

Termination rates at European level

July 2019

Table of contents

1. Executive Summary	2
2. Fixed networks – voice interconnection	7
2.1. Assumptions made for the benchmarking	7
2.2. FTR benchmark	7
2.4. Average fixed termination revenue per country	13
2.5. FTR regulatory model implemented and symmetry overview	16
2.6. Number of lines and market shares.....	17
3. Mobile networks – voice interconnection	18
3.1. Assumptions made for the benchmarking	18
3.2. Average MTR per country: rates per voice minute (as of July 2019)	19
3.3. Average MTR per operator.....	22
3.4. Average MTR: Time series of simple average and weighted average at European level.....	23
3.5. Average mobile termination revenue per minute per country	26
3.6. Regulatory model implemented and glide paths for MTRs	27
4. Mobile networks - SMS interconnection.....	28
4.1. Assumptions made for the benchmarking	28
4.2. SMS TRs per country (as of July 2019)	30
4.3. Volumes of SMS sent.....	31
Annex	32
Annex 1 Fixed termination rates as of 1 July 2019	32
Annex 2 Average fixed termination revenue per country	37
Annex 3 FTR regulatory cost accounting model implemented.....	38
Annex 4 FTR symmetry.....	40
Annex 5 Number of active fixed telephony lines and Market shares	42
Annex 6 Average MTR per operator as of 1 July 2019	48
Annex 7 Average mobile termination revenue per minute per country	55
Annex 8 Regulatory model implemented to calculate MTRs.....	56
Annex 9 SMS TR per country as of 1 July 2019.....	59
Annex 10 Abbreviations and Exchange rates	64
Annex 11 Glossary	65

1. Executive Summary

This document is an updated version of the benchmark of fixed and mobile Termination Rates (TRs) across Europe prepared by the BEREC Statistics and Indicators Working Group in cooperation with the BEREC Office, and aims to offer a picture of the regulated rates for fixed and mobile interconnection services in Europe. Fixed and mobile termination services in Europe are subject to price regulation.

The European Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC identifies:

- wholesale call termination on individual public telephone networks provided at a fixed location as a relevant market susceptible of ex-ante regulation (market 1)
- wholesale voice call termination on individual mobile networks as a relevant market susceptible of ex-ante regulation (market 2).

Because of the structure of these two markets, in general each network operator has an SMP position (i.e. a monopoly) for termination on its own network and therefore its termination rates are regulated.

The present overview of TRs is based upon the results of a request for information sent to all NRAs in July 2019, referring – if not differently indicated – to data as of 1st July 2019. It includes rates from the thirty seven (37) NRAs¹ that provided responses to our request.

As of July 2019, the situation regarding TRs in Europe can briefly be described as follows (see also Figures 1-3):

- The lowest regulated FTR simple average of incumbents at the European level (all 37 countries Avg (S)) stands at 0,2928 EUR cents per minute.
- The lowest regulated FTR simple average of European Union incumbents (only EU member states Avg EU28 (S)) stands at 0,1920 EUR cents per minute.
- The MTR simple average (Avg (S)) at the European level (all 37 countries) stands at 0,8815 EUR cents per minute, whereas the weighted average² (Avg (W)) at European level is estimated at 0,7804 EUR cents per minute.
- The MTR simple average at the EU level (only EU member states) stands at 0,7767 EUR cents per minute, whereas the weighted average at EU level is estimated at 0,7926 EUR cents per minute.

¹ 28 EU member states plus 4 EFTA states (Switzerland, Iceland, Norway and Liechtenstein) and 5 candidate states Albania, Montenegro, North Macedonia, Serbia and Turkey.

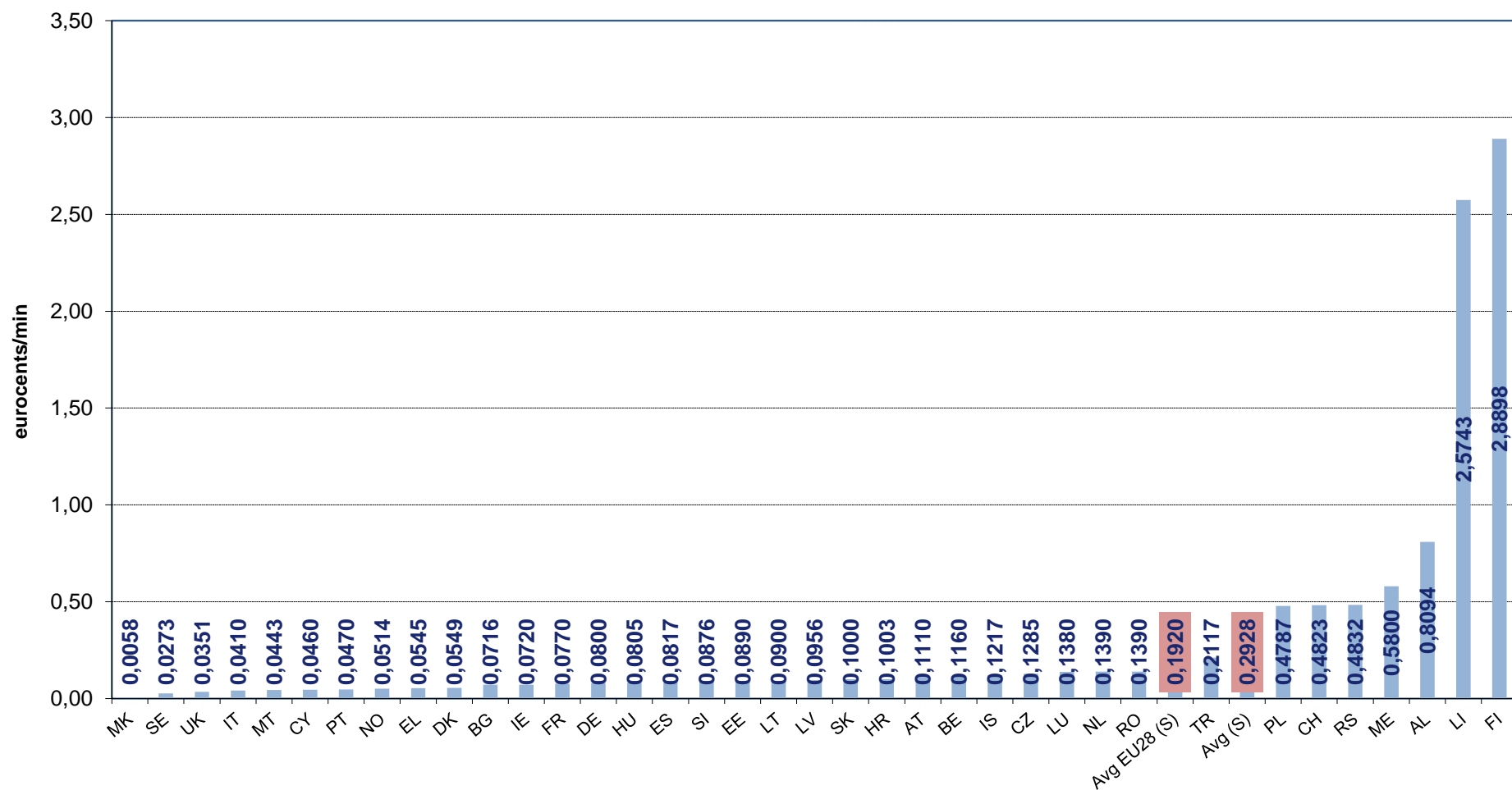
² The weighted averages weight each country's average rate with the share of the country's subscribers (total subscribers per country / total subscribers in all countries).

- The SMS TR simple average at the European level is 2,3574 EUR cents per SMS.
- Since not all EU member states report their SMS TR, no averages at the EU level could be calculated.

For non-EUR countries, the average exchange rate for the second quarter of the year (Q2 2019) was used for the calculation of FTRs, MTRs and SMS TRs. The exchange rates used are reported in [Annex 10](#).

Overview of incumbents' lowest regulated fixed termination rates per country – July 2019 (EUR cents per minute of service)

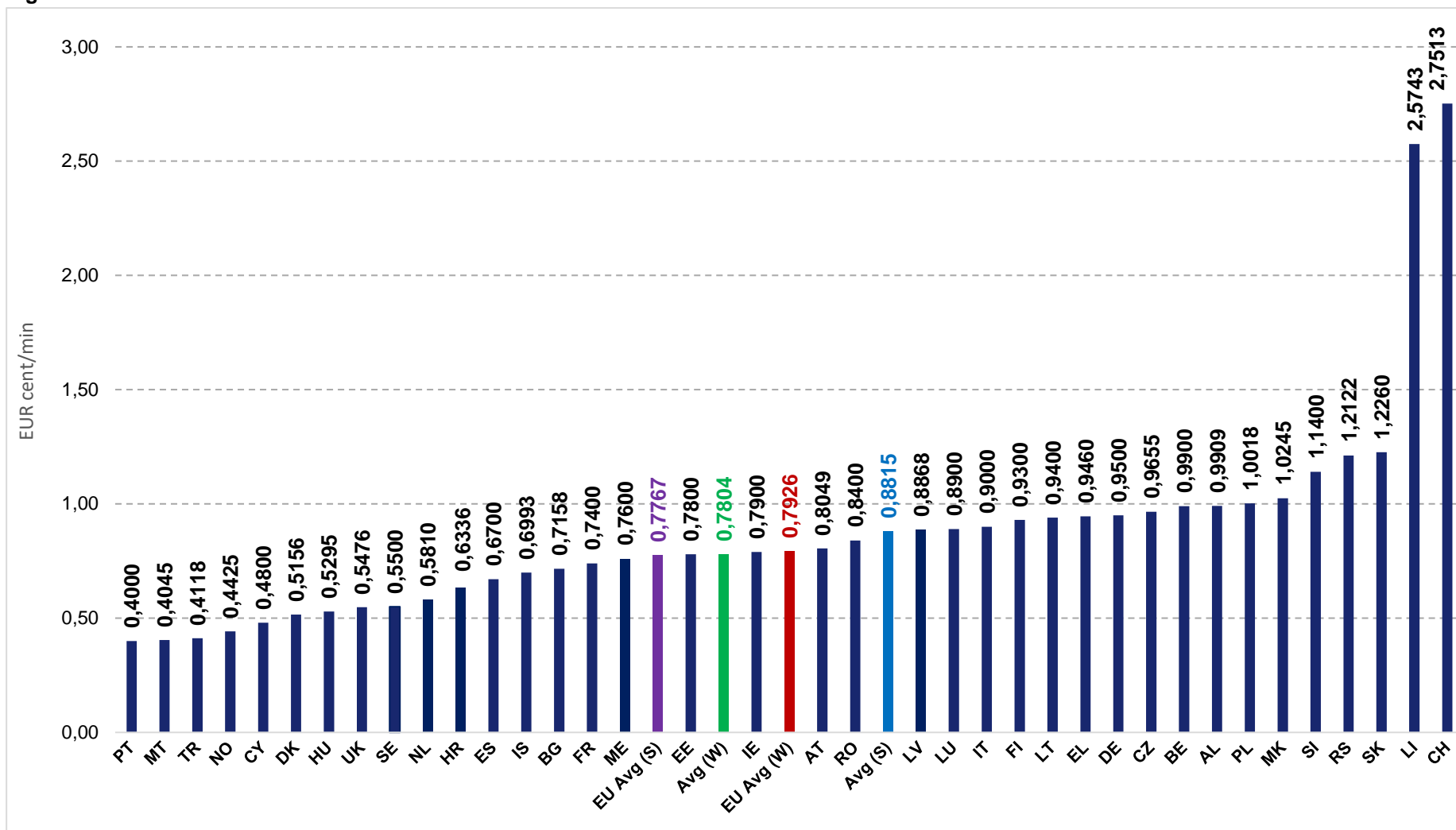
Figure 1 FTRs



Source: NRAs, BEREC

MTR per country – July 2019 (EUR cents per minute of service)

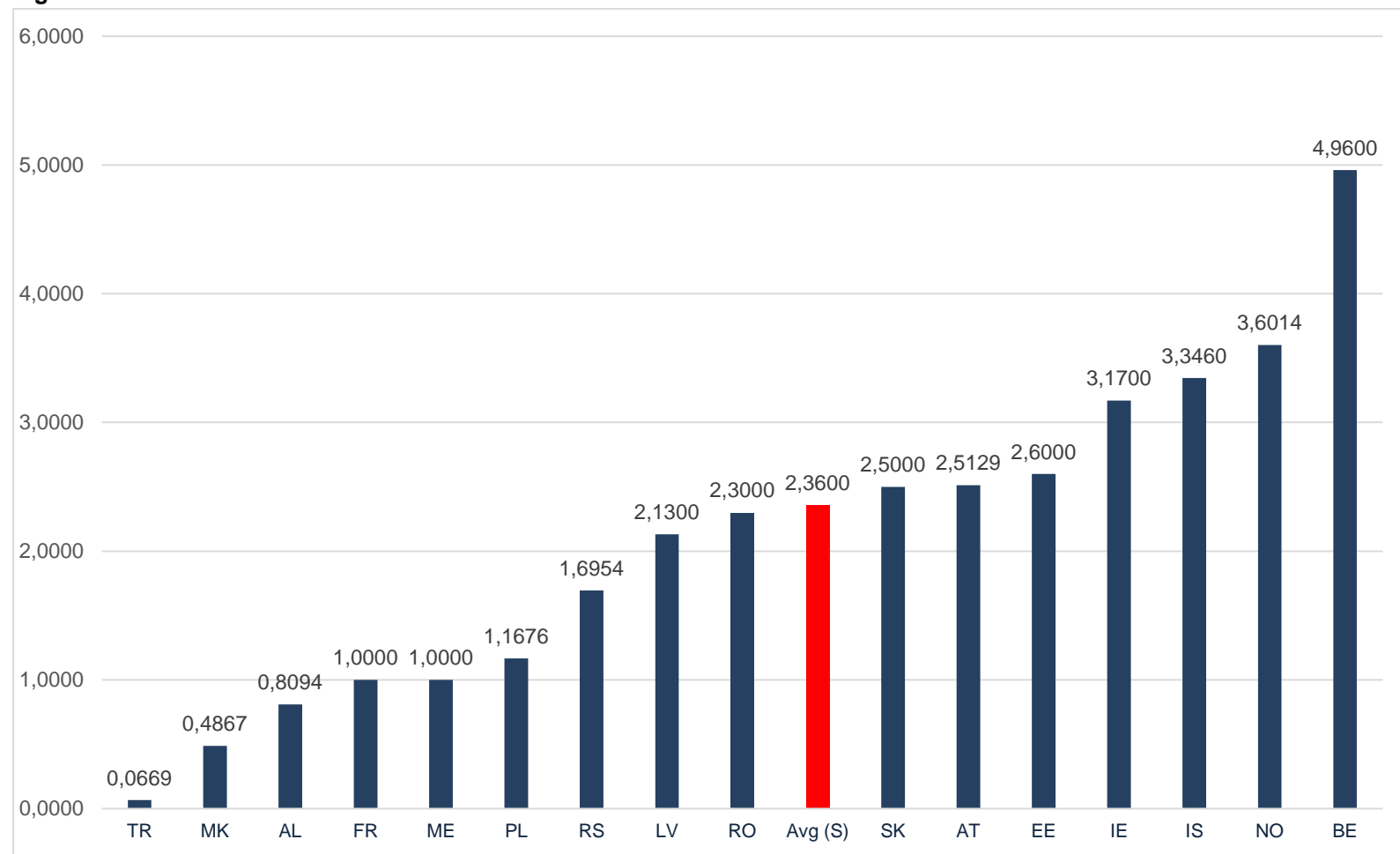
Figure 2 MTRs



Source: NRAs, BEREC

SMS TR per country – July 2019 (EUR cents per message)

Figure 3 SMS TRs



Source: NRAs, BEREC

*Data for IS, MK are not updated

2. Fixed networks – voice interconnection

The regulation of FTRs has been harmonized by the Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC). However, some differences can be found across the national regulatory regimes:

- 1) In some cases, the termination rate is a two-part tariff, i.e. composed of a variable part (to be paid for each minute of a call) plus a set-up or fixed part (to be paid for each call). In other cases, termination prices consist only of the variable part.
- 2) Interconnection services in fixed networks are provided at different levels in the hierarchy of the incumbents' networks, called layers. Even though some peculiarities in specific countries are present, in general three main layers for interconnection are defined:
 - i) layer 1³, or local level service provision,
 - ii) layer 2, or regional level service provision (single transit), and
 - iii) layer 3, national level service provision (or double transit).

Due to increasing symmetry and decreasing relevance of layers the report features a ranking of the lowest regulated rates as well as a weighted average of peak and off-peak rates in the table of [Annex 1](#).

The "lowest regulated rate" refers to the lowest of the rates of an operator. For operators that have more than one regulated rate, these are ranked in ascending order (first lowest, second lowest, etc.). If there is a single regulated rate, it is considered as "the lowest regulated rate".

2.1. Assumptions made for the benchmarking

The following assumptions have been made in order to make tariffs comparable:

- In order to obtain a homogeneous comparison of average prices per minute across operators, a 3-minute average call duration has been assumed, using the standard formula: $(\text{fixed set-up charge} + \text{price per minute} \times 3) / 3$.
- Nominal tariffs are reported only when the NRA has set out the maximum price per minute that operators may charge each other.
- For those countries which have not set a single tariff and which apply distinct rates for the peak/off-peak period (DK, HR and PL), an average price has been calculated taking into account the traffic distribution between peak and off-peak time. When this distribution has not been made available, a 50/50 distribution has been assumed.

2.2. FTR benchmark

In [Annex 1](#) the interconnection prices of operators listed by countries are presented. For each country, the NRA has provided information on the incumbent and some alternative or cable

³ Layer 1 is defined as the closest possible interconnection level to the network termination point.

operators offering interconnection services. In the last column, a weighted average of peak/off-peak prices is provided.

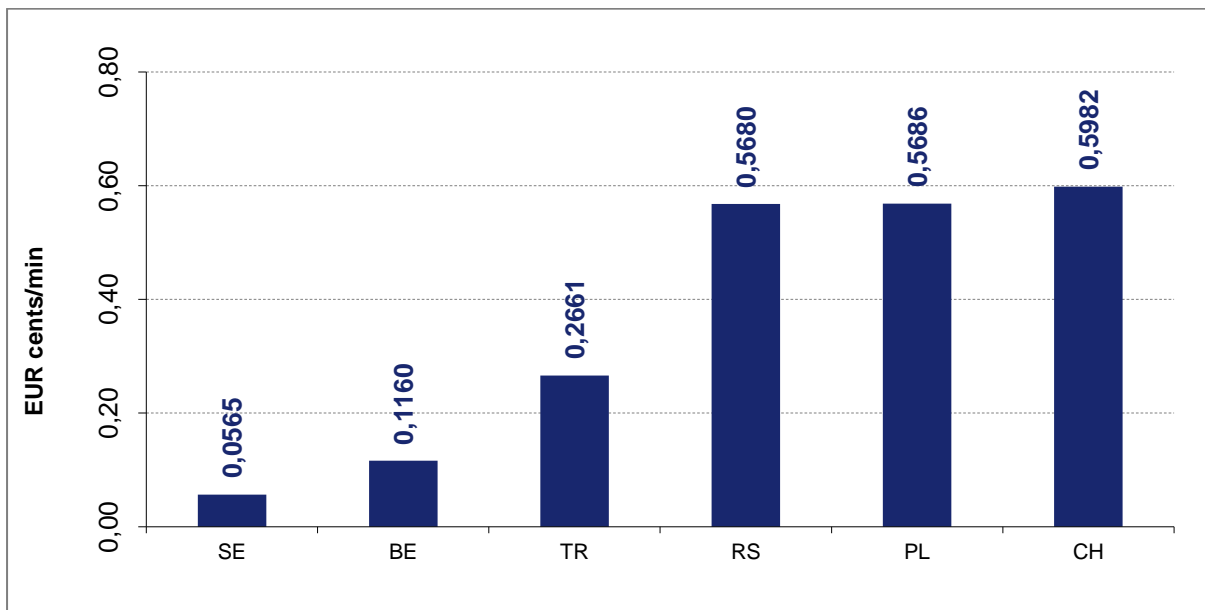
The lowest regulated rate is the rate applied by the operator at the level of interconnection that is closest to the network termination point. The second and third lowest regulated rates apply only to operators that have more than one regulated rate/interconnection layer.

Six (6) countries out of 37 maintain interconnection services in fixed networks at two different levels in the hierarchy of the incumbents' networks and other three (3) countries have three layers of interconnection.

Incumbents' fixed termination rates per lowest regulated rate and country

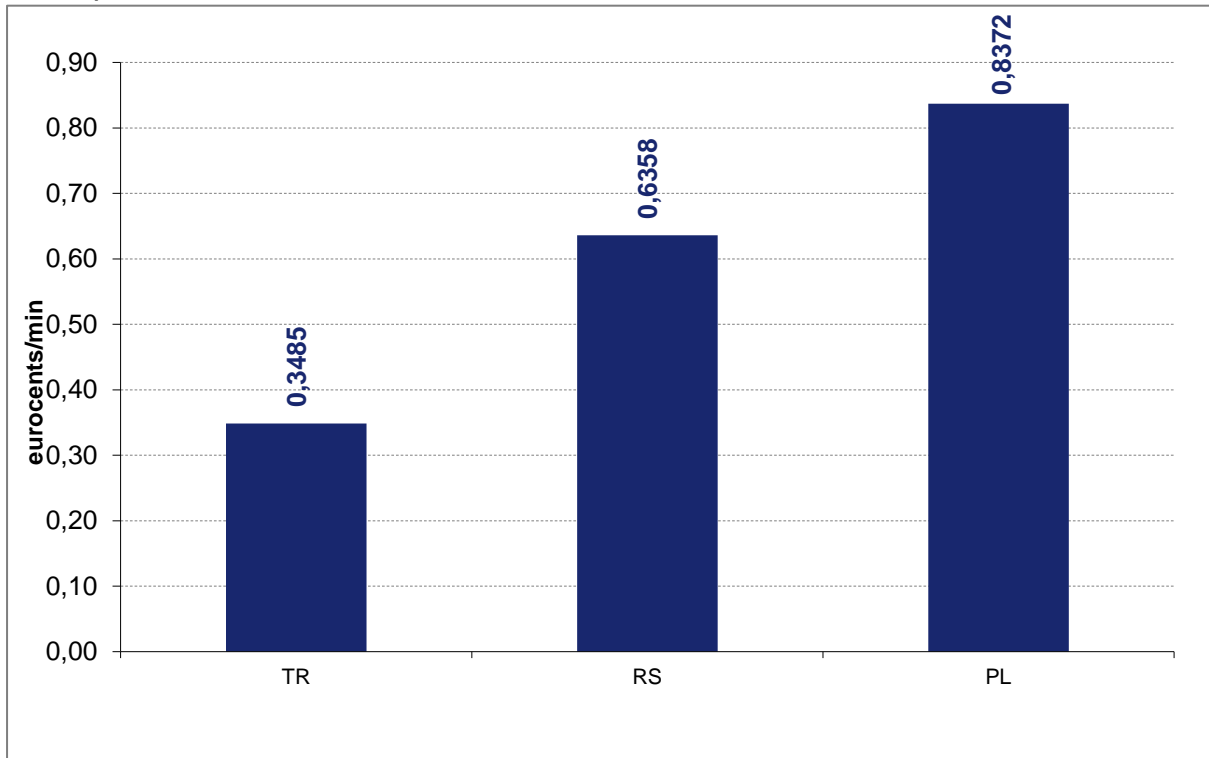
Figures 4 and 5 show the incumbents' second and third lowest regulated fixed termination rate per country. For more information on the individual lowest rates of respective incumbents, please refer to Figure 1 and respectively [Annex 1](#).

Figure 4 Incumbents' second lowest regulated fixed termination rate per country (EUR cents per minute)



Source: NRAs, BEREC

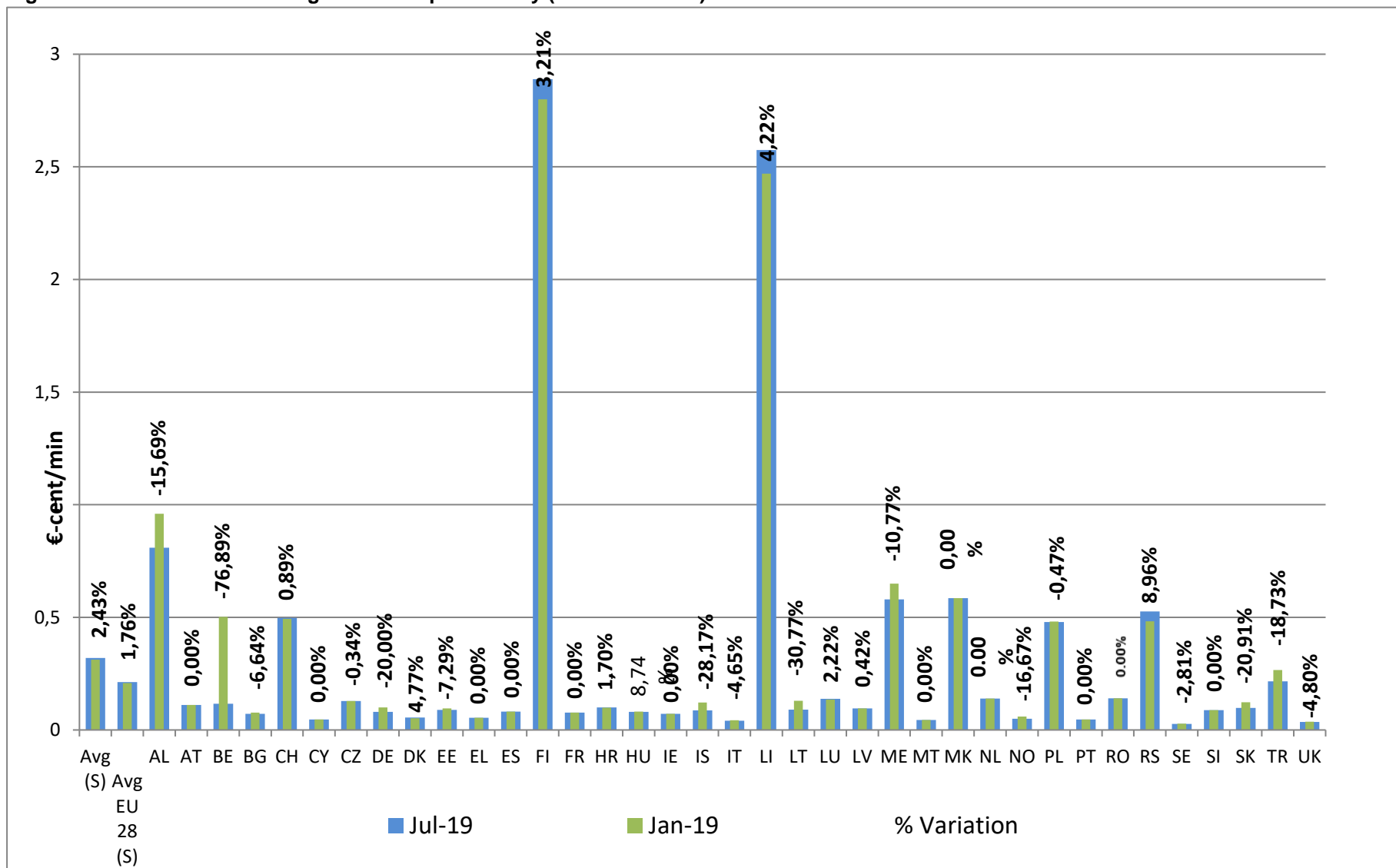
Figure 5 Incumbents' third lowest regulated fixed termination rate per country (EUR cents per minute)



Source: NRAs, BEREC

2.3. Short term evolution of fixed incumbents' FTRs

Figure 6 Incumbents' lowest regulated rate per country (EUR cents/min)

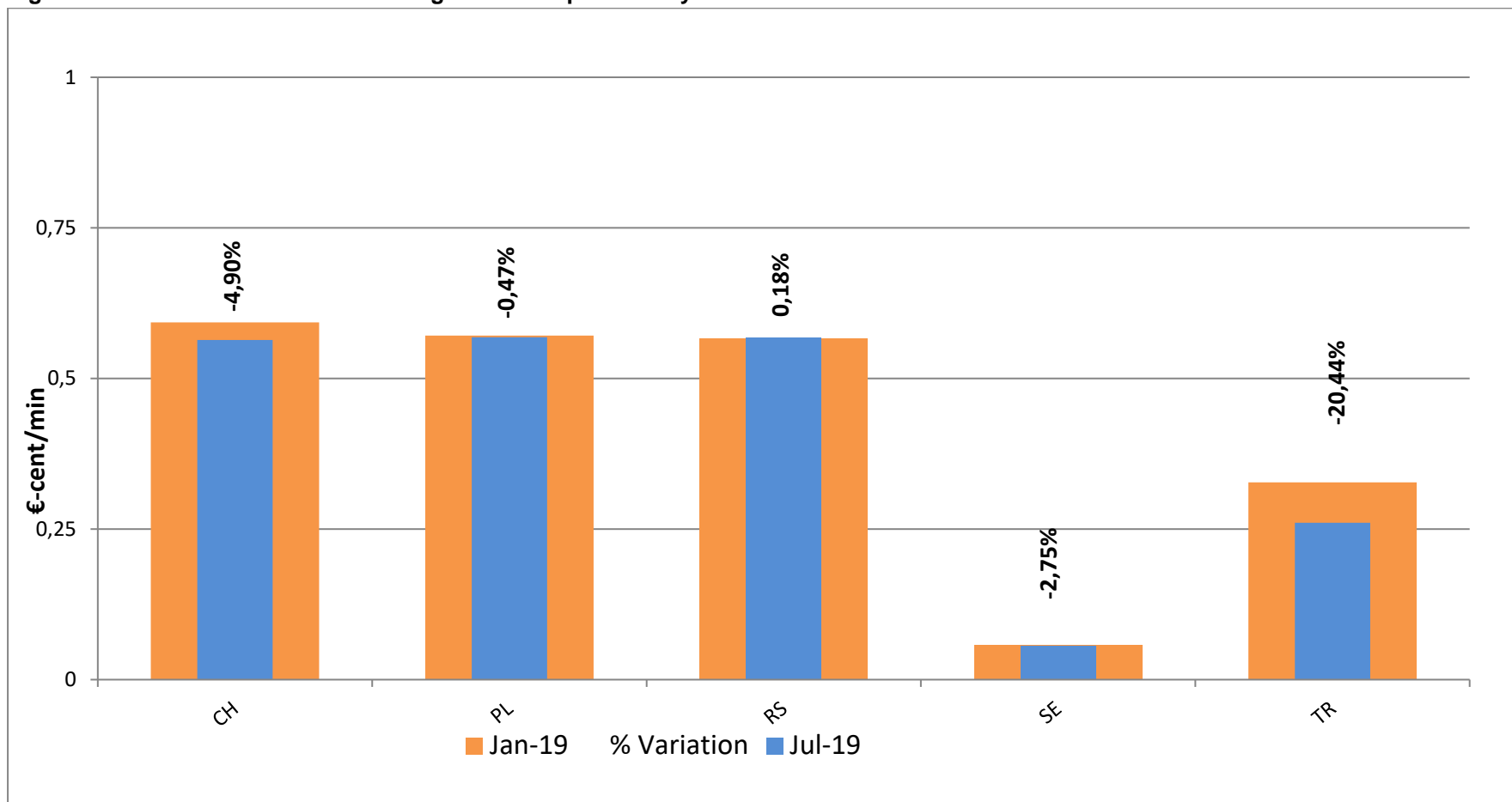


Source: NRAs, BEREC (In Lithuania, from January 2019 to July 2019 in this period FTR was 0,13 EUR cents/min. Since 1st of July FTR is 0,09 EUR cents/min.)

The above chart shows the variation in percentage of the lowest regulated fixed termination rate of incumbents between January 2019 and July 2019. For easier comparison, rates are stated in EUR cents.

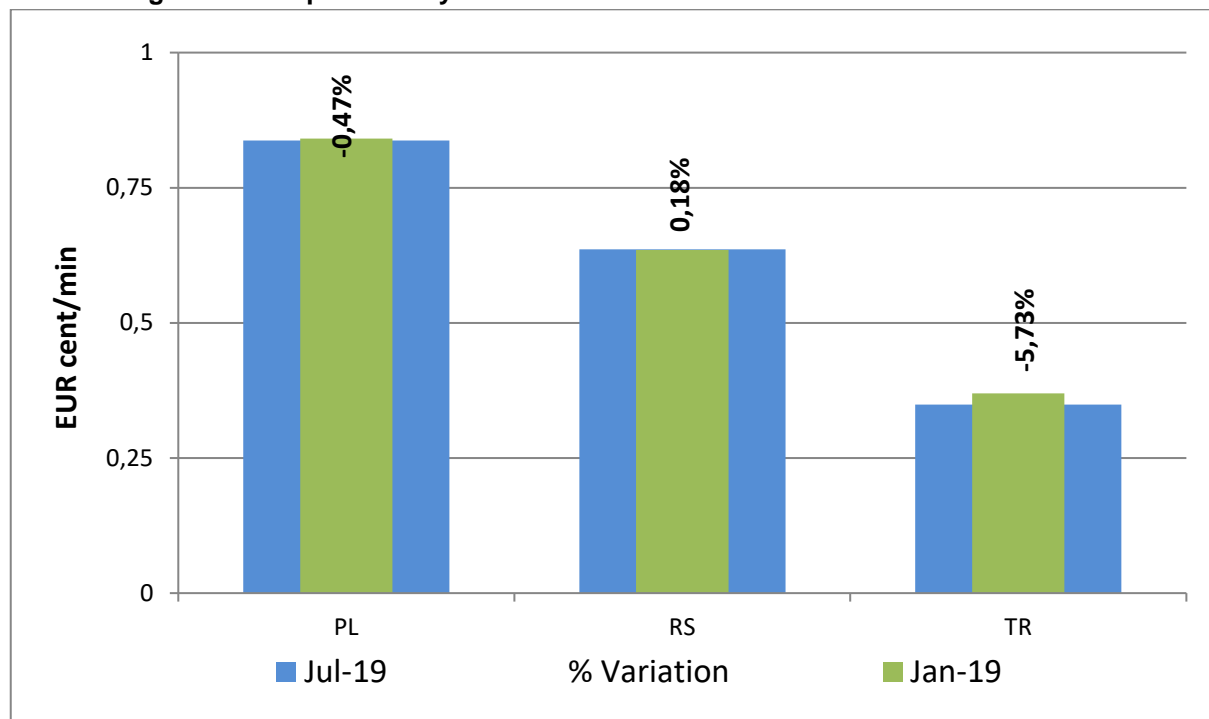
Please note that figures should be shown in EUR. Therefore, in some cases, like in AL and TR, there is a change in value in EUR, despite the fact that the price remains the same in national currency, since fluctuation of currency exchange rate impacts the value.

Figure 7 Incumbents' second lowest regulated rate per country



Source: NRAs, BEREC

Figure 8 Incumbents' third lowest regulated rate per country



Source: NRAs, BEREC

2.4. Average fixed termination revenue per country

Figure 9 illustrates the average revenue per minute from interconnection services across all layers and for all operators is reported, together with the simple average (horizontal line). The data refer to the entire year of 2018, unless otherwise stated in the notes of [Annex 2](#).

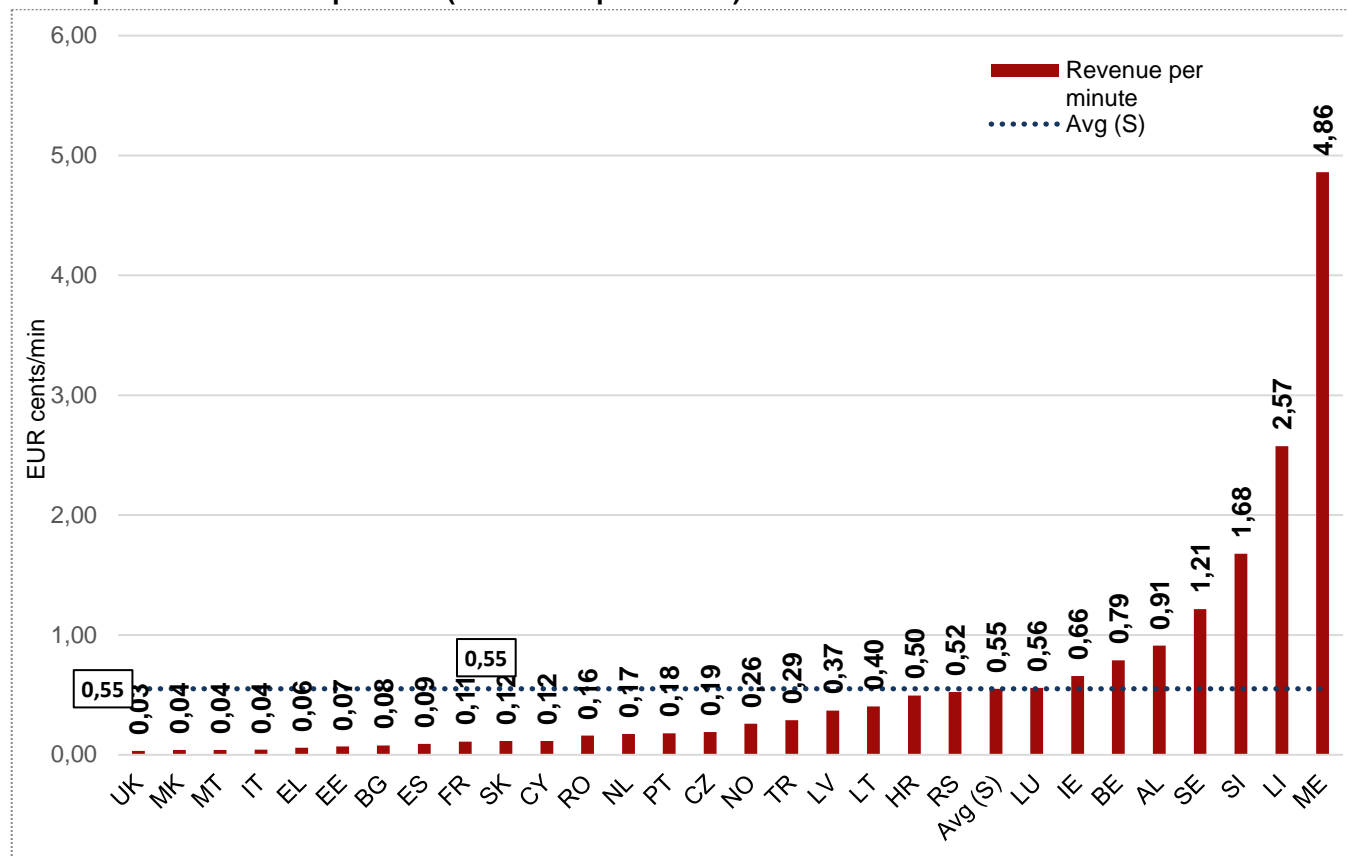
Note that the average revenues per minute provided are aggregated for each country to:

- 1) the different existing layers of interconnection,
- 2) the different operators (i.e.: incumbents and the rest), and
- 3) the different prices deriving from the peak /off-peak differentiation in a number of countries.

The comparison across countries of this average revenue has limitations, since each country may have a different distribution in usage across the different layers of interconnection and in the distribution between peak and off-peak traffic.

For more details please consult [Annex 2](#).

Figure 9 Average revenue per minute for all operators (EUR cents per minute)



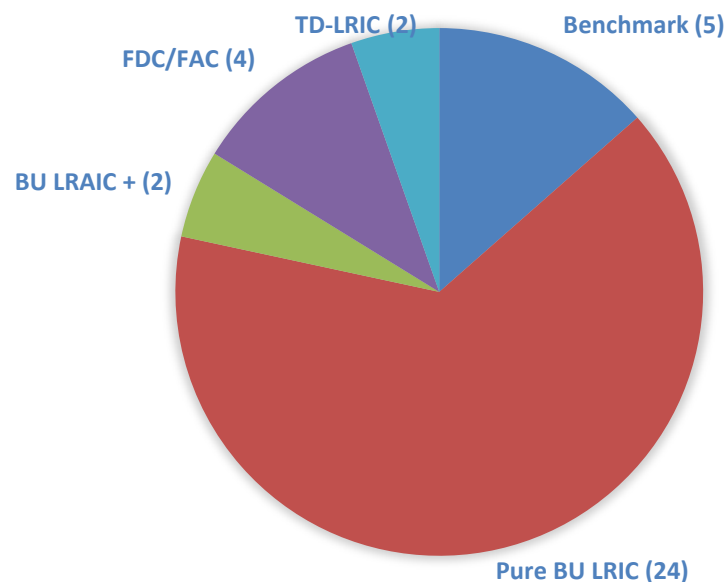
Source: NRAs, BEREC

2.5. FTR regulatory model implemented and symmetry overview

Most NRAs(24) use Pure BU LRIC models to set FTRs, while 5 NRAs use Benchmarking approaches and FDC/FAC is used by 4 NRAs. In addition 2 NRAs use LRIC and another 2 NRAs use BU LRAIC+.

For more information consult [Annex 3](#).

Figure 10 Cost accounting models for FTR used by NRAs

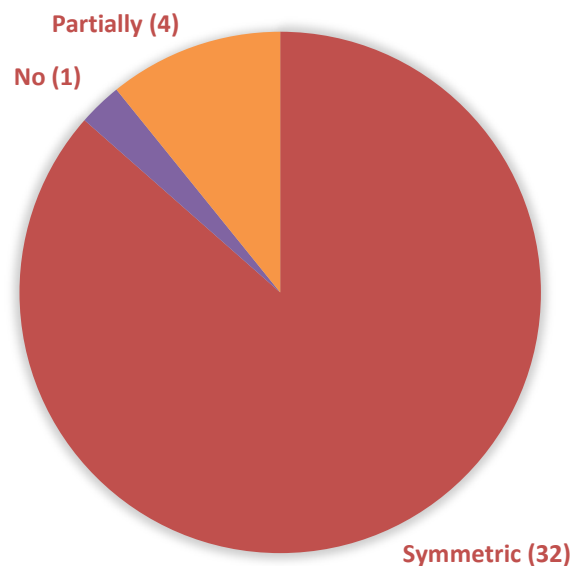


Source: NRAs, BEREC

According to the Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC), NRAs should set termination rates based on the costs incurred by an efficient operator. This implies that they would also be symmetric. The above figure shows compliance with the Recommendation in the case of 24 NRAs using Pure BU LRIC models, 5 NRAs are using Benchmarking while 4 of these NRAs are using Benchmarking based on Pure BU LRIC.

Furthermore, in most of the respondent countries (32), FTRs are symmetric across all operators. 4 NRAs reported partial symmetry while rates are not symmetric in only 1 of the reporting countries. In one of the cases, there is only one operator in the country, therefore, symmetry is not applicable.

Figure 11 FTRs Symmetry



Source: NRAs, BEREC

For more information, consult [Annex 4](#).

2.6. Number of lines and market shares

In [Annex 5](#) the number of active fixed telephony lines in the retail market is provided for each operator included in the report. For a number of countries this information is confidential.

3. Mobile networks – voice interconnection

This section presents the benchmark of mobile termination rates (MTR) with data as of 1 July 2019 and its recent evolution. The purpose of this comparison is to provide an indication of the level of MTRs across the NRAs, their variations and the cost models adopted for setting MTRs. Moreover, this benchmarking exercise includes a section devoted to the future evolution of MTRs⁴.

The present overview of MTRs is based upon the results of a request for information sent to all NRAs in July 2019. It includes data from thirty-seven (37) NRAs⁵.

3.1. Assumptions made for the benchmarking

For the present benchmarking exercise, the following assumptions have been made in order to make tariffs comparable⁶:

- Operators with a market share below 1,5% have been excluded from the national MTR average calculation.
- Only nominal tariffs are represented in the report, defining them as “the price (in cents/minute) set out by the regulator that represents the maximum price per minute which operators may charge each other (without any adjustment for purchasing power parity or real effects – inflation).”
- Average MTRs per country have been obtained by weighting the MTR of each operator by its market share, measured in terms of subscribers. Four general averages have been calculated: a simple average and a weighted average, each at the European level (including all 37 countries reporting data) and at EU level (including only the 28 EU member states). The weighted averages weight each country’s average rate with the share of the country’s subscribers (total subscribers per country / total subscribers in all countries).
- Regarding the number of subscribers, it must be considered that different estimation methods are used among European countries (especially in the case of pre-paid consumers. Mobile subscribers (active SIM cards) means 2G, 3G and 4G subscribers of a Mobile Network Operator or Mobile Virtual Network Operators. An active subscriber of mobile telephony means a subscriber of post-paid mobile telephony who has a valid contract, or a pre-paid subscriber who has made or received a call, sent an SMS or MMS or used data services at least once in the last 3 months. M2M, M2P and data-only SIMs cards should be excluded.⁷

Regarding the short-term MTR evolution (from January 2019 to July 2019), some variation may be a consequence of any of the following reasons:

- i. Modifications in the tariff structure (for instance, disappearance of the set-up charge or initial period);

4 See Annex 8 – Table 8

5 For IS and MK data is not updated in July 2019.

6 Generally speaking, these assumptions may create margins of error in the present comparison, making it difficult to draw valid conclusions for policy purposes.

7 Please note that due to a specification of the definition of mobile subscribers the number of total subscribers in some countries changed significantly compared to the previous reports.

- ii. Currency exchange rate variations in non-EUR countries⁸;
- iii. Changes in operators' market shares (e.g. due to a change in methodology in the calculation of subscriber rates) may have an effect on the average MTR for an individual country;
- iv. Inclusion of new operators that were not present in the previous benchmarks.

3.2. Average MTR per country: rates per voice minute (as of July 2019)

Table 1- Average MTR per country

Country	Average MT per country (EUR cents/min)
AL	0,9909
AT	0,8049
BE	0,9900
BG	0,7158
CH	2,7513
CY	0,4800
CZ	0,9655
DE	0,9500
DK	0,5156
EE	0,7800
EL	0,9460
ES	0,6700
FI	0,9300
FR	0,7400
HR	0,6336
HU	0,5295
IE	0,7900
IS*	0,6993
IT	0,9000
LI	2,5743
LT	0,9400
LU	0,8900
LV	0,8868
ME	0,7600
MK*	1,0245
MT	0,4045
NL	0,5810
NO	0,4425
PL	1,0018
PT	0,4000
RO	0,8400
RS	1,2122
SE	0,5500

⁸ This only affects short-term MTR evolution (figure 12) because the percentage of tariff variation in each country (figure 13) has been calculated by comparing rates expressed in terms of the national currency.

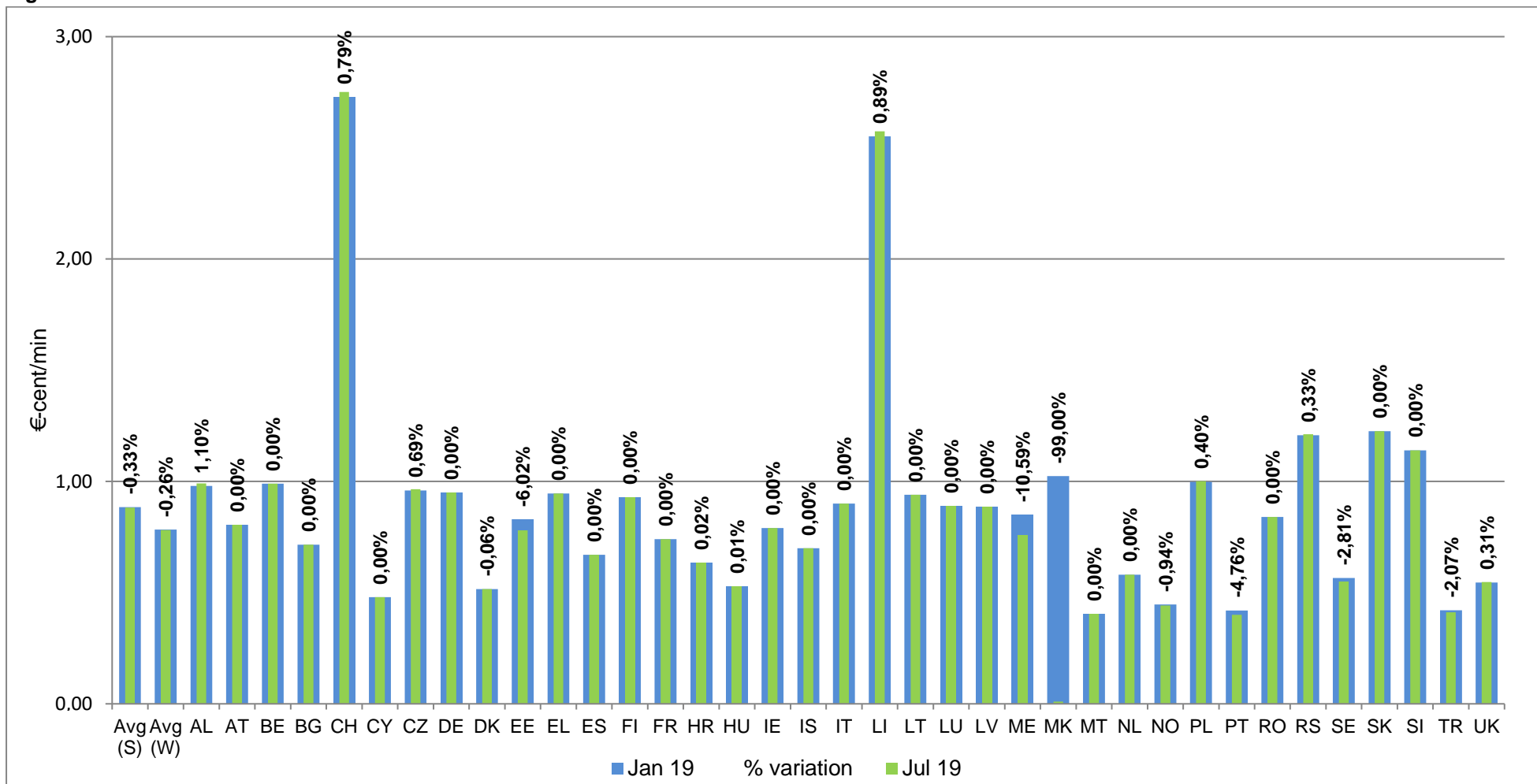
Country	Average MT per country (EUR cents/min)
SI	1,1400
SK	1,2260
TR	0,4118
UK	0,5476
Avg (S)	0,8815
Avg (W)	0,7804
EU Avg (S)	0,7767
EU Avg (W)	0,7926

*Data for IS, MK are not updated

Figure 12 shows the short term variations of MTRs in EUR. This figure illustrates the effect of the exchange rate on the short term evolution.

Variation of MTRs per country (from January 2019 to July 2019)

Figure 12 Variation in EUR cents and %



Source: NRAs, BEREC

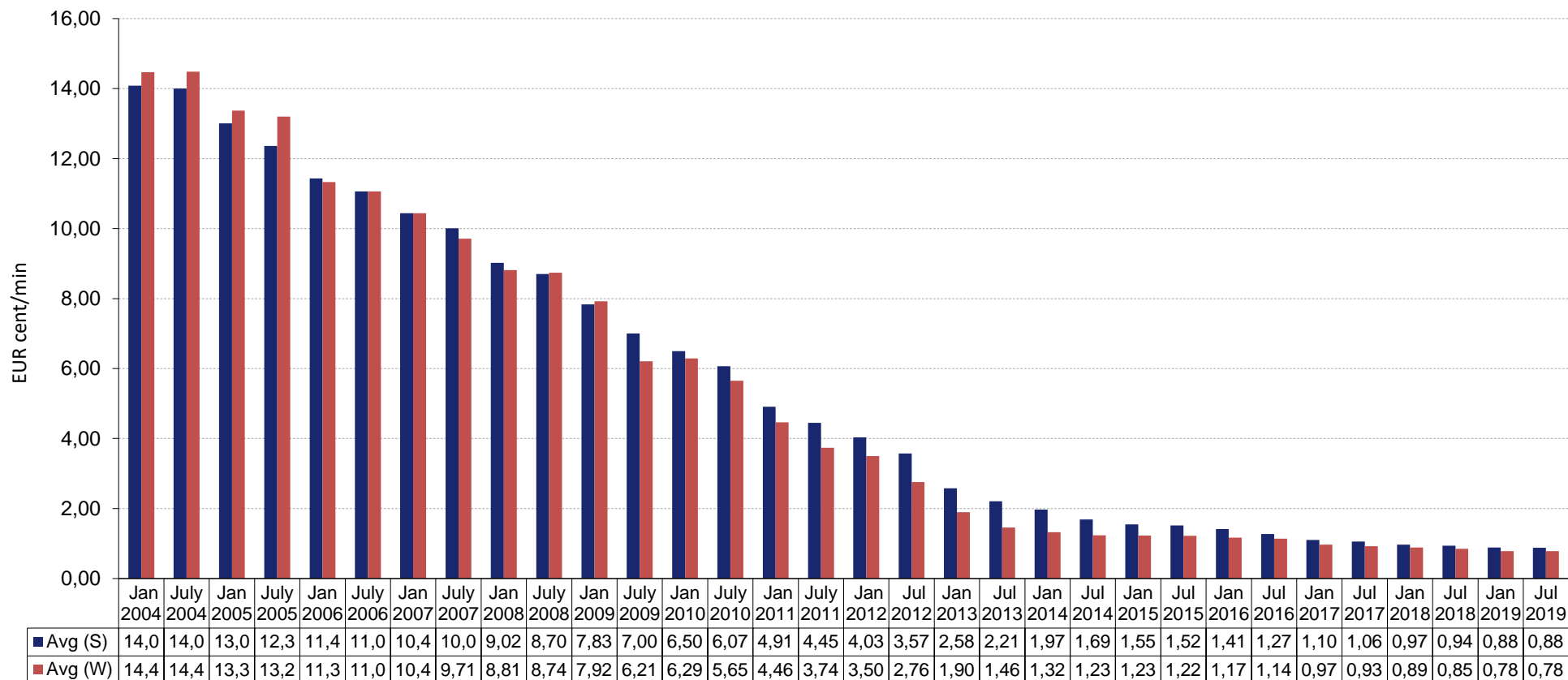
3.3. Average MTR per operator

There are a number of countries where information regarding number of subscribers and/or market share has been declared as confidential data and for this reason this report does not publish this data. Nevertheless, market shares have been taken into account for the average MTR calculations.

For further details see [Annex 6](#).

3.4. Average MTR: Time series of simple average and weighted average at European level

Figure 13 Evolution of simple and weighted averages

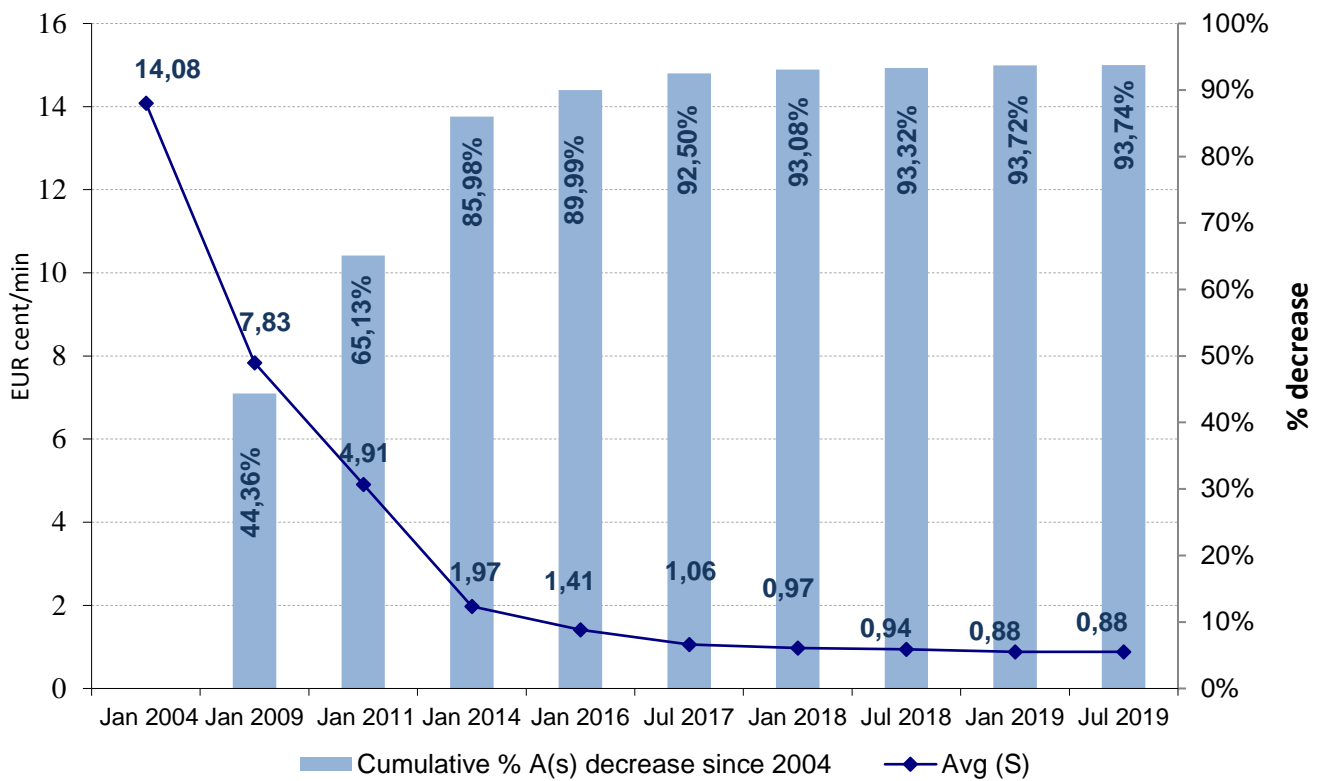


Source: NRAs, BEREC

Note to Figure 13: Averages are based on nominal rates per minute of service. The number of countries and operators considered has increased over the years, thus affecting the average slightly. Moreover, the Weighted Average does not take into account countries not providing the total number of subscribers and those that could have changed over the years. Considering these caveats, the graph shows the general trend.

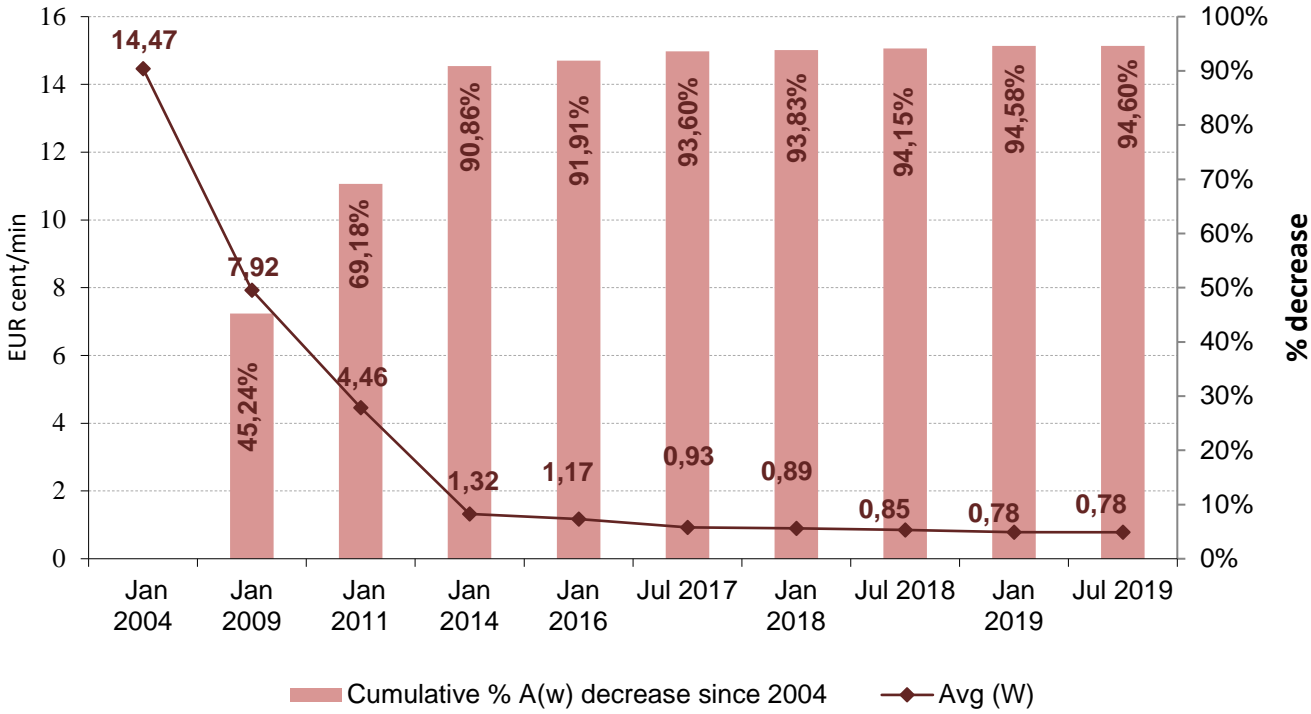
Figure 14 and Figure 15 show the cumulative declines of the simple and the weighted average of European MTRs since 2004. Considering the number of countries and operators included over the years, the simple average MTRs dropped by more than 93% since January 2004, from 14,08 EUR cents to 0,88 EUR cents in July 2019. When weighted, the average of European MTRs has declined even more, from 14,47 EUR cents to 0,78 EUR cents in the same period.

Figure 14 European MTRs simple average and cumulative decline



Source: NRAs, BEREC

Figure 15 European MTRs weighted average and cumulative decline



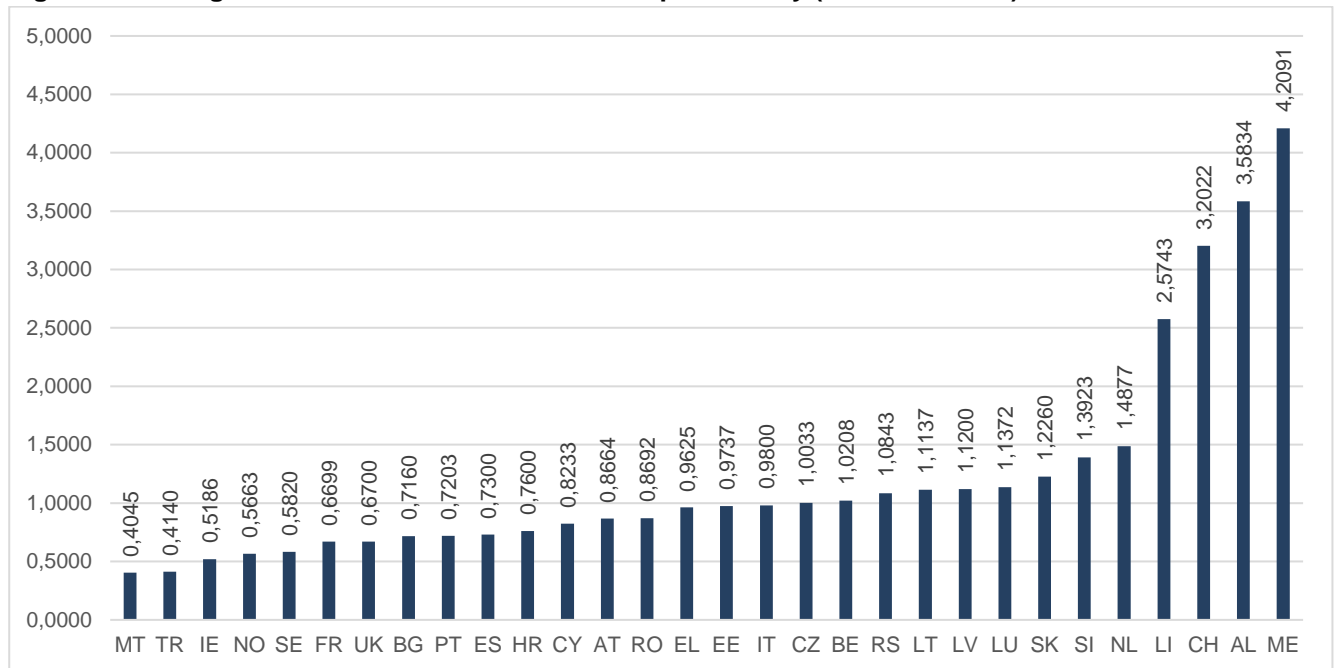
Source: NRAs, BEREC

3.5. Average mobile termination revenue per minute per country

The average wholesale termination revenue per minute (see Figure 16 below and Annex 7) is obtained as a ratio of total revenues from termination of voice services divided by the total number of minutes of termination provided by the operators. The data refer to the entire year of 2018, unless otherwise stated in the relevant notes.

Some countries do not collect information about termination revenues or treat this data as confidential. Those countries are not included in the Figure 16.

Figure 16 Average wholesale termination revenues per country (EUR cents/min)



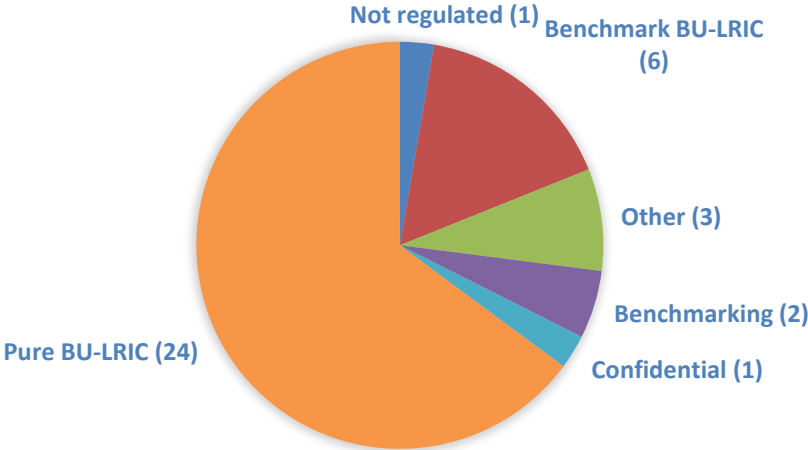
Source: NRAs, BEREC

For notes to Figure 16, see [Annex 7](#).

3.6. Regulatory model implemented and glide paths for MTRs

In the majority of countries BU LRIC models are used to calculate the MTRs. However, a significant number of NRAs base their price decision on Benchmarking. In one country (Switzerland) MTRs are not regulated.

Figure 17 Cost accounting models used by NRAs



Source: NRAs, BEREC

For further details, see [Annex 8](#) .

4. Mobile networks - SMS interconnection

The short message service (SMS) is widely deployed and supported by operators. This service is not regulated in most EU countries, but the evolution of wholesale SMS termination rates is monitored in most cases by NRAs.

The present SMS benchmark report bases its results on the data provided by NRAs as of July 2019. Thirty-four (34) countries provided data, but some NRAs – following national law provisions – asked to treat the SMS Termination Rates as confidential information.

The benchmark aims at keeping track of the main trends in wholesale SMS TRs in Europe. The scope of the report is limited to describe termination prices at national level (no international SMS TR are therefore considered⁹).

4.1. Assumptions made for the benchmarking

The SMS TRs collected in this report reflect wholesale rates applied among domestic operators for an off-net SMS exchange, excluding VAT. They may diverge from the “average revenue from an SMS at wholesale level”.

In this report SMS TRs are presented for each country as a whole. In some countries, SMS wholesale rates are considered to be confidential information.

The following characteristics of SMS TRs make the collection and comparison of data more straightforward (as compared to the exercise of benchmarking the FTRs and the MTRs):

- No countries differentiate between peak time, off-peak time and weekend hours;
- The price for SMS termination is related to each delivered domestic off-net SMS; therefore, no assumption is necessary about set-up charges or average call durations. Slovenia is the only country where “Bill & Keep” agreements are in place for traffic between all domestic operators.
- Regarding the number of subscribers, it must be considered that different estimation methods are used among European countries (especially in the case of pre-paid consumers, but also in the case of services considered, some countries are including data-only SIM cards and/or M2M SIM cards).

On the other hand, and due to the generally unregulated environment existing for SMS TRs in most European countries, there is a high degree of bilateral negotiation among operators. Therefore, some peculiarities in setting SMS TRs could emerge and require additional assumptions (as compared to the exercise of benchmarking the FTRs and the MTRs):

- In Slovakia operators have bilateral contract agreements implying different rates depending on the volume of SMS sent across the two networks. These non-linear relationships imply different average rates depending on the volume of SMS exchanged. In this case, the highest SMS TR value is reported. See more details in Table 2 (subsection 4.2).

⁹ International SMS TRs in most European countries are also based on bilateral negotiations among operators, which generally result in higher levels than the domestic rates that are reflected in this report.

- Additionally, in some countries operators¹⁰ negotiate different SMS TRs vis-à-vis each one of the other operators. In this case, the highest and the lowest SMS TR is reported. See more details in Table 2 (subsection 4.2).

A simple average European level has been calculated as average value of the SMS TRs among European countries¹¹. Since not all countries report complete sets of data, no other calculations are made.

For non-Euro countries, the exchange rates reported in the [Annex 10](#) are used.

For more information, consult [Annex 9](#): SMS TR per country.

¹⁰ CH, CY, ES, IT, LI, LT, and MT.

¹¹ Except CH, CY, ES, IT, LI, LT, and MT, because of different SMS TRs among different operators within the country.

4.2. SMS TRs per country (as of July 2019)

Table 2- SMS TRs per country

Country	SMS TR per country (EUR cents)
AL	0,8094
AT	2,5129
BE	4,9600
BG	Confidential
CH	Confidential
CY	0,5500 (min); 0,7300 (max)
CZ	Confidential
DE	N/A
DK	N/A
EE	2,6000
EL	Confidential
ES	2,3684 (min); 3,0000 (max)
FI	N/A
FR	1,0000
HR	N/A
HU	Confidential
IE	3,1700
IS *	3,3460
IT	3,1237
LI	0 (min); 7,9893 (max)
LT	0 (min); 0,0145 (max)
LU	N/A
LV	2,1300
ME	1,0000
MK*	0,4867
MT	1,8100 (min); 2,7200 (max)
NL	N/A
NO	3,6014
PL	1,1676
PT	Confidential
RO	2,3
RS	1,6954
SE	N/A
SI	B&K
SK	2,5000
TR	0,0669
UK	Confidential
Average (S)	2,3574

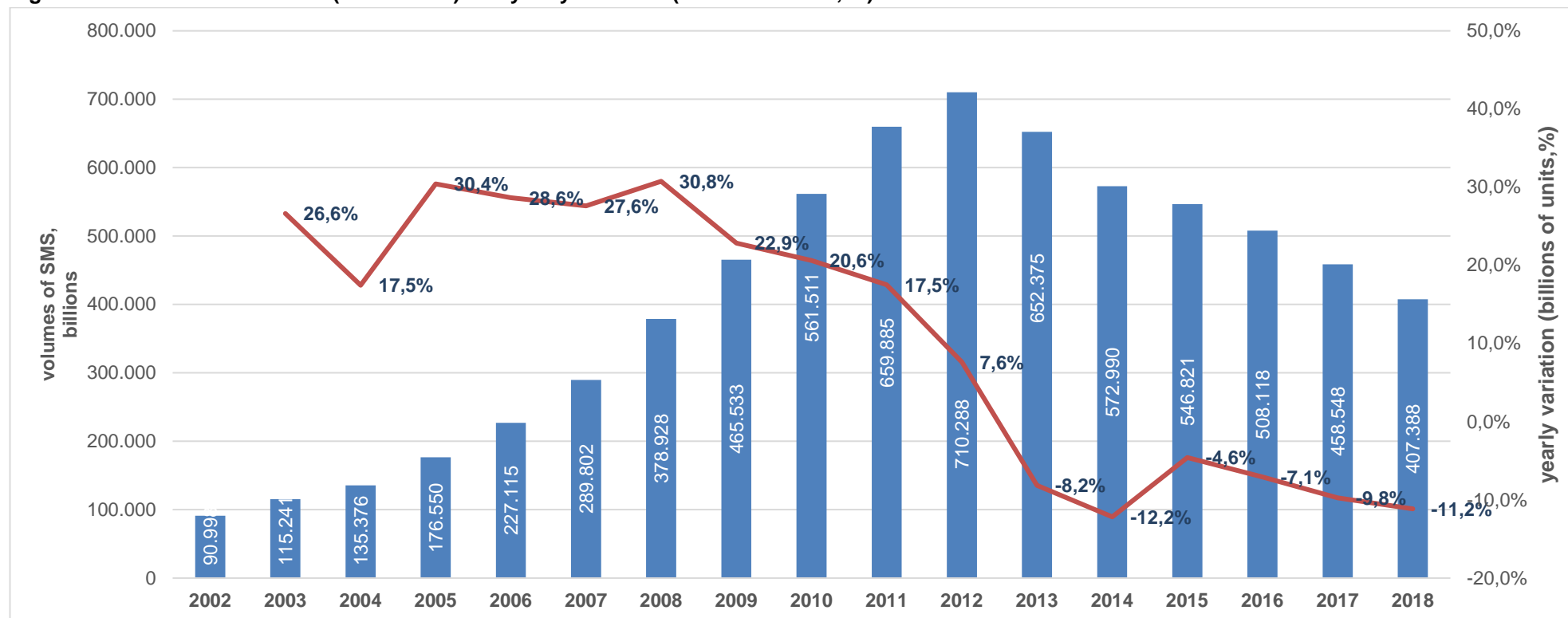
* Not updated

Source: NRAs, BEREC

4.3. Volumes of SMS sent

Figure 18 provides information on the evolution of volume of SMS sent since 2002 and is based on the time series of the countries from which information was available from 2002 to 2018. For each reporting year there are some countries which didn't provide data.

Figure 18 Volumes of SMS sent (2002 - 2018) and yearly variation (billions of units, %)



Source: NRAs, BEREC

Annex¹²

Annex 1 Fixed termination rates as of 1 July 2019

Table 3

Country	Operator	Lowest Regulated Rate	WA in EUR cents
AL	Albtelecom	Single-rate	0,8094
	Abcom	Single-rate	0,8094
	Albanian Satellite Communications	Single-rate	0,8094
	Rest of operators	Single-rate	0,8094
AT	A1 Telekom Austria	Single-rate	0,1110
	Operator 2	Single-rate	0,1110
	Operator 3	Single-rate	0,1110
	Operator 4	Single-rate	0,1110
	Operator 5	Single-rate	0,1110
	Operator 6	Single-rate	0,1110
	Rest of operators	Single-rate	0,1110
BE	Proximus	Single-rate	0,1160
	Rest of operators	Single-rate	0,1160
BG	Bulgarian Telecommunication Company (BTC)	Single-rate	0,0716
	A1 Bulgaria	Single-rate	0,0716
	Telenor Bulgaria	Single-rate	0,0716
CH	Swisscom	LRR	0,4982
	Swisscom	2nd LRR	0,5982
CY	Cyta	Single-rate	0,0460
	Primetel	Single-rate	0,0460
	Cablenet	Single-rate	0,0460
	Epic	Single-rate	0,0460
CZ	Česká telekomunikační infrastruktura a.s.	Single-rate	0,1285
	UPC Česká republika, s.r.o.	Single-rate	0,1285
	Vodafone Czech Republic a.s.	Single-rate	0,1285
	T-Mobile Czech Republic a.s.	Single-rate	0,1285
	IPEX a.s.	Single-rate	0,1285
	Nej.cz s.r.o.	Single-rate	0,1285
DE	Telekom Deutschland GmbH	Single-rate	0,0800
DK	TDC	Single-rate	0,0549
	Telia	Single-rate	0,0549
	Telenor	Single-rate	0,0549

12 For a Decimal separator in the tables is used comma to separate whole numbers from decimals and a point is used to indicate thousands in whole numbers. More information: <http://publications.europa.eu/code/en/en-360500.htm>

Country	Operator	Lowest Regulated Rate	WA in EUR cents
EE	Telia Eesti AS	Single-rate	0,0890
	STV	Single-rate	0,0890
	Elisa	Single-rate	0,0890
EL	OTE	Single-rate	0,0545
	FORTHNET	Single-rate	0,0545
	VODAFONE	Single-rate	0,0545
	WIND	Single-rate	0,0545
ES	Telefónica de España	Single-rate	0,0817
	Vodafone - Ono	Single-rate	0,0817
	Orange	Single-rate	0,0817
	Grupo MASMOVIL	Single-rate	0,0817
	Euskaltel	Single-rate	0,0817
	Rest of operators	Single-rate	0,0817
FI	DNA Oyj	Single-rate	2,8000
	Elisa Oyj	Single-rate	2,8000
	TeliaFinland Oyj	Single-rate	2,8000
	Rest of operators	Single-rate	3,2000
	Weighted average of all operators	Average	2,8900
FR	All operators	Single-rate	0,0770
HR	HT	Single-rate	0,1003
	OPTIMA	Single-rate	0,1035
	A1	Single-rate	0,1005
HU	Magyar Telekom	Single-rate	0,0805
	Digi	Single-rate	0,0805
	UPC	Single-rate	0,0805
	Rest of operators	Single-rate	0,0805
IE	Eir	Single-rate	0,0720
	Virgin Media	Single-rate	0,0720
IS*	Siminn	Single-rate	0,0874
	Vodafone	Single-rate	0,0874
IT	Telecom Italia	Single-rate	0,0410
	Vodafone	Single-rate	0,0410
	Wind Tre	Single-rate	0,0410
	Fastweb	Single-rate	0,0410
	Linkem	Single-rate	0,0410
	Tiscali	Single-rate	0,0410
	Rest of operators	Single-rate	0,0410
LT	Telia Lietuva, AB	Single-rate	0,0900
	UAB „CSC Telecom“	Single-rate	0,0900
	AB Lietuvos gelezinkeliai	Single-rate	0,0900
LI	Telecom Liechtenstein AG	Single-rate	2,5743

Country	Operator	Lowest Regulated Rate	WA in EUR cents
LU	Post	Single-rate	0,1380
	Proximus S.A.	Single-rate	0,1380
	Luxembourg Online S.A.	Single-rate	0,1380
	Rest of operators	Single-rate	0,1380
LV	Tet (ex. Lattelecom)	Single-rate	0,0960
	Latvijas Mobilais Telefons	Single-rate	0,0960
	CSC Telecom	Single-rate	0,0960
	D-COM	Single-rate	0,0960
	Rest of operators	Single-rate	0,0956
ME	Crnogorski Telekom	Single-rate	0,5800
	Mtel	Single-rate	0,5800
	Telenor	Single-rate	0,5800
	Telemach	Single-rate	0,5800
MT	Go plc	Single-rate	0,0443
	Melita plc	Single-rate	0,0443
	Vodafone Malta Ltd	Single-rate	0,0443
	Ozone	Single-rate	0,0443
	Vanilla Telecoms Ltd	Single-rate	0,0443
MK	Makedonski Telekom	Single-rate	0,5800
	One.VIP	Single-rate	0,5800
	Robi	Single-rate	0,5800
NL	KPN	Single-rate	0,1390
	Ziggo	Single-rate	0,1390
	T-Mobile/Tele2	Single-rate	0,1390
NO	Telenor	Single-rate	0,0500
	Telia	Single-rate	0,0500
	Altibox	Single-rate	0,0500
	Nextgentel	Single-rate	0,0500
	Rest of operators	Single-rate	0,0500
PL	Orange Polska S.A.	Single-rate	0,4787
	Orange Polska S.A.	2nd LRR	0,5686
	Orange Polska S.A.	3rd LRR	0,8372
	UPC Polska Sp. z o.o.	2nd LRR	0,4787
	Netia S.A.	Single-rate	0,4787
	Multimedia Polska S.A.	2nd LRR	0,5079
PT	MEO	Single-rate	0,0470
	NOS Group	Single-rate	0,0470
	Vodafone	Single-rate	0,0470
	ONI/NOWO	Single-rate	0,0470
	Rest of operators	Single-rate	0,0470
RO	Telekom RC S.A.	Single-rate	0,1400

Country	Operator	Lowest Regulated Rate	WA in EUR cents
	S.C. RCS&RDS S.A.	Single-rate	0,1400
	S.C. UPC Romania S.R.L.	Single-rate	0,1400
	S.C. VODAFONE ROMANIA S.A.	Single-rate	0,1400
RS	Telekom Srbija	LRR	0,4832
	Telekom Srbija	2nd LRR	0,5680
	Telekom Srbija	3rd LRR	0,6358
	Orion	Single-rate	0,5256
	Telenor	Single-rate	0,5256
	SBB	Single-rate	0,5256
SE	Telia Company AB	LRR	0,0273
	Telia Company AB	2nd LRR	0,0565
	Com Hem AB	LRR	0,0273
	Tele2 Sverige AB	LRR	0,0273
	Telenor Sverige AB	LRR	0,0273
	Telavox AB	LRR	0,0273
SI	Telekom Slovenije	Single-rate	0,0876
	Telemach	Single-rate	0,0876
	T-2	Single-rate	0,0876
	A1 Slovenija	Single-rate	0,0876
SK	Slovak Telekom a.s.	Single-rate	0,0976
	Orange Slovensko a.s.	Single-rate	0,0976
	UPC Broadband Slovakia s.r.o.	Single-rate	0,0976
	SWAN, a.s.	Single-rate	0,0976
TR	Türk Telekom	LRR	0,2163
	Türk Telekom	2nd LRR	0,2661
	Türk Telekom	3rd LRR	0,3485
	TTNet	Single-rate	0,4979
	Türksat	Single-rate	0,4979
	Superonline	Single-rate	0,4979
	Rest of operators	Single-rate	0,4979
UK	BT	Single-rate	0,0351
	TalkTalk	Single-rate	0,0351
	Sky	Single-rate	0,0351
	Virgin Media	Single-rate	0,0351
	Vodafone	Single-rate	0,0351

*Figures not updated for IS.

Notes to table 3:

Incumbents are indicated first in the table

AL: Market analysis and SMP decisions for fixed call termination for the incumbent and 67 other fixed network operators on 1.10.2018 imposed the regulation of FTRs through benchmarking methodology and a glide path (1.12.2018 AKEP's decision): symmetrical FTRs starting from 1.1.2016 and only one single layer FTR to be applied from the incumbent and the other FNOs; the FTR (one single rate) to be applied from 1.1.2018 was calculated by AKEP as the simple average of FTRs in BEREC countries with one layer interconnection as of 1.7.2017.

BE: The second lowest regulated rate is identical to the 1st LRR in Belgium.

BG: With Decision 550 from 20 October 2016 CRC approved cost-oriented fixed terminating rates based on Pure Bu-LRIC model as follows:

from 1.11.2016 - 0,0015 BGN/minute

from 1.1.2017 - 0,0015 BGN/minute

from 1.1.2018 - 0,0015 BGN/minute

from 1.1.2019 - 0,0014 BGN/minute

from 1.1.2020 - 0,0014 BGN/minute

According to CRC Decision No 356 of 23 June 2016, all operators on the fixed termination market are obliged to offer IP interconnection. Until the successful migration to IP interconnection, the TDM interconnection is maintained in order to ensure the interconnection.

CH: The prices indicated are taken from the Swisscom price manual for TDM-Interconnection. For IP-Interconnection the same prices as the ones for regional TDM-interconnection (LRR) apply. Furthermore, there exists a "clause of reciprocity", meaning that the tariffs of other operators have to be same as the ones of Swisscom.

CY: No peak and off-peak separation of rates.

DE: Following Phase II proceedings by the European Commission (concerning the Benchmark adjustment of the rate calculated in the German pure LRIC cost model) BNetzA notified in May 2019 the following glide path for fixed termination rates of incumbent Telekom Deutschland and 67 alternative network operators:

0,08 EUR cents/min in 2019;

0,06 EUR cents/min in 2020;

0,05 EUR cents/min in 2021;

0,03 EUR cents/min in 2022.

Rates will thus arrive at the level of the German pure LRIC cost model by 2022.

IE: Due to ComReg Decision D11/19 the max. FTR changed to 0,063 EUR cents/min on 1.8.2019.

LT: FTR is set as 0,09 EUR cents/min since 1 st of July 2019.

TR: In Turkey, there is no differentiation in fixed termination rates such as peak and off-peak.

Annex 2 Average fixed termination revenue per country

Notes to figure 9

BG: No FTRs differentiation between peak/off-peak or interconnection levels. The traffic that is outside of the scope of regulation is not included in the questionnaire.

CH: This data has not been collected.

CZ: Revenues and volumes are in thousands of units (CZK and minutes).

DE: Revenues are not regulated in Germany and are therefore not available.

DK: The DBA do not collect revenues from termination.

FI: Data not available (not collected on detailed level)

FR: 1 - FTRs for calls coming from abroad are not taken into account in the figures provided. There are only national FTRs.

2 - Final figures for 2018 will not be available before December 2019: the figures provided are an estimate based on quarterly scorecards and previous annual scorecards.

3 - Revenues take into account other elements such as link rental, provision of services related to call termination.

HR: In Croatia, HT switched to IP interconnections and it has access points in two regions.

HU: Not available.

IE: Total includes termination of calls to end users and service providers for all of 2018.

LU: Revenues are total revenues (no IX layers apply) and they include revenues from traffic from abroad (international traffic). These revenues may include non termination related revenues like revenues from the transport of calls.

ME: Data for National FTR are for calls originated from national (fixed and mobile) operators and from abroad. FTR for calls that are originated from abroad are not regulated and different from FTR for calls that originated from national operators.

NO: The FTR has been NOK 0,006 from 1st April 2016. From 1st July 2019 the FTR has been NOK 0,005. When calculating the average FTR based on revenue and minutes we got a higher TR. One of the reasons why the result is above the regulated TR is that FTR revenue and FTR minutes also includes traffic terminated in non-geographical numbers. Price cap regulation is only imposed on geographical numbers.

PT: Data not available by National/Regional/Local. Total FTR minutes also includes international traffic originated outside EEA which is not subject to price control obligation. This is the reason that justifies average revenues per minute higher than the maximum regulated value for EEA traffic.

RS: Data provided are for 2018 and includes only national fixed-to-fixed and mobile-to-fixed calls. Revenue and traffic do not include self-supply and do not include calls when both the the fixed and the mobile network are owned and run by the same operator.

SI: Including international termination. The prices for incoming calls from Non-EU international networks are not regulated, therefore the average revenue per minute is higher than regulated prices. Self supply is not included!

SK: The total FTR revenue consists of two levels of regulated price cap. The previous FTR rate 0,001234 EUR/min was valid till 31.8.2018 and than a new price decision was issued valid from 1.9.2018 with FTR at the level of 0,000976 EUR/min.

Annex 3 FTR regulatory cost accounting model implemented

Table 4

Country	COST ACCOUNTING MODEL
AL	Benchmark (Other)
AT	Pure BU LRIC
BE	Pure BU LRIC
BG	Pure BU LRIC
CH	BU LRAIC +
CY	Pure BU LRIC
CZ	Pure BU LRIC
DE	Benchmark (Pure BU LRIC)
DK	Pure BU LRIC
EE	Benchmark (Pure BU LRIC)
EL	Pure BU LRIC
ES	Pure BU LRIC
FI	FDC
FR	Pure BU LRIC
HR	Pure BU LRIC
HU	Pure BU LRIC
IE	Pure BU LRIC
IS	Benchmark (Pure BU LRIC)
IT	Pure BU LRIC
LI	FDC/FAC
LT	Pure BU LRIC
LU	Pure BU LRIC
LV	Benchmark (Pure BU LRIC)
ME	TD LRIC
MT	Pure BU LRIC
MK	TD LRIC
NL	Pure BU LRIC
NO	Pure BU LRIC
PL	TD-FDC/FAC
PT	Pure BU LRIC
RO	Pure BU LRIC
RS	TD-FAC-CCA
SE	Pure BU LRIC
SI	Pure BU LRIC
SK	Pure BU LRIC
TR	Confidential

Country	COST ACCOUNTING MODEL
UK	Pure BU LRIC

Notes to table 4:

BE: Number of access channels to the fixed telephone network at the 1st of January 2019.

CH: Source of the Swisscom-Tariffs:

https://www.swisscom.ch/dam/swisscom/de/ws/documents/D_IC-Dokumente/de_handbuch-preiseicv1-19.pdf, p.11 and https://www.swisscom.ch/dam/swisscom/de/ws/documents/D_IC-Dokumente/voip-ic/de_voip_ic_handbuch-preise2-3.pdf, p. 7.

DE: The calculation of rates is based on a pure LRIC cost model, adjusted by benchmarking with other European countries that use pure LRIC.

EL: A Pure BU LRIC model applies since 28.5.2014 as a result of EETT's decision 714/09/10-4-2014 (Official Gazette 1049/28-04-2014). Since we are in the process to conduct a new market analysis, the rate as of 1.1.2019 will be applicable until the adoption of the new decision.

FI: Market shares as of 1.1.2019. Volumes are confidential. In Finland there are no (ex ante) price caps on FTRs. FNOs have cost-oriented pricing obligation. The obligation is monitored ex post.

LI: FTR regulation is not finalized.

Current FTR cap was decided in 2007. Market analysis and remedies M3 decided in 2010. New FTR decision expected in 2018, based on TD-FDC and Benchmarking. (EFTA Surveillance Authority Recommendation of 13 April 2011 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EFTA States).

LT: Rates of termination on alternative fixed networks should not be higher than rates applied by Telia Lietuva, AB at particular network level. No differentiation between peak and off peak. Since 1st of July 2019 the calculation of rates has been based on a pure LRIC cost model, adjusted by benchmarking with other European countries that use pure LRIC.

LU: Règlement 16/209/ILR du 28 novembre 2016 portant sur la fixation des plafonds tarifaires pour les prestations de la terminaison d'appel sur divers réseaux téléphoniques publics individuels en position déterminée (Marché 1/2014)

ME: Current FTR are regulated according to the TD LRIC costing methodology. Incumbent operator Crnogorski Telekom had developed TD LRIC cost model, and NRA approved results every year. Other SMP operators apply symmetrical FTR.

SE: 0,29 refers to single segment (within an interconnection area) and 0,60 to double segment (between interconnection areas). All FTRs are applicable to all terminating operators.

SK: Ru has not used any glide path.

UK: Rates have been set on a BU LRIC basis since 1.1.2014

Annex 4 FTR symmetry

The following table emphasises the level of **symmetry** among the operators when interconnection in fixed networks is offered. The information below is directly reported by each NRA explaining its particular situation.

Table 5

Country	Symmetry	Comments
AL	Yes	
AT	Yes	Full symmetry
BE	Yes	
BG	Yes	
CH	Yes	Symmetry is ensured on the basis of geographical coverage from a certain point of interconnection (e.g. regional termination is priced the same both ways regardless of actual network hierarchy). Symmetry is evaluated on the basis of the average FTR (i.e. pricing flexibility is left for operators).
CY	Yes	Yes, the same single regulated termination rate applies for all providers
CZ	Yes	
DE	Yes	Tariffs are symmetrical because of contractual agreements between incumbent Telekom Deutschland and alternative fixed network operators to charge reciprocal tariffs
DK	Yes	Same FTR apply to all price regulated operators, cf. market decisions as of 2.6.2017.
EE	Yes	Same FTR applies for 13 operators with SMP.
EL	Yes	
ES	Yes	
FI	Yes	In Finland there are no price caps on FTRs. Three biggest SMP-operators (DNA, Elisa and Telia) applies same prices (2,8 EUR cents/min). Rest of the SMP-operators price is 3,2 EUR cents/min.
FR	Yes	
HR	Yes	Symmetry in fixed network is prescribed for all operators as of the 1.1.2013
HU	Yes	
IE	Yes	FTRs are symmetrical based on interconnection at primary exchange level. Interconnection at higher levels in the network could result in transit fees.
IS	Yes	
IT	Yes	
LI	N/A	There is only one FNO in Liechtenstein: Telecom Liechtenstein AG. Fixed net interconnection partners of Telecom Liechtenstein are regulated by other NRAs and are not obliged to apply Liechtenstein's FTR regulation
LT	Yes	FTRs of all fixed operators having SMP, are symmetrical, i.e. FTRs are the same despite number of customers, difference in network topologies, level of interconnection, and so on
LU	Partially	A maximal price cap is defined by the regulation, but operators may implement the solution in their own way
LV	Yes	
ME	Yes	

Country	Symmetry	Comments
MT	Yes	Due to national characteristics interconnection is at layer 1. The FTR charge applicable to all those operators having an SMP in the wholesale fixed termination market is on a symmetrical basis
MK	Yes	
NL	Yes	Same FTR rate for all operators
NO	Yes	
PL	Partially	
PT	Yes	Prices applied by operators with SMP in the wholesale markets for call termination on the public telephone network at a fixed location must be symmetrical.
RO	Yes	Symmetric FTRs irrespective of interconnection level
RS	Partially	Operators have different topology and different number of the levels of interconnection. Telekom Serbia have three levels of interconnection. Other operators have one level of interconnection
SE	Yes	
SI	Yes	Based on national coverage of layer.
SK	Yes	The FTR is non-discriminatory for all operators without any exception
TR	No	
UK	Yes	

Annex 5 Number of active fixed telephony lines and Market shares

Table 6

Country	Operator	Number of lines	Total number of lines	Market share
AL	Albtelecom	177.800	250.260	71,05%
	Abcom	12.080		4,83%
	Albanian Satellite Communications	39.342		15,72%
	Rest of operators	21.038		8,41%
AT	A1 Telekom Austria	1.866.320	3.144.944	59,34%
	Operator 2	553.988		17,62%
	Operator 3	408.659		12,99%
	Operator 4	65.600		2,09%
	Operator 5	59.826		1,90%
	Operator 6	32.082		1,02%
	Rest of operators	158.469		5,04%
BE	Proximus	2.452.546	4.105.557	59,74%
	Rest of operators	1.653.011		40,26%
BG	Bulgarian Telecommunication Company	Confidential	1.122.468	Confidential
	A1 Bulgaria	Confidential		Confidential
	Telenor Bulgaria	Confidential		Confidential
	Rest of operators	64.661		5,76%
CH	Swisscom	N/A	N/A	N/A
CY	Cyta	206.601	310.899	66,45%
	Primetel	46.731		15,04%
	Cablenet	33.527		10,78%
	Epic	24.040		7,73%
CZ	Česká telekomunikační infrastruktura a.s.	Confidential	Confidential	39,48%
	UPC Česká republika, s.r.o.	Confidential		12,88%
	Vodafone Czech Republic a.s.	Confidential		4,38%
	T-Mobile Czech Republic a.s.	Confidential		7,36%
	IPEX a.s.	Confidential		4,15%
	Nej.cz s.r.o.	Confidential		2,89%
	Rest of operators	Confidential		28,85%
DE	Telekom Deutschland GmbH	18.740.000	38.820.000	48,27%
	Rest of operators	20.080.000		51,73%

Country	Operator	Number of lines	Total number of lines	Market share
DK	TDC	388.736	508.387	76,5%
	Telia	37.298		7,3%
	Telenor	62.285		12,3%
	Rest of operators	20.068		3,90%
EE	Telia	283.129	330.911	85,6%
	Elisa	10.895		3,3%
	Elisa Teleteenused	25.078		7,6%
	STV	11.809		3,57%
EL	OTE	2.656.256	4.753.479	55,88%
	FORTHNET	Confidential		Confidential
	VODAFONE	Confidential		Confidential
	WIND	Confidential		Confidential
ES	Telefónica de España	8.938.811	19.579.538	45,65%
	Vodafone - ONO	4.461.416		22,79%
	Orange	4.017.671		20,52%
	Grupo MASMOVIL	1.095.485		5,60%
	Euskaltel	782.328		4,00%
	Rest of operators	283.827		1,45%
FI	DNA Oyj	Confidential	323.000	Confidential
	Elisa Oyj	Confidential		Confidential
	Telia Finland Oyj	Confidential		Confidential
	Rest of operators	Confidential		Confidential
FR		N/A	N/A	N/A
HR	HT	Confidential	1.342.564	Confidential
	OPTIMA	Confidential		Confidential
	A1	Confidential		Confidential
	Rest of operators	Confidential		Confidential
HU	Magyar Telekom	1.485.011	3.072.000	48,34%
	DIGI	696.881		22,68%
	UPC	638.925		20,80%
	Rest of operators	251.183		8,18%
IE	Eir	565.024	1.297.376	43,55%
	Virgin Media	345.940		26,66%
	Vodafone	194.408		14,98%
	Sky	192.004		14,80%
IS*	Siminn	80.073	128.056	62,53%
	Vodafone	47.983		37,47%
IT	Telecom Italia	10.150.938	20.214.188	50,22%
	Vodafone	2.833.204		14,02%
	Wind Tre	2.677.187		13,24%

Country	Operator	Number of lines	Total number of lines	Market share
	Fastweb	2.620.938		12,97%
	Linkem	593.148		2,93%
	Tiscali Italia	422.217		2,09%
	Rest of operators	916.556		4,53%
LI	Telecom Liechtenstein AG	20.374	20.374	100,00%
LT	Telia Lietuva, AB	321.817	377.119	85,34%
	UAB „CSC Telecom“	17.893		4,74%
	AB Lietuvos gelezinkeliai	3.766		1,00%
	Rest of operators	33.643		8,92%
LU	Post	182.500	273.460	66,74%
	Proximus S.A.	37.760		13,81%
	Luxembourg Online S.A.	16.600		6,07%
	Rest of operators	36.600		13,38%
LV	Tet (ex. Lattelecom)	124.712	254.241	49,05%
	Latvijas Mobilais Telefons	41.119		16,17%
	CSC TELECOM	12.607		4,96%
	D-COM	11.510		4,53%
	Rest of operators	64.293		25,29%
ME	Crnogorski Telekom	110.851	181.782	60,98%
	Mtel	54.923		30,21%
	Telenor	1.844		1,01%
	Telemach	14.164		7,79%
MK*	Makedonski Telekom	210.333	375.441	56,02%
	One.VIP	126.387		33,66%
	Robi	23.805		6,34%
	Rest of operators	14.916		3,97%
MT	Go plc	157.656	269.286	58,55%
	Melita plc	86.779		32,23%
	Vodafone Malta Ltd	19.651		7,30%
	Ozone	729		0,27%
	Vanilla Telecoms Ltd	4.470		1,66%
NL	KPN	2.857.695	5.999.273	47,63%
	Vodafone/Ziggo	2.503.680		41,73%
	T-Mobile/Tele2	637.898		10,63%
NO	Telenor	350.216	563.250	62,18%
	NextGenTel	76.913		13,66%

Country	Operator	Number of lines	Total number of lines	Market share
	Get	58.112		10,32%
	Telia	36.843		6,54%
	Rest of operators	41.166		7,31%
PL	Orange Polska S.A.	Confidential	4.098.701	Confidential
	Netia S.A.	Confidential		Confidential
	Multimedia Polska S.A.	Confidential		Confidential
	Multimedia Polska Poludnie S.A.	Confidential		Confidential
	Rest of operators	Confidential		Confidential
PT	MEO (incumbent)	Confidential	5.071.203	44,84%
	NOS Group	Confidential		33,99%
	Vodafone	Confidential		17,02%
	ONI/NOWO	Confidential		3,53%
	Rest of operators	Confidential		0,61%
RO	Telekom RC S.A.	Confidential	3.499.859	Confidential
	S.C. RCS&RDS S.A.	Confidential		Confidential
	S.C. UPC Romania S.R.L.	Confidential		Confidential
	S.C. VODAFONE ROMANIA S.A.	Confidential		Confidential
	Rest of operators	Confidential		Confidential
RS	Telekom Srbija	Confidential	2.574.299	Confidential
	Serbia Broadband	Confidential		Confidential
	Rest of operators	Confidential		Confidential
SE	Telia Company AB	1.335.141	2.392.386	61,82%
	Com Hem AB	257.227		11,91%
	Tele2 Sverige AB	132.743		6,15%
	Telenor Sverige AB	4.195		0,19%
	Telavox AB	96.507		4,47%
	Rest of operators	333.889		15,46%
SI	Telekom Slovenije	Confidential	Confidential	52,40%
	Telemach	Confidential		19,23%
	T-2	Confidential		15,05%
	A1 Slovenija	Confidential		8,33%
	Rest of operators	Confidential		4,99%
SK	Slovak Telekom, a. s.	Confidential	782.041	Confidential
	Orange Slovensko, a. s.	Confidential		Confidential
	UPC Broadband Slovakia, s.r.o.	Confidential		Confidential
	SWAN, a. s.	Confidential		Confidential

Country	Operator	Number of lines	Total number of lines	Market share
	Rest of operators	Confidential		Confidential
TR	Türk Telekom	5.874.096	11.470.165	51,21%
	TTNet	3.930.061		34,26%
	Türksat	358.160		3,12%
	Superonline	262.899		2,29%
	Rest of operators	1.044.949		9,11%
UK	BT	Confidential	26.515.976	Confidential
	TalkTalk	Confidential		Confidential
	Sky	Confidential		Confidential
	Virgin Media	Confidential		Confidential
	Vodafone	Confidential		Confidential

*Figures not updated for IS, MK

Notes to table 6

AL: Updated with data of Q2 2019.

AT: Number of lines data refers as of 30.6.2019. Type of interconnection of other operators not known.

BG: BG: Data on number of lines (network termination points) as of 1.7.2019 per operator is confidential.

CY: Number of lines as of 30.6.2019.

CZ: Data regarding number of lines are as of 31th December 2018.

DE: Number of lines are an estimate of end of year 2018.

DK: Number of lines is of ultimo H2 2018.

EE: Number of lines as of 1.10.2018.

EL: The number of lines data refer to the number of active telephone access lines as of 31.12.2018. The wholesale line rental lines are included in the incumbent's (OTE) lines.

FI: Market shares as of 1.1.2019. Volumes are confidential. NRA has not set price caps for FTRs.

HR: Data refers to Q1 2019.

IE: Due to ComReg Decision D11/19 the max. MTR changed to 0,67 EUR cents per minute on 1.8.2019 from 0,79.

LT: Number of lines as of Q2 2019.

LU: Data as of 31.12.2018. The number of lines is considering the number of network termination points.

MT: Data reflects the position as at Q1 2019.

NO: Number of subscribers as of 31.12.2018.

RS: Number of lines as of 31.12.2018. Number of lines are collected by using ITU indicator i112 Fixed-telephone subscriptions which refers to the sum of active number of analogue fixed-telephone line, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones. Number of fixed telephone subscriptions over FWA networks and number of fixed subscriptions over mobile networks (CLL technology) are also included. Information on individual number of lines per operator is confidential.

SE: Data as of 31.12.2018.

SI: As all operators' systems are not adopted to reporting the data at such detailed level, all lines in case of VoIP are not taken into account.

TR: The number of lines specified above table for alternative network operators includes the number of wholesale line rental and VoIP subscribers. Number of Lines can be given as total number of lines including layer 1, layer 2 and layer 3 termination points.

Annex 6 Average MTR per operator as of 1 July 2019

Table 7

Country	Operator (B)	MTR (EUR cents)	Mobile Subscribers	Total mobile subscribers ¹³	Real Mkt Shares
AL	Telekom Albania	0,9801	936.352	2.575.689	36,35%
	Vodafone Albania	0,9801	1.213.212		47,10%
	Albtelecom	0,9801	426.125		16,54%
AT	A1Telekom Austria	0,8049	Confidential	10.785.715	Confidential
	T-Mobile Austria	0,8049	Confidential		Confidential
	Hutchison Drei Austria	0,8049	Confidential		Confidential
BE	Proximus	0,99	3.084.159	8.979.018	34,35%
	Orange	0,99	1.844.444		20,54%
	Telenet	0,99	3.149.436		35,08%
	Lycamobile	0,99	579.415		6,45%
BG	A1 Bulgaria	0,7158	Confidential	Confidential	38,65%
	Telenor Bulgaria	0,7158	Confidential		33,35%
	BTC	0,7158	Confidential		27,99%
CH	Swisscom	2,485575	5.000.000	8.735.540	57,24%
	Sunrise	3,106968	2.059.000		23,57%
	Salt	3,106968	1.676.540		19,19%
CY	Cyta	0,48	650.806	1.192.149	54,59%
	Epic	0,48	401.717		33,70%
	Primetel	0,48	127.876		10,73%
	Cablenet	0,48	11.750		0,99%
CZ	T-Mobile Czech Republic a.s.	0,9655	Confidential	Confidential	37,08%
	O2 Czech Republic a.s.	0,9655	Confidential		28,82%

¹³ Mobile subscribers (active SIM cards) means both 2G, 3G and 4G subscribers of a Mobile Network Operator or Mobile Virtual Network Operators. An active subscriber of mobile telephony' means a subscriber of post-paid mobile telephony who has a valid contract, or a pre-paid subscriber who has made or received a call, sent an SMS or MMS or used data services at least once in the last 3 months. M2M, M2P and data-only SIMs cards should be excluded."

Country	Operator (B)	MTR (EUR cents)	Mobile Subscribers	Total mobile subscribers ¹³	Real Mkt Shares
	Vodafone Czech Republic a.s.	0,9655	Confidential		26,45%
	Nordic Telecom s.r.o.	0,9655	Confidential		0,11%
DE	Telekom Deutschland GmbH	0,9500	N/A	107.500.000	N/A
	Vodafone GmbH	0,9500			
	Telefónica Germany GmbH & Co. OHG	0,9500			
DK	TDC	0,5160	2.884.113	7.197.000	40,73%
	Telenor	0,5160	1.466.409		20,37%
	Telia	0,5160	1.066.639		14,82%
	3 (Hi3G)	0,5160	1.035.266		14,38%
EE	Telia Eesti AS	0,7800	812.010	1.924.034	42,20%
	Tele2 Eesti AS	0,7800	469.092		24,38%
	Elisa Eesti AS	0,7800	642.932		33,42%
EL	Cosmote	0,9460	Confidential	11.781.513	Confidential
	Vodafone	0,9460	Confidential		Confidential
	WIND	0,9460	Confidential		Confidential
ES	TME	0,6700	16.157.557	54.144.042	29,84%
	Orange	0,6700	13.844.276		25,57%
	Vodafone	0,6700	12.431.090		22,96%
	Masmovil	0,6700	6.806.584		12,57%
FI	DNA Oyj	0,9300	Confidential	7.304.000	Confidential
	Elisa Oyj	0,9300	Confidential		Confidential
	Telia Finland Oyj	0,9300	Confidential		Confidential
	Álcom	0,9300	Confidential		Confidential
FR	Orange	0,7400	N/A	75.800.000	N/A
	SFR	0,7400			N/A
	Bouygues Telecom	0,7400			N/A
	Free Mobile	0,7400			N/A

Country	Operator (B)	MTR (EUR cents)	Mobile Subscribers	Total mobile subscribers ¹³	Real Mkt Shares
	MVNOs	0,7400			N/A
MK*	Makedonski Telekom	1,0245	1.002.272	2.050.793	48,87%
	one.VIP	1,0245	1.003.153		48,92%
	Lycamobile	1,0245	45.368		2,21%
HR	HT	0,6336	2.025.243	4.343.752	46,62%
	A1	0,6336	1.499.367		34,52%
	Tele2	0,6336	819.142		18,86%
HU	Magyar Telekom	0,5295	Confidential	10.124.526	Confidential
	Telenor	0,5295	Confidential		Confidential
	Vodafone	0,5295	Confidential		Confidential
	UPC	0,5295	Confidential		Confidential
	Netfone	0,5295	Confidential		Confidential
	Tarr	0,5295	Confidential		Confidential
IE	Vodafone	0,7900	1.802.150	5.003.034	36,02%
	Three Ireland Group	0,7900	1.627.988		32,54%
	Eircom Group Mobile	0,7900	968.775		19,36%
	Tesco Mobile	0,7900	410.959		8,21%
IS*	Siminn	0,6993	138.241	422.992	32,68%
	Vodafone	0,6993	128.011		30,26%
	Nova	0,6993	147.248		34,81%
	Hringdu	0,6993	9.492		2,24%
IT	Telecom Italia	0,9000	22.909.268	82.179.755	27,88%
	Vodafone	0,9000	20.975.344		25,52%
	WindTre	0,9000	26.402.000		32,13%
	Iliad Italia S.p.A.	0,9000	3.309.000		4,03%
	PosteMobile	0,9000	4.046.219		4,92%
LI	Telecom Liechtenstein AG	2,5743	Confidential	15.532	Confidential
	Swisscom (Schweiz) AG	2,5743	Confidential		Confidential
	Salt (Liechtenstein) AG	2,5743	Confidential		Confidential

Country	Operator (B)	MTR (EUR cents)	Mobile Subscribers	Total mobile subscribers ¹³	Real Mkt Shares
LT	Tele2	0,9400	1.934.877	4.548.974	42,53%
	Telia Lietuva, AB	0,9400	1.304.137		28,67%
	Bite Lietuva	0,9400	1.147.203		25,22%
LU	Post Télécom	0,8900	Confidential	798.600	Confidential
	Tango	0,8900	Confidential		Confidential
	Orange	0,8900	Confidential		Confidential
LV	Bite Latvija	0,8868	473.397	2.070.424	22,86%
	Latvijas Mobilais Telefons	0,8868	721.034		34,83%
	Tele2	0,8868	875.993		42,31%
	Zetcom	0,8868	875.993		8,09%
ME	Telenor	0,7600	376.648	1.121.298	33,59%
	Crnogorski Telekom	0,7600	360.268		32,13%
	Mtel	0,7600	384.382		34,28%
MT	Go plc	0,4045	225.510	614.781	36,68%
	Melita plc	0,4045	136.391		22,19%
	Vodafone	0,4045	252.668		41,10%
	Yom	0,4045	212		0,03%
NL	KPN	0,5810	6.822.075	17.041.879	40,03%
	Vodafone Ziggo	0,5810	4.966.048		29,14%
	T-Mobile	0,5810	3.922.772		23,02%
	Tele2	0,5810	1.330.984		7,81%
NO	Telenor	0,4425	2.798.209	5.720.892	48,91%
	Telia	0,4425	2.083.800		36,42%
	ICE	0,4425	442.610		7,74%
PL	Orange Polska S.A.	1,0018	Confidential	49.167.962	Confidential
	Polkomtel sp. z o.o.	1,0018	Confidential		Confidential
	P4 sp. z o.o.	1,0018	Confidential		Confidential
	T-Mobile Polska S.A.	1,0018	Confidential		Confidential
PT	MEO	0,4000	Confidential	11.758.249	Confidential
	NOS	0,4000	Confidential		Confidential

Country	Operator (B)	MTR (EUR cents)	Mobile Subscribers	Total mobile subscribers ¹³	Real Mkt Shares
	Vodafone	0,4000	Confidential		Confidential
RO	VODAFONE ROMANIA S.A.	0,8400	Confidential	22.164.149	Confidential
	ORANGE ROMANIA S.A.	0,8400	Confidential		Confidential
	TELEKOM RMC S.A.	0,8400	Confidential		Confidential
	RCS & RDS S.A.	0,8400	Confidential		Confidential
	LycaMobile	0,8400	Confidential		Confidential
RS	Telekom Srbija - MTS	1,2122	Confidential	8.431.365	Confidential
	Telenor	1,2122	Confidential		Confidential
	Vip mobile	1,2122	Confidential		Confidential
SE	Telia Company	0,5500	4.566.499	12.647.103	36,11%
	Tele2	0,5500	3.719.284		29,41%
	Telenor	0,5500	2.268.905		17,94%
	Hi3G	0,5500	1.588.744		12,56%
	Telavox AB	0,5500	256.288		2,03%
SI	Telekom Slovenije	1,1400	Confidential	Confidential	41,84%
	A1 Slovenija	1,1400	Confidential		30,48%
	Telemach	1,1400	Confidential		21,93%
	T-2	1,1400	Confidential		5,75%
SK	Orange Slovensko, a s.	1,2260	Confidential	6.078.270	Confidential
	Slovak Telekom, a. s.	1,2260	Confidential		Confidential
	O2 Slovakia, s. r. o.	1,2260	Confidential		Confidential
	Swan Mobile, a. s.	1,2260	Confidential		Confidential
TR	Turkcell	0,3890	31.742.883	74.736.653	42,47%
	Vodafone	0,4014	23.163.987		30,99%
	Avea	0,4605	19.829.783		26,53%
UK	EE	0,5476	Confidential	79.148.841	Confidential
	Telefonica	0,5476	Confidential		Confidential
	Vodafone	0,5476	Confidential		Confidential
	H3G	0,5476	Confidential		Confidential

*Figures not updated for IS, MK

Notes to Table 7

AL: data refers as of 30.6.2019

BG: Subscribers as of 1.7.2019. M2M, M2P and data-only SIMs cards are excluded. Individual data on number of subscribers/M2M SIM Cards by operators is confidential. With Decision 585 from 24 November 2016 CRC approved cost-oriented mobile termination rates based on Pure Bu-LRIC model as follows:

from 1.12.2016 – 0,014 BGN/minute

from 1.1.2017 – 0,014 BGN/minute

from 1.1.2018 – 0,014 BGN/minute

from 1.1.2019 – 0,014 BGN/minute

from 1.1.2020 – 0,014 BGN/minute

No MTRs peak/off-peak differentiation.

CH: Subscriber base as of 30.6.2019.

CZ: Regulated MTR is defined as a single price per minute. SIM cards filled in column "rest of operators" are MVNOs (Service Providers) with no MTR regulation - however, termination is carried out by their MNOs for regulated rates. The total number of SIM cards as of 31th December 2018 is available as the latest information. It appears from the excel that the total number is confidential as well as all individual subscriber numbers.

CY: Cablenet has been recently (June 2019) granted an individual right of use of radio frequencies (800MHZ to 2600MHZ) thus becoming a MNO.

DE: Current MTR are valid until 30.11.2019. The total number of active subscribers is not available by individual operator. Data are as of end of 2018.

DK: Total Subscribers is derived as of ultimo H2 2018.

EL: As far as the subscriptions are concerned, please note that: a) data refers to 30/06/2019 and b) data per operator is considered confidential. Note that as of 1.4.2019 Cyta (MVNO) was fully absorbed by Vodafone due to the acquisition of the former by the latter.

FI: Subscriber figures per 1.7.2019. Subscriber figures depict the number of subscriptions not SIM cards. Subscription figures include all subscriptions other than data-only subscriptions. SIM card volumes are very close to the subscription number in Finland. Traficom does not collect detailed information of SIM cards (e.g. data-only SIM cards) and therefore the figure would not have reflected the asked figures. Number of M2M SIM cards is collected and is reported in the figures.

DNA, Elisa and Telia have commercially agreed on new termination rates. New termination rates will be as follows:

1.12.2018 MTRs will be 0,93 EUR cent/minute

1.12.2019 MTRs will be 0,89 EUR cent/minute

1.12.2020 MTRs will be 0,82 EUR cent/minute

Ålcom will follow the same glide path.

HR: Subscribers data Q1 2019. Please note that MTRs are regulated only for the calls originated on A numbers belonging to the EU/EEA operators and terminated into the individual fixed.

IE: Due to ComReg Decision D11/19 the max. MTR changed to 0,67 EUR cent on 1.8.2019 from 0,79.

IS: Vodafone bought MVNO 365/Tal end of 2017, MTR is set by benchmark against BU-LRIC for one year at a time. M2M data is confidential. Subscriber data from mid 2018.

IT: Please, note that information on subscribers and M2M SIM Cards refer to first quarter of 2019 (more updated data are not available now).

LT: Subscribers as at 2019 IIQ.

LU: data subscribers as of 31.12.2018. Règlement ILR/T17/4 du 9 juin 2017 portant fixation du plafond tarifaire pour les prestations de la terminaison d'appel vocal sur les réseaux mobiles individuels (Marché 7/2007) , Price cap based on Pure-LRIC. Individual data of operators is confidential.

MT: Data reflects as at Q1 2019.

NO: Maximum price from 1.1.2018 price in 1/100 of national currency 5,4. Maximum price from 1.1.2019 price in 1/100 of national currency 4,3. Number of subscribers are provided per 31 December 2018. The total number of subscribers per 1 July 2019 will be available in Q4 2019.

PL: subscribers as of 31.12.2018. Individual operator data is confidential, totals are not confidential.

PT: Information on the number of subscribers of each operator is confidential. In June 21, 2018, ANACOM approved a new decision establishing the new MTR also in accordance with the EC Recommendation on Termination rates - BU-LRIC. According to this decision, in 1.7.2020 the MTRs will be further updated on the basis of existing and foreseen inflation data. The number of subscribers is according to the definition and it only considers users that have effectively used the service in the last 30 days.

RO: The decision to reduce MTR to 0,76 EUR cents/min, starting January 1st, 2020, based on benchmark of MTRs applied by member states that developed pure LRIC models has been adopted at 26 November.

RS: Information on individual's number of subscribers by operator is confidential. Number of subscribers are as of 31.12.2018 and include both MNO and MVNO operators' subscribers. Numbers of subscribers are collected by using ITU indicator i271 which excludes data cards and USB modems. M2M are collected by using ITU indicator i271m2m with the following definition - M2M mobile-network subscriptions refers to the number of mobile-cellular machine-to-machine subscriptions that are assigned for use in machines and devices (cars, smart meters, consumer electronics) for the exchange of data between networked devices, and are not part of a consumer subscription. For instance, SIM-cards in personal navigation devices, smart meters, trains and automobiles should be included. Mobile dongles and tablet subscriptions should be excluded.)

SE: Subscriber numbers and market shares are given for 31.12.2018, the latest point in time with available data. New MTR levels are to be decided in the autumn of 2019 and is planned to be changed for the remainder of the year, the same level as for first half year of 2020. The indicated levels will change somewhat ahead of notification and final decision by PTS.

SI: Absolute number of subscribers per operator is confidential. Absolute number of all subscribers is confidential if this number is published with market shares of operators together.

SK: The number of subscribers per operator has to be treated as confidential. According to new issued decision MTR has been changed since 1.8.2019 from value 0,01226 EUR to value 0,00818 EUR.

UK: All prices are nominal Source: <https://www.ofcom.org.uk/about-ofcom/latest/media/analysts/regulated-prices>. Period 4 and 5 cannot be estimated as this falls outside of Ofcom's charge control period and we expect Eurorates to be applied from 1.1.2021.

Annex 7 Average mobile termination revenue per minute per country

Notes to Figure 16

BG: The Indicator "Total MTR revenue" includes revenues from traffic originated from national fixed networks and terminated in mobile networks during 2018. Excluded are fixed-to-mobile calls when both the fixed and the mobile network are owned and run by the same operator. The Indicator "Total MTR minutes" includes traffic originated in national fixed networks and terminated in mobiles networks during 2018. Excluded are fixed-to-mobile calls when both the fixed and the mobile network are owned and run by the same operator. No MTRs peak/off-peak differentiation.

CZ: Revenues and volumes are in thousands of units (CZK and minutes).

CY: Cablenet has market share below 1,5% and was excluded in the average revenue calculation

DE: No revenue data available since BNetzA does not regulate revenue.

FR: Scope of reported Total MTR revenue and MTR minutes : national only.

IE: Total MTR minutes includes termination of call minutes on net, call minutes handed over from domestic mobile operator, domestic fixed operator and calls handed over from foreign network operators (for all of 2018).

LU: Revenues are total revenues and they include revenues from traffic from abroad (international traffic). These revenues may include non-termination related revenues like revenues from the transport of calls.

ME: Data are for calls originated from national operators (fixed and mobile) and from abroad. MTR for calls that are originated from abroad are not regulated, and different from MTR for calls that are originated from national operators.

PT: Total MTR minutes also includes international traffic terminated in mobile operators of which traffic originated outside EEA is not subject to price control obligation. It is also noteworthy that the maximum regulated MTR changed mid-year, decreasing around 56%. These are the reasons that justify average revenues per minute higher than the current maximum regulated value for EEA traffic.

RS: Data provided are for the whole 2018 and includes only national fixed-to-mobile calls. Revenue and traffic do not include fixed-to-mobile calls when both the the fixed and the mobile network are owned and run by the same operator.

SI: Including international termination. The prices for incoming calls from Non-EU international networks are not regulated, therefore the average revenue per minute is higher than regulated prices. Self supply is not included.

Annex 8 Regulatory model implemented to calculate MTRs

Table 8

July-19	COST ACCOUNTING MODEL			Period 1 - From 1.7.2019 until 31.12.2019	Period 2 - From 1.1.2020 until 30.6.2020	Period 3 - From 1.7.2020 until 31.12.2020	Period 4 - From 1.1.2021 until 30.6.2021	Period 5 - From 1.7.2021 until 31.12.2021
	Model	Rate status	When a tariff adopted by a final decision and meeting the standards of the TR Recommendatio n has been or will be firstly applied?					
AL	Benchmark BU-LRIC	adopted	1.12.2018	0,99	0,90	0,90	0,90	0,90
AT	Pure BU-LRIC	adopted		0,8049	0,8049	0,8049		
BE	Pure BU-LRIC	adopted	1.1.2013	0,99	0,99	0,99		
BG	Pure BU-LRIC	adopted	1.12.2016	0,716	0,716			
CH		not regulated						
CY	Pure BU-LRIC	adopted	1.1.2018	0,48	0,48			
CZ	Pure BU-LRIC	adopted	1.7.2013	0,9655				
DE	Pure BU-LRIC	adopted	1.12.2017	0,95				
DK	Pure BU-LRIC	adopted	1.1.2013.	0,5156	0,5156	0,5156		
EE	Benchmark BU-LRIC	adopted	25.5.2019	0,78				
EL	Pure BU-LRIC	adopted	1.1.2013	0,946				
ES	Pure BU-LRIC	adopted	5.10.2012	0,67	0,64	0,64	0,64	0,64
FI	other (FDC/FAC)	adopted		0,93	0,89	0,89	0,82	0,82
FR	Pure BU-LRIC	adopted	1.1.2013	0,74				
MK	TD - LRIC	adopted		0,01				
HR	Pure BU-LRIC	adopted		0,6336	0,6336			
HU	Pure BU-LRIC	adopted	1.4.2015	0,5295				
IE	Pure BU-LRIC	adopted	1.9.2016	0,79	0,55	0,55	0,43	

July-19	COST ACCOUNTING MODEL			Period 1 - From 1.7.2019 until 31.12.2019	Period 2 - From 1.1.2020 until 30.6.2020	Period 3 - From 1.7.2020 until 31.12.2020	Period 4 - From 1.1.2021 until 30.6.2021	Period 5 - From 1.7.2021 until 31.12.2021
	Model	Rate status	When a tariff adopted by a final decision and meeting the standards of the TR Recommendatio n has been or will be firstly applied?					
IS	Benchmark BU-LRIC	notified		0,699				
IT	Pure BU-LRIC	adopted	1.7.2013	0,9	0,9	0,76	0,76	0,67
LI	Benchmarking (other)	adopted		2,5743				
LT	Benchmark BU-LRIC	adopted	1.4.2016	0,94				
LU	Pure BU-LRIC	adopted		0,89				
LV	Benchmark BU-LRIC	adopted	26.4.2017	0,8868	0,8868	0,8868		
ME	TD - LRIC	adopted		0,76				
MT	Pure BU-LRIC	adopted		0,405	0,405			
NL	Pure BU-LRIC	adopted	1.7.2017	0,581	0,581	0,581	0,581	0,581
NO	Pure BU-LRIC	adopted	1.7.2015	0,4425	0,3293	0,3293		
PL	Pure BU-LRIC	adopted	1.7.2013	1,0018	1,0018	1,0018	1,0018	1,0018
PT	Pure BU-LRIC	adopted	31.12.2012	0,4	0,4			
RO	Benchmark BU-LRIC	adopted	1.4.2014	0,84	0,76			
RS	Benchmarking (other)			1,2122				
SE	Pure BU-LRIC	adopted	1.7.2013	0,5500	0,2693	0,2081		
SI	Pure BU-LRIC	adopted	1.9.2014	1,14	0,916	0,916		
SK	Pure BU-LRIC	adopted	1.8.2013	1,226	0,818			
TR	Confidential							

July-19	COST ACCOUNTING MODEL							
	Model	Rate status	When a tariff adopted by a final decision and meeting the standards of the TR Recommendation has been or will be firstly applied?	Period 1 - From 1.7.2019 until 31.12.2019	Period 2 - From 1.1.2020 until 30.6.2020	Period 3 - From 1.7.2020 until 31.12.2020	Period 4 - From 1.1.2021 until 30.6.2021	Period 5 - From 1.7.2021 until 31.12.2021
UK	Pure BU-LRIC	adopted		0,5476	0,5430	0,5384		

Additionally please see Notes to Table 7

Annex 9 SMS TR per country as of 1 July 2019

Table 9

Country	Operator (B)	SMS TR as of 1 July 2019 (EUR cents)	Volumes of SMS globally sent in 2018 ¹⁴ (millions)	Number of subscribers ¹⁵ as of 31.12.2018 (millions)
AL	Telekom Albania	0,81	1212.56	4.14
	Vodafone Albania			
	Albtelecom			
AT	A1Telekom Austria	2,51	2227.00	13.30
	T-Mobile Austria			
	Hutchison Drei Austria			
BE	Proximus	4,96	20466081.12	11.92
	Orange			
	Telenet			
	Lycamobile			
BG	A1 Bulgaria	Confidential	430.78	8.39
	Telenor Bulgaria			
	BTC			
CH	Swisscom	Confidential	1423.00	9.95
	Sunrise	Confidential		
	Salt	Confidential		
CY	CYTA	0,55	1202.52	1.21
	MTN	0,68		
	PRIMETEL	0,73		
	CABLENET	0,73		
CZ	T-Mobile Czech Republic a.s.	Confidential	8178.95	14.76
	O2 Czech Republic a.s.			
	Vodafone Czech Republic a.s.			
	Nordic Telecom s.r.o.			
DE	Telekom Deutschland GmbH	*	8900.00	137.00
	Vodafone GmbH			
	Telefónica Germany GmbH & Co. OHG			
DK	TDC	*	5300.00	8.38
	Telenor			
	Telia			
	3 (Hi3G)			

¹⁴ Volume data refers to 2018, unless otherwise stated in the Notes of Annex 9

¹⁵ Including M2M, M2P and data-only SIMs cards.

Country	Operator (B)	SMS TR as of 1 July 2019 (EUR cents)	Volumes of SMS globally sent in 2018 ¹⁴ (millions)	Number of subscribers ¹⁵ as of 31.12.2018 (millions)
EE	Telia Eesti AS	2,60	709.31	1.92
	Tele2 Eesti AS			
	Elisa Eesti AS			
EL	Cosmote	Confidential	2185.00	12.17
	Vodafone			
	WIND			
	CYTA Hellas			
ES	TME	2,56	1088.85	54.00
	Orange	2,37		
	Vodafone	3,00		
	Masmovil	2,71		
FI	DNA Oyj	*	1937.00	9.53
	Elisa Oyj			
	Telia Finland Oyj			
	Ålcom			
FR	Orange	1,00	176682.00	75.00
	SFR			
	Bouygues Telecom			
	Free Mobile			
	MVNOs			
MK	Makedonski Telekom	No data	No data	No data
	one.VIP			
	Lycamobile			
HR	HT	*	2101.72	4.39
	A1			
	Tele2			
HU	Magyar Telekom	Confidential	2525.00	10.04
	Telenor			
	Vodafone			
	UPC			
	Netfone			
	Tarr			
IE	Vodafone	0,03	4342	6.3
	Three Ireland Group			
	Eircom Group Mobile			
	Tesco Mobile			
IS	Siminn	No data	No data	No data
	Vodafone			
	Nova			

Country	Operator (B)	SMS TR as of 1 July 2019 (EUR cents)	Volumes of SMS globally sent in 2018 ¹⁴ (millions)	Number of subscribers ¹⁵ as of 31.12.2018 (millions)
	Hringdu			
IT	Telecom Italia	Confidential	10572.25	82.18
	Vodafone	Confidential		
	WindTre	Confidential		
	Iliad	Confidential		
	Poste Pay	Confidential		
	Fastweb	Confidential		
	BT Italia	Confidential		
	Digi Italy	Confidential		
	Lycamobile	Confidential		
	Noverca	Confidential		
	Welcome Italia	Confidential		
LI	Telecom Liechtenstein AG	0,00	1.21	0.01
	Swisscom (Schweiz) AG	6,04		
	Salt (Liechtenstein) AG	7,99		
LT	Tele2	0,01	3977.95	3.78
	Telia Lietuva, AB	0,00		
	Bite Lietuva	0,01		
LU	Post Télécom	*	505.00	0.80
	Tango			
	Orange			
LV	Bite Latvija	2,13	1756.34	2.08
	Latvijas Mobilais Telefons			
	Tele2			
	Zetcom			
ME	Telenor	1,00	354.09	1.13
	Crnogorski Telekom			
	Mtel			
MT	Go plc	2,02	278.00	0.62
	Melita plc	1,81		
	Vodafone	2,72		
NL	KPN	*	1338.78	21.62
	Vodafone Ziggo			
	T-Mobile			
	Tele2			
NO	Telenor	3,60	4951.13	5.72
	Telia			
	ICE			
PL	Orange Polska S.A.	1,17	46500.00	48.30
	Polkomtel sp. z o.o.			

Country	Operator (B)	SMS TR as of 1 July 2019 (EUR cents)	Volumes of SMS globally sent in 2018 ¹⁴ (millions)	Number of subscribers ¹⁵ as of 31.12.2018 (millions)
	P4 sp. z o.o.			
	T-Mobile Polska S.A.			
PT	MEO	Confidential	16439.70	11.86
	NOS			
	Vodafone			
RO	VODAFONE ROMANIA S.A.	Confidential	7728.93	22.68
	ORANGE ROMANIA S.A.			
	TELEKOM RMC S.A.			
	RCS & RDS S.A.			
	LycaMobile			
	Telekom RC			
	Iristel			
Compatel				
RS	Telekom Srbija - MTS	1,70	6414.00	8.43
	Telenor			
	Vip mobile			
SE	Telia Company	*	8192.00	12.65
	Tele2			
	Telenor			
	Hi3G			
	Lycamobile			
Telavox AB				
SI	Telekom Slovenije	*	Confidential	Confidential
	A1 Slovenija			
	Telemach			
	T-2			
SK	Orange Slovensko, a s.	2,50	2.89	6.22
	Slovak Telekom, a. s.			
	O2 Slovakia, s. r. o.			
	Swan Mobile, a. s.			
TR	Turkcell	0,0669	82830.51	80.12
	Vodafone	0,0669		
	Avea	0,0731		
UK	EE	Confidential	73467.00	84.00
	Telefonica			
	Vodafone			
	H3G			

* SMS call termination rates are not regulated

Notes to Table 9

AL: The reported SMS termination rates are effective since 1.4.2014, based on AKEP market analysis and SMP decisions for mobile SMS termination.

CY: SMS Termination is not regulated and it is based on company agreements between operators

CZ: Note: 14,756 according to the same methodology as last year, i.e. incl. M2M and data-only SIM cards, excl. M2M and data-only SIM it would be 12,704 as provided for the MTR Report.

DE: The 137 Mio SIM cards (thereof 23,1 Mio M2M) are as reported by mobile operators. The number of active SIM cards (as required for the MTR report) as recorded by BNetzA is 107,5 Mio, not including M2M and IoT SIM cards.

MT: Data reflects as at Q1 2019 (January - March 2019).

SI: Operators apply "bill and keep" system.

SK: 0 - 100 000 sms/month = 0,0284 EUR

100 001 - 500 000 sms/month = 0,0261 EUR

500 001 and more sms/month = 0,0250 EUR

Termination rates continue to vary with respect to terminated traffic volumes. All operators meet requirement for 0,0250 EUR rate.

Annex 10 Abbreviations and Exchange rates**Table 10 – Abbreviations**

AL	Albania
AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LV	Latvia
LU	Luxembourg
ME	Montenegro
MT	Malta
MK	North Macedonia
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
RS	Serbia
SE	Sweden
SI	Slovenia
SK	Slovakia
TR	Turkey
UK	United Kingdom

Table 11 – Exchange Rates¹⁶

COUNTRY	1 EURO
AL	123,55
BG	1,9558
CH	1,1265
CZ	25,686
DK	7,4665
HR	7,4183
HU	322,97
IS	123,48
LI	1,1265
MK	61,50
NO	9,7184
PL	4,2823
RO	4,748
RS	117,9654
SE	10,6191
TR	6,4272
UK	0,87477

¹⁶ ECB website, <https://sdw.ecb.europa.eu/browse.do?node=9691296>

Annex 11 Glossary

Avg(S)	Simple average
Avg(W)	Weighted average
FTR	Fixed Termination Rate
MTR	Mobile terminate rate
NRA	National Regulatory Authority
SMS	Short Message Service
TR	Termination Rate
TD	Top Down
BU	Bottom Up
LRIC	Long Run Incremental Cost
LRAIC	Long Run Average Incremental Cost
FAC	Fully Allocated Cost
CCA	Current Cost Accounting
FDC	Fully Distributed Cost