PERSPECTIVE MARCH 2015

LIQUEFIED NATURAL GAS

(LNG) HOW TO WIN THE GLOBAL SUPPLY-SIDE COMPETITION FOR MIDDLE EAST PRODUCERS

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LNG: how to win the global supply-side competition for Middle East producers

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OVERVIEW

IN A STILL EXPECTEDLY HIGH-GROWTH LNG MARKET, THE MIDDLE EAST PRODUCERS SEEM TO HAVE THROWN IN THE TOWEL ON CAPTURING NEW DEMAND, AT THE EXPENSE OF APPARENTLY LESS COST-EFFECTIVE INVESTMENTS ESPECIALLY FROM AUSTRALIA AND NORTH AMERICA.

IS THAT THE CORRECT STRATEGY OR, ESPECIALLY IN CURRENT LOW OIL PRICE SCENARIO, CAN MIDDLE EAST PLAY AN INDUSTRIAL AND COMMERCIAL ROLE IN MEETING THE EXPECTED SURGE IN DEMAND?

EXHIBIT 1
World primary energy demand by fuel

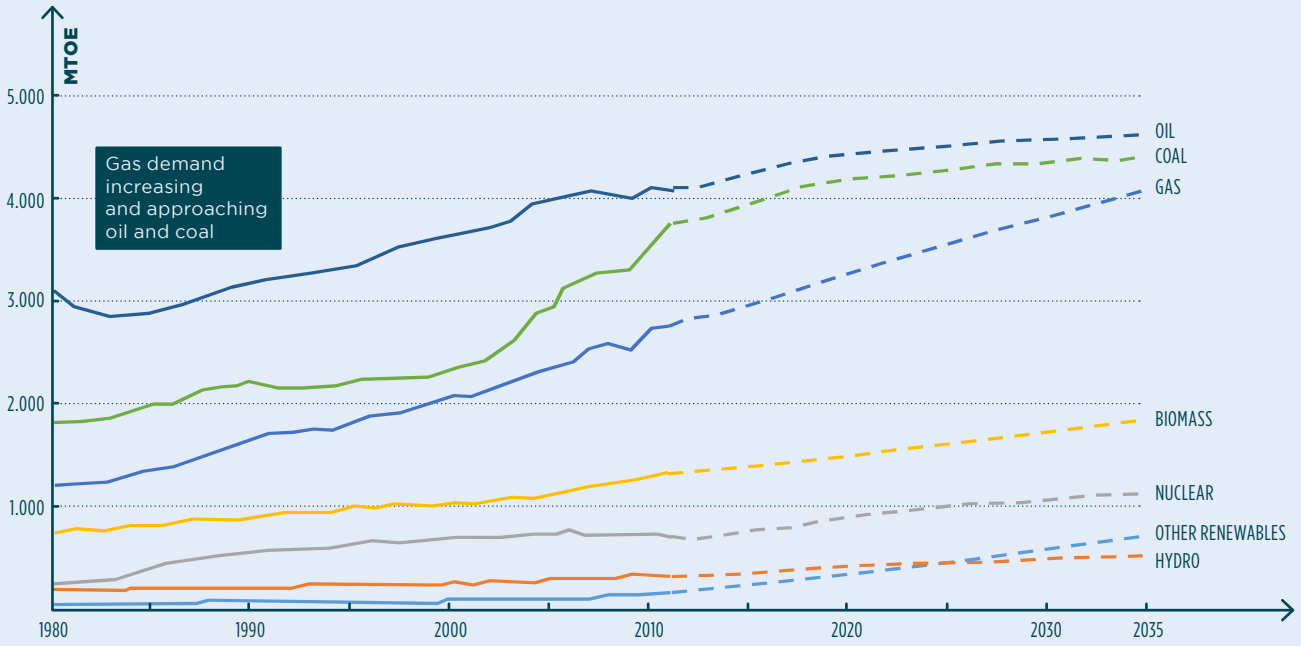
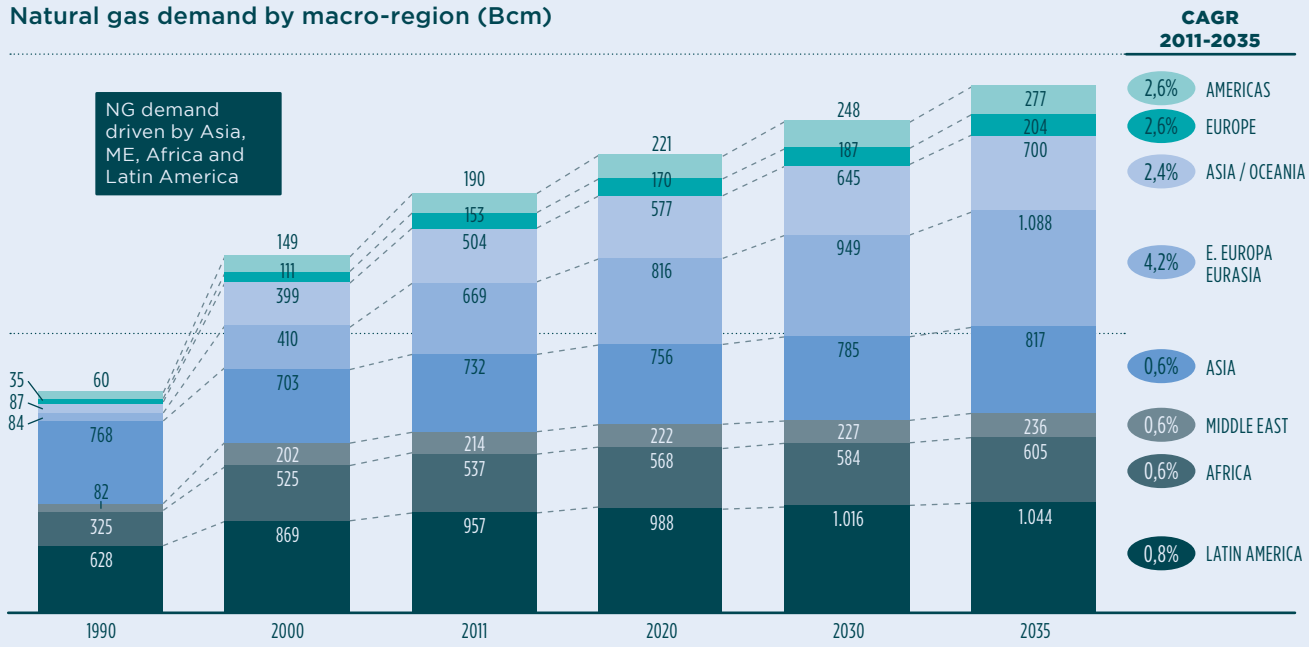


EXHIBIT 2
Natural gas demand by macro-region (Bcm)



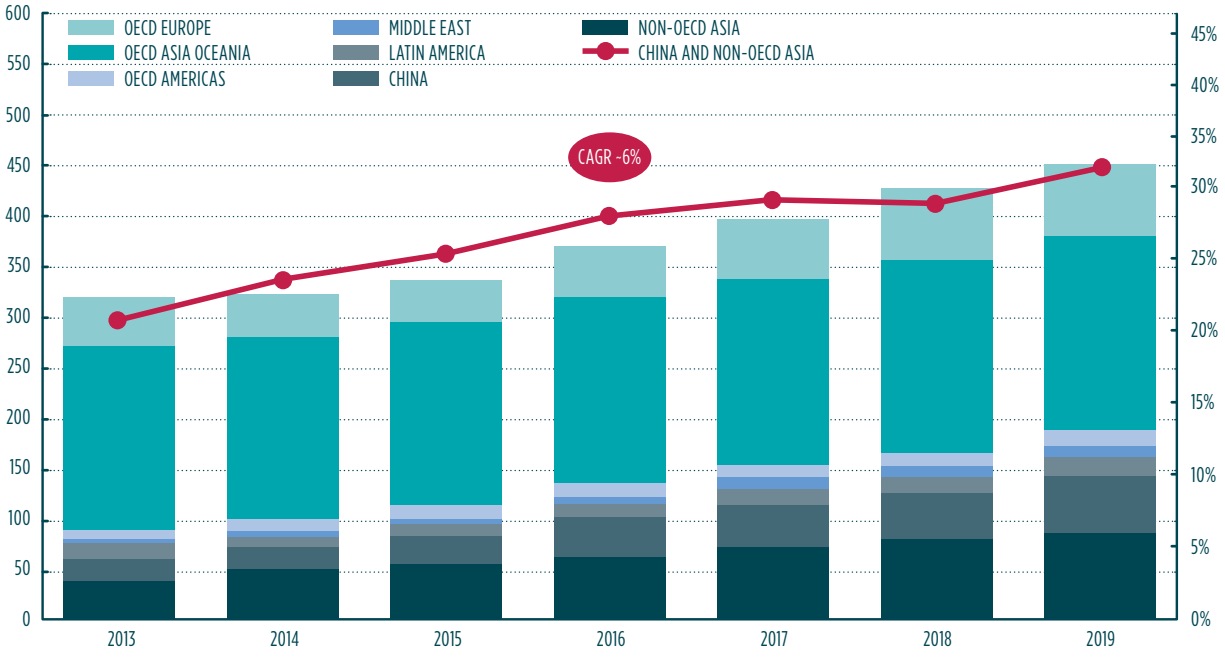
Source: IEA 2013

MARKET OUTLOOK FOR LNG

In a long-term perspective, natural gas demand is expected to increase its weight in fulfilling primary energy needs, approaching oil and coal by achieving a 25% share of the fuel market already as of 2025 at a 1.6% CAGR through 2035 (Exhibit 1). The areas which will be major drivers of this demand growth are mainly Asia, the Middle East, Africa and Latin America (Exhibit 2)

Liquefied Natural Gas (LNG) demand, which currently accounts for ca. 10% of the natural gas market at ca. 240 Mtpa (330 Bcm) in 2014, is projected to experience a high growth rate at 6% per annum until 2020, clearly led by Asian countries which will account for over 70% of the total demand (Exhibit 3). Such growth, according to most sources, would then likely slow down to ca 2-3% per annum after 2020.

EXHIBIT 3
Evolution of LNG imports by world region (Bcm)



Sources: IEA (2014), Medium-Term Gas Market Report 2014, OECD/IEA, Paris

EXHIBIT 4
Nominal liquefaction capacity by status and region, 2014 (Mtpa)

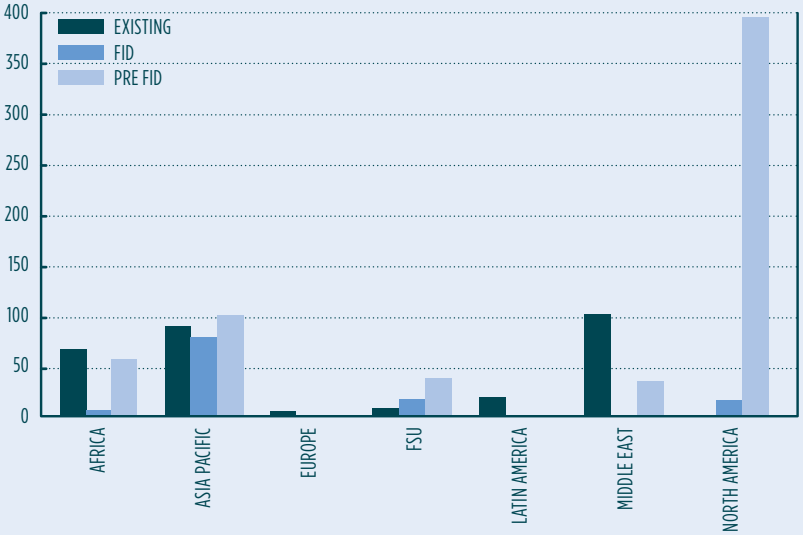
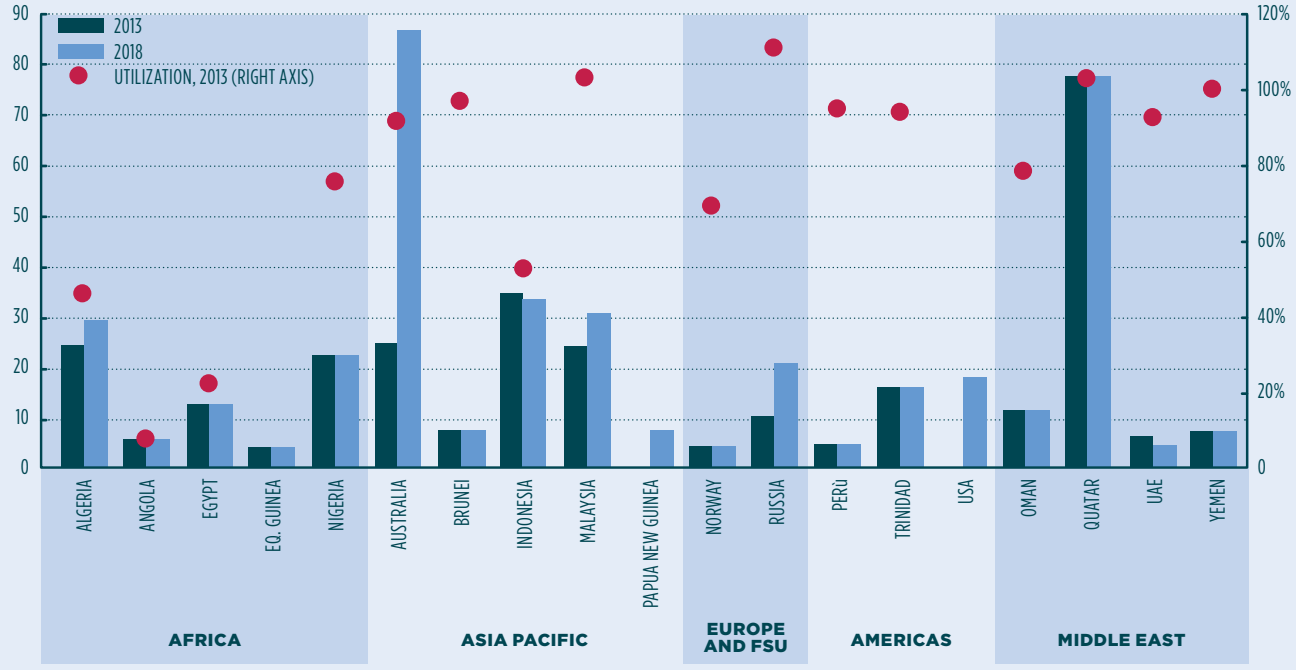
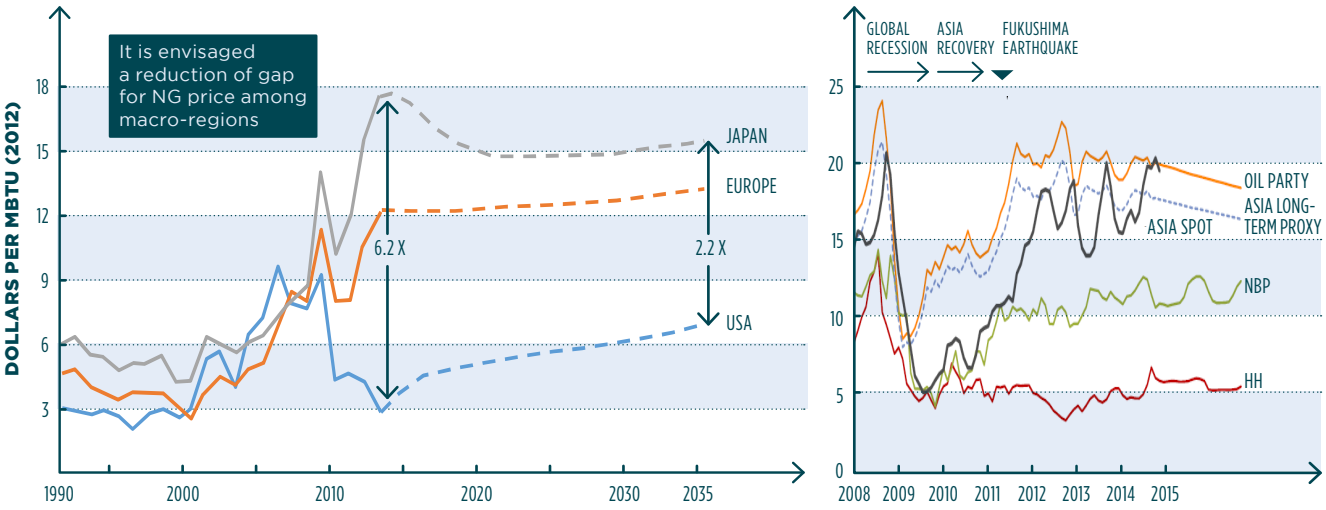


EXHIBIT 5
Liquefaction capacity by country, 2013-2018 (Mtpa, percent)



Source: IGU 2014

EXHIBIT 6
LNG price trends (USD/mmbtu)



Source: IEA 2013-2014

On the supply side, overall liquefaction capacity totaled ca 290 mtpa at end of 2013 (Qatar being the major producer with 27% capacity) and a pipeline of projects is deemed to boost this figure with 117 Mtpa having currently reached FID/construction stage, 260 Mtpa being in some stage of FEED and ca 360 in early stage of project. Total capacity should reach ca 400 Mpta by 2018-2020 (Exhibit 4).

The most important areas for liquefaction capacity development prove to be Australia (6 major projects under development), which is set to surpass Qatar by 2018, Asia (Yamal, Papua,..), East Africa with Mozambique Mamba giant (likely on stream from 2020) and the US, which have over 20 projects under evaluation, besides Sabine Pass first train commissioning in 2015. No major projects are currently envisaged in the Middle East, though this region holds 40% of world gas reserves (Exhibit 5).

Regasification facilities (often with shared interests by producers) still offer a high degree of available capacity (total capacity over 900 Mtpa) and many development projects are underway as well.

In terms of pricing, LNG has shown an overall growth in the last years and has consistently approached oil parity. Regional patterns are expected to reduce in the future (Exhibit 6). LNG SPA contracts have recently seen attempts to introduce hub/spot-based price clauses, but on a much smaller extent than pipeline gas where hub-based spot/short term transactions are progressively displacing long term oil-linked agreements.

EXHIBIT 7
Unit cost for existing and new projects (USD/Mbtu)

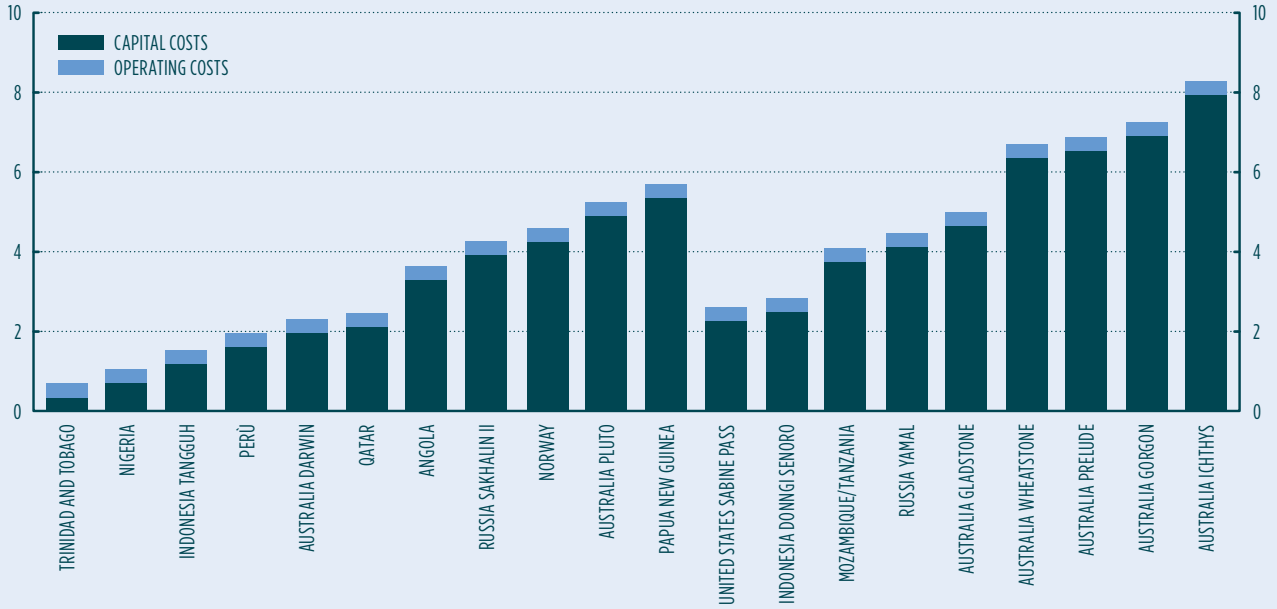
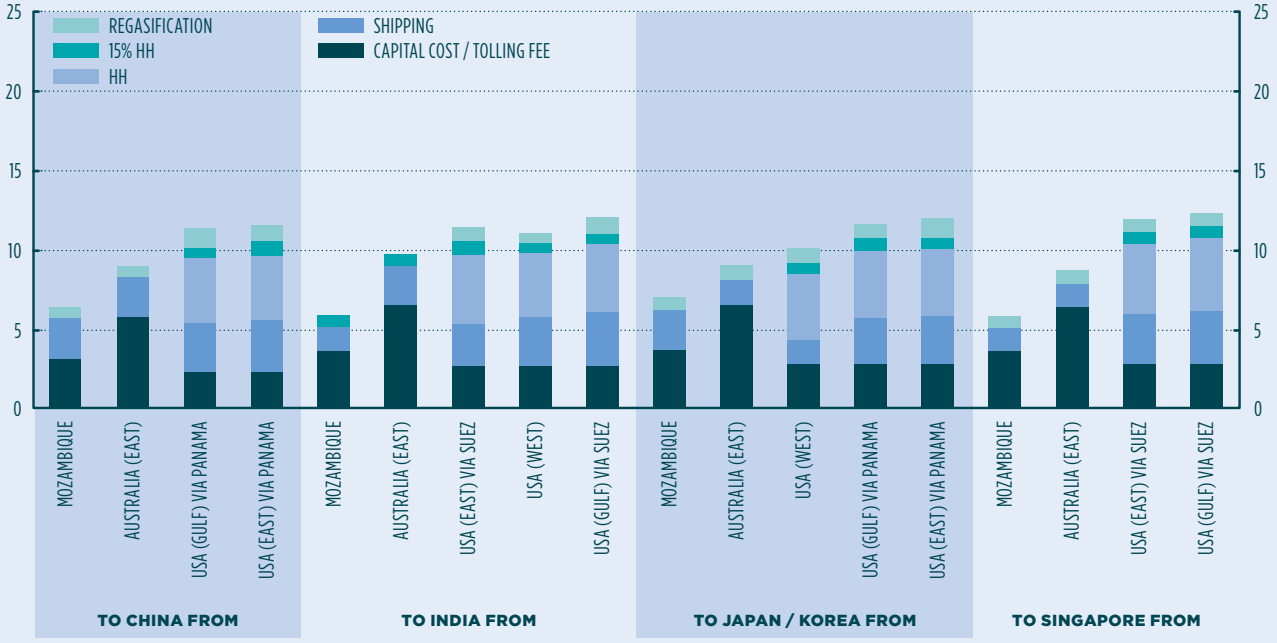


EXHIBIT 8
Comparison of total costs to different LNG importers (USD/Mbtu)



Source: IEA 2014

CHALLENGES FOR PRODUCERS: SUPPLY SIDE COMPETITION

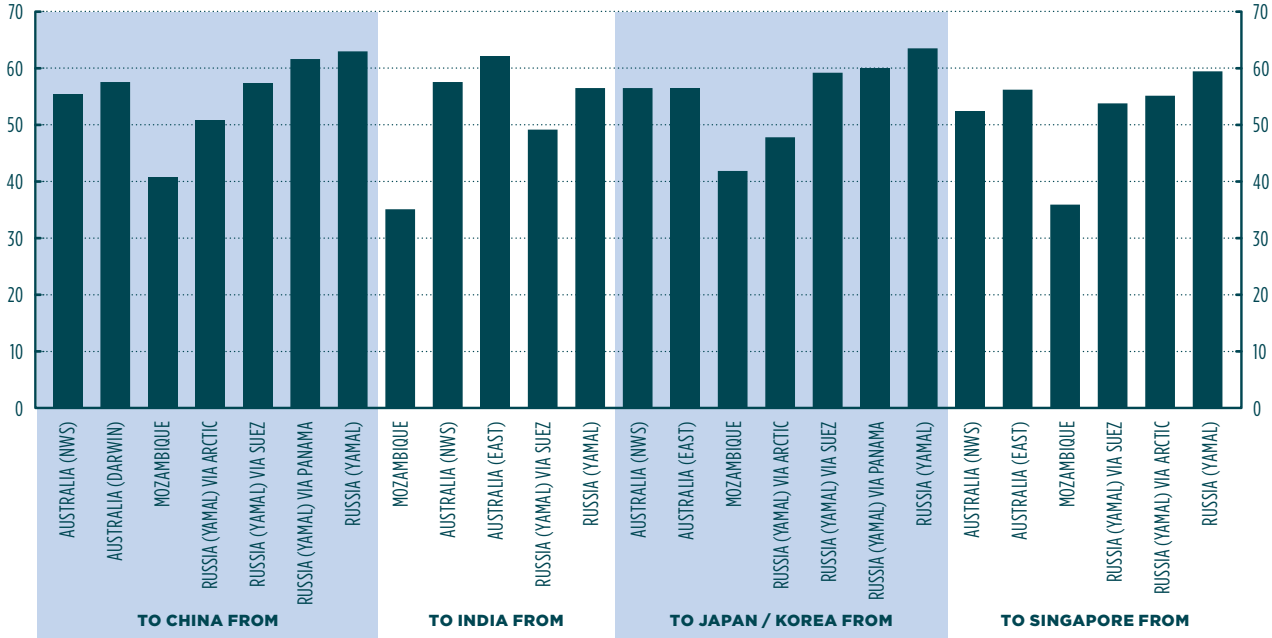
With global liquefaction capacity from expected projects surpassing demand growth, a supply-side competition between producers and their liquefaction projects is on the agenda.

To this regard, liquefaction projects show a wide range of capital unit costs and, when added to gas production and shipping costs, some of them – namely US and Australian projects - prove to be very sensitive to oil price and would not meet break-even should the current cheap oil scenario endure in the medium term (Exhibits 7-10).

Some projects – esp. in Australia, Canada, East Africa - having not yet contracted sales agreements or term-sheets, prove to be very exposed to market risk so to put off their shift to the FID construction phase (Exhibit 11).

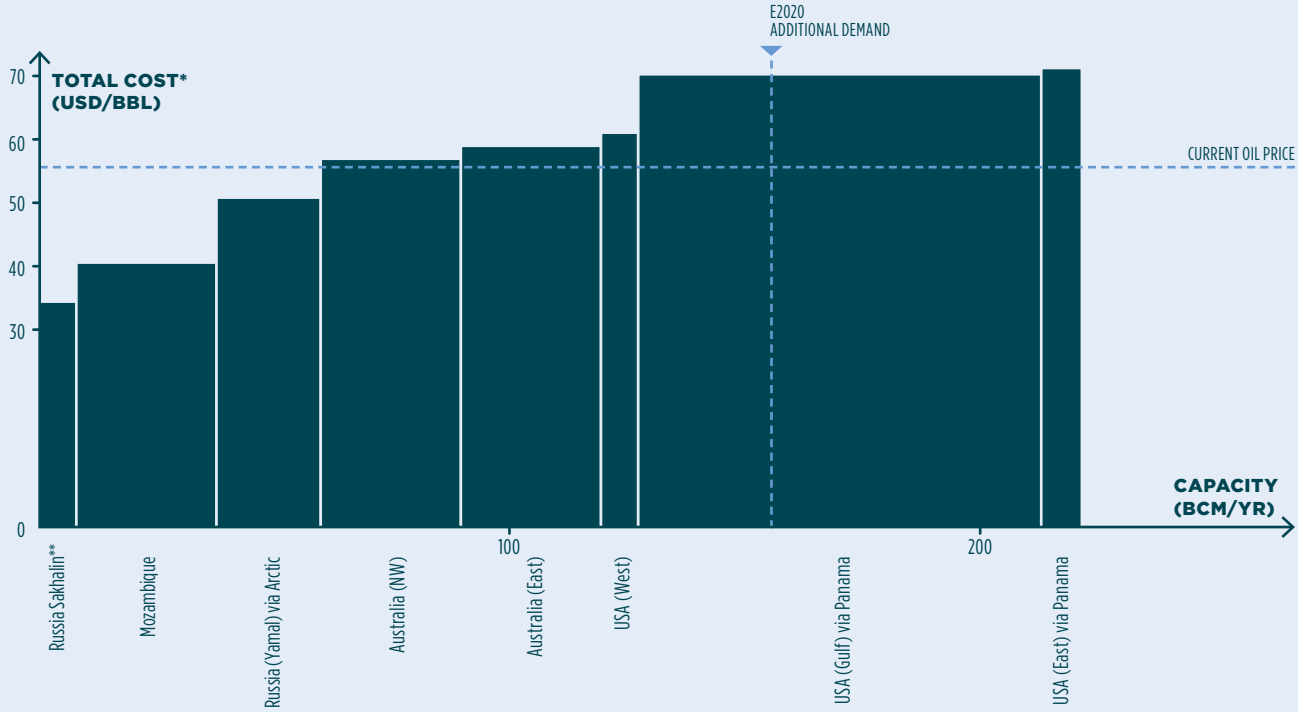
Producers have in general many tools along the E&P-LNG production/shipping/marketing value chain to manage the critical success factors underlying such supply side competition (Exhibit 12).

EXHIBIT 9
Break-even oil price by project (Minimum oil price required, USD/bbl)



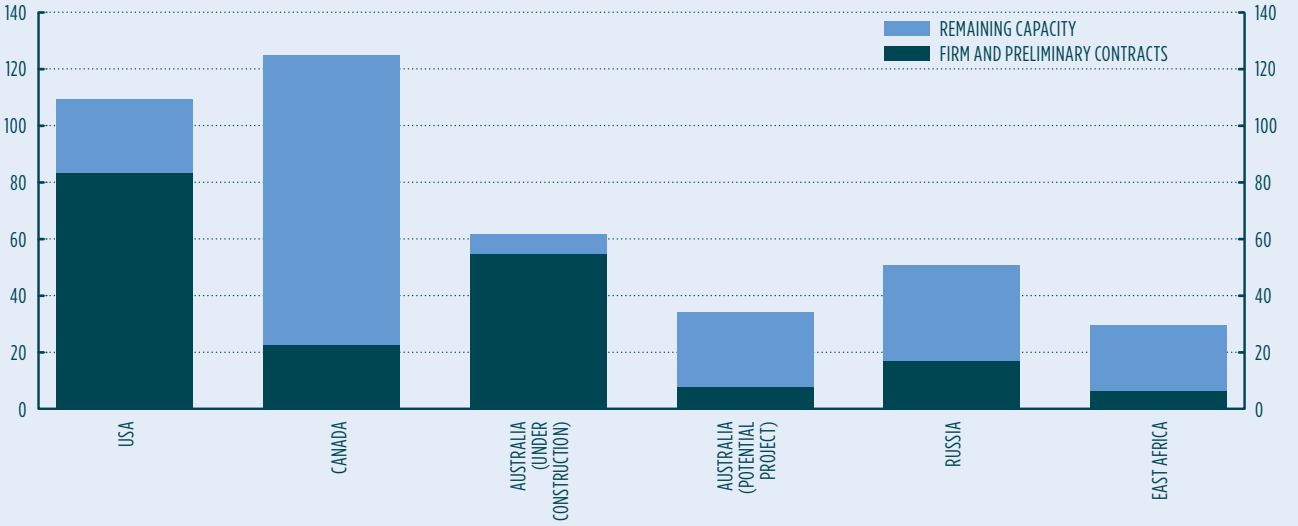
Source: IEA 2014

EXHIBIT 10
Industry cost curve (new projects)



Notes: * Assuming shipping costs to China; ** Estimates

EXHIBIT 11
LNG contracted by region (Mtpa)



Sources: IEA 2014, Value Partners analysis
Notes Ex. 11: potential Australian projects include Arrow LNG, Pluto LMG train 2, Gorgon LNG train 4, Sunrise FLNG, Bonaparte FLNG and Browse FLNG Russian projects include Yamal LNG, Sakalin-1 LNG, Vladivostok, Sakhalin-2 (expansion) and Baltic LNG US projects include Sabine Pass, Freeport LNG, Cameron LNG, Lake Charles, Cove Point, Jordon Cove, Oregon LNG, Corpus Christi and Magnolia LNG Canadian projects include Kitimat LNG, BC LNG, LNG Canada, Pacific Northwest LNG, Prince Rupert LNG, WCC LNG, Woodfibre LNG Export, Triton LNG, Aurora LNG and Goldboro LNG

EXHIBIT 12
Competitive tools for LNG producers along the value chain

PHASE	EXPLORATION & PRODUCTION	LNG PRODUCTION	LNG SHIPPING	LNG MARKETING
TOOLS / CRITICAL SUCCESS FACTORS	EXPLOIT NEW TECHNOLOGIES FOR FIELD DEVELOPMENT (E.G. FPSO) TARGET LOWER DEVELOPMENT COST FIELDS (VS. DEEPWATER, ...)	EXPLOIT NEW TECHNOLOGIES (E.G. FLNG) OPTIMIZING FEED AND EPC PHASES (COST OVERRUNS, EFFECTIVE O&M FOR DOWNTIME AND COST MINIMIZATION	LEVERAGE ON PROPRIETARY FLEET IF AVAILABLE LT FRAMEWORK AGREEMENT WITH SHIPPERS	MARKET AND CLIENT PRIORITIZATION ON A RISK/RETURN FRAME (MARKET SIZE AND GROWTH, LIQUIDITY, GAS-TO-GAS AND GAS-TO-FUELS COMPETIVENESS) OPTIMIZE LONG/SHORT TERM CONTRACT PORTFOLIO FOR CAPEX BACKING AND PROFIT MAXIMIZATION

In particular, LNG producers should focus on some critical success factors to achieve competitive edge in this context:

- Leverage the latest technologies to achieve a better cost position both in gas E&P and LNG production (for instance floating technologies as FPSO and FLNG...)
- Strictly control and pursue efficiency in project development (ie choosing "heavy" FEED to prevent cost overruns) and in O&M
- Evaluate a make or buy policy in shipping as a function of projected customer portfolio (supercarrier proprietory fleet may not fit in a portfolio of small/medium sized receiving terminals)
- Strictly perform a market selection based on risk/return approach, not overlooking specific segments and niches (isolated markets as opposed to gas hubs)

Timing and cost effectiveness can and will likely operate a natural selection, which avoids the threat of overcapacity that would eventually affect all competitors' profitability.

HOW TO SHAPE A COMPETITIVE STRATEGY FOR MIDDLE EAST PRODUCERS

How can Middle East LNG producers find a way to capture future LNG demand growth?
Most ME producers have indeed carried out massive investments, with some projects being completed only recently (e.g last liquefaction trains on stream in Ras Laffan, Qatar in 2011).

However, no major developments seem to be planned in the medium term by current players (Qatar, Oman, Yemen, UAE) nor other countries in the area, namely KSA, seem interested to enter this game, having chosen oil as their export driver and natural gas to be used for domestic purposes only.
Yet there might be further potential and competitive advantages to exploit for the LNG run, again pointing out that this area is the one with the highest reserves and favorable cost position in the world.

A debate on how a competitive strategy should be rolled out would have to address at least two items: how to restart effective investments and how to focus on the right markets.

Middle East O&G producers should leverage their competitive advantages to rethink LNG industrial strategy with a smart marketing approach.

Rethinking investing on E&P-LNG facilities means addressing the following framework:

- exploit their own most cost-effective E&P current and prospect portfolio (vs competitors' fracking or deep water as more expensive technologies)
- build on extensive experience to carry out development stages: heavy FEED to reduce capex uncertainty, EPC control,..
- hinge on the availability of large equity investment capitals (as opposed to often highly leveraged project capital structures of competitor projects)
- exploit advantage in proprietary carrier fleet (e.g Qatar), since it might prove to be a bottleneck for others.

Marketing should of course keep being focused on large growing markets (such as Far East), but should not overlook the following principles and further opportunities:

- target also "isolated" markets vs "gas hubs" where competition from pipeline gas and availability of trading platforms increase gas-to-gas competition and spot price/short-term contracts (the least suitable for E&P/LNG liquefaction plant development), e.g some African countries where the gas value chain could be introduced from scratch with a long-term, strategic and industrial partnership approach
- further exploit proximity to some large high-growth markets (e.g India, Pakistan,...)

THE SCENARIOS WE BET ON

ME countries seem to have established their economic strategy towards the development of downstream industries and industrial diversification, to reduce the risk of a single-commodity economy, which nowadays, in a low oil-price scenario, appears to be a sound approach.

In the O&G business, though, a wait-and-see, business-as-usual approach seems prevailing, as every possible move is seen as a possible harm to long-term price sustainability and maximization of current operating assets value.

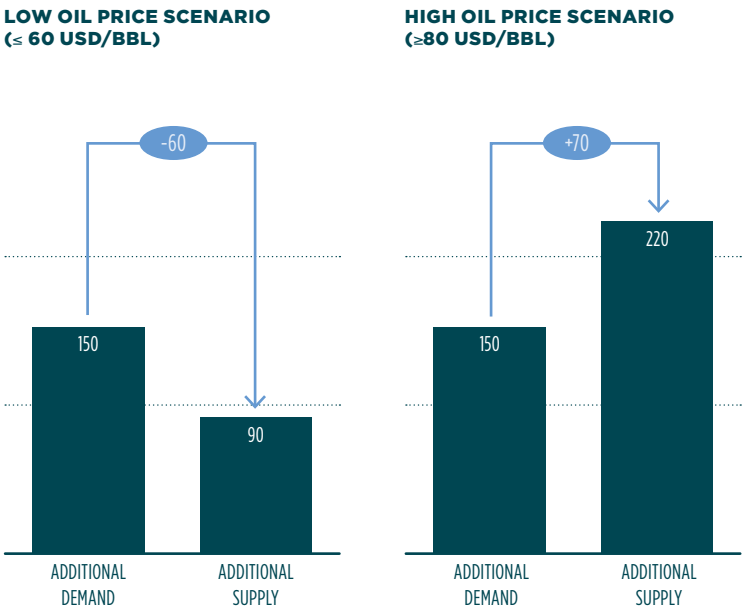
Should a moderate oil price scenario endure then would ME projects displace the least cost-effective Australian or US ones, provided a reasonable time-to-market (e.g. 3-4 years)? In a below 60 USD/bbl scenario 60 bcm of additional demand would be unmet by new supply capacity (Exhibit 13)

A standstill may prove to be very dangerous for the economic interests of the area. Not entering competition for growth, as the LNG analysis has shown, may perhaps enhance the profitability of current assets, as most expensive adopted technologies are expected to drive oil price up (which, by the way, has not at all been the case so far if we look at the US shale impact) at the expense of reducing market share.

But we cannot overlook that, in the long run, it will entail allowing newcomers entering ME producers' own markets and approaching their own customers, putting at risk retention and profit sustainability.

Is this a risk that ME producers are willing to run, or should a further industrial development for LNG be envisaged to, at least partially, preempt this risk?

EXHIBIT 13
Possible LNG demand-supply scenarios in 2020



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Winning the global LNG supply-side competition entails ME producers to break the standstill and restart an industrial strategy.

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