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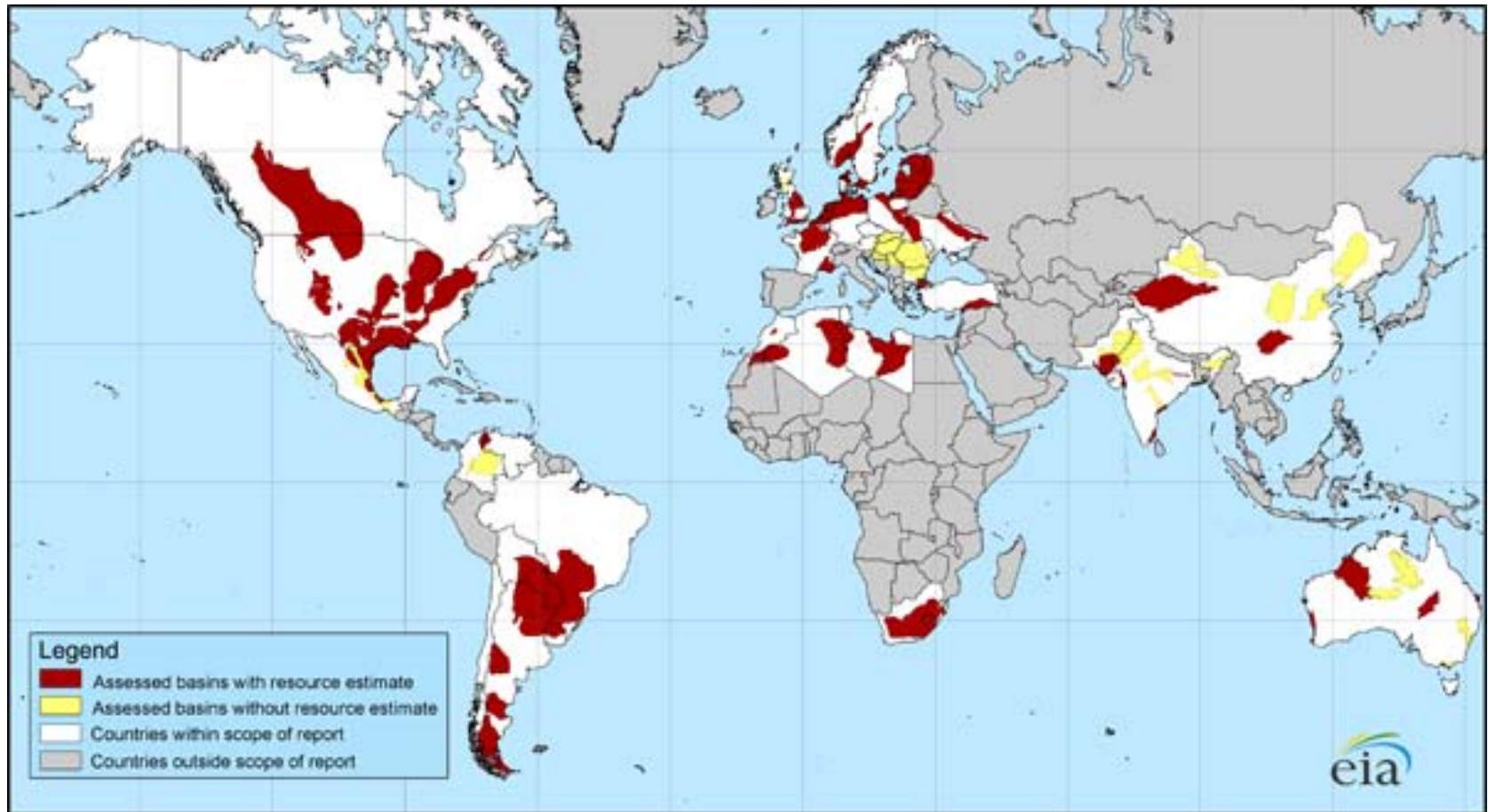
Unconventionals and energy security. What to expect – and what not

European and international perspectives on the German
“Energiewende”

KAS Academy, Berlin 22 – 23 April 2013



A changing global gas balance





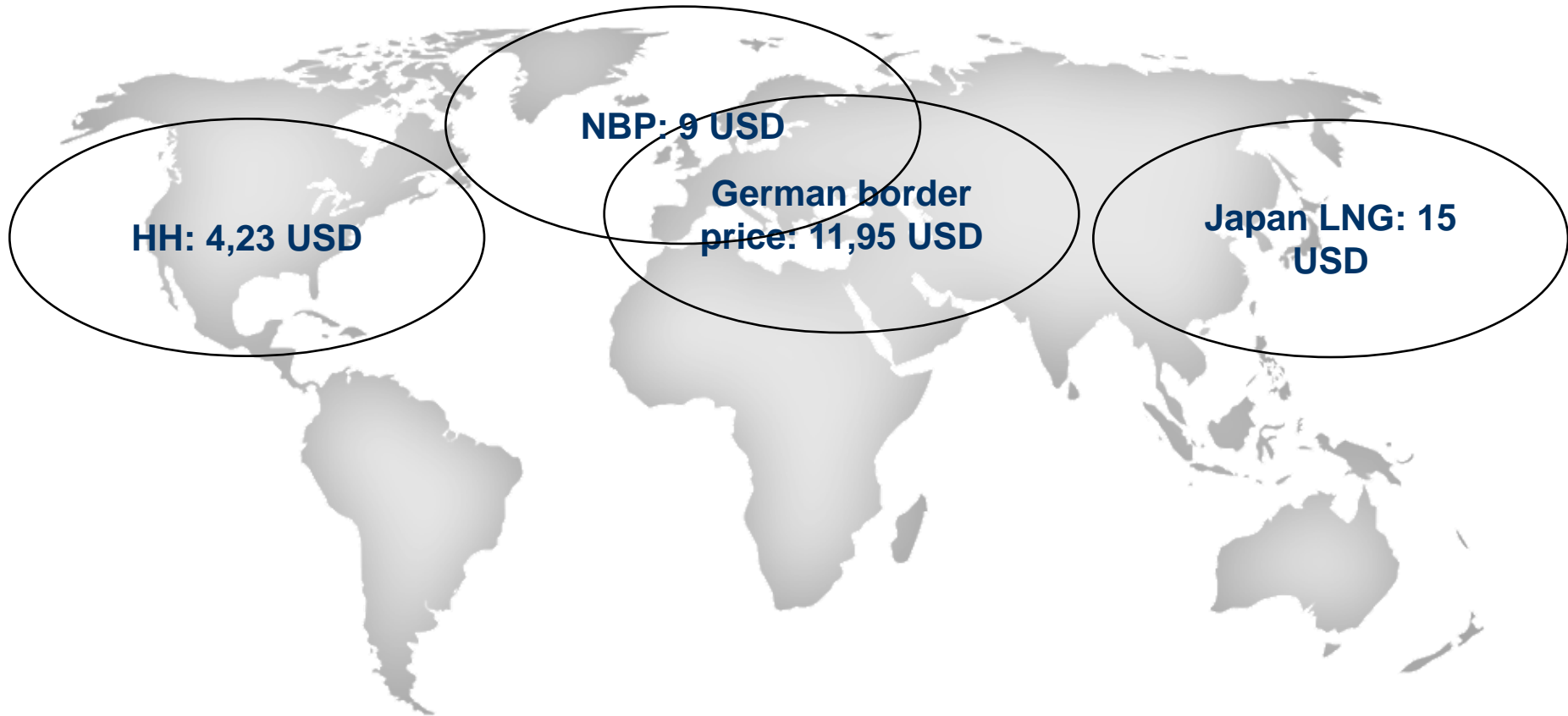
The shale gas hype

- Geopolitics: 'game changer'
- Economy: industry impact (U.S.)
- Energy transition: bridge fuel

Most important question: will shale make gas markets go global?



Global gas prices April 2013 – a snapshot





How does Europe play out?

Environment

- High environmental standards (no 'Halliburton loophole')
- Access to water and disposal of used water an issue
- Strong environmental movements

Regulation

- Ownership of subsoil resources (state not private)
- Land access/ drilling rights difficult due to high population density
- Fiscal regimes for unconventional gas production lacking

Economics

- Availability of (pipeline) infrastructure
- Availability of business in energy service sector
- High European well costs



No 'copy – paste' in Europe



Still, U.S. developments have great impact on European markets

Source: SG Cross Asset Research, Platts, Reuters

Goldthau 22 April 2013



How does the Pacific basin play out?

- China's gas demand is growing (155bcm/y) and so are its sources
 - 30bcm of Turkmen gas by 2015, additional agreements in CA up to 65bcm
 - 6,5 bcm domestic unconventional, 100bcm planned by 2020
 - Australia's LNG at the doorstep
 - Qatar additional LNG trains seek export markets in Asia

- China plays hard-to-get on pricing
 - 70bcm/y framework agreement with Russia fell through b/c disagreements on price
 - China will not soak up liquidity from Europe



Company	Quantity ^(a)	FTA Applications ^(b) (Docket Number)	Non-FTA Applications ^(c) (Docket Number)
Sabine Pass Liquefaction, LLC	2.2 billion cubic feet per day (Bcf/d) ^(d)	Approved (10-85-LNG)	Approved (10-111-LNG)
Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC	1.4 Bcf/d ^(d)	Approved (10-160-LNG)	Under DOE Review (10-161-LNG)
Lake Charles Exports, LLC	2.0 Bcf/d ^{(e)**}	Approved (11-59-LNG)	Under DOE Review (11-59-LNG)
Carib Energy (USA) LLC	0.03 Bcf/d: FTA 0.01 Bcf/d: non-FTA ^(f)	Approved (11-71-LNG)	Under DOE Review (11-141-LNG)
Dominion Cove Point LNG, LP	1.0 Bcf/d ^(d)	Approved (11-115-LNG)	Under DOE Review (11-128-LNG)
Jordan Cove Energy Project, L.P.	1.2 Bcf/d: FTA 0.8 Bcf/d: non-FTA ^(a)	Approved (11-127-LNG)	Under DOE Review (12-32-LNG)
Cameron LNG, LLC	1.7 Bcf/d ^(d)	Approved (11-145-LNG)	Under DOE Review (11-162-LNG)
Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC ^(b)	1.4 Bcf/d ^(d)	Approved (12-06-LNG)	Under DOE Review (11-161-LNG)
Gulf Coast LNG Export, LLC ⁽ⁱ⁾	2.8 Bcf/d ^(d)	Approved (12-05-LNG)	Under DOE Review (12-05-LNG)
Gulf LNG Liquefaction Company, LLC	1.5 Bcf/d ^(d)	Approved (12-47-LNG)	Under DOE Review (12-101-LNG)
LNG Development Company, LLC (d/b/a Oregon LNG)	1.25 Bcf/d ^(d)	Approved (12-48-LNG)	Under DOE Review (12-77-LNG)
SB Power Solutions Inc.	0.07 Bcf/d	Approved (12-50-LNG)	n/a
Southern LNG Company, L.L.C.	0.5 Bcf/d ^(d)	Approved (12-54-LNG)	Under DOE Review (12-100-LNG)
Excelerate Liquefaction Solutions I, LLC	1.38 Bcf/d ^(d)	Approved (12-61-LNG)	Under DOE Review (12-146-LNG)
Golden Pass Products LLC	2.6 Bcf/d ^(d)	Approved (12-88 -LNG)	Under DOE Review (12-156-LNG)
Cheniere Marketing, LLC	2.1 Bcf/d ^(d)	Approved (12-99-LNG)	Under DOE Review (12-97-LNG)
Main Pass Energy Hub, LLC	3.22 Bcf/d ^{***}	Approved (12-114-LNG)	n/a
CE FLNG, LLC	1.07 Bcf/d ^(d)	Approved (12-123-LNG)	Under DOE Review (12-123-LNG)
Waller LNG Services, LLC	0.16 Bcf/d	Approved (12-152-LNG)	n/a
Pangea LNG (North America) Holdings, LLC	1.09 Bcf/d ^(d)	Approved (12-174-LNG)	Under DOE Review (12-184-LNG)
Magnolia LNG, LLC	0.54 Bcf/d	Approved (12-183-LNG)	n/a
Trunkline LNG Export, LLC	2.0 Bcf/d ^{**}	Approved (13-04-LNG)	Under DOE Review (13-04-LNG)
Gasfin Development USA, LLC	0.2 Bcf/d	Approved (13-06-LNG)	n/a
Freeport-McMoRan Energy LLC	3.22 Bcf/d ^{***}	Pending Approval (13-26-LNG)	Under DOE Review (13-26-LNG)
Sabine Pass Liquefaction, LLC	0.28 Bcf/d ^(d)	Pending Approval (13-30-LNG)	Under DOE Review (13-30-LNG)
Sabine Pass Liquefaction, LLC	0.24 Bcf/d ^(d)	Pending Approval (13-42-LNG)	Under DOE Review (13-42-LNG)
Total of all Applications Received		29.93 Bcf/d(**) (***)	28.54 Bcf/d



How does US play out?

- Wild cards: FERC approvals/ domestic politics (“reindustrializing America”)
- If exports happen:
 - cheaper gas and more flexible contracts will make market share in Asia
 - Qatar, Russia, Australia need to become more flexible to secure Asian markets
 - Regional markets get linked up
- In this case: US will be decisive in future pricing models



What does unconventional gas mean for markets and energy security?

- What it does:
 - Challenge incumbent gas pricing models
 - Possibly helps establishing a global gas market
- What it does not:
 - Marginalize incumbent producers
 - Lower prices



Take home points on energy security

- America is make-or-break nation for 'globalizing' natural gas
- But: be careful what you wish for – transition is a bumpy process
 - uncertainty over pricing models
 - transition from 'old' to 'new' gas world



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