



# Gas Transmission Tariffs in South and Central East Europe

February 2018

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# I. INTRODUCTION

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## 1. Background and scope of work

In March 2017 Commission Regulation (EU) 2017/460 establishing a network code on harmonized transmission tariff structures for gas<sup>1</sup> (hereinafter 'the tariff network code') was adopted after several years of intensive discussions among transmission system operators (TSOs) and national regulatory authorities (hereinafter NRAs or 'regulators') of the European Union. Its implementation is supposed to lead to more transparency and predictability of the tariff setting process as well as to better cost reflectivity of transmission tariffs.

Different from European level, the tariff network code is not applicable yet in the Contracting Parties of the Energy Community (hereinafter 'the Contracting Parties').<sup>2</sup> Discussions around implementation of gas network codes and guidelines in the Contracting Parties were launched in 2016 and led to successful adoption of the first set of gas network codes, namely the network code on interoperability and data exchange<sup>3</sup> and the congestion management guideline<sup>4</sup> in January 2018.<sup>5</sup>

The efforts necessary for implementing the tariff network code will vary between countries, depending on the current tariff system in place. In particular for some of the Contracting Parties, but potentially also other EU members of the Gas Regional Initiative South South East (GRI SSE<sup>6</sup>), the development from the existing tariff models to compliance with the tariff network code will require significant reforms. To support this process and with a view to identify the best way towards implementation of the tariff network code *E-Control Austria* and *Autorità di Regolazione per Energia Reti e Ambiente (ARERA)*,<sup>7</sup> already in December 2016, presented at the 30<sup>th</sup> RGRI SSE Regulatory Coordination Committee (RCC) meeting the intention to proceed with a new pilot project aimed at investigating the present tariff and cost

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<sup>1</sup> OJ L no 72 of 17.3.2017, p 29 *et seq.*

<sup>2</sup> These are: Albania, Bosnia and Herzegovina, Georgia, Kosovo\*, fYR of Macedonia, Moldova, Montenegro, Serbia and Ukraine [throughout this document the symbol \* refers to the following statement: *This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Advisory Opinion on the Kosovo declaration of independence*]. For more details on the Energy Community see: [www.energy-community.org](http://www.energy-community.org).

<sup>3</sup> Regulation (EU) 703/2015 adapted and adopted for the Contracting Parties by Decision 2018/02/PHLG-EnC of 12.01.2018.

<sup>4</sup> Commission Decision (EU) 2012/490 and 2015/715 amending Annex I to Regulation (EC) 715/2009 2015 adapted and adopted for the Contracting Parties by Decision 2018/01/PHLG-EnC of 12.01.2018.

<sup>5</sup> The adoption of the tariff network code is scheduled for 2018. Decision 2011/02/MC-EnC of the Energy Community Ministerial Council on implementation of the 3<sup>rd</sup> package foresees application of network codes and guidelines in the Contracting Parties once made legally binding on European level and subject to adoption by the Energy Community Permanent High Level Group (PHLG) upon consultation with Energy Community Regulatory Board (ECRB). ECRB and PHLG adopted Procedural Acts laying down the rules governing the adoption process (cf. PHLG Procedural Act 01/2012 and ECRB Procedural Act 2012/02).

<sup>6</sup> The GRI SSE operates as initiative of the Agency for the Cooperation of Energy Regulators. It comprises Austria, Bulgaria, the Czech Republic, Croatia, Cyprus, Greece, Hungary, Italy, Poland, Romania, Slovakia and Slovenia as well as (since 2014) the Contracting Parties Albania, Bosnia and Herzegovina, Kosovo\*, fYR of Macedonia, Moldova, Montenegro, Serbia and Ukraine. Launched in 2006, the GRI SSE represents a bottom up approach to the completion of the Internal Energy Market in Central and South Europe. For more details on the GRI SSE see: [www.acer.europa.eu](http://www.acer.europa.eu) – gas – regional initiatives.

<sup>7</sup> Formerly: *Autorità per l'Energia Elettrica il Gas ed il Sistema Idrico*.

methodologies situation in the GRI SSE countries. This activity, carried out in early 2017 was linked to the broader framework of the Gas Working Group of the Energy Community Regulatory Board (ECRB GWG)<sup>8</sup> against the background of a consolidated and long-lasting cooperation between *E-Control*, *ARERA* and ECRB. The outcomes of the investigation were presented by *E-Control* and *ARERA* at the 31<sup>st</sup> RCC and 22<sup>nd</sup> Stakeholder Group (SG) GRI SSE, at the ECRB GWG and Energy Community Gas Forum in Ljubljana in September 2017.

The present paper compares the transmission tariff structures as well as the methodologies for allowed revenue calculations applied in South and Central Easter Europe (hereinafter ‘the GRI SSE Region’).

Beyond that, the survey aims at shedding light on the reasons why transmission tariffs are relatively high at interconnection points in South and Central East Europe, including on entry/exit points between EU and Energy Community members.

The present report follows a presentation of the findings presented at the 2017 Energy Community Gas Forum at which more in-depth explanation of the identified results was suggested.

The report covers Austria, Bulgaria, the Czech Republic, Croatia, Greece, Hungary, Italy, Poland, Romania, Slovakia, Slovenia, fYR of Macedonia, Moldova, Serbia and Ukraine.

Cyprus, Albania, Kosovo\* and Montenegro are not part of this analysis due to absence of gas infrastructure in these markets. In Bosnia and Herzegovina there is no state national regulatory authority and therefore information on the transmission tariff methodology is not available.

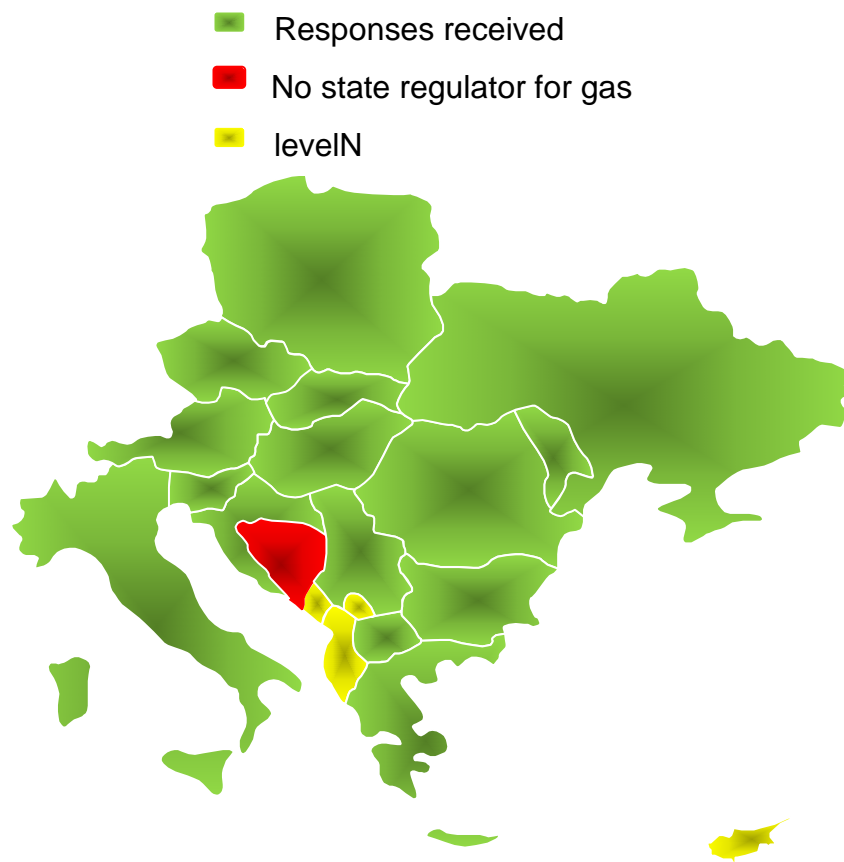
## 2. Methodology

Data and analyses provided in present report are exclusively based on information provided by the regulatory authorities of the analyzed markets and refer to 2017.

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<sup>8</sup> ECRB operates based on the Energy Community Treaty as an institution of the Energy Community. ECRB advises the Energy Community Ministerial Council and PHLG on details of statutory, technical and regulatory rules and makes recommendations in the case of cross-border disputes between regulators. For more details on ECRB see: [www.energy-community.org](http://www.energy-community.org) – institutions.

Figure 1: Jurisdictions covered



## II. FINDINGS

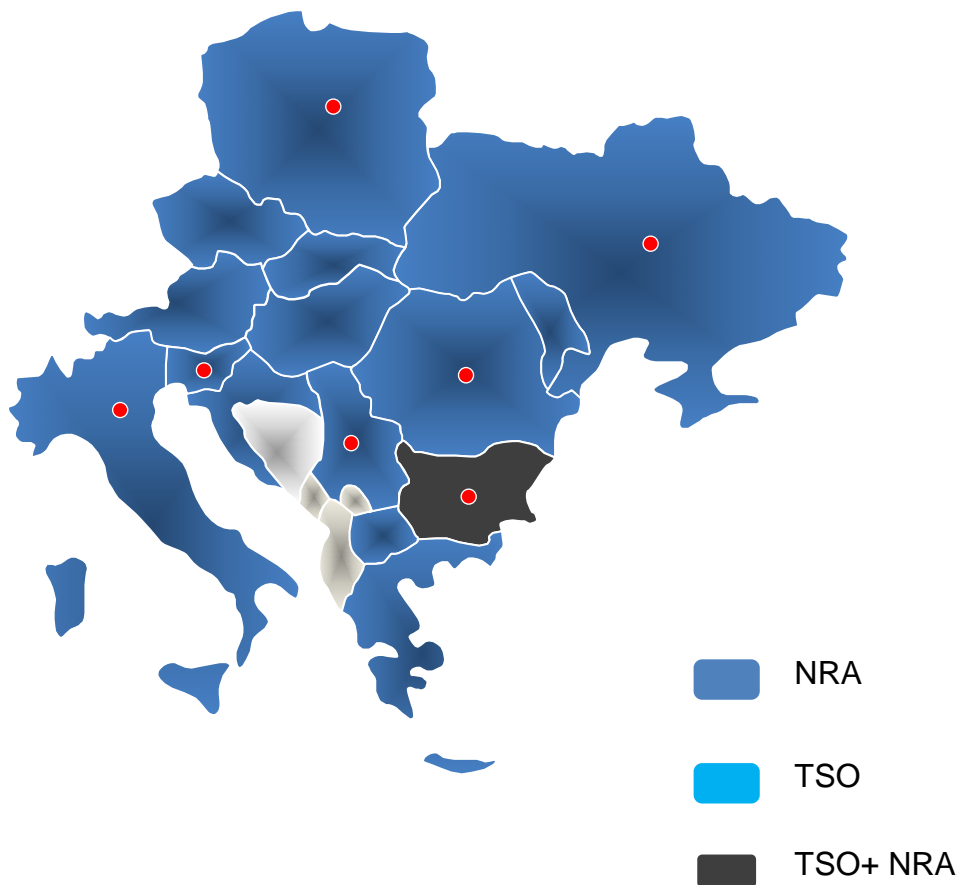
### 1. Transmission tariff structures

#### 1.1. Setting of tariff methodologies and tariffs

Directive 2009/73/EC<sup>9</sup> (hereinafter ‘the Gas Directive’) requires that regulatory authorities fix or approve, in accordance with transparent criteria, transmission tariffs or their methodologies. This has been implemented in the GRI SEE region in the following way:

Figure 2: Who does set the tariff methodology and tariffs?

If the NRA sets the tariffs, do they calculate themselves the tariffs? ● stands for “no”



<sup>9</sup>OJ L no 211 of 14.8.2009, p 94 *et seq.* For the Contracting Parties referring to the version adopted and adapted by Decision 2011/02/MC-EnC of the Ministerial Council.

Regulators set/approve the tariffs and set the tariff methodologies in all analyzed countries. In 8 countries the NRAs calculate applicable tariffs, while in remaining 7 they approve tariffs calculated by TSOs.

## 1.2. Capacity- commodity split

The tariff network code prescribes that transmission revenues allowed for transmission services<sup>10</sup> shall be recovered by capacity- based tariffs. Subject to approval by the NRA, and as an exception, part of the revenue may be recovered by a commodity charge however only through one of the following tools:

- A flow- based charge, covering costs that are driven by the quantity of gas flow, e.g. gas or electricity for compressor fuel. This charge must be the same for all entry and exit points and expressed in monetary terms or in kind.
- A complementary revenue recovery charge levied for the purpose of managing revenue under- and over-recovery and applied to points other than interconnection points.<sup>11</sup> However it can be applied only after the NRA assessed its cost- reflectivity and impact on cross- subsidization between interconnection and other points.<sup>12</sup>

Currently, the following capacity/commodity splits are applied in the GRI SSE region:

Table 1 Capacity/commodity split

	Percentage of total regulated revenue recovered via capacity charge (%)	Percentage of total regulated revenue recovered via commodity charge (%)
<b>Austria</b>	100	-
<b>Bulgaria</b>	80	20
<b>Croatia</b>	90	10
<b>Czech Republic</b>	97	3

<sup>10</sup> Article 4(1) of the tariff network code (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R0460&from=EN>) describes which service may be treated as transmission and which as non- transmission services. Furthermore, ENTSOG's tariff network code Implementation Document ([https://www.entsog.eu/public/uploads/files/publications/Tariffs/2017/170322\\_ENTSOG\\_TAR%20NC%20IDoc\\_High-Res.pdf](https://www.entsog.eu/public/uploads/files/publications/Tariffs/2017/170322_ENTSOG_TAR%20NC%20IDoc_High-Res.pdf)) provides examples of services that are currently treated as non- transmission and that must be assessed in the future against the TAR NC criteria (cf p 33-34).

<sup>11</sup> According to Commission Regulation (EU) 2017/459 establishing a network code on capacity allocation mechanisms in gas transmission systems, the term 'interconnection point' means 'a physical or virtual point connecting adjacent entry-exit systems or connecting an entry-exit system with an interconnector, in so far as these points are subject to booking procedures by network users'.

<sup>12</sup> Cf Article 4(3) of the tariff network code.

	Percentage of total regulated revenue recovered via capacity charge (%)	Percentage of total regulated revenue recovered via commodity charge (%)
<b>fYR of Macedonia</b>	-	100
<b>Greece</b>	80	20
<b>Italy</b>	80-85	20-15
<b>Hungary</b>	92.2	7.8
<b>Moldova</b>	-	100
<b>Poland</b>	90	10
<b>Romania</b>	60%. Starting from 2017 to 2022 the percentage will increase with 5% yearly and the target is 85%	40%. Starting from 2017 to 2022 the percentage will decrease with 5% yearly and the target is 15%.
<b>Serbia</b>	70	30
<b>Slovakia</b>	Not available	Not available
<b>Slovenia</b>	92.4	7.6
<b>Ukraine</b>	100	-

In only two out of the 15 analyzed countries, the transmission revenue is recovered solely via capacity- based tariffs, namely in Austria and Ukraine. In the majority of other countries, the commodity charge covers up to 20% of the allowed revenue. In fYR of Macedonia and Moldova transmission tariffs are based on a commodity charge only.

### 1.3. Treatment of legacy contracts

In many countries of the GRI SSE region long-term transit contracts (so called ‘legacy contracts’) still have not expired. In 2013 ACER published a report on Transit Contracts in EU Member States<sup>13</sup> (hereinafter ‘the ACER report 2013’) that, among others, explored the interaction between these contracts and new tariff rules, i.e. whether tariffs applied to transports subject to legacy contracts are different from regulated transmission tariffs in place. Such differentiation and, in particular, granting a more favourable treatment to transit

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[http://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Publication/ACER\\_Report\\_Inquiry\\_on\\_Transit\\_Contracts\\_9\\_April\\_2013.pdf](http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER_Report_Inquiry_on_Transit_Contracts_9_April_2013.pdf) . Prepared based on a related invitation of the 19<sup>th</sup> Madrid Forum.

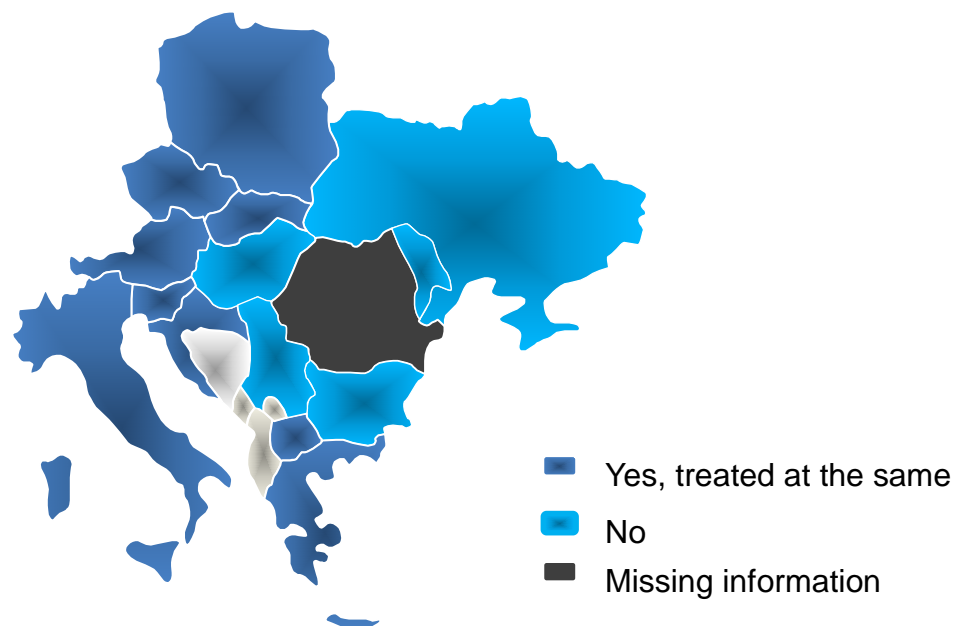


contradicts the requirements of (already) the second Gas Directive 2003/55/EC<sup>14</sup> (hereinafter ‘the second Gas Directive’) that established a regulated Third Party Access regime for all transmission flows, including transit. In particular, the term ‘transmission’ in Article 2(3) of the second Gas Directive applies to all downstream high pressure transportation of natural gas, while TSOs must not discriminate between transmission system users pursuant to Article 8 (1) litera (b) *leg cit.* This concept did not change under the third Gas Directive. Thus, different treatment of tariffs applicable to gas transmission and transit, at the same entry/exit points, constitutes a breach of the existing EU and Energy Community *acquis communautaire*.

The ACER report 2013 identified that in at least seven EU Member States legacy contracts existed at the time of the report, namely: Bulgaria, Estonia, Hungary, Lithuania, Poland, Romania and Spain; in the Czech Republic gas in transit is subject to an exemption from third party access.

For the purpose of the present analysis, NRAs reported application of different treatment in terms of tariffs for legacy contracts in Bulgaria, Hungary, Moldova, Serbia and Ukraine; Romania did not provide answer. In all other countries, transmission and transit contracts are treated equally.

Figure 3: Treatment of legacy contracts



The long-term transit contract in Serbia expired in December 2017. However, annex of the long-term transit contract was signed with implementation until 30 September 2018. In Ukraine and Moldova the transit contracts are valid until 31<sup>st</sup> December 2019.

<sup>14</sup> OJ L 176 of 15.7.2003, p 57–78.

#### 1.4. Allocation of costs/allowed revenue to entries and exits

In case a commodity charge exists, it may be applied on entries, exits or both.<sup>15</sup> The table below shows the overview of the relevant practices by country:

Table 2 Application of commodity charge on different entry- exit points

	Entries	Exits	Entries and exits	Not applicable
<b>Austria</b>	-	-	-	X
<b>Bulgaria</b>	-	-	X	-
<b>Croatia</b>	-	X	-	-
<b>Czech Republic</b>	-	X	-	-
<b>fYR of Macedonia<sup>16</sup></b>	Not applicable			
<b>Greece</b>	-	-	X	-
<b>Italy</b>	X	-	-	-
<b>Hungary</b>	X	-	-	-
<b>Moldova<sup>17</sup></b>	Not applicable			
<b>Poland</b>		X		
<b>Romania</b>	-	-	X	-
<b>Serbia</b>	-	X	-	-
<b>Slovakia</b>	-	-	-	X
<b>Slovenia</b>	-	X	-	-
<b>Ukraine</b>	-	-	-	X

In order to fully implement the tariff network code, NRAs and TSOs of the GRI SSE region will need to revise their transmission tariff methodologies in terms of defining the commodity charge either as flow-based- or complementary-revenue-recovery-charge, fulfilling the criteria set for these charges. In addition, cost allocation assessments based on predefined cost drivers and ratios for allocation between intra-system and cross-system network users shall be conducted.<sup>18</sup>

According to the tariff network code, calculation of tariffs for yearly capacity firm products shall be done by using a so-called reference price methodology. For the calculation of reference prices, the NRA/TSO should allocate all TSO assets that are part of the TSO regulatory asset base, using the same methodology, to all E/E points (with the exception of non-transmission services and the revenues recovered by commodity charges). Within such a system, it is no

<sup>15</sup>Article 4(3) of the tariff network code.

<sup>16</sup> Only commodity charge exist, no entry- exit scheme.

<sup>17</sup> Only commodity charge exist, no entry- exit scheme.

<sup>18</sup> Cf Article 5 of the tariff network code.

longer possible to assign costs to specific pipelines (e.g. transit pipelines, domestic networks, etc).

Several adjustments to the reference price methodology are possible under certain circumstances, namely: <sup>19</sup>

- Benchmarking by NRAs- adjusting of tariffs to competitive levels in cases where effective pipeline-to-pipeline competition exists<sup>20</sup>;
- Equalization by TSOs or NRAs- the same reference price is applied to some or all points within a homogeneous group of points;
- Rescaling by TSOs or NRAs- multiplying by a constant or adding/subtracting the same amount to all entry or/and exit tariffs;
- Discounts for storage/LNG/infrastructure ending isolation.

NRAs may choose a reference price methodology in line with the requirements of Regulation (EC) No 715/2009 <sup>21</sup> and the tariff network code. To comply with the consultation requirements of the tariff network code<sup>22</sup>, NRAs have to calculate tariffs by using a so-called capacity weighted distance reference price methodology (CDW)<sup>23</sup> and compare the resulting tariffs with those stemming from the chosen reference price methodology. The CDW methodology is to be performed by applying 50/50 entry/exit splits.

Entry/exit splits currently implemented in GRI SSE region are presented in the table below.

Table 3 Entry/exit splits<sup>24</sup>

	Percentage of allowed revenue allocated to entries (%)	Percentage of allowed revenue allocated to exits (%)	Not applicable
<b>Austria</b>	20	80	
<b>Bulgaria</b>	50	50	
<b>Croatia</b>	70	30	
<b>Czech Republic</b>	19	81	
<b>fYR of Macedonia</b>	-	-	x
<b>Greece</b>	20	80	
<b>Italy</b>	50	50	
<b>Hungary</b>	50	50	
<b>Moldova</b>	-	-	x

<sup>19</sup> Cf Chapter II of the tariff network code.

<sup>20</sup> See Commission Staff Working Document on tariffs for access to the natural gas transmission networks regulated under Article 3 of Regulation 1775/2005

<sup>21</sup> OJ L no 211 of 14.8.2009, p 36 *et seq.*

<sup>22</sup> See Article 26(1) of the tariff network code.

<sup>23</sup> CWD assumes that the share of the allowed revenue to collect from each entry or exit point should be proportionate to its contribution to the cost of the system's capacity and to the distance between it and all exit points or all entry points. The resulting tariff would be uniform per unit of capacity and distance (cf: ENTSO, tariff network code Implementation Document, p.61).

<sup>24</sup> Please note that the entry/exit splits presented in this table do not refer always to capacity only (as required by tariff network code).

	Percentage of allowed revenue allocated to entries (%)	Percentage of allowed revenue allocated to exits (%)	Not applicable
<b>Poland</b>	50	50	
<b>Romania</b>	50	50	
<b>Serbia</b>	57	43	
<b>Slovakia</b>	-	-	x
<b>Slovenia</b>	25	75	
<b>Ukraine</b>	30	70	

In six countries the applicable entry/exit split adds up to a 50/50 share or almost so (Serbia 57/43), in four of them the proportion allocated to exits is much higher compared to those allocated to entries; only in Croatia entry tariffs receive a higher cost allocation than exit tariffs.

Table 4 Methodologies for calculation of entry/exit tariffs

	Methodology
<b>Austria</b>	Distance from virtual trading point
<b>Bulgaria</b>	Matrix
<b>Croatia</b>	Matrix
<b>Czech Republic</b>	Distance from virtual trading point
<b>fYR of Macedonia</b>	Not applicable
<b>Greece</b>	CDW
<b>Italy</b>	Matrix
<b>Hungary</b>	Post stamp
<b>Moldova</b>	Not applicable
<b>Poland</b>	Post stamp
<b>Romania</b>	-
<b>Serbia</b>	other
<b>Slovakia</b>	Benchmark
<b>Slovenia</b>	Matrix
<b>Ukraine</b>	other

In Serbia, capacity part of allowed revenue is allocated to different entry and exit points according to the replacement value of parts of transmission system (pipelines, metering stations and compressor stations) which are allocated to different entry and exit points of the transmission system. That means percentage of capacity part of allowed revenue for entry point domestic production is equal to percentage of replacement value of pipelines which connect entry points from domestic gas fields with main transmission pipelines in the

replacement value of whole transmission system (100%). The same principle is used to defined percentage of allowed revenue allocated to all others entry and exit points.

The NRAs of the GRI SSE region were asked to provide information related to the shares of transmission allowed revenues allocated to distribution network exits, exits to directly connected customers as well as to cross- border interconnection points. The table hereinafter shows related responses. Please note that, where the shares do not add up to 100%, the rest of allowed revenue is allocated to entries/exit to and from storages and domestic production.

Table 5 Allocation of allowed revenue/costs to different entry and exit points

	<b>Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the exit/entry to/from the distribution system? (%)?</b>	<b>Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the exit to the final customers connected with the transmission system level? (%)</b>	<b>Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the entry/exit cross-border IPs? (%)?</b>
<b>Austria</b>	4.2% exit	0%	95.8%
<b>Bulgaria</b>	Data not available		
<b>Croatia</b>	Data not available (exits to distribution systems and exits to customers directly connected to TS are all assumed as domestic exits - and reported to HERA aggregated)	Data not available (exits to distribution systems and exits to customers directly connected to TS are all assumed as domestic exits - and reported to HERA aggregated)	29.9% (2016)
<b>Czech Republic</b>	67%	Not applicable- revenue is allocated jointly to all domestic points	31% entry
<b>fYR of Macedonia</b>	There are no entry/exit tariffs, and no capacity charges. Only post stamp commodity charge		
<b>Greece</b>	Not available	Ex post exercise-not considered when setting the entry exit tariffs	No entry/exit cross border flows at the time when the tariffs were approved by RAE
<b>Italy</b>	Not available	Not available	Considering capacity charges, around 16% of national grid revenues
<b>Hungary</b>	Not available		
<b>Moldova</b>	There are no entry/exit tariffs, and no capacity charges. Only post stamp commodity charge		
<b>Poland</b>	44.9%	7%	19.5%
<b>Romania</b>	45.49%	29.21%	0.001%
<b>Serbia</b>	50% (includes entry points from production and entry point from storage and exit point to storage)	11%	39%
<b>Slovakia</b>	Not available		

	Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the exit/entry to/from the distribution system? (%)?	Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the exit to the final customers connected with the transmission system level? (%)	Of the overall TSO(s) allowed revenues (capacity and commodity charges of the tariff) of the system, which is the part covered by the entry/exit cross-border IPs? (%)?
<b>Slovenia</b>	29	37	34
<b>Ukraine</b>	currently entry-exit system is not applied for domestic points	currently entry-exit system is not applied for domestic points	100%

Similar to the allocation of allowed revenues to entry and exit points in general, allocation to specific entry and exit points - such as distribution networks, directly connected system users or cross border interconnection points - might reflect not only the costs caused to the system by different users but also national policies mainly related to protection of domestic users. To identify to a certain extent the cost-reflectivity of such allocations, information on the number of entry and exit IPs, domestic physical off-take points and final customers directly connected to the transmission network is required. The table hereinafter provides related information.

Table 6 Number of cross-border IPs

	Number of exit IPs	Number of entry IPs	Number of physical off-take points to DSOs	Number of physical off-take points to SSOs	Number of final customers connected to the transmission network
<b>Austria</b>	6	6	17	2	0
<b>Bulgaria</b>	4	3	30	1	Not available
<b>Croatia</b>	2	2	123	1	21
<b>Czech Republic</b>	7	7	80	7	9
<b>FYR of Macedonia</b>	0	1	2	0	55
<b>Greece</b>	1	1	21	0	20
<b>Italy</b>	4IPs plus 1 to San Marino	5 IPs plus 3 with LNG terminals	2700	12	3200
<b>Hungary</b>	5	5	App. 400	5	32
<b>Moldova</b>	5	4	80	0	7
<b>Poland</b>	1	6	873	7	76
<b>Romania</b>	6	7	881	7	228

	Number of exit IPs	Number of entry IPs	Number of physical off-take points to DSOs	Number of physical off-take points to SSOs	Number of final customers connected to the transmission network
<b>Serbia</b>	1	1	173	1	66
<b>Slovakia</b>	5	5	8	2	0
<b>Slovenia</b>	3	3	132	0	137
<b>Ukraine</b>	10	10	Not available-44 DSOs	Not available-12 SSOs	191

A certain correlation between the number of off-take points from the distribution system and the number of directly connected customers on one side, and their relevant revenue shares on the other, can be observed in the majority of countries for which the information on shares is available.<sup>25</sup> In Austria the transmission network is almost solely devoted to cross-border transmission and therefore the mentioned shares also correspond to the number of physical off- and in-take points. For countries where shares are not available a related assessment cannot be performed.

For the purpose of cost allocation assessment and capacity weighted distance price methodology, the tariff network code allows for clustering of individual points.<sup>26</sup> In the majority of the analyzed countries transmission tariff methodologies include a related provision for calculating exit tariffs for distribution. The exceptions are Bulgaria, FYR of Macedonia and Moldova.

Information on individual highest and lowest entry/exit tariffs at interconnection points is presented in the table below. It has to be noted that these are only capacity charges, so in systems where commodity charges apply,<sup>27</sup> relevant tariffs will be higher than presented in the table.

<sup>25</sup> Namely: Poland, Romania, Slovenia, Serbia and Czech Republic.

<sup>26</sup> Art. 3(19), Art. 5 and Art.8

<sup>27</sup> I.e. the majority of the analyzed countries. Exceptions are Austria, Slovakia and Ukraine, where only capacity charges exist.

Table 7 Entry/exit tariffs at cross- border IPs in SSE region (in EUR/kWh/h/year)

	Highest entry IP capacity tariff	Lowest entry IP capacity tariff	Highest exit IP tariff	Lowest exit IP tariff
<b>Austria</b>	1.3	0.77	4.63	<b>1.12</b>
<b>Bulgaria</b>	-	-	-	-
<b>Croatia</b>	5.56	5.56	14.13	14.13
<b>Czech Republic</b>	0.667	<b>0.667</b>	2.664	2.664
<b>FYR of Macedonia</b>	-	-	-	-
<b>Greece</b>	4.63	4.63	4.63	4.63
<b>Italy</b>	9.51	1.73 (Passo Gries)	7.397 (San Marino)	1.63 (Tarvisio)
<b>Hungary</b>	7.2	4.79	7.46	2.04
<b>Moldova</b>	-	-	-	-
<b>Poland</b>	6	6	3,55	3,55
<b>Romania</b>	3.54	3.54	3.48	3.48
<b>Serbia</b>	4.61	4.61	9.14	9.14
<b>Slovakia</b>	4.11	1.33	5.71	2.07
<b>Slovenia</b>	2.665	1.94	2.34	1.53
<b>Ukraine</b>	10.25	10.25	26.95	13.67

On average, the highest entry and exit charges are recorded for Ukraine. Exit charges are also very high in Croatia, followed by Serbia and, for some IPs, Italy and Hungary. Among the entry IP charges, besides Ukraine, on some IPs in Italy and Hungary above average tariffs are also observed. In five countries, namely Croatia, Czech Republic, Romania, Poland and Ukraine, all entries are charged equally. In the same countries, with the exception of Ukraine, also all exit IPs have the same tariffs.<sup>28</sup>

Similar results have been observed by REKK<sup>29</sup> in the framework of transmission tariff analysis performed for CESEC<sup>30</sup> region.<sup>31</sup> The scheme below shows that, indeed, average entry and exit tariffs in the GRI SSE, i.e. the CESEC region, are higher than in other parts of Europe.<sup>32</sup>

<sup>28</sup> Greece and Serbia have only one entry IP and one exit IP.

<sup>29</sup> <http://rekk.hu>.

<sup>30</sup> <https://ec.europa.eu/energy/en/topics/infrastructure/central-and-south-eastern-europe-energy-connectivity>.

<sup>31</sup> [https://www.energy-community.org/dam/jcr:609ce081-8ee2-4068-a65d-33215df85021/REKK%20transmission%20tariff%20benchmarking\\_final.pdf](https://www.energy-community.org/dam/jcr:609ce081-8ee2-4068-a65d-33215df85021/REKK%20transmission%20tariff%20benchmarking_final.pdf).

<sup>32</sup> Differences in tariffs in table 7 above and those calculated by REKK stem from the different calculation methodologies applied: while tariffs in table 7 represent “pure” fixed costs for booking capacities (in EUR/kWh/h/year), not taking into consideration system usage, tariffs in REKK survey, expressed in EUR/MWh, include both capacity and commodity part and are calculated based on several assumptions: firm transportation





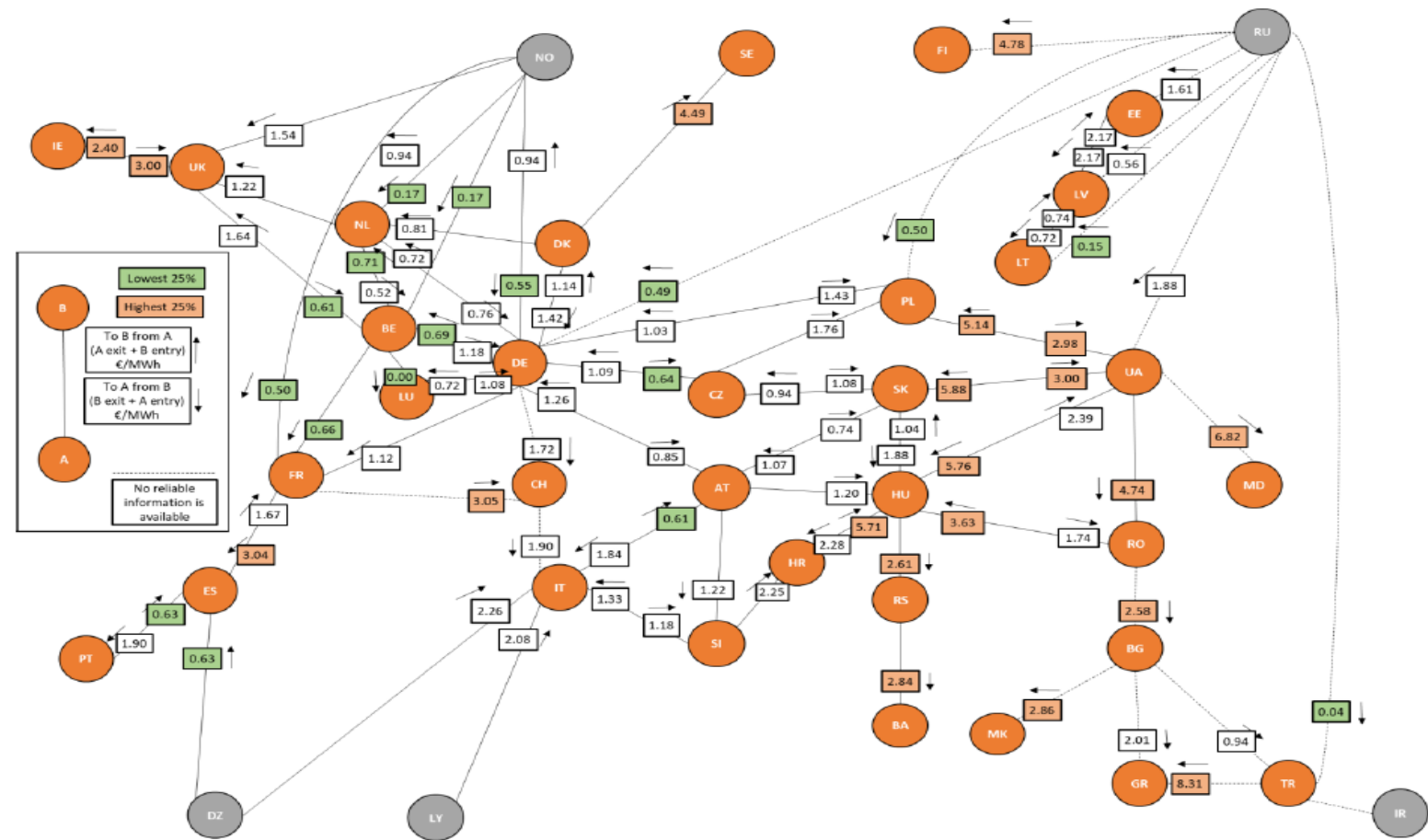
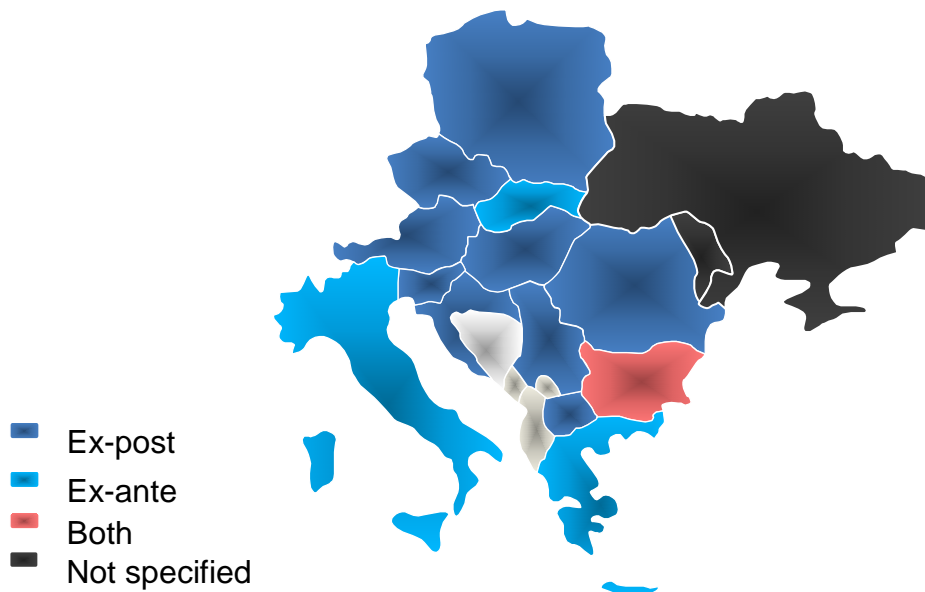


Figure 4: Average entry and exit tariffs in the CESEC region

### 1.5. Pricing of interruptible products

The tariff network code requires calculation of prices for interruptible capacity products by applying a discount to the reserve prices of corresponding firm capacity products.<sup>33</sup> These discounts may be set ex-ante or ex- post. An ex-ante discount is calculated based on the probability of interruption and the estimated economic value of the product. Ex- post discounts compensate network users after the actual interruptions occur. Such ex-post discount may only be used at IPs where there was no interruption of capacity due to physical congestion in the previous gas year.<sup>34</sup> Ex-post compensation for each day when the interruption occurred should be equal to three times the reserve daily price of firm capacity.<sup>35</sup> Current application of discounts in the GRI SEE region is shown in the figure below.

Figure 5: Pricing of interruptible capacity products



In the majority of analyzed markets, ex-post discounts are offered for interruptible products. On wider EU level ex- ante discounts prevail.<sup>36</sup>

In Ukraine, the tariff methodology foresees ex-ante discounts for interruptible products, but the tariffs have not been set. Interruptible products are not being used.

<sup>33</sup> Cf Article 16 of the tariff network code, applicable as of 31<sup>st</sup> may 2019.

<sup>34</sup> Article 16(4) of tariff network code.

<sup>35</sup> See above.

<sup>36</sup> Cf ENTSOE, tariff network code Implementation Document.

### Calculation of discount for interruptible capacity in Poland

The fixed fee for interruptible transmission services is reduced proportionally to the actual reduction of the contracted capacity and the number of hours of such reduction. For hours of complete reduction of the interruptible contracted capacity the fee is to be adjusted by the D- coefficient to be determined in the following manner:

$$D = (T - T_0) / T$$

where:

T - the number of hours during a billing period,

T<sub>0</sub> - the number of hours of complete reduction of contracted capacity during a billing period.

If the D-coefficient value, determined in compliance with the foregoing formula, is lower than 0.05, it is accepted that its value is 0.05.

Details can be found in point 9.4 of the TSO's tariff available at:

<http://en.gaz-system.pl/customer-zone/tariff>

## 2. Methodologies for calculation of allowed revenues of transmission system operators

Methodologies for calculation of allowed revenues for gas transmission are not in the focus of the tariff network code. Nevertheless, provisions aimed at securing recovery of transmission revenues on one side,<sup>37</sup> and at providing more transparency in the process of allowed revenue and tariff determination<sup>38</sup> are included in the Regulation. The present chapter summarizes information on allowed revenue calculation in the GRI SSE region, tackling also the issues of revenue reconciliation and transparency.

### 2.1. Cost-based vs. incentive- based regulation of allowed revenue

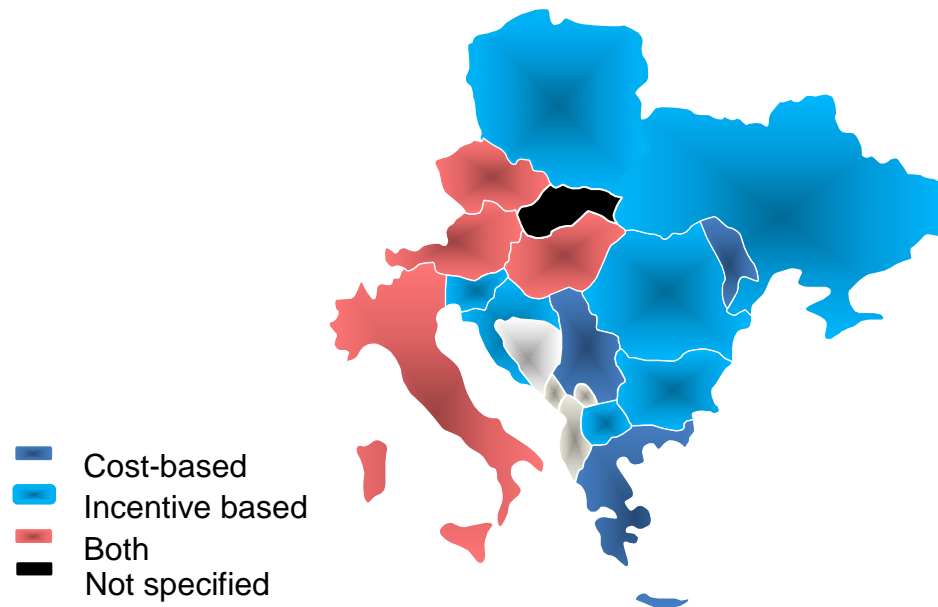
Setting of allowed revenues can be based on actual or forecasted costs of the TSO, whereby, in the GRI SSE region the comparison of allowed and actual costs is done on regular basis with the purpose of reconciliation, usually once a year. In this case, TSOs are not allowed to keep the part of eventual savings resulting from efficiency. Another way of regulation incentivizes TSOs to efficiently incur costs or to invest by allowing them to keep a portion of

<sup>37</sup> Cf Tariff network code chapter 4- reconciliation of revenue.

<sup>38</sup> Cf Tariff network code, chapter 8- publication requirements.

savings. Some NRAs combine these approaches in the process of revenue regulation. The figure below provides an overview of the practices implemented in the GRI SSE Region.

Figure 6: Cost- based vs. incentive based regulation in the GRI SSE Region



Pure cost- based regulation is implemented in only three countries, namely Greece, Moldova and Serbia, whereas in all other countries (for at least a part of the allowed costs) incentives are implemented.

More details on the implementation of incentives are presented in the table below.

Table 8 Application of X-factor in case of incentive based regulation

	Do you apply X- factor?	If yes, how big is X- factor?	On which part of costs do you apply X- factor (OPEX, CAPEX, other)?
<b>Austria</b>	yes	2.45%	OPEX
<b>Bulgaria</b>	yes	-	OPEX
<b>Croatia</b>	yes	1%	OPEX
<b>Czech Republic</b>	yes	1% per year	OPEX
<b>fYR of Macedonia</b>	Not available		
<b>Greece</b>	No incentive based regulation		
<b>Italy</b>	yes	It is company- specific; for the main TSO 2.4%	OPEX

	Do you apply X-factor?	If yes, how big is X-factor?	On which part of costs do you apply X-factor (OPEX, CAPEX, other)?
<b>Hungary</b>	yes	1.5%	OPEX
<b>Moldova</b>	No incentive based regulation		
<b>Poland</b>	no <sup>39</sup>		
<b>Romania</b>	yes	3.5% for the period 2014-2017	OPEX
<b>Serbia</b>	No incentive based regulation		
<b>Slovakia</b>	Not available		
<b>Slovenia</b>	yes	1.5%	OPEX
<b>Ukraine</b>	yes	1%	OPEX

The survey reveals that the majority of regulators in the GRI SSE Region require cost savings on OPEX, and none of them on CAPEX. The X-factor implemented on OPEX varies between 1% in Czech Republic and Croatia to 3.5% in Romania. This cost saving factor reflects the regulators' estimation of the companies' saving potentials.

## 2.2. Calculation of return on assets

Beside allowed costs, another crucial element of the revenue is the return calculated by multiplying the regulatory asset base (RAB) by the rate of return typically determined as weighted average cost of capital (WACC). In the GRI SSE Region the value of assets included into the RAB is expressed either as historical costs<sup>40</sup> or re-evaluated values<sup>41</sup>. The following table shows how evaluation of assets is done in the individual countries of the region:

<sup>39</sup> URE verifies and approves the regulated revenue of the TSO which covers justified costs and a return on capital. The results of analysis of under or over-recovery of TSO's regulated revenue affect the accuracy of costs forecasting for future tariff, but the revenue reconciliation is not applied. Regulatory period equals tariff period which is calendar year.

<sup>40</sup> I.e. costs actually incurred to build or acquire the assets.

<sup>41</sup> I.e. costs that would be incurred for acquiring the assets in the moment of evaluation.

Table 9 Evaluation of assets

	Historical asset value	Re-evaluated asset value
<b>Austria</b>	Yes 60%	Yes 40%
<b>Bulgaria</b>	no	yes
<b>Croatia</b>	yes	yes
<b>Czech Republic</b>	no	yes
<b>fYR of Macedonia</b>	yes	no
<b>Greece</b>	yes	no
<b>Italy</b>	no	yes
<b>Hungary</b>	no	yes
<b>Moldova</b>	yes	no
<b>Poland</b>	yes	no
<b>Romania</b>	yes	no
<b>Serbia</b>	yes	yes
<b>Slovakia</b>	Not available	
<b>Slovenia</b>	yes	no
<b>Ukraine</b>	no	yes

While in Austria, Croatia and Serbia both methods of asset evaluation are used, other countries apply solely historical or re-evaluated value of assets for revenue calculation. Re-evaluation of assets is sometimes done after unbundling of TSOs from vertically integrated companies or in the cases of substantial inflation diminishing the value of assets.

Different rates of return are applied in the calculation of revenue varying from 5.29% in Croatia to 15.13% in Ukraine. Here it has to be noted that these values are only to a certain extent comparable, because the regulatory authorities define allowed cost of capital using different approaches (pre- or post- tax, nominal or real). The table hereinafter shows more details including the applicable equity/debt ratios used for the calculation of WACC.

Table 10 WACC and equity/debt ratio

	WACC	Equity/debt ratio
<b>Austria</b>	Nominal for debt: 2.7 %; real for equity: 5.42 pre- tax +3.5% risk premium	40/60
<b>Bulgaria</b>	8.14% (real, pre-tax)	100/0
<b>Croatia</b>	5.29% (nominal, pre-tax)	50/50
<b>Czech Republic</b>	-	15/85
<b>fYR of Macedonia</b>	6.70% (real, pre-tax)	98.75/1.25
<b>Greece</b>	9.22%	22/78
<b>Italy</b>	5.30% (real, pre-tax)	56.6/44.4
<b>Hungary</b>	-	62.70/37.30
<b>Moldova</b>	-	65/35
<b>Poland</b>	5.64% (nominal, pre-tax)	75/25
<b>Romania</b>	-	72/28
<b>Serbia</b>	7.77 % (real, pre-tax)	40/60
<b>Slovakia</b>	-	-
<b>Slovenia</b>	6.98% (nominal, pre-tax)	40/60
<b>Ukraine</b>	15.13% (real, post-tax)	55/45

For the countries where the rates of return are not shown, NRAs informed that such information is not publically available<sup>42</sup>; this is the case for five out of fifteen analyzed countries.

The approved RAB value is published only in Bulgaria, Croatia, fYR of Macedonia, Greece, Romania and Serbia. Similarly, only six countries publish information on allowed costs, namely Bulgaria, Croatia, fYR of Macedonia, Greece, Romania and Serbia.

### 2.3. Depreciation

Depreciation decreases the asset value through use from year to year and should also allow a TSO to cover replacement investment costs during the economic life of an asset. Regulatory depreciation periods implemented for the TSOs in the GRI SSE Region may be observed from the table below.

<sup>42</sup> Which is not in line with Art.30 of the TAR NC applicable in EU countries.



Table 11 Depreciation periods applied for TSOs' assets (in years)

	<b>pipelines</b>	<b>Compressor stations</b>	<b>Metering stations</b>
<b>Austria</b>	30	12	12
<b>Bulgaria</b>	35	15	15
<b>Croatia</b>	35	35	35
<b>Czech Republic</b>	40	20	10
<b>fYR of Macedonia</b>	40	20	20
<b>Greece</b>	40	40	40
<b>Italy</b>	50	20	20
<b>Hungary</b>	Steel (with katod protection): 50 years; other equipments: 10-20 years	20 years for compressor and the turbine	Building: 50 years; equipment: 10-20 years
<b>Moldova</b>	20	20	20
<b>Poland</b>	40	15	15
<b>Romania</b>	40	40	20
<b>Serbia</b>	40	40	40
<b>Slovakia</b>	Not available		
<b>Slovenia</b>	It takes into account the useful life of assets	It takes into account the useful life of assets	It takes into account the useful life of assets
<b>Ukraine</b>	steel pipelines - 40, main steel pipelines - 60, polyethylene pipelines - 50	50	35

## 2.4. Taxation

Taxes represent a significant part of final transmission charges and are out of TSOs' control- they reflect the state fiscal policy related to energy goods and services. The table below shows substantial differences between the applied taxation policies in the countries of the GRI SSE region ranging from only 10% in Bulgaria and FYR of Macedonia to more than 34% in Italy.

Table 12 Corporate income tax applied

	Corporate tax applied (in %)
<b>Austria</b>	25
<b>Bulgaria</b>	10
<b>Croatia</b>	18
<b>Czech Republic</b>	19
<b>FYR of Macedonia</b>	10
<b>Greece</b>	29
<b>Italy</b>	34,4
<b>Hungary</b>	19
<b>Moldova</b>	12
<b>Poland</b>	19
<b>Romania</b>	16
<b>Serbia</b>	15
<b>Slovakia</b>	22
<b>Slovenia</b>	19
<b>Ukraine</b>	18

## 2.5. Reconciliation

The tariff network code deals with the risk of under- or over- recovery of TSO's revenue, in case a non- price cap regime is applied, by requiring three principles to be met: <sup>43</sup>

- Minimizing the under- or over- recovery of the transmission revenue;
- Ensuring that transmission tariffs recover revenue in a timely manner and
- Avoiding, to the extent possible, significant differences between the consecutive tariff periods.

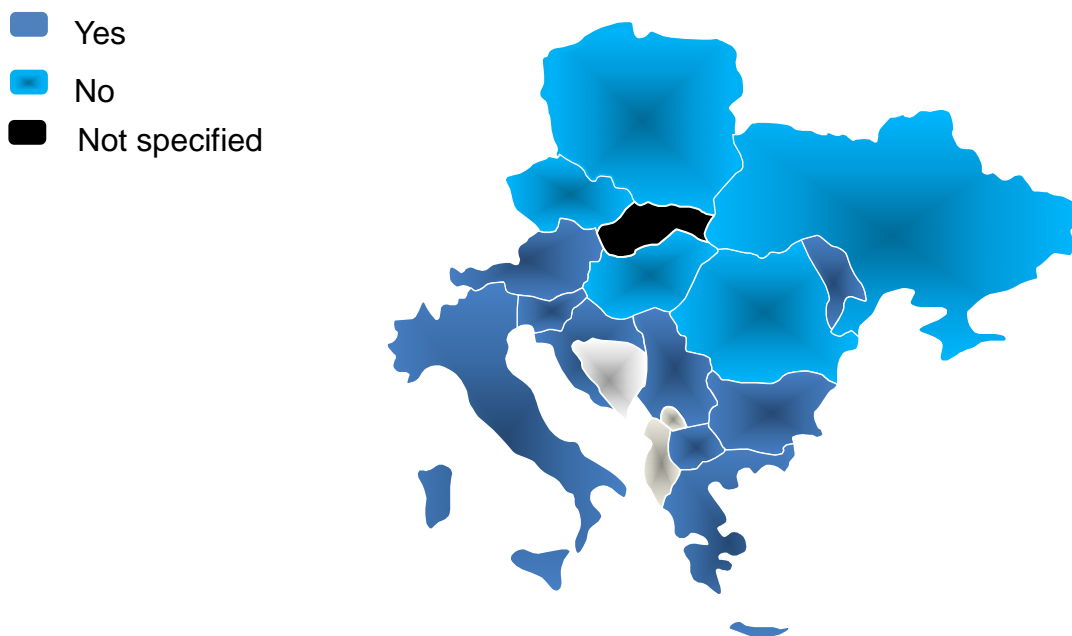
In certain regulatory regimes, differences between the allowed and actually obtained revenue, including differences between anticipated and actual costs, are to be assigned to a so called regulatory account. This regulatory account is then reconciled with the aim of reimbursing to the TSO the under-recovery and of returning to the network users the over-recovery. Reconciliation is done by using the reference price methodology; however also a commodity based complementary revenue recovery charge may be applied.

<sup>43</sup> Article 17 of the tariff network code, applicable as of 31<sup>st</sup> May 2019.

It is important to mention that the reconciliation described in the tariff network code is done only if a non- price cap regime is implemented. In case the TSO performs under a price-cap regime or offers a fixed payable price, it is assumed that all risks related to under- or over-recovery shall be covered exclusively by the risk premium.

For the purpose of this analysis, the NRAs were asked if the applicable transmission tariff methodologies applied in their countries take into account the risks of under- recovery i.e whether the TSO will be compensated for the under-recovery in the previous regulatory period. The responses received are presented in the figure below.

Figure 7: Treatment of revenue under-and over- recovery



### III. SUMMARY AND CONCLUSIONS

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The present report provides an overview of the practices implemented by the regulatory authorities of the GRI SSE Region used for in calculating transmission tariffs in 2017. The analysis thus illustrates the *status quo* at a moment right before the start of the implementation of the EU tariff network code.

In all countries of the GRI SSE Region the regulatory authorities are in charge of setting the methodologies for calculation of gas transmission tariffs. In roughly half of these countries, the regulators also calculate applicable tariffs, in the other cases they approve the tariffs calculated by transmission system operators.

The tariff network code prescribes that transmission tariff revenues should mainly be recovered by capacity-based tariffs. Currently, **in two out of 15 analyzed countries, the transmission revenue is recovered solely via capacity-based tariffs. In majority of other countries, the commodity charge covers up to 20% of the allowed revenue.**

**In many countries of the GRI SSE Region long-term transit contracts still did not expired.** In six countries, namely: Bulgaria, Hungary, Romania, Moldova, Serbia and Ukraine, different treatment of domestic and cross-border users in terms of tariffs was reported for 2017. *De facto*, also in Slovakia the tariffs for domestic and cross- border users are different, as the tariff level varies by the amount of booked capacity.

According to the tariff network code, calculation of tariffs for yearly capacity firm products shall be done by using the reference price methodology (with some possible adjustments). The default reference price methodology is the so called capacity weighted distance reference price methodology using a 50/50 entry/exit split. **In seven out of 15 GRI SSE countries the applicable entry/exit split adds up to a 50/50 share, in four of them the proportion allocated to exits is much higher compared to those allocated to entries and only in Croatia entry tariffs receive a higher cost allocation than exit tariffs.** When it comes to the allocation of revenues to specific entry/exit points, such as distribution networks, directly connected system users or cross- border interconnection points, **a certain correlation between the number of off- take points from the distribution system and the number of directly connected customers on one side, and their relevant shares on the other, can be observed in the majority of countries for which the information on shares is available** (Poland, Romania, Slovenia, Serbia and Czech Republic).

The analysis revealed that, **on average, the highest entry and exit tariffs were recorded for Ukraine. Exit charges were also above average in Croatia, followed by Serbia and, for some interconnection points, in Italy and Hungary. Among the entry interconnection points charges, besides Ukraine, on some interconnection points in Italy and Hungary high tariffs were also be observed.** It has to be noted that these are

only capacity tariffs, so in systems where commodity charges apply, relevant tariffs should be higher than those presented in this report.

Although the methodologies for calculation of allowed revenues as such are not part of the tariff network code, provisions aiming at securing recovery of transmission revenue as well as providing more transparency of the process are defined. The present report summarizes information on allowed revenue calculation in GRI SSE countries, also including the aspects of revenue reconciliation and transparency.

With regard to the method of regulation (cost vs. incentive- based), **pure cost-based regulation is implemented in only three countries**, namely: Greece, Moldova and Serbia, whereas in all other countries incentives are implemented for at least part of the costs (OPEX rather than CAPEX, with X-factor ranging from 1% to 3.5%).

When determining the value of assets for which the rate of return should apply, the regulators of Austria, Croatia and Serbia use both historical and re-evaluated values, while the other GRI SSE regulators apply only one of the mentioned options. **Different rates of return are applied, varying from 5.29% in Croatia to 15.13% in Ukraine.** Five regulatory authorities of the region, i.e. Czech Republic, Hungary, Moldova, Romania and Slovakia, stated that such information was not publicly available. **Lack of transparency is particularly obvious when it comes to the publication of the approved value of the regulatory asset base. Namely, only in Bulgaria, Croatia, FYR of Macedonia, Greece, Romania and Serbia regulators publish related values.**

Significant influence on the final transmission tariffs has also **taxation**. The values of corporate income tax applied in the region vary from only 10% in Bulgaria and FYR of Macedonia to more than 34% in Italy.

Finally, **in the majority of the GRI SSE countries (ten out of 15) the currently applicable tariff methodologies take into account the risks of under-recovery.**