

Building renovation delivers South-East Europe gas security

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(replacing Dan Staniaszek)

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EH...KSST!
GAZPROM
Slovakia
Hungary
Romania
Slovenia
Croatia
Bosnia & Herzegovina
Serbia
Bulgaria
Montenegro
Kosovo
FYROM
Albania
Greece

Security of Gas Supply Regulation (2017)



EUROPEAN COMMISSION

Brussels, 16.2.2016
COM(2016) 52 final

2016/0030 (COD)

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010

(Text with EEA relevance)

{SWD(2016) 25 final}
{SWD(2016) 26 final}

EN

EN

Member States will have to:

- guarantee gas deliveries to **protected customers**
- realise **Risk Assessments**
- draw up **Preventive Action Plans**
- prepare **Emergency Plans** for dealing with a crisis
- show **solidarity between MSs**

Reality check


Bloomberg Markets Tech Pursuits Politics Opinion Businessweek

Freeze Hits Balkan Power Markets as Greece Halts Exports

by **Ladka Mortkowitz Bauerova**, **Misha Savic**, and **Slav Okov**
January 12, 2017, 1:25 PM GMT+1 *Updated on* January 12, 2017, 3:39 PM GMT+1


EurActiv.com

ROMÂNIA
Veste proastă pentru Tăricea
Salariile minime cresc în toat
2017 – an de reușită sau eșec pe
Sociologul Bogdan Voicu: Este c

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Romania turns down emergency energy request from Bulgaria

Home | Energy | News

By Georgi Gotev | EurActiv.com with Dnevnik

Jan 10, 2017 (updated: Jan 19, 2017)

EU energy solidarity left out in the cold

The energy union is meant to have countries help each other, but national interests are stronger.

By **ANCA GURZU** | 1/23/17, 5:51 PM CET | Updated 2/10/17, 8:19 AM CET


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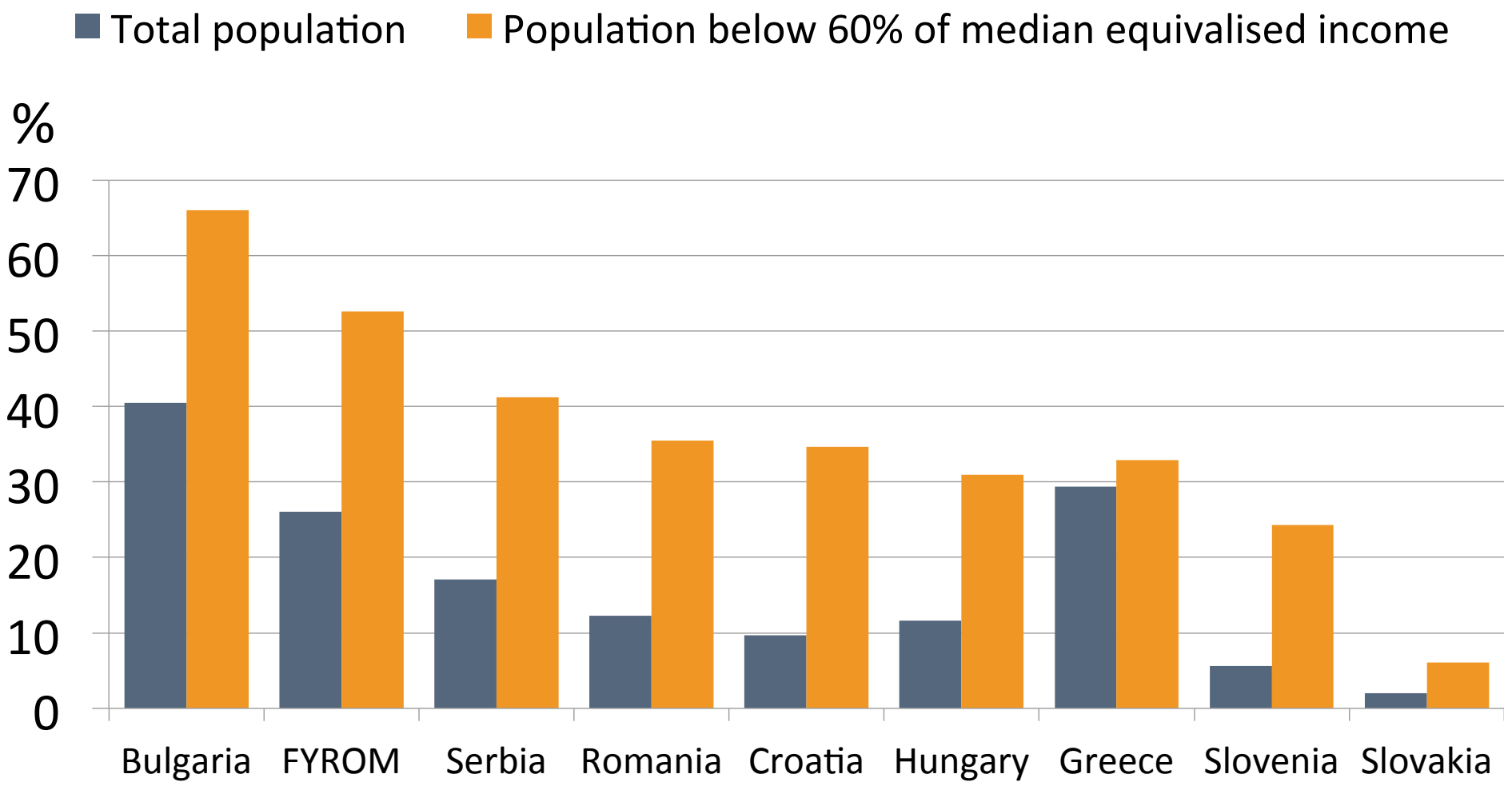
ce Energy Industry Properties Tourism

KEYWORDS TODAY: ROMANIA FARMERS REFERENDUM RUMEN RADEV MACHINE VOTI

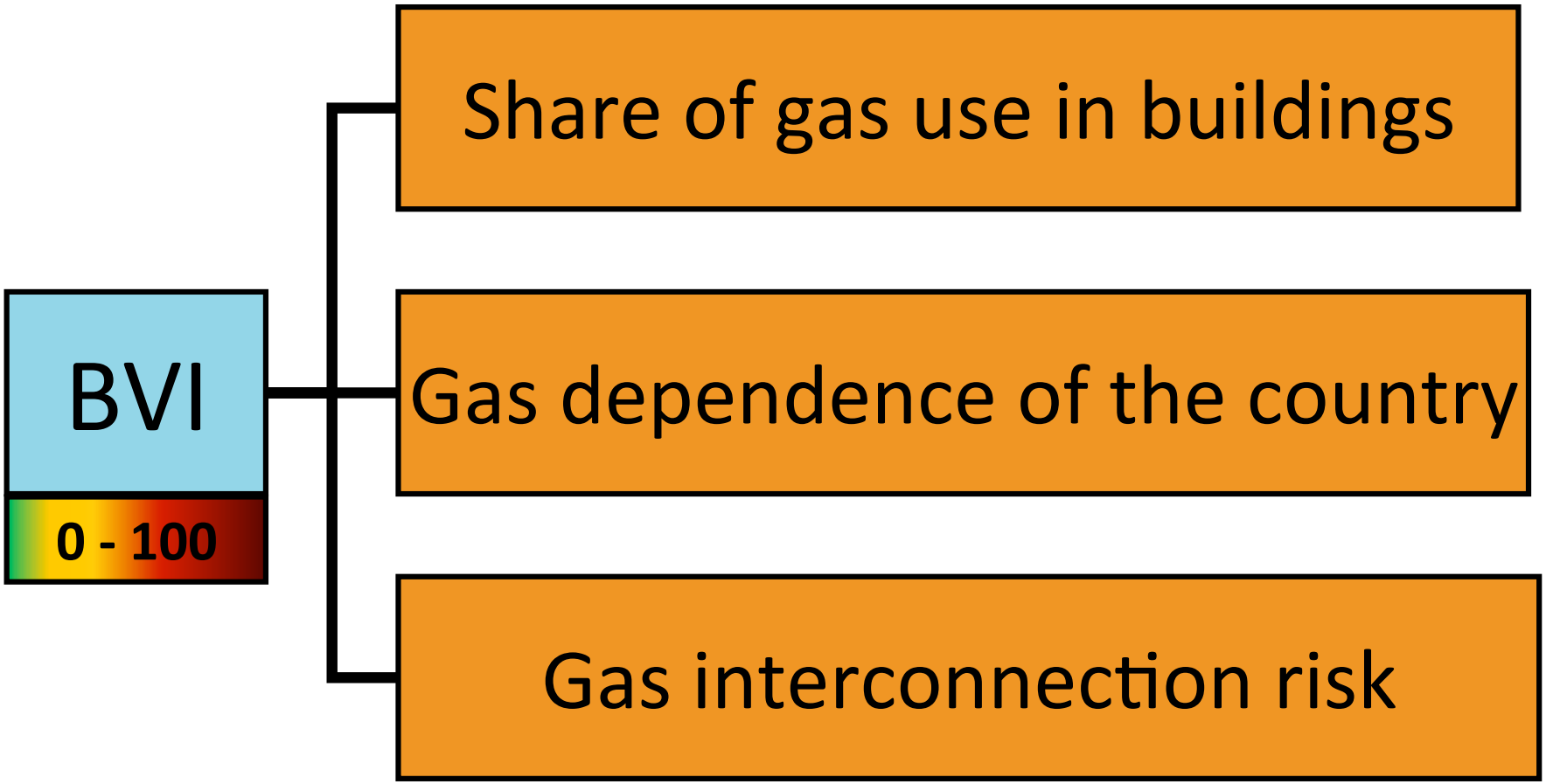
Bulgaria to Halt Electricity Exports on Friday

Business » ENERGY | January 12, 2017, Thursday // 08:06 | Views: 2715 | Comments: 0

Inability to keep home adequately warm

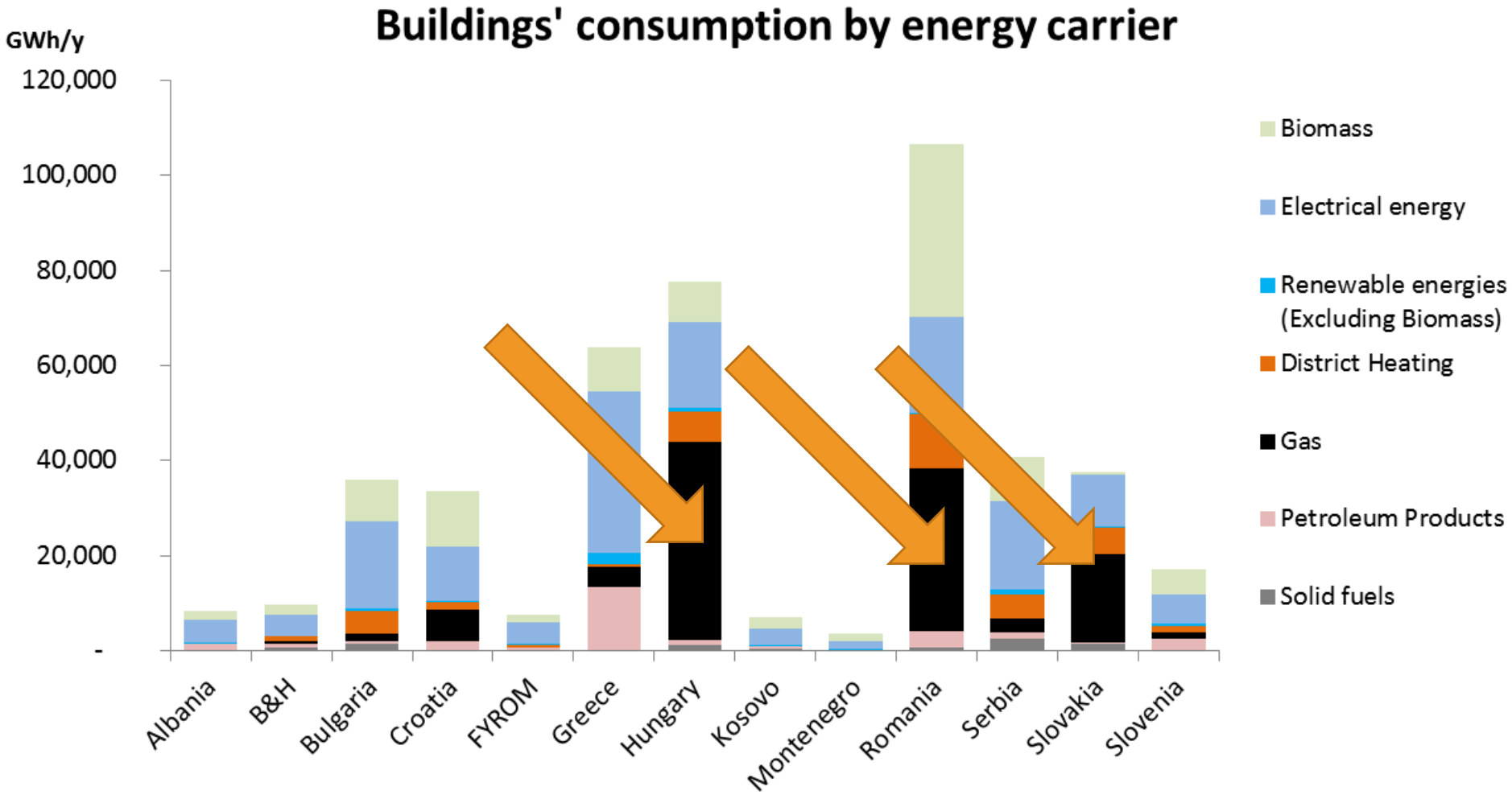


BPIE's Building Stock Vulnerability Indicator



$$BVI = (B_{gas}/B_{nrg}) * G_{depend} * I.Risk * 100$$

1) Share of gas use in buildings



Source: Eurostat, 2014

2) Gas dependence

*defined as: the net **imports of gas /***
*divided by the sum of gross **inland gas consumption***

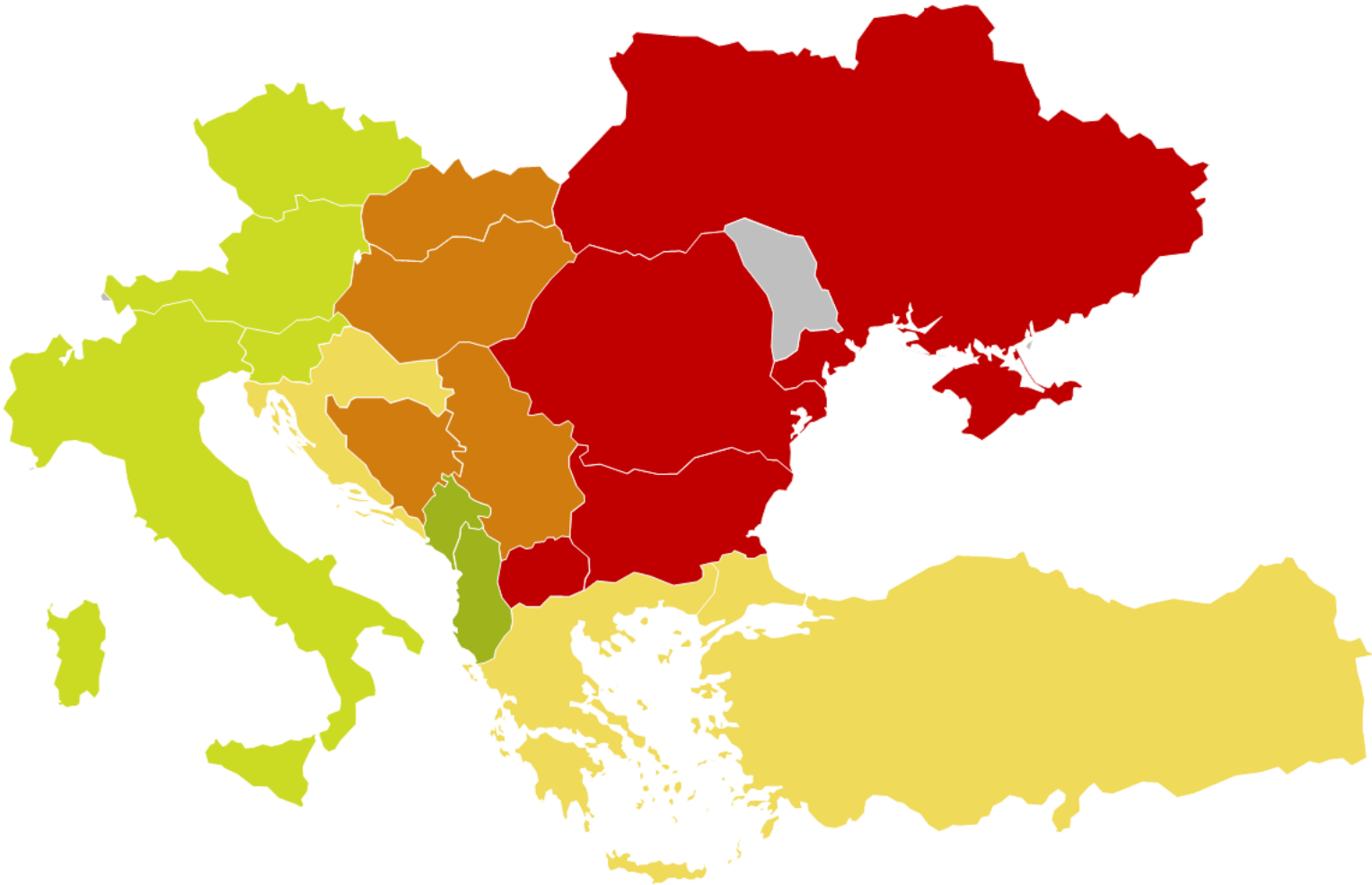
Albania	Bosnia & Herzegovina	Bulgaria	Croatia	FYROM	Greece	Hungary	Romania	Serbia	Slovakia	Slovenia
0%	100%	99%	29%	100%	100%	83%	5%	71%	98%	100%

	Bosnia & Herzegovina	Bulgaria	Croatia	FYROM	Greece	Hungary	Romania	Serbia	Slovakia	Slovenia
Import capacity in bcm/a from	Serbia (0.49)	Romania (26.22)	Hungary (2.64) Slovenia (1.84)	Bulgaria (0.93)	LNG (5.21) Turkey (1.69) Bulgaria (3.75)	Ukraine (20.84) Romania (4.50) Austria (0.09)	Ukraine (26.25) Hungary (1.78)	Hungary (4.88)	Ukraine (79.53) Hungary (1.77) Czech R. (24.21) Austria (8.60)	Italy (0.97) Austria (3.91)
Total	0.49	26.22	4.48	0.93	10.66	25.45	28.03	4.88	114.11	4.88

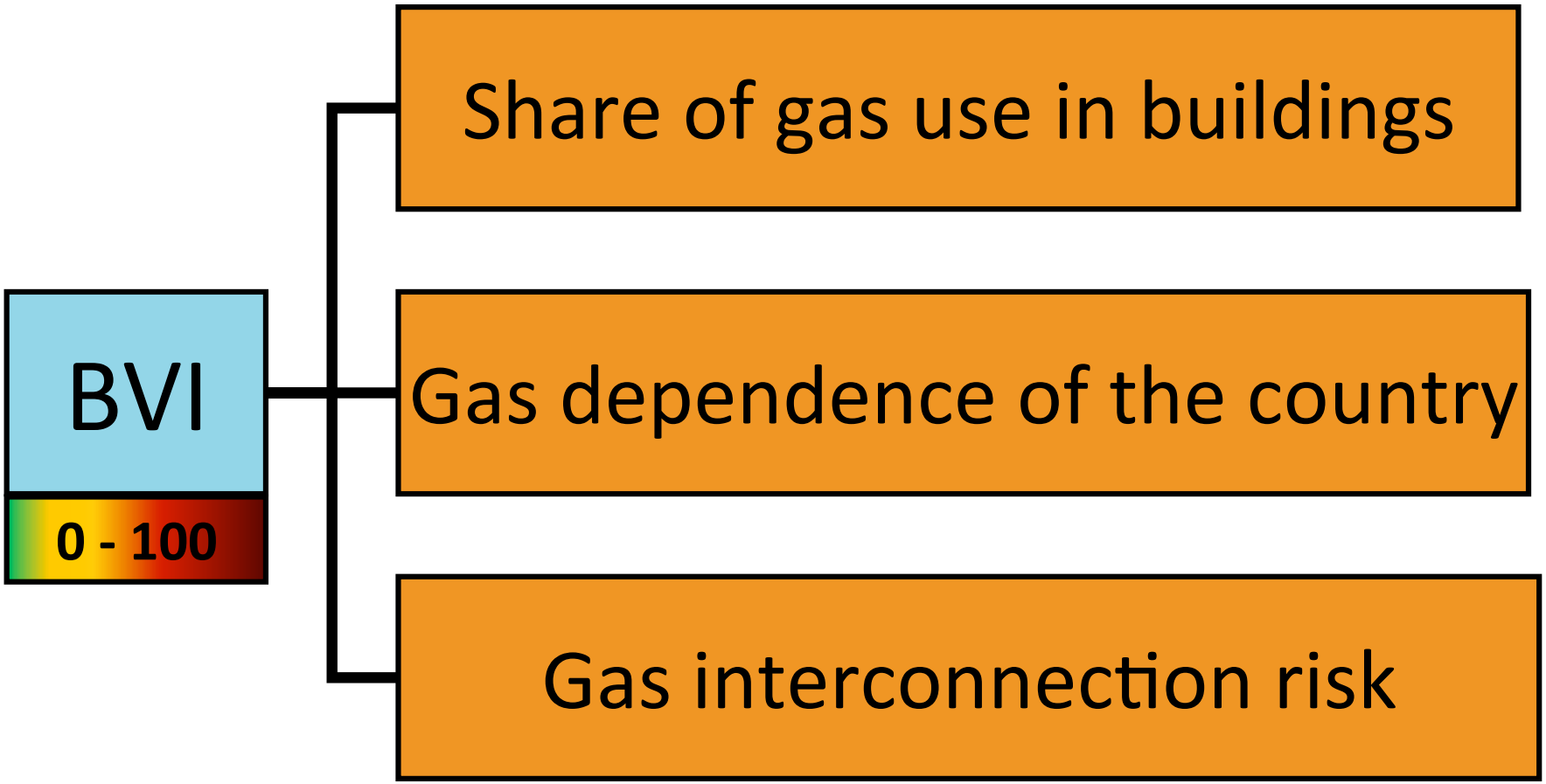
Source: Eurostat, 2014 and ENTSO-G, 2015

3) Interconnection Risk

	IRF
Albania	0.0
Austria	0.5
Bosnia & Herzegovina	0.7
Bulgaria	0.8
Croatia	0.6
Czech Republic	0.5
FYROM	0.8
Greece	0.6
Hungary	0.7
Italy	0.5
Kosovo	0.0
LNG	0.4
Montenegro	0.0
No connection	0.0
Romania	0.8
Serbia	0.7
Slovakia	0.7
Slovenia	0.5
Turkey	0.6
Ukraine	0.8



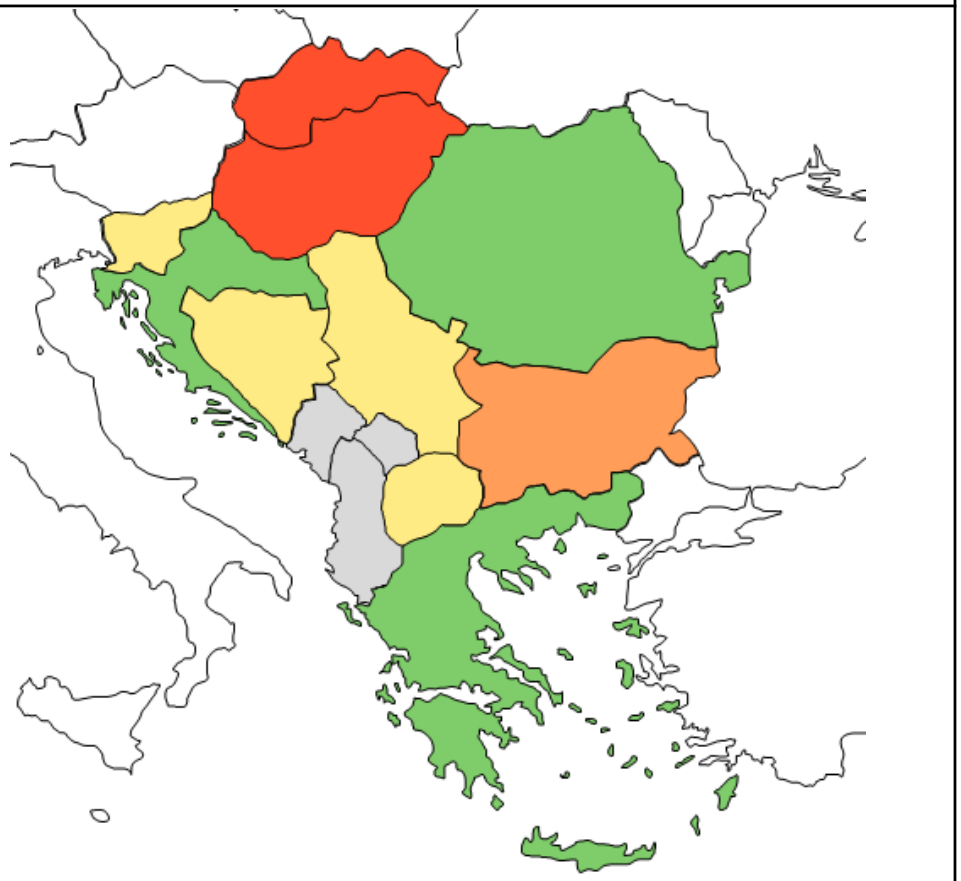
BPIE's Building Stock Vulnerability Indicator



$$BVI = (B_{gas}/B_{nrg}) * G_{depend} * I.Risk * 100$$

Building Stock Vulnerability

	BVI	Vulnerability level
Albania	0	Not Applicable
Bosnia & Herzegovina	5	Moderate
Bulgaria	12	Substantial
Croatia	4	Low
FYROM	5	Moderate
Greece	3	Low
Hungary	34	Severe
Kosovo	0	Not Applicable
Montenegro	0	Not Applicable
Romania	1	Low
Serbia	7	Moderate
Slovakia	39	Severe
Slovenia	6	Moderate

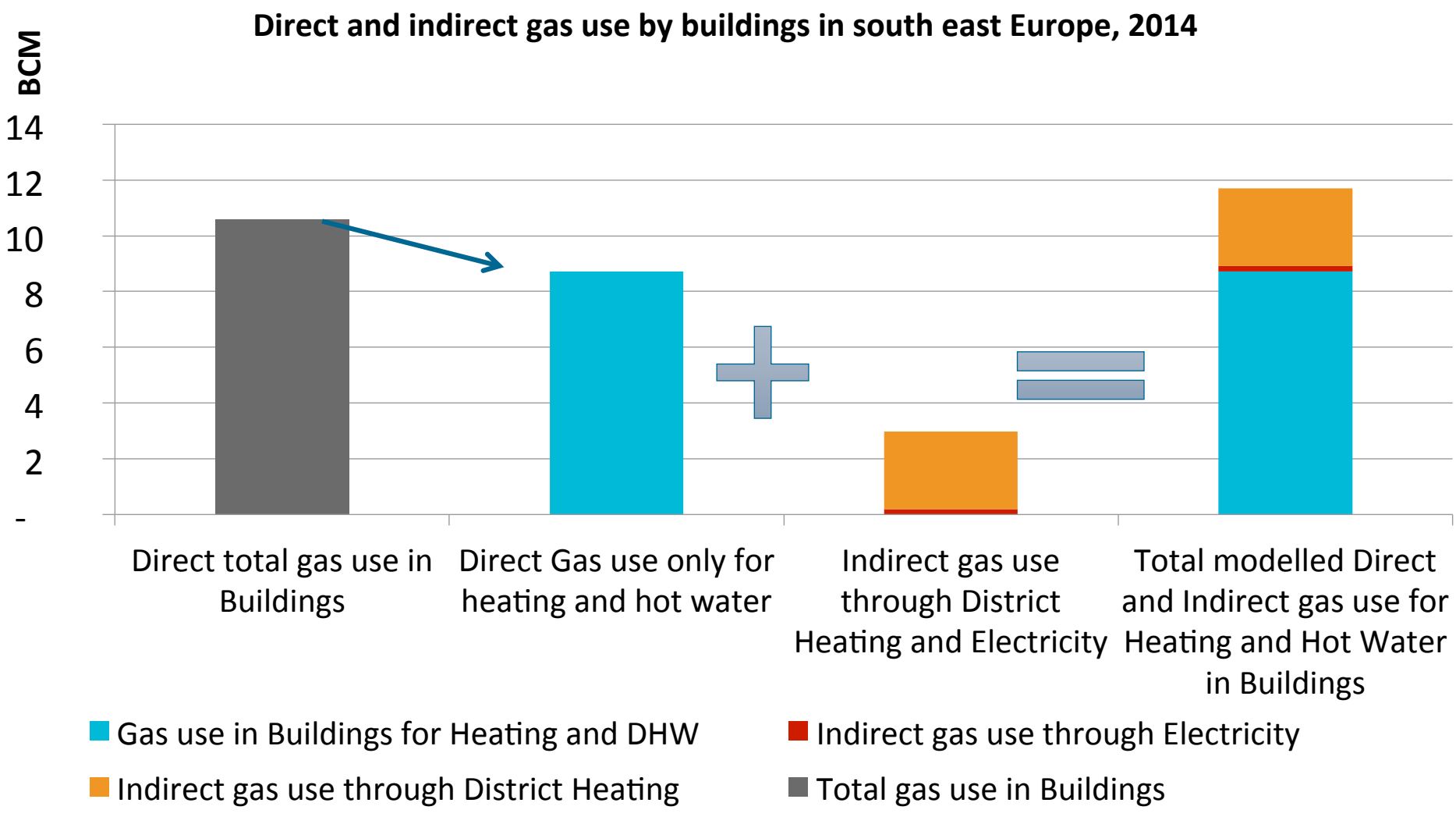


Scale:	N/A	Low	Moderate	Substantial	Severe	Critical
	BVI = 0	0 < BVI < 5	5 < BVI < 10	10 < BVI < 20	20 < BVI < 40	BVI > 40

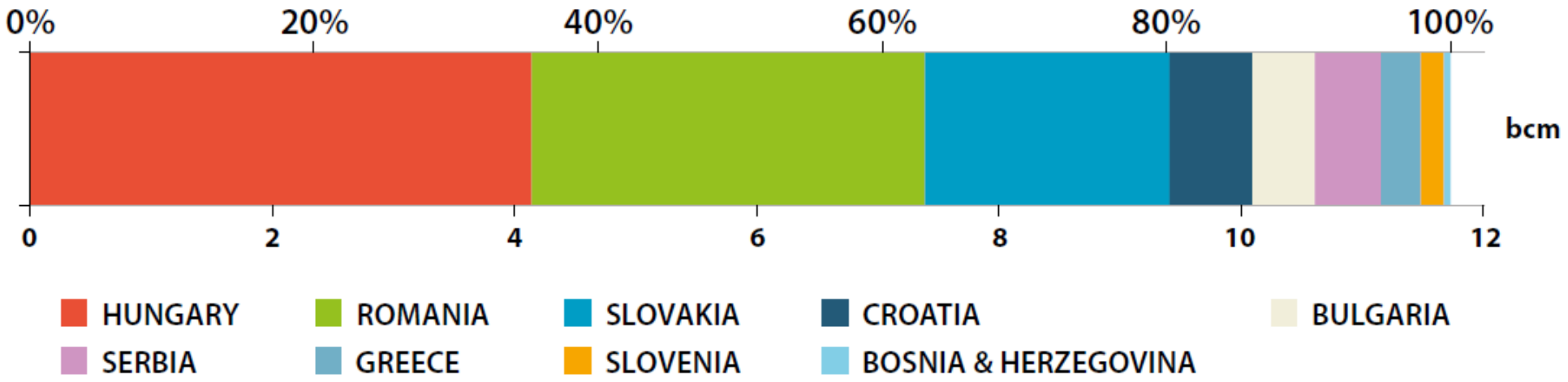
Demand side infrastructure



Direct and indirect gas use

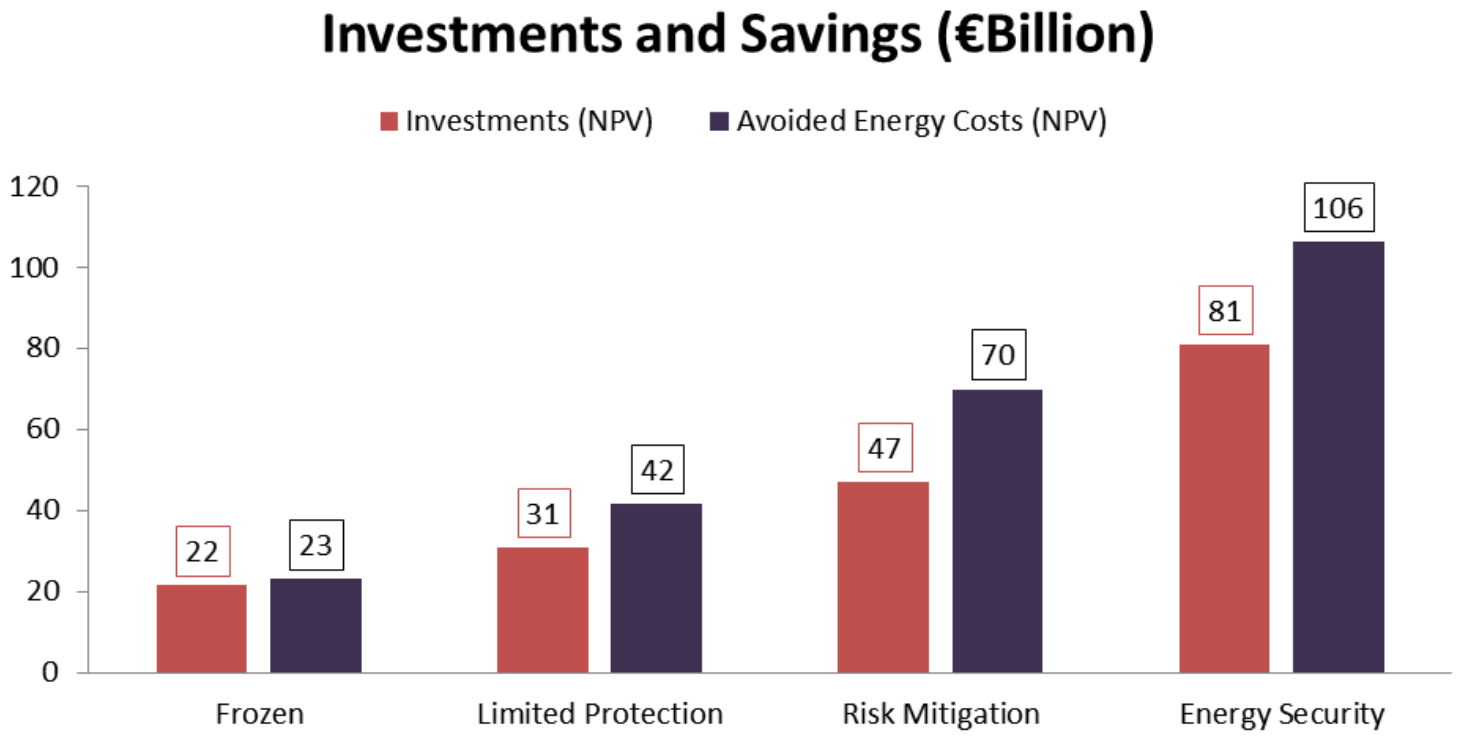


Share of direct and indirect gas use by buildings for space heating and hot water



20-year targeted renovation programme

	Frozen	Limited Protection	Risk Mitigation	Energy Security
Demand reduction through renovation (bcm/a)	1.7	2.8	4.7	8.2
Residual gas use (bcm/a)	10.1	8.9	7.0	3.5
Gas demand reduction (%)	**14%**	**24%**	**40%**	**70%**



Main takeaways



Energy poverty in SEE

20% - 60% of less well off households cannot keep their house warm



BVI as risk assessment

Buildings in Bulgaria, Hungary and Slovakia are substantially vulnerable



Preventive action plan within 20 years, renovations could reduce the building stock's gas needs by 70%





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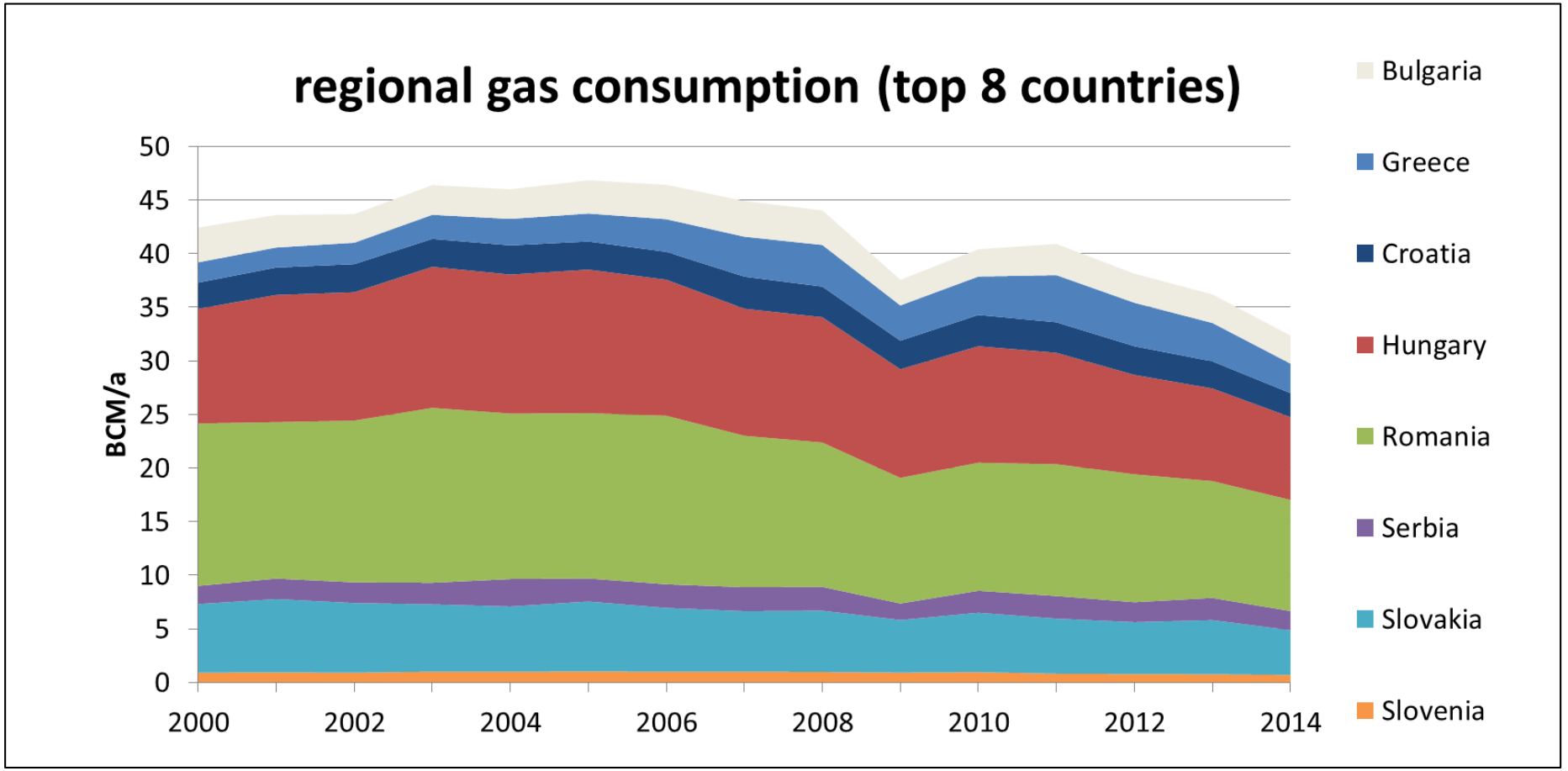
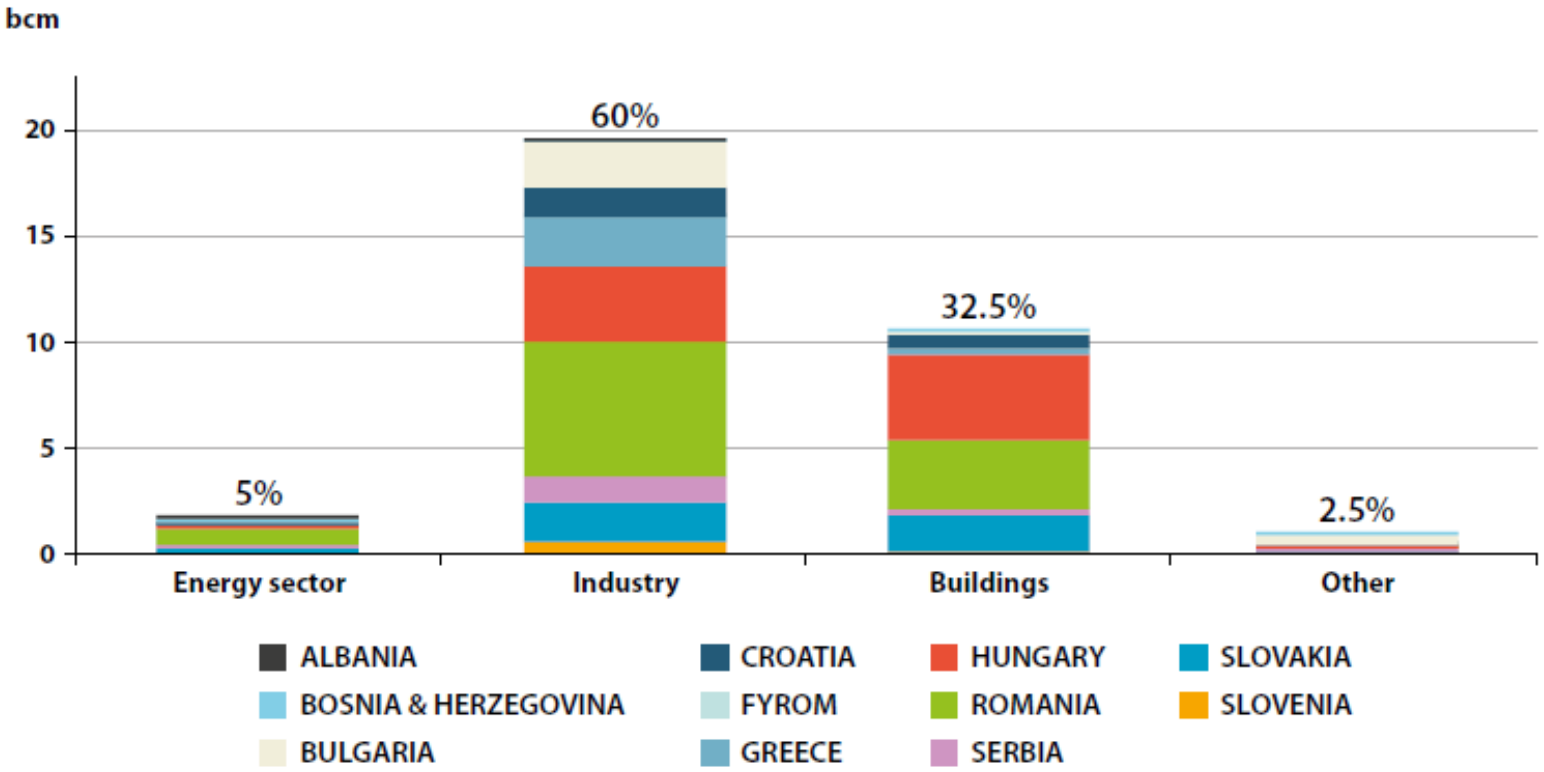

regional gas consumption (top 8 countries)
BCM/a
50
45
40
35
30
25
20
15
10
5
0
2000
2002
2004
2006
2008
2010
2012
2014
Bulgaria
Greece
Croatia
Hungary
Romania
Serbia
Slovakia
Slovenia

Figure 4 - Sectoral gas use in the target region (Source: Eurostat, 2014[15])



Annex: The building stock vulnerability indicator

BVI = (Bg / Bt) EDg * IRF * 100

Where:

Bg is the absolute amount of Gas use in Buildings;
Bt is the Total absolute amount of energy consumption of Buildings;
EDg is the Energy Dependence for Gas defined as the net imports of gas divided by the sum of gross inland energy consumption;
IRF is the Interconnection Risk Factor, defined by the formula:

IRFx = ImportCountry**A***IRF**a** + ImportCountry**B***IRF**b** + … + ImportCountry**N***IRF**n**

Where, each country "N" has its corresponding Interconnection Risk Factor "n", taking values from 0 to 1 according to the following logic:

- IRF= 0.8 for imports from Ukraine, 0.6 from Turkey, 0.5 from Austria, Czech R. and Italy
- IRF= 0.4 for LNG,
- IRF= 0 for no interconnection

Annex: BVI calculations

BVI	Building Stock Vulnerability Indicator		Albania	Bosnia & Herzegovina	Bulgaria	Croatia	FYROM	Greece	Hungary	Kosovo	Montenegro	Romania	Serbia	Slovakia	Slovenia
Bg/Bt	Direct and Indirect gas use in buildings as a share of total energy use in buildings		0%	6%	15%	21%	7%	5%	56%	0%	0%	32%	14%	56%	12%
EDg	Gas Import Dependency (Imports / Consumption)		0%	100%	99%	29%	100%	100%	83%	0%	0%	5%	71%	98%	100%
	Gas import Capacity shares	IRF		Romania	Serbia	Slovenia Hungary	Bulgaria	LNG Turkey Bulgaria	Ukraine Romania Austria			Ukraine Hungary	Hungary	Ukraine Hungary Czech R. Austria	Italy Austria
	Bulgaria	0.80					100%	35%							
	Romania	0.80			100%				0.3%						
	Slovenia	0.50				41%									
	Serbia	0.74		100%											
	Hungary	0.74				59%						6%	100%	2%	
	Turkey	0.60						16%							
	LNG	0.40						49%							
	Ukraine	0.80							82%			94%		70%	
	Austria	0.50							18%					8%	80%
	Czech Republic	0.50												21%	
	Italy	0.50													20%
	No connection	0.0	100%							100%	100%				
IRF	Interconnection risk factor		0	0.7	0.8	0.6	0.8	0.6	0.7	0	0	0.8	0.7	0.7	0.5
BVI	Building Stock Vulnerability Indicator		-	5	12	4	5	3	34	-	-	1	7	39	6

Building Stock Vulnerability levels	Not Applicable BVI = 0	Low 0 < BVI < 5	Moderate 5 < BVI < 10	Substantial 10 < BVI < 20	Severe 20 < BVI < 40	Critical BVI > 40

Gas Use in Buildings (direct and Indirect) as a share of Total Energy use in Buildings (Bg/Bt) and **Import dependency** (EDg) have been calculated using Eurostat figures of 2014

IRF: Interconnection Risk factors taking values from 0 to 1 according to the formula: IRF = CountryA*IRFa + CountryB*IRFb + … + CountryN*IRFn

Where, each country "N" has its corresponding Interconnection Risk Factor "n", making use of initial assumption values according to the following approach:

- IRF= 0 For no interconnection,
- IRF= 0.4 for LNG,
- Assumptions on countries' Interconnection risk Factors
  - Ukraine's IRF is 0.8 [Due to historical presidents of risky deliveries]
  - Turkey's IRF is 0.6 [It is closer to European Interests but there are risk concerns]
  - Austria's IRF is 0.5 [Its import capacity is 24% from Germany, 8% from Italy and 68% from Slovakia]
  - Czech Republic's IRF is 0.5 [Its import capacity is 70% from Germany and 30% from Slovakia]
  - Italy's IRF is 0.5 [Its import capacity is 16% from LNG, 37% from north Africa, 1% from Slovenia, 16% from Switzerland and 30% from Austria]

BVI: The Building Stock Vulnerability Indicator is calculated according to the following formula: BVI = Bg/Bt * EDg * IRF * 100

Annex : Gas use in buildings by country

	Albania	Bosnia & Herzegovina	Bulgaria	Croatia	FYROM	Greece	Hungary	Kosovo	Montenegro	Romania	Serbia	Slovakia	Slovenia	Total
Direct Gas demand (BCM)														
Residential Buildings	-	0.04	0.05	0.48	-	0.26	2.57	-	-	2.41	0.16	1.15	0.10	7.2
Services Buildings	-	-	0.09	0.15	0.01	0.14	1.38	-	-	0.86	0.13	0.63	0.04	3.4
Gas use for space heating and DHW in Residential as a share of buildings gas demand	0%	89%	87%	86%	86%	78%	95%	0%	0%	75%	86%	89%	94%	
Gas use for space heating and DHW in Services as a share of buildings gas demand	0%	90%	51%	60%	63%	21%	82%	0%	0%	70%	63%	90%	67%	
Gas demand for space heating and DHW in Residential	-	0.03	0.04	0.41	-	0.20	2.44	-	-	1.81	0.14	1.02	0.09	6.2
Gas demand for space heating and DHW in Services	-	-	0.05	0.09	0.00	0.03	1.13	-	-	0.60	0.08	0.57	0.03	2.6
Gas demand through electricity (BCM)														
Share of Gas in electricity production	0%	6%	5%	7%	4%	13%	14%	0%	0%	12%	1%	6%	2%	
Electricity consumption of Residential	0.33	0.47	1.01	0.54	0.29	1.63	0.99	0.24	0.11	1.13	1.31	0.47	0.30	
Electricity consumption of Services	0.13	0.59	0.75	0.54	0.14	1.60	0.73	0.07	0.06	0.78	0.43	0.59	0.30	
Electricity used for space heating and DHW in Residential as a share of buildings electricity demand	16%	13%	22%	13%	16%	29%	8%	16%	16%	2%	14%	13%	11%	
Electricity used for space heating and DHW in Services as a share of buildings electricity demand	21%	10%	28%	23%	21%	17%	15%	21%	21%	19%	20%	10%	27%	
Gas-generated electricity consumption for space heating and DHW in Residential	-	0.00	0.01	0.01	0.00	0.06	0.01	-	-	0.00	0.00	0.00	0.00	0.1
Gas-generated electricity consumption for space heating and DHW in services	-	-	0.01	0.01	0.00	0.04	0.02	-	-	0.02	0.00	0.00	0.00	0.1
Gas demand through District heating (BCM)														
Share of gas in district heating	0%	79%	90%	91%	100%	0%	86%	0%	0%	76%	68%	79%	67%	
Gas-generated Derived heat in Residential	-	0.03	0.31	0.12	0.03	-	0.41	-	-	0.68	0.27	0.37	0.05	2.3
Gas-generated Derived heat in Services	-	-	0.10	0.03	0.01	-	0.13	-	-	0.16	0.05	0.05	0.03	0.6
Total Gas Use for Space Heating (BCM)														
Residential	-	0.06	0.36	0.53	0.03	0.26	2.87	-	-	2.48	0.41	1.40	0.14	8.5
Services	-	-	0.16	0.13	0.02	0.06	1.27	-	-	0.78	0.13	0.62	0.06	3.2
Total Gas Use for Space Heating and DHW in Buildings	-	0.06	0.52	0.66	0.05	0.33	4.13	-	-	3.26	0.54	2.02	0.20	11.8