/bbl then (Exhibit 5).

### EXHIBIT 4: MALAYSIA AND ITS FINANCIAL STATISTICS

Malaysia has one of the largest government debts in the region,

**\$170 BN** in 2015,  
exceeding the Government's  
self-imposed **55%** limit.

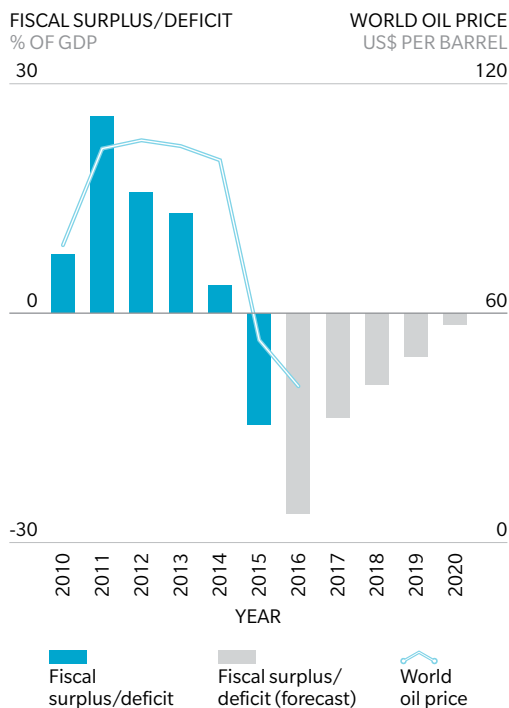


Sources APRC analysis of BMI research, World Bank, Oxford Economics, IMF, World Economic Outlook Database, extracted October 2016

<sup>7</sup> BMI Research Database, 2016

<sup>8</sup> See "Tough times for Brunei bring more media repression". Available at: <http://asia.nikkei.com/magazine/TUNE-UP-TIME-FOR-VIETNAM/Politics-Economy/Ahmed-Mansoor-Tough-times-for-Brunei-bring-more-media-repression?page=1>

## EXHIBIT 5: BRUNEI'S ANNUAL FISCAL BALANCE AND OUTLOOK IN COMPARISON TO WORLD OIL PRICE FROM 2010 TO 2020



Sources APRC analysis of Oxford Economics, IMF, World Economic Outlook Database, extracted October 2016

## BENEFITS REAPED BY NET-IMPORTERS

The fall in oil price has spearheaded opportunities for infrastructure investments and implementation of new reforms. For example, recent plans of a China-Pakistan economic corridor have resulted in \$46 billion worth of new investments, funded by state-owned Chinese banks, fuelling the growth of Pakistan's energy and infrastructure sector.<sup>9</sup>

Meanwhile, as a net oil-importer, approximately 80 percent of India's crude oil consumption is imported to meet its rising domestic needs, even though it is home to the second-largest oil reserves in Asia after China.<sup>10</sup> The significant cost savings helps narrow its current account deficit: India's 2016 crude oil import costs have declined 40 percent compared to 2014, allowing the government to spend \$60 billion less despite a 4 percent increase in import volume.

India's inflation rate has also halved from a high of 10.9 percent in 2013 to 5.9 percent in 2015, partly as a result of a decline in fuel prices.<sup>11</sup> Healthy macroeconomic indicators have allowed the government to manage its fiscal deficit better by cutting subsidies on petroleum products while raising energy taxes.

## UNEQUAL BENEFITS ACROSS OIL-IMPORTERS

A low oil price environment is not the only determining factor that boosts demand for oil or stimulates economic growth. There are some countries where low prices have not necessarily stimulated growth for reasons beyond simple economics. Consumer confidence regarding the future outlook has an immense impact on the level of spending within an economy.

<sup>9</sup> See "Marsh's National Oil Companies Conference 2016". Available at <http://me.marsh.com/Portals/130/Documents/NOCCExecutiveSummary2016.pdf>

<sup>10</sup> See "India's Thirst for Oil is Overtaking China's". Available at: <http://www.bloomberg.com/news/articles/2016-04-07/india-echoing-pre-boom-china-as-new-center-of-oil-demand-growth>

<sup>11</sup> World Development Indicators, 2016. Inflation, consumer prices (annual percent)

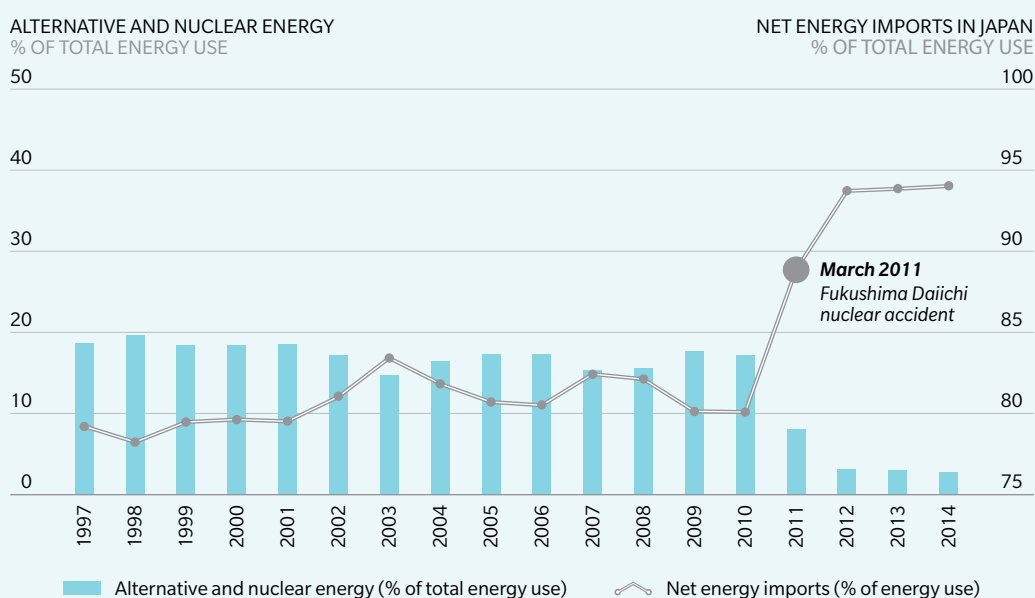
## COUNTRY IN FOCUS: JAPAN

The 2011 Fukushima Daiichi accident has resulted in the Japanese nuclear reactors laying idle ever since, causing a 30 percent deficit in the electricity supply that was subsequently replaced by imports of coal, oil, and liquefied natural gas (LNG)<sup>12</sup>: Japan's net energy imports resultantly soared from 80 percent on average to approximately 93 percent within a year of the accident (Exhibit 6).<sup>13</sup>

As crude oil is now accounting for a greater share of total energy use, the fall in crude oil prices in mid-2014 would appear to be a blessing for Japan. However, benefits to Japan's terms of trade were offset by the effects of deflation.<sup>14</sup> The low oil prices, among many other factors, have reignited deflationary fears in the country, fuelling the risk that consumers and businesses will curb spending and defer investment, thereby slowing growth. Given the weak market fundamentals and uncertainty around the strength of economies in the region and around the world, the low price environment has not boosted consumer confidence in Japan.

In fact, the risk of a deflationary mindset has emerged as a bigger challenge for the Japanese economy, which is struggling to keep quarterly GDP growth rate positive and to avoid falling back into recession.<sup>15</sup>

### EXHIBIT 6: TREND OF NET ENERGY IMPORTS IN JAPAN, BY PERCENTAGE OF TOTAL ENERGY USE



Sources World Development Indicator 2016, APRC analysis

<sup>12</sup> See "Japan nuclear update". Available at: <http://www.nei.org/News-Media/News/Japan-Nuclear-Update>

<sup>13</sup> World Development Indicator 2016. Net energy imports (percent of energy use)

<sup>14</sup> See "Why cheaper oil doesn't always lead to economic growth".

Available at: <http://www.wsj.com/articles/why-cheaper-oil-doesnt-always-lead-to-economic-growth-1423083687>

<sup>15</sup> OECD Statistics, 2016. Quarterly National Accounts Japan. (Online database)

## INCREASED VULNERABILITY OF OIL-IMPORTERS

Outpacing domestic production, demand for oil in Asia is set to grow in sync with its economy. OPEC forecasts global oil demand to grow by 1.2 million b/d to average around 95.33 million b/d, largely driven by robust growth in India and other Southeast Asian economies.<sup>16</sup> On the contrary, oil production in Asia is slowing down:<sup>17</sup> producers in China are shutting down marginal oil fields with output hitting a five-year low in July 2016, while Indonesia faces a 25 percent decline in production due to slowing down of activities such as offshore drilling and well servicing.

The significant cutbacks in foreign investments into Asian exploration and production projects, as well as technical expertise leaving the region, could leave the region's oilfields at risk of sharp production declines beyond 2016. Asia's oil production is forecasted to fall by about 30 percent to 5 million b/d by 2025 from 7.6 million b/d in 2016.

## RESPONDING TO GEOPOLITICAL THREATS

Energy security remains a major challenge for Asian economies that are highly dependent on its import. Oil-importing economies such as South Korea, Japan, Hong Kong and Singapore have scarce domestic energy sources, which subject them to heightened geopolitical risks and uncertainty. Swift governmental policies are required to enhance energy security and ensure business continuity.<sup>19</sup>

South Korea, for example, which imports 83 percent of its net energy use, has recently launched policy plans to enhance energy security that focus on external collaboration with resource-rich countries, and establish energy funds to subsidize energy development projects.<sup>20</sup> Singapore, which is also resource-scarce, imports more than 97 percent of its energy usage. It has been investing intensively in R&D projects to improve resilience and self-sufficiency in O&G infrastructure, such as its distribution network and the LNG terminals.

<sup>16</sup> See "OPEC raises oil demand forecast on outlook for cheaper crude".

Available at: <https://www.bloomberg.com/news/articles/2016-11-08/opec-raises-oil-demand-forecast-on-outlook-for-cheaper-crude>

<sup>17</sup> See "Rising oil import costs may become Asia's growing pain". Available at: <http://in.reuters.com/article/asia-oil-idINKCN11A029>

<sup>18</sup> See "Energy Trilemma Index". Available at: <http://www.worldenergy.org/>

<sup>19</sup> World Development Indicators; IEA sourced World DataBank

## OIL AND GAS SECTOR

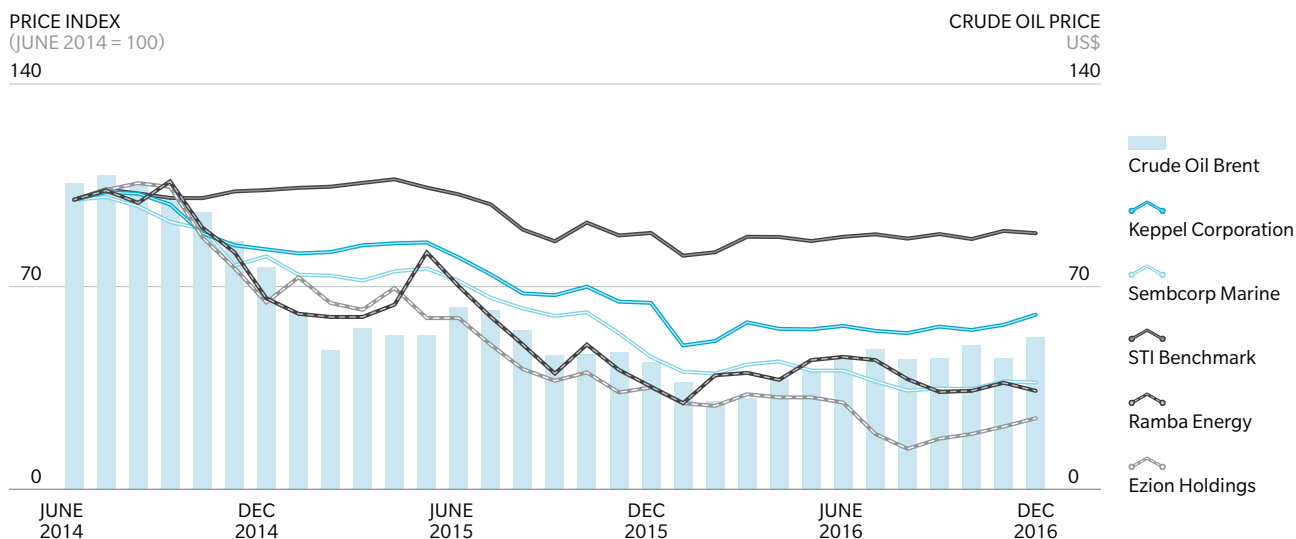
### UPSTREAM INVESTMENT CUTS AND PERFORMANCES ARE SEVERE

Global upstream capital expenditure (capex) is expected to see reductions by up to 25 percent between 2014 and 2016, despite showing strong growth over the last three decades. Across Asia, exploration and production capex totals \$81 billion in 2016, down from the \$100 billion spent in the previous year.<sup>20</sup> Particularly in China, oil majors China National Petroleum Corp. (CNPC)<sup>21</sup> and Sinopec<sup>22</sup> are expected to cut capex by up to 23 percent in 2016, as weaker cash flows force these large oil companies to prioritize profitable projects over production growth.

Upstream operating companies have seen their share prices fall in tandem with the collapse of crude oil prices, while selected downstream operations have taken advantage of the lower purchasing price. Changes in share prices of selected Asian upstream and downstream energy companies over the past five years are shown in Exhibits 7 and 8, highlighting the stark contrast in financial implications along the industry supply chain.

#### EXHIBIT 7: TIME SERIES OF HISTORICAL MONTHLY STOCK PRICES OF OIL COMPANIES FROM 2014 TO 2016: SGX-LISTED UPSTREAM O&G COMPANIES IN COMPARISON TO STRAITS TIMES INDEX (STI)

##### COMPARISON OF UPSTREAM O&G COMPANIES' MONTHLY STOCK PRICES LISTED ON THE SGX



Sources Datastream, APRC analysis

<sup>20</sup> See "Spending cuts deepen in 2016".

Available at: <http://www.aogdigital.com/component/k2/item/5497-spending-cuts-deepen-in-2016>

<sup>21</sup> See "China's CNPC to cut capex 23%, lower oil output on price crash".

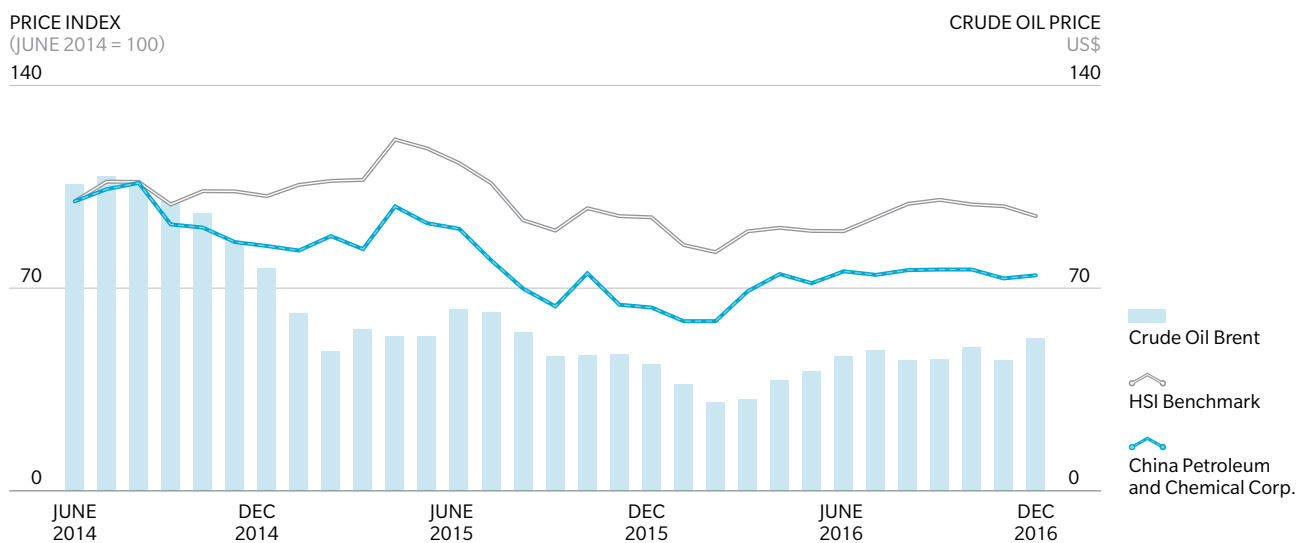
Available at: <http://www.bloomberg.com/news/articles/2016-03-07/china-s-cnpc-to-cut-capex-23-lower-oil-output-on-price-crash>

<sup>22</sup> See "Crude slide prompts Sinopec to cut capital expenditure".

Available at: <https://www.ft.com/content/85920588-d143-11e4-98a4-00144feab7de>

## EXHIBIT 8: TIME SERIES OF HISTORICAL MONTHLY STOCK PRICES OF OIL COMPANIES FROM 2014 TO 2016: HKEX-LISTED DOWNSTREAM O&G COMPANIES IN COMPARISON TO HANG SENG INDEX (HSI)

### COMPARISON OF DOWNSTREAM O&G COMPANIES' MONTHLY STOCK PRICES LISTED ON THE HKEX



Sources Datastream, APRC analysis

## OFFSHORE SUPPLIERS ARE NOT SPARED

Contractors and suppliers to the O&G industry have also been adversely affected as their business operations are traditionally dependent on upstream and integrated oil companies (IOCs). They face intense competition amidst the global economic slowdown, the low oil prices, declining new contract orders and cancellations of completed offshore drilling rigs.<sup>23</sup> Shipyards in South Korea, formerly the global industry leader, are undergoing massive restructuring after posting record losses.<sup>24</sup> The largest three Korean shipbuilders – Hyundai Heavy Industries, Daewoo Shipbuilding & Marine Engineering, and Samsung Heavy Industries – suffered a combined loss of approximately \$7.2 billion in 2015.

<sup>23</sup> See "Blame it on oil: 2016 unhappy new year for Asian shipyards". Available at: <http://www.bloomberg.com/news/articles/2016-01-03/blame-it-on-oil-2016-an-unhappy-new-year-for-asian-shipbuilders>

<sup>24</sup> See "Murky waters for South Korea's struggling shipbuilders". Available at: <http://www.ship-technology.com/features/featuremurky-waters-for-south-koreas-struggling-shipbuilders-4716089/>

## OFFSHORE AND MARINE INDUSTRY: WORKFORCE REDUCTION, WRITE OFFS, WHAT'S NEXT?

Several offshore and marine firms in Singapore have been hit hard by low oil prices. One of Singapore's offshore rig builders, Keppel Offshore & Marine, reported a 19 percent reduction in full-year profit margins, down to S\$1.5 (\$1.04) billion in 2015 from S\$1.9 (\$1.3) billion in the previous year. Its 2015 financial result was heavily impacted by lower offshore and marine activities, reducing the net order book amount by approximately \$7 billion, the lowest in five years. By the end of 2015, Keppel reduced its global headcount by about 11,000, while contracts for approximately 8,500 subcontractors in Singapore were either terminated or not renewed. Keppel was also affected by non-payments, writing off \$170 million in bad debt, when one of its biggest clients, *Sete Brasil Participacoes SA*, filed for bankruptcy protection in April 2016.<sup>25</sup>

Swiber Holdings, another Singapore-based oil services firm, filed for judicial management after it failed to fulfil its debt obligation of approximately \$50 million in August 2016.<sup>26</sup> The near-liquidation shocked the local marine and offshore industry and sent shockwaves through the Singapore Exchange. Singapore's Straits Times Index fell 2.4 percent following the news, while Singapore's largest bank DBS was expected to recover no more than \$260 million, about half of its total exposure to Swiber.

In response, the Singapore Ministry of Trade and Industry recently announced two bridging loan schemes to Singapore-based companies in the marine and offshore engineering industry to finance operations and bridge short-term cash flow shortfalls.<sup>27</sup> The one-off financial assistance aims to stabilize the sector, which has been adversely impacted by low oil prices. Approximately S\$1.6 (\$1.1) billion of loans will be approved over 12 months from December 2016, where the Government will take on 70 percent of the risk- share.

This may prove controversial with many suggesting that state interventions would only serve to extend the industry's downturn. A survey conducted in the fourth quarter of the 2016 issue of the *Maritime CEO* magazine found that 76 percent of more than 600 respondents around the world were not in favor of government interventions in the O&G sector.<sup>28</sup>

However, the O&G industry and financial institutions in Singapore mostly welcome the financial assistance. Local bank profits have come under immense pressure from a weakening domestic economy and a declining Singapore interbank offered rate (SIBOR),<sup>29</sup> as well as being highly exposed to the O&G sector. According to Japanese bank Nomura, in 2015 Singapore banks have \$51.3 billion exposure to the O&G sector (7.3 percent of Singapore banks' total lending book).<sup>30</sup>

Besides providing temporary relief to the affected sectors, the financial support offered by the Singapore government will ensure the entire industry value chain survives this persistent low price environment. In general, the one-off financial assistance may have limited impact, but it will send a strong message to the world that Singapore remains highly supportive of its O&G industry amidst this low oil price environment. It also provides a timely confidence boost to investors and other energy companies before they decide to relocate their regional headquarters to lower cost centers in the neighboring countries.

25 See "Keppel profit falls as oversupply of oil rigs delays deliveries".

Available at: <http://www.bloomberg.com/news/articles/2016-07-21/keppel-profit-falls-as-oversupply-of-oil-rigs-delays-deliveries>

26 See "A penny stock DBS couldn't save roils Singapore oil hubs, banks".

Available at: <http://www.bloomberg.com/news/articles/2016-08-07/a-penny-stock-dbs-couldn-t-save-roils-singapore-s-oil-hub-banks>

27 See "Offshore Marine Sector gets Government financing aid". Available at: <http://www.straitstimes.com/business/offshore-marine-sector-gets-govt-financing-aid>

28 See "Maritime CEO Issue four 2016". Available at: [https://issuu.com/sinoship/docs/maritime\\_ceo\\_issue\\_4\\_2016?e=4630401/40801486](https://issuu.com/sinoship/docs/maritime_ceo_issue_4_2016?e=4630401/40801486)

29 See "Bad Loan Charges to Hit Singapore's Three Biggest Banks".

Available at: <https://www.bloomberg.com/news/articles/2016-10-25/oil-gas-impairment-charges-seen-curbing-singapore-bank-profits>

30 See "Singapore to support troubled offshore sector". Available at: <http://www.gtreview.com/news/asia/singapore-to-support-troubled-marine-and-offshore-sector/>



## ENERGY-INTENSIVE INDUSTRY AND THE FINANCIAL SECTOR

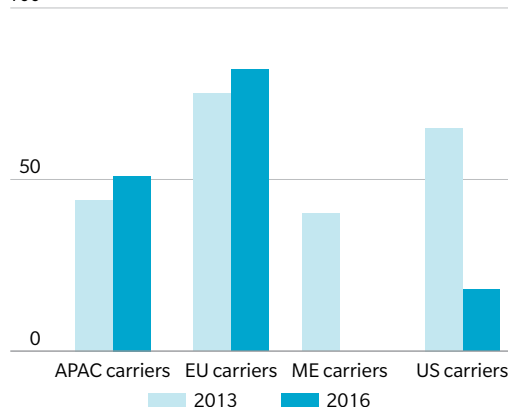
### HOPEFUL GAINS BY ENERGY-INTENSIVE INDUSTRIES

Globally, the airline industry generated record high operating profit in 2016 (5.1 percent), in addition the International Air Transport Association (IATA) forecasts airlines in 2017 to make a return on invested capital at 7.9 percent.<sup>31</sup> In Singapore for example, the national carrier Singapore Airlines recorded full-year profits of \$804 million in the financial year 2015/16, more than a 100 percent gain from the previous financial year profit of \$368 million.<sup>32</sup> This is consistent with the growth in the APAC region at 10 percent year-on-year.<sup>31</sup> The cyclical nature of the aviation industry further suggests that higher operating margins could quickly be followed by economic downturns. So while low oil prices could translate to cheaper flight tickets, the demand for air travel may not necessarily surge accordingly as both individuals and companies could be tightening budgets due to a weak economic outlook.<sup>33</sup>

Furthermore, not all airline carriers reap similar rewards as profit margins depend largely on risk appetites and fuel hedging strategies. In general, airlines around the world hedge fuel prices up to 24 months in advance, although the hedge ratios may differ by region. Based on industry practices in terms of jet fuel hedging,<sup>34</sup> while Asian carriers are not as cautious as the EU carriers, they follow a more conservative approach than their US and Middle Eastern counterparts, who have drastically reduced their jet fuel hedging activities between 2013 and 2016 (Exhibit 9).

### EXHIBIT 9: INDUSTRY PRACTICES ON JET FUEL HEDGING ACROSS REGIONS

SPOT PRICE HEDGE RATIOS BY REGION  
2013 VS. 2016  
100



Sources Oliver Wyman 2016, Jet Fuel Price Risk Management.  
APRC analysis

31 See "IATA: Another strong year airline profits 2017".  
Available at: <http://news.gtp.gr/2016/12/28/iata-another-strong-year-airline-profits-2017/>

32 See "Full year net profit of \$804 million".  
Available at: <https://www.singaporeair.com/saar5/pdf/Investor-Relations/Financial-Results/News-Release/nr-q4fy1516.pdf>

33 See "Qatar, Garuda CEOs say cheap oil is hitting airlines' business travel units".  
Available at: <http://www.cnbc.com/2016/02/16/qatar-garuda-ceos-say-cheap-oil-is-hitting-airlines-business-travel-units.html>

34 Oliver Wyman, 2016. Jet Fuel Price Risk Management. For discussion, Nov 2016

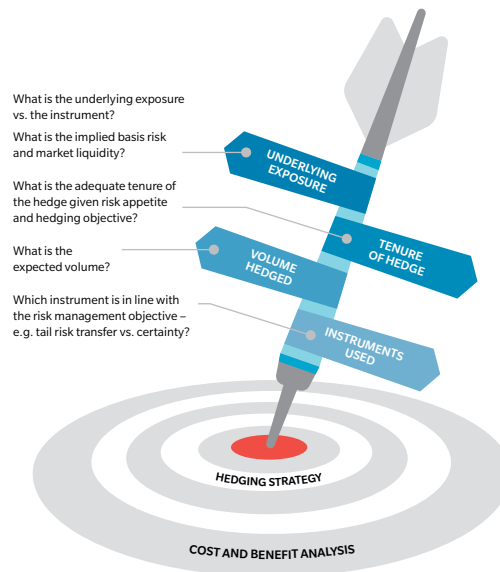
The execution of a hedge strategy requires the rational consideration of a number of key elements, while identifying various hedging dimensions and asking the right questions, as illustrated in Exhibit 10.

## LENDING BANKS' DISPROPORTIONATE EXPOSURE

Commercial banks could also be exposed to overleveraged O&G companies that are not supported by a corresponding loss loan provision. Under the Monetary Authority of Singapore rules, Singaporean banks must always maintain a general provision of at least 1 percent of loans and receivables, after accounting for collateral and deducting any specific provisions made.<sup>35</sup> In the case of the recent Swiber example, it was reported that the banks involved had not made full allowance for their exposures; no more than half of the total loan amounts are recovered and the remaining are either written off through specific or general provisions.

Non-performing loans and provisions could also increase due to the lacklustre performance of the O&G sector, and companies with notes maturing in 2016-18 could be at higher risk of default. Generally, banks need to set aside larger amounts of capital to cover potential losses tied to energy companies, a trend anticipated to continue as higher rates of potential loan defaults and bankruptcies among O&G companies are expected.

**EXHIBIT 10: DIMENSIONS TO HEDGING STRATEGY AND KEY ELEMENT CONSIDERATIONS**



Sources Oliver Wyman 2016, Jet Fuel Price Risk Management. APRC analysis

<sup>35</sup> See "DBS says Swiber had no overdue payments with it".

Available at: <http://www.businesstimes.com.sg/companies-markets/dbs-says-swiber-had-no-overdue-payments-with-it>

## CONTAGION EFFECTS AND INCREASED COMPETITION FOR INSURERS

Reduction in activities by upstream companies, their corresponding service contractors and suppliers have had downward effects on the energy insurance market as significantly lower risk premiums lead to more competition amongst insurers and reinsurers.

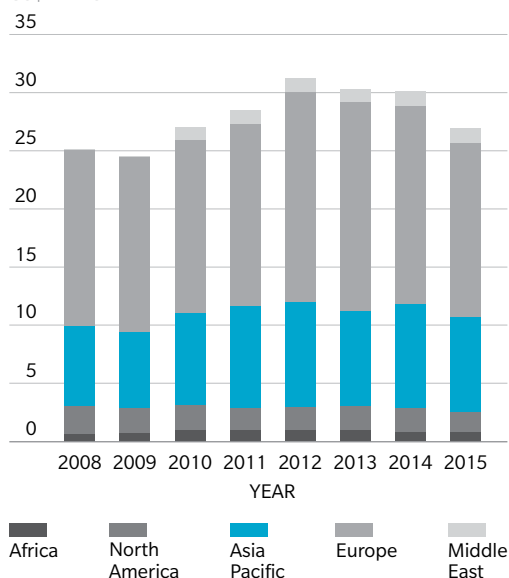
As energy firms re-strategize in response to the low prices, operators across the O&G sector are also cancelling, scaling down, or delaying projects indefinitely. The reduction in activity has pushed down risk exposure and associated premiums due to lower drilling activities, construction projects, maritime transportation volumes, coastal trades and port operations in the shipbuilding industry.

According to a global marine insurance report by IUMI on the offshore energy outlook, substantial premium decline since 2012 is likely to continue into 2017 (Exhibit 11).<sup>36</sup> The global marine insurance market in 2015 fell 11 percent, mostly driven by downward pressures in developed regions such as North America (-15 percent) and Europe (-12 percent), while APAC marine insurance premiums experienced a relatively modest 9 percent decline (from \$8.9 billion in 2014 to \$8.1 billion in 2015).<sup>37</sup>

Marine insurers, both globally and regionally, will need to adapt to a permanent change in the *trade intensity of production*, which will affect long-term marine insurance demand and drive uncertainty with respect to marine premiums.

### EXHIBIT 11: REGIONAL COMPARISON OF TOTAL MARINE INSURANCE PREMIUMS FROM 2010 TO 2015, INCLUDING HULL, TRANSPORT/CARGO, MARINE LIABILITY AND OFFSHORE ENERGY

MARINE INSURANCE PREMIUM BY REGION  
US\$ BILLION



Sources IUMI Statistics, global premiums by country, Global Marine Insurance Report 2016

<sup>36</sup> Global Marine Insurance Report prepared for the IUMI 2016 Geneva Conference. 18-21 September 2016

<sup>37</sup> See "IUMI's Global Premiums by country".

Available at: <http://www.iumi.com/index.php/committees/facts-a-figures-committee/statistics>

## INVESTORS AND SHAREHOLDERS

### RENEWABLES INVESTMENT AND SHAREHOLDERS' CHANGING VALUES

Shifting investor demands and fast-changing market perception towards traditional fossil fuel have been accelerating the growth in renewables. Observations made by IEA have showed that in 2014 and 2015, investments originally made in the traditional oil sector have been channelled into clean energy projects and technologies. Renewable energy infrastructure is receiving particular attention within the energy sector, catalyzed by growing numbers of climate-related regulations such as intergovernmental commitments under the 2015 COP21 Paris Agreement and CO<sub>2</sub> reduction targets, leading to increasing divestments from fossil fuels.

For example, Norway's Government Pension Fund Global (GPFG), which is the world's largest sovereign wealth fund with assets of around \$900 billion and is founded upon the country's rich O&G wealth, has sold off \$8 billion worth of coal investments in total.<sup>38</sup> It is the largest fossil fuel divestment to date, and has affected 122 coal companies across the world, including Reliance Power and Tata Power in India, as well as China Coal Energy, China Shenhua Energy, and Yanzhou Coal Mining, among many others in Asia.<sup>39</sup>

Taking a risk-based approach, GPFG makes strategic decisions to exit sectors where it perceives elevated levels of risks to its investments in the long-term. In addition to coal, which is increasingly being regarded as a stranded asset, or "unburnable fuel", GPFG has also divested from over 50 firms for their unsustainable deforestation practices and excessive greenhouse emissions, including palm oil plantations in Malaysia and companies in the pulp and paper industry from Singapore.

According to BlackRock, a global asset manager, financial fiduciaries and investors are now making decisions on where to invest based on considerations relating to climate impacts, in addition to likely returns.<sup>40</sup> It is also becoming increasingly clear that shareholders are taking a more active interest in the future of stranded carbon assets. Oil companies will need to heed investors' concerns and shareholders' changing values before committing to future production that may not align with key investors' strategies or generate the potential returns from this fast-changing and highly volatile industry.

<sup>38</sup> See "Norway's pension fund to divest \$8bn from coal".

Available at: <https://www.theguardian.com/environment/2015/jun/05/norways-pension-fund-to-divest-8bn-from-coal-a-new-analysis-shows>

<sup>39</sup> See "Norway's oil fund jettisons coal-linked investments".

Available at: <https://www.ft.com/content/e2e0fb40-022f-11e6-9cc4-27926f2b110c>

<sup>40</sup> See "Adapting portfolios to climate change".

Available at: <https://www.blackrock.com/investing/literature/whitepaper/bii-climate-change-2016-us.pdf>

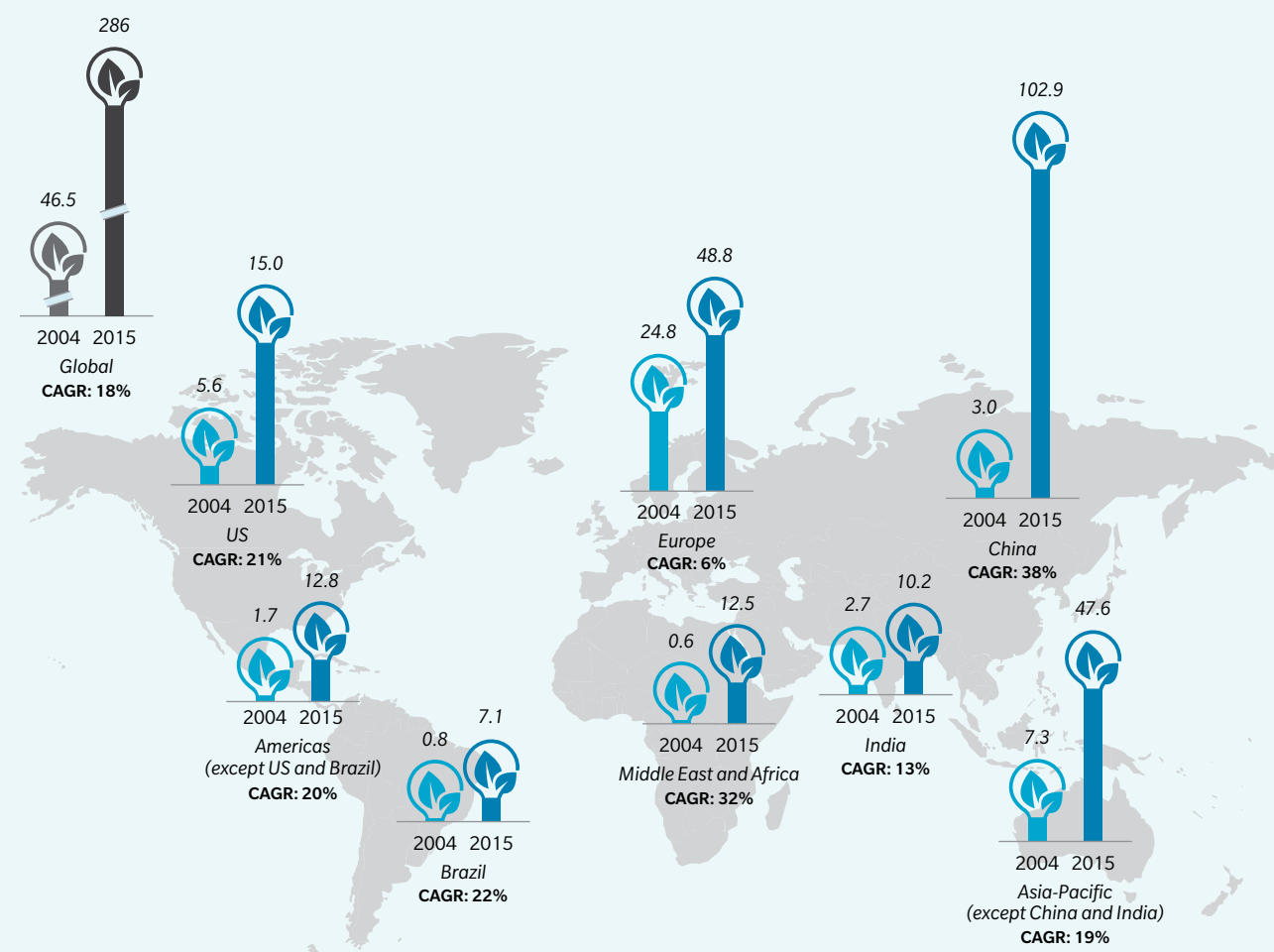
## FUNDAMENTAL SHIFT TOWARDS RENEWABLES INFRASTRUCTURE MARKET

One of the five key focus areas to achieving the goals of security, equity, and sustainability on the energy trilemma is to decarbonize the energy sector. According to the 2016 World Energy Trilemma report,<sup>41</sup> transforming into a low-carbon economy demands a broad policy package, which typically includes carbon pricing, and incentivizing low-carbon and/or carbon mitigating technologies for deployment.

Globally, it is found that the renewable energy infrastructure market was valued at \$285.6 billion in 2015 and has been growing steadily at a compounded annual growth rate of 18 percent, a six-fold increase from 2004 (see Exhibit 12).<sup>42</sup> Total new investments in renewables have also been more than double the amount invested into new coal and gas generation, suggesting investors' preference to shift away from traditional fossil fuels, and the growing confidence in the renewables market.

### EXHIBIT 12: TOTAL GLOBAL RENEWABLE ENERGY INFRASTRUCTURE MARKET GREW SIX-FOLD OVER THE PAST DECADE

GLOBAL NEW INVESTMENTS IN RENEWABLE ENERGY BY GEOGRAPHY  
2004-2015, US\$ BILLIONS



Sources: APRC adapted UNEP, Bloomberg New Energy Finance data source

<sup>41</sup> World Energy Council/ Oliver Wyman, 2016. World Energy Trilemma Report 2016

<sup>42</sup> Finance, Bloomberg New Energy, 2016. Global trends in renewable energy investment 2016. UNEP Report

Breaking down the market by geography, it is clear that the accelerated growth in renewables investments stem from the APAC region. In particular, the stand-out contribution to the rise in investments comes from China, with new investments in renewables ballooning from \$3 billion in 2004 to more than \$100 billion in 2015, contributing more than a third of the world's total in 2015. In all, the APAC region, including India and China, invested \$160.7 billion in renewables in 2015 alone, making up more than half the share of global investment. Developed regions (US and Europe) also invested \$92.9 billion in 2015; although it was a more than three-fold increase from 2004, the collective amount was at its lowest record since 2009, which was heavily impacted by the 2008 GFC.

The transformational shift towards clean energy would be inconsequential without a corresponding decrease in traditional fuel usages. Since the ratification of the Paris Agreement, the Chinese government has implemented various energy policies such as putting in place immediate bans on new coal-fired power plants construction as well as instituting a reduction in thermal coal consumption. In 2015, coal consumption fell 3.7 percent in China, and net coal imports was cut by more than 30 percent compared to the previous year, down to 199 million tonnes.

Envoys from countries around the world – including oil-exporting countries such as the United Arab Emirates – have affirmed in the recent COP22 that the shift to a low-carbon economy is now “unstoppable” and warned that any country backing out of the Paris Agreement would miss out on major business opportunities.<sup>43</sup> These core commitments have provided a strong signal to companies, governments, and investors that countries will have to transform their energy mix to adapt to a relatively more carbon-constrained future.

With the long-term goal of net zero carbon emissions, policymakers must avoid decisions that would lock in high-emission trajectories and infrastructure investments that would otherwise be obsolete or stranded in a low-carbon economy.

<sup>43</sup> See “How Trump climate denial is catalyzing the world”.  
Available at: <http://www.bloomberg.com/news/articles/2016-11-19/how-trump-climate-denial-is-catalyzing-the-world-quicktake-q-a>

# SCENARIO ANALYSIS: ASIA'S EXPOSURE TO COMMODITY MARKET DEVELOPMENTS

To better illustrate how changes in the global oil market can impact Asia, this section uses the Global Economic Model (GEM), Oxford Economics' quarterly international econometric model, to simulate an alternative scenario for the world economy.<sup>44</sup> This allows an assessment of implications of key economic risks and opportunities at the macro level. An alternative outlook is modelled where a failure of the OPEC-Russia production agreement depresses oil prices and increases financial stress (particularly for commodity producers) over the next 24 months. Using the GEM, this "what-if" scenario is modelled, capturing the causes of lower oil prices and their impact, so as to quantitatively assess the implications of these economic risks and opportunities.

## OVERVIEW

Following a year of political surprises in the form of the US Presidential election result and Britain's vote to leave the European Union, the near-term economic outlook is shrouded by a cloud of uncertainty and apprehension. This uncertainty is built into the scenario analysis baseline projection for 2017 and 2018. Despite the recent OPEC-Russia agreement to cut production, oil prices remain similar to 2016 in the baseline. To illustrate the scope for prices to fall further and the associated impacts, an alternative scenario is modelled, where a failure of the OPEC-Russia supply agreement leads to a further fall in oil prices and heightens financial stress, particularly for commodity producers. In this alternative scenario, commodity producers are negatively affected. Oil importers benefit from lower fuel prices, but this is partially offset by the deterioration in financial conditions. The impact across the APAC region is varied, with oil producers like Malaysia, Indonesia and Australia experiencing the largest declines in GDP relative to the baseline.

44 For more details, see: <http://www.oxfordeconomics.com/forecasts-and-models/countries/scenario-analysis-and-modeling/global-economic-model/overview>

## BASELINE – OIL PRICES STAYING AROUND \$50 PER BARREL

Given recent developments, the baseline projection assesses the most likely outcome for the global economy. Recent economic trends indicate that the slow growth experienced since 2008 is here to stay; improvements in productivity have stagnated, and in many developed economies labor market participation rates have fallen substantially. As a result, our global growth outlook remains subdued relative to the past, with these negative supply side developments weighing down productive capacity in many countries. Unexpected electoral results have added uncertainty to economic prospects. Global GDP growth is expected to be 2.7 percent in 2017 and 2018.

Regionally, growth in APAC is forecast to be 4.3 percent in 2017 and 4.2 percent in 2018. Leading the pack, growth in India is expected to reach 7 percent in 2017 and 2018. In China, growth will remain robust but is likely to fall below 6.5 percent as policymakers change emphasis somewhat from growth to reining in financial risks. The Philippines will also perform well, with 6.1 percent in 2017 and 6 percent in 2018. Near-term prospects for Japan have improved slightly with GDP growth expected at 0.9 percent in 2017. Although the OPEC countries and Russia have agreed to production cuts in principle, there remains significant scepticism about whether they will be implemented. As a result, the baseline projects oil prices remaining around \$50/bbl in 2017, rising to \$53/bbl by the end of 2018.

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*We run the scenario against our November baseline, where oil prices recover to \$50 a barrel in 2017*

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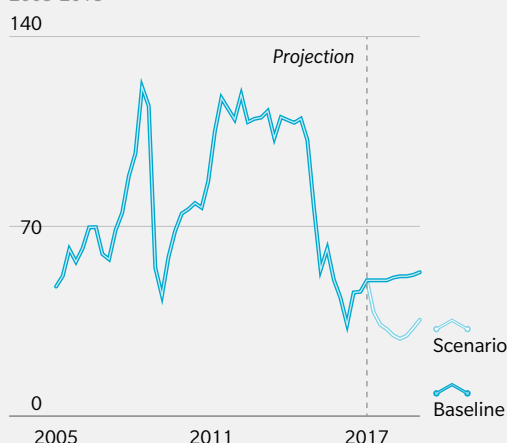
## SCENARIO – OIL PRICES FALLING TO A LOW OF \$28 PER BARREL

Although the baseline (most likely) outcome calls for fairly subdued growth, there remains considerable downside risk. We model one possible alternative scenario, where a failure of the OPEC-Russia supply agreement depresses oil prices (as a result of increased supply) and heightens financial tensions, particularly for oil producers. Commodity prices across the board are forecasted to be lower than in the baseline, weighed down by weaker oil prices and the negative growth impact of worsening financial conditions.

While consumers globally receive a boost to their incomes as fuel prices fall, the decline of oil prices to even lower levels adds to existing strains on many emerging market commodity producers. Against the backdrop of inadequate fiscal buffers, some oil exporting countries are forced to cut back on fiscal spending in the face of lower revenues. Brent crude fails to recover in line with the baseline and is assumed to reach a low of \$28/bbl in 2018.

### EXHIBIT 13: HISTORICAL AND PROJECTION OF WORLD OIL PRICE

QUARTERLY PRICE IN US\$ PER BARREL  
2005-2018



**Note** Oil prices drop to \$28/bbl in 2018. Prices are expected to recover, as the exit of higher cost producers from the industry weighs on global supply and oil price weakness stimulates increased global demand

**Sources** Oxford Economics/Haver Analytics

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*The unravelling of the OPEC-Russia supply agreement pushes prices down and hits financial markets*

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The impact is also felt in some advanced economies, including the US. Although oil prices have recovered somewhat over the last 12 months many shale producers – with a very high level of leverage and dependence on the renewal of bank funding – still appear vulnerable. In the scenario, the weakness in commodity markets spills over to financial markets: equity prices are reassessed; spreads on high-yield energy debt increase; and high-yield strains spill over to investment-grade credit, including through a renewed wave of M&A activity in the energy sector. That translates into a higher cost of borrowing across corporates and slower investment in the US. The increase in financial stress offsets the gains from lower oil prices, and as a result global growth is similar to the baseline. But this masks imbalances between countries, with commodity exports seeing activity weaken sharply relative to commodity importers.

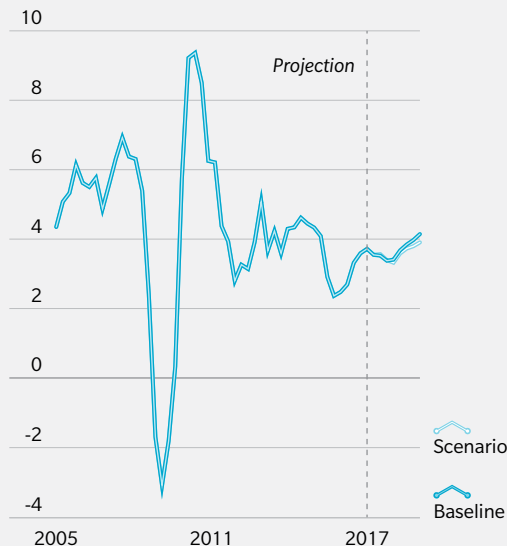
## ECONOMIC IMPACTS ON ASIA

The impact across the APAC region is forecasted to be mixed. Commodity producers are particularly hard hit, with a strong initial impact on Malaysia, Indonesia and Australia in 2017. By 2018, Malaysia (the largest oil exporter in the region) suffers a 0.7 percent decline in GDP relative to baseline. For Indonesia and Australia, large exporters of commodities like coal, the level of GDP falls by up to 0.3 percent below baseline in 2018.

*Commodity exporters in Asia are most affected*

**EXHIBIT 14: HISTORICAL AND PROJECTION OF ASIA-PACIFIC GDP GROWTH RATE**

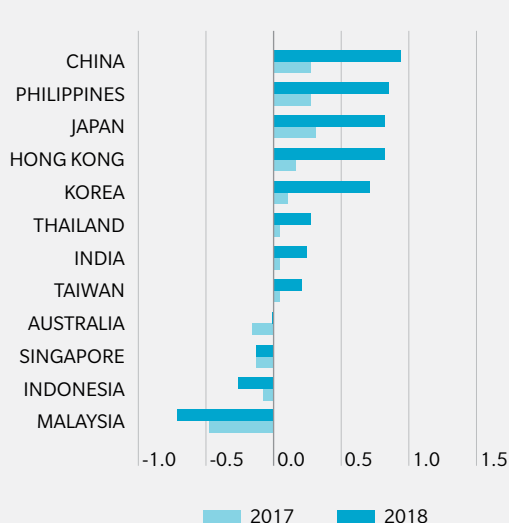
QUARTERLY GROWTH RATE  
% Y-O-Y



**Note** Global growth falls slightly, weighed down by the US; the Asia-Pacific is broadly unchanged, with the negative impact on commodity producers offset by gains in oil importers  
**Sources** Oxford Economics/Haver Analytics

**EXHIBIT 15: PROJECTED ASIA-PACIFIC GDP**

DIFFERENCE BETWEEN BASELINE AND SCENARIO  
%

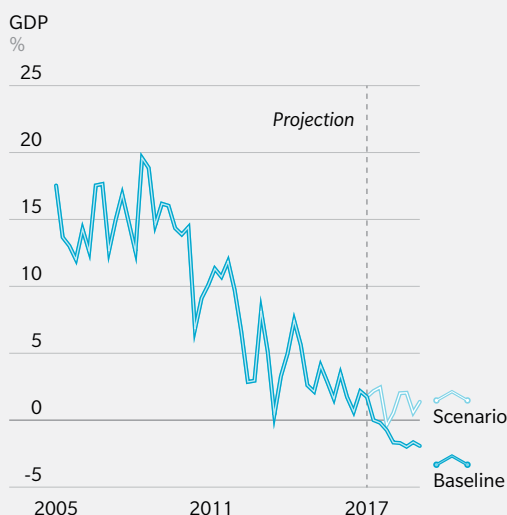


**Note** The impact on GDP varies. Exporters like Malaysia and Indonesia are hardest hit, while commodity importers see small gains as the positive impact from lower prices outweighs the negative impact of worsened financial conditions  
**Source** Oxford Economics

A hit to commodity export revenues directly impacts an economy's external position. We expect the current account of countries such as Malaysia and Indonesia – where commodities play a large role in the export basket – to deteriorate, increasing their vulnerability to global capital flows and market sentiment.

Meanwhile, commodity importers such as China and the Philippines see a small gain in GDP. This is a result of the conflicting impacts of the disruption in global financial markets and the positive impact of lower commodity prices; there is a boost to household real disposable incomes from cheaper fuel, but weaker demand in key markets such as the US and the impact of increased financial volatility dampens these gains.

#### EXHIBIT 16: HISTORICAL AND PROJECTED CURRENT ACCOUNT OF MALAYSIA



**Note** A reduction in commodity prices will reduce the trade surplus of countries such as Malaysia, which exports significant amounts of oil. This would entail a decline in the current account surplus and potentially shift the external position into deficit  
**Sources** Oxford Economics/Haver Analytics

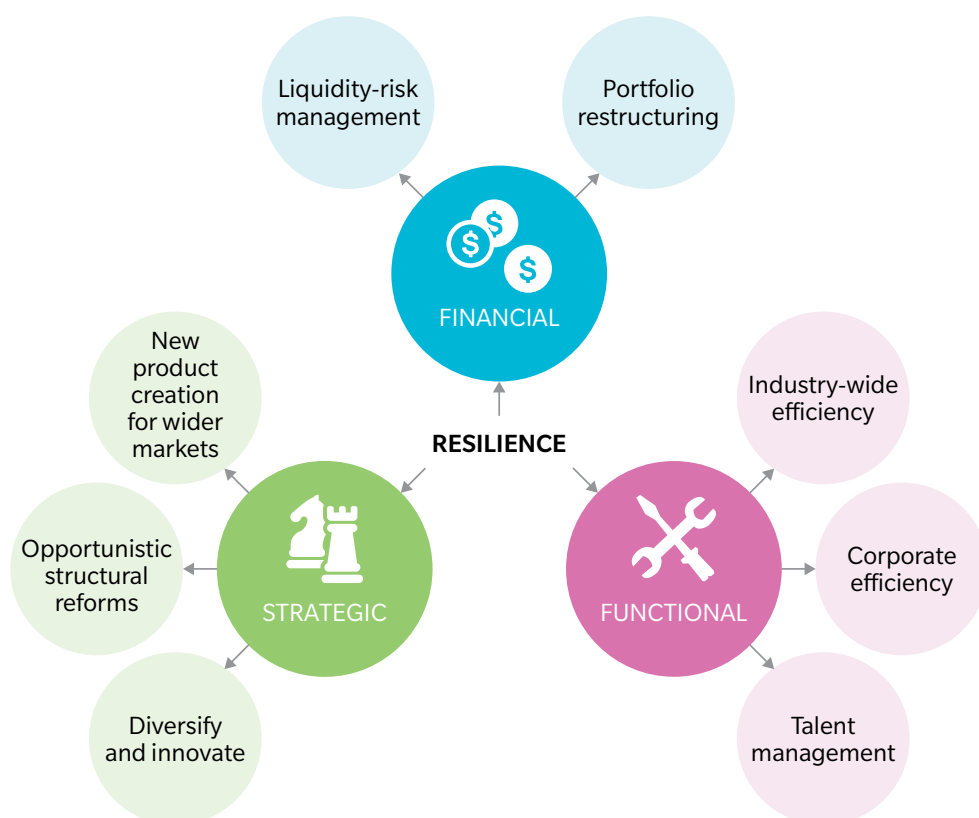
*The foregoing chapter was prepared by Oxford Economics and all views, opinions and analysis contained herein are solely those of Oxford Economics. Oxford Economics will provide all Services with reasonable skill and care. Because of the uncertainty of future events and circumstances and because the contents are based on data and information provided by third parties upon which Oxford Economics has relied in good faith in producing its work, Oxford Economics does not warrant that its forecasts, projections, advice, recommendations or the contents of any report, presentation or other document will be accurate or achievable.*

# RECOMMENDATIONS: BUILDING RESILIENCE IN A TIME OF OIL PRICE VOLATILITY

While the current industry consensus is that oil prices will stay low relative to the recent peaks of 2014 in the short-term, the mid- to long-term prospects remain uncertain. Prices may rebound due to the OPEC agreement to cut production, or due to rebalancing of the current oversupply of oil. However, it is also possible that the structural changes that have led to the current situation will persist in various forms for years to come. This uncertainty creates an incentive for all stakeholder groups identified in this report to build resilience to oil price uncertainty and potential volatility.

There are three major areas of focus to help stakeholders develop levels of corporate effectiveness, which will ensure they display the resiliency required to endure the unknown industry outlook.

EXHIBIT 17: THE STAKEHOLDER RESILIENCE FRAMEWORK



Sources APRC adapted UNEP, Bloomberg New Energy Finance data source

## FUNCTIONAL RESILIENCE

Producers must thoroughly understand their internal operational processes and systems in order to adapt to the changing environment. Key decision-makers, either in government or corporations, must be able to take bold actions such as to innovate, to overhaul systems and improve efficiency, or to halt operations indefinitely, even if it would require disrupting existing conventions or overcoming institutional inertia.

## TALENT MANAGEMENT

The low oil price environment has increased the prevalence of mergers, acquisitions, and bankruptcies. This has deprived the energy industry of experienced talent, as employees become displaced, retire, or find occupation in other industries. According to Mercer's latest O&G Talent Outlook Report 2016-2025,<sup>45</sup> energy executives should be acquiring a deeper understanding of the economic outlook and trends in the industry, associated impacts on the corporations, and a long-term viewpoint of how to manage constraints from the lens of human resource management. This report reveals that the aforementioned issues are commonly neglected by executives.

A consequence of the volatile nature of the O&G industry is that human resources (HR) processes in energy companies are required to be robust, such as giving the HR a greater role in cost management and setting priorities for recruiting and retaining talent. Organizations need to implement practical, long-term workforce strategies to manage the cyclical nature of the labor market, while simultaneously building the capabilities of the organization.

Although workforce reductions may be necessary to realize immediate cost savings, alternative decision-making could also balance the much needed savings without impeding the organization's ability to compete once the market recovers. Exhibit 18 highlights select processes that enable effective HR and business management given the current uncertain economic outlook.

45 Mercer 2016. Oil and Gas Talent Outlook Report 2016-2025

## EXHIBIT 18: A PRACTICAL PROCESS FOR DRIVING ROBUST AND EFFECTIVE CORE TALENT DECISION MAKING



Source: APRC adaptation of Mercer's publication

## CORPORATE EFFICIENCY

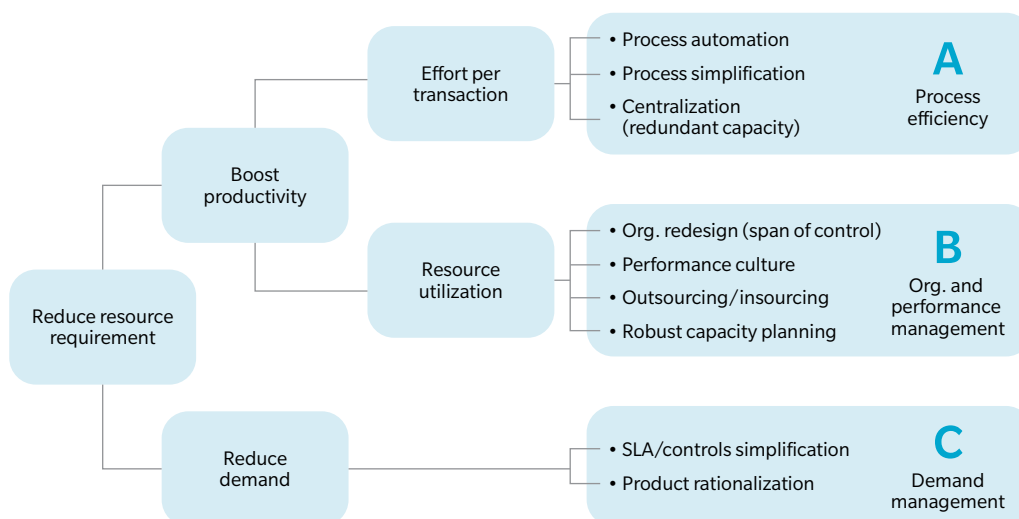
Enhancing operational efficiency has a direct improvement on productivity in energy companies, as it improves the cost-income ratio in a low oil price environment. Exhibit 19 illustrates an operational efficiency improvement framework developed by Oliver Wyman to define efficiency improvement measures to better maximize available resources while driving down operating costs.

The framework de-constructs operational efficiency in the form of an *efficiency issue tree* into its sub-components to identify typical *efficiency improvement levers*, which use key performance indicators to track operational efficiency improvement.

## EXHIBIT 19: OPERATIONAL EFFICIENCY IMPROVEMENT FRAMEWORK

### EFFICIENCY ISSUE TREE

### TYPICAL EFFICIENCY LEVERS



Source: APRC adaptation of Oliver Wyman's publication

More specifically, improving energy efficiency is also a key step in enhancing functional resilience against volatile oil prices by corporations, as it supports the push for oil companies to leverage enabling technologies. Digital technologies have been applied to historical datasets of oilfield performance over the past decade, where international oil companies (IOCs) have taken advantage of technology to increase production while lowering operating costs substantially.<sup>46</sup>

## INDUSTRY-WIDE EFFICIENCY

Efficiency at the regional level also allows oil-consuming economies to be less dependent on imported fuel, thereby increasing energy security for future economic growth. According to the World Energy Trilemma Report 2016,<sup>47</sup> Asia faces a burgeoning energy crisis on various fronts, including the necessity to provide equitable and modern energy access, and meeting rising demand from a narrow set of energy sources, traditionally dominated by the O&G supply.

There has been a discernable slowdown in the development of energy efficiency funds in the region.<sup>48</sup> The Asia-Pacific Economic Cooperation sub-fund on energy efficiency was established in 2009 with voluntary contributions of less than \$17.6 million.<sup>49</sup> This is dwarfed in comparison to the fossil fuel subsidies given by net oil-importing Asian countries, such as India, Indonesia, and Thailand, which are at least a thousand times larger in the year the fund was established.

<sup>46</sup> In this example cited, British Petroleum (BP) increased production by 8 percent while lowering operating costs by a quarter. See "BP Technology Outlook" Available at <http://www.bp.com/content/dam/bp/pdf/technology/bp-technology-outlook>

<sup>47</sup> World Energy Council/ Oliver Wyman, 2016. World Energy Trilemma Report 2016

<sup>48</sup> See "Green Building in Asia". Available at: <http://www.sustainalytics.com/green-building-asia>

<sup>49</sup> Japan: \$16.7 million; Chinese Taipei: \$500,000; United States: \$392,000.

For more details, visit: <http://www.apec.org/Projects/Funding-Sources.aspx#asfee>

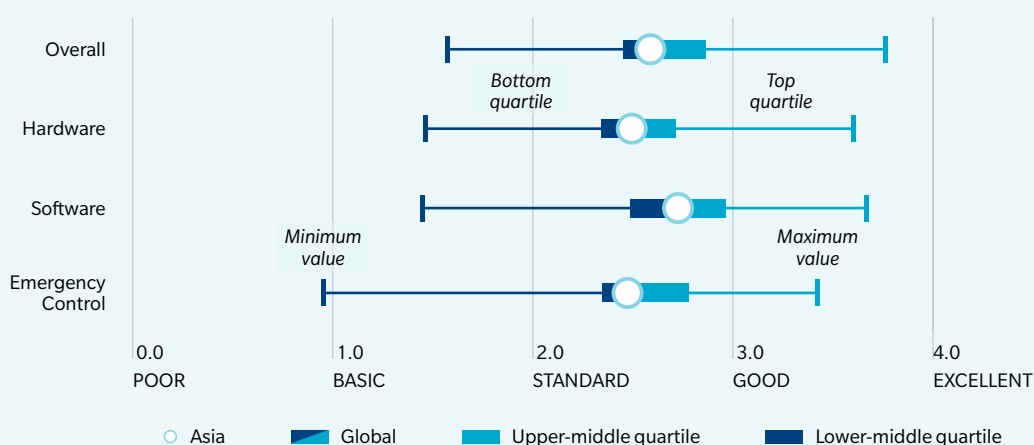
## MARSH RISK-QUALITY RANKING AND BENCHMARKING

Marsh conducts an annual risk ranking and benchmarking program to evaluate and compare the risk-quality of onshore energy downstream assets in major regions around the world, such as the Middle East, Asia, Western Europe and North America.

Exhibit 20 shows the overall benchmarking results, which indicates that Asian onshore energy assets scored a relatively “good” risk-quality position (within the range of 2.6 to 3.4), but still lag behind their global peers across a broad spectrum of risk-quality assessments; hardware (plant and equipment), software (management systems) and emergency control.

*“In general, Asia tends to lag slightly behind the global peer group in terms of software and emergency control... attributed to the diversity of the region, which has no common overarching legislation”,* explained Ian Henderson, Global Energy and Power Engineering Leader at Marsh.

**EXHIBIT 20: MARSH’S RISK RANKING AND BENCHMARKING THE ENERGY INDUSTRY  
OVERALL SCORES OF THE ASIAN REGION AS COMPARED TO THE GLOBAL INDUSTRY**



Source Marsh

Deeper analyses of the Asian database also reveal that the Southeast Asia (SEA) region scores relatively higher risk-quality benchmarking results than its peers in East Asia. The reasons are two-fold: first, energy sites, such as refineries, petrochemical and gas-processing plants, in the SEA region are younger; and second, there is greater influence of IOCs in these SEA sites, likely due to better knowledge transfer of global risk management best practices.

Based on the analyses, the benchmarking exercise can act as an operational resilience dial, bringing attention to the risk-quality of individual energy sites, before industry players finalize their business strategies. For example, energy companies are able to better rationalize capacity and assess the risks and opportunities involved by either upgrading existing plants (those with benchmark scores above “standard”), or shutting down obsolete plants that do not meet any of the minimum standards expected of current-day practice.

## FINANCIAL RESILIENCE

By understanding their operational processes and systems, stakeholders would be able to better identify and address critical financial risks through liquidity-risk management systems and portfolio restructuring, to ensure financial sustainability while adjusting to a volatile price environment.

### LIQUIDITY-RISK MANAGEMENT

According to an Oliver Wyman survey conducted in November 2015, many respondents surveyed from commodity-driven industrial corporations and asset-backed traders in the UK and EU revealed that they have basic liquidity-risk management practices in place.<sup>50</sup> The survey revealed that these businesses generally do not have a holistic understanding of the extent to which their organizations are at risk of funding shortfalls, or underestimate the processes needed to close the liquidity-risk gap.

The application of liquidity-risk management is crucial to businesses both directly and indirectly related to the O&G industry, as most are affected by oil price volatility. Oliver Wyman analysis of liquidity-risk management has identified five key factors (Exhibit 21) to prevent a funding shortfall, where Asian energy corporations may also recognize potential financing risks.

#### EXHIBIT 21: PRACTICES IN LIQUIDITY RISK MANAGEMENT TO PREVENT FUNDING SHORTFALLS

1	EXAMINE A BROADER RISK PERIMETER	Besides focusing solely on direct market risks, businesses should regularly evaluate the potential impact of credit risks or operational interruptions that could disrupt the company's ability to generate cash
2	FOCUS ON TAIL EVENTS	Stress-testing "what-if" scenarios that occur outside the company's regularly considered risk purview, so as to allow businesses to examine whether they have sufficient financial strength to weather an unlikely event with significant downside risk
3	EMPHASIZE THE IMPORTANCE OF TIME	Miscalculating how exposures could change over time, and applying liquidity obligations over a longer time horizon based on data analytics collected over the shorter term
4	EXERCISE PROFESSIONAL JUDGMENT ON FUNDING RISKS	Lack of consideration towards funding risks, such as irregular assessment of lenders' credibility and their associated liquidity issues, may surprise businesses with critical funding shortfalls
5	ENHANCE COLLABORATIVE OPERATIONS	Liquidity risk is complex and interconnected; the failure to communicate and collaborate across divisions can cause significant gaps in companies' liquidity-risk assessments

Source Oliver Wyman, 2016

<sup>50</sup> Oliver Wyman 2015. Liquidity Risk – Uncovering the hidden cause of corporate shocks



## PORTFOLIO RESTRUCTURING

The sharp and prolonged fall in the price of oil is also a timely reminder to investors that commodity prices are inherently unpredictable, and signals to key stakeholders that there are significant investment risks. One component of building financial resilience is the opportunity to restructure investment portfolios to diversify risks or hedge against low prices. There are a number of examples of portfolio restructuring in Asia. In early 2016, India's Axis Bank issued green bonds worth \$500 million, while China's Shanghai Pudong Development Bank raised \$5 billion in two separate deals,<sup>51</sup> indicating that Asian banks are increasingly active in green investment bond issuance.

## STRATEGIC RESILIENCE

Continuous success relies on the ability to dynamically reinvent strategic plans as circumstances change, while enhancing organizational capacity and capability.

## OPPORTUNISTIC STRUCTURAL REFORMS

The low oil price environment provides an opportunity for structural reforms to achieve long-term sustainability goals. Some oil-exporting nations have taken advantage of low prices to grow their strategic petroleum reserves (SPR). Access to cheaper energy is beneficial for the economic performance of emerging markets that are net importers; hence energy security has become one of the top priorities in light of future oil demand growth expectations. China imported a record volume of 7.5 million b/d as of Q3 2016, and its SPR is nearing its full capacity of 244.8 million barrels in the second phase expansion.<sup>52</sup> China plans for a third-phase SPR expansion that will be completed by 2020, and will have an undisclosed capacity.<sup>53</sup> The target goal is reserves equal to a buffer worth 90 days of import.

## DIVERSIFY AND INNOVATE

The immediate outlook for the global O&G industry is still filled with uncertainty. However, optimism within the industry returned briefly as a result of the recent production cut in the OPEC agreement also supported by Russia, which pushed up oil prices slightly. In light of the ongoing uncertainty, some Asian oil rig builders are beginning to diversify their core operations to ride out the energy market downturn. Keppel Offshore & Marine, for example, announced in early 2016 that it would be exploring projects in the non-O&G market, such as deep sea power plants and seawater desalination, where it would be able to continue utilizing its offshore expertise and stay afloat in the low price environment.<sup>54</sup>

51 See "Chinese banks lead 'green' bond boom". Available at <https://www.ft.com/content/9ee1a5f4-20d2-11e6-aa98-db1e01fab0c>

52 See "China's Strategic Petroleum Reserves nearly Full".

Available at <http://seekingalpha.com/article/3986205-chinas-strategic-petroleum-reserves-nearly-full>

53 See "China's surging crude oil imports for storage may ease".

Available at: <http://www.reuters.com/article/us-column-russell-crude-china-idUSKCN0Y910D>

54 See "World's top oil rig builder starts diversifying".

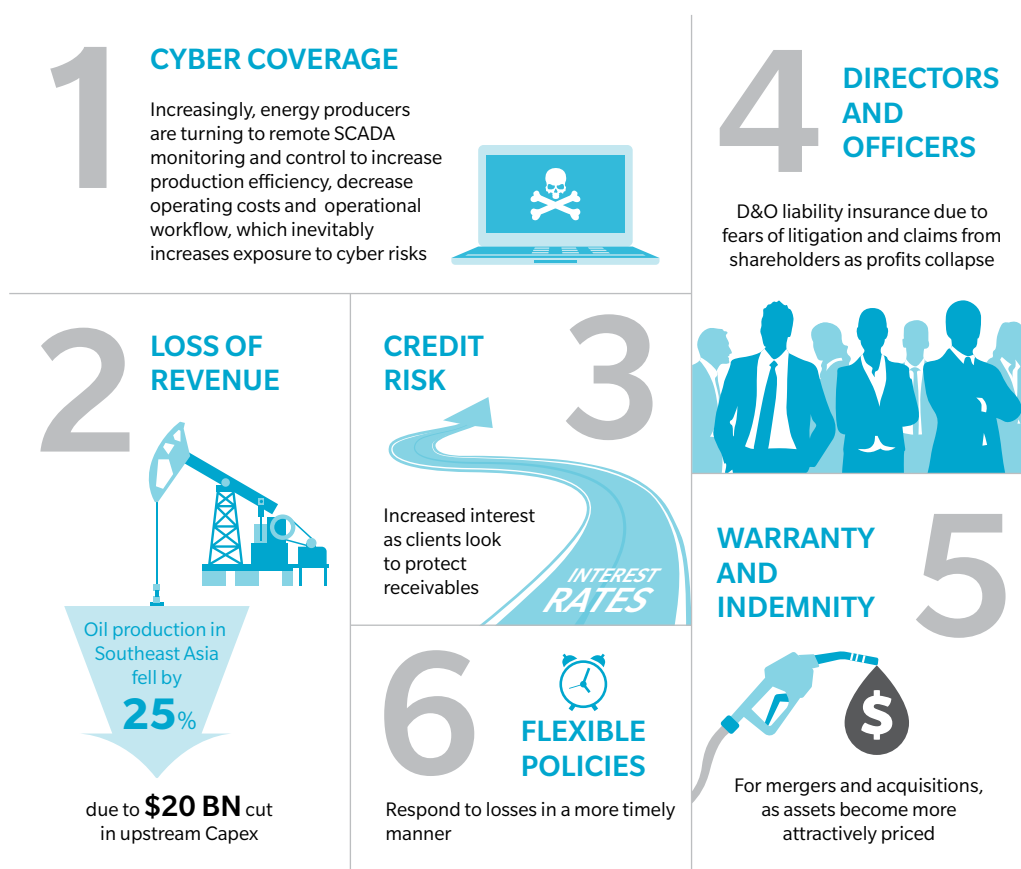
Available at: <http://www.fin24.com/Economy/worlds-top-oil-rig-builder-to-starts-diversifying-20160420>

## NEW PRODUCT CREATION FOR WIDER MARKETS

A recent report by Marsh shows a key challenge for stakeholders in the commercial insurance market is to be adaptable and responsive to the changing demands of energy companies.<sup>55</sup> Suggestions cited include offering lower retentions, offering higher limits, or providing wider coverage, which recognizes the continuing cost pressures faced by the energy industry.

The report also highlights a number of innovative risk management products marine insurers can offer to support energy companies more broadly, given the new industry realities (see Exhibit 22).

### EXHIBIT 22: BUYERS ARE ENCOURAGED TO EXPAND THE PROTECTION THEY HAVE IN PLACE AND TO TAKE ADVANTAGE OF NEW TYPES OF COVERAGE



Sources Marsh, APRC analysis

<sup>55</sup> Can Energy Firms Break the Historical Nexus, Marsh 2016

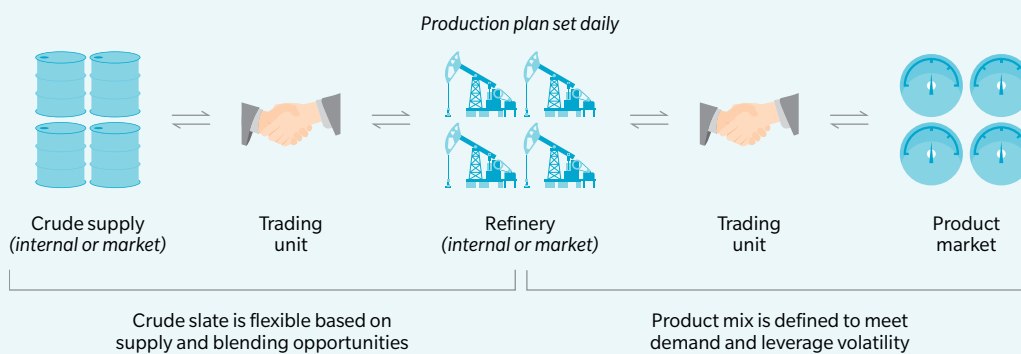
## THE INTEGRATED CRUDE OIL TRADING MODEL

The world is getting increasingly complex with higher liquidity and multiple supply and marketing partners, hence *integrated trading models* (Exhibit 23) are capable of helping capture additional value of up to 3 percent of the O&G industry, according to a recent Oliver Wyman analysis.

One major objective achieved by the integrated marketing and trading model is to match sophisticated counterparties in “procurement” and “sale” in international markets, while responding and adapting to market disruptions. The ability to gain flexibility to meet volatile demand presents the O&G industry with the opportunity to build strategic resilience. However, management will be required to address the accompanying challenges, such as complex risk management systems and potential “pull-back” from governments that may receive less than marginal gains.

### EXHIBIT 23: DIVERSIFYING BUSINESS MODEL TO CAPTURE ADDITIONAL MARKET VALUE

#### INTEGRATED TRADING MODEL



Source Oliver Wyman analysis

# CONCLUSION

The fall in oil prices has had varied effects on stakeholders in the region. For some it has had a negative impact and prompted a rethink of strategy leading to subsequent drastic action in certain quarters. However, many net oil importers have been presented with significant opportunities, and those who have acted quickly and effectively have benefited the most.

Technology is continuing to drive structural changes in the energy industry, and growth of the global renewables industry is continuing rapidly despite the prolonged period of low prices. This ongoing investment will gradually impact the demand for oil and other fossil fuels in the region, despite starting from a low base. Asian governments that incentivize renewable investments in the near term will find that, as a result, they are also building resilience against future oil price increases and offering new employment opportunities.

The oil industry itself has been scaling back on new investments, slashing contractor rates and trying to innovate to realize operational efficiency gains. The latter is integral to drive long-term competitive advantage, as contractors and suppliers who have been squeezed will simply turn the tables as soon as prices are higher.

All forecasts show an expectation that Asia's economic growth story will continue in the decades to follow, resulting in a rise in the demand for energy. This suggests that the region will continue to be susceptible to price volatility. Therefore, focusing on innovation, diversification and efficiency gains is a sensible strategy for all Asian stakeholders in light of the continued uncertainty in the oil industry expected in the future. However, it should be noted that history has a habit of repeating itself and there is precedent behind the oil industry adage – "the cure for low prices, is low prices".

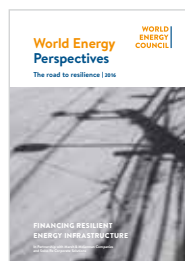
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With partners including Marsh and McLennan Companies, the World Energy Council's "The road to resilience" series provides decision makers with an encompassing understanding of the risks involved in financing resilient energy infrastructure.



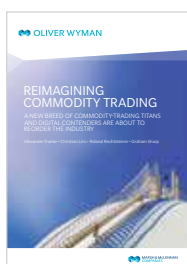
### BENCHMARKING THE ASIAN ENERGY INDUSTRY: STRENGTHS AND OPPORTUNITIES IN A RAPIDLY DEVELOPING MARKET

Marsh's risk ranking system provides an absolute measure of risk quality when compared against a defined set of criteria, while benchmarking determines the relative position of the region or industry to its peers.



### WORLD ENERGY TRILEMMA 2016

Prepared in partnership with global consultancy Oliver Wyman, along with the Marsh & McLennan Companies' Global Risk Center, this report aims to support policymakers in the complex task of translating the trilemma goals of energy security, energy equity and environmental sustainability, into implementation actions.



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Reimagining Commodity Trading is the fifth of a series of pieces of research produced by Oliver Wyman, which analyzes the changing dynamics that are redefining the commodity trading industry.



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In a recent Oliver Wyman survey, commodity-driven industrial conglomerates and asset-backed traders are asked about four critical liquidity-risk-management best practices.



### OIL AND GAS TALENT OUTLOOK 2016-2025: STRATEGIC PLANNING IN TIMES OF UNCERTAINTY

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### INVESTING IN A TIME OF CLIMATE CHANGE

Mercer's study on this topic established important foundations for investors, and its key findings still hold true. The study highlighted the importance of climate policies as a risk factor for investors, given their ability to incentivize meaningful changes in the energy sector.

To read the digital version of The Impact of Oil Prices on Asia publication, please visit [www.mmc.com/asia-pacific-risk-center.html](http://www.mmc.com/asia-pacific-risk-center.html)

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For more information, please email the team at [contactaprc@mmc.com](mailto:contactaprc@mmc.com).

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