



Intro to LNG in Shell

IGU Meeting

October 2012

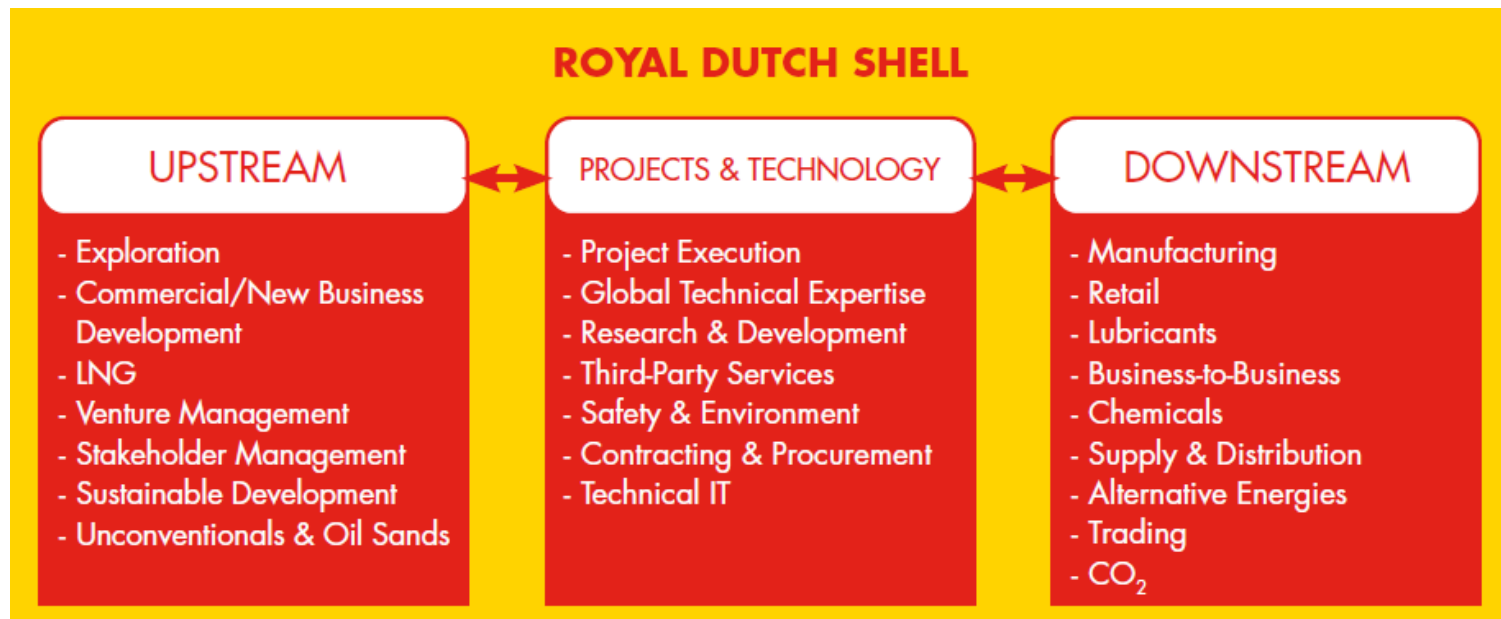
Marjan van Loon
VP LNG – Shell Projects and Technology

P&T Vision

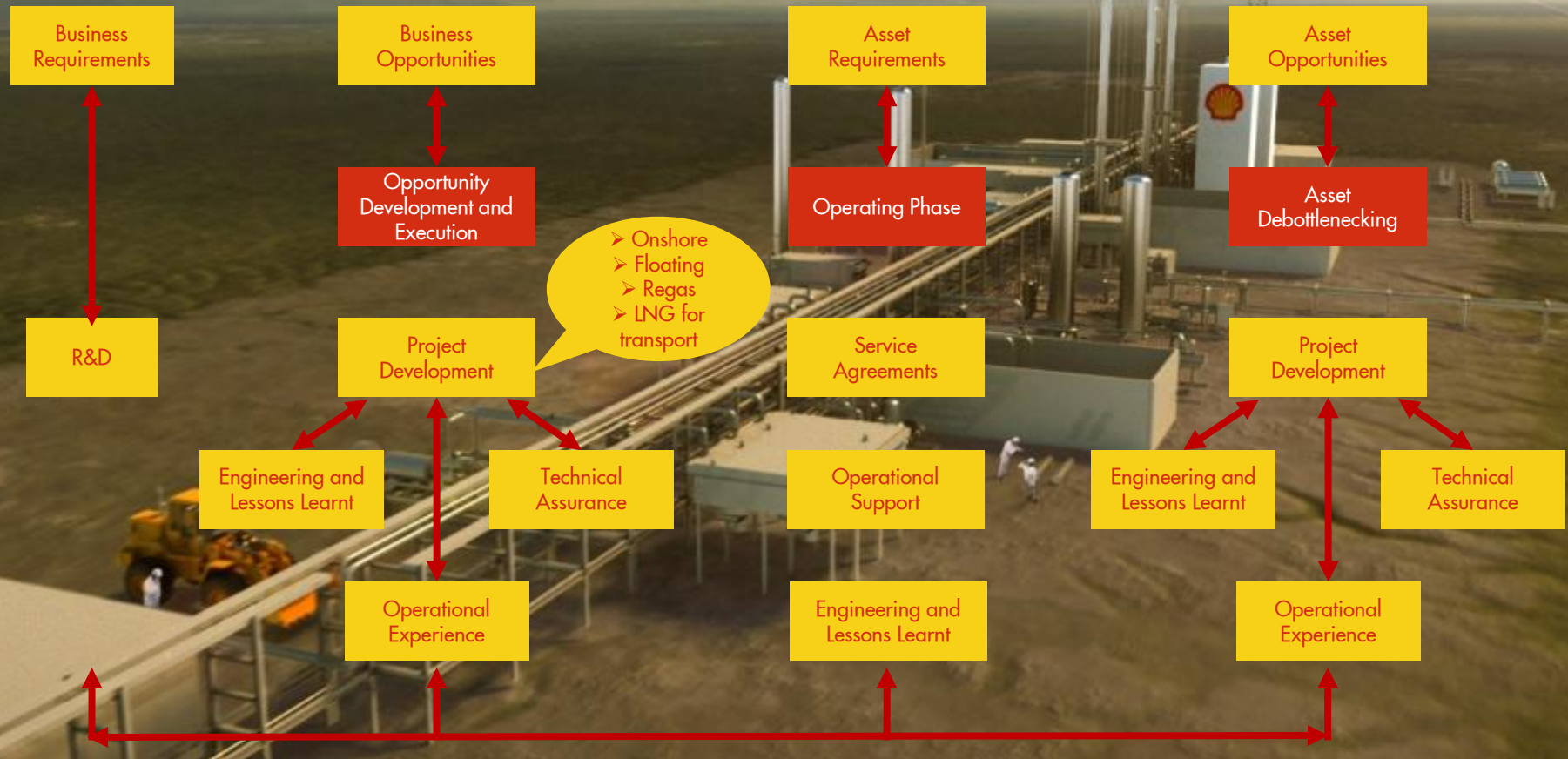
The driving force for Shell's competitive success...

- Delivering top quartile projects and wells
- Creating competitive advantage through technology
- Driving technical and operational excellence in ourselves and others
- Attracting industry's top talent

...Achieved with top quartile costs and health, safety and environmental excellence.



A typical LNG project



Shell's Global LNG Portfolio – Post FID

ACCESS
TO KEY
STRATEGIC
MARKETS



ALTAMIRA



BAJA



COVE POINT



ELBA ISLAND



DUBAI



HAZIRA



SPAIN

LNG FOR
TRANSPORT



GREEN CORRIDOR

EXPORT



BRUNEI LNG



SAKHALIN II



PLUTO (WOODSIDE)*



QATARGAS 4



NIGERIA LNG



QALHAT*



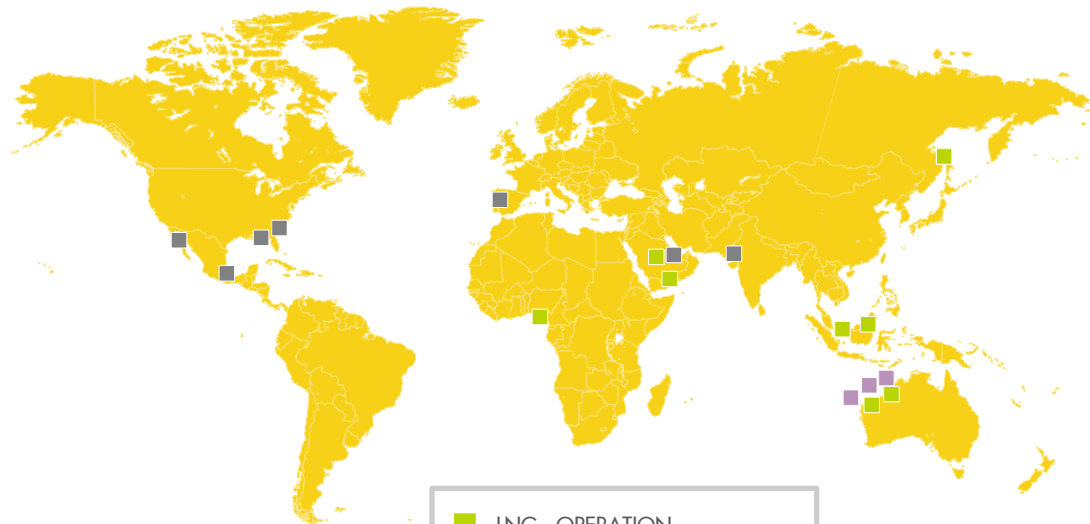
WHEATSTONE LNG



PRELUDE



GORGON LNG



MALAYSIA LNG



NORTH WEST SHELF

* Indirect interest

Leadership across LNG value chain

EXPLORATION & PRODUCTION



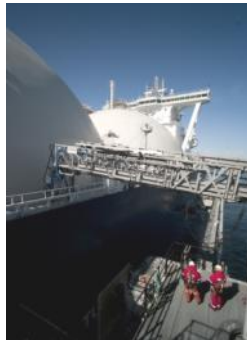
One of the world's largest gas producers

LIQUEFACTION



Largest LNG supplier

LNG SHIPPING



Largest ship operator

REGAS, PIPELINES, STORAGE



Strategic positions, active portfolio management

MARKETING & TRADING



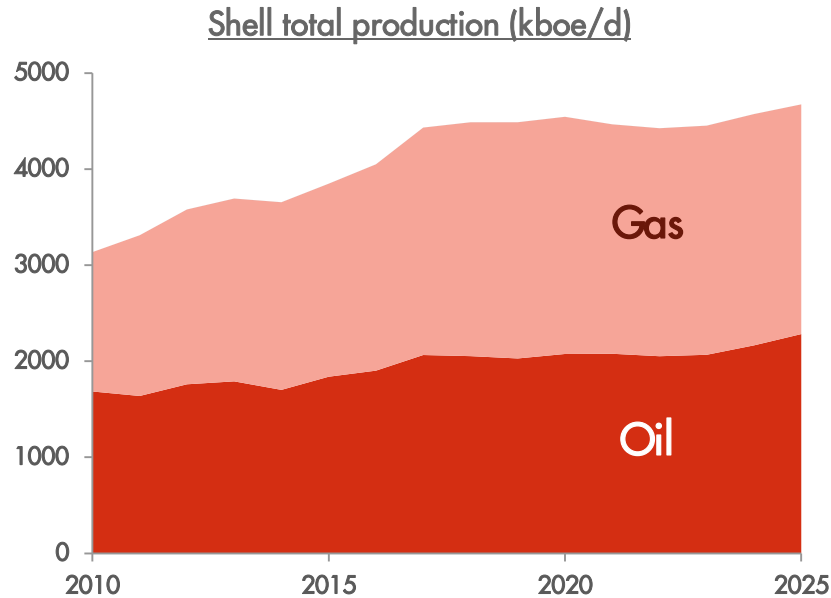
Global positions and capabilities

TECHNOLOGY



Leader in LNG and gas conversion technologies

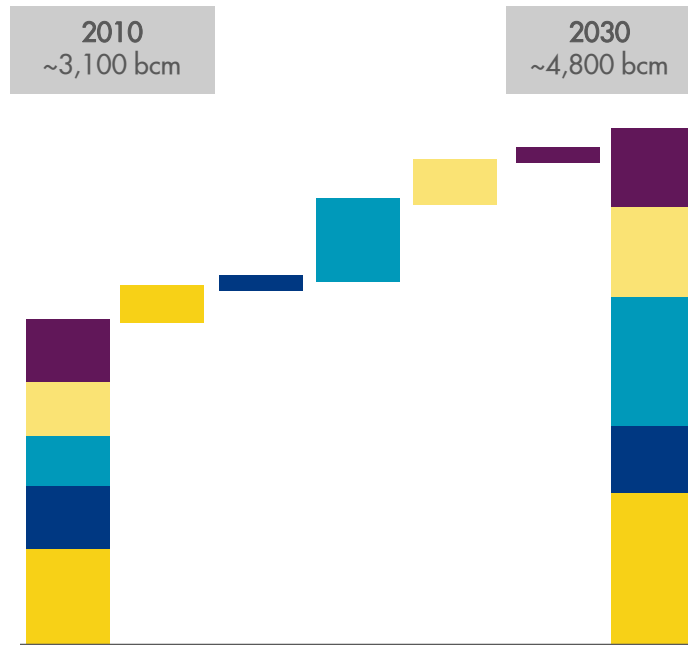
Shell Gas Production Outlook



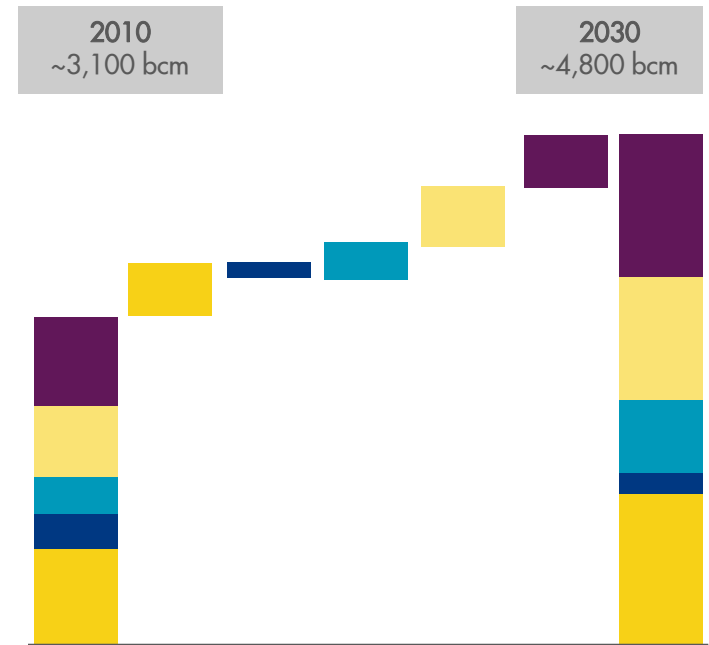
- Shell's gas production is expected to grow until 2017 and then stabilises around 50 – 55%
- European gas production in decline
- Gas growth in North America through unconventional, followed by Australia LNG

Gas Demand and Supply Growth

GAS DEMAND GROWTH



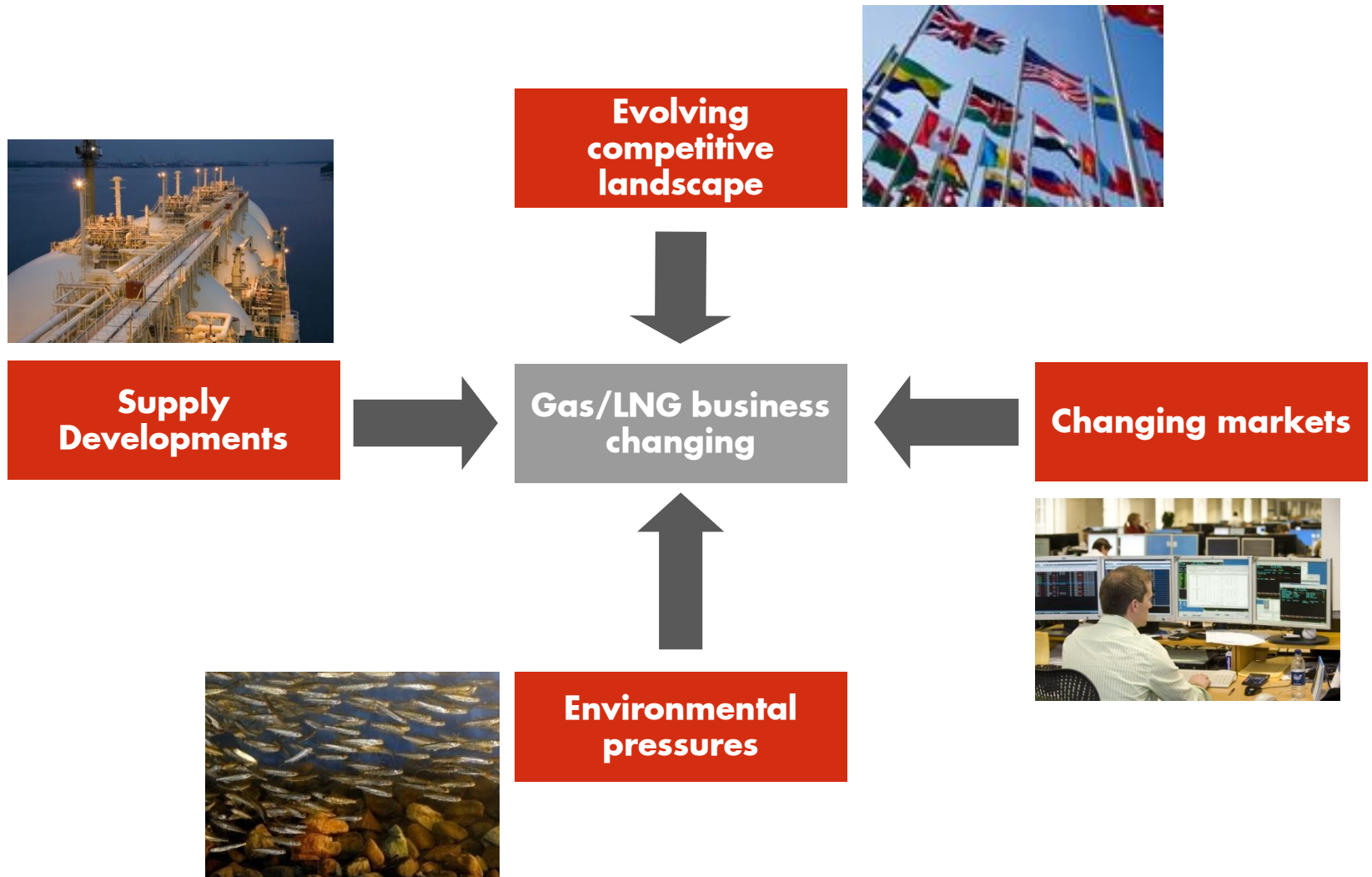
GAS SUPPLY GROWTH



■ Russia + Others ■ MENA + Qatar ■ Asia ■ Europe ■ Americas

- Strong global demand growth of 2.2% to 4,800 bcm/annum in 2030
- Significant growth in gas production expected from North America, Middle East, Australia and China

Gas Market Dynamics



Snapshot of LNG Projects and Opportunities

LNG Canada



Basra Gas Company



Various import



MMLS (CGC)



Gorgon Base & Expansion



Prelude FLNG Sunrise FLNG



Browse



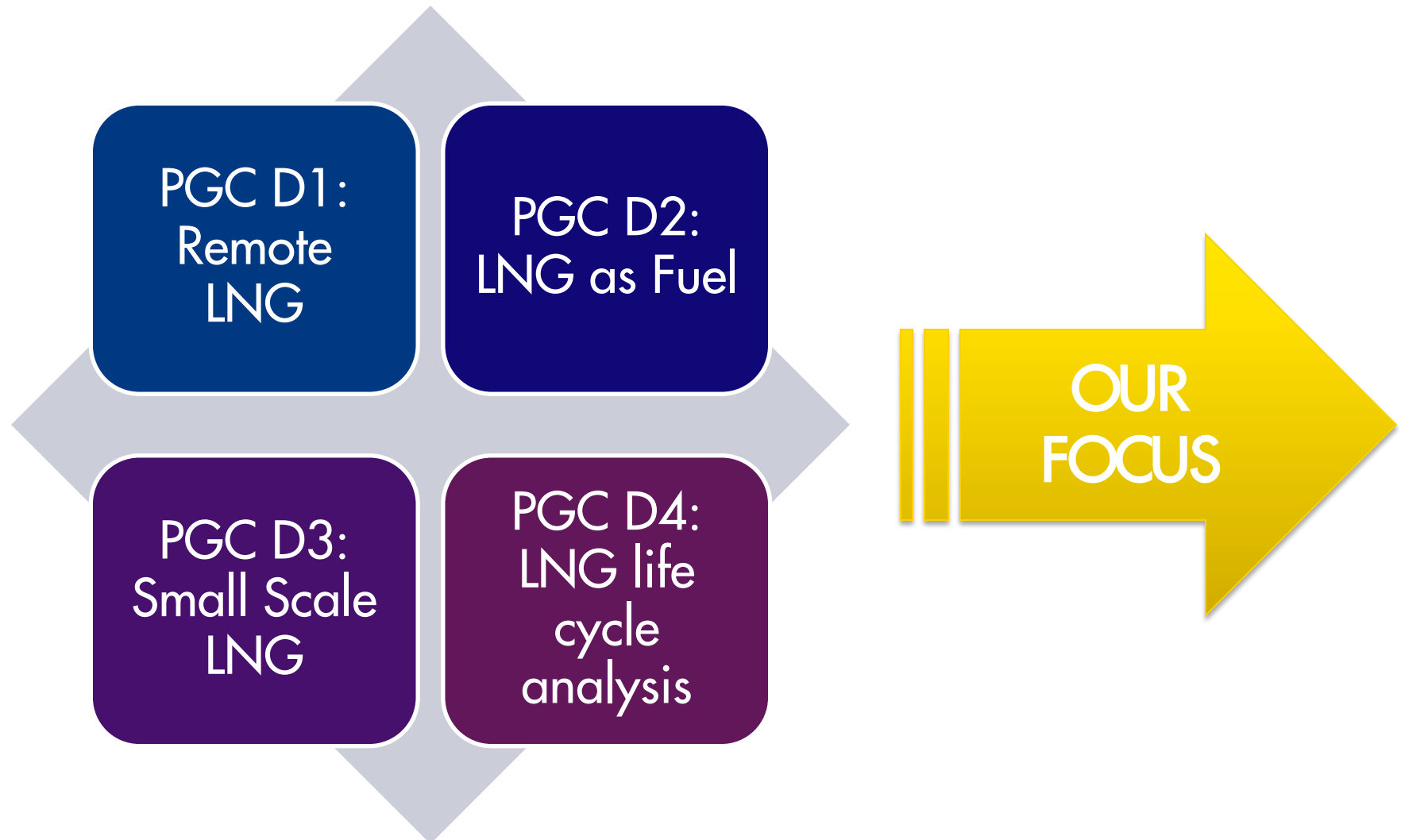
Abadi



Arrow LNG



PGC D - Topics for Triennium 2012 - 2015



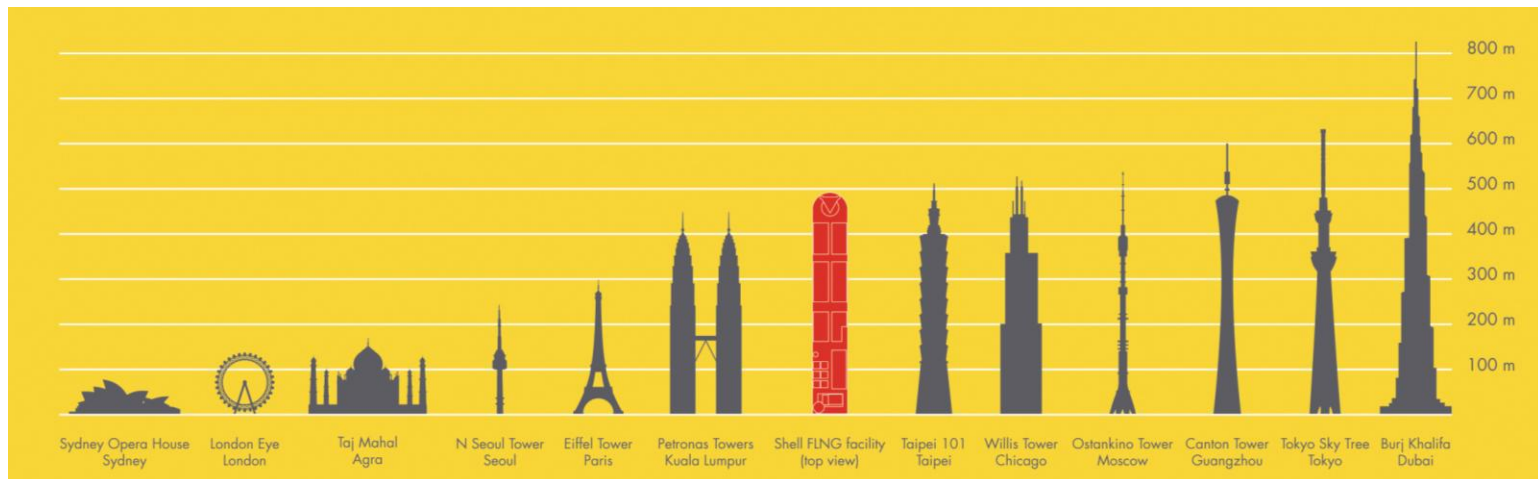
Prelude FLNG

PGC D1:
Remote
LNG

OVERVIEW (SHELL 67.5%, OPERATOR)



- Located in the Browse field, 200 km offshore northwestern Australia
- Prelude and Concerto gas resources combined ~3 tcf
- Capacity Prelude FLNG: 5.3 mtpa in total liquids (3.6 mtpa of LNG, 0.4 mtpa of LPG, 1.3 mtpa of condensate)
- Largest offshore floating facility, topsides, turret & mooring
- FID taken May 2011



Shell acquired two LNG-powered barges

PGC D2:
LNG as
Fuel

- Contract signed for the charter of two new-build tank barges powered by LNG
- New additions to the Shell Rhine Fleet, bringing fuel products to customers along Europe's Rhine river
- A first for Shell and the inland marine industry



- 110 metres long, 11.4 metres wide
- Average speed of 16 km/h
- Bridge/wheelhouse at the front of the ship

PGC D3:
Small
Scale
LNG

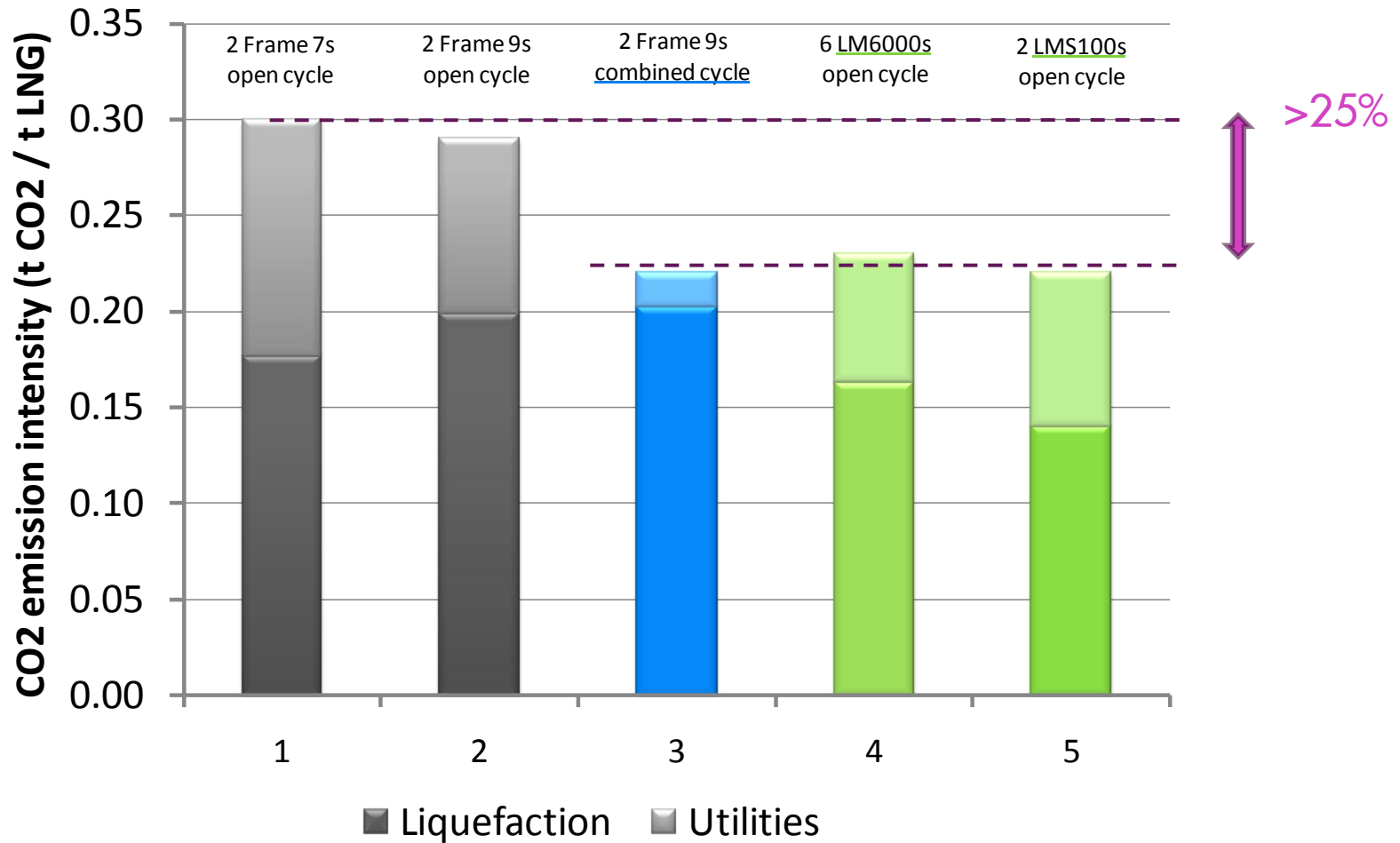


```
graph LR; A[Natural gas supply] --> B[LNG supply]; B --> C[LNG distribution]; C --> D[LNG storage and dispensing]
```

The flowchart illustrates the stages of LNG supply. It consists of four blue rectangular boxes with rounded corners, each containing white text. The boxes are arranged horizontally from left to right, connected by grey right-pointing arrows. The first box is labeled 'Natural gas supply', the second 'LNG supply', the third 'LNG distribution', and the fourth 'LNG storage and dispensing'.

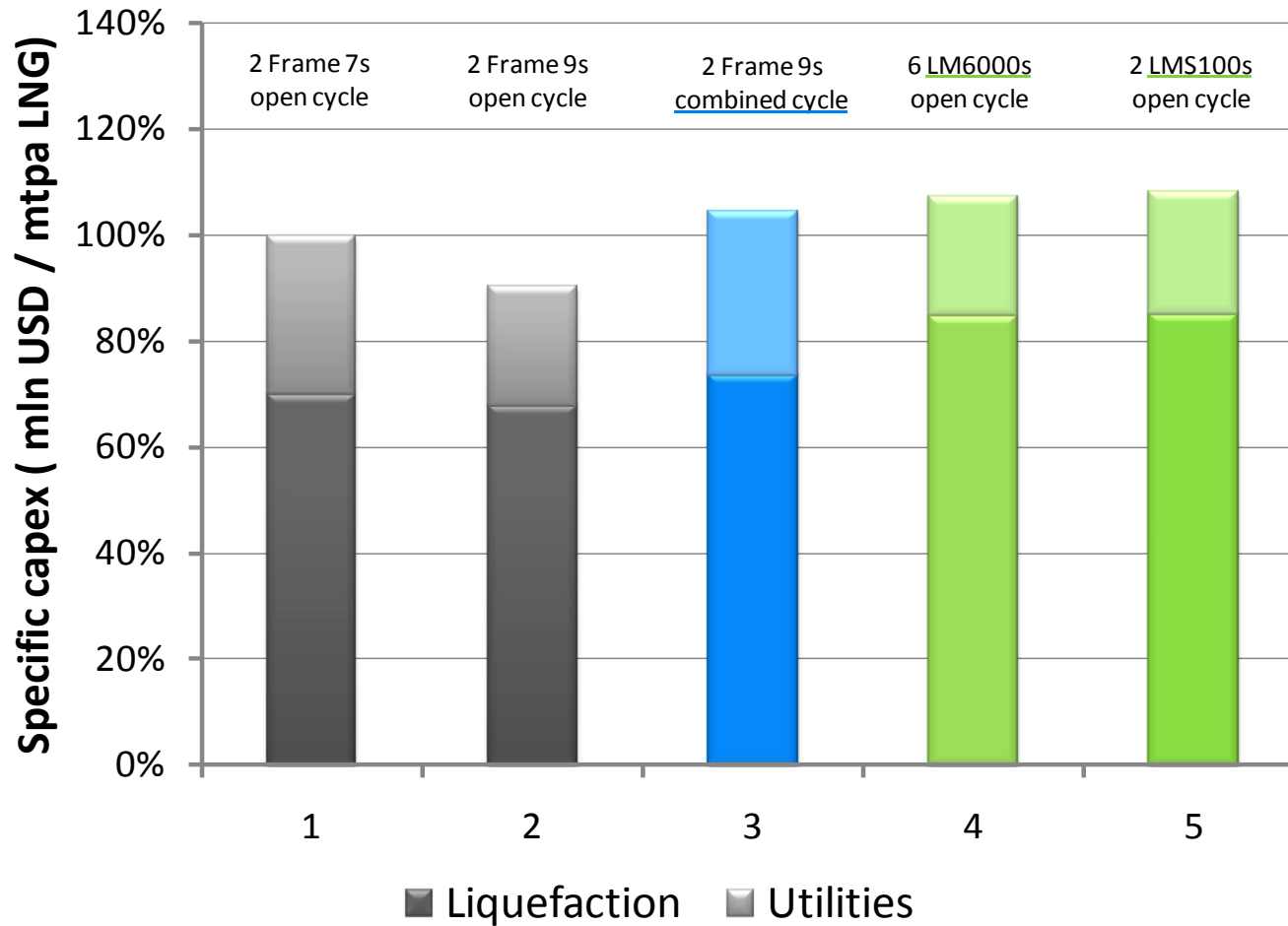
Study on 5 configurations

PGC D4:
LNG life
cycle
analysis



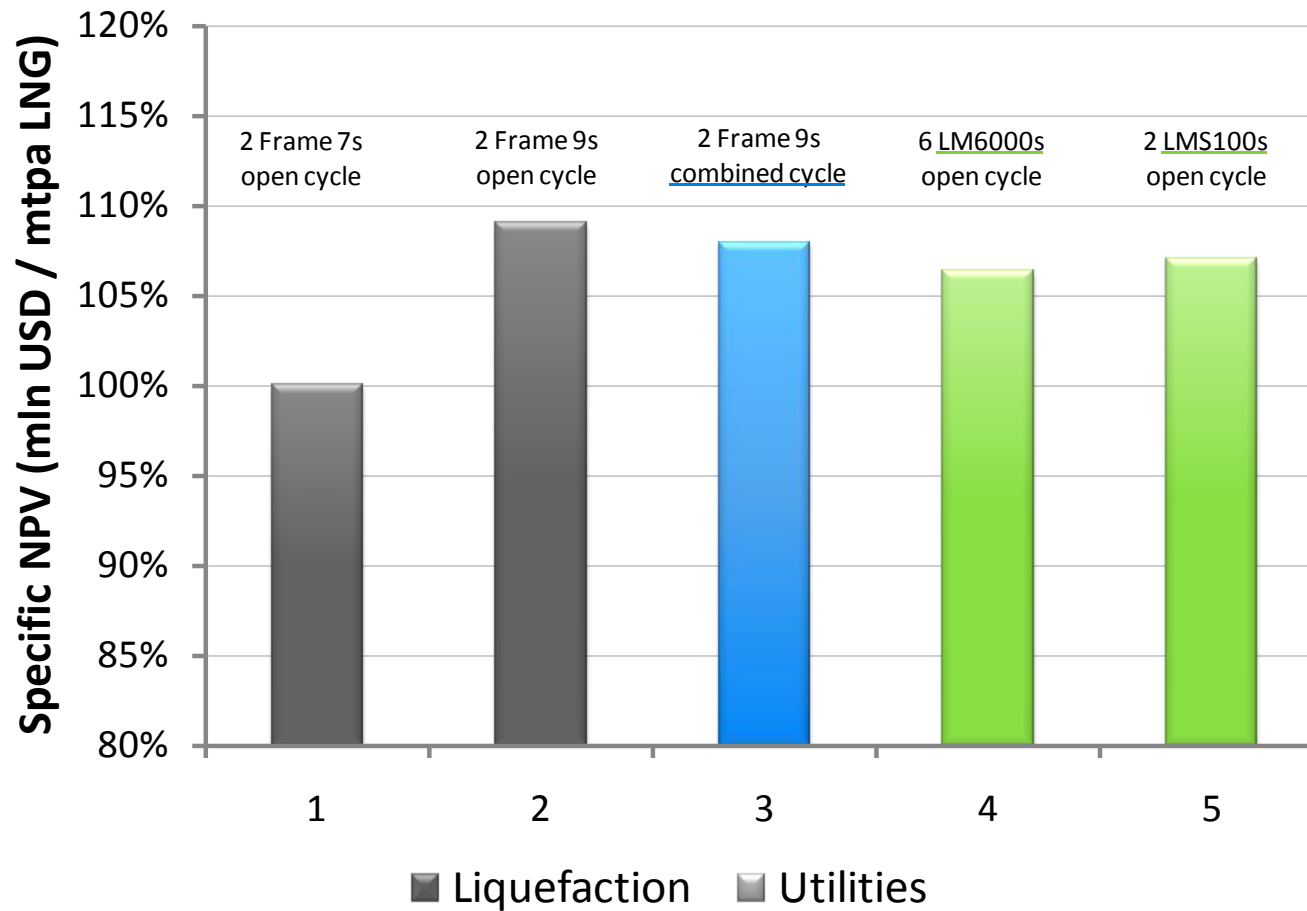
Study on 5 configurations

PGC D4:
LNG life
cycle
analysis



Study on 5 configurations

PGC D4:
LNG life
cycle
analysis



Shell LNG: Excellence through Integration

- Innovation in train size and efficiency
- CO2 performance
- Minimizing plot size/environmental footprint

Technology



Integration



Project Management

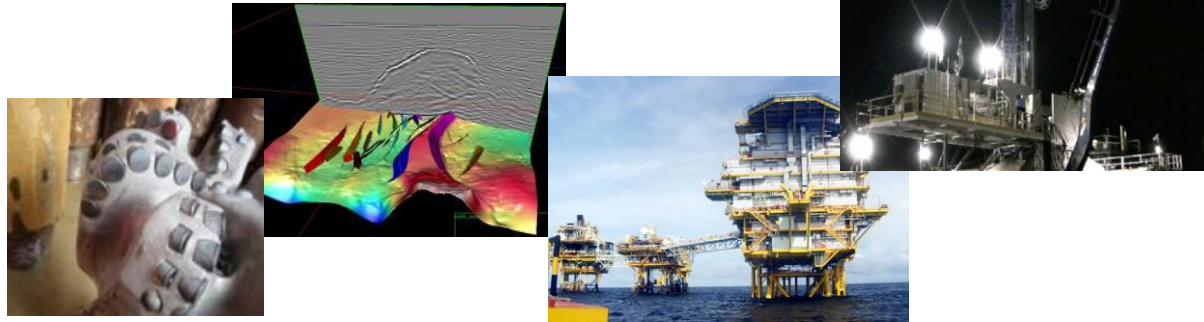
- Project delivery in complex/remote locations
- Competitive costs and schedule
- Maximizing local content



Operations

- Track record of Flawless Start-ups
- Added value by Shell's LNG M&T capability
- Improving plant performance over its lifetime

Visit to Shell E&P Labs in Rijswijk



Drilling Simulator

- New training facility is crucial for safety in drilling wells.
- It is the cutting edge of drilling simulation technology.

Heavy Oil Laboratory

- Creating integrated solutions for the development of unconventional hydrocarbons – extra heavy oil, shale oils, oil sands and unconventional gas.

Enhanced Oil Recovery

- Shell has built up the capability to accurately model and forecast the performance of EOR projects, making them more economically robust.

Test Rig – Expandable Tubulars

- Full size test rig (and of the expandable test facilities from the skybox)
- expandables, monodiameter well technology, zonal isolation, and a hole making technology

