Tight Gas and its Global Implications

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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.

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SUSTAINABLE ENERGY FUTURE

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 CO_2 emissions must be **half** today's to avoid serious climate change

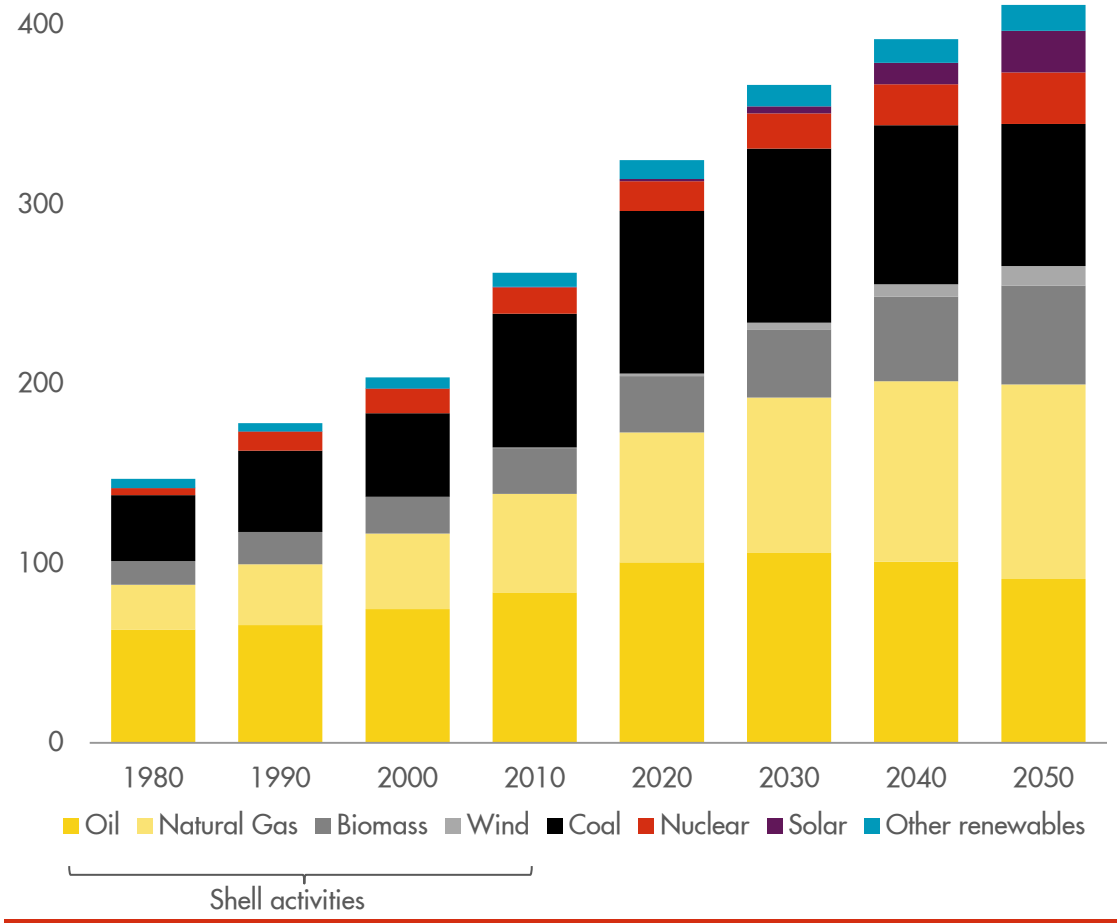
Twice as efficient, using **half** the energy to produce each dollar of wealth

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

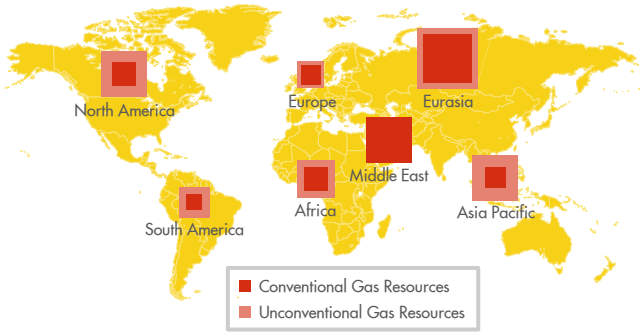
- Crude oil & oil products
- Natural gas & LNG
- Biofuels, wind, carbon capture + storage
- Petrochemicals

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

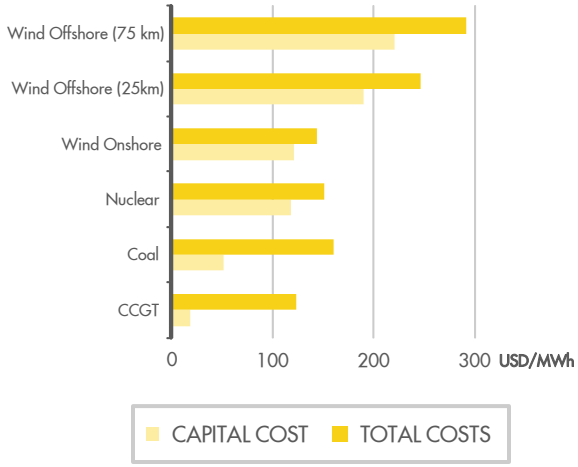


ACCEPTABLE

- **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



NATURAL GAS: A DESTINATION FUEL

Source: IEA World Energy Outlook, WoodMackenzie, Shell Interpretation

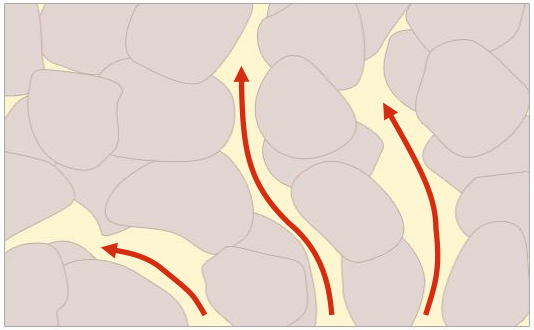
CCS: Carbon Capture & Storage

CCGT: Combined Cycle Gas Turbine
Total Cost = Capital + Fuel + Operating

Source: DECC (Mott MacDonald) June 2010

TIGHT GAS: THREE DIFFERENT TYPES

TIGHT GAS

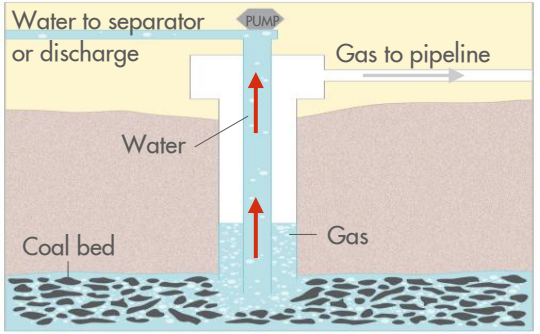


- Occurs in 'tight' sandstone
- Low porosity = Little pore space between the rock grains
- Low permeability = gas does not move easily through the rock

SHALE GAS

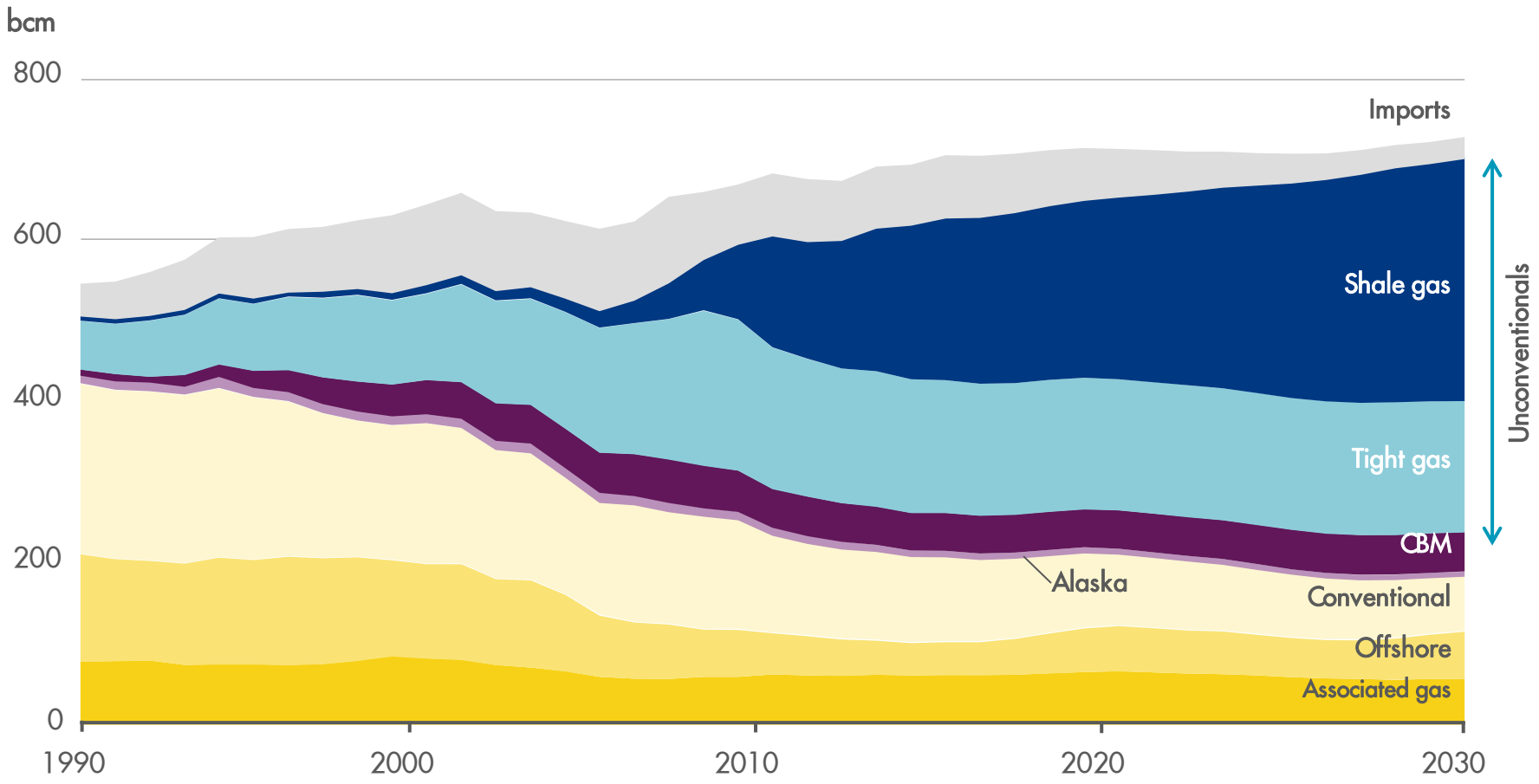
- Natural gas trapped in very small pores and adsorbed on organic material
- Ultra-low permeability (.0001-.001mD)
- Production via induced fractures

COALBED METHANE

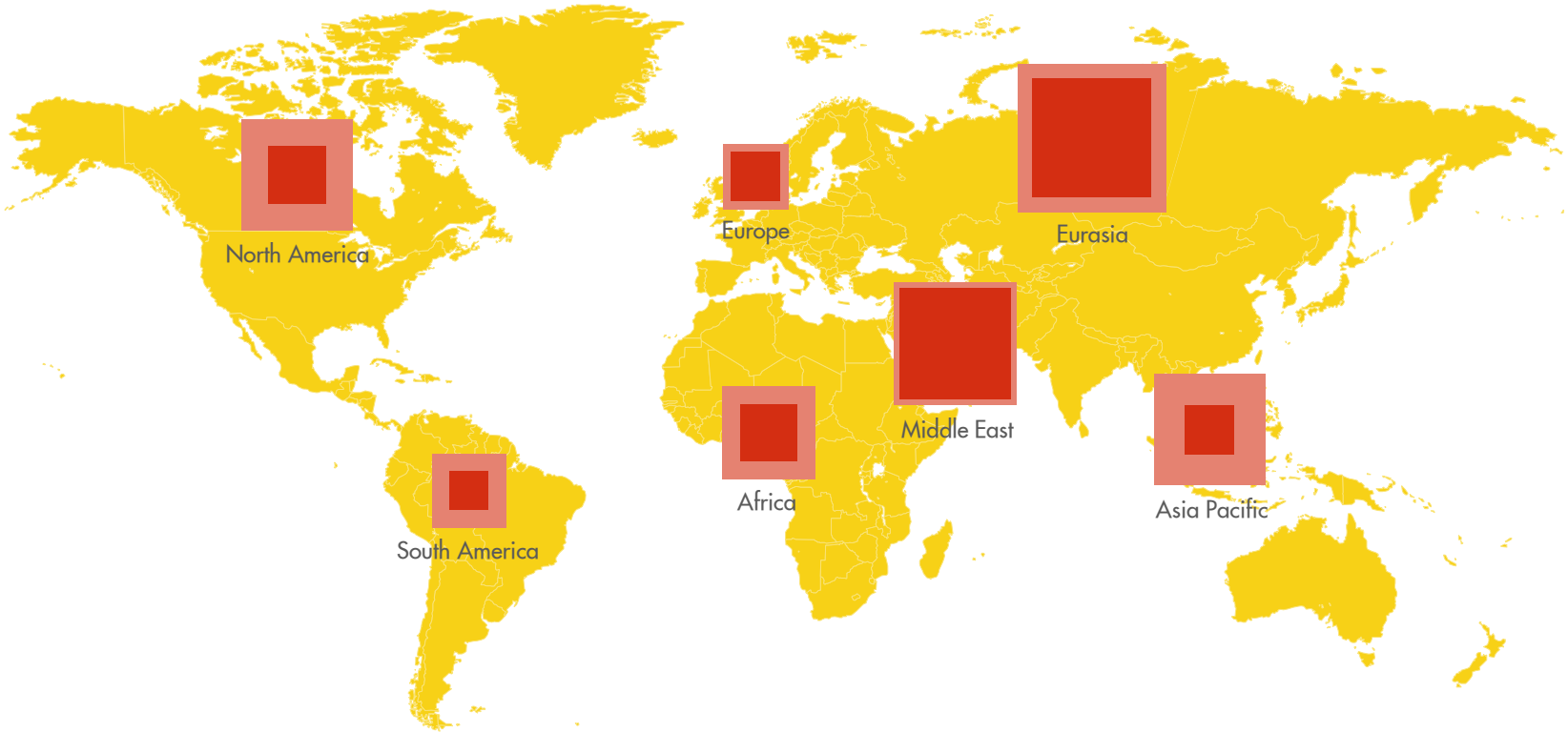


- Natural gas in coal (organic material converted to methane)
- Permeability low
- Production via natural fractures ("cleats") in coal
- Recovery rates low

DRAMATIC IMPACT OF TIGHT GAS IN THE US



GAS REVOLUTION: GLOBAL POTENTIAL



More than 250 years of supplies at current production rates

- Conventional Gas Resources
- Unconventional Gas Resources

Source: IEA World Energy Outlook, WoodMackenzie, Shell Interpretation

TECHNOLOGY & INTEGRATION

TECHNOLOGY ENABLERS

Decrease Well Costs

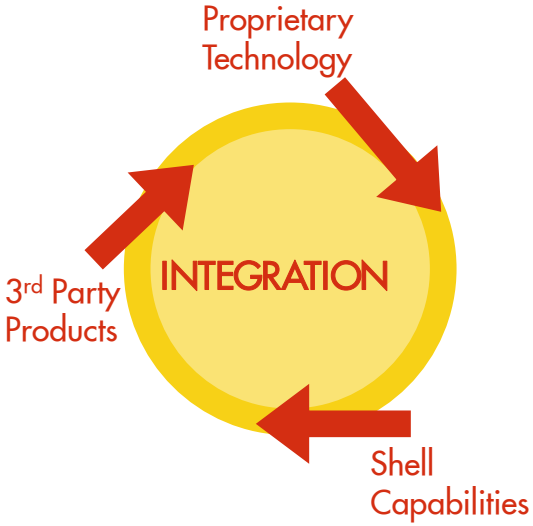
- Best in class drilling technologies - Drilling Automation & Well Manufacturing
- Rigs on skids
- Mud composition
- Fracturing techniques
- Multi-stage completions
- Micro seismic

Increase Production

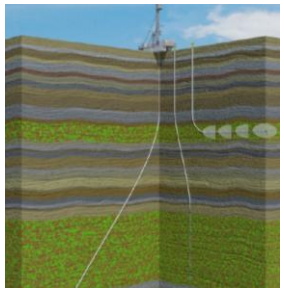
- Integration of techniques
- Selecting the best areas
- Fracture prediction
- Rock property analysis
- Seismic evaluation
- Geomechanical analysis
- Geochemical analysis

Reduce Footprint

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



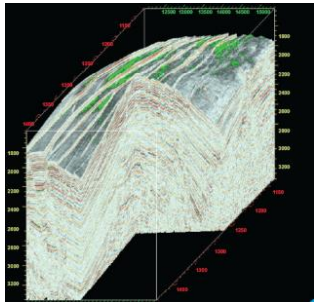
WELL DESIGN



PAD DRILLING

FRACTURE PREDICTION

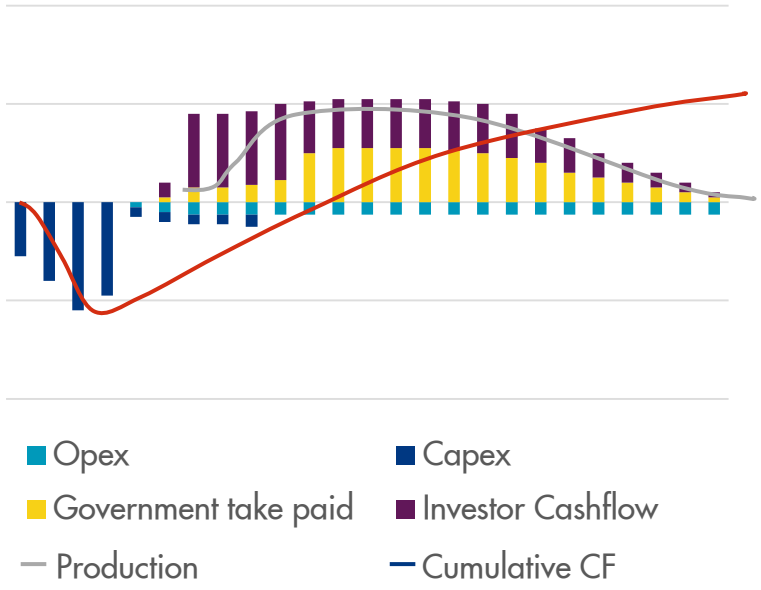
SEISMIC EVALUATION



NOVEL TECHNOLOGIES

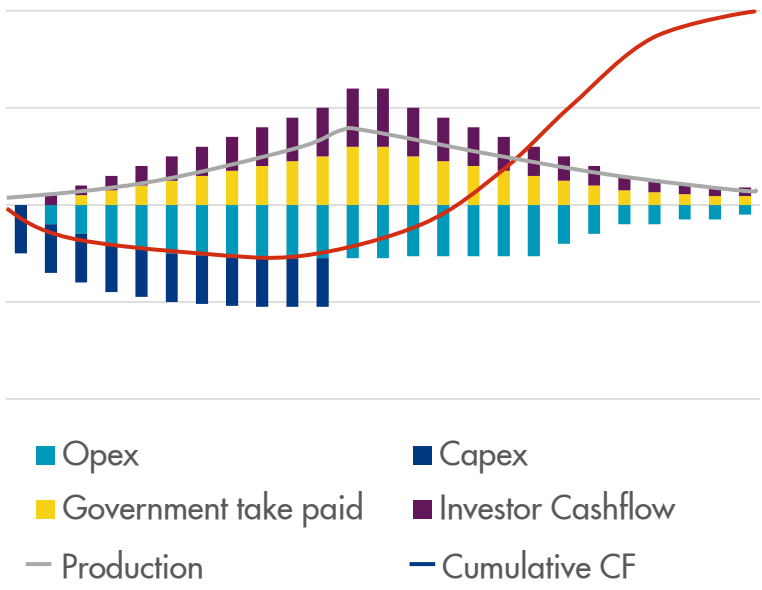
WHAT DOES TIGHT/SHALE GAS NEED TO WORK?

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)

 Date 08/10/2012

SHELL TIGHT GAS OPERATING PRINCIPLES

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

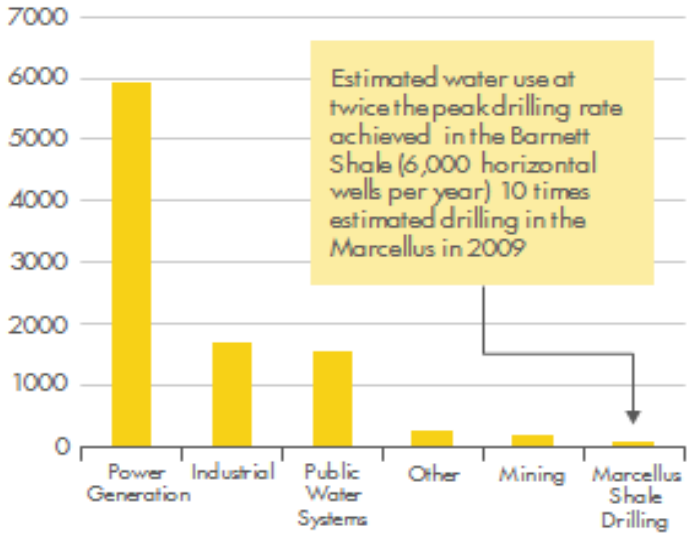
Shell conducts its operations in a manner that protects groundwater and reduces potable water use as reasonably practicable.

Community

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

WATER MANAGEMENT

HOW OUR WATER USAGE STACKS UP

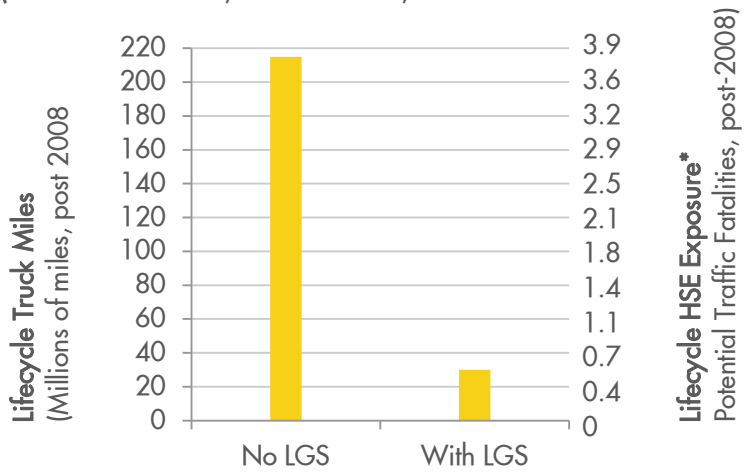


Source: USGS, Pennsylvania Water Consumption

PINEDALE: LIQUIDS GATHERING SYSTEM (LGS)

Lifecyle Trucking Exposure, Shell operated

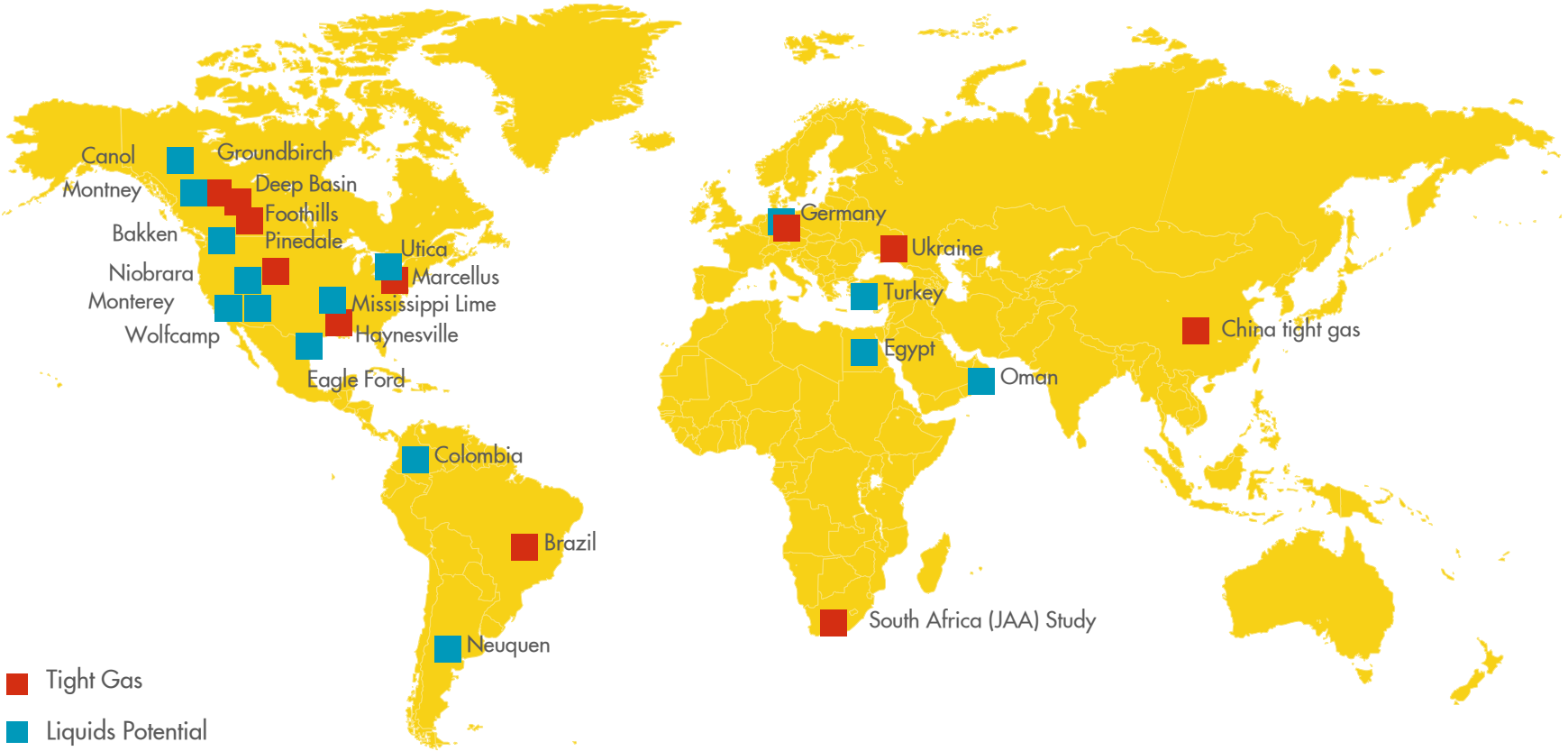
(Produced Water, Condensate, Frac Flowback



In Wyoming, 1.79 traffic fatalities per 100 million vehicle miles

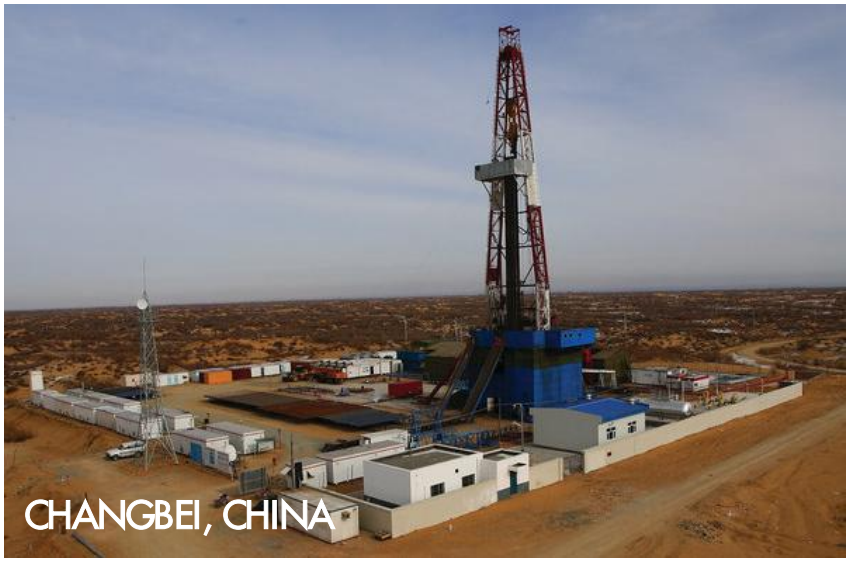
- 90-miles of LGS for condensate and water.
  - Condensate exported via pipeline. Increased yield & price
  - Excess water injected in disposal wells via pipeline
- LGS provides water re-use distribution piping for frac jobs.
- LGS recovers flared tank gas for increased gas sales.

SHELL'S GLOBAL TIGHT GAS + LIQUIDS-RICH SHALES PORTFOLIO



~50,000 KM2 (~12 MILLION ACRES) ACREAGE WORLD WIDE
~12,000 KM2 (~3 MILLION ACRES) LIQUIDS-RICH SHALES ADDED IN 2011

STRATEGIC PARTNERSHIPS



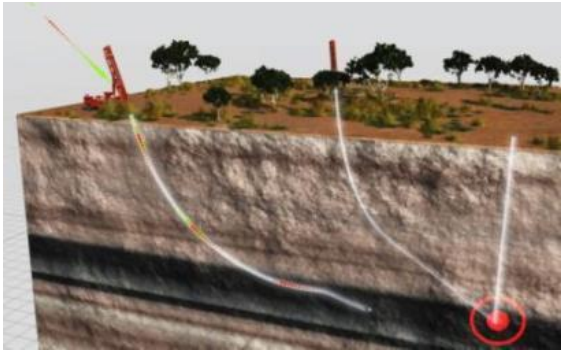
WELL MANUFACTURING SYSTEM – A SHELL/CNPC JV

- 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.

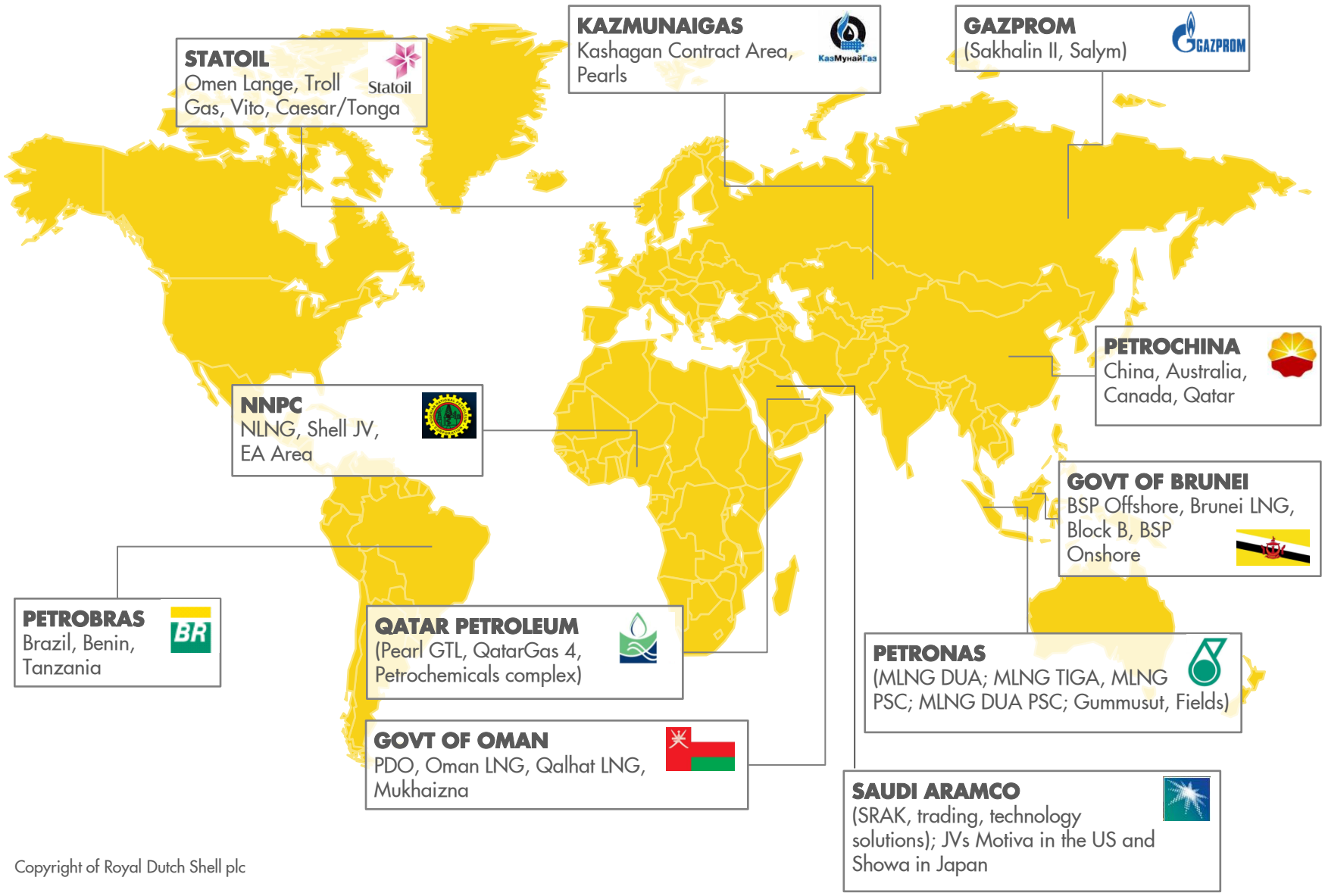
CENTRAL SUPPLY FACILITY FOR LOGISTICS

DRILLING AUTOMATION - SCADADRILL

AUTOMATED TRUCK-MOUNTED RIGS

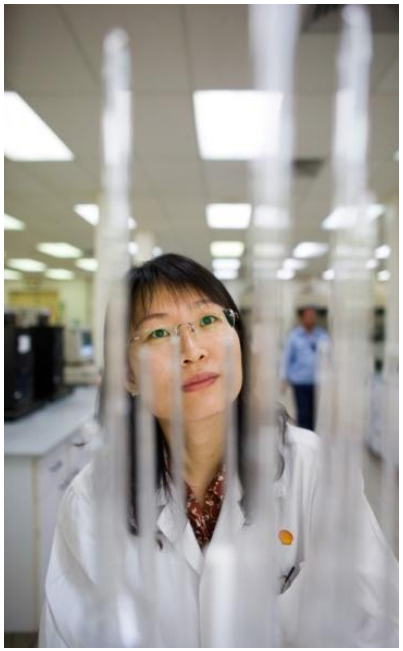


NOC / IOC COOPERATION



KEY ENABLER: PEOPLE

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



THANK YOU!