Tight Gas and its Global Implications

IEF Conference
Saudi Arabia
October 2, 2012

Ceri Powell
Executive Vice President Exploration
Royal Dutch Shell
DEFINITIONS AND CAUTIONARY NOTE

Resources: Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves or SEC proven mining reserves. Resources are consistent with the Society of Petroleum Engineers 2P and 2C definitions.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this presentation “Shell”, “Shell group” and “Royal Dutch Shell” are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this presentation refer to companies in which Royal Dutch Shell either directly or indirectly has control, by having either a majority of the voting rights or the right to exercise a controlling influence. The companies in which Shell has significant influence but not control are referred to as “associated companies” or “associates” and companies in which Shell has joint control are referred to as “jointly controlled entities”. In this presentation, associates and jointly controlled entities are also referred to as “equity-accounted investments”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect (for example, through our 24% shareholding in Woodside Petroleum Ltd.) ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

This presentation contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “objectives”, “outlook”, “probably”, “project”, “will”, “seek”, “target”, “risks”, “goals”, “should” and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this presentation, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including potential litigation and regulatory measures as a result of climate changes; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. All forward-looking statements contained in this presentation are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional factors that may affect future results are contained in Royal Dutch Shell’s 20-F for the year ended 31 December, 2011 (available at www.shell.com/investor and www.sec.gov). These factors also should be considered by the reader. Each forward-looking statement speaks only as of the date of this presentation, 2 October 2012. Neither Royal Dutch Shell nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this presentation. There can be no assurance that dividend payments will match or exceed those set out in this presentation in the future, or that they will be made at all.

We use certain terms in this presentation, such as resources, that the United States Securities and Exchange Commission (SEC) guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov. You can also obtain these forms from the SEC by calling 1-800-SEC-0330.

Copyright of Royal Dutch Shell plc
RISING ENERGY DEMAND, SUPPLY PRESSURE, CLIMATE CHANGE

9 billion people, 75% living in cities
(2 billion more than today)

2 billion vehicles
(800 million at the moment)

Many millions of people will rise out of energy poverty; with higher living standards energy use rises

Energy demand could double from its level in 2000... while CO₂ emissions must be half today’s to avoid serious climate change

Twice as efficient, using half the energy to produce each dollar of wealth

3 times more energy from renewable sources
GLOBAL ENERGY MIX TO 2050

ROBUST DEMAND GROWTH

Energy demand outlook in million boe/d

INDUSTRY OUTLOOK

- Hydrocarbons dominate outlook
- Growth required in all sectors of energy mix
- Renewable growth particularly strong
- Energy policy + sustained investment

SHELL

- Crude oil & oil products
- Natural gas & LNG
- Biofuels, wind, carbon capture + storage
- Petrochemicals

FOSSIL FUELS WILL SUPPLY MORE THAN 60% OF GLOBAL ENERGY IN 2050
THE CASE FOR GAS

ABUNDANT

- Abundant global gas resources, growing and geographically diverse
- Conventional and unconventional recoverable gas resources can supply >250 years of current global gas production

ACCEPTABLE

- **CCGT**: gas-fired power compared to coal:
  - 30% more energy efficient
  - Emit around half the CO2
  - CCS retrofit at similar cost per MWh
  - Better complement to wind power
- Replacing coal with gas for electricity generation is the cheapest and fastest way to meet CO2 reduction targets

AFFORDABLE

- CCGT cheapest to build
- Similar total cost to coal and nuclear

CNGT: Combined Cycle Gas Turbine

Total Cost = Capital + Fuel + Operating

Source: DECC (Matt Macdonald) June 2010

NATURAL GAS: A DESTINATION FUEL

Source: IEA World Energy Outlook, WoodMackenzie, Shell Interpretation

Shell International Exploration and Production B.V. ©
TIGHT GAS: THREE DIFFERENT TYPES

TIGHT GAS
- Occurs in ‘tight’ sandstone
- Low porosity = Little pore space between the rock grains
- Low permeability = gas does not move easily through the rock

SHELGE GAS
- Natural gas trapped in very small pores and adsorbed on organic material
- Ultra-low permeability (.0001-.001mD)
- Production via induced fractures

COALBED METHANE
- Natural gas in coal (organic material converted to methane)
- Permeability low
- Production via natural fractures (“cleats”) in coal
- Recovery rates low
DRAMATIC IMPACT OF TIGHT GAS IN THE US

Imports

Shale gas

Tight gas

CBM

Alaska

Conventional

Offshore

Associated gas

bcm

800

600

400

200

0

1990

2000

2010

2020

2030

Unconventionals
GAS REVOLUTION: GLOBAL POTENTIAL

More than 250 years of supplies at current production rates

Source: IEA World Energy Outlook, WoodMackenzie, Shell Interpretation
TECHNOLOGY & INTEGRATION

TECHNOLOGY ENABLERS

Decrease Well Costs
- Best in class drilling technologies - Drilling Automation & Well Manufacturing
- Rigs on skids
- Mud composition
- Fracturing techniques
- Multi-stage completions
- Micro seismic

Increase Production
- Integration of techniques
- Selecting the best areas
- Fracture prediction
- Rock property analysis
- Seismic evaluation
- Geomechanical analysis
- Geochemical analysis

Reduce Footprint
- Green Completions
- Multi well pads
- Light, noise inhibitors
- Green frac fluids
- Fluids recycle
- Pipeline water
- Novel stimulation technologies

INTEGRATION

PROPRIETARY TECHNOLOGY

3rd Party Products

Shell Capabilities

WELL DESIGN
PAD DRILLING
FRACTURE PREDICTION
SEISMIC EVALUATION
NOVEL TECHNOLOGIES
WHAT DOES TIGHT/SHALE GAS NEED TO WORK?

Conventional Gas Project
- Few large wells, processing capacity modeled on highest production
- Single final investment decision, big upfront commitment
- Deep cash / Capex sink
- Relatively quick cost recovery

Unconventional Gas Project
- Capital exposure for longer period
- Early gas produced from day 1
- Rolling investment decision, limited upfront commitment
- Fields life much longer than Conventional
- Low well productivity, huge number of wells for same recovery
- Long time to recover cost (depending on the fiscals)
Safety & Well Integrity
Shell designs, constructs and operates wells and facilities in a safe and responsible way.

Air
Shell conducts its operations in a manner that protects air quality and controls fugitive emissions.

Footprint
Shell works to reduce its operational footprint.

Water
Shell conducts its operations in a manner that protects groundwater and reduces potable water use as reasonably practicable.

Community
Shell engages with local communities regarding socio-economic impacts that may arise from its operations.
WATER MANAGEMENT

HOW OUR WATER USAGE STACKS UP

- Estimated water use at twice the peak drilling rate achieved in the Barnett Shale (6,000 horizontal wells per year) 10 times estimated drilling in the Marcellus in 2009.

Source: USGS, Pennsylvania Water Consumption

PINEDALE: LIQUIDS GATHERING SYSTEM (LGS)

Lifecycle Trucking Exposure, Shell operated
(Produced Water, Condensate, Frac Flowback)

- 90-miles of LGS for condensate and water.
  - Condensate exported via pipeline. Increased yield & price
  - Excess water injected in disposal wells via pipeline
- LGS provides water re-use distribution piping for frac jobs.
- LGS recovers flared tank gas for increased gas sales.

In Wyoming, 1.79 traffic fatalities per 100 million vehicle miles
~50,000 KM² (~12 MILLION ACRES) ACREAGE WORLD WIDE
~12,000 KM² (~3 MILLION ACRES) LIQUIDS-RICH SHALES ADDED IN 2011
STRATEGIC PARTNERSHIPS

CHANGBEI, CHINA

LNG, CANADA

ARROW, AUSTRALIA

WELLS MANUFACTURING JV
WELL MANUFACTURING SYSTEM – A SHELL/CNPC JV

- 50/50 JV with CNPC
- Leveraging capability of both Shell and China National Petroleum Corporation:
  - Drilling efficiency optimization techniques – Automation - Low-cost sourcing
- Targeting resource-intensive plays (tight gas, shale gas, coalbed methane) to achieve ultra low-cost wells
- Automated/standardized/optimised/commoditized processes to unlock resource plays
- Less HSSE risk exposure; smaller footprint
- Fully integrated service company
- Mass produce wells: Lower drilling cost; operational excellence; speed; consistency.

CENTRAL SUPPLY FACILITY FOR LOGISTICS  
DRILLING AUTOMATION - SCADADRILL  
AUTOMATED TRUCK-MOUNTED RIGS
NOC / IOC COOPERATION

KAZMUNAIGAS
Kashagan Contract Area, Pearls

PETRONAS
(MLNG DUA; MLNG TIGA, MLNG PSC; MLNG DUA PSC; Gumusut, Fields)

PETROCHINA
China, Australia, Canada, Qatar

QATAR PETROLEUM
(Pearl GTL, QatarGas 4, Petrochemicals complex)

GAZPROM
(Sakhalin II, Salym)

GOVT OF OMAN
PDO, Oman LNG, Qalhat LNG, Mukhaizna

STATEOIL
Omen Lange, Troll Gas, Vito, Caesar/Tonga

NNPC
NLNG, Shell JV, EA Area

PETROBRAS
Brazil, Benin, Tanzania

GOVT OF BRUNEI
BSP Offshore, Brunei LNG, Block B, BSP Onshore

PETRONAS
(SRAK, trading, technology solutions); JVs Motiva in the US and Showa in Japan

SAUDI ARAMCO

Copyright of Royal Dutch Shell plc
KEY ENABLER: PEOPLE

- Training
- On-the-job mentoring & learning
- Expert knowledge networks
- Global secondments
- Focus on new technical professionals
THANK YOU!