REKK Regional Centre for Energy Policy Research

The prospects for LNG in the Danube Region

Dr. Péter Kaderják, Director

Danube Region Stakeholder Seminar

Brussels, May 26, 2016

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Expected outcomes (Ulm, October, 2015)

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- Conclusions to contribution to the Commission's LNG strategy
- Policy and regulatory proposals to unlock the Danube Region for LNG
- Produce a DR Working Paper to serve as a basis for a topical LNG Workshop for the DR

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Main messages

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- LNG oversupply would bring price relief to Europe, however, the DR will experience limited benefits. The price difference between Europe and the Danube Region will grow as more LNG supplies reach Europe
- By 2020, we find IGB, IGB+TAP and the Croatian LNG alone or even with HR-HU interconnector (at low tariffs) to be projects with a positive social NPV
- The Nord Stream expansion would bring a substantial price increase to the DR. If Nord Stream 2 is realized, alternative sources and additional investment are justified

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Outline

REKK Regional Centre for Energy Policy Research

- Review of changes in global market conditions
- Task description and methodology
- Effect of LNG oversupply in the DR
- Infrastructure scenarios and CBA

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Shifting global gas market fundamentals

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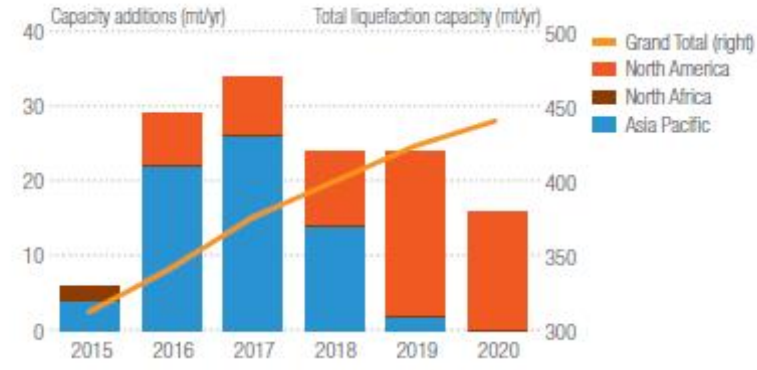
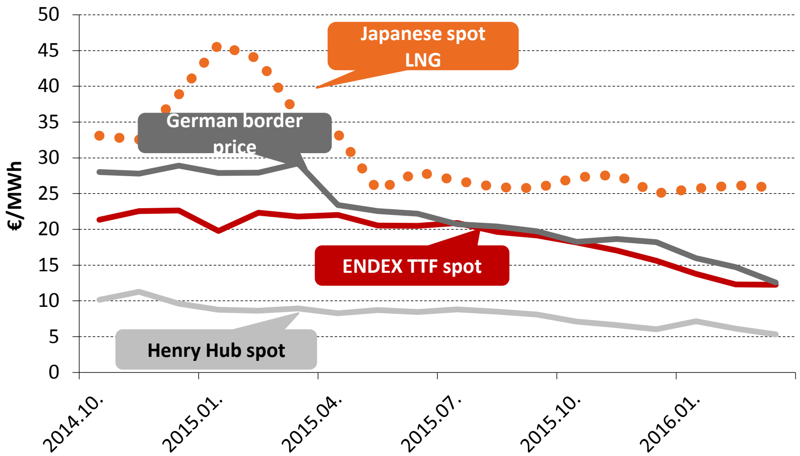
- Falling demand in Asia
  - cheap available coal
  - the rollout of RES
  - China's pipeline diversification
  - the restart of Japan's nuclear reactors
- New supply from Australia and US
- Low oil prices have further pushed down indexed Asian gas prices
- Asia is no longer the premium market for LNG
- Lower Asian demand has led to price convergence between Asia and Europe

Increase in global liquefaction capacity



Source: Platts Eclipse

Regional gas prices



Forrás: Japán Statisztikai Hivatal, EIA, Gaspool, IMF

Increased attractiveness of the EU market

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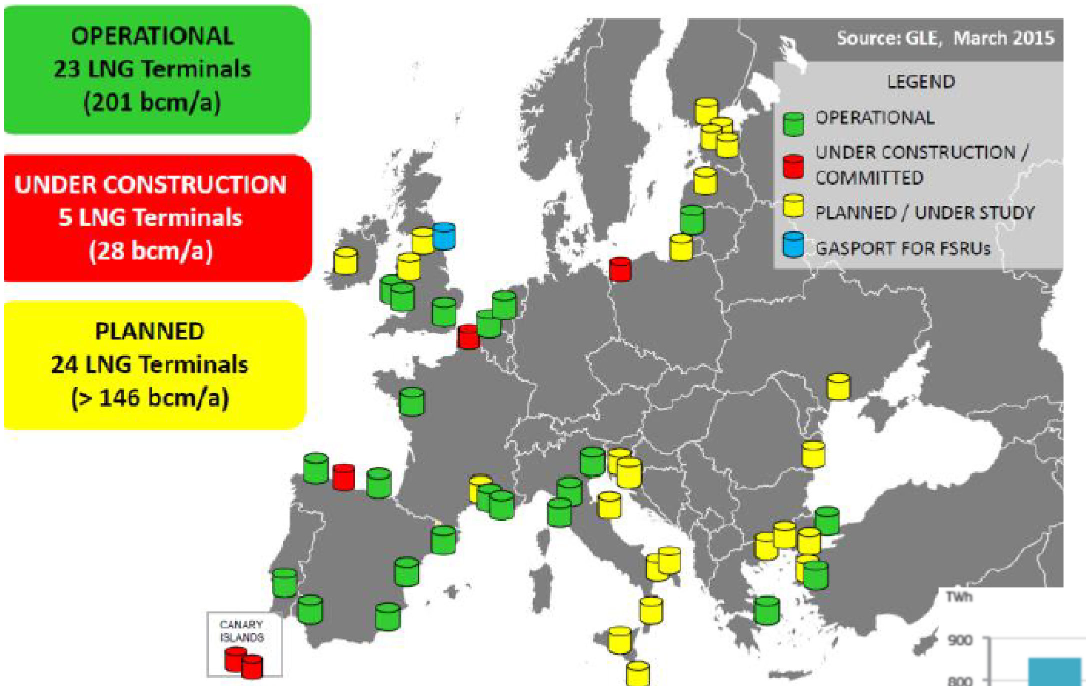
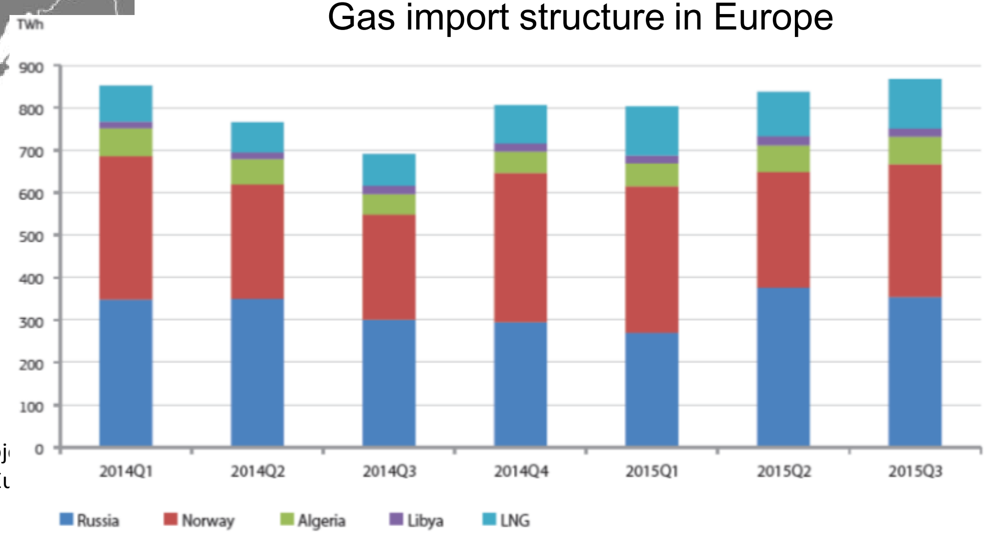
Regasification terminals in Europe



- LNG flexibility towards regional price changes
- Majority of volumes are committed to Asia but partly flexible (portfolio traders)
- First US LNG shipment landed in Europe on April 26, 2016
- 2015/14 EU LNG import growth: 24%

Gas import structure in Europe



- In 2014 utilization of LNG regasification terminals in Europe was down at 19% (163 bcm capacity remained unused)

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Task description

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- To assess how the Danube Region benefits from the soft global LNG market under current infrastructure and tariff conditions
- To identify the most important infrastructure bottlenecks
- To explore the benefits of existing/new routes of LNG to the region
  - Newly commissioned PL LNG
  - Existing (expanded) GR LNG + additional infrastructure
  - New HR LNG + additional infrastructure
  - Existing IT LNG (with lower regasification tariffs)
- To calculate social NPV of these infrastructures
- To analyse the effect of Nord Stream 2 on the above listed scenarios

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Methodology

- Gas market modelling (EGMM)
- Establishing the 2016 and 2020 references
- Simulation of increased LNG flow to Europe based on the 2016 and 2020 reference cases measuring the change of modelled gas wholesale prices across Europe and in the Danube Region
- Simulation of new infrastructure scenarios:
  - Effect of new LNG regasification terminals
  - Effect of CESEC/PCI regional projects
  - Sensitivity of the results to the realisation of Nord Stream 2
- Social NPV for all infrastructure projects is quantified

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2016 reference

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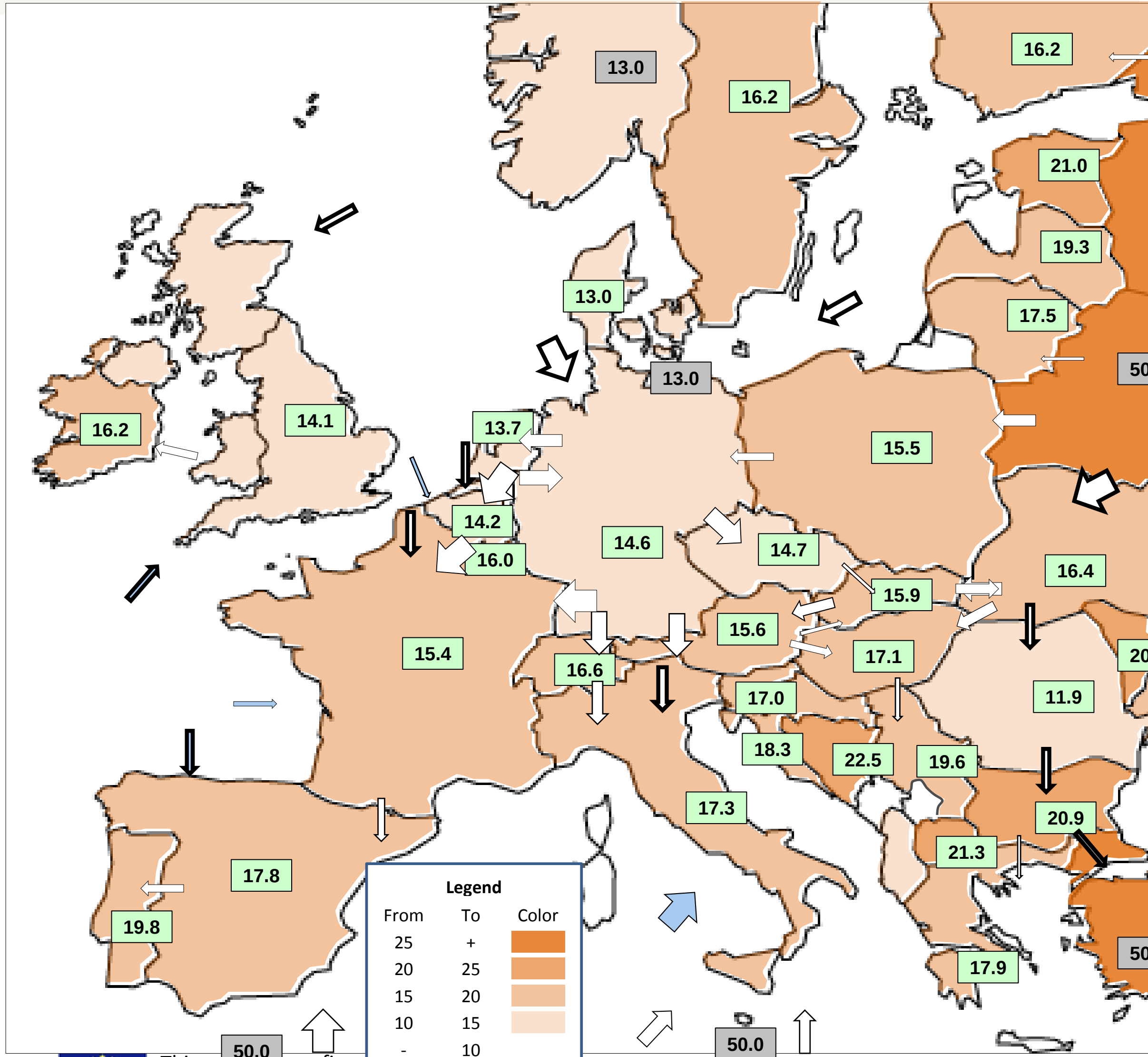
- 2016 Q1 European price landscape
- Flows modelled are in line with the 2015 flow pattern (IEA, ENTSOG, Eurostat)
- 50bcm/year of LNG reaching Europe
- Compared to North-West Europe, prices remain higher in some DR countries
- Reason: LNG terminals are distant and tariffs absorb the price difference between countries



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Outline

- Review of changes in global market conditions
- Task description and methodology
- **Effects of LNG oversupply in the DR**
- Infrastructure scenarios and CBA

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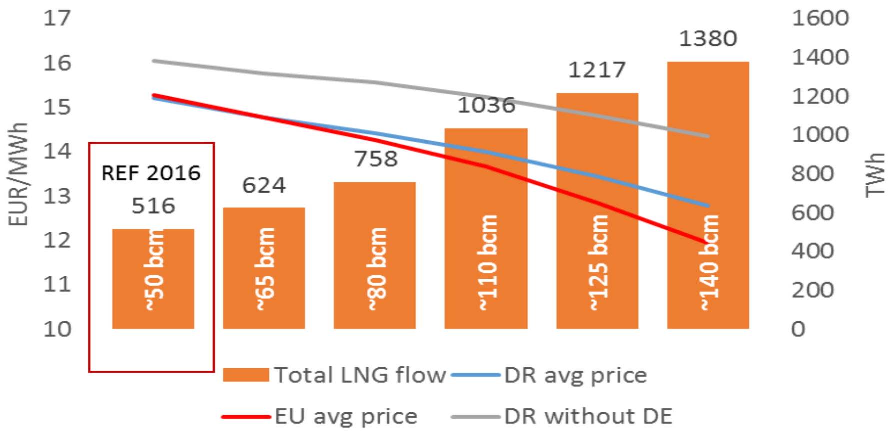
Price effects of increased LNG flows in 2016



LNG flows (bcm/year)	Price change (%)					
	~50 bcm	~65 bcm	~80 bcm	~110 bcm	~125 bcm	~140 bcm
AT	0%	-5%	-8%	-12%	-15%	-20%
BA	0%	0%	0%	-1%	-4%	-5%
BG	0%	0%	0%	0%	0%	0%
CZ	0%	-3%	-6%	-8%	-13%	-18%
DE	0%	-4%	-7%	-11%	-15%	-21%
HR	0%	-3%	-6%	-9%	-13%	-15%
HU	0%	-2%	-3%	-5%	-8%	-11%
MD	0%	-1%	-1%	-3%	-5%	-8%
RO	0%	0%	0%	-1%	-1%	-1%
RS	0%	-1%	-2%	-4%	-7%	-9%
SI	0%	-4%	-8%	-12%	-16%	-19%
SK	0%	-2%	-4%	-7%	-11%	-15%
UA	0%	-1%	-2%	-4%	-6%	-9%
DR	0%	-3%	-5%	-8%	-12%	-16%
EU	0%	-3%	-7%	-11%	-16%	-22%

- We modelled the price effects of increased LNG flows in our 2016 reference
- Due to infrastructural constraints (no LNG terminal and high tariffs on interconnectors) in the region, DR countries benefit less than the EU as a whole
- DR countries may not receive actual LNG „molecules”, but spot gas is crowded out in Western Europe by cheaper LNG sources
- Average EU wholesale gas price might decrease below 12 €/MWh at LNG levels of 140 bcm/year while DR prices are 7% higher
- Average DR price masks large disparity in individual prices
  - Main beneficiaries of larger flows include DE (through NL), AT (through IT and DE) and SI (through AT and IT)

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Assumptions for the 2020 reference scenario

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- LNG flows to Europe to reach ~100 bcm/year by 2020
- Demand and production will change as forecasted in the latest TYNDP grey scenario
- LTC assumptions: prices are partly oil indexed (ratio is based on 2015 statistical data) and do not expire
- Oil price: 2016 January World Bank forecast
- Based on the 2015 real transmission, storage, and LNG regasification tariffs we assume 2 €/MWh tariff for newly commissioned infrastructure
- New infrastructure: the FID projects to be commissioned by 2020. Source: ENTSO-G TYNDP without TAP (TAP will be analysed)

New interconnector		Capacity (GWh/day)
Biriatou	FR-ES	60
	ES-FR	55
Alveringem-Maldegem	FR-BE	270
Griespass-Passo Gries	IT-CH	421
Ellund	DE-DK	40.56
Ruse-Giurgiu	BG-RO	14.38
	RO-BG	14.38
LNG	**Country**	**Capacity (GWh/day)**
Revythoussa extension	GR	+80.38
Dunkerque	FR	348
Klaipeda extension	LT	+27.1

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2020 reference

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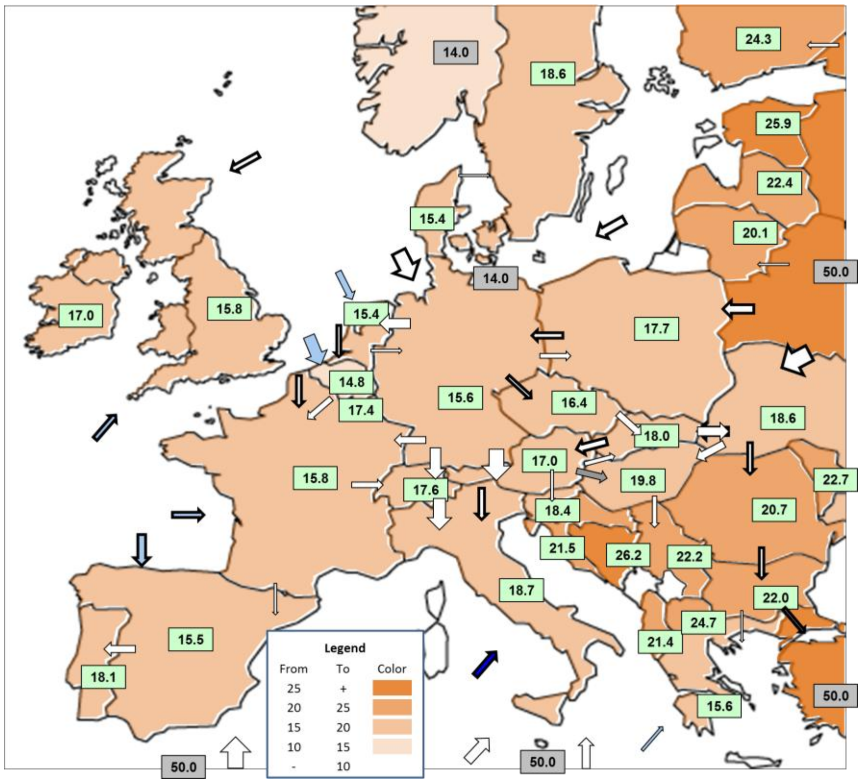
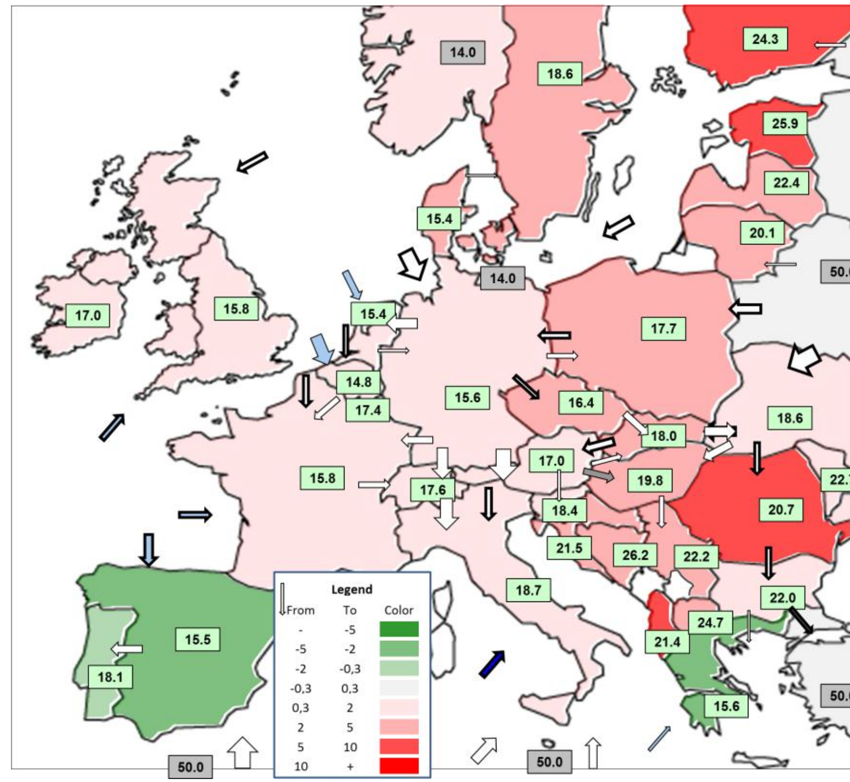
Price levels, €/MWh



Price levels (€/MWh) and change to 2016 reference



- By 2020 the price difference between DR and Western Europe widens
- Increased LNG flows to Europe lowers prices in Greece, Spain (major LNG importers)
- Lack of infrastructure prevents price convergence in Europe

Price effects of increased LNG flows in 2020

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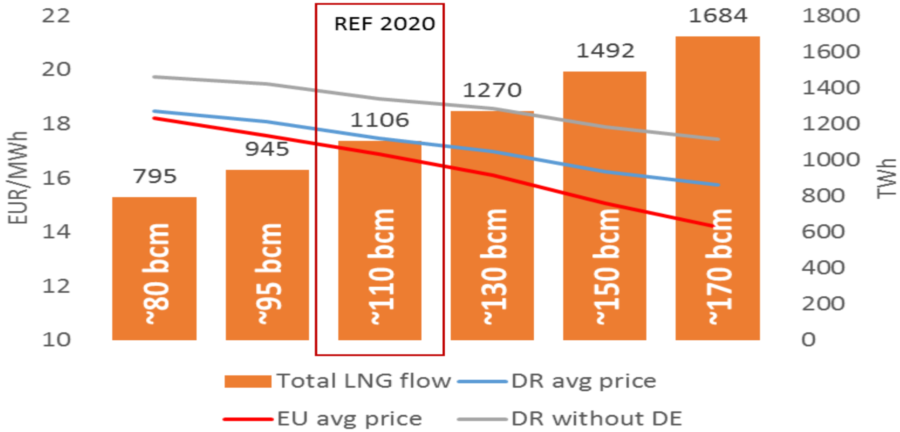

LNG flows (bcm/year)	Price change (%)					
	~80 bcm	~95 bcm	~100 bcm	~120 bcm	~140 bcm	~160 bcm
AT	+7%	+4%	0%	-3%	-8%	-12%
BA	+2%	+2%	0%	-1%	-3%	-5%
BG	0%	0%	0%	0%	0%	-1%
CZ	+7%	+4%	0%	-3%	-8%	-12%
DE	+8%	+4%	0%	-4%	-10%	-13%
HR	+4%	+3%	0%	-2%	-6%	-8%
HU	+4%	+3%	0%	-1%	-4%	-6%
MD	+3%	+2%	0%	-1%	-4%	-6%
RO	+2%	+2%	0%	-1%	-4%	-6%
RS	+3%	+2%	0%	-1%	-4%	-5%
SI	+6%	+4%	0%	-3%	-8%	-11%
SK	+7%	+4%	0%	-3%	-8%	-11%
UA	+4%	+3%	0%	-2%	-5%	-8%
DR	+6%	+3%	0%	-3%	-7%	-10%
EU	+8%	+4%	0%	-5%	-11%	-16%

- We modelled the price effects of increased LNG flows in our 2020 reference
- At the expected level of global LNG supply, increased European prices attract more LNG to Europe
- Price difference between the EU and the Danube Region is bigger in 2020 than in 2016

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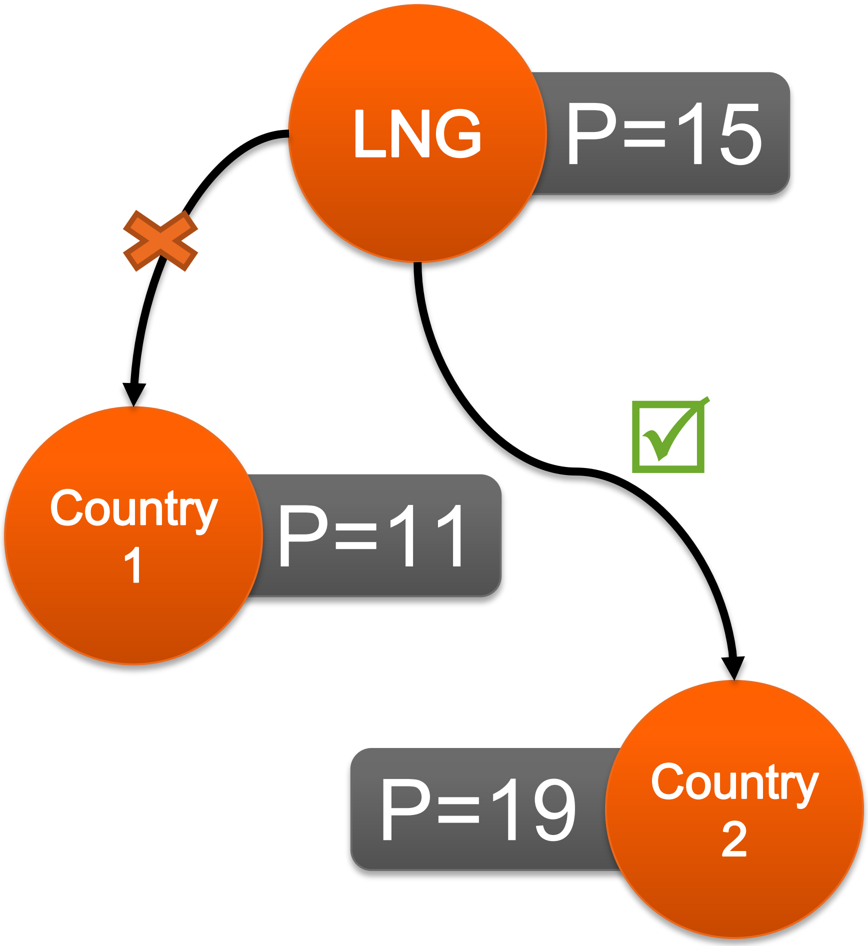
Methodology of infrastructure assessment

- PL, IT, GR and HR LNG evacuation routes assessed
- Evacuation route is deemed possible if the neighbouring market price is higher than the domestic price
- Assumed new infrastructure tariff is 1 €/MWh on both entry and exit points (2 €/MWh in total)
- Pipeline utilisation of new infrastructure and LNG utilisation checked
- Welfare effects relative to the reference case measure the benefit of the project
- Total CAPEX of infrastructure expansion is considered the cost of the project
- CAPEX is paid 1 year before commissioning
- NPV is calculated for all projects with a positive welfare effect on a 25 year lifetime, assuming 4% discount rate



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Analysed routes and scenarios

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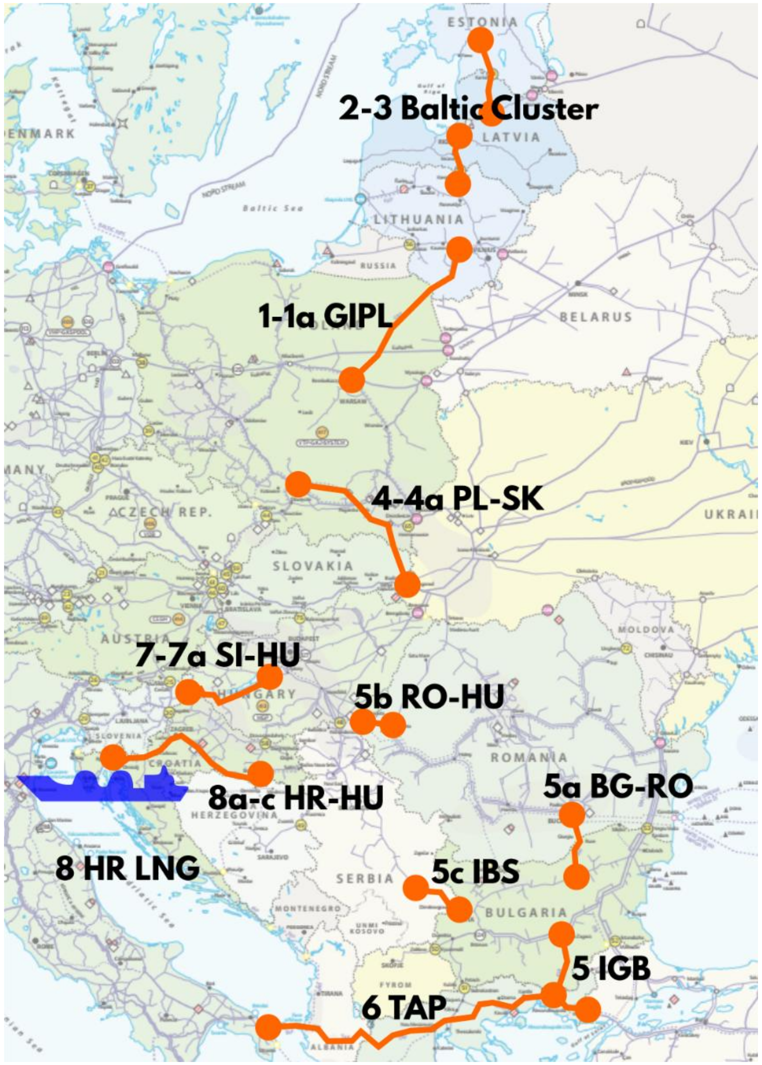
LNG terminals PL, LT, GR, IT, HR, are linked to PCI projects in the DR

	Infrastructure element
1	GIPL
1a	GIPL + low PL LNG tariff
2	GIPL+Baltic Cluster
3	Baltic Cluster
4	PL-SK
4a	PL-SK + low PL LNG tariff
5	IGB
5a	IGB+BG-RO
5b	IGB+BG-RO+RO-HU
5c	IGB+IBS
6	TAP +IGB
7	IT LNG + SI-HU
7a	Low IT LNG tariff + SI-HU
8	HR LNG
8a	HR LNG + HR-HU
8b	HR LNG + low HR-HU tariff
8c	Low HR LNG + low HR-HU tariffs



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PCIs used to connect LNG to DR

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Name of PCI	From	To	Capacity Bcm/y	Capacity GWh/d	Cost MEUR	Length km	Diameter mm	Calc.Cost MEUR	PCI	Date
GIPL	PL	LT	2.4	64.2	558	534	700	452.8	TRA-N-212 TRA-N-341	2019
	LT	PL	1.7	45.5						
PL-SK	PL	SK	5.7	152.4	n.a.	371	1000	586	TRA-N-190 TRA-N-275 TRA-N-245	2019
	SK	PL	4.7	126.0						
IGB	GR	BG	3.0	80.3	220	185	800	156.9	TRA-N-378	2018
	BG	GR	3.0	80.3						
Baltic Cluster	LT	LV	4.4	117.2	n.a.	93	500	69.5	TRA-N-342 TRA-N-382	2021
	LV	LT	4.4	117.2						
	LV	EE	3.7	97.7	n.a.	n.a	n.a.	~100	TRA-N-084	2019
	EE	LV	3.7	97.7						
TAP	GR	AL	13.0	348	1500	871	1200	2091.7	TRA-F-051	2020
RO-HU	RO	HU	4.2	113.7	550	n.a	n.a.	n.a.	TRA-N-126	2023
BG-RO	BG	RO	0.5	562	n.a.	185	800	220	TRA-N-431 TRA-N-379	2023 2018
BG-RS	BG	RS	3.0	80	200-250	185	813	215.5	TRA-N-137	2018
SI-HU	SI	HU	1.3	34.8	145	174	500	156.3	TRA-N-112 TRA-N-325	2020
HR-HU	HR	HU	2.8	76	370	308	1000	439.5	TRA-N-075	2019
HR LNG	LNG	HR	4.0	108	300	-	-	-	LNG-N-082	2019

Reported cost was used for NPV calculation where available – otherwise estimated

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Regional welfare effects

		Welfare change in DR to reference, M€
1	GIPL	0.88
1a	GIPL low	-13
2	GIPL+Baltic Cluster	0.79
3	Baltic Cluster	-0.1
4	PL-SK	0
4a	PL-SK low	-13
5	IGB	30.9
5a	IGB+BG-RO	29.1
5b	IGB+BG-RO+RO-HU	29.1
5c	IGB+IBS	24
6	TAP +IGB	31.7
7	IT LNG +SIHU	0
7a	low IT LNG tariff +SIHU	-13
8	HR LNG	44.3
8a	HR LNG + HR-HU	44.3
8b	HR LNG+HR-HU low tariff	45.7
8c	Low HR LNG+low HR-HU tariffs	90.9

- Majority of the projects have a positive welfare effect in the DR
- CAPEX costs of the project have to be considered for CBA

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Social NPV for the infrastructure scenarios

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- Total welfare change from reference measures the benefit of the project
- Costs are indicated on slide 18
- Investment was made in t-1
- Benefits were awarded for a 25 year lifetime
- Projects with positive social NPV in base case:
  - IGB
  - IGB with TAP
  - HR LNG (4bcm/year 300 M€, 3€/MWh tariff – HR is the only beneficiary country)

	Social NPV, M€ Without NS
GIPL	-483
GIPL low	-677
GIPL+Baltic Cluster	-568
Baltic Cluster	-84
PL-SK	-521
PL-SK low	-702
IGB	261
IGB+BG-RO	-262
IGB+BG-RO+RO-HU	-680
IGB+IBS	-46
IGB (with TAP)	236
IT LNG +SIHU	-128
low IT LNG +SIHU	-303
HR LNG	36.4
HR LNG + HR-HU	-293
HR LNG+HR-HU low	-272
Low HR LNG+low HR-HU	380

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Nord Stream 2 scenarios

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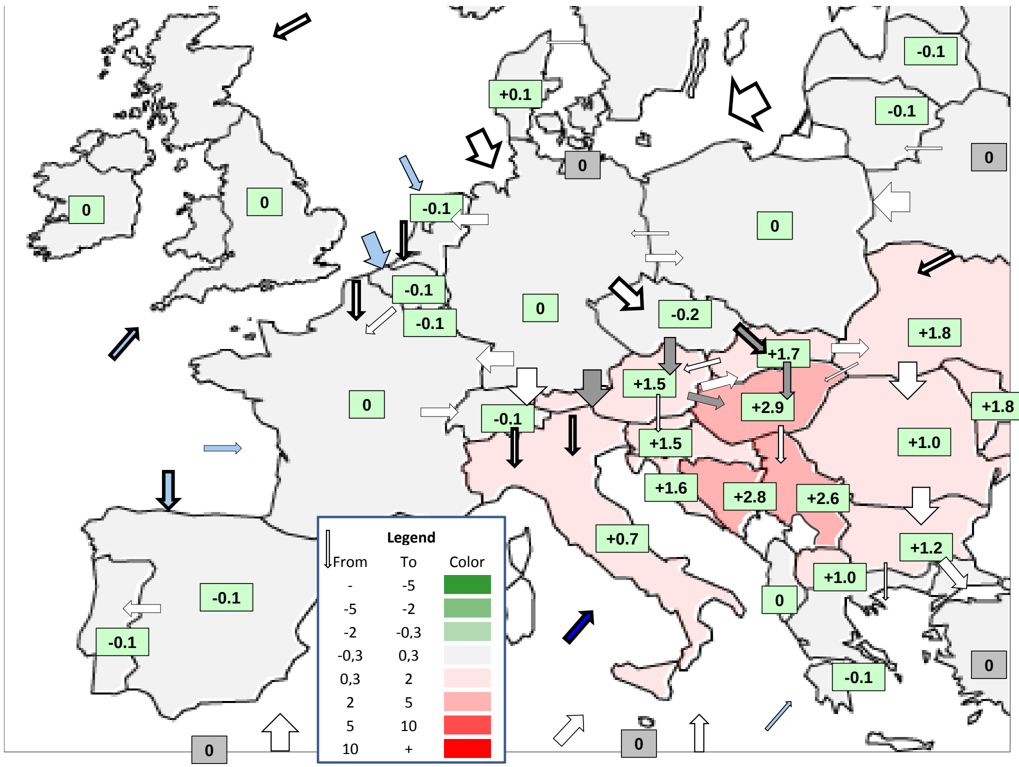
- Scenario assumptions
  - Realisation of Nord Stream 2, doubling current capacity to 110 bcm/year
  - Most long-term Russian contracts assumed to be re-routed (RU-AT, RU-BA, RU-CZ, RU-FR, RU-DE, RU-HU, RU-IT, RU-RS, RU-SK, RU-SI)
  - LTCs crossing the Balkans route and Ukraine are kept intact (RU-UA, RU-RO, RU-BG, RU-MK, RU-GR, RU-TR)
  - Delivery point is at the national border of each country
  - Price of Russian gas delivered remains unchanged for existing contracts
- Nord Stream expansion effects
  - General price increase in Danube Region and CSEE
  - Marginal price drop in Western Europe

Natural gas wholesale price change compared to the 2020 reference (€/MWh)



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Social NPV for the infrastructure scenarios

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- Projects with positive social NPV with Nord Stream 2:
  - IGB
  - BG-RO (reverse flow)
  - RO-HU
  - IBS
  - IGB with TAP also
  - HR LNG with HR-HU
- Nord Stream 2 causes a general price hike in the region, thus any new infrastructure has stronger welfare effect
- **Without Nord Stream 2, total project investment needs are approximately 890 M€**
- **With Nord Stream 2, project investment needs increase to 1880 M€**

	Social NPV, M€	
	Without NS	With NS
GIPL	-483	-510
GIPL low	-677	-581
GIPL+Baltic Cluster	-568	-594
Baltic Cluster	-84	-81
PL-SK	-521	-456
PL-SK low	-702	-514
IGB	261	1145
IGB+BG-RO	-262	495
IGB+BG-RO+RO-HU	-680	77
IGB+IBS	-46	1296
IGB (with TAP)	236	1677
IT LNG +SIHU	-128	-74
low IT LNG +SIHU	-303	-74
HR LNG	36.4	857
HR LNG + HR-HU	-293	528
HR LNG+HR-HU low	-272	1267
Low HR LNG+low HR-HU	380	1625

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Example of pipeline versus LNG competition: TAP+IGB

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Total pipeline flows, TWh			
	ref	IGB	TAP +IGB
BG-GR	16.6	16.6	16.6
TR-GR	0	0.0	0.0
GR-BG	n.a.	10.7	11.6
BG-GR2	n.a.	0.0	0.0
TR-GR2	n.a.	n.a.	88.0
GR-AL	n.a.	n.a.	78.2
AL-IT	n.a.	n.a.	78.2

LNG terminal flows, TWh			
	ref	IGB	TAP +IGB
GR LNG	22.4	33.1	24.3

- GR LNG utilisation is examined in two scenarios:
  - IGB commissioned
  - IGB and TAP commissioned
- LTC to IT (8 bcm/year), to GR (1 bcm/year) and to BG (1 bcm/year) is assumed on TAP
- TAP has a negative effect on GR LNG utilisation

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Main conlcusions

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- LNG oversupply would bring price relief to Europe, however, the DR will experience limited benefits. The price difference between Europe and the Danube Region will grow as more LNG supplies reach Europe
- The main reason for this outcome: lack of LNG terminals, missing interconnectors, and underutilized existing infrastructure due to high transmission tariffs
- Modelling suggests that for PL LNG, HR-HU interconnector and HR LNG tariffs are the major obstacle for infrastructure utilisation and greater regional social benefits
- Given the low price environment and demand decrease, many proposed PCI projects are not utilised in our modelling scenarios
- By 2020, we find IGB, IGB+TAP and the Croatian LNG alone or even with HR-HU interconnector (at low tariffs) to be projects with a positive social NPV
- The Nord Stream expansion would bring a substantial price increase to the DR. If Nord Stream 2 is realized, alternative sources and additional investment are justified
- Without Nord Stream 2, regional investment costs total 890 M€, with Nord Stream 2 expansion more than double this amount (1880 M€)
- Nord Stream 2 will not necessarily crowd out LNG from Europe, unless other suppliers (e.g. Russia) engage in price competition to retain market share
- TAP-contracted Azeri gas definitely weakens the utilisation of the Greek LNG terminal

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Thank you for your attention!

Project lead:
Borbála Takácsné Tóth
borbala.toth@rekk.hu
www.rekk.hu

Prepared by:
Ákos Beöthy, Péter Kotek, Adrienn Selei

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Annex

Modelling results of the analysed infrastructure routes

1.-2. GIPL and GIPL+Baltic Cluster

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Total pipeline flows on PL pipelines, TWh	Ref	GIPL	GIPL+ Baltic Cluster	Baltic Cluster
PL-DE	203.8	203.8	203.8	203.8
DE-PL	35.6	37.9	38.1	35.6
CZ-PL	0.0	0.0	0.0	0.0
RU-PL	318.0	318.0	318.0	318.0
UA-PL	0.0	0.0	0.0	0.0
PL-UA	8.3	8.3	8.3	8.3
PL-LT	n.a.	2.4	2.6	n.a.
LT-PL	n.a.	0.0	0.0	n.a.
PL-SK	n.a.	n.a.	n.a.	n.a.
SK-PL	n.a.	n.a.	n.a.	n.a.

LNG terminal flows, TWh	ref	GIPL	GIPL+ BC	Baltic Cluster
PL LNG	14.3	14.3	14.3	14.3
LT LNG	13.9	11.9	12.1	14.3

- GIPL does not increase PL LNG utilisation, but harms LT LNG spot utilisation
- If GIPL is commissioned, spot LNG from Western European markets flows from Germany through Poland to Lithuania
- The Baltic Cluster further increases GIPL flows, but alleviates the LT LNG utilisation issue somewhat

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1-1a PL LNG tariff reduction with GIPL

Total pipeline flows on PL pipelines, TWh			
	ref	GIPL	GIPL low
PL-DE	203.8	203.8	203.8
DE-PL	35.6	37.9	10.9
CZ-PL	0.0	0.0	0.0
RU-PL	318.0	318.0	315.5
UA-PL	0.0	0.0	0.0
PL-UA	8.3	8.3	9.7
PL-LT	n.a.	2.4	5.2
LT-PL	n.a.	0.0	0.0

LNG terminal flows, TWh			
TWh	ref	GIPL	GIPL low
PL LNG	14.3	14.3	48.9
LT LNG	13.9	11.9	9.3

- LNG regasification fee at the Polish terminal was reduced to 1 € /MWh from 3.86 €/MWh
- LNG utilisation increased at PL terminal and decreased at LT terminal
- Lower flows at PL-DE and RU-PL interconnectors
- Additional LNG consumed in Poland, transported to Baltic and Ukraine
- Increased use of GIPL and UA-PL

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3. Baltic Cluster

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Total pipeline flows, TWh	ref	GIPL	GIPL+ BC	Baltic Cluster
LV-LT	0.0	0.0	0.0	0.0
LT-LV	7.4	7.7	0.0	0.0
LT-RU	0.0	0.0	0.0	0.0
RU-LT	17.9	17.9	17.9	17.9
PL-LT	n.a.	2.4	2.6	n.a.
LT-PL	n.a.	0.0	0.0	n.a.
LT-LV2	n.a.	n.a.	8.1	7.8
LV-LT2	n.a.	n.a.	0.0	0.0
LV-EE	3.1	3.2	0.0	0.0
EE-LV	0.0	0.0	0.0	0.0
RU-EE	4.4	4.4	4.4	4.4
LV-EE2	n.a.	n.a.	3.6	3.5
EE-LV2	n.a.	n.a.	0.0	0.0

- Baltic Cluster increases LNG flows to the Baltic region by 3%
- Additional flows are delivered to Latvia and Estonia

LNG terminal flows, TWh	ref	GIPL	GIPL+ BC	Baltic Cluster
PL LNG	14.3	14.3	14.3	14.3
LT LNG	13.9	11.9	12.1	14.3

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4. PL-SK interconnector with tariff reduction in PL

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	ref	PL-SK	PL-SK low
PL-DE	203.8	203.8	203.8
DE-PL	35.6	35.6	9.4
CZ-PL	0.0	0.0	0.0
RU-PL	318.0	318.0	314.9
UA-PL	0.0	0.0	0.0
PL-UA	8.3	8.3	9.7
PL-SK	n.a.	0.0	0.0
SK-PL	n.a.	0.0	0.0
SK-CZ	0.0	0.0	0.0
CZ-SK	50.5	50.5	49.6
AT-SK	33.0	33.0	32.5
SK-AT	274.3	274.3	274.3
UA-SK	328.3	328.3	328.3
SK-UA	67.6	67.6	66.0
HU-SK	0.0	0.0	0.0
SK-HU	12.8	12.8	12.8

TWh	ref	PL-SK	PL-SK low
PL LNG	14.3	14.3	46.2
LT LNG	13.9	13.9	13.8

- The new infrastructure has no effect on PL LNG utilisation at high LNG tariff scenario
- Even if PL LNG tariff is reduced to 1 €/MWh, the low price difference between SK and PL markets does not allow for spot trade flows to SK and HU markets
- However, Ukrainian markets allow for increased consumption
- Additional LNG regasified in the PL terminal is consumed in the PL market and transported to Ukraine
- Spot flows through Slovakia to Ukraine are reduced due to this competing new source

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5. IGB + other infrastructure elements

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Total pipeline flows, TWh	ref	IGB	IGB+ BG-RO	IGB+ BG-RO+ RO-HU	IGB+ IBS
BG-MK	1.4	1.6	1.6	1.6	1.5
BG-GR	16.6	16.6	16.6	16.6	16.6
BG-TR	131.9	131.9	131.9	131.9	131.9
RO-BG	173.4	173.4	173.4	173.4	173.4
RO-BG2	3.1	0.1	1.3	1.3	1.3
BG-RO	0.0	2.6	0.4	0.4	2.0
BG-RO2	n.a.	n.a.	5.1	5.1	n.a.
GR-BG	n.a.	10.7	12.3	12.3	27.1
BG-GR2	n.a.	0.0	0.0	0.0	0.0
RO-HU	n.a.	n.a.	n.a.	0.0	n.a.
BG-RS	n.a.	n.a.	n.a.	n.a.	19.9

LNG terminal flows, TWh					
TWh	ref	IGB	IGB+ BG-RO	IGB+ BG-RO+ RO-HU	IGB+ IBS
GR LNG	22.4	33.1	34.6	34.6	49.4

- Does the realisation of BG-RO, BG-RO+RO-HU or IBS pipelines affect the flows on the IGB and the GR LNG?
- BG-RO increased the utilisation of the IGB and the GR LNG terminal, as the BG market consumed the additional flows
- Addition of the RO-HU interconnector did not improve the situation, the LNG did not reach Hungary
- The IBS had significantly higher effects on the LNG and the IGB utilisation

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6. TAP+IGB

Total pipeline flows, TWh	ref	IGB	TAP +IGB
BG-GR	16.6	16.6	16.6
TR-GR	0	0.0	0.0
GR-BG	n.a.	10.7	11.6
BG-GR2	n.a.	0.0	0.0
TR-GR2	n.a.	n.a.	88.0
GR-AL	n.a.	n.a.	78.2
AL-IT	n.a.	n.a.	78.2

- LTC to IT, GR and to BG is assumed on TAP
- TAP has a negative effect on GR LNG utilisation

LNG terminal flows, TWh	ref	IGB	TAP +IGB
GR LNG	22.4	33.1	24.3

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7. IT LNG + SI-HU

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	ref	IT LNG +SIHU	low IT LNG +SIHU
IT-SI	0	0	0

TWh	ref	IT LNG +SIHU	low IT LNG +SIHU
IT LNG	213.1	213.1	213.1

- LNG tariff reduction does not affect terminal utilisation
- IT-SI interconnector has 0 flows in both scenarios

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8 HR LNG+HR-HU

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	ref	HR LNG	HR LNG + HR-HU	HR LNG+ HR-HU low	Low HR LNG+ low HR-HU
SI-HR	13.7	0.0	0.0	0.0	0.0
HU-HR	0.0	0.0	0.0	0.0	0.0
HR-HU	n.a.	n.a.	0.0	0.5	18.8

TWh	ref	HR LNG	HR LNG + HR-HU	HR LNG+ HR-HU low	Low HR LNG+ low HR-HU
PL LNG	14.3	46.2	46.2	46.2	46.2
LT LNG	13.9	13.8	13.8	13.7	13.6
GR LNG	22.4	22.3	22.3	22.3	22.3
IT LNG	213.1	213.1	213.1	213.1	213.1
HR LNG		15.7	15.7	16.2	35.6

- HR terminal is under-utilized at high tariff (3.2 €/MWh)
- Adding the HR-HU interconnector does not change the utilisation, the interconnector is not used at high tariffs
- At lower (1-1) HR-HU tariff scenario, 0.5 TWh gas is flowing to Hungary
- At low LNG regasification (1 €/MWh) and pipeline tariffs, 2 bcm LNG may reach Hungary

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