

The Geopolitics of Gas in Europe: conflicts between political correctness and natural gas analysis

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Conventional Geopolitical Wisdom: EU must reduce dependence on Russian Gas

“In 2013, supplies from Russia accounted for more than 39% of EU Natural gas imports or 27% of EU gas consumption.

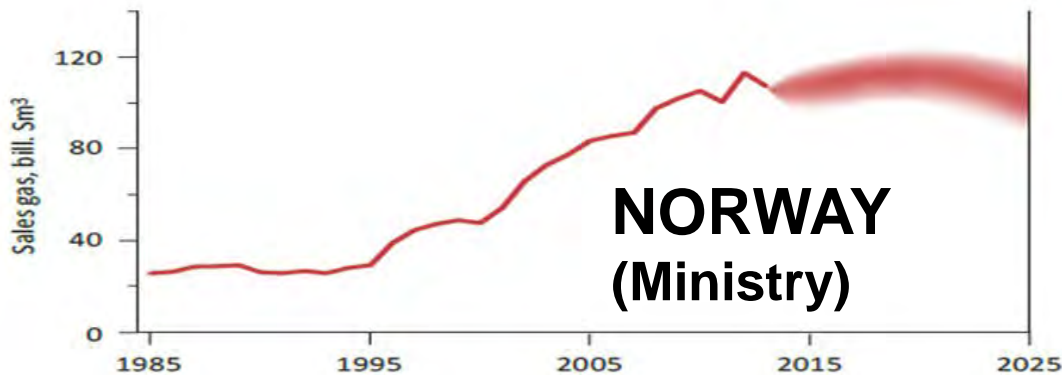
Six member states* depend on Russia as single external supplier for their entire gas imports and three of them use natural gas for more than a quarter of their energy needs.”

***Estonia, Latvia, Lithuania, Finland, Bulgaria, Slovakia**

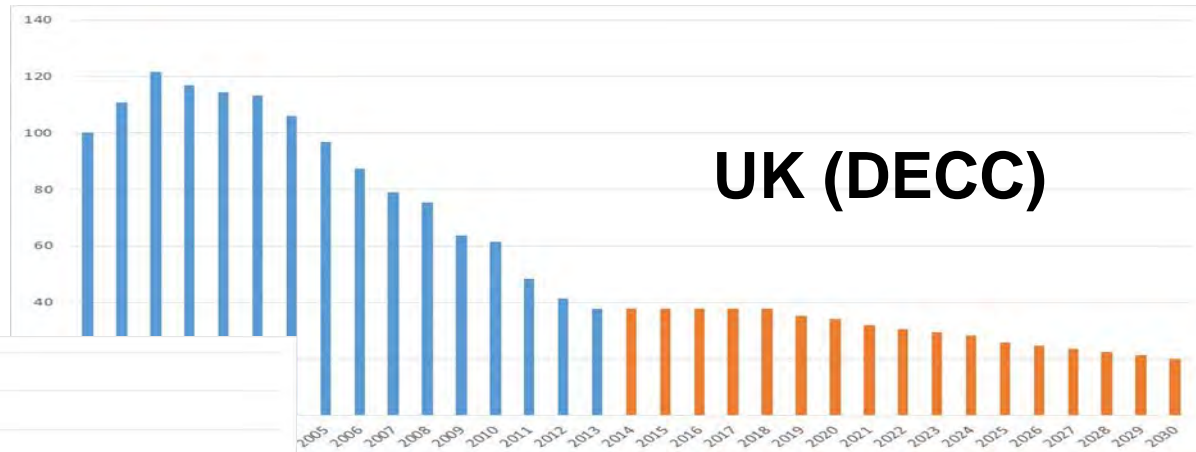
Source: Communication from the Commission to the European Parliament and the Council, European Energy Security Strategy, Brussels, 28.5.2014, COM(2014) 330 final, p.2.

Existing and New Pipeline Gas and LNG Supply

European Conventional Gas Production to 2030



NETHERLANDS (annual review)



Shale (Tight) Gas Production in Europe

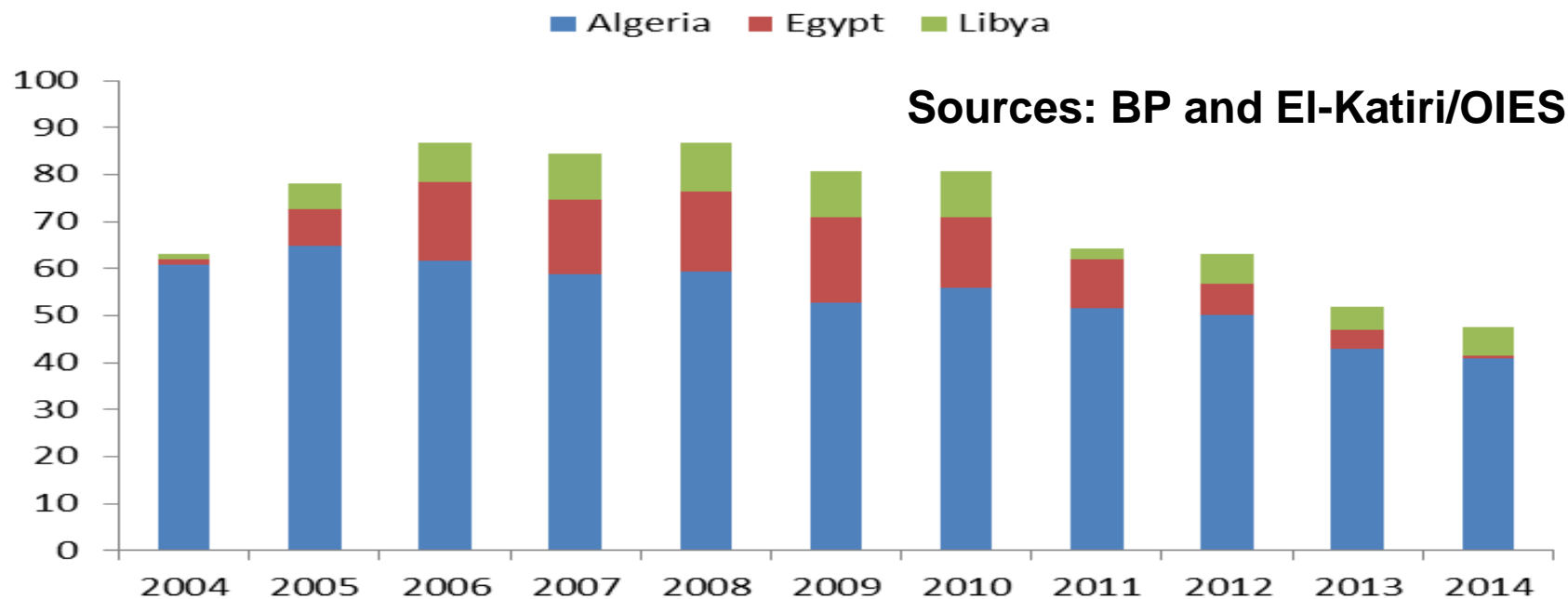
- No serious research – from any source – sees unconventional gas production of any magnitude in Europe in the 2020s (or even the 2030s)
- Both pro- and anti- (fracking) camps have massively exaggerated their arguments
- The only country which has drilled sufficient wells to make some kind of judgement is Poland (so far disappointing results)

Biogas/biomethane production is much more promising (and not so unpopular)





North African Gas Exports: 2004-14 and 2015-30



	2015		2020		2030	
	PIPE	LNG	PIPE	LNG	PIPE	LNG
Algeria	28	16	20	21	22	38
Libya	8	0	10	0	15	6
Egypt	0	0	0	0	0	3
TOTAL	36	16	30	21	37	47



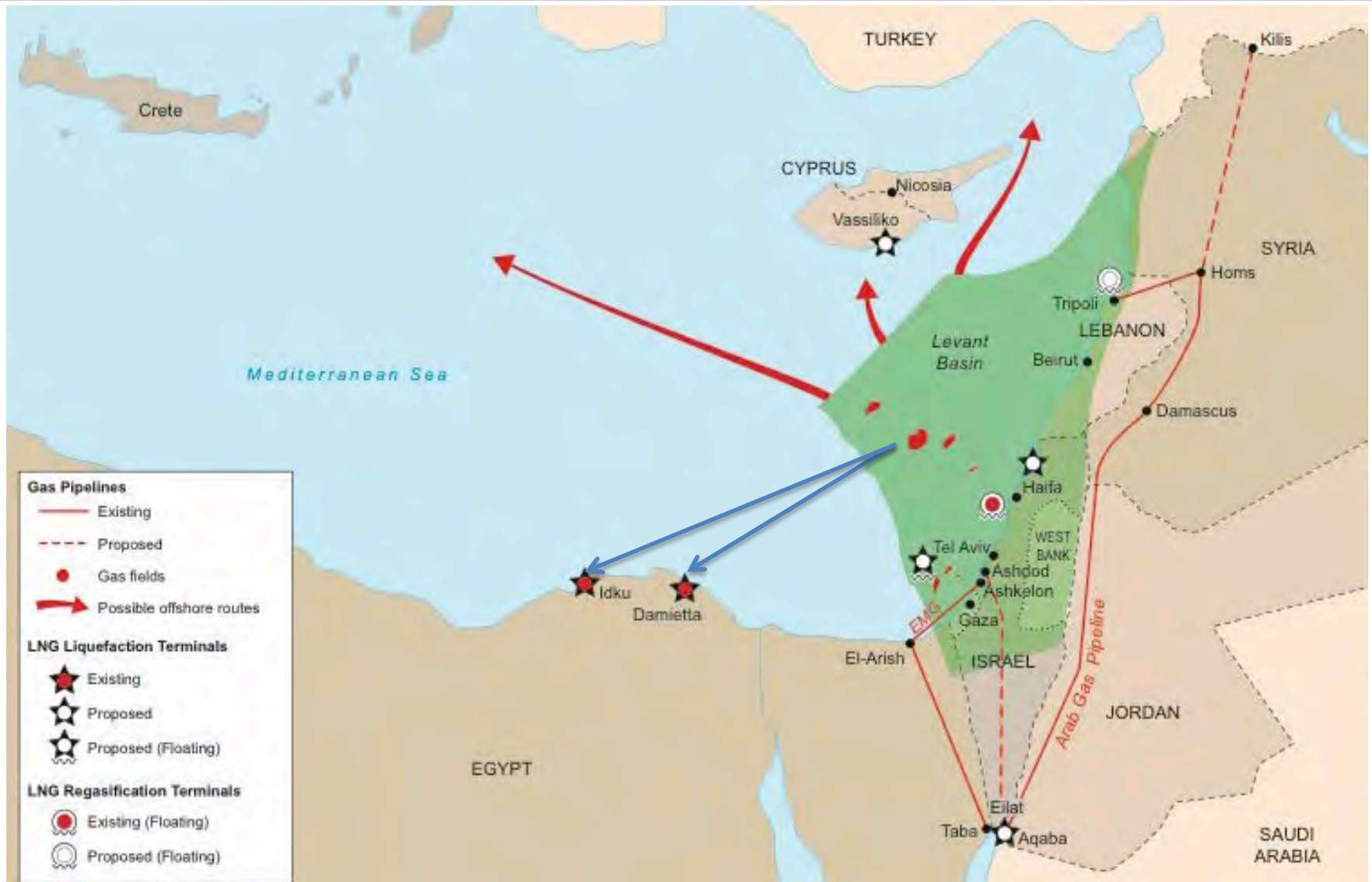
North African Problems Increase post-2011

- **ALGERIA:**
 - Two (largely) failed licensing rounds over the past three years will impact production (major opposition to possible shale gas development)
 - Previous chart probably too optimistic (2014 exports 19.5 Bcm of pipeline gas and 14.5 Bcm of LNG to Europe)
- **LIBYA:** no guarantee of supply security or new development but exports increased in 2014
- **EGYPT:** will become a gas importer in 2015; domestic demand continues to increase even at higher prices

Domestic political instability is highly problematic



Potential East Mediterranean gas export routes



Source: Oxford Institute for Energy Studies

East Mediterranean Gas: difficult geopolitics

ISRAEL:

- 300 Bcm proven, 900 Bcm estimated reserves
- Pre-contract export arrangements signed with Palestine, Jordan and Egypt via (empty) LNG terminals
- Pipeline to Turkey is politically difficult and expensive (possible by 2030); pipeline to Greece is too long
- Possible (floating) LNG terminal option in the 2020s

CYPRUS (Greek):

- 100-200 Bcm estimated reserves (currently insufficient for domestic demand and LNG exports)
- LNG link with Israel not likely, but with Egypt is possible

POLITICS/GEOPOLITICS: Israel-Palestine/all regional Arab states (excluding Jordan?), Israel-Egypt, Israel-Turkey, Turkey-Cyprus

The "Southern Corridor": from Nabucco to TANAP/TAP



Southern Corridor: gas exports to Europe

Azerbaijan:

- Shah Deniz 1 (does this continue post-2021?) + Shah Deniz 2 from 2019/20: total 12 Bcma to Turkey; up to 11 Bcm/a to 11 EU companies
- Other fields: potentially maximum of 10 Bcm/a starting from 2023
- Domestic market is short of gas; may need to resume imports from Russia in 2016?

Turkmenistan: depends on trans-Caspian pipeline

Iran: at least a decade even after sanctions lifted

Iraq (Kurdistan): security situation??

Geopolitically very desirable but very difficult commercially; promoters have confused reserve potential with gas supply potential

Europe: LNG Capacity vs Imports (bcm)

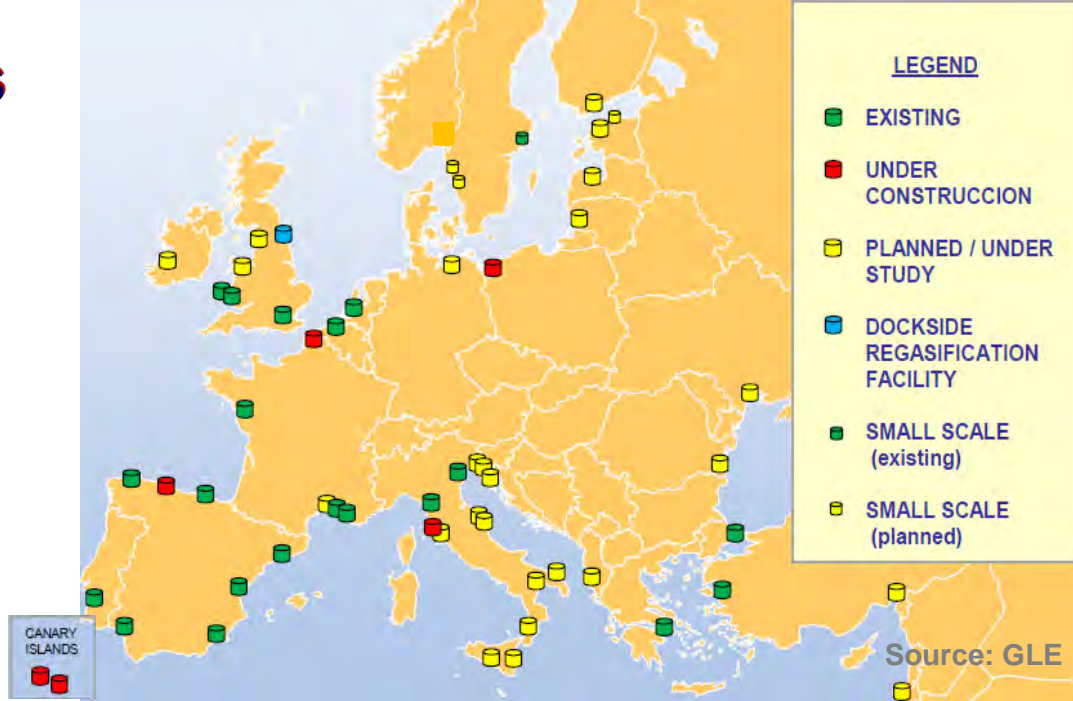
Regasification

Capacity in 2014:
203 Bcm

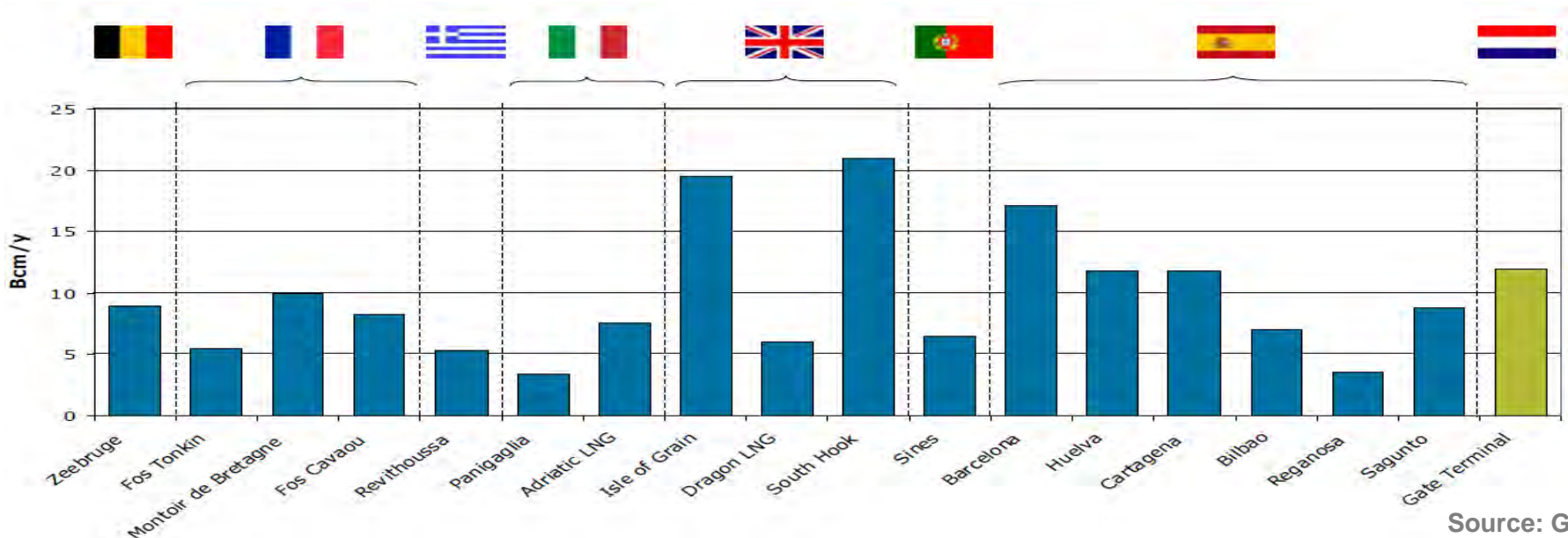
Imports:

- 2008: 59.4
- 2009: 71.7
- 2010: 89.2
- 2011: 89.8
- 2012: 47.5
- 2013: 43.0
- 2014: 44.1

Sources: GLE & GIIGNL

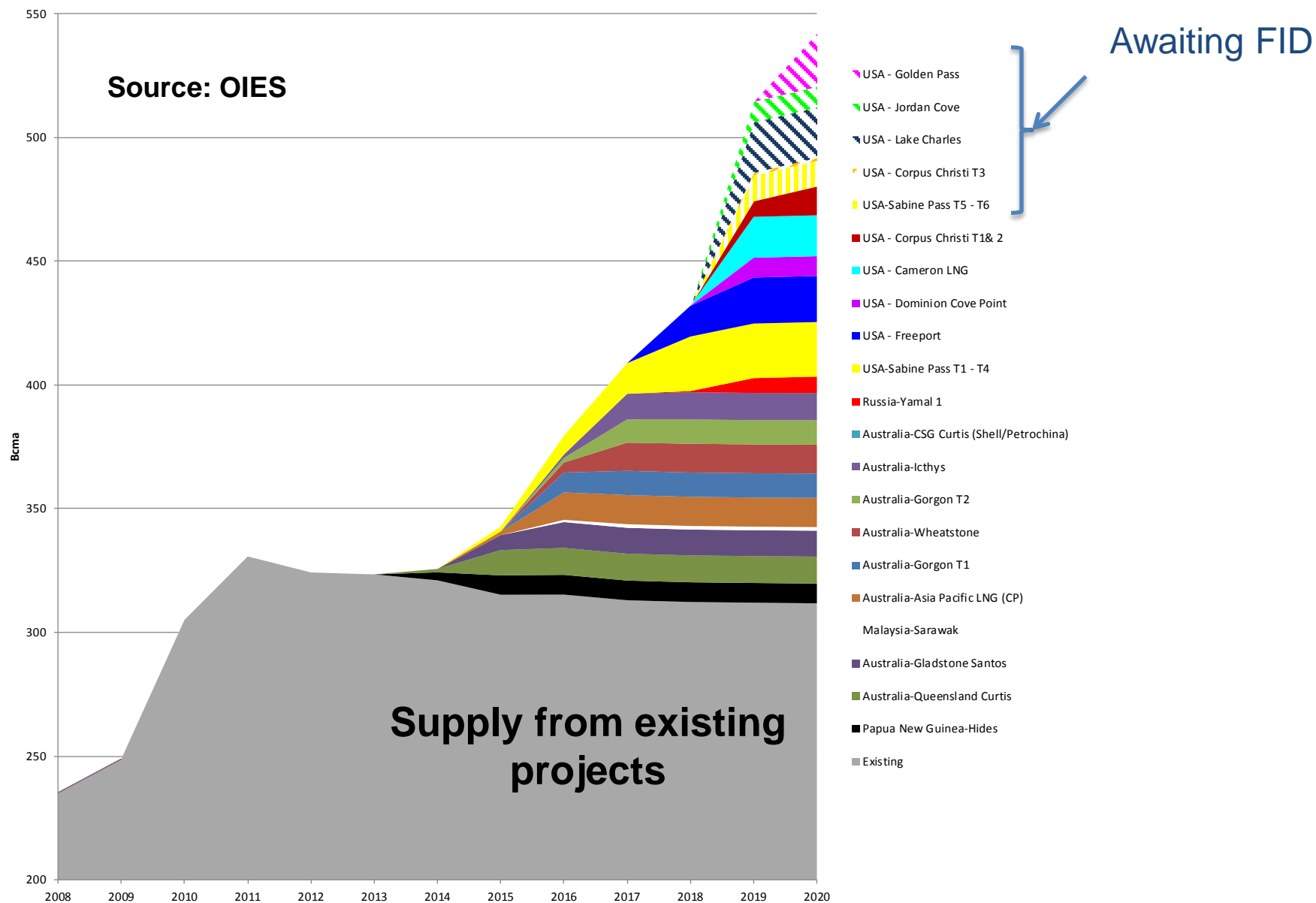


Nominal annual capacity: wide diversity between countries

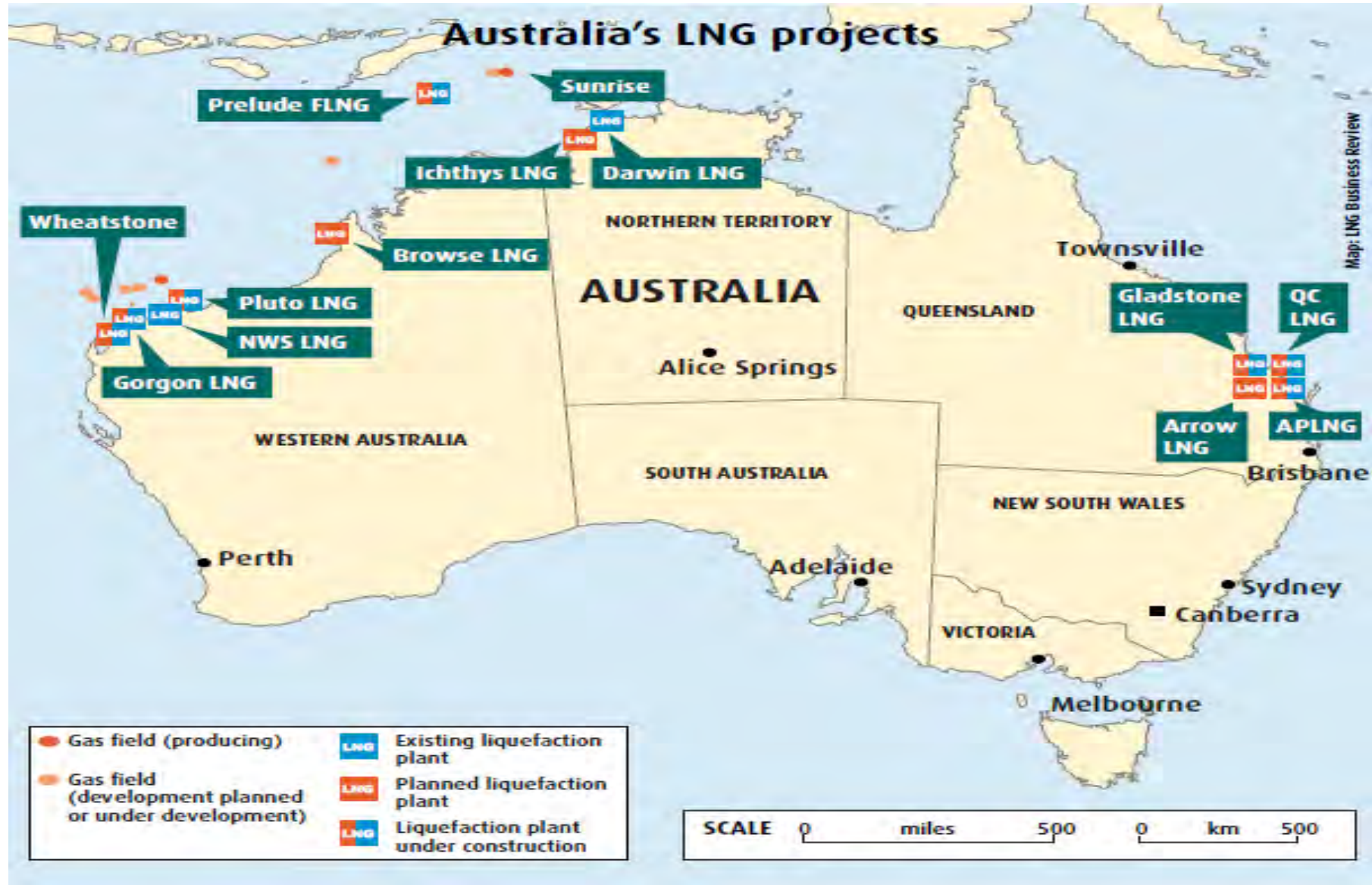




New LNG Projects Under Construction: (mainly) Australia and US



Australia: new LNG projects under development



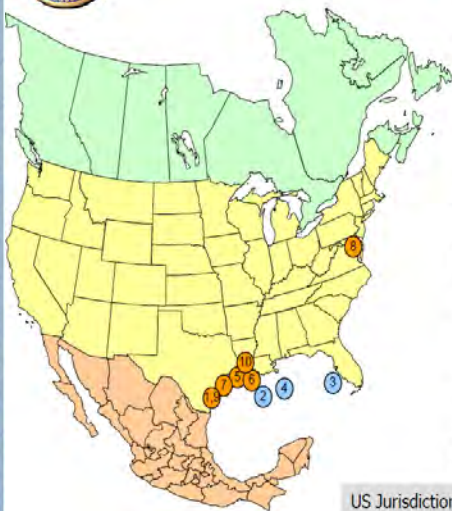
The world's biggest LNG exporter (113 Bcm) around 2020



North American LNG Export Projects



North American LNG Import /Export Terminals *Approved*



Import Terminal

APPROVED - UNDER CONSTRUCTION

U.S. - FERC

1. Corpus Christi, TX: 0.4 Bcfd (Cheniere - Corpus Christi LNG) (CP12-507)

APPROVED - NOT UNDER CONSTRUCTION

U.S. - MARAD/Coast Guard

2. Gulf of Mexico: 1.0 Bcfd (Main Pass McMoran Exp.)
3. Offshore Florida: 1.2 Bcfd (Hoogh LNG - Port Dolphin Energy)
4. Gulf of Mexico: 1.4 Bcfd (TORP Technology-Bienville LNG)

Export Terminal

APPROVED - UNDER CONSTRUCTION

U.S. - FERC

5. Sabine, LA: 2.76 Bcfd (Cheniere/Sabine Pass LNG) (CP11-72 & CP14-12)
6. Hackberry, LA: 1.7 Bcfd (Semptra - Cameron LNG) (CP13-25)
7. Freeport, TX: 1.8 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509)
8. Cove Point, MD: 0.82 Bcfd (Dominion - Cove Point LNG) (CP13-113)
9. Corpus Christi, TX: 2.14 Bcfd (Cheniere - Corpus Christi LNG) (CP12-507)

APPROVED - NOT UNDER CONSTRUCTION

U.S. - FERC

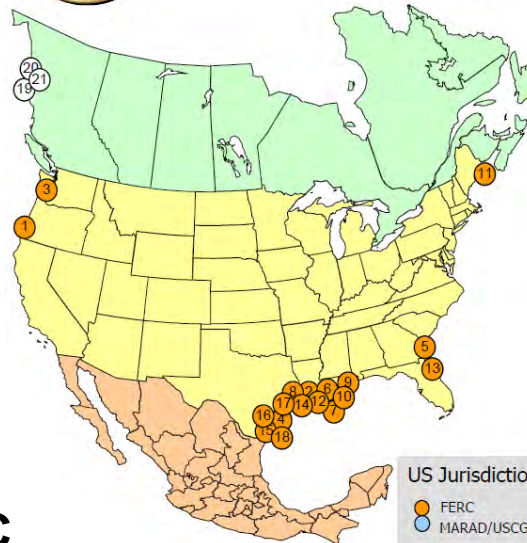
10. Sabine Pass, LA: 1.40 Bcfd (Sabine Pass Liquefaction) (CP13-552)

US Jurisdiction

Source: FERC



North American LNG Export Terminals *Proposed*



Export Terminal

PROPOSED TO FERC

1. Coos Bay, OR: 0.9 Bcfd (Jordan Cove Energy Project) (CP13-483)
2. Lake Charles, LA: 2.2 Bcfd (Southern Union - Trunkline LNG) (CP14-120)
3. Astoria, OR: 1.25 Bcfd (Oregon LNG) (CP09-6)
4. Lavaca Bay, TX: 1.38 Bcfd (Excelerate Liquefaction) (CP14-71 & 72)
5. Elba Island, GA: 0.35 Bcfd (Southern LNG Company) (CP14-103)
6. Lake Charles, LA: 1.07 Bcfd (Magnolia LNG) (CP14-347)
7. Plaquemines Parish, LA: 1.07 Bcfd (CE FLNG) (PF13-11)
8. Sabine Pass, TX: 2.1 Bcfd (ExxonMobil - Golden Pass) (CP14-517)
9. Pascagoula, MS: 1.5 Bcfd (Gulf LNG Liquefaction) (PF13-4)
10. Plaquemines Parish, LA: 0.30 Bcfd (Louisiana LNG) (PF14-17)
11. Robbinston, ME: 0.45 Bcfd (Kestrel Energy - Downeast LNG) (PF14-19)
12. Cameron Parish, LA: 1.34 Bcfd (Venture Global) (PF15-2)
13. Jacksonville, FL: 0.075 Bcfd (Eagle LNG Partners) (PF15-7)
14. Hackberry, LA: 1.4 Bcfd (Semptra - Cameron LNG) (PF15-13)
15. Brownsville, TX: 0.54 Bcfd (Texas LNG Brownsville) (PF15-14)
16. Brownsville, TX: 0.94 Bcfd (Annova LNG Brownsville) (PF15-15)
17. Port Arthur, TX: 1.4 Bcfd (Port Arthur LNG) (PF15-18)
18. Brownsville, TX: 3.6 Bcfd (Rio Grande LNG - NextDecade) (PF15-20)

PROPOSED CANADIAN SITES IDENTIFIED BY PROJECT SPONSORS

19. Kitimat, BC: 1.28 Bcfd (Apache Canada Ltd.)
20. Douglas Island, BC: 0.23 Bcfd (BC LNG Export Cooperative)
21. Kitimat, BC: 3.23 Bcfd (LNG Canada)

US Jurisdiction

- FERC
- MARAD/USCG

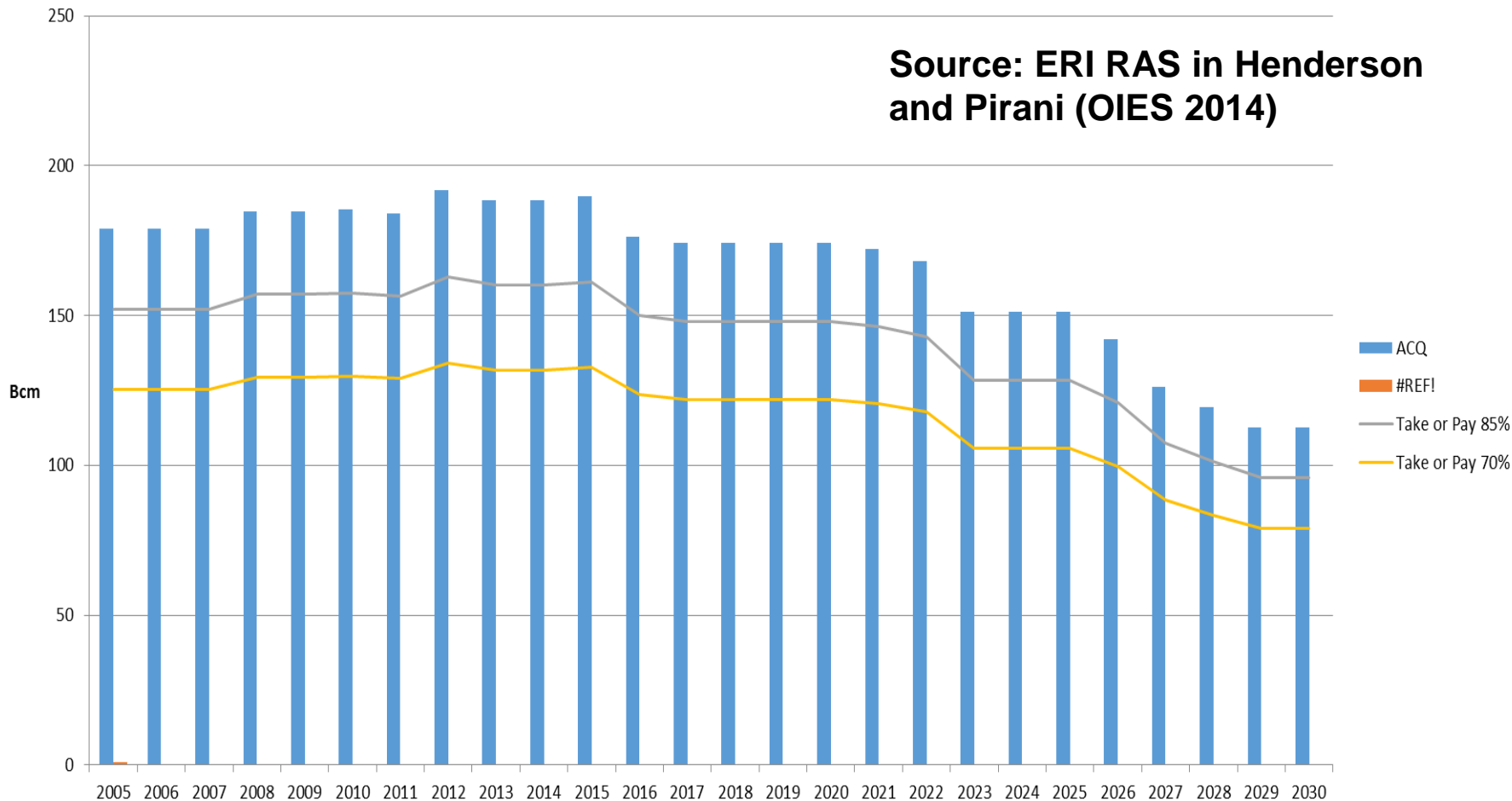
Under construction: 5 US projects (85 Bcm). Approved and proposed: 22 US, 3 Canada (316 Bcm).

Total = 393 Bcm (world trade in 2014 – 325 Bcm)

Competition against Russian pipeline gas in Europe has strong geopolitical resonance, but is not necessarily realistic from a commercial perspective

Russian Gas: the major “geopolitical problem”

Gazprom's long term take or pay contracts with European customers to 2030



Even at 70% ToP, Gazprom's average annual sales exceed 100 Bcm/year until the mid-2020s

But Individual Countries Highly Dependent on Russian Gas Have Diversification Options

BALTIC COUNTRIES (and Poland):

- Polish and Lithuanian LNG terminals
- Poland can receive gas from NW Europe

SOUTH EAST EUROPE:

- Bulgaria has contracted 1 Bcm of Azeri gas from 2019
- Possible export availability of 1-2 bcm/a from new Romanian production
- For many former Yugoslav countries even 0.2-0.5 Bcm/yr of non-Russian gas would be significant diversification – therefore small (floating) LNG terminals are a real possibility

**Major questions: how much does this cost, who pays?
Does the cost fall on individual countries or is this part
of European solidarity “speaking with one voice”?**

The Ukrainian and Yamal-Europe Pipelines



The Nord Stream Pipelines: 2 existing, two planned



Lines 1 and 2 commissioned 2011 and 2012 – major regulatory problems with on-land OPAL extension; lines 3 and 4 reappear in June 2015 (Shell, E.ON and OMV)

“Turkish Stream”: what the parties want/have said

WHAT GAZPROM HAS SAID: four lines totalling 63 Bcm: 1 to Turkey, 3 to a hub on the Greek border to be built by 2020

WHAT HAS BEEN AGREED WITH TURKEY: first line to western Turkey with a capacity of 15.75 Bcm to start deliveries (all to Turkey) end 2016, full capacity by 2017, but these dates look increasingly questionable as seabed survey and laying of first line only began in July 2015

WHAT GAZPROM WANTS: connection from the Greek border to Baumgarten to avoid changing delivery points in long term contracts

WHAT THE EU WANTS: continuation of transit through Ukraine for substantial volumes

“Turkish Stream”: timing of four lines

Cancellation of offshore pipeline contractor and halting of work on Russian Southern Corridor in July 2015 suggest comprehensive project rethink, nevertheless:

BEFORE 2020: first line to Turkey; second connecting with Trans-Balkan pipeline for reverse flow remains possible

AFTER 2020:

- **third line connecting to & utilising TAP (or ITGI) capacity; fourth line utilising a future “Eastring” (or similar) pipeline OR...**
- **depends on Nord Stream 3 and 4 progress**

TRUST: there is none on either side

EUROPEANS BELIEVE RUSSIANS:

- do not share their values, rule-based legal systems
- use energy/gas as a geopolitical weapon and means of “re-Sovietising” countries eg Ukraine, Moldova

RUSSIANS BELIEVE:

- European “values” are based on NATO expansion, Russian encirclement and regime change
- Nothing the EU says can be relied upon due to double standards in applying so-called “rules-based legal systems” (WTO challenge to EU Third Energy Package)
- Europeans have no real interest in gas “security” (or they would be happy to minimise Ukrainian transit)

**Geopolitical/trust climate has deteriorated rapidly since
Crimea/Ukrainian conflict, sanctions, etc**

(POLITICALLY INCORRECT?) CONCLUSIONS

Pipeline Gas Supply Outlook is Unpromising

- Worsening outlook for domestic conventional production which may decline by ~40% by 2030
- Domestic unconventional gas will not be significant even by 2030
- North Africa: probable decline in exports up to 2020; outlook for 2030 is unpromising
- East Mediterranean: exports of Israeli gas as LNG via Egypt are possible, pipeline to Turkey unlikely
- Southern Corridor: Azerbaijan: 24.4 Bcm maximum by 2020 (half Turkey/half EU); possible increase to 27 Bcm post-2023; Middle East/Central Asia possible post 2030; so at best a Southern Pipeline not a Corridor

Domestic and international politics are major problems

LNG supplies versus Russian pipeline gas: a cyclical story

In a surplus global LNG market 2015-2020:

- Europe is likely to be the recipient of substantial LNG supplies (even if it is not actively seeking these supplies)
- Gazprom would need to compete against these supplies at prices which could go as low as Henry Hub + \$2/mmbtu – possible “price war” scenario
- Failure of Gazprom to compete could lead to significant additional LNG supplies arriving in Europe which – at least for the duration of the surplus – would significantly reduce dependence on Russian gas....
- BUT we know this will be time-limited and when Asia needs the LNG it will disappear

So for a period in the late 2010s overall European dependence on Russian gas may fall, but post-2020...?

Geopolitical Arguments About European Gas

TEND TO FOCUS ON:

- Russia although North Africa is a much bigger problem for Southern Europe
- Countries highly dependent on Russian gas – but this is resolvable through LNG and interconnection (as long as somebody pays)
- Russian pipelines avoiding transit via Ukraine, rather than confronting difficult political and economic realities in Ukraine

TEND TO NEGLECT:

- Realities of available long term gas supply (as opposed to reserves)
- Very powerful commercial position of Russian gas

Are a lens for antipathy towards President Putin and are likely to remain so while he is in power

Thank You

FURTHER READING:

- **Reducing European Dependence on Russian Gas: distinguishing natural gas security from geopolitics, ed. Jonathan Stern (OIES 2014)**
- **Does the cancellation of South Stream signal a fundamental reorientation of Russian gas export policy? Jonathan Stern, Simon Pirani and Katja Yafimava (OIES 2015)**
- **The Impact of Lower Gas and Oil Prices on Global Gas and LNG Markets, Howard Rogers (OIES 2015)**