CNPC Upstream Current Status & Strategy

Feb 27, 2018
China Petroleum Upstream Review

CNPC at a Glance

CNPC Upstream & Strategy

RIPED Profile

Executive Summary
Primary Energy Demand Outlook in China

High share of primary energy consumption
Pillar of national economy and key for national energy security

Primary Energy Demand Outlook

In 10-15 years: 30% - 33%

From: CNPC Economics and Technology Research Institute 2050 World and China Energy Outlook
China's crude oil production:

- 0.73 mmbbl (1977)
- 1.46 mmbbl (2010)
- Plateau Production: 15.7 mmbbl (2015)

Historical Crude Oil Production in China (by Company)
Initial Stage: 1949 - 1975: 353 mmcf → 353 bcf

Slow development: 1976 - 2000: 353 bcf → 1.1 tcf

“Focus much on oil & little on gas”

Fast development: 1.1 tcf → 5.2 tcf (since 2001)

“Focus equally on oil & gas”

4 Areas: Ordos, Tarim, Sichuan & the South China Sea

**Historical Annual Gas Production in China**

- **Initial**: Small gas fields in Sichuan basin, Sichuan & Chongqing gas pipeline network system
- **Slow**: Focus on dissolved gas and gas-layer gas, Shaanxi - Beijing line
- **Fast**: Large integrated gas fields discovered. Se-Ning-Lan, Shan-Jing 2 and west-east gas transmission pipeline
CNPC is the largest oil and gas producer and supplier in China, as well as one of the world's major oilfield service providers and contractor in engineering construction. CNPC is running 94 oil and gas cooperation projects in 38 countries (by 2017).
CNPC at a Glance

**Employees:** 1.5182 million

**Assets:** ¥ 4.0341 trillion(RMB) ≈ $ 602 billion(USD)

**Global Ranking:** In 2016, CNPC ranked 3rd of 50 large integrated oil companies in the world, and ranked 3rd of Fortune Global 500.
Since 2011

Oil & gas equivalent of 11 new proved reserves ≥ 730 mmbbl
7 oil & 4 gas areas
10 in Central & western China

New proved reserves:
> 73 mmbbl annually for 6 consecutive years—“Best in History”

New proved reserves of CNPC
Plateau oil production > 730mmbbl for 2 decades+

Gas Production-dramatically growing:

Since 2000, annual natural gas production increased by 11%+

National gas production of 2016 >3.53 tcf

Historical Gas Production of CNPC (by Oil field)
CNPC Upstream – Overseas Business

Stable development-Economic of scale

Overseas oil & gas equity production: 532 mmbbl (2016)

Overseas oil & gas equity production of CNPC total: ↑29.3% (2016)

Crude oil: 35.3%

Natural gas: 19.1%

Historical share of CNPC overseas oil & gas equity production

- Overseas equity gas
- Overseas equity oil
- Overseas equity oil & gas

Share of overseas equity production
Exploration Targets: complex

Topographical conditions: mountainous, loess tablelands & deserts

Geological conditions: high & steep structure, low-abundance lithology, fracture-vug

Development Challenges

Mature oil fields: High water cut (90%) & High recovery (76%) (2016)
Profits from Upstream sector of oil companies declines, however

Annual tax from CNPC + Sinopec ≈ ¥ 300 billion RMB ($47 billion USD)

Current assessment mechanism

Reduce new investment in the areas with high-risk

Production VS Efficiency: Balance

National crude oil production declines due to

Mature oilfields

Long-term low oil prices
CNPC Upstream Strategy

Efficiency Oriented, Equal effort on E&D

“Risk-pooling” & “profit-sharing”

Oil Companies & Oil Service companies

Interwoven & interdependent, win-win

“Single-plank bridge” to “Double channels”

R&D leading

Cost efficiency

Integration of all sectors

Technology innovation

Fine management
CNPC Upstream Strategy

Global Vision: Management & Coordination

Domestic
- Oil & Gas
- Conventional & Unconventional

Overseas
- "Belt & Road"
- Profit Oriented

Key to sustainable
- Resources, Technology, Talent & Capital

Cost efficiency

Synchronized increase of reserves, production & profit

Target: 2200 mmbbl of oil & gas equivalent in 2020
- Domestic crude >730 mmbbl, Gas > 4.24 tcf
- Overseas oil & gas equity > 730 mmbbl
Innovation strategy: Profit & Efficiency

Theories:
- Onshore deep layers & offshore deep water
- Unconventional oil & gas accumulation
- High-efficient E&D
- Residual oil & gas of mature oilfields
- Characteristics of water flooding

Techniques:
- High-precision 3D seismic
- Intelligent steering drilling
- Fracturing stimulation
- Gas-medium chemical flooding

Management:
- Integration E&D, geology & engineering
- Technology & economy
- Production & environmental protection
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RIPED Profile – Position in CNPC

CNPC

PetroChina

Administrative Department
- General Office (President’s Office)
- Planning Department
- Finance Department
- Human Resources Department
- R & D Department
- Production and Operation Management Department
- Mining Service Department

Business Sectors
- PetroChina Exploration & Production Company
- CNODC
- PetroChina Refining & Chemicals Company
- PetroChina Natural Gas & Pipeline Company
- CNPC Technical Service Company
- PetroChina Marketing Company
- CNPC Engineering & Construction Company
- CNPC Asset & Management Company

Affiliated research institute
- RIPED
- CPPEI
- Research Institute of Petroleum Processing
- Technology Institution
- Economics and DRI
- RISE
- Pipeline Technology Research Institute
- Consulting Center

Affiliated companies
- Oil and gas field
- Refinery
- Engineering technology
- Sales
- Pipeline
- Finance

RIPED: Affiliated research institute for CNPC’s global O&G’s E&D.
“One think tank and three centers”

Think tank for Strategic Decision-Making

Technological R&D center

Training center

Technical support center

Backbone of upstream technological innovation & talent training of China’s petroleum industry
RIPED Profile – Talents

Employees: 3169 (2229 researchers)

High professional titles:

- 8 in-service academicians,
- 75 corporate senior technical experts,
- 148 professors,
- 1123 senior engineers (professor + senior engineers: 57%)

Well-educated: 1961 master's degree or above, 88% of total researchers
Series of Equipment and instruments

A relatively complete upstream fundamental R&D platform
R&D innovation platform
International exchange window

4 state key laboratories and R&D center
17 corporate-level key laboratories

SKL of EOR
Nano CT (50nm, 70um)
National Oil & Gas Strategy Research Center

Establishment: Dec 8, 2017

Prompt and valuable decision support to National Energy Administration for a sustainable development of petroleum industry and national energy security
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Upstream business: Priority for CNPC

Current Status: challengeable exploratory targets & low oil price

Strategy: Adequate investment

Innovation & reform

Resources integration

Continuously Contribution to China’s Energy Transition & moderately prosperous society!
Welcome to RIPED for the 2\textsuperscript{nd} IEF Industry Advisory Committee Workshop on July 31, 2018

Thank you for your attention!