



# Harvest Operations Corporation

1. Overview of KNOC

2. Overview of Harvest



**Strong Government Support and Strategic Importance to Korea's Energy Security**

**Well-diversified Portfolio**

**Disciplined Financial Management**

**Solid Access to Debt Capital Markets**

## 100% Owned by Korean Government

### KNOC at a Glance:

Description	<ul style="list-style-type: none"> <li>Special entity established under the Korea National Oil Corporation Act</li> <li>Engages primarily in <b>E&amp;P, Strategic Petroleum Reserve ("SPR") Storage and Fuel Retailing</b></li> </ul>
Policy Mandate	<ul style="list-style-type: none"> <li>Enhance <b>Korea's energy security</b></li> </ul>
Ownership	<ul style="list-style-type: none"> <li><b>100% directly owned by Korean government</b></li> </ul>
Key Government Support / Control Measures	<ul style="list-style-type: none"> <li><b>Continued financial support through capital contribution and access to policy loans</b></li> <li><b>Close supervision</b> on all KNOC activities</li> </ul>
Rating	<ul style="list-style-type: none"> <li><b>Aa2 (Stable)</b> by Moody's, <b>AA (Stable)</b> by S&amp;P, <b>AA- (Stable)</b> by Fitch</li> </ul>



*"KNOC is one of the most important GREs in Korea responsible for exploration, development and production of crude oil and natural gas and other policy roles."*

*Standard & Poor's Credit Opinion, November 29, 2016*

### Moody's

*"We believe that KNOC's strategic importance to the economy and critical policy role will continue in the medium term, thereby upholding the company's credit strength."*

*Moody's Credit Opinion, April 13, 2017*

## Key Milestones

## 1 Establish footprints

## Korea's Policy Initiatives

## 2 Build Reserves in Preparation for Emergencies

## 1980: Stockpiling Master Plan

**1983: Overseas Resources Development Business Act**

### 3 Secure Overseas Reserve and Resources

## 2008: KNOC Expansion Program



#### 4 Enhance Efficiency / Rationalize Assets

**2014:** 4<sup>th</sup> Stockpiling Master Plan, 2<sup>nd</sup> Energy Development Base Plan and 5<sup>th</sup> Overseas Resources Development Master Plan released

## 1970s

**1979:**  
Establishment of  
KNOC<sup>1</sup>



## 1980s - 1990s

**1984:** Constructed  
Doo Sung – semi-  
submersible rig

**1985:** Established  
Geoje stockpiling  
facility

**1988:** Discovered Korea's first natural gas in its continental shelf



**1998:** Discovered Donghae-1 gas field



## 2000s – early 2010s

**2000:** Discovered large oil reserve in Vietnam



**2004:** Began gas production in Donghae-1



**2008:** Acquired Ankor Energy

**2009: Acquired Harvest Energy**



**2010:** Acquired Dana Petroleum (“Dana”)

**2011:** Acquired stake in Eagle Ford assets from Anadarko

**2012:** Acquired assets from EP Energy

## Mid 2010s - Present

**2017e:** Production from Dana's Western Isles project



Source: Company data

<sup>1</sup> Under the name of Korea Petroleum Development Corporation

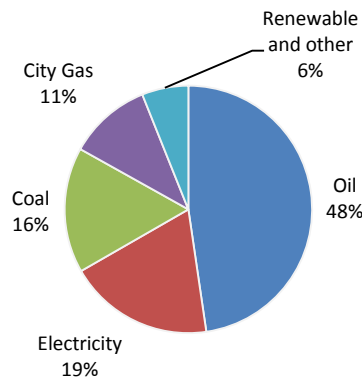
# Securing Stable Oil Supply as Korea's Top Priority

Korea is one of the largest consumers of oil in the world...

Ranking by Consumption<sup>1</sup>

1	US
2	China
3	Japan
4	India
5	Russia
6	Saudi Arabia
7	Brazil
8	Korea
9	Germany
10	Canada

Final Energy Consumption by Source<sup>2</sup>

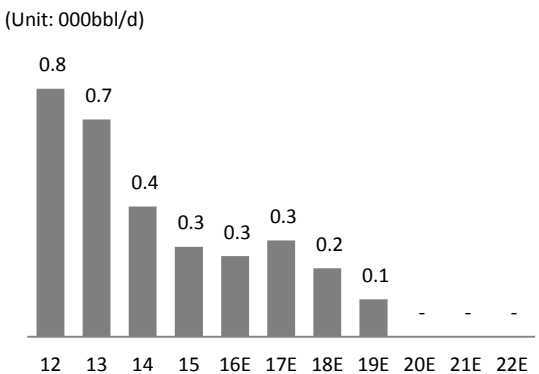


...but is only ranked #145 in terms of oil production...

Ranking by Production<sup>3</sup>

1	Saudi Arabia
2	Russia
3	US
4	Iraq
5	China
6	Canada
7	Iran
8	UAE
...	...
145	Korea

Oil Production Forecast<sup>3</sup>

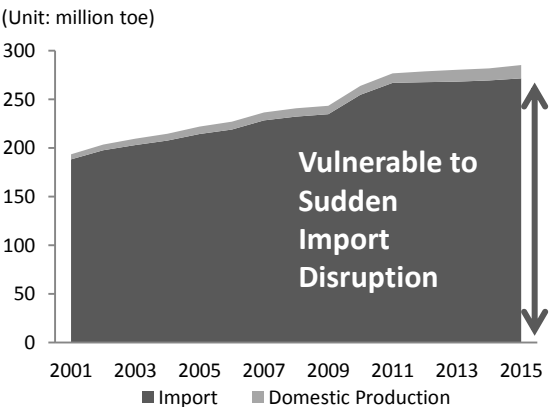


...as a result, Korea is one of the largest importers of oil

Ranking by Import Volume<sup>1</sup>

1	US
2	China
3	India
4	Japan
5	Korea
6	Germany
7	Spain
8	Italy
9	France
10	Netherlands

Total Energy Consumption<sup>4</sup>



KNOC is of Strategic Importance to Korea's Energy Security

<sup>1</sup> OPEC Annual Statistical Bulletin 2016; <sup>2</sup> Korea Energy Economic Institute (November 2016); <sup>3</sup> Wood Mackenzie, as of February 27, 2017; <sup>4</sup> Korean Statistical Information Services (KOSIS) database, as of February 27, 2017



## SPR Storage

*In preparation for:*

**short-term** supply disruption

*KNOC is required to:*

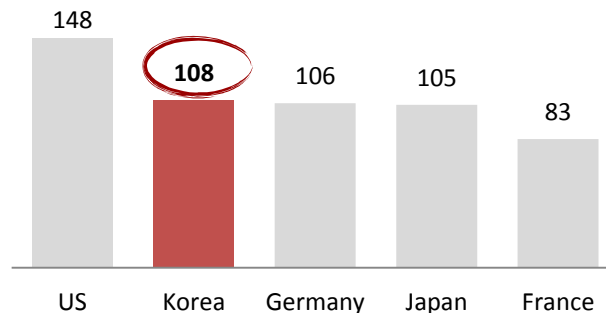
**stockpile** crude oil and petroleum products for immediate use

*in order to:*

**utilize SPR** (crude oil and petroleum products) to ensure market stability domestically or as a part of international cooperation

### Sufficient Reserves to Last 108 Days Without Imports

(Unit: days)



## E&P

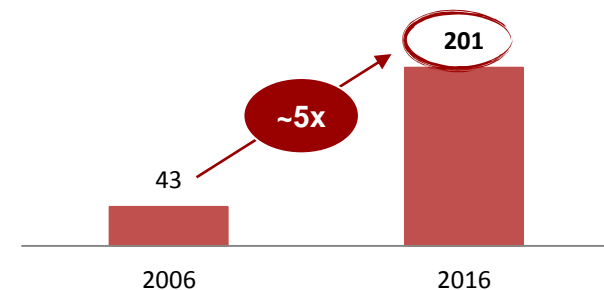
**prolonged** supply disruption

**secure direct ownership** in crude oil reserves / resources

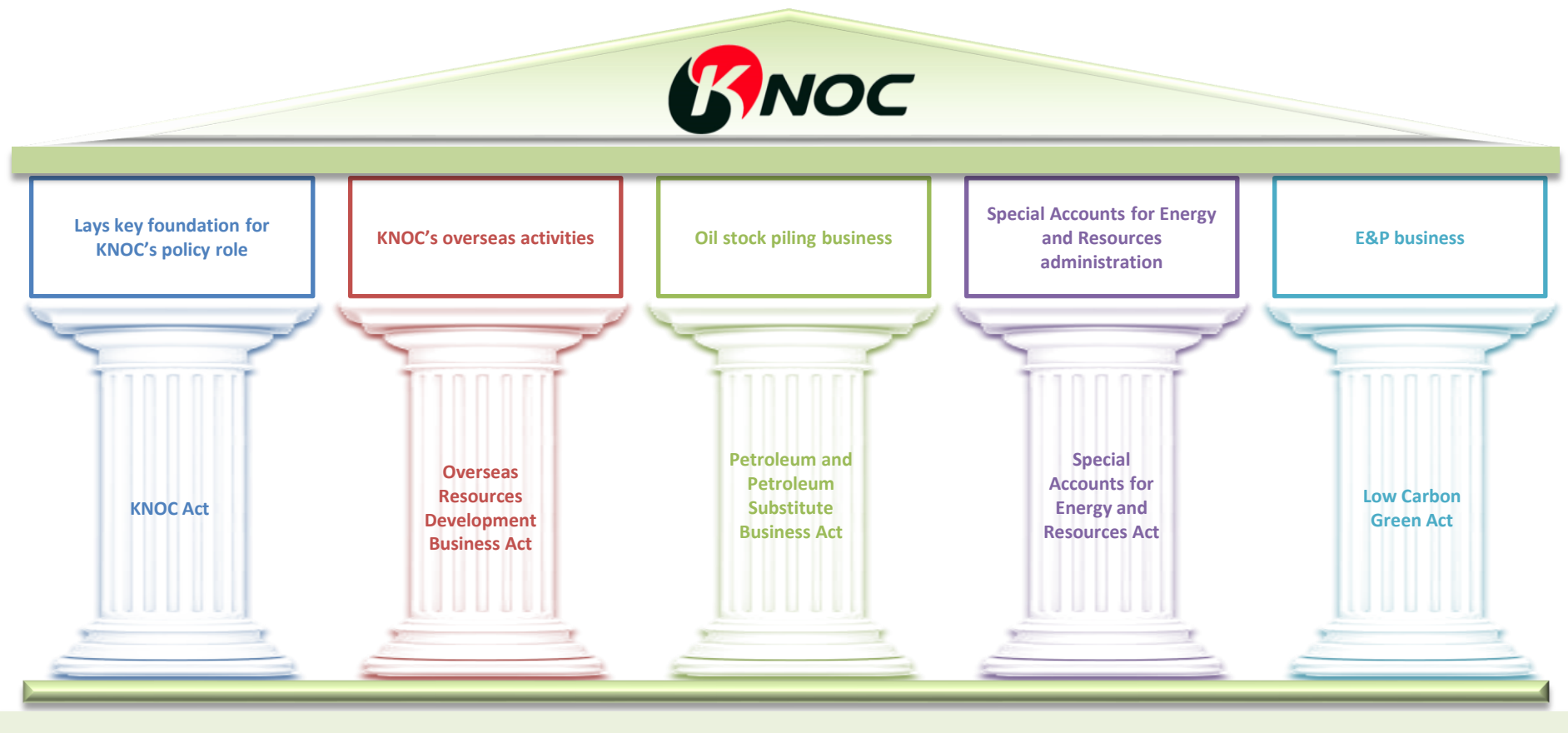
**directly import** to Korea crude oil production from its own reserves in need for additional crude oil supply

### Significant Increase in Daily Production

(Unit: mboe/d)







- Capital (Article 4)**

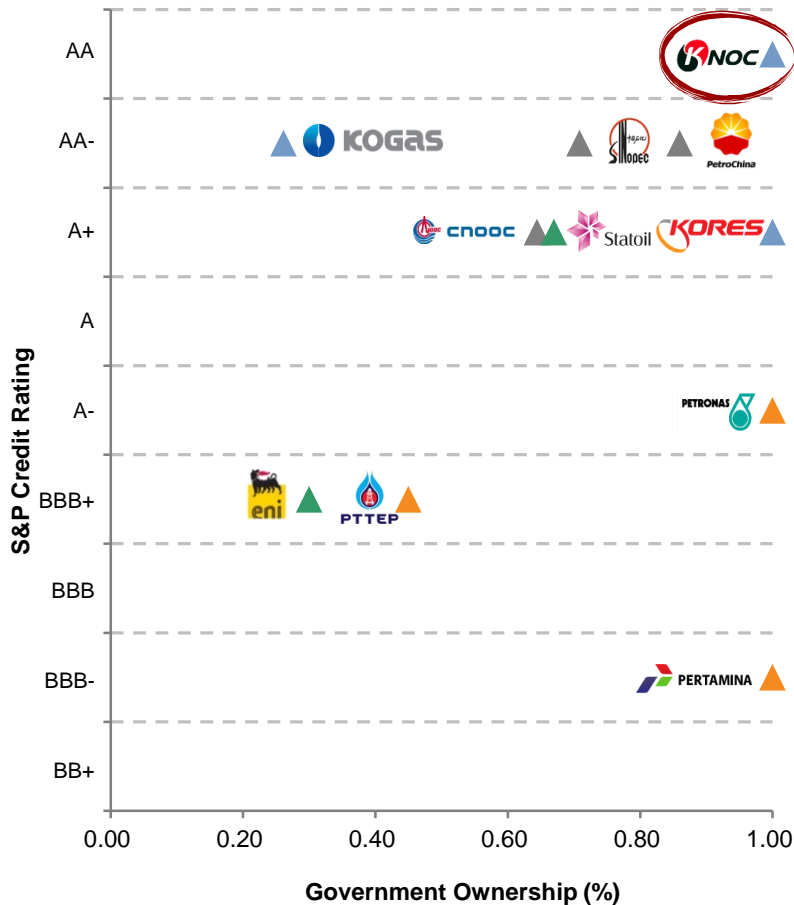
  - (1) The capital of the corporation shall be KRW13trn
  - (2) The capital mentioned in above paragraph (1) shall be contributed by the government
- Guarantee for Repayment (Article 14)**

  - The Government may guarantee the repayment of the principal and the interest of debentures issued by, and loans made to, the Corporation
- Subsidy (Article 15)**


































  - Within a scope of the budget, the Government may subsidize activities of the Corporation



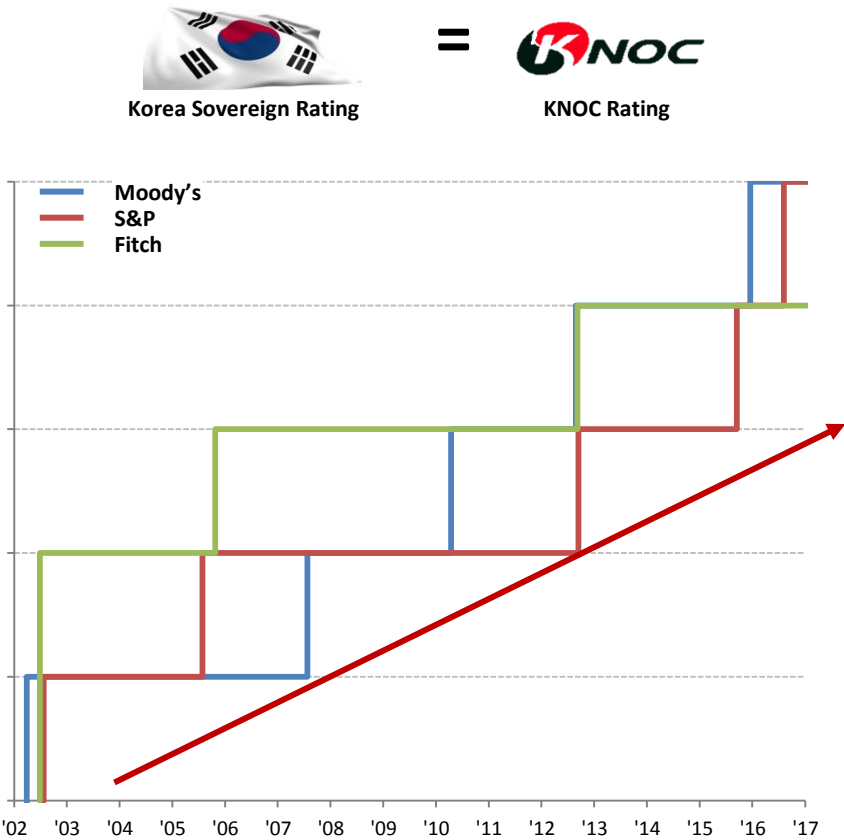
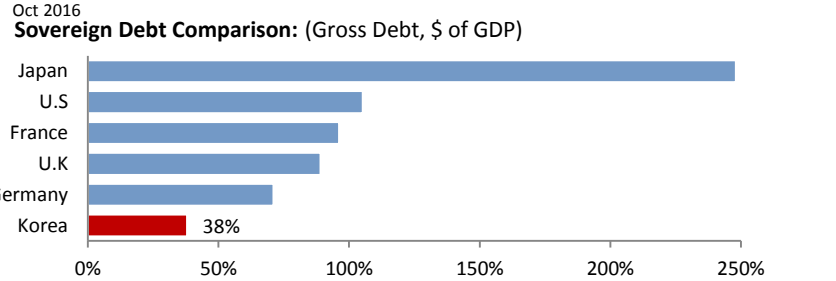
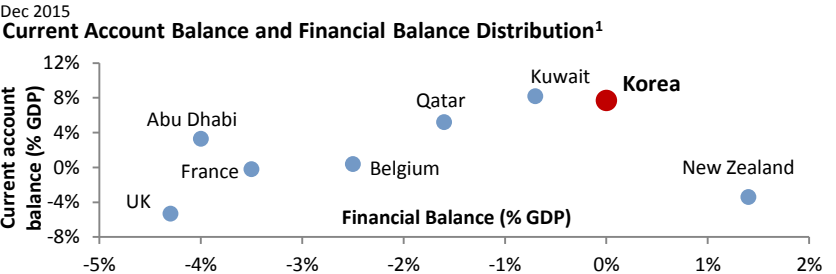
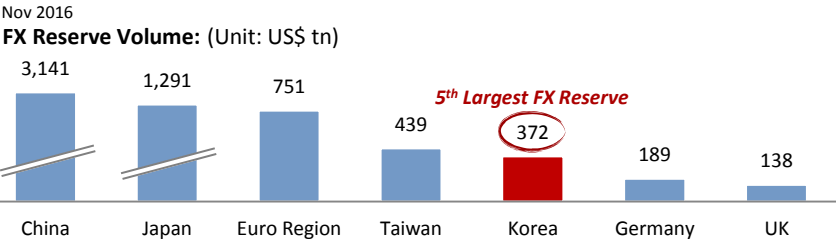
## Comparison with Peers



Source: Bloomberg, Moody's, S&P, as of June 1, 2017

Moody's		S&P Global		Nationality	Sovereign Rating (Moody's/S&P)	Gov't Ownership	Publicly Listed	
Rating	Outlook	Rating	Outlook					
Korean SOEs								
	Aa2	Stbl	AA	Stbl		Aa2/AA	 ROK Gov't 100%	<b>NO</b>
	Aa2	Stbl	AA-	Stbl		Aa2/AA	 Other s 74% ROK Gov't 26%	Yes
	A1	Stbl	A+	Stbl		Aa2/AA	 ROK Gov't 100%	No
Chinese NOCs								
	A1	Stbl	AA-	Neg		A1/AA-	 Other s 14% Gov't 86%	Yes
	A1	Stbl	AA-	Neg		A1/AA-	 Other s 29% Gov't 71%	Yes
	A1	Stbl	A+	Neg		A1/AA-	 Other s 36% Gov't 64%	Yes
Southeast Asian NOCs								
	A1	Stbl	A-	Stbl		A3/A-	 Gov't 100%	No
	Baa1	Stbl	BBB+	Stbl		Baa1/BBB+	 Other s 55% Gov't 45%	Yes
	Baa3	Pos	BBB-	Stbl		Baa3/BBB-	 Gov't 100%	No
European NOCs								
	Aa3	Stbl	A+	Stbl		Aaa/AAA	 Other s 33% Gov't 67%	Yes
	Baa1	Stbl	BBB+	Stbl		Baa2/BBB-	 Other s 70% Gov't 30%	Yes

## Strong Fundamentals of the Korean Economy:



Source: Bank of Korea, Bloomberg, OECD Economic Outlook, IMF Fiscal Monitor Database, Moody's, Standard & Poor's, Fitch  
<sup>1</sup> Countries with credit ratings of AA selected as peer evaluation

## E&P, SPR Storage and Fuel Retailing



### E&P




“Secure Stable Oil and Gas Supply”

Production

201 mboe/d<sup>1</sup>

Net 2P Reserves

1,416 mmboe<sup>1</sup>



### Strategic Petroleum Reserve Storage

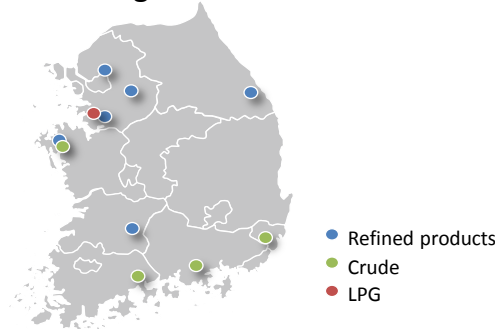


“Maintain SPR to Mitigate Any Supply Disruption”

Reserves of  
**94.3** mmboe<sup>1</sup>

Capacity of  
**146.0** mmboe

### Oil Storage Facilities





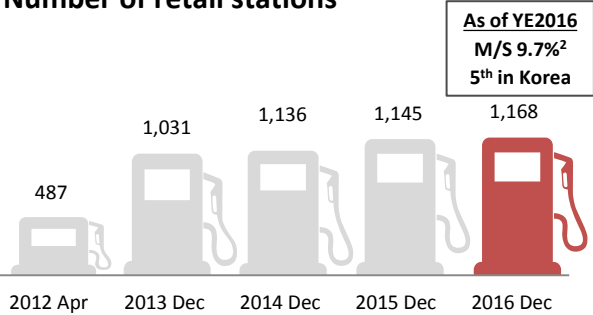
### Fuel Retailing



“Promote Fair Competition and Stabilize Fuel Costs”

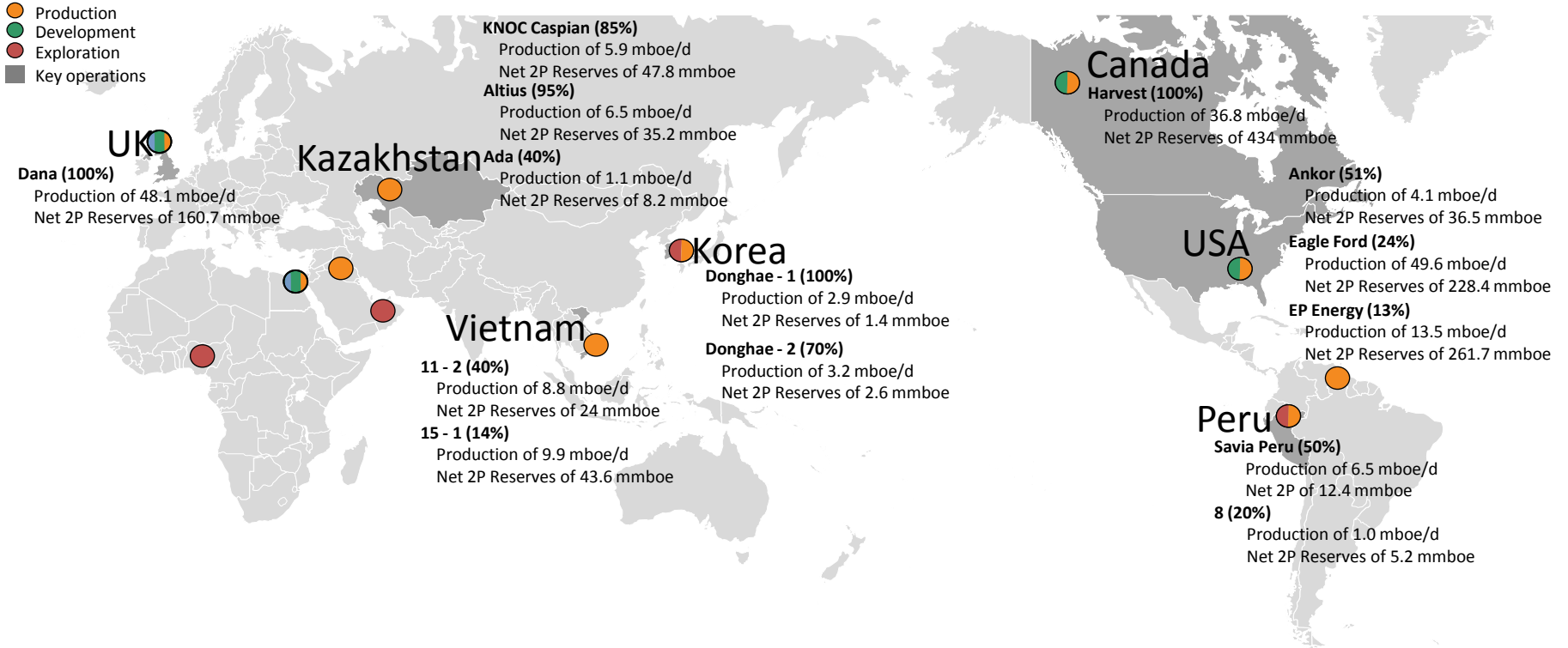
**1,168** stations

### Number of retail stations



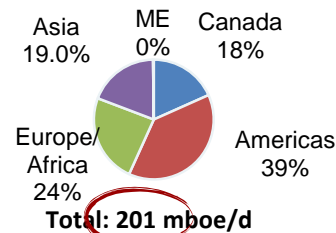
Source: Company data as of December 31, 2016  
<sup>1</sup> Company estimate; <sup>2</sup> Based on the number of retail stations

## KNOC's Global Footprint

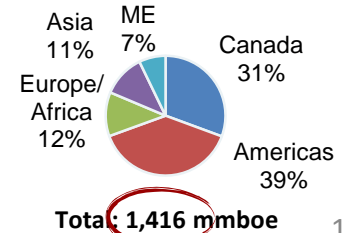


**Harvest (Canada) is the largest KNOC subsidiary in terms of 2P reserves and the third largest in terms of production**

### Daily Production by Region<sup>1</sup>

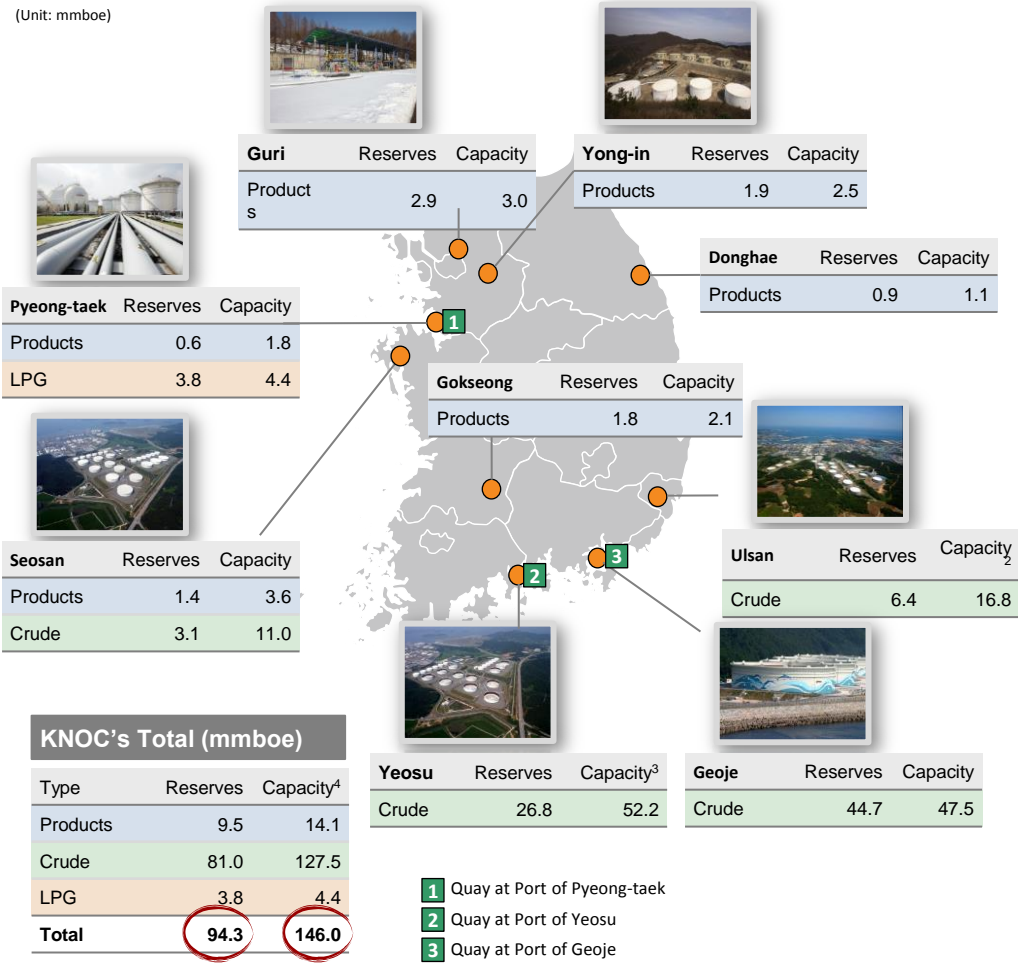


### 2P Reserve by Region<sup>1</sup>



## KNOC's SPR Storage Facilities<sup>1</sup>

(Unit: mmboe)



## KNOC's SPR Storage Operations

### Flexibility

- Storage facilities in 9 locations across the country
- Access points diversified across 3 quays

### Safety

- 16 consecutive years of operation without accident or serious injury

### Technical expertise

- O&M technology acknowledged worldwide for its excellence
- Exported and transferred to Vietnam's PVOS

### International cooperation

- Joint-stockpiling effort with other NOCs
- Profit-making trading business since 1999

Source: Company data as of December 31, 2016  
<sup>1</sup> Company estimate; <sup>2</sup> Underground storage facilities of 6.5 mmboe. Aboveground storage facilities being replaced by underground storage facilities of 10.3 mmboe of crude, which are currently under construction and expected to be completed by Dec 2020; <sup>3</sup> Aboveground storage facilities of 2.5 mmboe crude are under construction, with expected completion by Sep 2017; <sup>4</sup> 133.2 mmboe current capacity, 12.8 mmboe under construction

# Stabilize Retail Gasoline Prices

## Economical Gas Station (“EGS”)



Policy Objective

- EGS was launched in 2011 with the Government’s goal of promoting fair competition in Korea’s oil market
- Government aims to increase market share of EGS up to 10%



KNOC's Role

- KNOC is one of the main suppliers, purchasing gasoline from refiners and utilizing its stockpile facilities



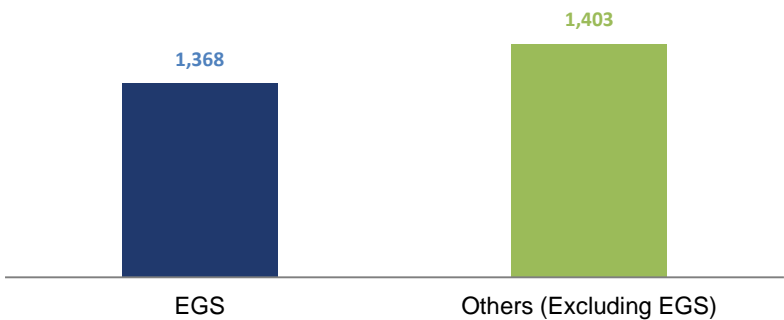
Impact On Market

- Spark competition in oligopoly market dominated by four majors
- Supply lower gasoline prices to Korean public



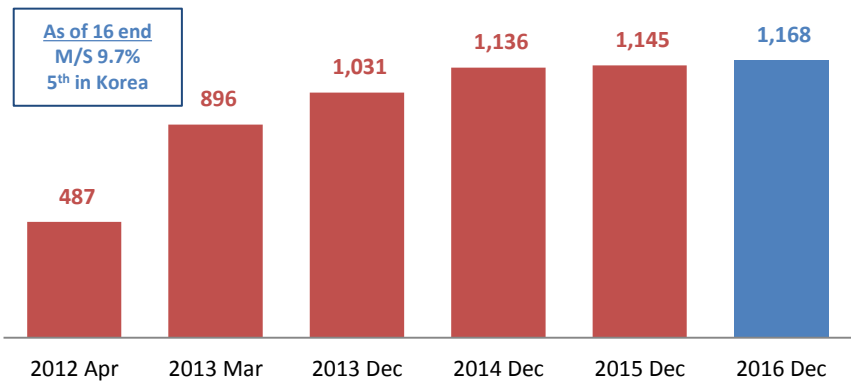
## Supplying Lower Gasoline Prices to the Korean Public<sup>1</sup>

(Unit: KRW)



## Increasing Market Share in Korea’s Gasoline Distribution Market

(Unit: No of Gas Stations)



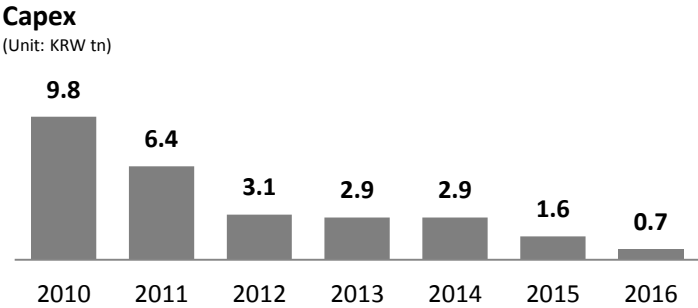
Source : Opinet, Average nationwide gasoline price per liter

## Asset Rationalization

- Attract investors to our core assets (e.g. securitization of Eagle Ford assets), while achieving deleverage
- Realign portfolio by selling non-core E&P assets
- Monetize non-E&P assets (e.g. headquarter office sale and lease back)

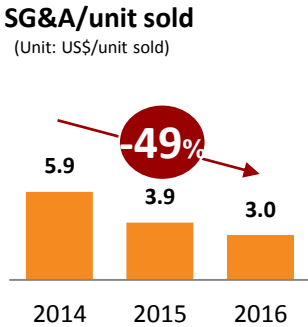
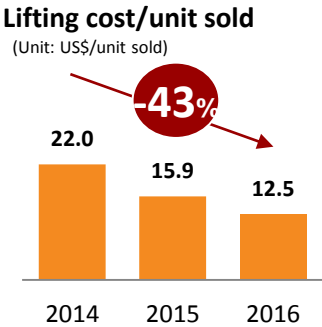
## Capex Reduction

- Prioritize capex program by applying more stringent criteria for capex decision
- 54% y-o-y reduction from 2015 to 2016



## Cost Saving

- Continue to streamline lifting cost and SG&A
- Seek leaner organization / greater per head labor efficiency




Source: Company data



## KNOC's Supervision Framework

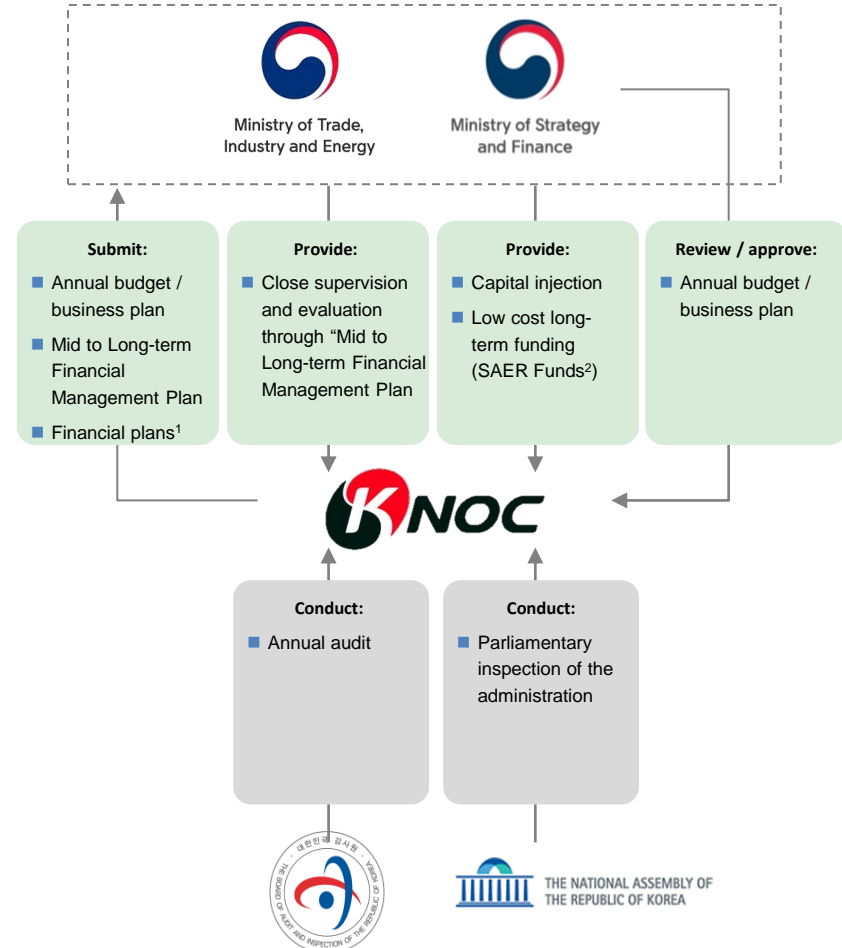
### Government Supervision & Control

	Overall Supervision	Financial Control	Appointment of President and Directors	Audit
 <b>Ministry of Trade, Industry &amp; Energy</b>	✓	✓		
 <b>Ministry of Strategy and Finance</b>		✓	✓	
 <b>The Blue House (President of Korea)</b>			✓	
 <b>The Board of Audit and Inspection</b>				✓
 <b>National Assembly of the Republic of Korea</b>				✓

Source: Company data

<sup>1</sup> On an annual basis; <sup>2</sup> Special Accounts for Energy and Resources (Policy funding for energy related projects)

### Close Integration with the Government



(Unit: US\$ mm)	2013 <sup>1</sup>	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>
<b>Income Statement</b>				
Revenue	4,808	4,138	3,034	2,094
<b>EBITDA</b>	2,548	2,104	1,071	745
<b>EBITDA Margin (%)</b>	53.0%	50.8%	35.3%	35.6%
<b>Operating Income</b>	1,071	449	(393)	(208)
<b>Balance Sheet</b>				
Current Assets	2,703	1,769	1,570	1,332
Non-current Assets	24,588	22,696	18,230	16,928
Total Assets	27,291	24,464	19,800	18,260
<b>Total Debt</b>	11,292	10,932	12,161	12,010
<b>Total Liabilities</b>	17,546	16,850	16,220	15,357
<b>Total Shareholders' Equity</b>	9,745	7,614	3,580	2,903
Total Liabilities and Shareholders' Equity	27,291	24,464	19,800	18,260

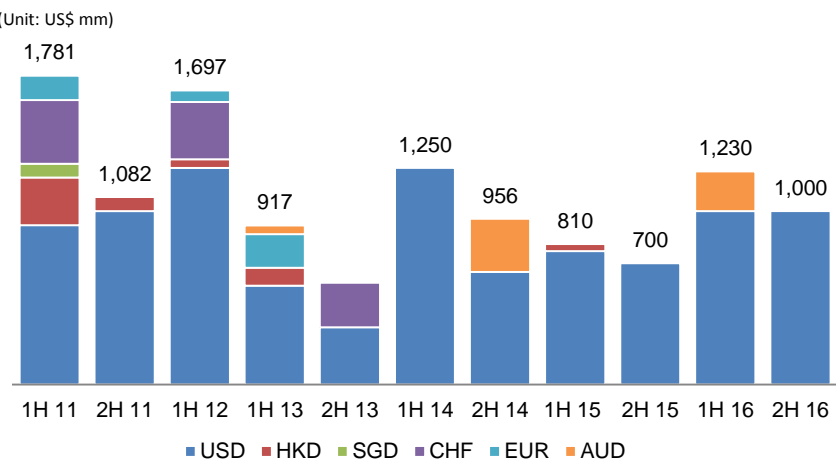
Source: Company data as of December 2016 on a consolidated basis (K-IFRS)

Notes: EBITDA calculated as EBITDA = Operating Income + Depreciation + Amortization

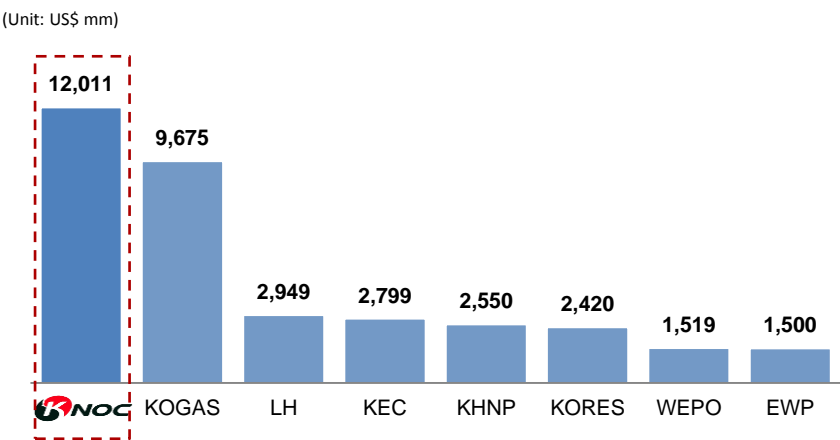
<sup>1</sup> IS FX Rate KRW1,095.04/US\$, KRW1,053.22/US\$, KRW1,131.49/US\$, KRW1,160.50/US\$, average of FY 2013, 2014, 2015, and 2016; BS FX Rate KRW1,055.30/US\$, KRW1,099.20/US\$, KRW1,172.00/US\$, KRW1,208.50/US\$, as of end of FY 2013, 2014, 2015, and 2016

## Strong Track Record as the Representative Issuer in Korea

International Bonds Issuance Volume



Foreign Currency Debt Issuance Volume (2011-2016)



Assessments from Rating Agencies



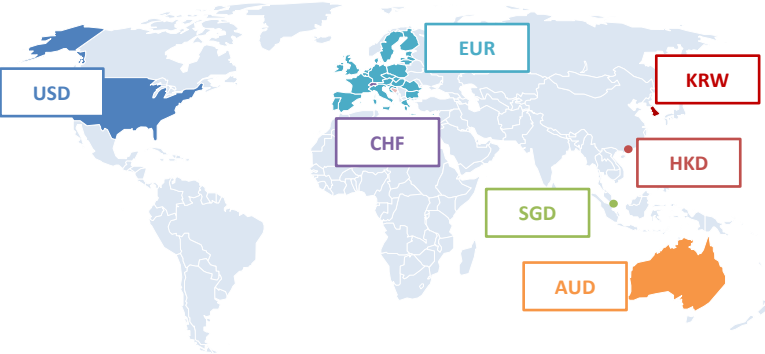
***"We believe the company will continue to benefit from preferential access to the debt markets in Korea so it can raise debt in a timely manner if needed."***

*Standard & Poor's Credit Opinion, November 29, 2016*

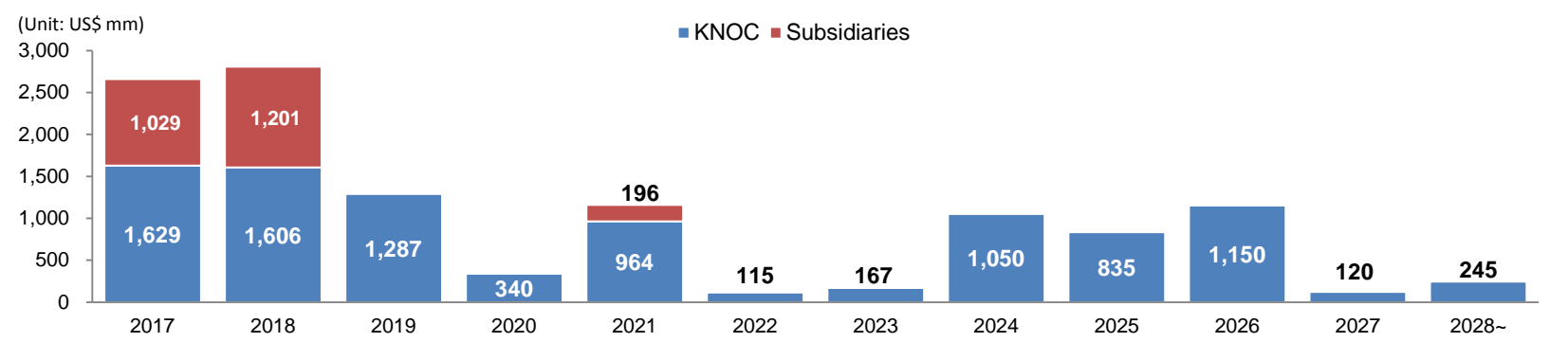


***"We expect **KNOC's liquidity to remain supported by its strong financial flexibility, given its strong access to the domestic and international debt markets,**** aided by its status as a fully government-owned company, and its important role in enhancing Korea's self-sufficiency in oil and gas. The government also provides the firm with regular funding."*

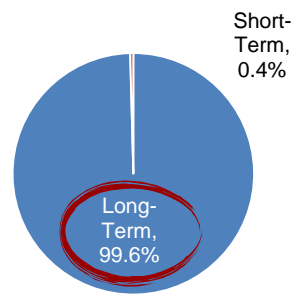
*Moody's Credit Opinion, April 13, 2017*



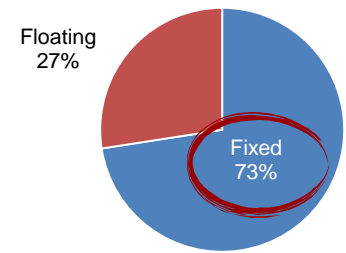
Debt Maturity Profile – in US\$ Equivalent



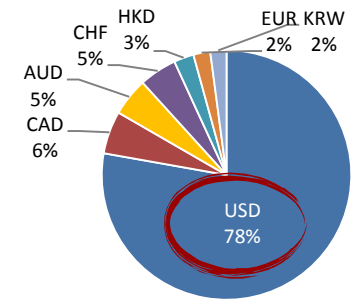
Short-term vs. Long-term



Floating vs. Fixed



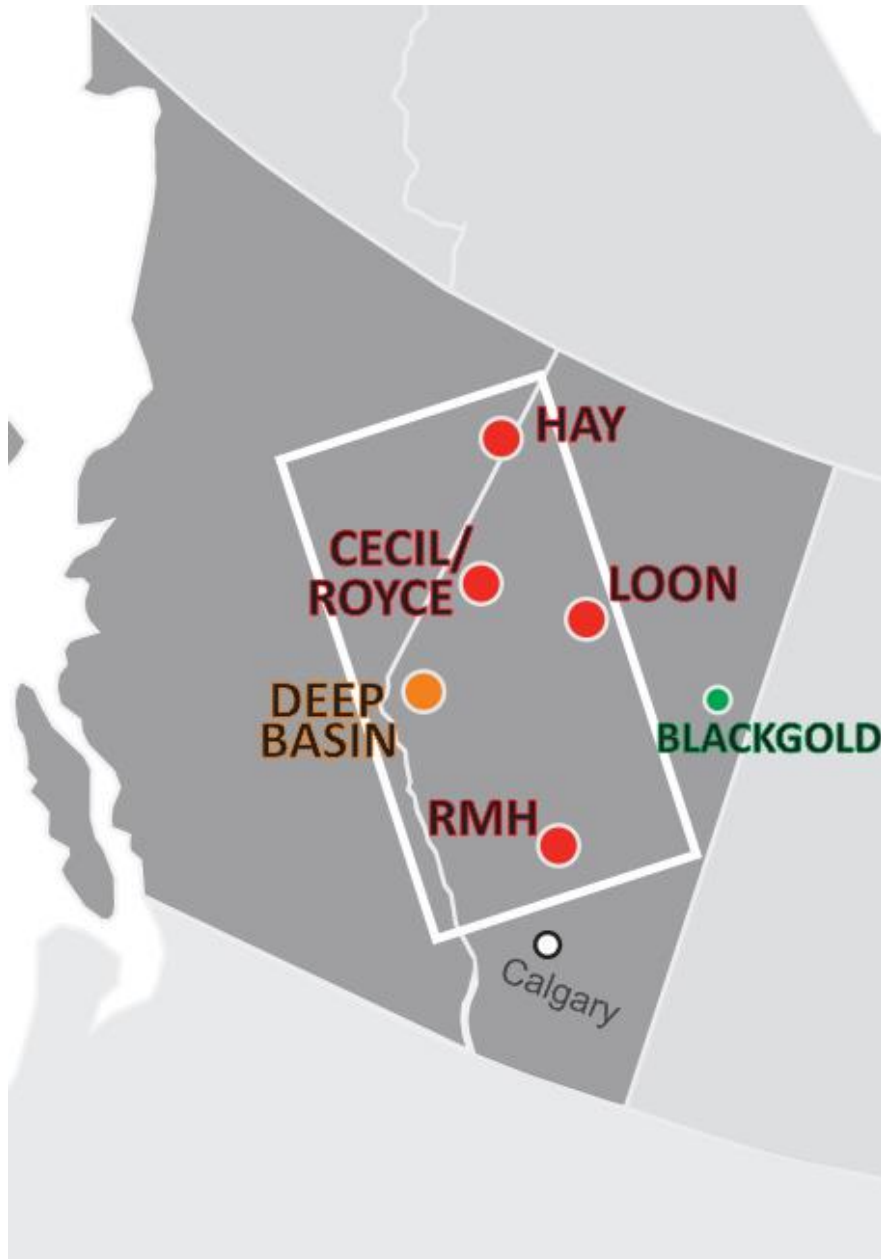
Currency Mix



Source: Company data as of December 31, 2016  
 Note: On a consolidated basis and excludes government loan amount

## 1. Overview of KNOC

## 2. Overview of Harvest



**100% owned by Korea National Oil Corporation (“KNOC”)**

**2002:** Formed as an energy royalty trust

**2009:** Acquired by KNOC in December

**2010:** Acquired Oil Sands project from KNOC

**2014:** Sold North Atlantic Refining Ltd. in November

## Conventional assets:

- 36,758 boe/d in 2016<sup>1</sup>

## **Key focus areas:**

- Royce/Cecil, Loon, Hay
- Deep Basin (incl. partnerships)
- Rocky Mtn. House (exploration)

## **Non-core areas:**

- W4 assets; largely high water cut, mature, high ARO, heavy oil assets

## Oil Sands:

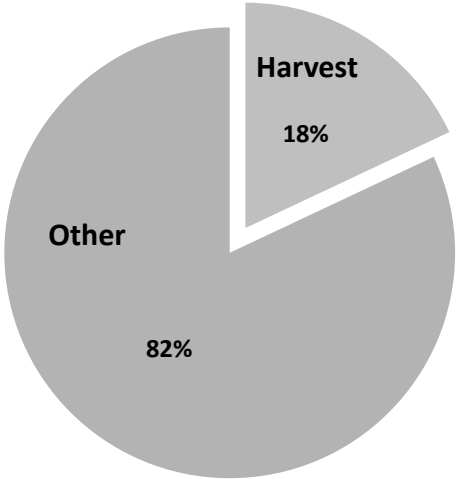
- Phase 1 (BlackGold)
  - 10,000 bbl/d in-situ project
  - Preparing for first steam in early 2018

## 2016 Reserves

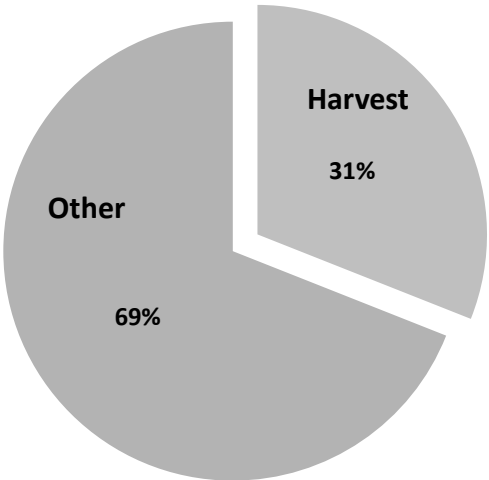
- 1P 197.2mmboe (NPV10 \$1.3 billion)<sup>1</sup>
- P+P 434mmboe (NPV10 \$2.1 billion)<sup>1</sup>

<sup>1</sup> Includes Harvest share of Deep Basin Partnership; Reserves per GLJ and three consultants average price deck

KNOC  
Oil and Gas Production



KNOC  
Oil and Gas 2P Reserves



Harvest is the largest subsidiary of KNOC in terms of 2P reserves and the third largest in terms of production

KNOC<sup>1</sup>

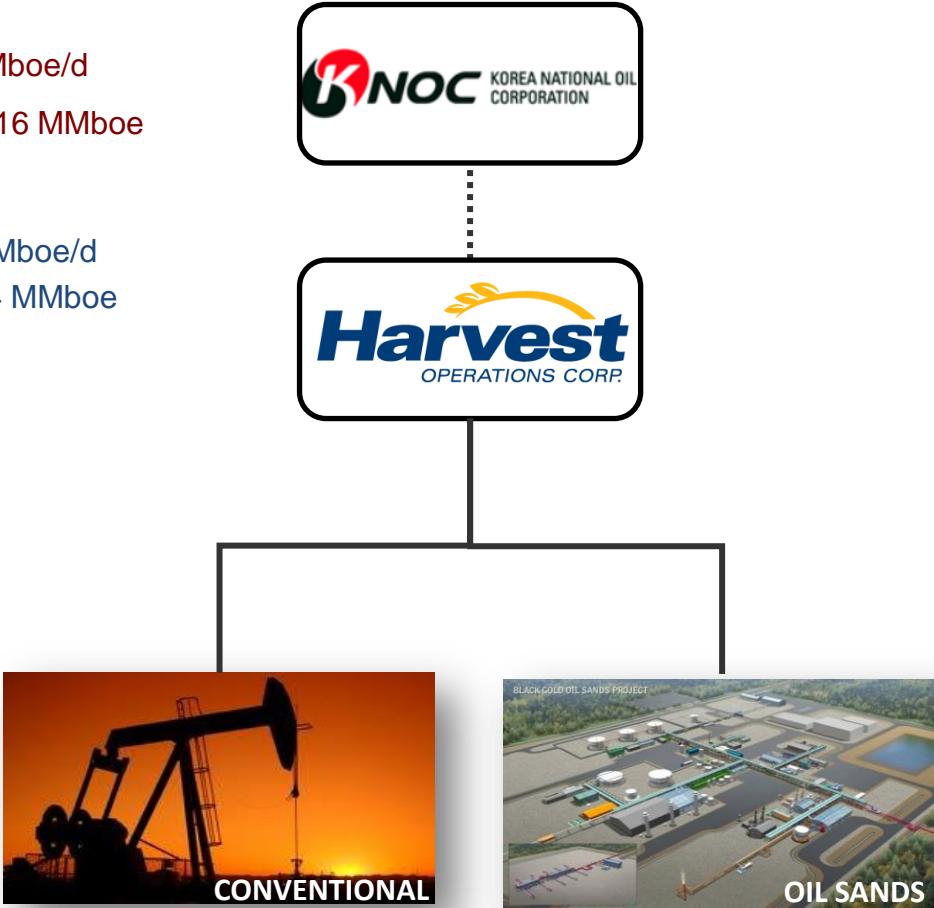
Production: 201 Mboe/d

2P Reserves: 1,416 MMboe

Harvest<sup>1</sup>

Production: 36.8 Mboe/d

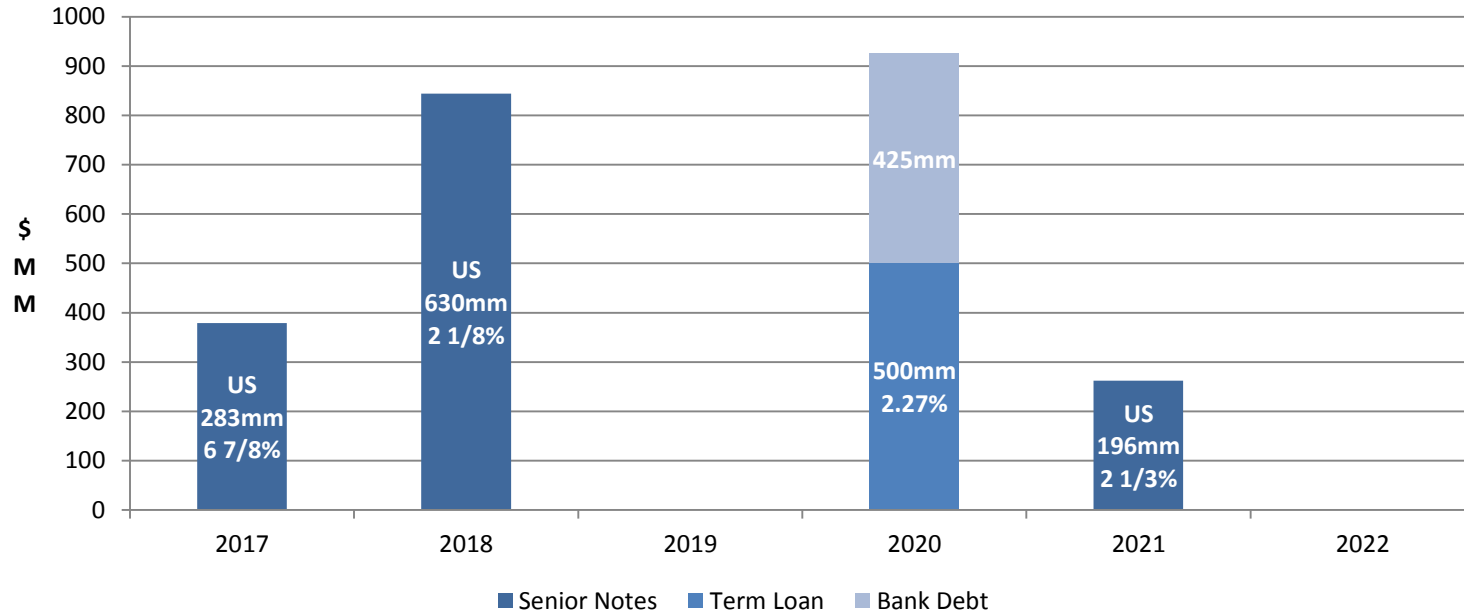
2P Reserves: 434 MMboe



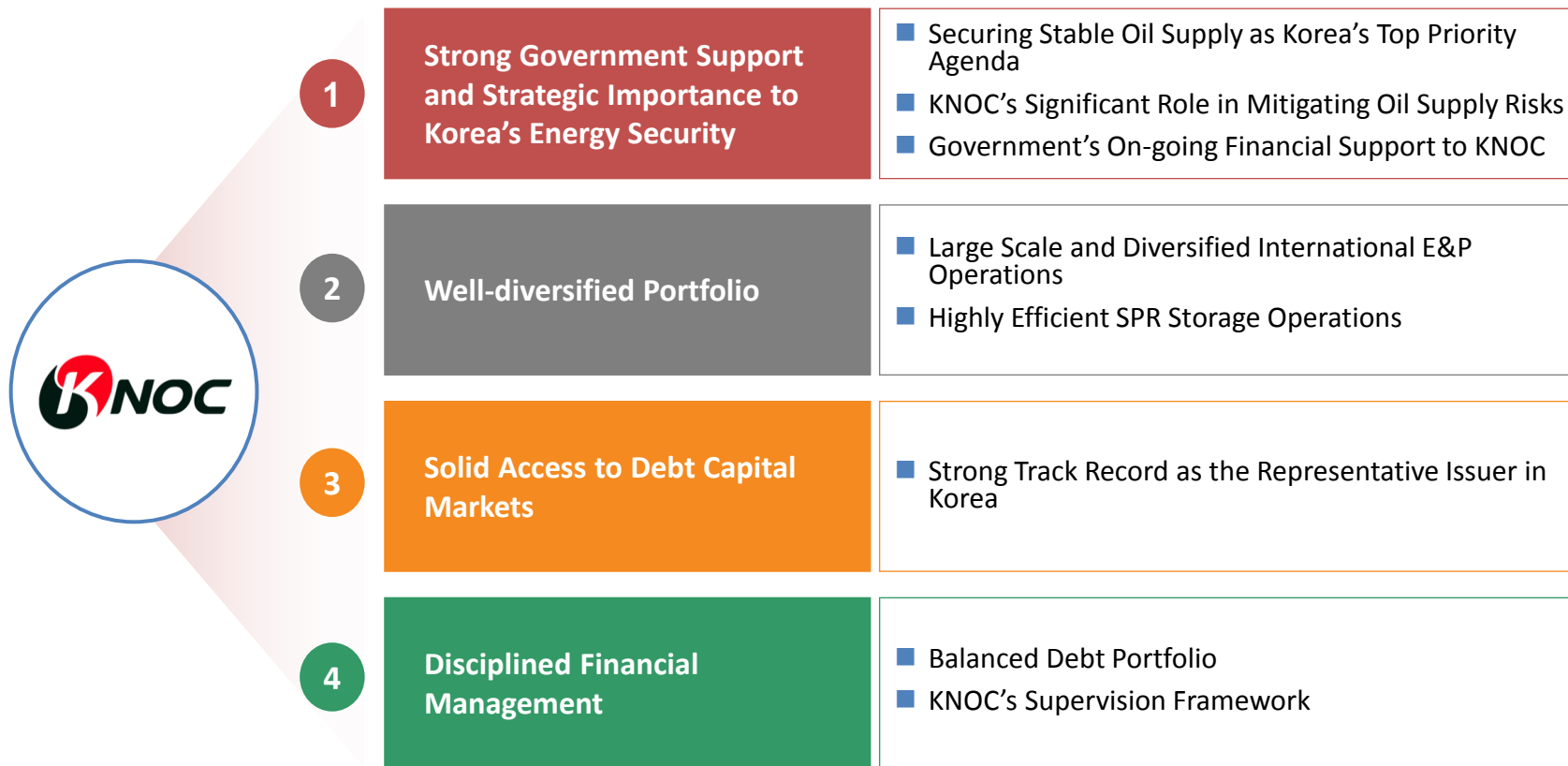
KNOC has provided in excess of \$6 billion of financial support to Harvest through equity and guaranteed debt since 2009

<sup>1</sup> As at Dec. 31, 2016, includes Harvest's share of Deep Basin Partnership

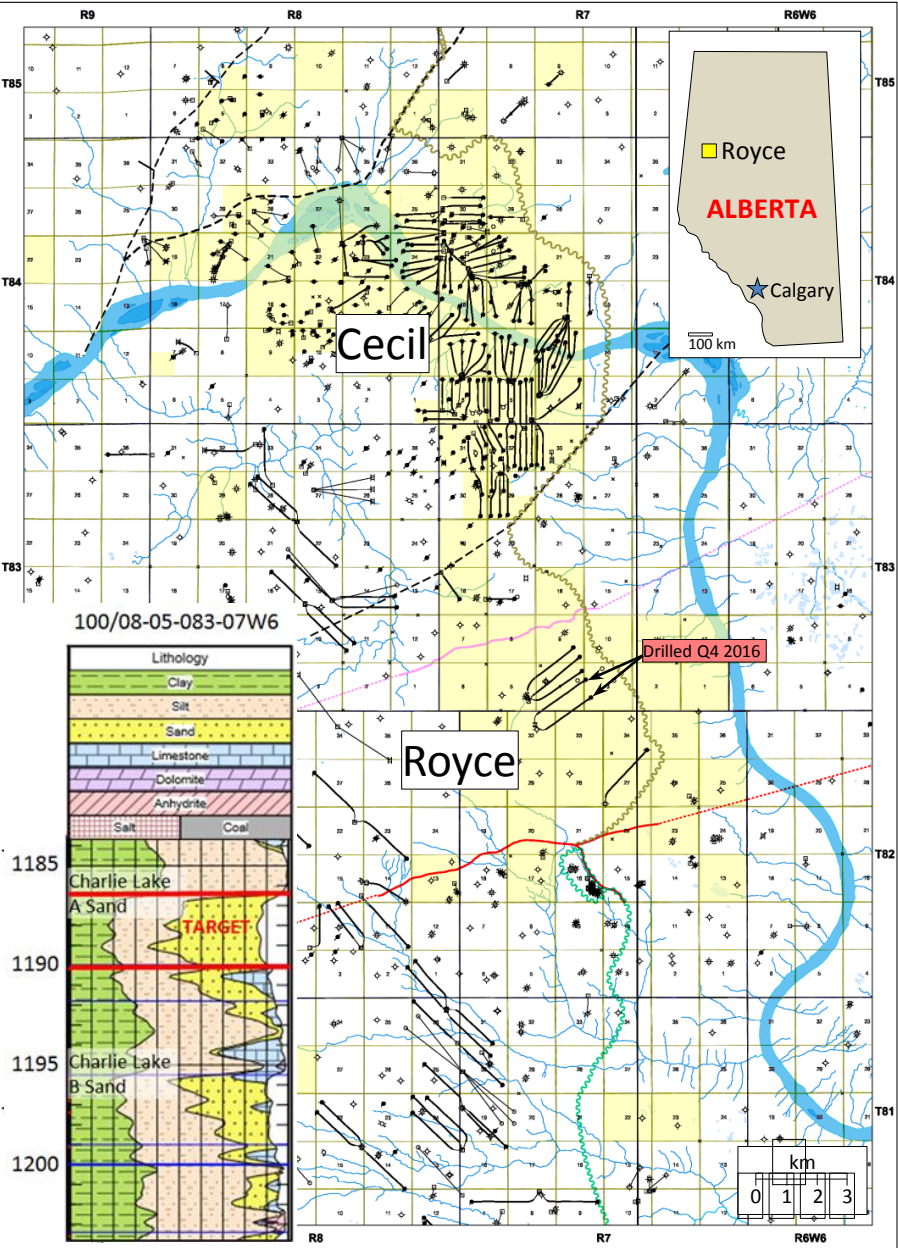




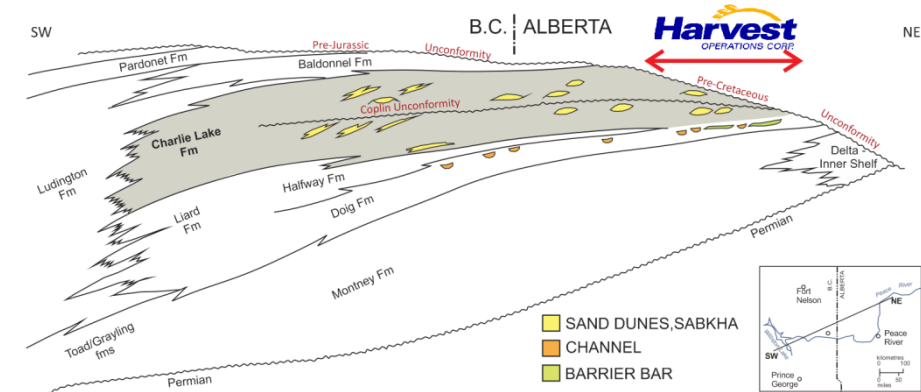
- Harvest has \$2.4 billion of debt maturing through 2021
  - \$2 billion of which has been guaranteed by KNOG
- The US\$283 million 6 7/8% Senior Notes are the only series of Senior Notes not guaranteed by KNOG
  - Due October 1, 2017
  - Anticipate refinancing with new Senior Notes guaranteed by KNOG
- Bank Debt is a \$500 million extendible revolving credit facility with a syndicate of nine banks
- Term Loan is with the Export-Import Bank of Korea

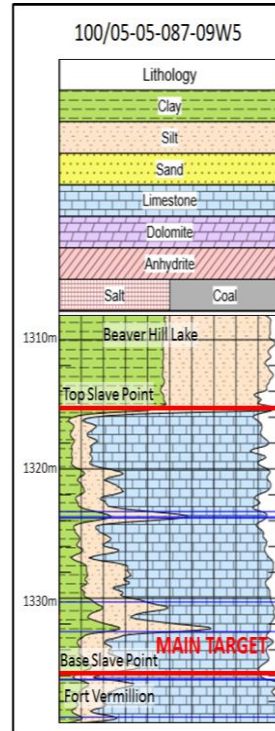
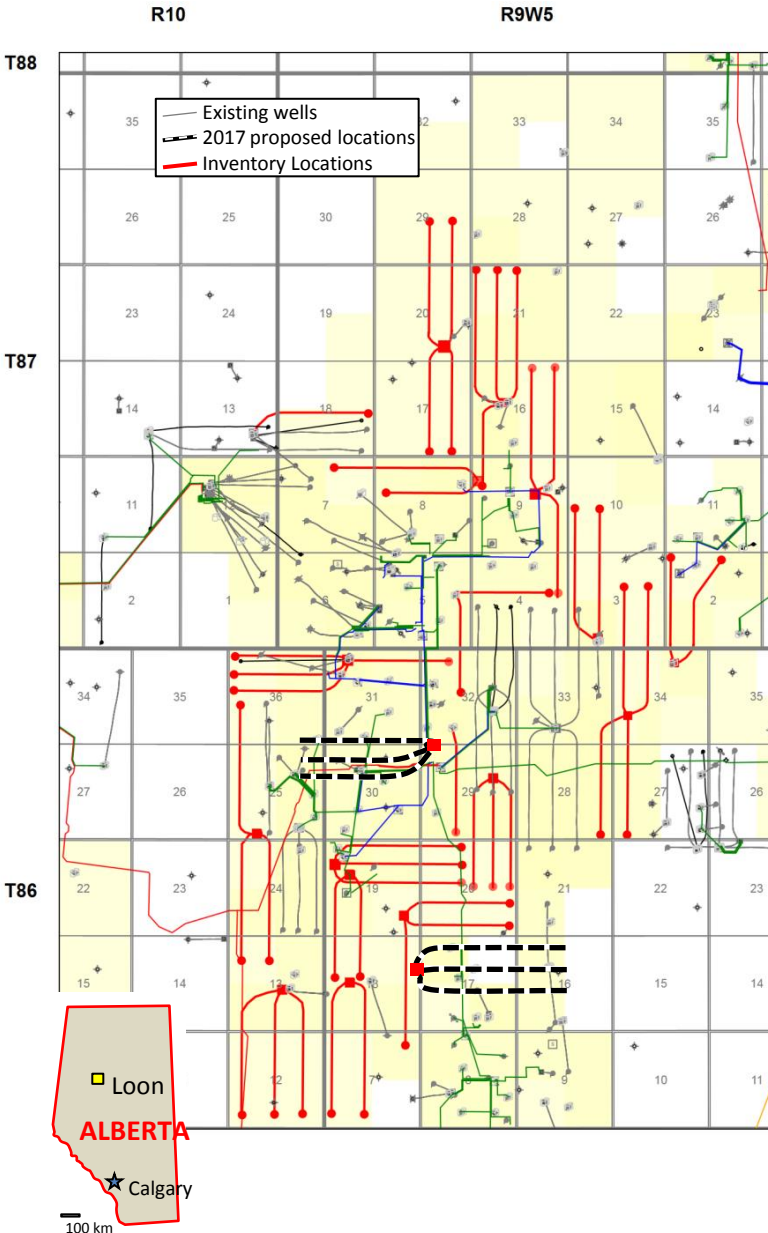




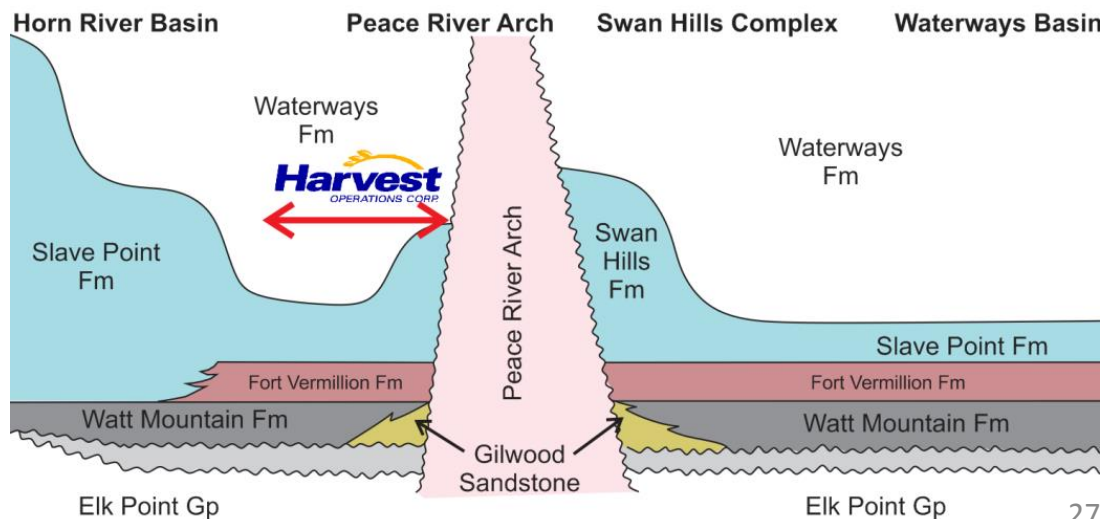


Area		Royce, Cecil North, Cecil South
Reservoir		Triassic Charlie Lake, light gravity crude oil
2016 2P Reserves		4,428 Mboe
2016 Production		973 Boe/d
Contingent Resources		5,180 Mboe
Key Players		Birchcliff, Tourmaline, CNRL
Potential	Cecil N	10 Charlie Lake A HZ infills Charlie Lake B play
	Cecil S	15 Charlie Lake A HZ infills
	Royce	27 Charlie Lake A HZ infills

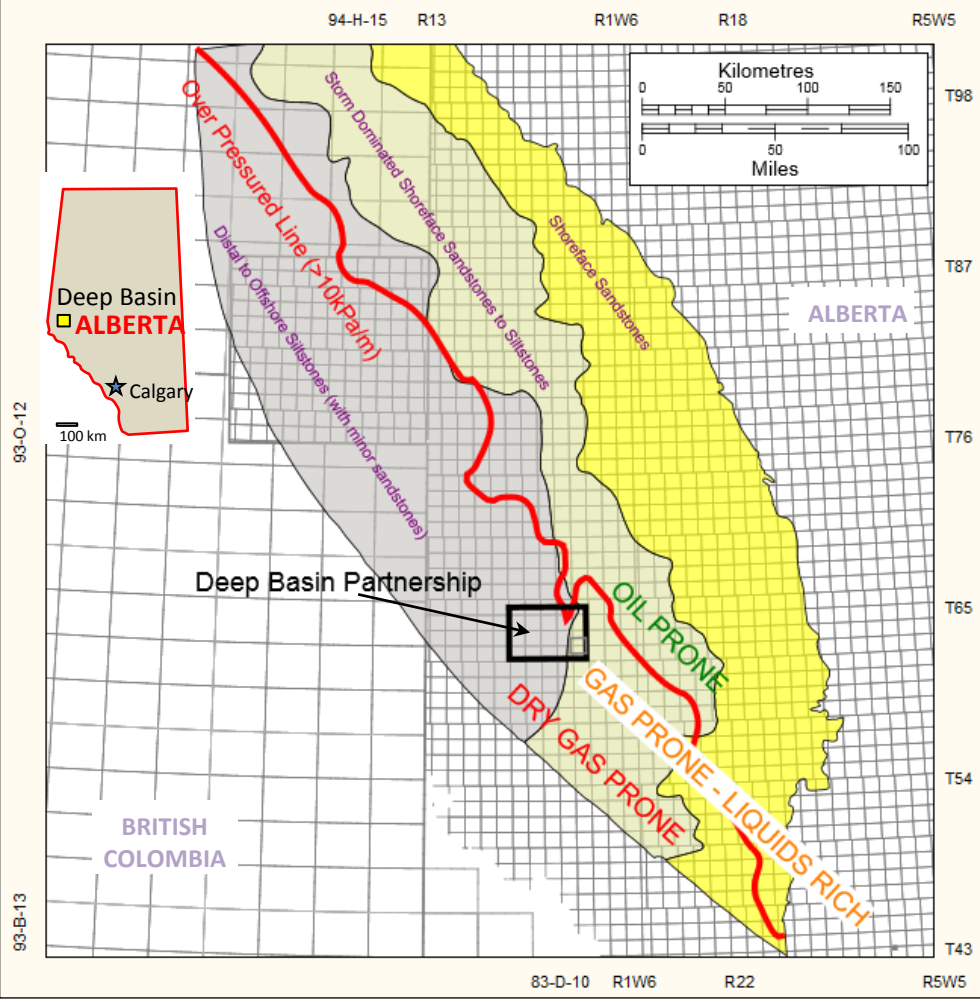




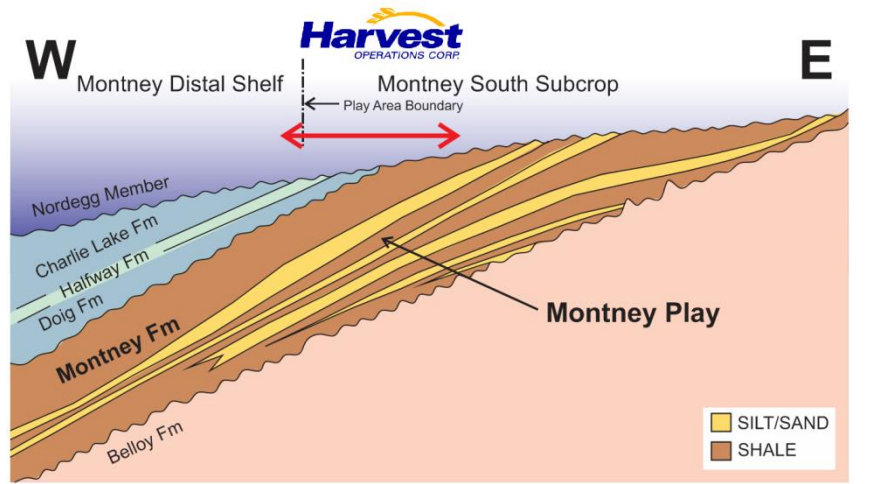
Area		Evi 1, Evi 3, Golden, Loon Lake, Red Earth
Reservoir		Devonian 'Slave Point' – Carbonate light gravity crude oil
2016 2P Reserves		9,443 Mboe
2016 Production		2,563 Boe/d
Contingent Resources		4,254 Mboe
Key Players		Mount Bastion, Virginia Hills, Summerland
Potential	South Loon	9 HZ Slave Point locations
	Loon Lake	72 HZ Slave Point locations Perforation to undeveloped Interval (cycle 1, 2, 3)

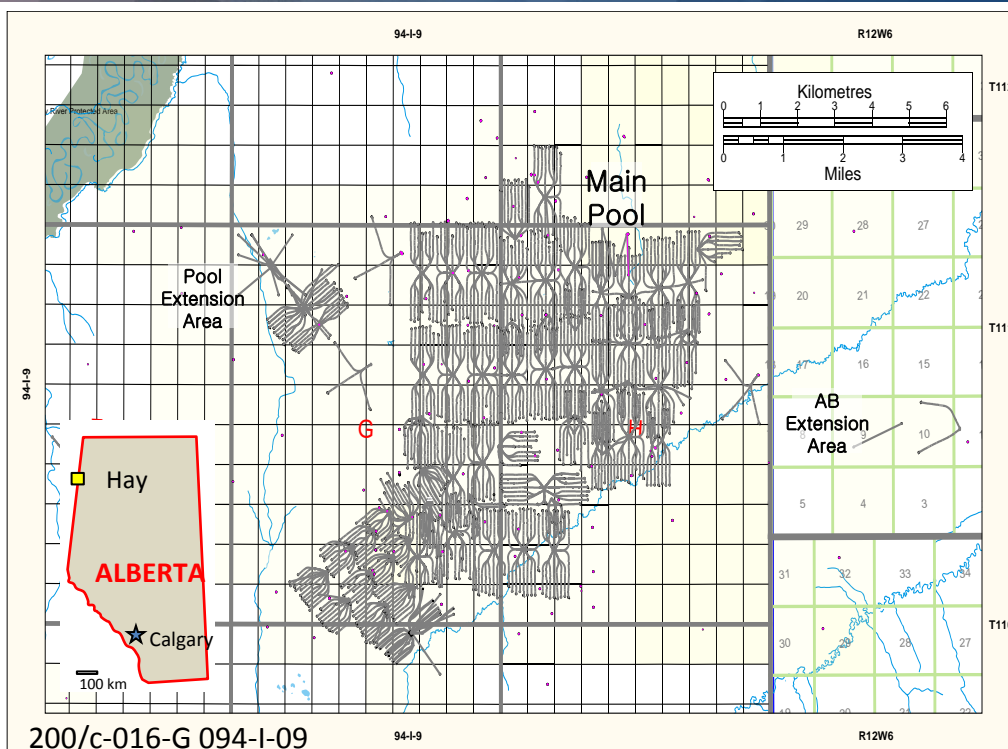




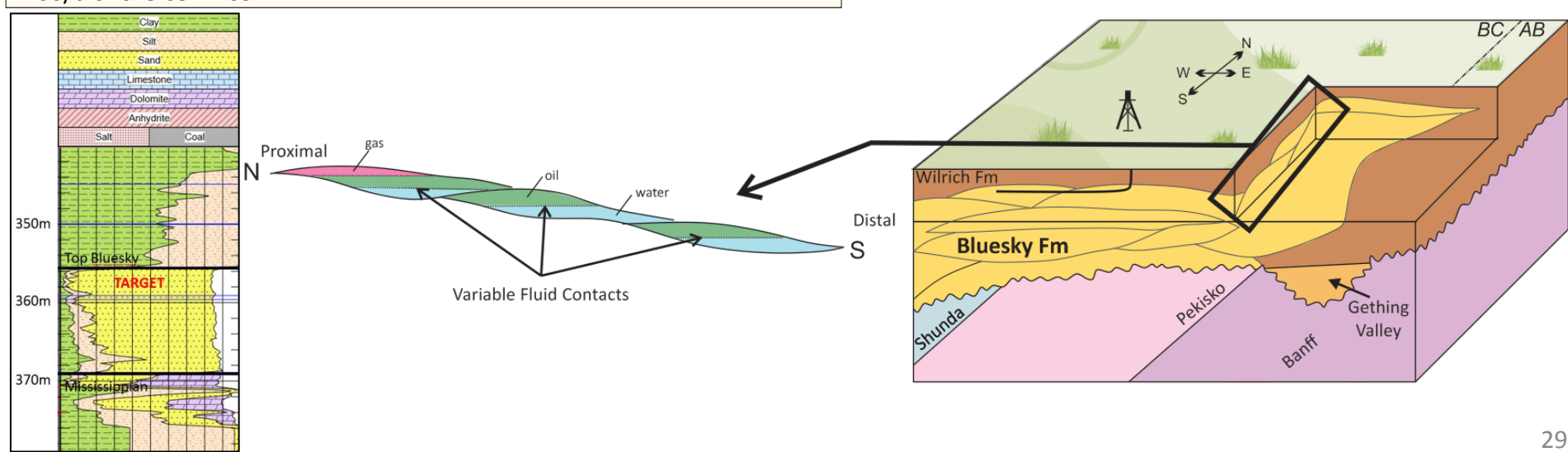


Area	Deep Basin South, Deep Basin Partnership	
Reservoir	Cretaceous Falher (CGR 7-18 bbl/mmcf), Triassic Montney (CGR 105 bbl/mmcf)	
2016 2P Reserves	315 Bcf Gas	65 MMboe
	12 MMbbl NGL	
2016 Production	60 MMcf/d Gas	11,750 boe/d
	1,750 bbl/d NGL	
Key Players	Paramount, 7 Gen, CNRL, Tourmaline, Conoco, NuVista, Jupiter	
Potential	1) Future Gross Inventory (DBP + DBS) Montney – 89, Falher FG – 165, Other - 12 2) Up to 10 perspective zones in the area.	



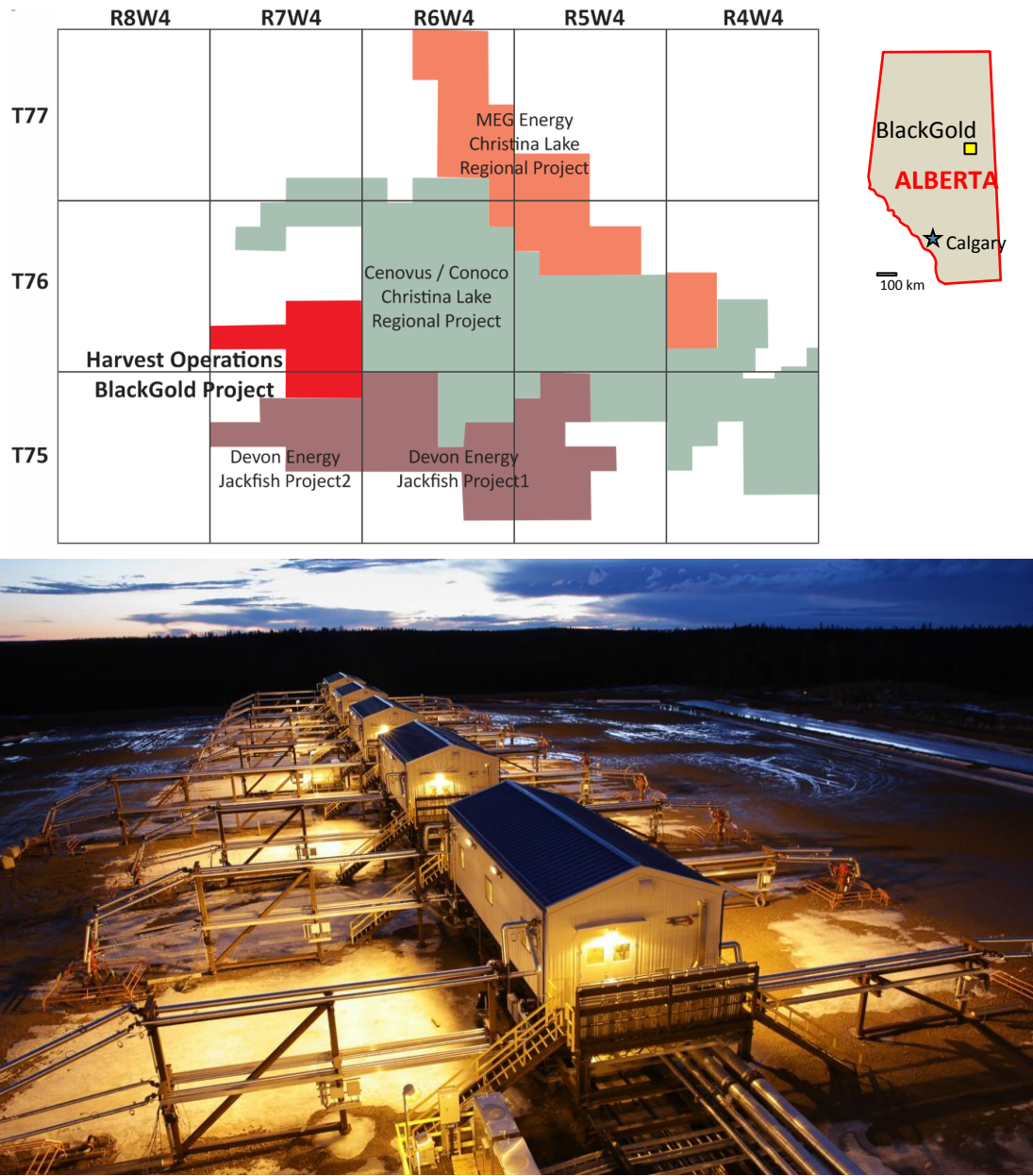


Area	Hay
Reservoir	Cretaceous Bluesky, 24 <sup>0</sup> gravity crude oil
2016 2P Reserves	21,697 Mboe
2016 Production	4,267 Boe/d
Contingent Resources	33,543 Mboe
Key Players	Husky
Potential	1) Drilling 25 production and injection wells/ year 2) Optimization potential exists 3) Improve sweep efficiency 4) Potential to convert watered out production wells into water injectors





- 100% ownership
- 15 sections in 76-7-W4M
- ~10 km southeast of Conklin
- Great neighbourhood
  - CVE Christina Lake
  - MEG Christina Lake
  - Devon – Jackfish
- 30,000 bbl/d SAGD oil sands project
  - Phase 1: 10,000 bbl/d
  - Phase 2: additional 20,000 bbl/d approved by regulators
- Phase 1 construction includes capital pre-build for Phase 2
- Phase 1 moving towards first steam in early 2018



Certain information set forth in this document, including management's assessment of Harvest's future plans and operations, contains forward-looking statements. By their nature, forward-looking statements are subject to numerous risks and uncertainties, some of which are beyond Harvest's control, including risks associated with conventional petroleum and natural gas operations, risks associated with refining and marketing operations, risks associated with realizing the value of acquisitions, risks associated with the construction of the oil sands project, general economic, market and business conditions, volatility of commodity prices, interest rates and currency exchange rates, imprecision of reserve estimates, environmental risks, changes in environmental legislation and regulations, competition from other industry participants, the lack of availability of qualified personnel or management, stock market volatility and ability to access sufficient capital from internal and external sources. The refining business adds the following risks and uncertainties, including but not limited to: the volatility between the prices for crude oil purchased and products sold (the "crack spread"), refinery operating risks such as spills and discharges of petroleum or hazardous substances, the stability of the refinery throughput performance, competition from other refiners and petroleum product marketers, crude oil supply interruptions, loss of key personnel, and labour disruptions.

Readers are cautioned that the assumptions used in the preparation of such information, although considered reasonable at the time of preparation, may prove to be imprecise and, as such, undue reliance should not be placed on such assumptions and these forward-looking statements. Harvest's actual results, performance or achievement could differ materially from those expressed in, or implied by, these forward-looking statements and, accordingly, no assurance can be given that any of events anticipated by the forward-looking statements will transpire or occur, or if any of them do so, what benefits that Harvest will derive therefrom. Harvest disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

All financial figures quoted herein are Canadian dollars, unless otherwise stated.

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