



COMPETITIVE, ECONOMICAL AND FAST: GROWTH THROUGH BROWNFIELD LNG EXPANSION

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CAUTIONARY NOTE

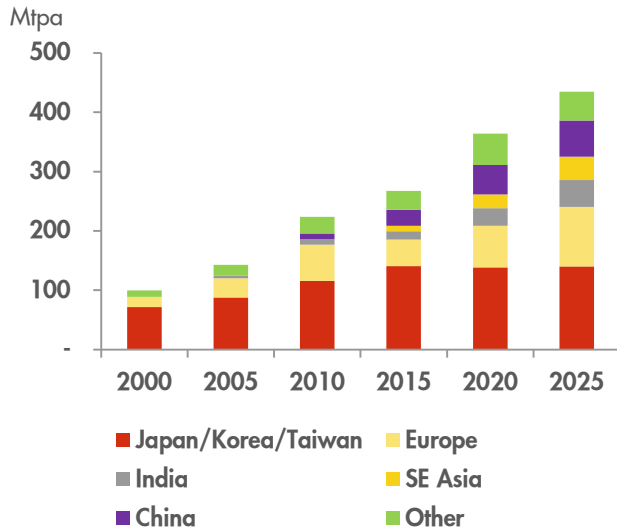
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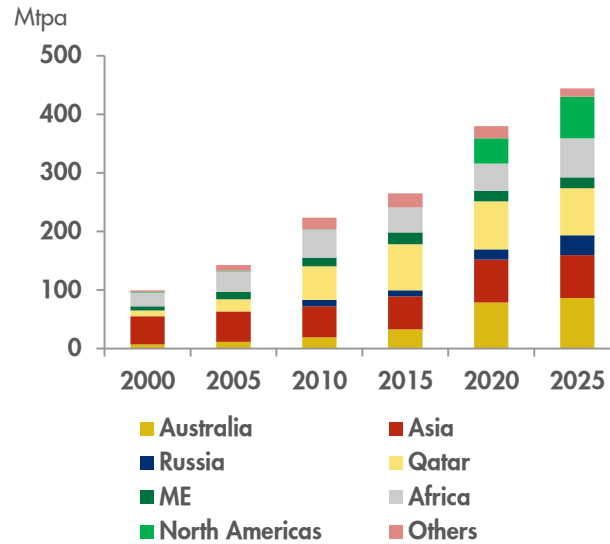
LNG SUPPLY AND DEMAND OUTLOOK



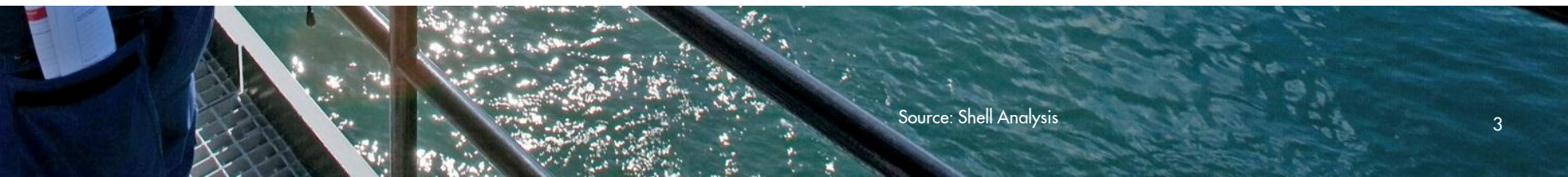
LNG DEMAND



LNG SUPPLY*



* Risked view of all LNG supply projects Source: Shell analysis



SHELL'S GLOBAL LNG PORTFOLIO

10 PROJECTS IN OPERATION & 3 NEW PROJECTS UNDER CONSTRUCTION



NIGERIA LNG
22 MTPA



QATARGAS 4
7.8 MTPA



OMAN AND QALHAT
10.8 MTPA



SAKHALIN T1 & 2
9.6 MTPA



■ LNG – OPERATION
■ LNG – CONSTRUCTION



PERU LNG
4.4 MTPA



ELBA ISLAND
2.5 MTPA



PLUTO (WOODSIDE)
4.3 MTPA



MALAYSIA LNG
17.3 MTPA



ATLANTIC LNG
15 MTPA



PRELUDE
3.6 MTPA



GORGON
15.3 MTPA



NORTH WEST SHELF
16.3 MTPA

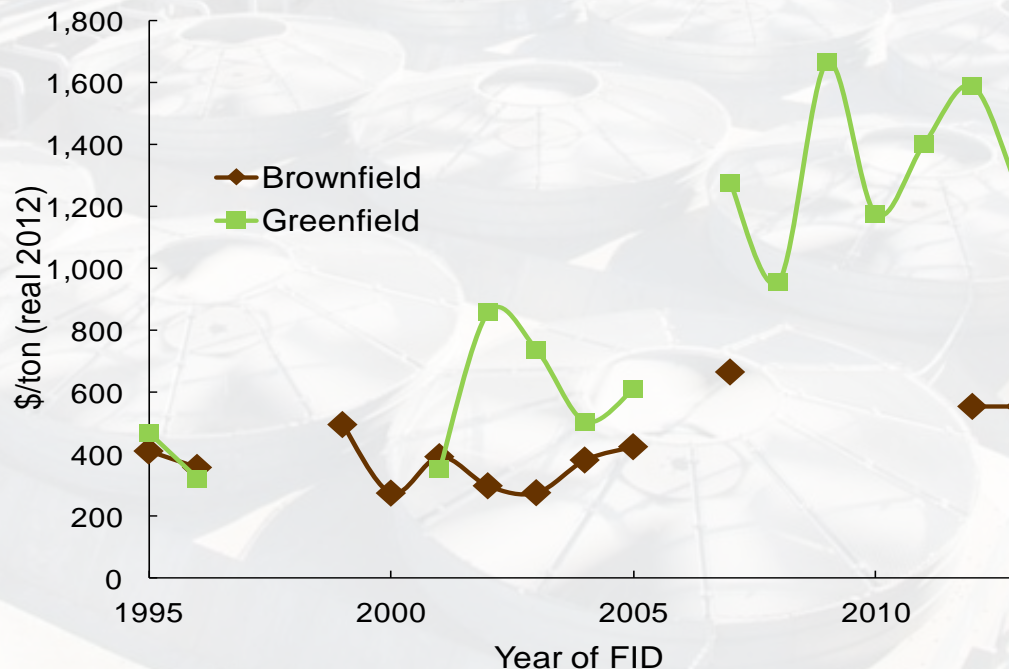
Figures shown are 100% capacities of the projects

HISTORICAL ANALYSIS

SCHEDULE AND COST

- Study of worldwide LNG plant execution supports the advantages of brownfield expansion.
- On average, brownfield plants were executed 13 months faster (FID to first cargo) and less prone to unscheduled delays (3 months vs 9 months)
- Up until 2005, greenfield costs were on average 30-40% higher than brownfield. Since 2005, greenfield costs have been averaging around 100% higher than brownfield

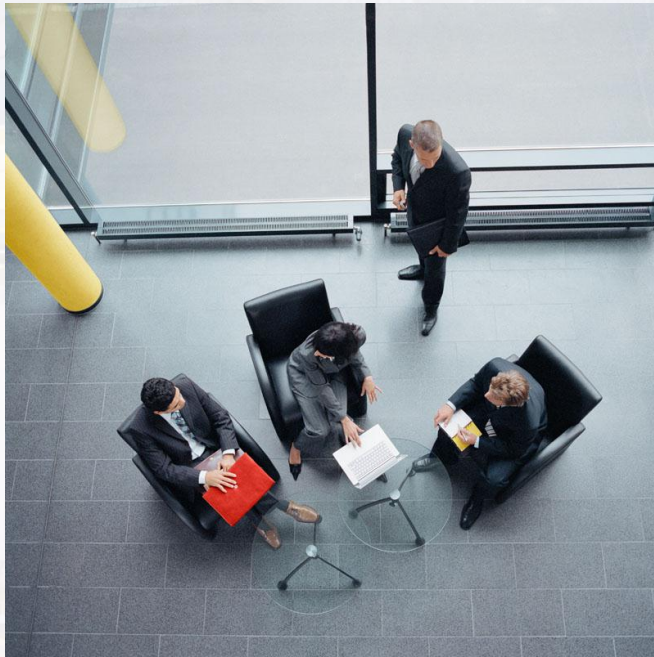
Average liquefaction capex estimates by year of FID



Source: IHS Energy

COMMERCIAL ADVANTAGES OF BROWNFIELD PROJECTS

- Established customer relations
- Established relationships with project lenders
- (Usually) Established partner agreements and taxation terms



REPLICATION OF LNG TRAINS

SHELL'S EXAMPLES

Malaysia LNG: expanded from 3 to 8 trains

Nigeria LNG: expanded from 2 to 6 trains

Oman LNG: expanded from 2 to 3 trains

North West Shelf LNG: expanded from 2 to 5 trains

Sakhalin-2: only 2 trains



NORTH WEST SHELF LNG

SHELL'S EXAMPLES

16.3 MTPA LNG NAMEPLATE CAPACITY



NWS TRAIN 5



KARRATHA GAS PLANT

AUSTRALIA NWS (SHELL 16.6%)

- Operating since 1984, Australia's largest oil and gas development
- Shell has provided technical leadership and support since its inception
- Over 25 years of LNG exports to Asian Pacific customers, over 4000 LNG cargoes to customers in Asia Pacific
- Size and scale: 5 LNG trains, 2 domestic gas trains, 6 condensate stabilization units, 3 LPG fractionation units + storage, loading facilities
- Today the project produces more than 1/3 of Australia's oil and gas

NORTH WEST SHELF LNG

SHELL'S EXAMPLES

Train 1 – 2.5 mtpa – 1989

Train 2 – 2.5 mtpa – 1989

Train 3 – 2.5 mtpa – 1992

Train 4 – 4.4 mtpa – 2004

Train 5 – 4.4 mtpa – 2008

Total 16.3 mtpa



SAKHALIN-2

OPPORTUNITIES FOR EXPANSION

9.6 MTPA LNG NAMEPLATE CAPACITY



LUNSKAYA PLATFORM



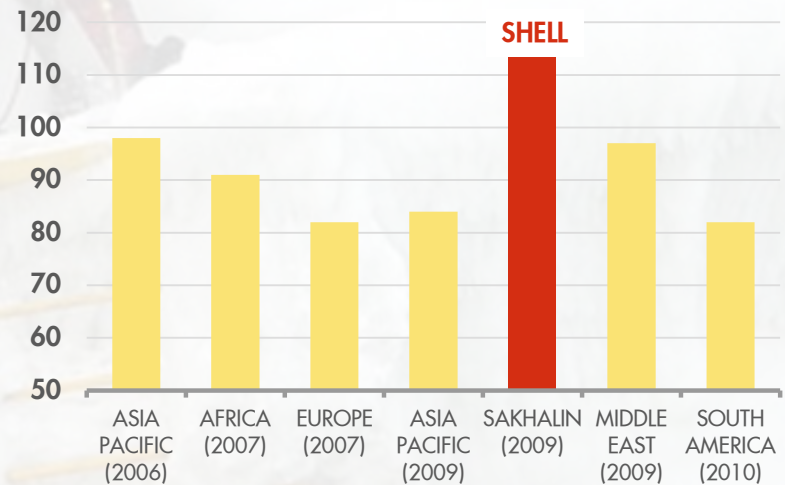
SAKHALIN II LNG PLANT

PROJECT START-UP: LNG

2011 LNG

capacity utilization %

COMPETITOR PROJECT (START-UP)

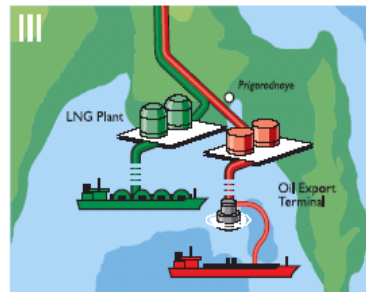
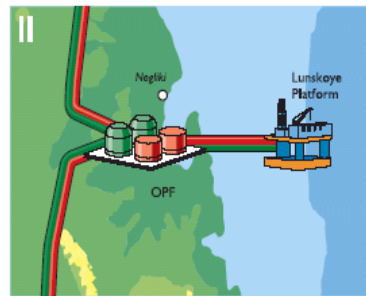
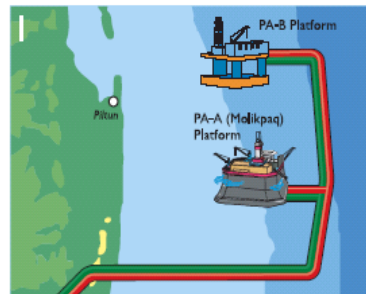


Sakhalin LNG:

- Started up in 25 days using Shell's Flawless™ Start Up method
- Due to optimization, has produced above initial capacity since 2010
- In late 2015, the 1000th LNG cargo will leave the Sakhalin-2 LNG plant
- Uses Shell's Double Mixed Refrigerant (DMR) process for liquefaction

SAKHALIN-2

OPPORTUNITIES FOR EXPANSION



Integrated infrastructure including sub-arctic offshore oil and gas production, onshore processing, pipeline, LNG plant, oil and LNG export terminals



SAKHALIN-2 OPPORTUNITIES FOR EXPANSION

August 2003



SAKHALIN-2

OPPORTUNITIES FOR EXPANSION

August 2004



SAKHALIN-2

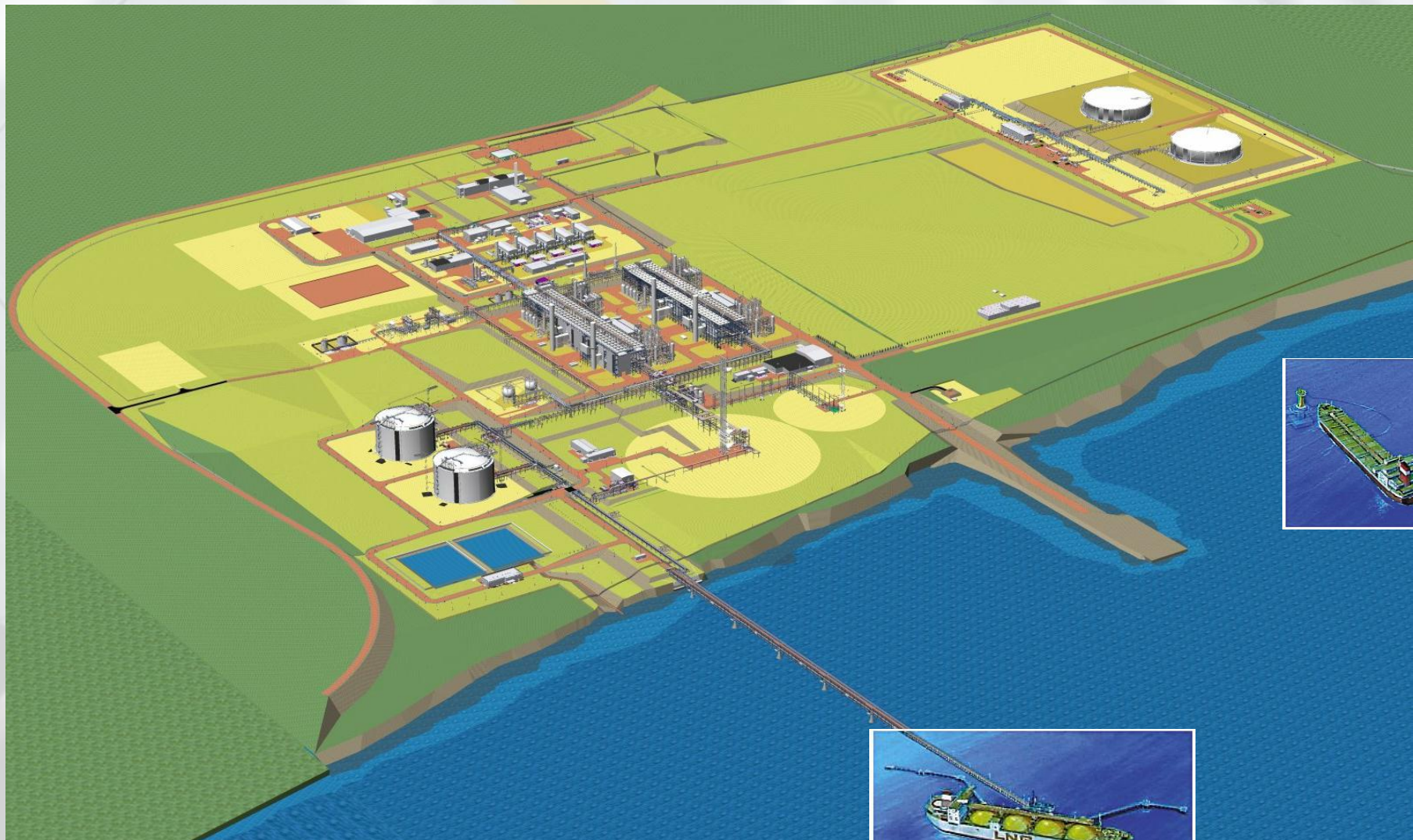
OPPORTUNITIES FOR EXPANSION

August 2013



SAKHALIN-2

TRAIN-3 PROJECT



SAKHALIN-2

TRAIN-3 PROJECT



