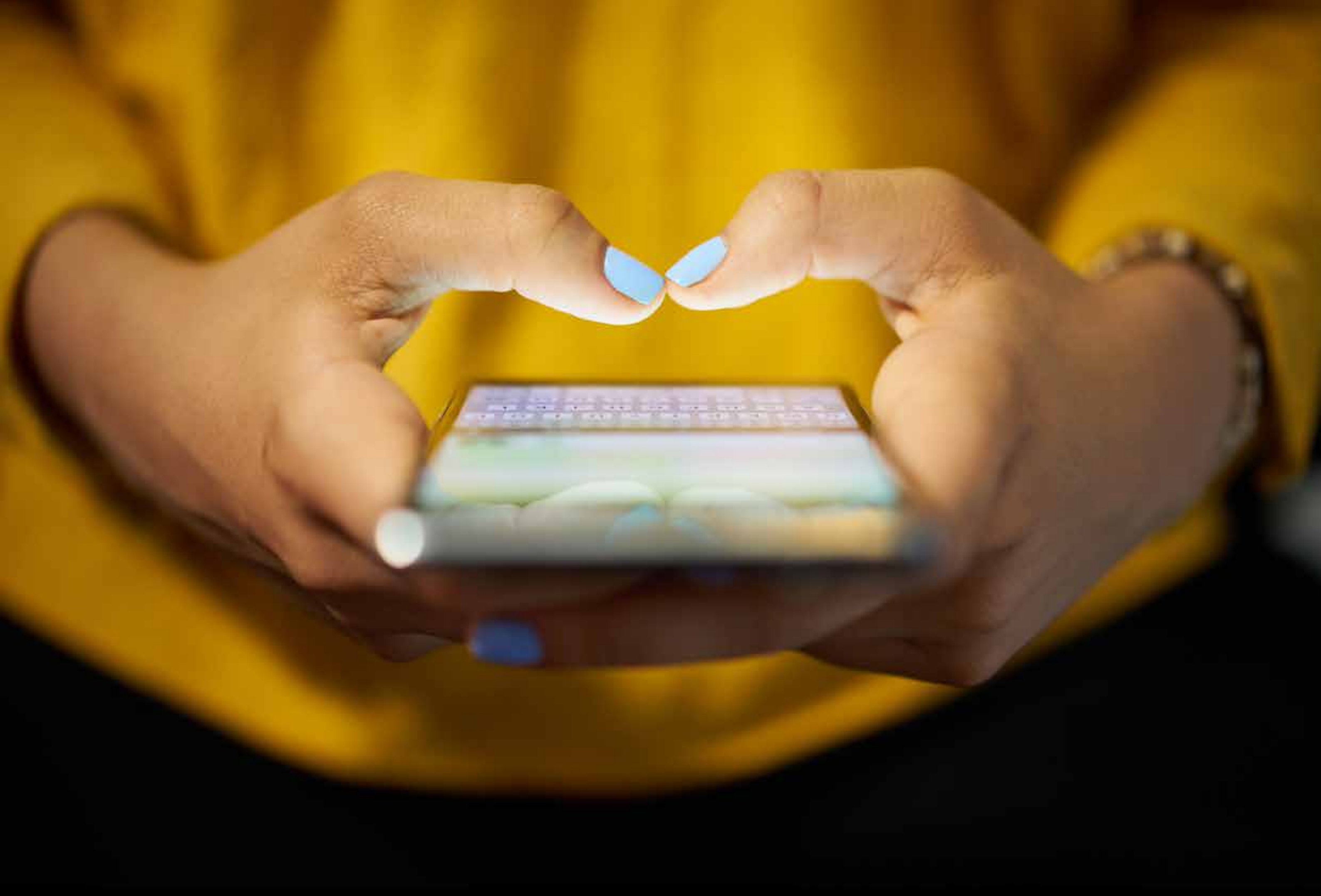

WESTERN BALKANS ROAMING REPORT 2022

RegionalCooperationCouncil

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INTRODUCTION

Western Balkans (WB) Roaming Report, prepared by Regional Cooperation Council (RCC), presents the results of the data analyses on international roaming services delivered by regulatory authorities of Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, North Macedonia and Serbia. The reporting period is the full year 2021 and this is the 2nd roaming report prepared by RCC, following the one that covered the 2019-2020 period. The data collection process began in April 2022 and was completed in July 2022. WB regulators collected data from operators providing the majority of requested data and information. RCC assumes no responsibility for the completeness and/or accuracy of the data provided.

The Report aims to provide information about the consumption, revenue and price developments of the roaming services in the region, thus supporting WB economies in the efficient monitoring of Regional Roaming Agreement (RRA) implementation. According to RRA, full abolition of roaming surcharges was introduced as at 1 July 2021 and this report comprehends the first analytic assessments of the impact of Roam-Like-At-Home (RLAH) regime.

RRA represents one of the most important achievements of the Digital Agenda for the WB and overall regional cooperation within the Multi-annual Action Plan for a Regional Economic Area (MAP REA) in the Western Balkans and Common Regional Market (CRM) initiatives. It is also considered as a very important step towards harmonisation with the current European Union (EU) roaming regulatory framework and launching the next phase of the CRM 2021-2024 Action Plan - reduction of roaming prices between the WB region and the EU.

In order to determine key challenges and priority objectives in the process of reducing roaming prices between WB and EU, all important findings and trends in roaming users' patterns, traffic volumes, retail and wholesale revenues, and costs of international roaming services between WB and EU operators have been assessed, analysed and presented herein.

The first chapter includes information on roaming users in the WB region and the European Economic Area (EEA)[1] in 2021, followed by an analysis of the service usage patterns. Chapter II focuses on retail roaming revenues, followed by information on wholesale roaming revenues and costs in Chapter III and IV, respectively. Profitability and service margins of WB mobile operators in provisioning roaming services within the WB region and EU have been analysed in Chapter V.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

1 EEA consists of EU Member States, Iceland, Liechtenstein and Norway. WB-EEA roaming data are covered by this report in order to align the span of the reporting with BEREC questionnaires.

ABSTRACT

The introduction of RLAH regime from 1 July 2021 resulted in significant increase in consumption/user of all roaming services in the region, thus confirming the high price sensitivity of WB roamers. In H2 2021 vs. H1 2021 call duration/user increased in all of the WB economies, from 45% in Kosovo* to as much as 237% in Serbia. Data consumption/user has increased even more, from 62% in Albania up to 459% in Serbia.

The average duration of outgoing call/user made while roaming in the region in 2021 was approximately 8 times higher than the number of minutes made by WB roamer while roaming in the EEA footprint. Also, the average consumption of data services by a WB roamer in the region in 2021 was about 7 times higher than the amount of consumed data traffic while roaming across the EEA. Customers from Montenegro were the heaviest users of roaming services under the umbrella of RRA, while the highest consumption/user of roaming services in the EEA, among the WB economies, was registered in Albania.

Retail revenues of WB mobile operators, generated by providing roaming services in the region in 2021, have doubled compared to 2020 and even increased by 28% vs. 2019, despite the sharp price reduction due to implementation of RRA. At the same time, in the absence of any regulation, retail revenues generated by WB users roaming in the EEA have decreased by 32% vs. 2019.

WB end users in 2021 paid on average 28 times higher prices for outgoing roaming voice calls realised in the EEA, compared to the average expenses per minute of calls made while roaming within the WB region. For incoming calls, SMS and data services, roaming in the EEA in 2021 was 46, 11 and 15 times more expensive than in the region, respectively. The lowest average prices/unit for roaming in the region were registered in Montenegro, while Albanian roamers paid the lowest fees/unit for roaming in the EEA.

69% of the total amount of voice traffic that WB users generated while roaming in the EEA in 2021 was made in only 6 EEA countries and 71% of total data traffic was used in 7 EU Member States. The highest outbound roaming usage was registered in Greece, Germany, Italy and Croatia. In inbound segment, roaming users from only 5 EEA countries generated 71% of total EEA inbound voice roaming traffic and 76% of data traffic in the WB region in 2021. The highest usage was generated by the visitors from Austria, Germany and Denmark.

The difference in average wholesale revenues/units generated by providing roaming services to operators from the EEA and those from other WB economies was not as big as in case of retail revenues. The average wholesale revenue of voice calls made was 8 €cents/min for EEA vs. 3 €cents/min for WB operators; in messaging 1.6 €cents/SMS vs. 0.5 €cents/SMS; in data segment 4.3 €/GB for the EEA vs. 1.2 €/GB for the regional operators.

The gap between the wholesale cost/unit paid by WB operators for roaming services in the EEA and in the other WB economies in 2021 is smaller in SMS and data segment than in the voice (due to high international mobile termination rates between the WB and EEA). The average wholesale cost for voice calls made while roaming in the EEA was 27 €cents/min vs. 3 €cents/min paid to the WB wholesale roaming partners;

average wholesale SMS cost in the EEA was 1.2 €cents/SMS vs. 0.8 €cents/SMS; average data wholesale fee in the EEA was 5.4 €/GB vs. 1.9 €/GB in the WB region.

In general, average wholesale cost/GB of data traffic that WB operators paid to the EEA operators in 2021 was lower than the wholesale price caps for 2023 proposed by the Roadmap for lowering roaming charges between the EU and WB (Roadmap) for all of the WB economies, except for Montenegro and Serbia. Also, the average wholesale fee paid by EEA operators in 2021 to the WB partners was lower than the proposed wholesale price cap for 2023 in all of the WB economies excluding Kosovo*.

In the observed period, the regulated maximum MTR for roaming calls originated and terminated in the WB region was set at 0.016 €/min from 1 July 2021. Reported average mobile termination rate for roaming calls, charged to EEA operators by WB operators in 2021, ranged from 0.258 €/min in Montenegro to 0.895 €/min in Albania.

The comparison of retail revenues and associated wholesale costs of roaming service shows that profitability of WB operators generated by providing roaming in the EEA is much higher than in case of intra-WB roaming. Total retail revenues generated by WB users while roaming in the WB region (including the revenues from bundles) exceeded the associated wholesale costs by €1.5 million in 2021, enabling WB mobile operators 13% retail mark-up on intra-WB roaming services. In the same time, total retail revenues generated by WB users while roaming in the EEA (including the revenues from bundles) exceeded the associated wholesale costs of roaming by €23.2 million in 2021, thus producing 374% retail mark-up to WB mobile operators.

Even if revenues from bundles are not considered, retail revenues for outgoing voice calls exceeded wholesale costs by 53% (in some of the economies even above 600%); average revenue/SMS was 13 times higher than the related wholesale cost (in some cases even 30 times higher), while revenue/GB of data traffic in the EEA was, on average, 4 times higher than the underlying cost (with maximum mark-up going to 1.225% in one of the WB economies).

I ROAMING USERS AND SERVICE CONSUMPTION IN 2021

MAIN FINDINGS

- The introduction of RLAH regime from 1 July 2021 resulted in significant increase in the average consumption/user of all roaming services in the region, confirming the high price sensitivity of WB roamers.
- WB users, while roaming in the region, significantly increased the usage of voice and data services in H2 2021 compared to the first half of the year in all of the economies except Montenegro. Call duration/user increased from 45% in Kosovo* to as much as 237% in Serbia. Data consumption/user was higher from 62% in Albania up to 459% in Serbia.
- The average number of minutes of outgoing calls made by a WB user while roaming in the region in 2021 was approximately 8 times higher than the number of minutes/WB user roaming across the EEA footprint. In Q4 that ratio increased to as much as 11:1.
- Similarly, the average consumption of data services by a WB user while roaming in the region in 2021 was about 7 times higher than the amount of consumed data traffic/user in the EEA.
- The heaviest users of roaming services within the WB region are customers from Montenegro, while highest consumption of roaming services in the EEA per user comes from Albania.
- The most important EEA outbound roaming destinations for WB users are Croatia, Germany, Greece and Italy. The highest inbound usage of roaming services from EEA is registered by the visitors from Austria, Denmark and Germany.

1.1. ROAMING USERS

During the first three quarters of 2021, the number of roaming users from the WB that used roaming services within the WB region was significantly higher than those roaming in the EEA. The biggest difference, of 45%, was recorded during the summer season[2].

2 Number of roaming users - different users that used roaming services at least once in the concerned quarter

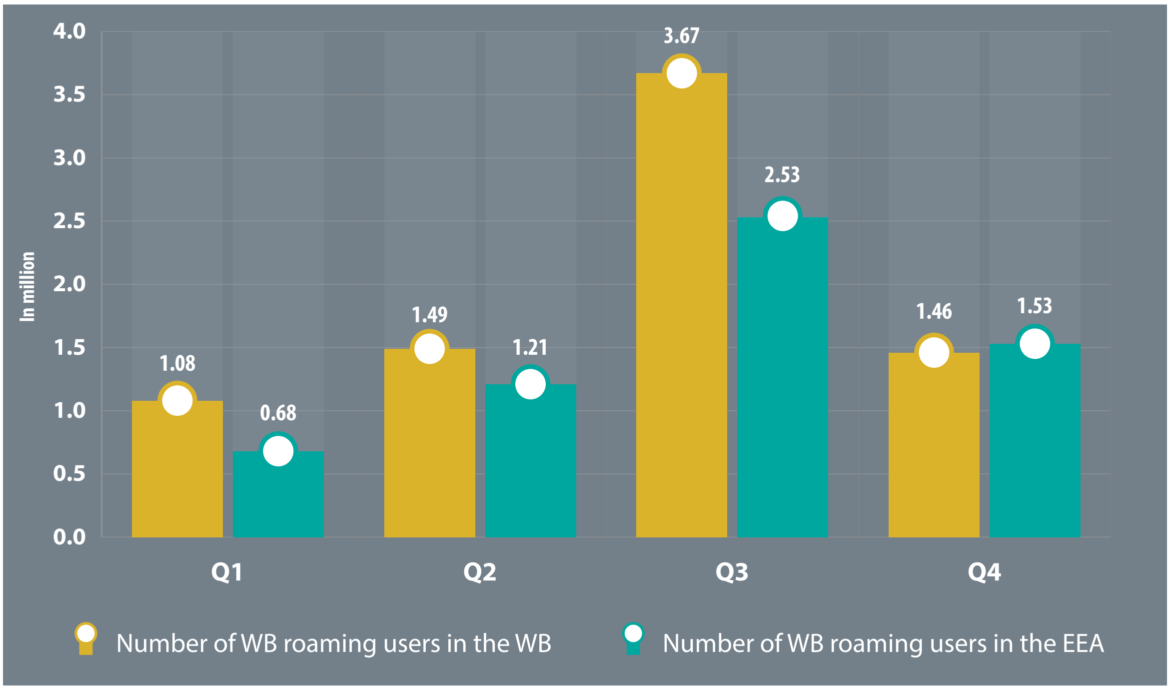

Figure 1 - Number of WB roaming users in 2021

The number of WB users that have been roaming in the region was higher in all of the WB economies, except in Albania and Bosnia and Herzegovina where roamers in the EEA prevailed. In absolute terms, the highest number of roamers in both segments came from Serbia, while proportionally to the number of subscribers the most represented were the roamers from Kosovo*.

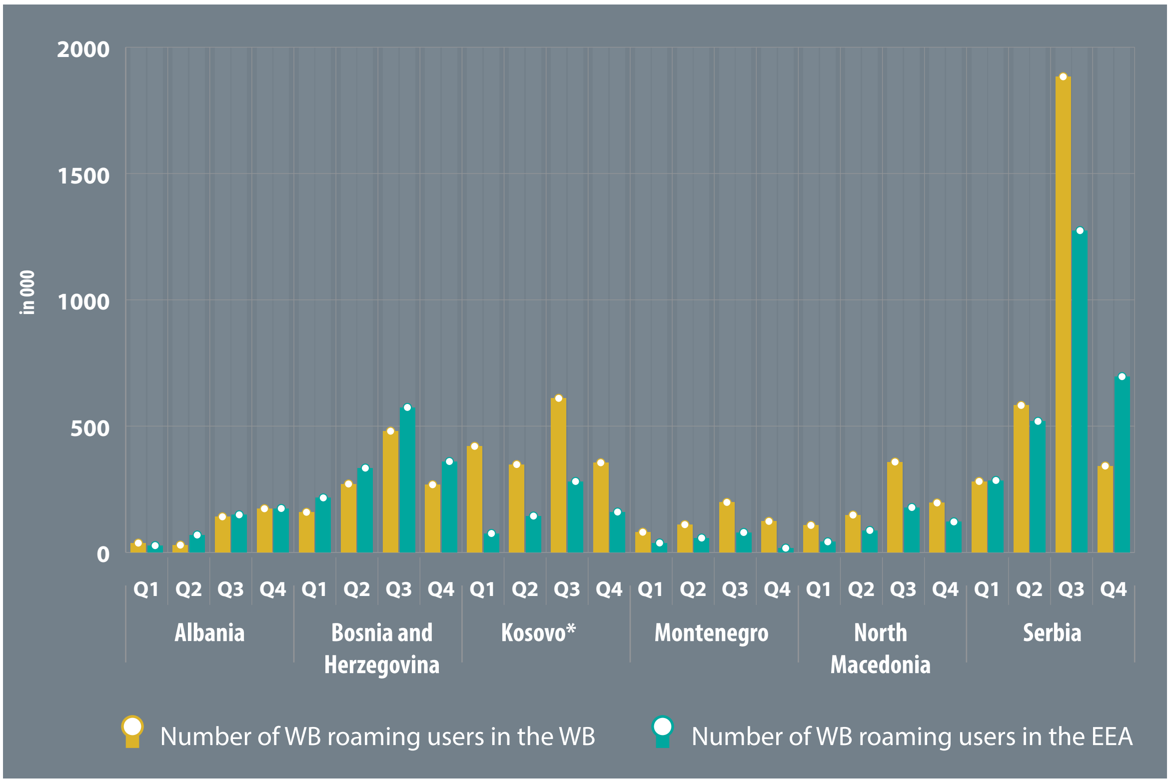

Figure 2 – WB roaming users in the WB and EEA in 2021

1.2. ROAMING VOICE CONSUMPTION

1.2.1. OUTGOING VOICE

Roaming users from the WB made a total of 143 million minutes of outgoing calls while using roaming services in the WB region in 2021, representing about 50% annual growth if compared to 96 million and 94 million in 2019 and 2020, respectively.

Roaming users from the WB region made a total of 13 million minutes of outgoing calls while using roaming services in the EEA in 2021. This is 19% higher than in the 2020 pandemic year, but still significantly lagging behind the voice volumes from 2019 (41% less).

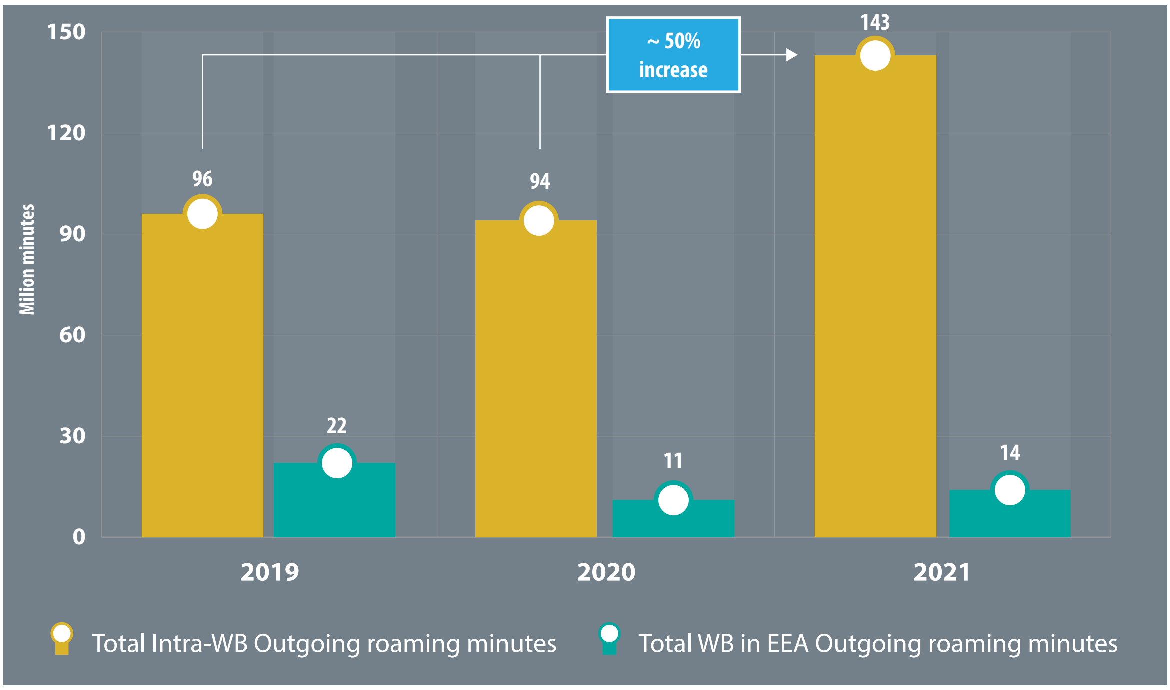

Figure 3 – Total number of outgoing roaming voice minutes in the WB and the EEA in 2021

During the first three quarters of 2021, the average consumption of outgoing voice calls per WB roaming user was about 7 times higher when roaming in the region than in the EEA. In Q4, after RLAH was introduced, this difference even increased (up to the ratio 11:1). This implies high price sensitivity of WB customers.

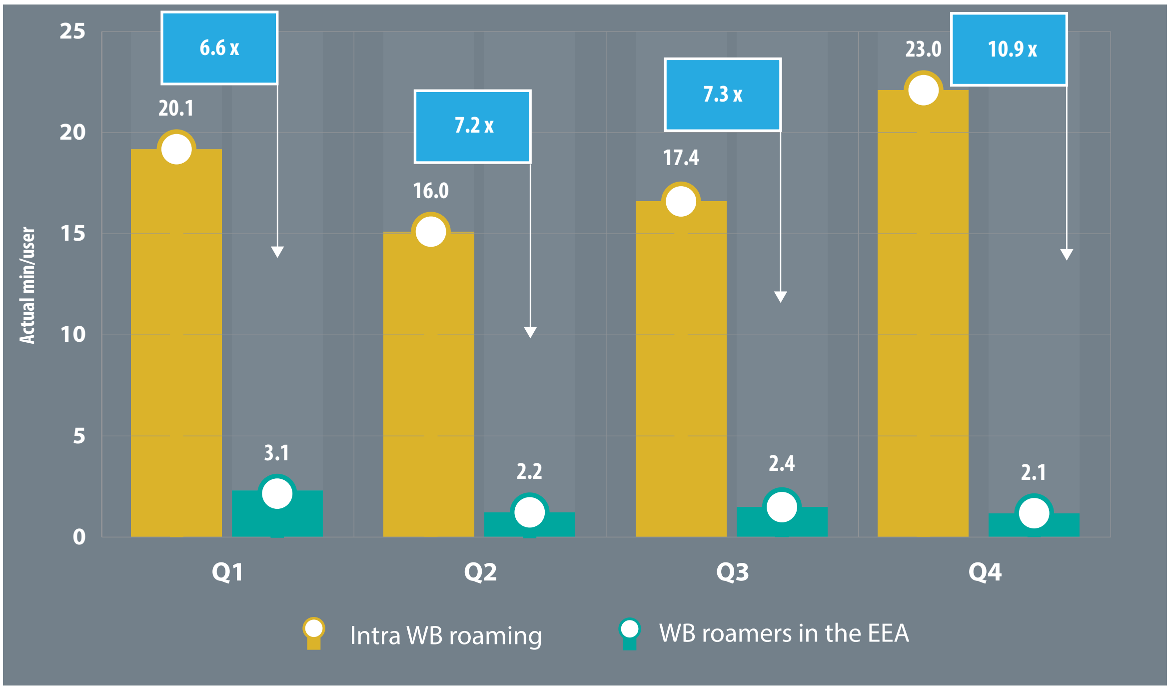

Figure 4 – Number of outgoing voice minutes/WB roaming user in the WB and EEA in 2021

Absolutely the highest number of outgoing voice minutes per WB user roaming in the region in 2021 was made by roaming users from Montenegro. The comparison between the consumption of voice services/ roamer in H1 and H2 2021 in the WB region reflects the positive impact of introducing RLAH from 1st July in all of the WB economies (except Montenegro). The highest increase in the usage has been noted in the behaviour of customers from Serbia and North Macedonia (237% and 195% increase in average number of minutes/users in H2 vs. H1 2021).

Albanian roamers had the highest average consumption of outgoing voice services in the EEA among all of WB economies. In all other economies, except in North Macedonia in H1, the duration of calls made per WB user is significantly higher while roaming in the WB region than in the EEA footprint.

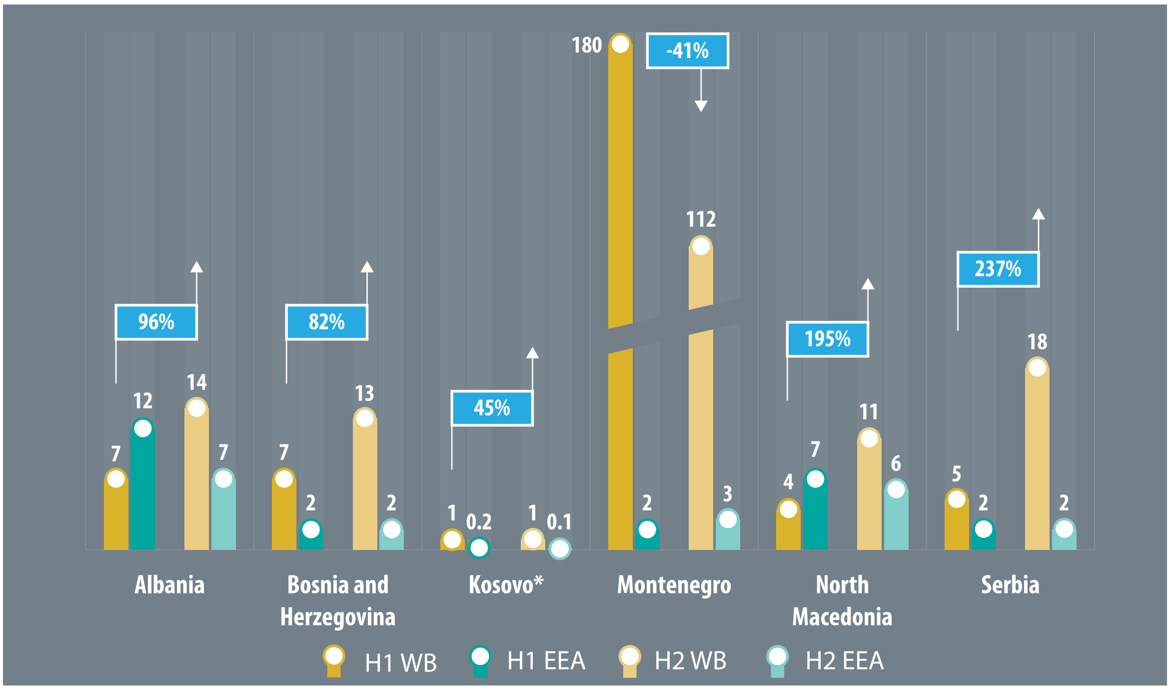

Figure 5 - Outgoing minutes/WB roaming user in the WB and the EEA in H1&H2 2021

1.2.2. INCOMING VOICE

The total number of minutes of incoming calls received by WB users while roaming in the WB region was 104 million minutes, which represents huge increase compared to 55 million minutes in 2019 and 45 million minutes in 2020.

The total number of minutes of incoming calls received by roaming users while roaming in the EEA was 13 million minutes. This is 14% higher than in 2020 pandemic year, but still 41% below the 2019 volumes.

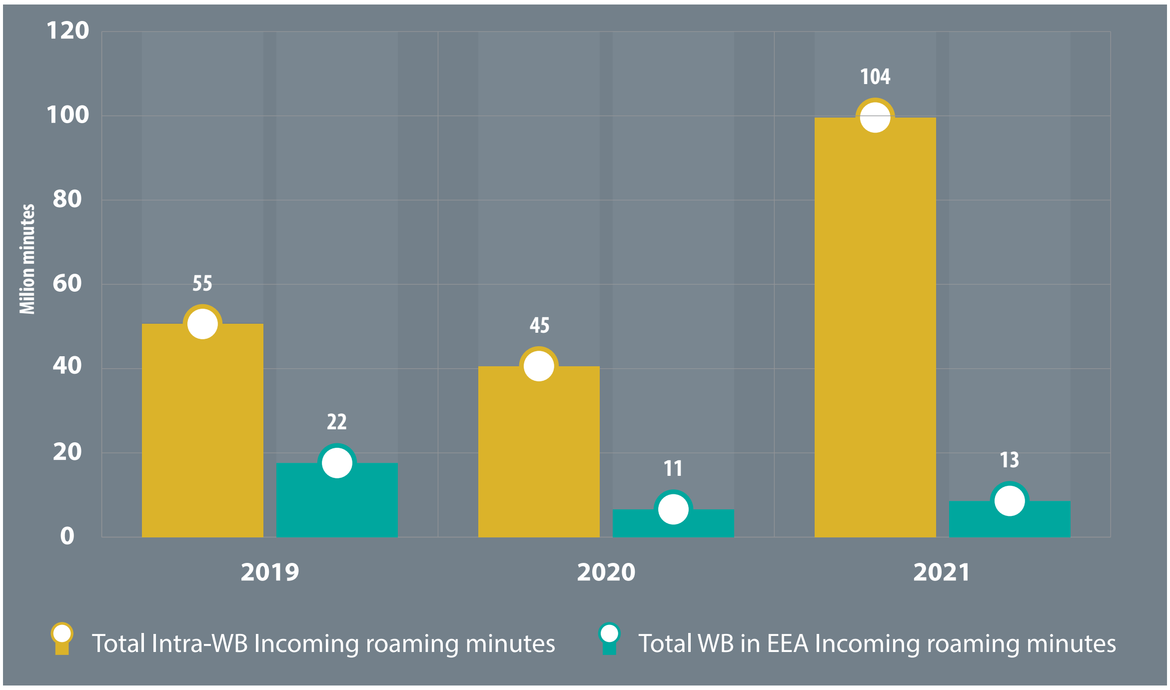

Figure 6 – Total incoming roaming voice minutes in the WB and EEA in 2021

During the first two quarters of 2021, the average consumption of incoming voice calls per WB roaming user was about 4 times higher when roaming in the region than in the EEA. In Q3 & Q4, after RLAH was introduced, this difference increased additionally (up to the ratio 8.4:1).

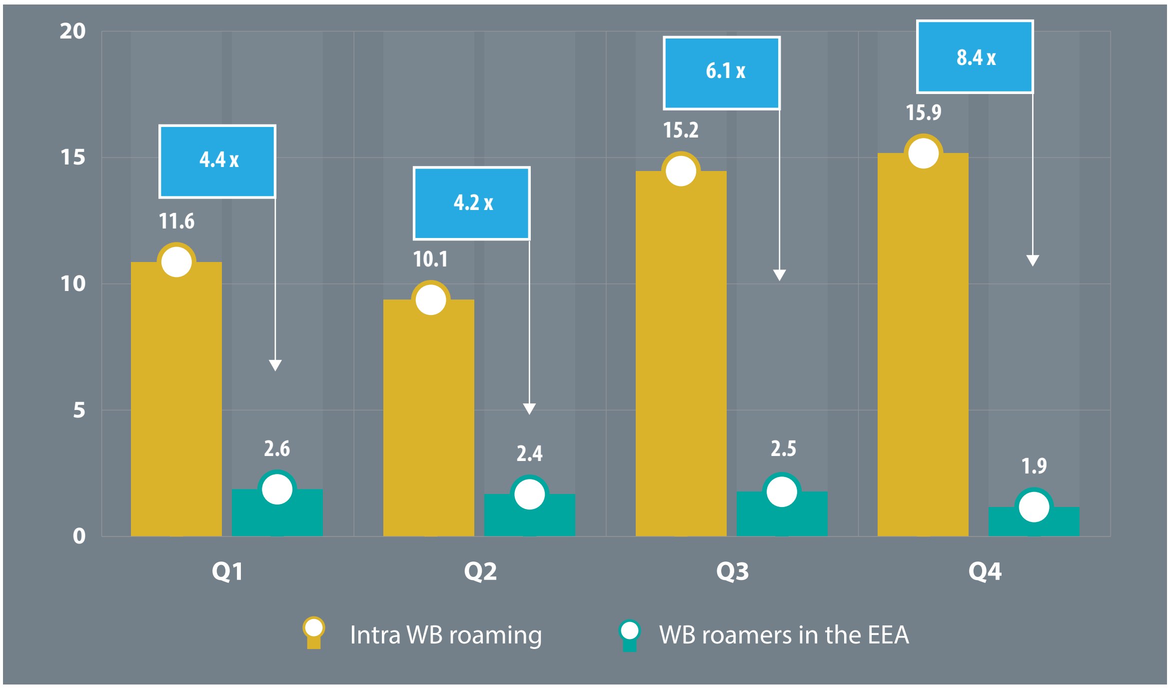

Figure 7 – Number of incoming voice minutes/WB roaming user in the WB and EEA in 2021

Absolutely the highest number of incoming voice minutes per roaming user in the WB region in 2021 was received by roaming users from Montenegro. The comparison between the duration of calls received/roamer in the WB region in H1 and H2 2021 reflects the positive impact of introducing RLAH from 1st July in all of the economies except Montenegro. The highest increase in usage is noted in case of customers from Serbia and North Macedonia (173% and 151%, respectively).

Albanian roamers had the highest average consumption of incoming voice services in the EEA among all of WB economies. In all other economies, the duration of calls received per roamer in the WB region is significantly higher while roaming in the region than across the EEA networks.

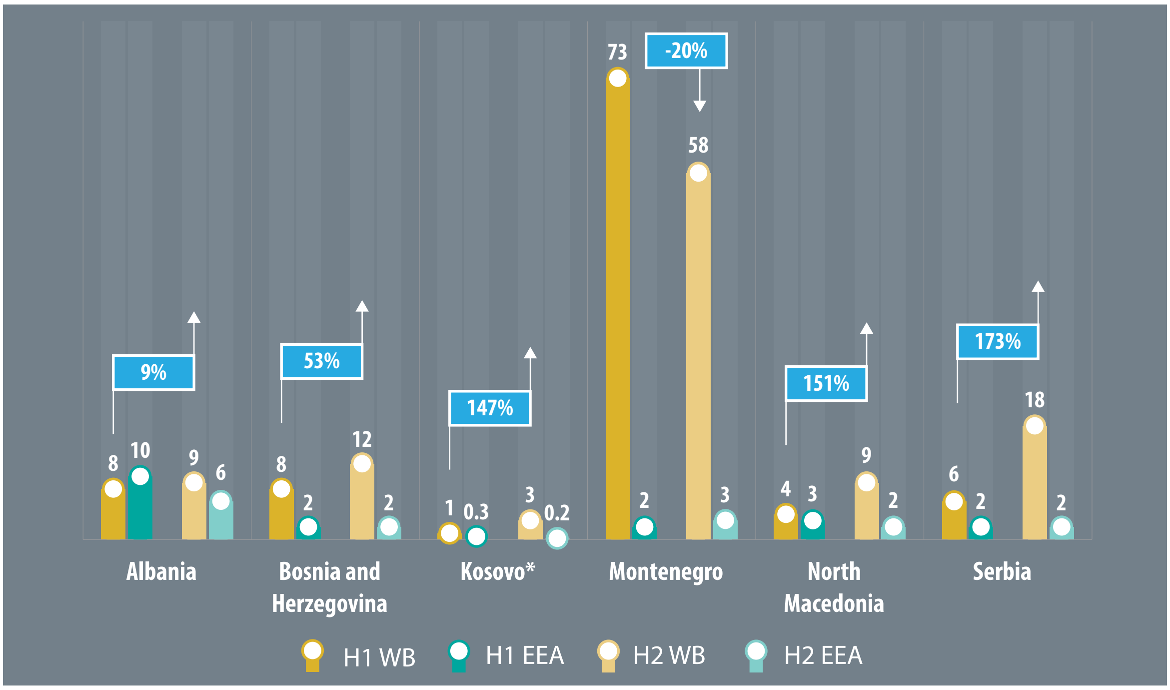

Figure 8 - Incoming minutes/WB roaming user in the WB and the EEA in H1&H2 2021

1.3. ROAMING SMS USAGE

WB mobile users sent 34 million SMSs in 2021 while roaming in the WB region and 13 million while using roaming services in the EEA. SMS traffic in the WB region doubled compared to the previous year, exceeding 2019 volumes as well. SMS traffic in the EEA in 2021 was at 40% of 2019 volumes.

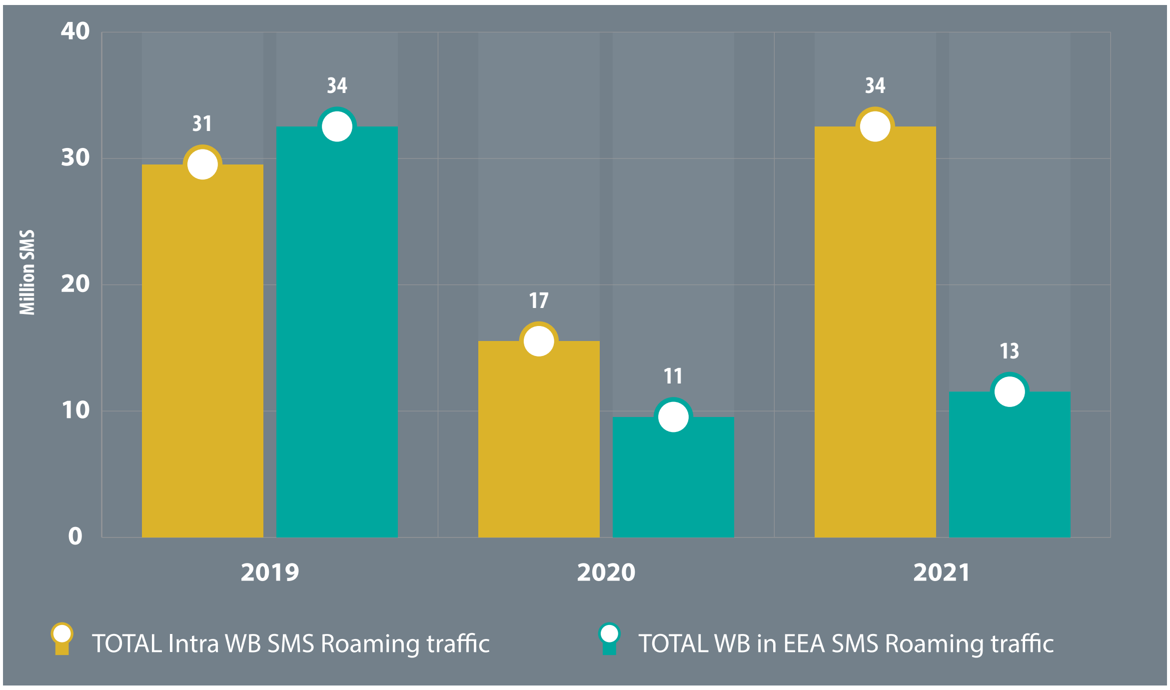

Figure 9 – Total outgoing SMS roaming traffic in the WB and the EEA in 2021

The difference between the number of SMSs/WB user sent while roaming in the WB region and in the EEA increased during the year, especially after RLAH introduction. This confirms high price sensitivity of WB customers even in the SMS segment.

Figure 10 – Number of SMS sent/WB roaming user in the WB and the EEA in 2021

The comparison between the average usage of SMS per WB roaming user in H1 and H2 2021 in the WB region implies consumption growth at the regional level after the introduction of RLAH, driven mainly by the significant increase of usage in Serbia. Highest traffic per user was generated by roamers from Montenegro and Serbia.

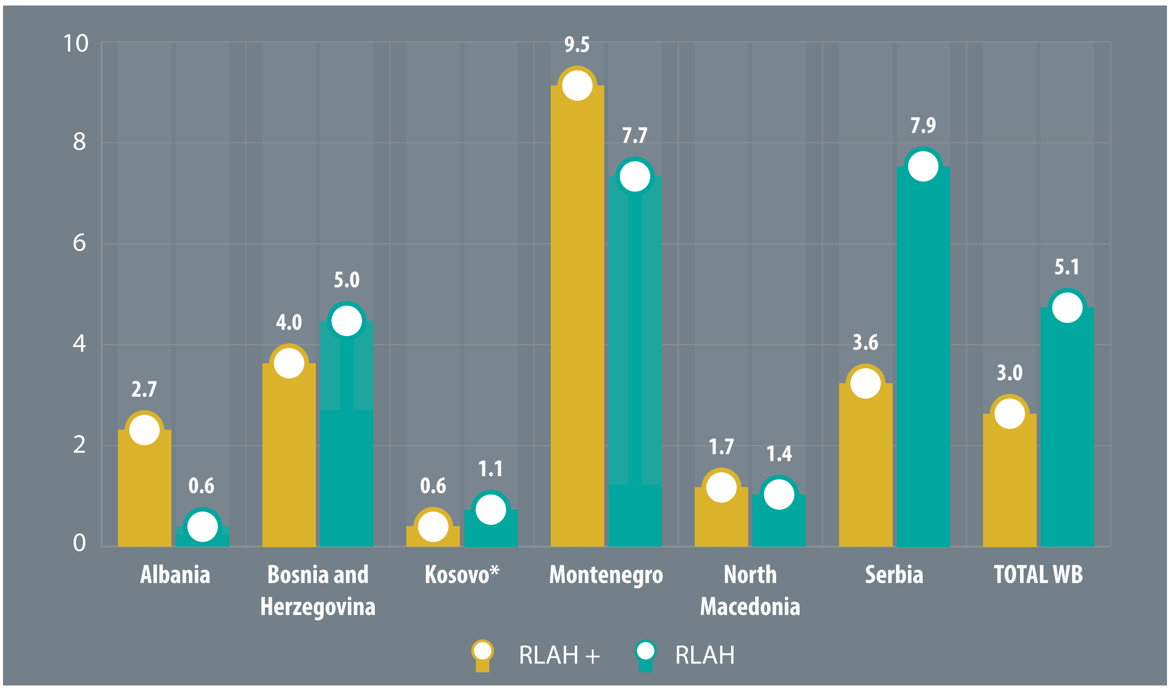

Figure 11 - SMS traffic per roaming user in intra WB roaming in H1&H2 2021

1.4. ROAMING DATA USAGE

WB users generated 3.4 million GB of data traffic while roaming in the WB region in 2021, thus increasing total consumption on year-over-year basis by 45% and more than doubling the 2019 volumes. Data roaming service consumptions while roaming in the EEA reached 427 000 GB in 2021 and that is 2.6 times higher than in the 2020 pandemic year and 40% above the 2019 level.

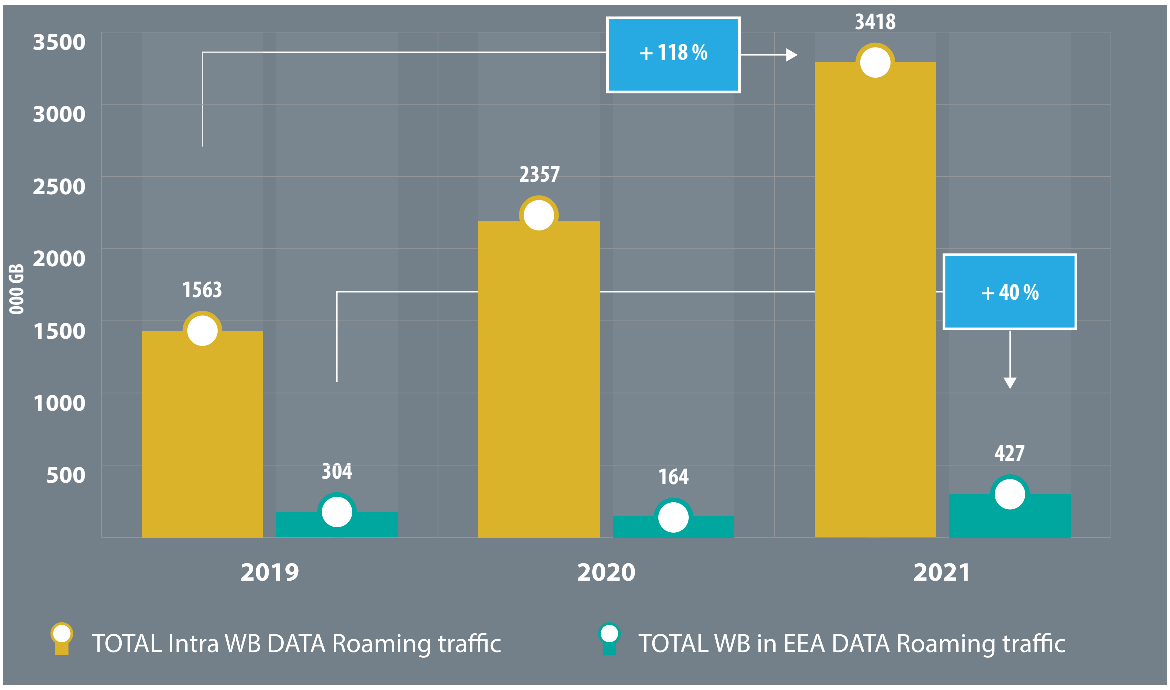

Figure 12 - Total data roaming traffic in the WB and the EEA in 2021

The difference of data usage per WB user while roaming in the WB region and in the EEA has been varying between 5.5 and 7 times throughout the year.

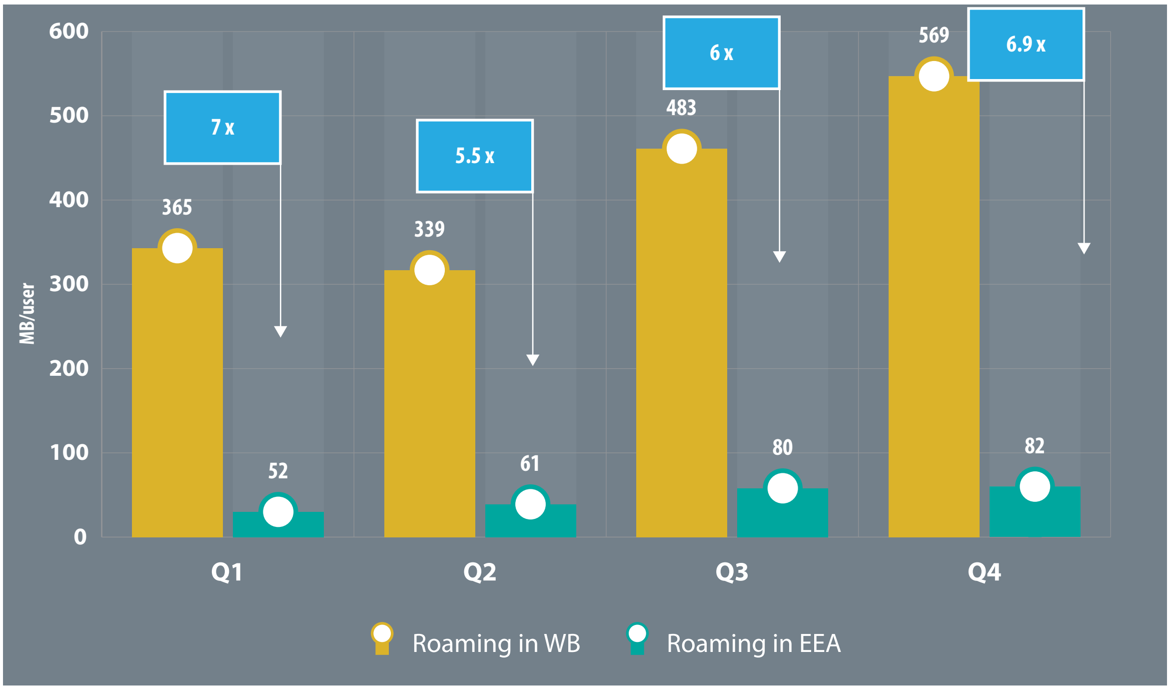

Figure 13 - Data traffic per WB roaming user in the WB and the EEA in 2021

Absolutely the highest volume of data traffic/WB user roaming in the region in 2021 was generated by roaming users from Montenegro. The comparison between the consumption of data services/WB roamer in the WB region in H1 and H2 2021 reflects high impact of introducing RLAH from 1st July. The highest impact is noted in the behaviour of customers from Serbia and North Macedonia (459% and 294% increase in average consumption of MB/user, respectively).

Albanian roamers, followed by the users from North Macedonia, had the highest average consumption of data services in the EEA among all of WB economies.

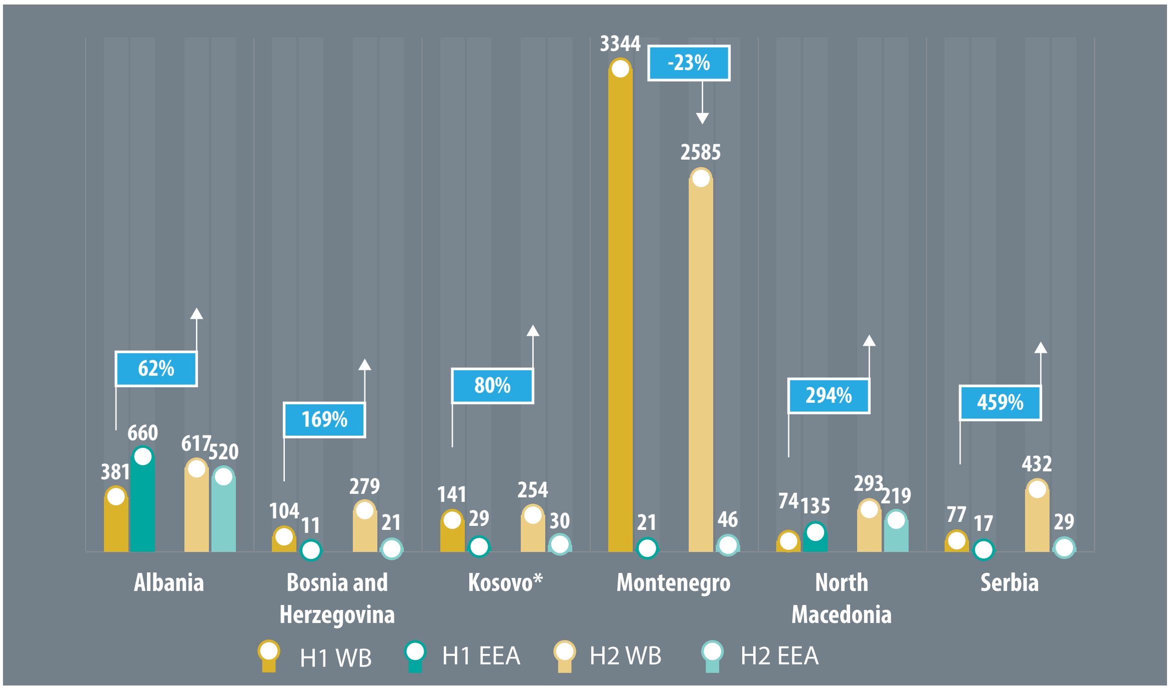

Figure 14 - MB/user in the WB and the EEA in H1&H2 2021

1.5. EEA COUNTRIES WITH THE HIGHEST SHARE OF ROAMING TRAFFIC WITH THE WB

Roaming users from the WB region produced 69% of the total outgoing roaming voice traffic in the EEA in only 6 EEA countries in 2021. The highest usage is registered in Greece, Croatia and Germany. The increase of share in Greece in 2021 was driven by significant reduction of retail roaming charges by Serbian operators.

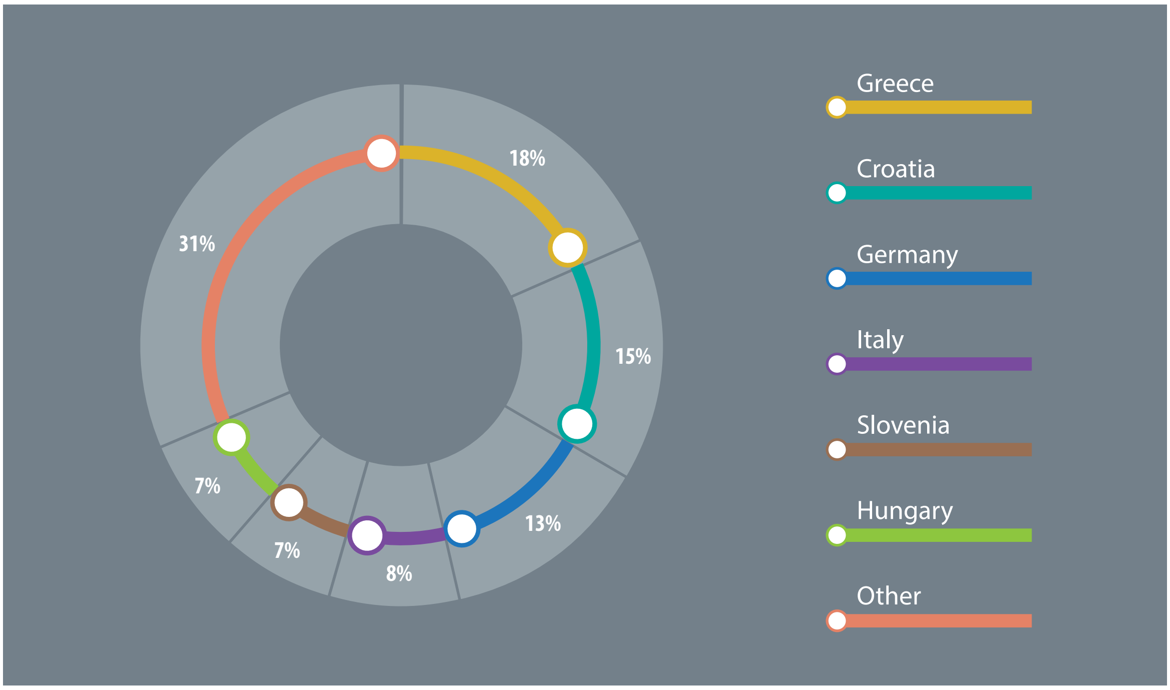

Figure 15 - Top EEA countries (outbound voice traffic) in 2021

Roaming users from the WB region produced 71% of the total outgoing roaming data traffic in the EEA in only 7 countries in 2021. The highest usage is registered in Greece, Germany and Italy.

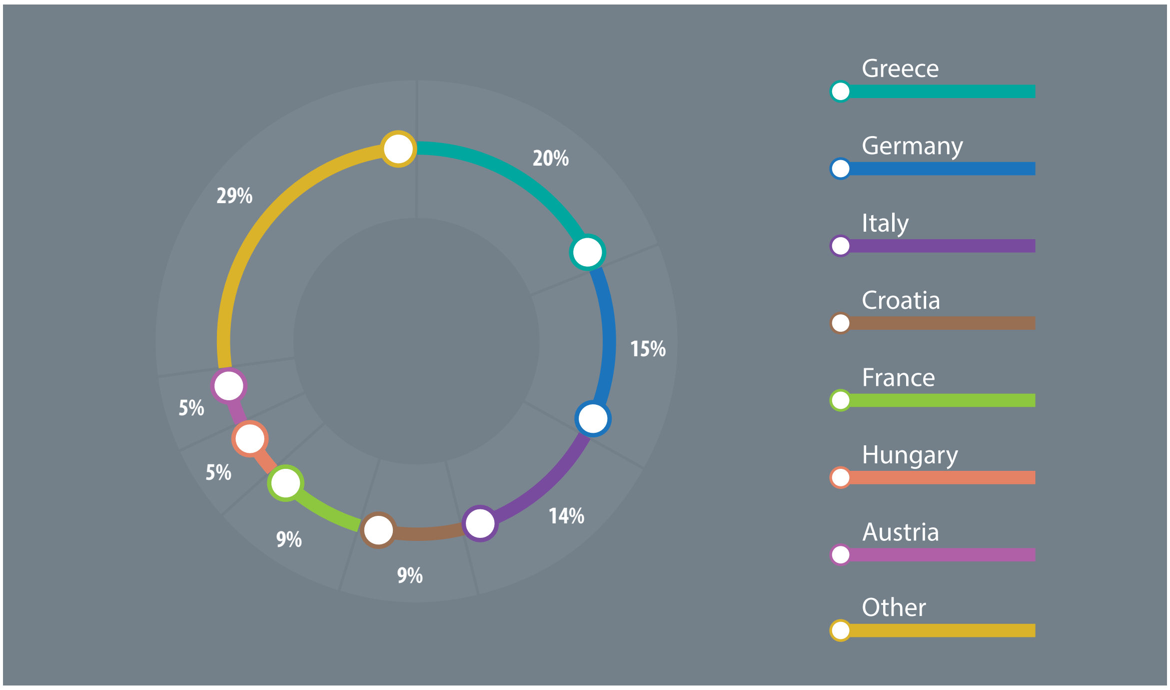

Figure 16 - Top EEA countries (outbound data traffic) in 2021

While using voice services in the WB region roaming users from the EEA generated 60 million minutes of inbound traffic in 2021, comparing to 66 million minutes in 2019 and 45 million minutes in 2020.

Roaming users from only 6 EEA countries generated 72% of total EEA inbound voice roaming traffic in the WB region in 2021. The highest usage was generated by the roamers from Austria, followed by Germany.

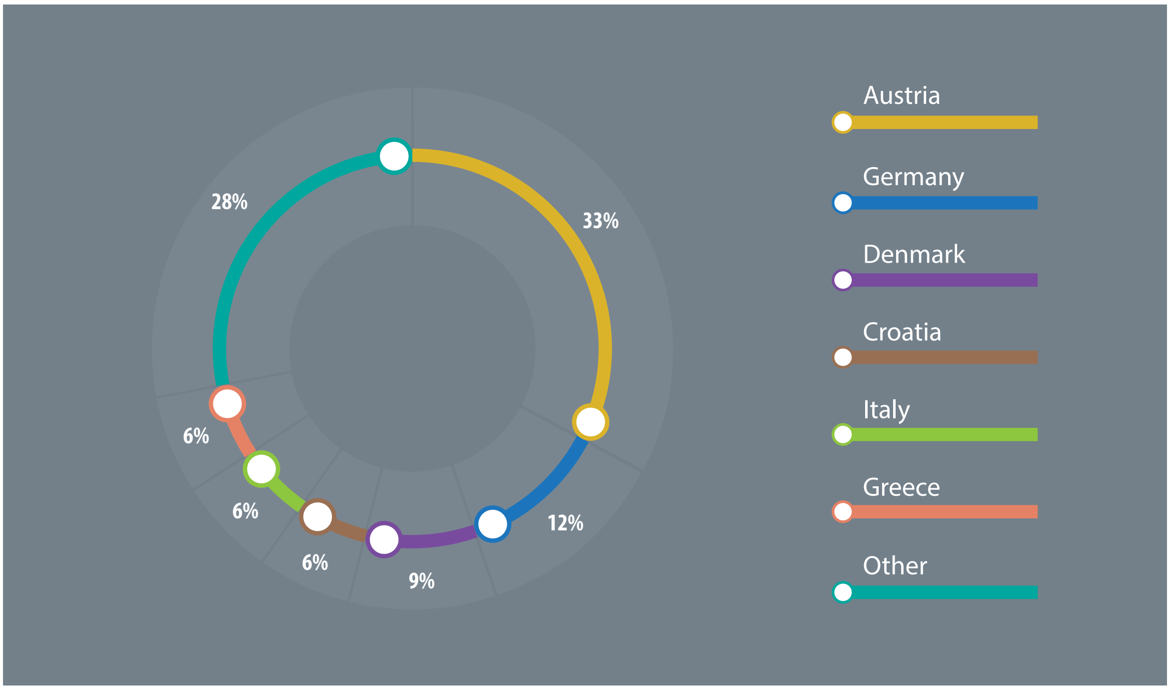

Figure 17 - Top EEA countries (inbound voice traffic) in 2021

While using data services in the WB region roaming users from the EEA produced 1330 TB of inbound data traffic in 2021, comparing to 833 TB in 2019 and 499 TB in 2020.

Roaming users from 6 EEA countries generated 74% of total EEA inbound data roaming traffic in the WB region in 2021. The highest usage was generated by the roamers from Austria, Denmark and Germany.

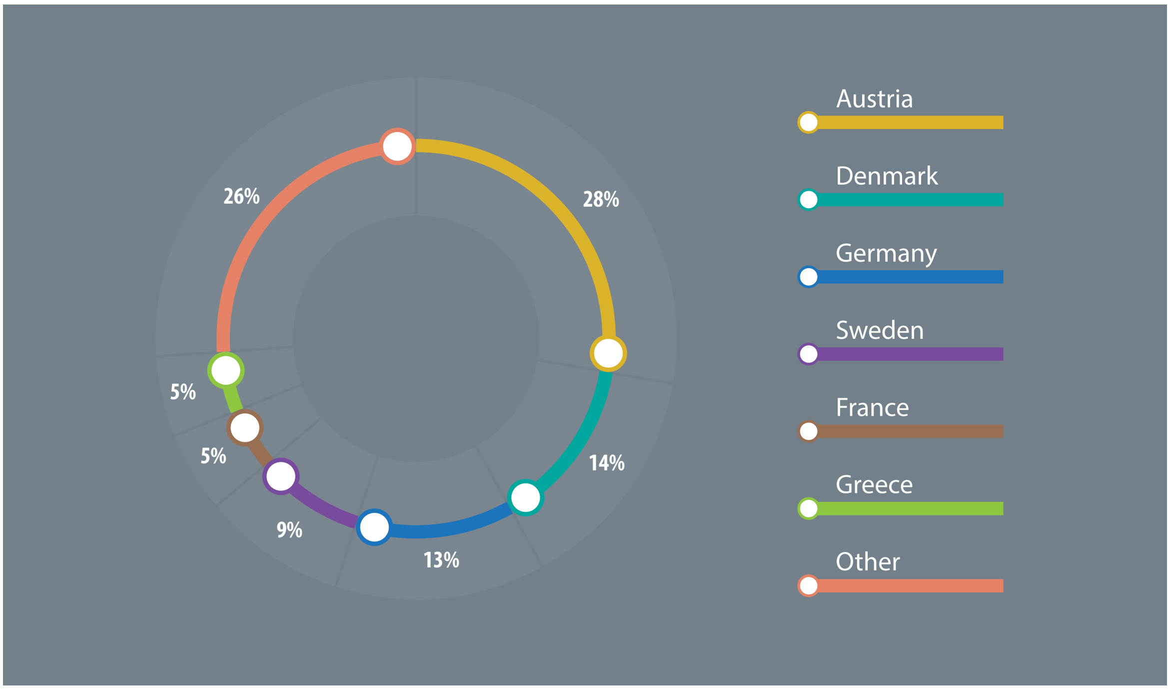

Figure 18 - Top EEA countries (inbound data traffic) in 2021

II RETAIL ROAMING REVENUES

MAIN FINDINGS

- Total retail revenues of WB mobile operators from providing roaming services within the WB region in 2021 doubled compared to 2020 and increased by 30% vs. 2019, despite the sharp price reduction implemented according to RRA terms. In the same reference period, retail revenues from WB users roaming in the EEA decreased by 32%.
- Under the umbrella of RRA, in 2019-2021 period, the average retail revenue/min of outgoing roaming calls in the region decreased in the range from 15% (Bosnia and Herzegovina) up to 94% (North Macedonia); for incoming calls 73% and for SMS 80%, on average. The average actual revenue/GB of roaming data traffic decreased between 56% (Serbia) and 95% (North Macedonia) in 3-year period.
- The average retail revenue/minute in 2021 was 28 times higher for outgoing roaming voice calls realised in the EEA compared to the revenues/minute of calls generated while roaming within the WB region. For incoming calls, SMS and data services, the magnitude of this difference is 46, 11 and 15 times, respectively.
- The lowest actual revenues/unit for all roaming services in the region are registered in Montenegro, while Albanian mobile operators have the lowest revenues/unit for roaming in the EEA.

2.1. TOTAL RETAIL ROAMING REVENUES

The total retail revenues generated by WB users while roaming in the WB region reached €10.1 million in 2021[3], thus doubling the revenues from 2020 and exceeding those from 2019 by 28% as well.

Total retail revenues generated by WB mobile subscribers while roaming in the EEA in 2021 amounting to €25.1 million indicate significant recovery compared to Y2020, but remain well below the 2019 revenue (32%).

3 Revenues from roaming bundles are not included in total revenues in order to align with the 2019-2020 reporting period. Reported retail revenues from bundles in 2021 were 2.38 mil €.

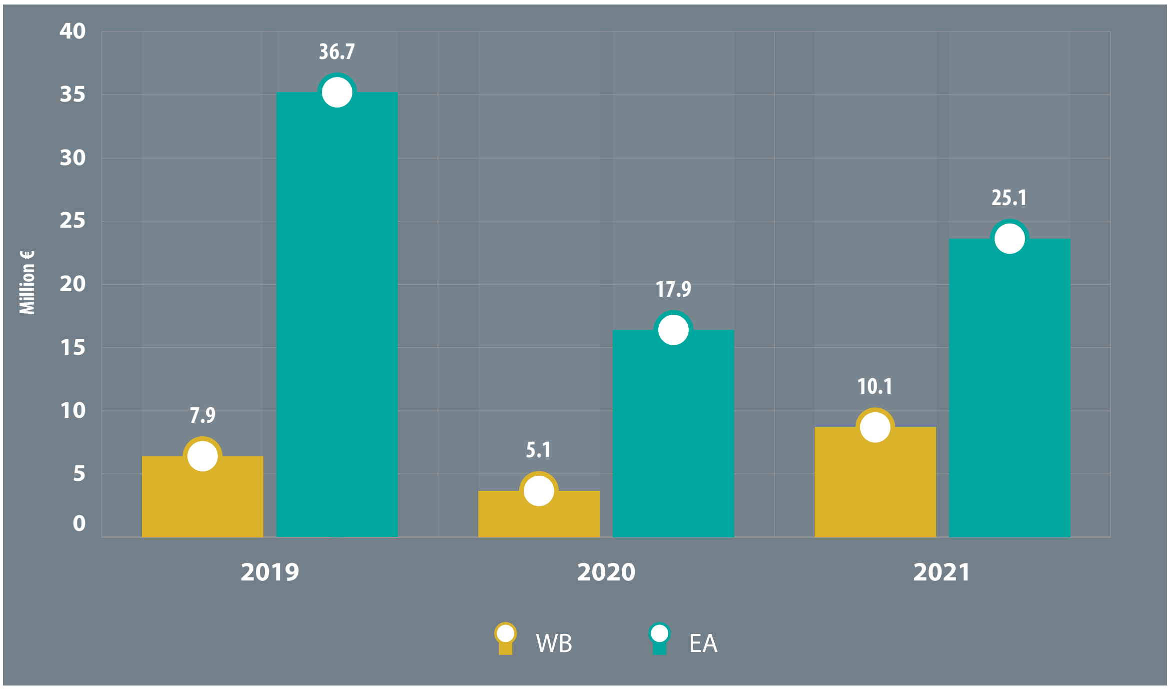

Figure 19 - Total retail roaming revenue in the WB and EEA in 2021

Out of the total retail revenues generated in intra-WB roaming in 2021, 59% derived from data services, while outgoing voice calls accounted for 30%. The share of incoming voice calls and SMS services was 6% and 5%, respectively. Considering that just two years ago data contributed with only 31% to total retail roaming revenues within the WB region, statistics confirm strong customer shift to data services also in the roaming.

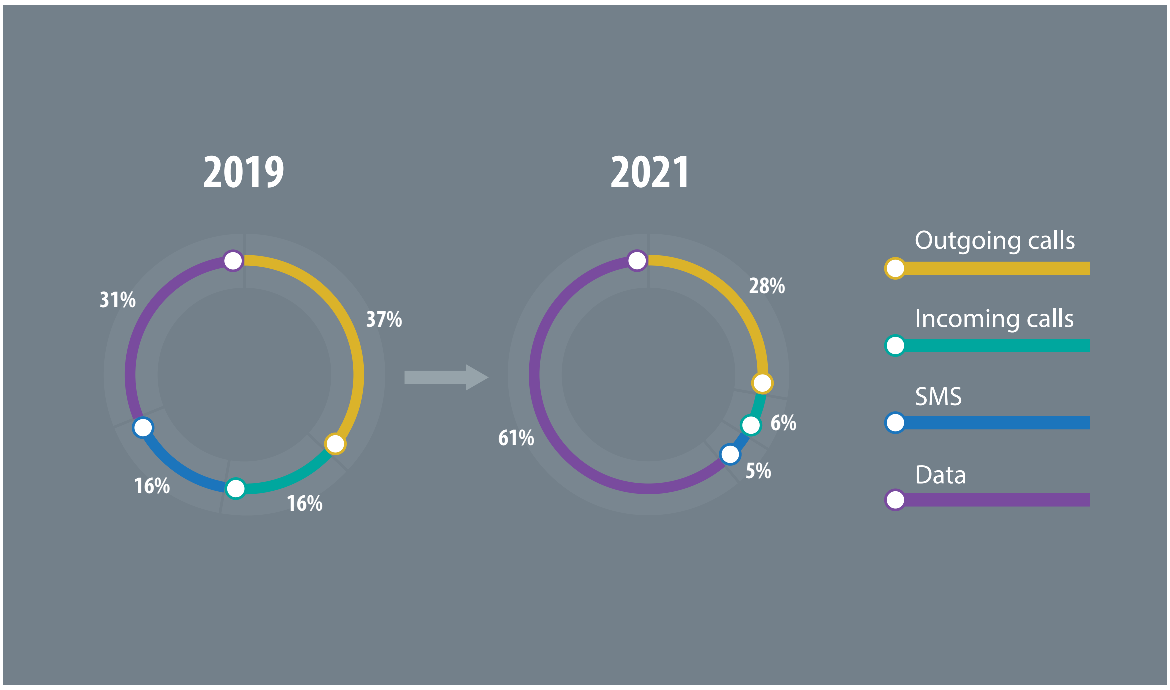

Figure 20 – Split of retail roaming revenues in the WB per services

Out of the total retail revenues generated by WB mobile subscribers while roaming in the EEA in 2021, 46% derived from data services, while outgoing voice calls accounted for 31%. The share of incoming voice calls and SMS services was 14% and 9%, respectively. In comparison to the revenue structure from intra-WB roaming, incoming calls and SMS have significantly higher portions in the EEA.

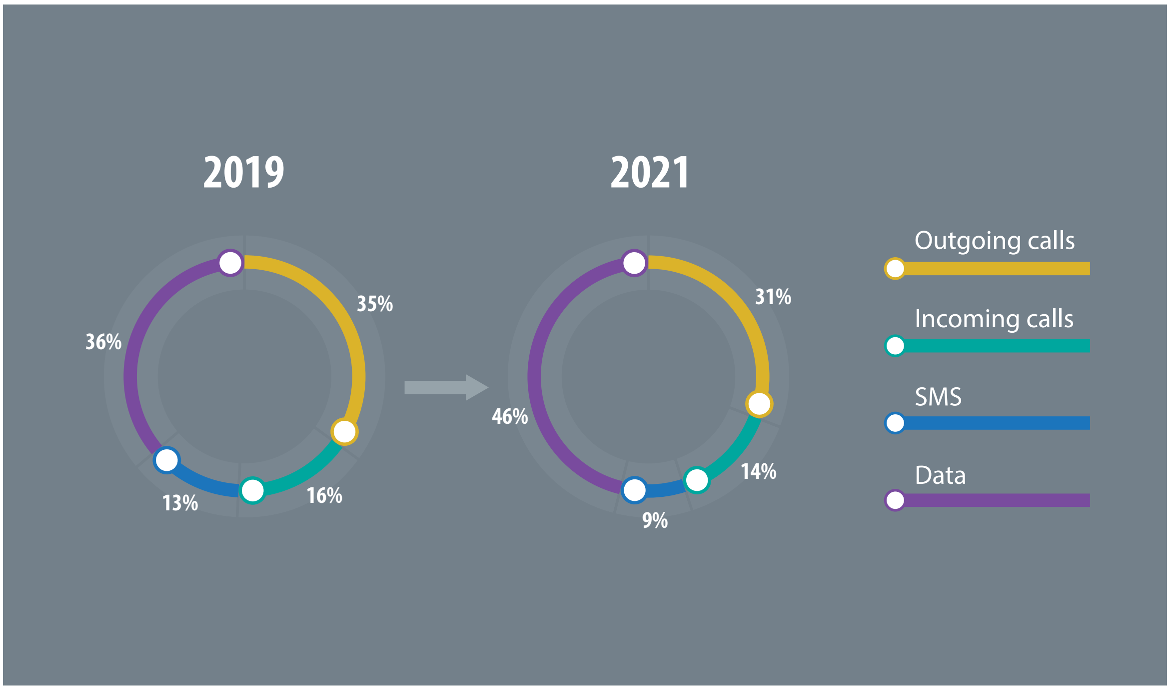

Figure 21 – Split of retail roaming revenues in the EEA per services

2.2. RETAIL ROAMING VOICE REVENUES

2.2.1. OUTGOING VOICE

Roaming users from the WB region generated close to €3 million of retail revenues while making roaming calls in the WB region and €7.8 million while roaming in the EEA in 2021. Despite reduced retail roaming prices in the WB region after RLAH was introduced, roaming revenues from outgoing voice are in line with the 2019 revenues, driven entirely by higher usage.

Revenues from calls made while roaming in the EEA slightly recovered from the 2020 pandemic year, but are still 40% lower than in 2019.

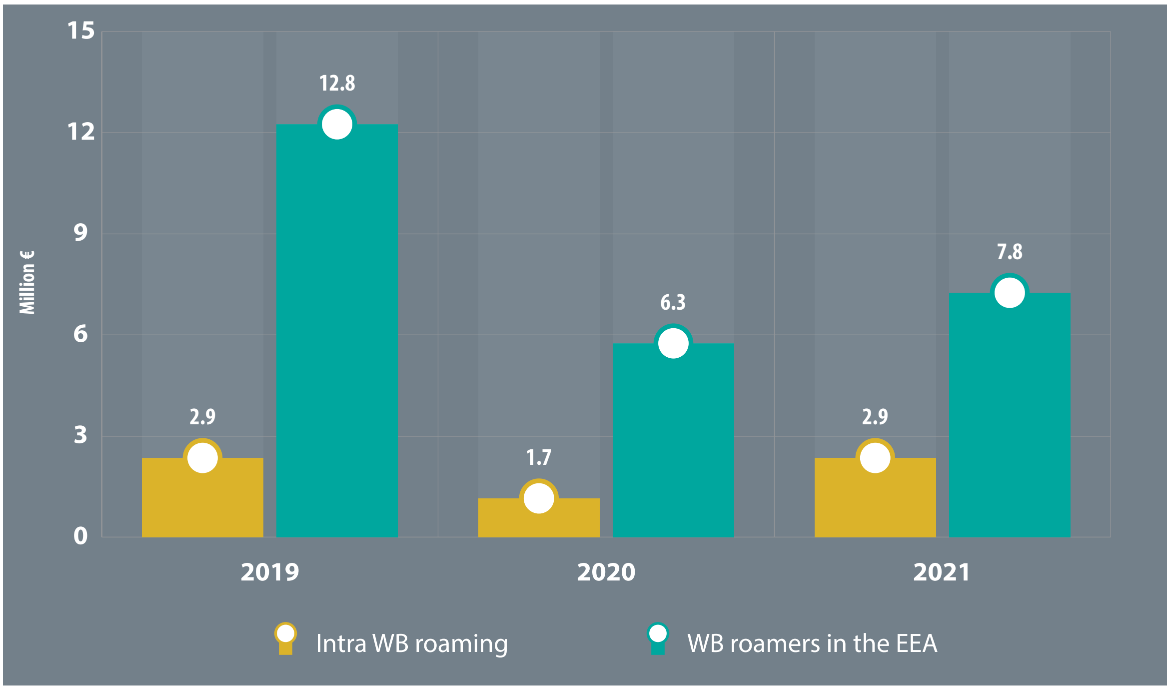

Figure 22 - Retail outgoing voice roaming revenue in the WB and the EEA

The average retail roaming revenue/minute of outgoing calls made within the WB region in 2021 slightly increased vs. 2020 (driven by an increase in Montenegro which generates more than half of the regional traffic), but decreased by 29% compared to 2019. The largest price drop over the 3-year horizon (2019-2021), in percentage, was registered in North Macedonia (94%) and Kosovo* (91%)[4]. Revenues/minute in Bosnia and Herzegovina are notably higher than in other WB economies.

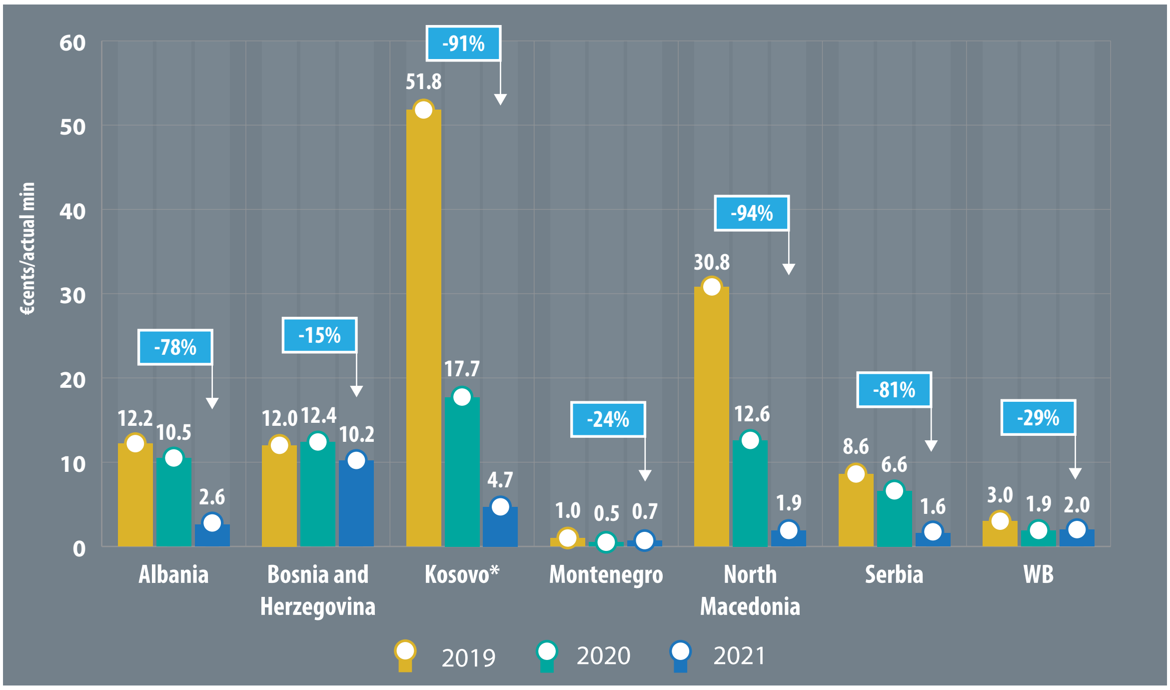

Figure 23 - Retail roaming revenue per minute of outgoing calls in the WB

4 Albanian MNOs reported pay-as-you-go revenues as revenues from bundles due to the difficulties to separate them per service. This could have caused the reported retail revenues/unit to be lower than actual.

Retail revenues/ minute of outgoing calls while roaming in the EEA stayed high and stable during the last 3 years, yielding the 2021 regional average as much as 28 times higher than for the same service while roaming in the region. By far the lowest retail revenues/minute of outgoing roaming calls in the EEA are in Albania, and the highest in Kosovo*. Bosnia and Herzegovina, Kosovo* and Montenegro have even increased the retail roaming revenue/minute compared to the previous year.

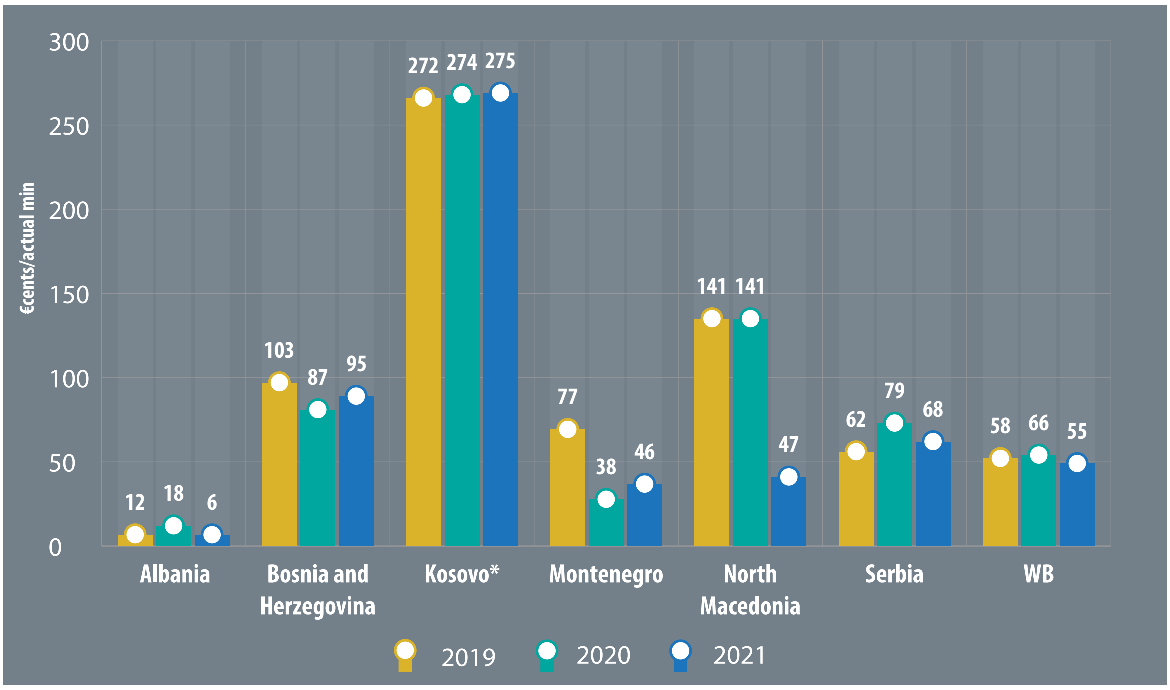

Figure 24 - Retail roaming revenue per minute of outgoing calls in the EEA

2.2.2. INCOMING VOICE

Users from the WB region generated €0.65 million of retail revenues from received calls while roaming in the WB region in 2021. This represents further revenue drop vs. 2019 and 2020, despite heavily increased usage.

Revenue from this service produced by WB users while roaming in the EEA was €3.6 million, which represents only a slight recovery from the big drop in the pandemic year of 2020.

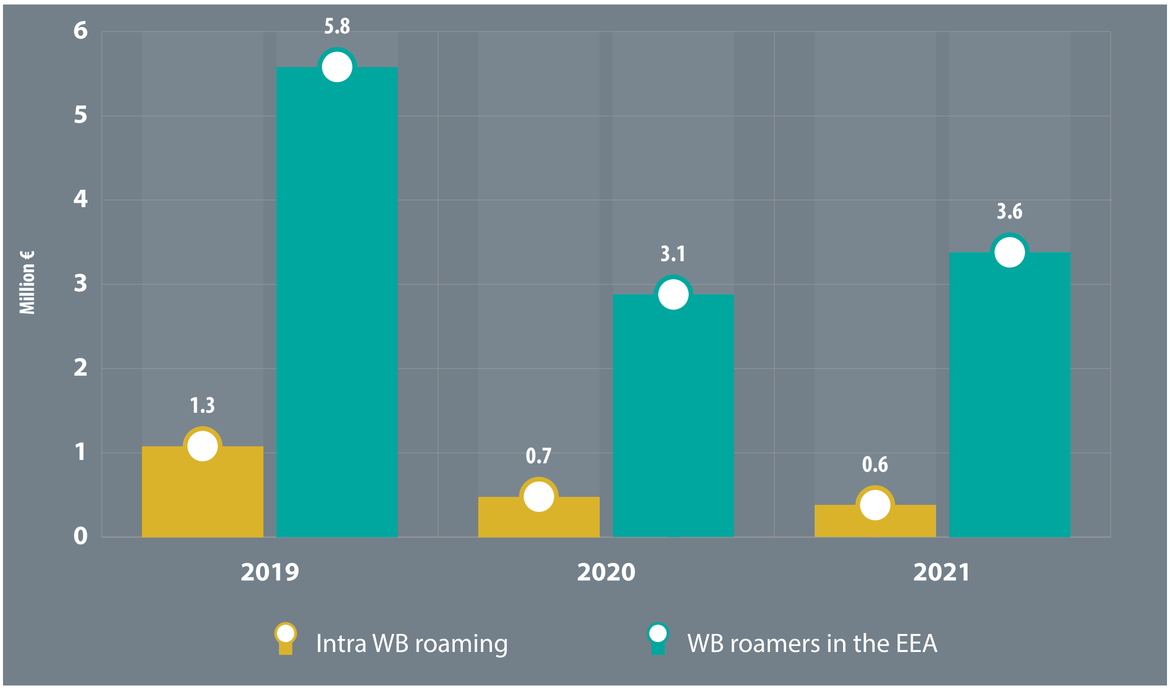

Figure 25 - Retail incoming voice roaming revenue in the WB and the EEA

The average retail revenue/minute of incoming calls received while roaming within the WB region further decreased in all of the economies in 2021, thus registering a 73% drop over the 3-year horizon (2019-2021) at the regional level. The largest price drop was evidenced in Kosovo*, North Macedonia and Serbia (all above 90%).

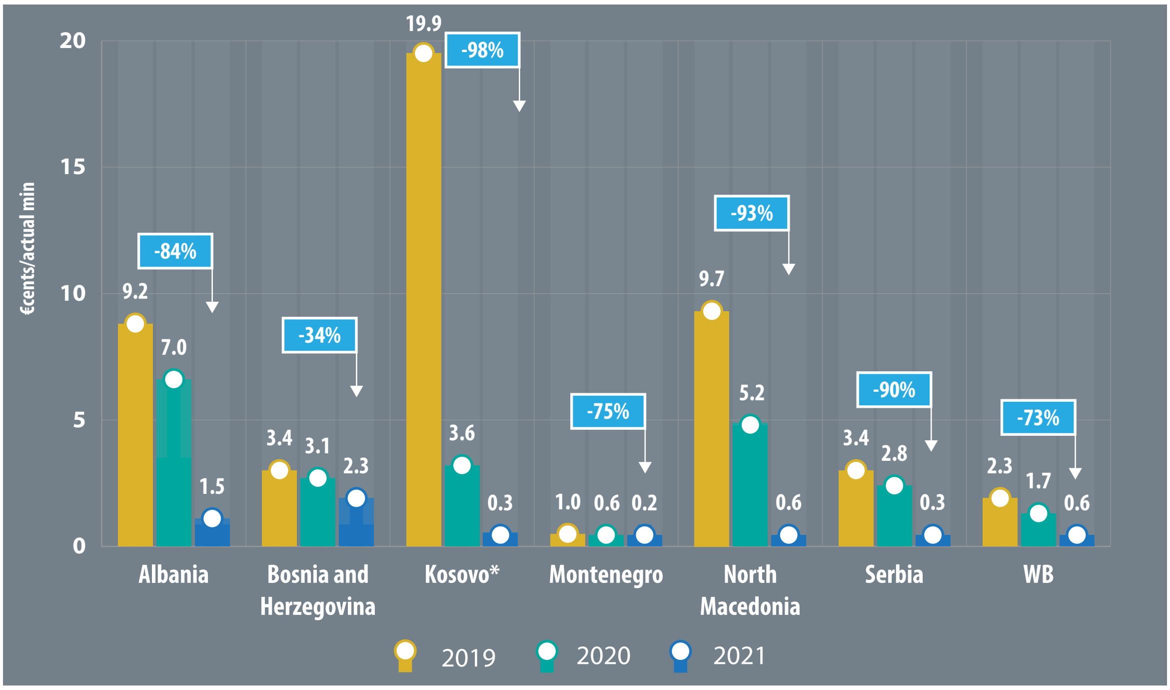

Figure 26 - Retail roaming revenue/minute of incoming calls in the WB

Retail revenue/minute of incoming calls received while roaming in the EEA remained high and stable during the last 3 years, with the 2021 regional average as much as 46 times higher than for the same service while roaming within the WB region. As in the case of outgoing calls, by far the lowest retail revenues per minute of incoming roaming calls while roaming in the EEA are still in Albania, and the highest in Kosovo*.

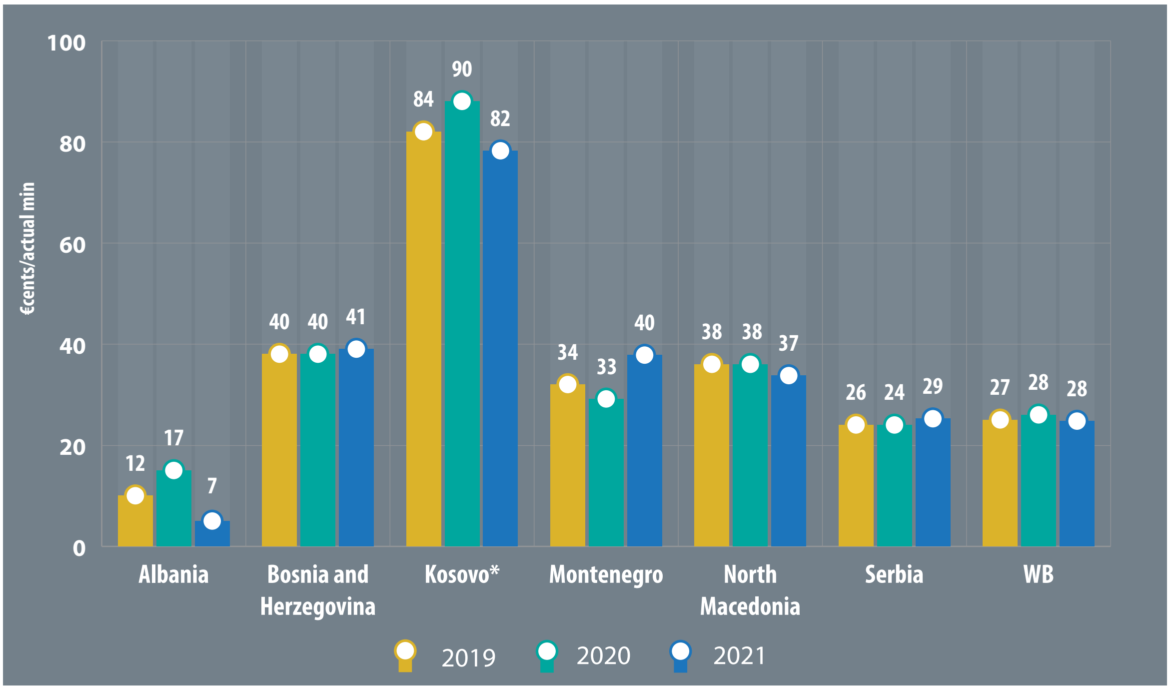

Figure 27 - Retail roaming revenue per minute of incoming calls in the EEA

2.3. RETAIL ROAMING SMS REVENUES

Users from the WB region generated just over €0.5 million of retail revenue by sending SMSs while roaming in the WB region in 2021. This is only 10% above the previous year's revenue (although traffic doubled on a year-over-year basis), but still remains far behind the 2019 service revenue.

Revenue from SMSs sent by WB users while roaming in the EEA was €2.3 million, about 13% higher than in 2020, but still more than halved compared to the 2019 revenue.

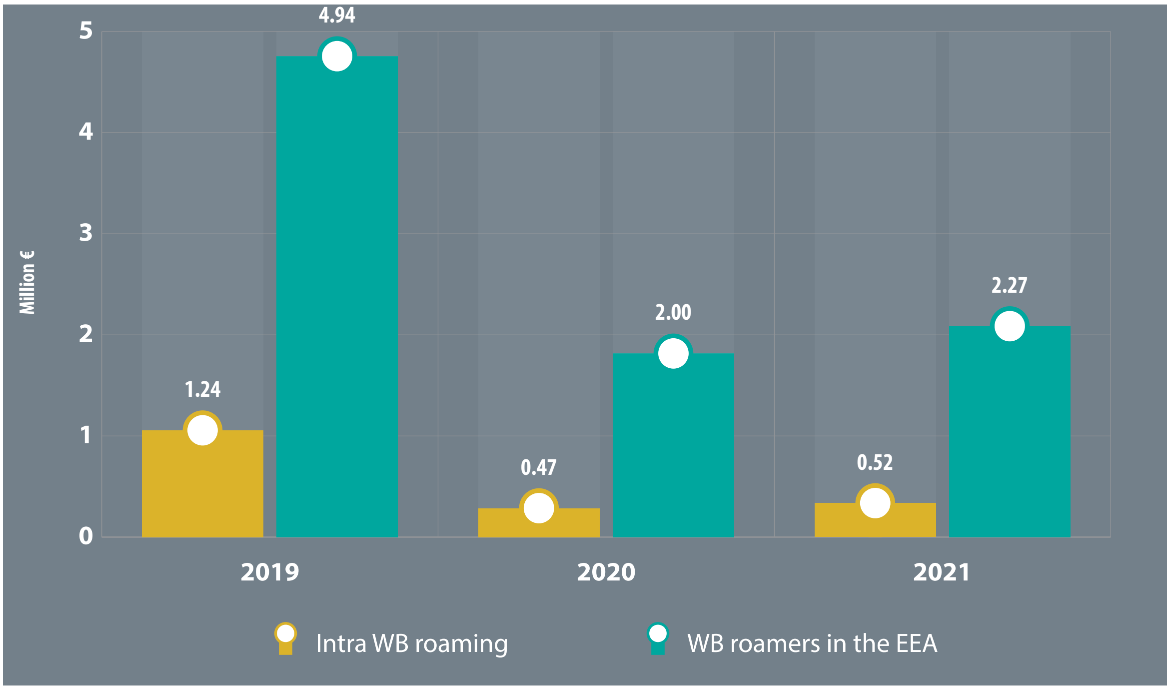

Figure 28 - Retail SMS roaming revenue in the WB and the EEA

The average retail revenue/SMS sent while roaming within the WB region further decreased in all of the economies in 2021, thus registering a 63% drop over the 3-year horizon (2019-2021) at the regional level. The biggest price drops, percentage wise, were evidenced in Albania and Serbia, while the sharpest price decrease in absolute terms was reported in Kosovo*. Reported revenues/SMS in Kosovo* and Bosnia and Herzegovina are notably higher than in the other WB economies.

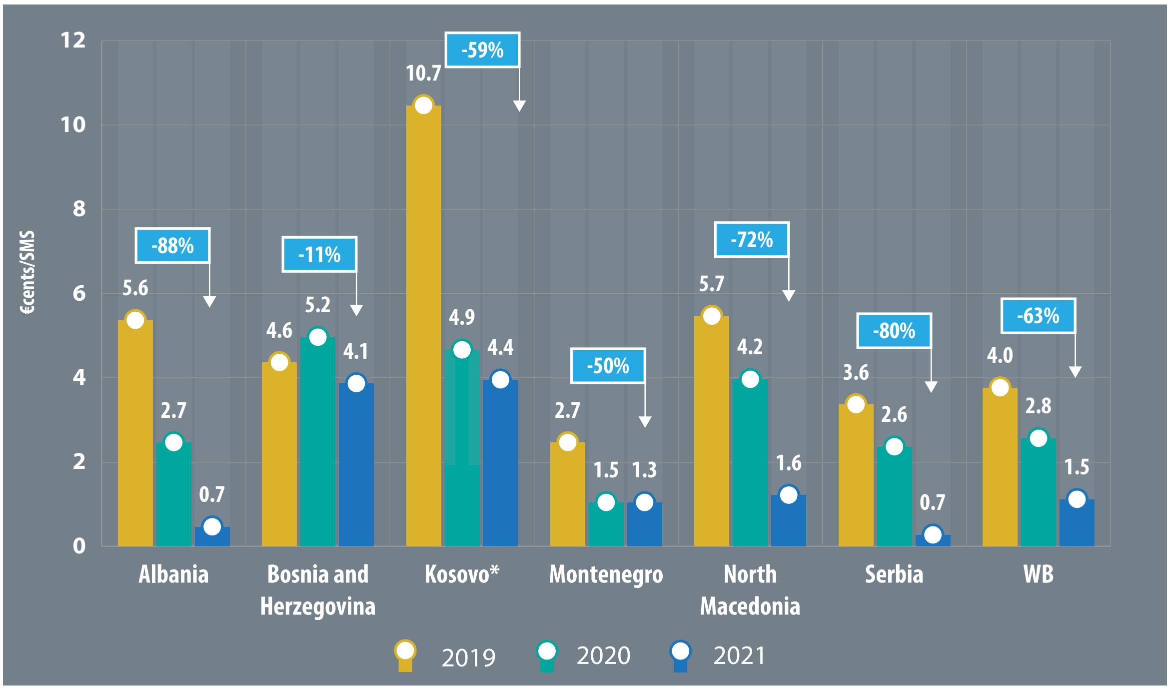

Figure 29 - Retail roaming revenue per SMS in the WB

The regional average retail revenue/SMS while roaming in the EEA in 2021 was 11 times higher than for the same service within the WB region. By far the lowest retail revenues/SMS sent are in Albania and the highest in Kosovo*. Bosnia and Herzegovina, Montenegro and North Macedonia even increased the actual retail roaming revenue/SMS compared to the previous year.

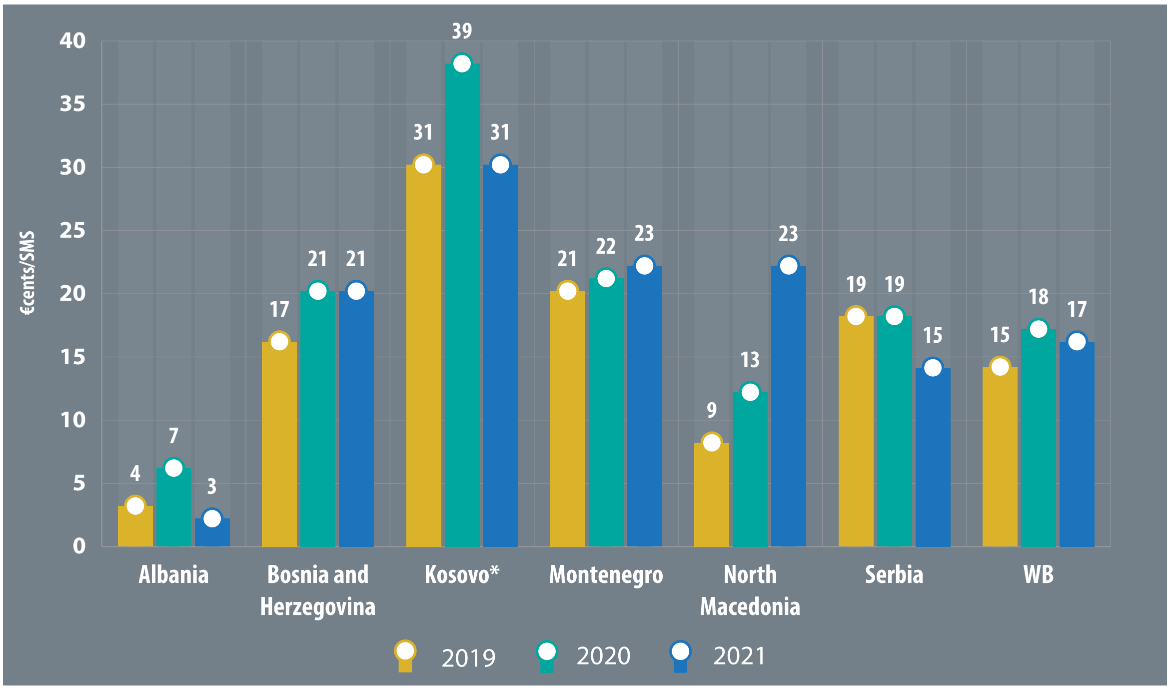

Figure 30 - Retail roaming revenue per SMS in the EEA

2.4. RETAIL ROAMING DATA REVENUES

Users from the WB region generated more than €6 million in retail revenues while using data roaming in the WB region in 2021. This is 2.5 and 2.8 times higher than in 2019 and 2020, respectively. The huge increase in total retail data roaming revenues, driven by higher usage, was observed in all of the WB economies (raising up to 14.4 times in Serbia) except Montenegro (32% decrease).

Revenue from data traffic generated by WB users while roaming in the EEA in 2021 was €11.4 million, 78% higher than in 2020, but still 13% below the 2019 revenue.

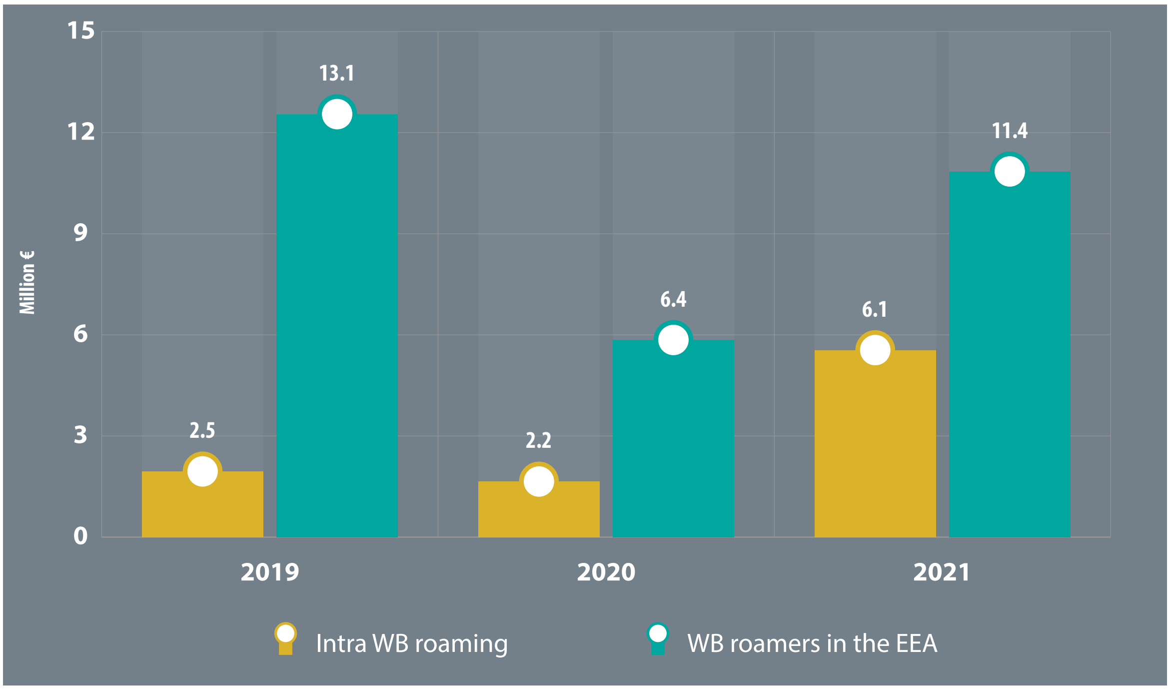

Figure 31 - Retail data roaming revenue in the WB and the EEA

The average retail revenue/GB of data traffic generated by WB users roaming within the region increased in 2021 compared to 2019 and 2020. That was driven only by significant decrease of the portion of Montenegrin traffic, by far the cheapest in the region, in the total regional roaming data traffic (MNE roamers used to generate up to 90% of the regional volumes in 2019-2020 and then dropped to 40% in 2021). Huge decrease was reported in all other economies. The biggest price drop in the 2019-2021 period was evidenced in Albania and North Macedonia (above 90%). Reported revenue/GB in Kosovo* was notably higher than in the other WB economies.

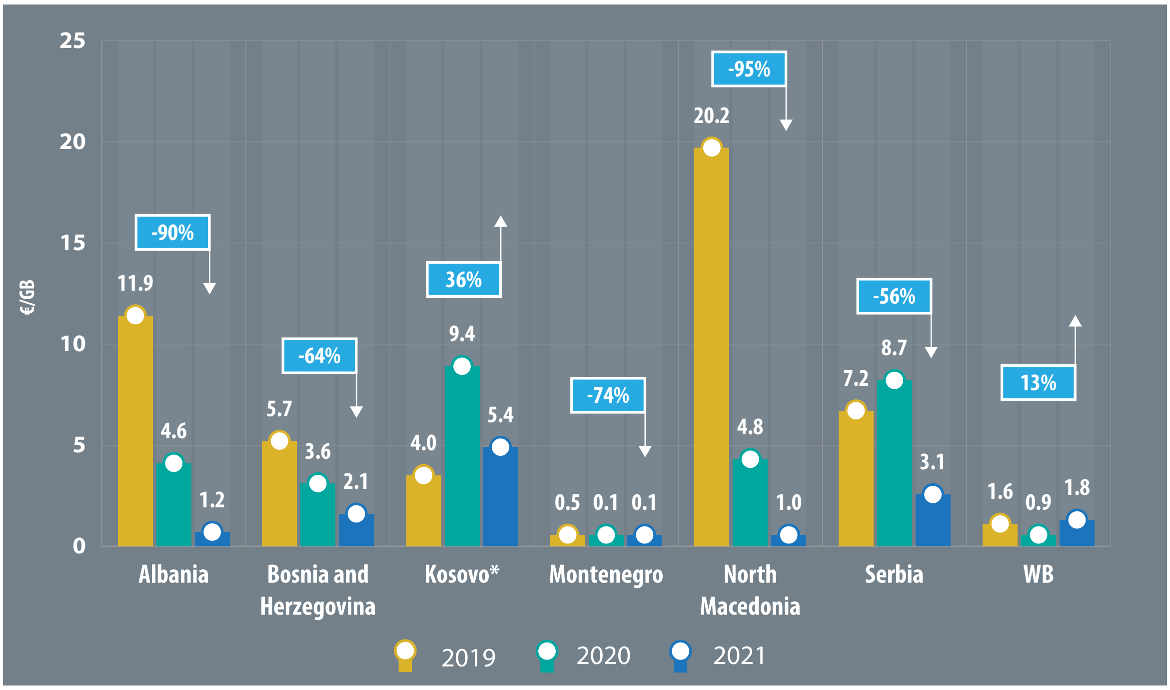

Figure 32 - Retail roaming revenue per GB in the WB

By far the lowest retail revenue/GB of data traffic consumed while roaming in the EEA is in Albania, while the revenues high above the average were registered in Serbia, Montenegro and Bosnia and Herzegovina. All the economies reported a decrease in retail roaming revenue/GB in 2021 vs. 2020. However, the average retail revenue/GB of data traffic while roaming in the EEA, amounting to 27 €/GB, is still 15 times more expensive than the same service within the WB region.

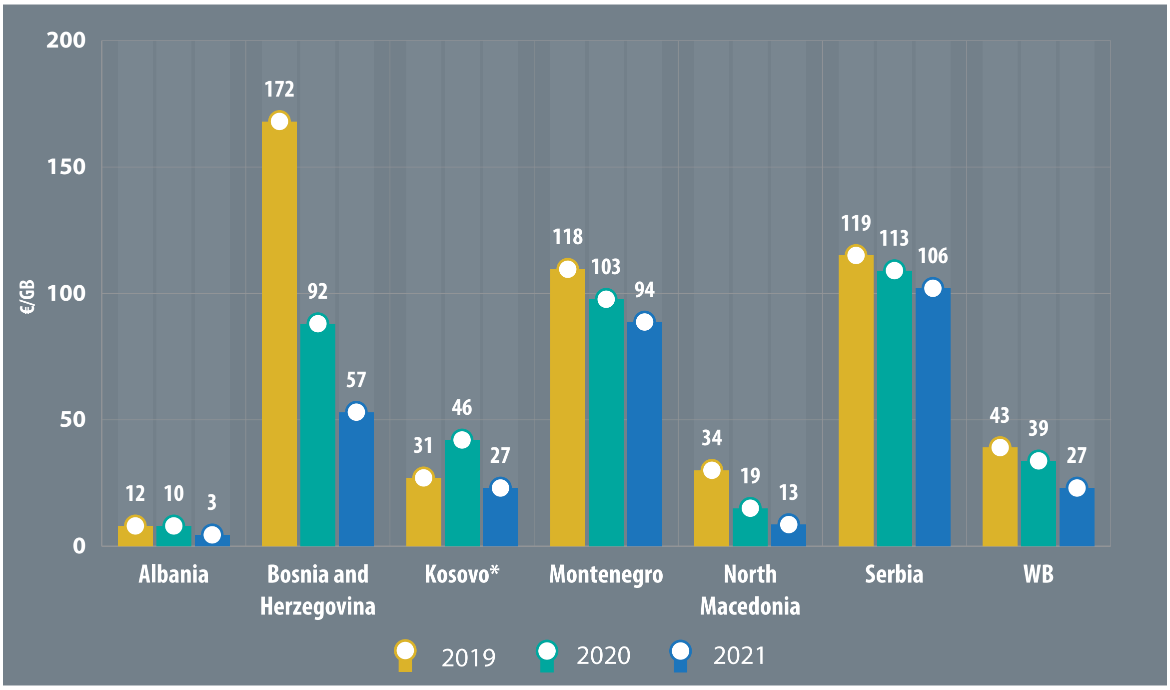

Figure 33 - Retail roaming revenue per GB in the EEA

III WHOLESALE ROAMING REVENUES

MAIN FINDINGS

- The total WB wholesale revenue generated by visitors from the other WB economies increased by 26% compared to 2020, but remained 9% lower than in 2019.
- The total wholesale revenue generated by visitors from the EEA increased by 55% compared to 2020, but still being 16% lower than in 2019.
- The average wholesale revenue/GB in the regional roaming in 2021 was 1.2 €/GB. The average wholesale revenue/GB of data traffic produced by the visitors from EEA countries in 2021 was 4.3 €/GB and it was lower than the wholesale price cap proposed by the Roadmap for 2023 in all of the WB economies excluding Kosovo*.
- The difference in wholesale revenues/unit generated by providing other wholesale roaming services to EEA operators and to the operators from other WB economies is not as large as in case of retail revenues. In 2021, the average revenue from voice calls made was 8 €cents/min for EEA vs. 3 €cents/min for WB operators; from messaging 1.6 €cents/SMS vs. 0.5 €cents/SMS.

3.1. WHOLESALE ROAMING REVENUES

Reported wholesale roaming revenue generated by visitors from the WB region amounted to €11.5 million in 2021, constituting a 26% increase compared to the previous year, driven by higher usage.

The total wholesale roaming revenues generated by EEA roaming users while using roaming services in the WB region amounted to €10.8 million and they were just partially recovered after the huge drop in the 2020 pandemic year (still 16% below the 2019 revenue).

Wholesale revenues from intra-WB roaming and from EEA visitors were quite well balanced in 2019 and 2021. The share of voice and data in intra-WB wholesale revenues was almost equal in 2021, while data was prevailing in the revenues from EEA visitors.

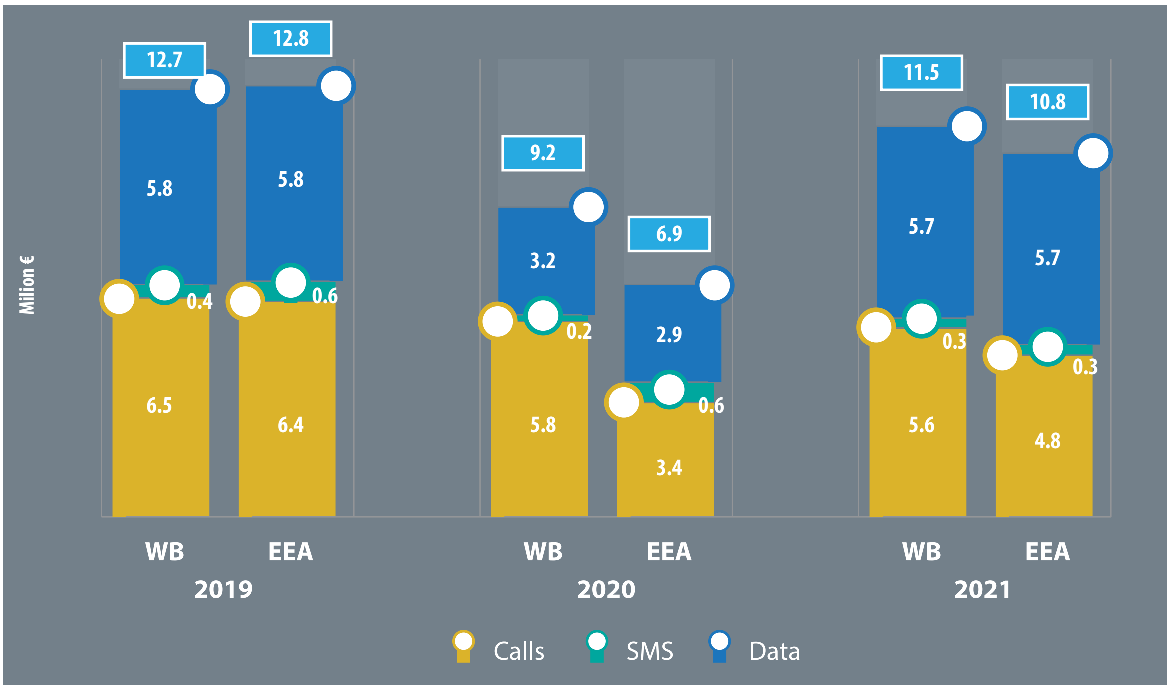

Figure 34 - Wholesale roaming revenue from the WB and the EEA

3.2. WHOLESALE ROAMING VOICE REVENUES

WB wholesale revenue/minute generated by roaming users from other WB economies has been continuously decreasing during the implementation of RRA. The lowest voice wholesale revenue/minute in intra-WB roaming was registered in Bosnia and Herzegovina (1 €cent/min), while these charges fell below 4 €cents in all WB economies in 2021, yielding the regional average of 3 €cents/min.

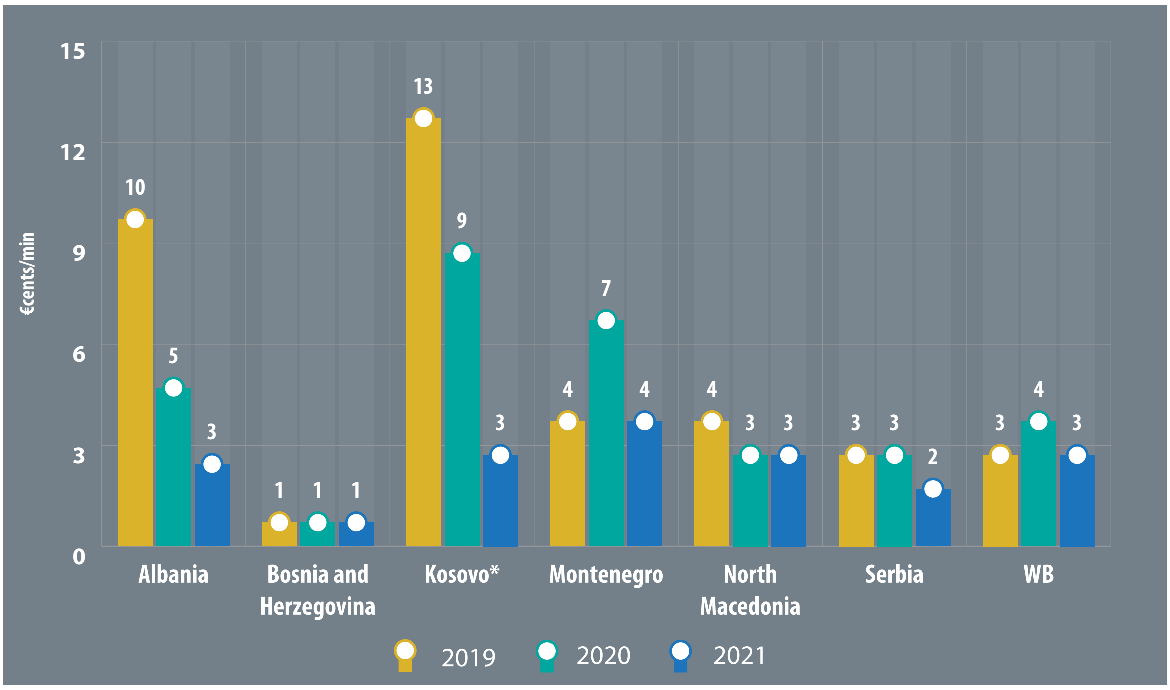

Figure 35 - Wholesale roaming revenue per minute from the WB

Wholesale revenue/minute generated by EEA mobile subscribers while using roaming voice services in the WB region increased slightly during 2021, resulting in 8 €cents/min as the average charge.

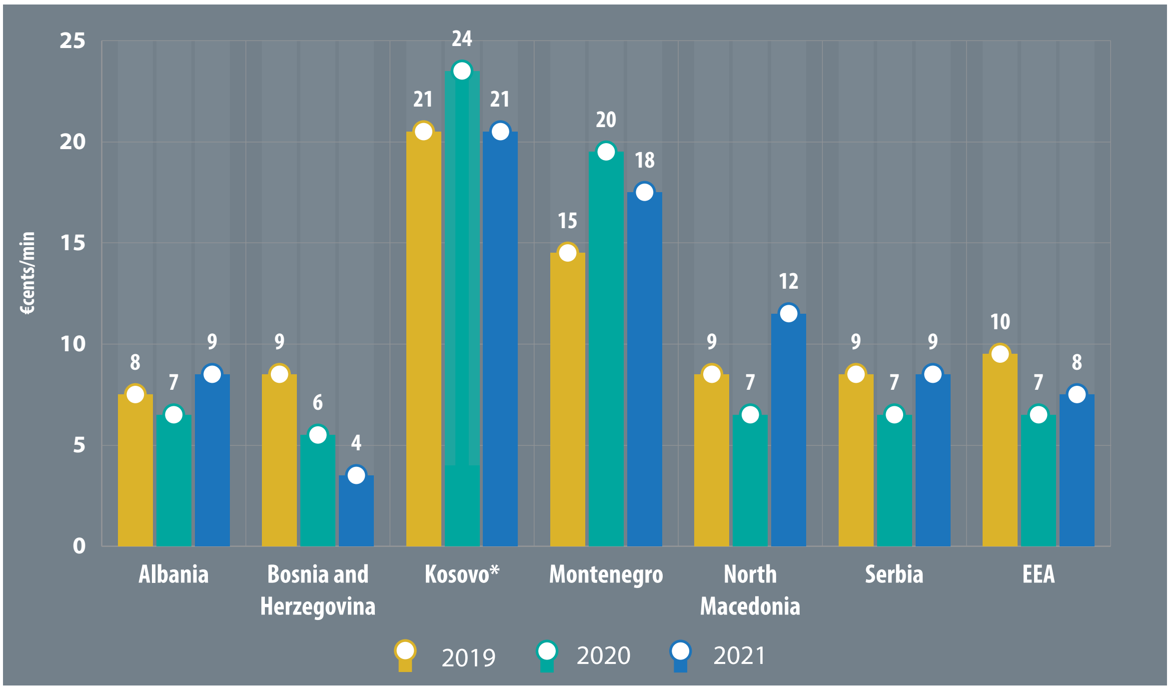

Figure 36 - Wholesale roaming revenues per minute from the EEA

3.3. WHOLESALE ROAMING SMS REVENUES

Wholesale revenues/SMS sent by WB users roaming in other WB economies have been significantly reduced after the implementation of RLAH regime. These charges fell below 1 €cent in all of the WB economies, resulting in a regional average of 0.5 €cents/SMS.

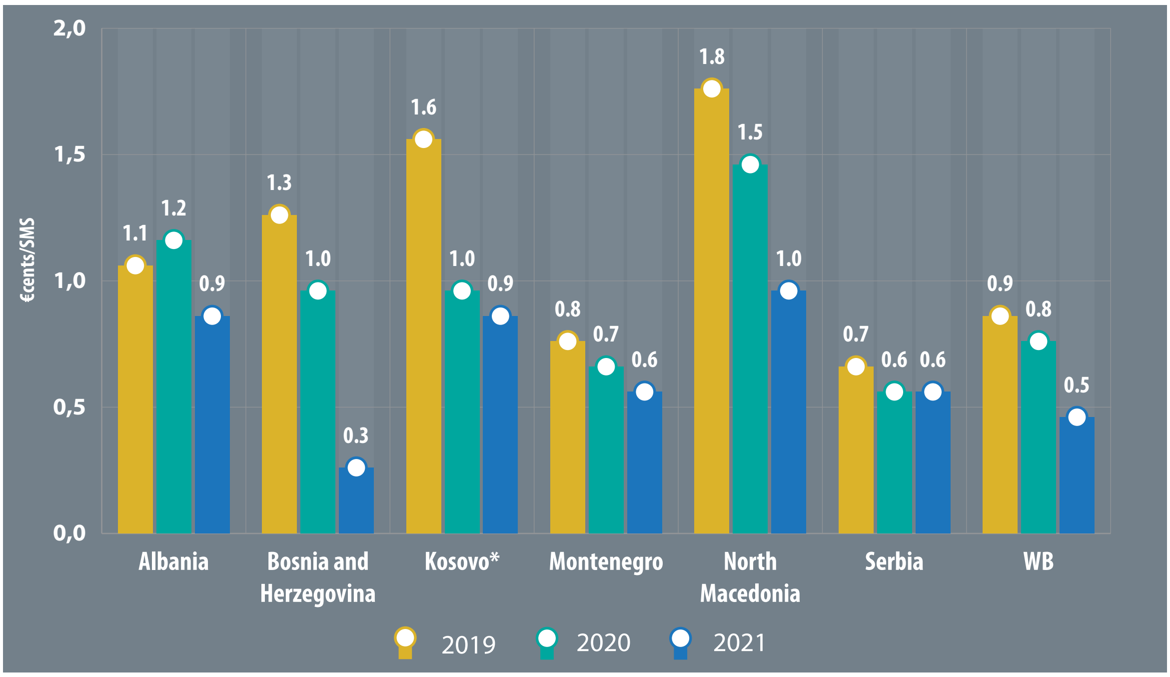

Figure 37 - Wholesale roaming revenue per SMS from the WB

WB wholesale revenues/SMS sent by EEA roaming users while using roaming voice services in the WB have been moderately reduced in 2021, resulting in a regional average of 1.6 €cents/SMS.

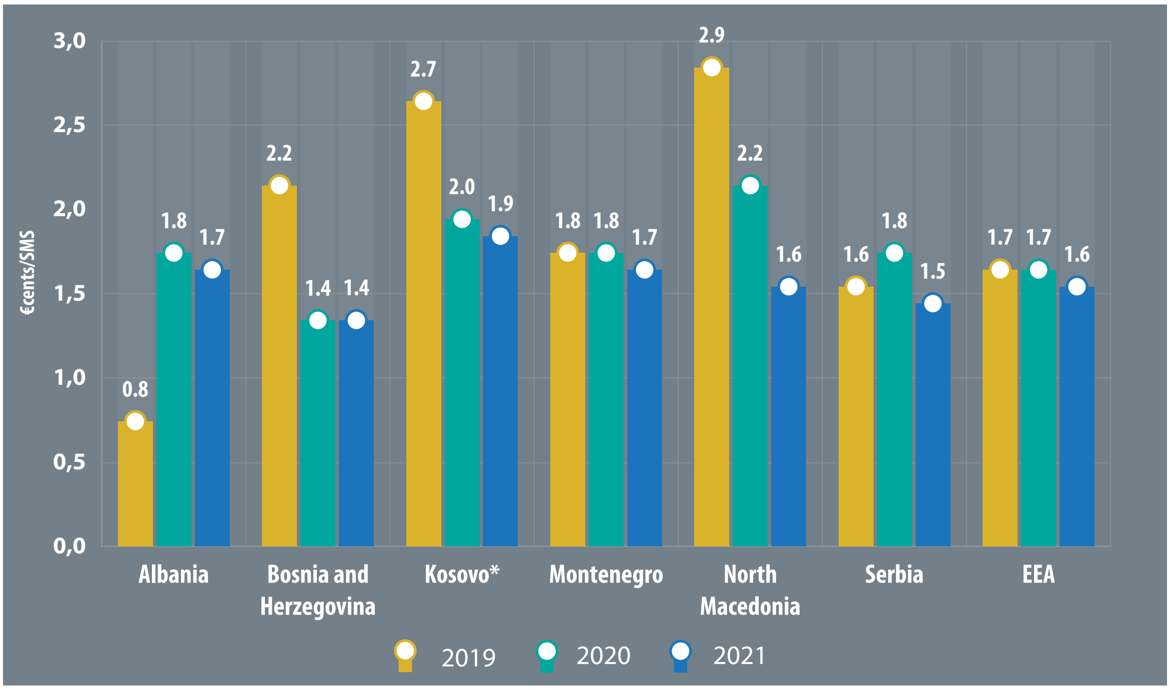

Figure 38 - Wholesale roaming revenue per SMS from the EEA

3.4. WHOLESALE ROAMING DATA REVENUES

Wholesale revenues/GB of data traffic generated by WB users roaming in other WB economies were further reduced in all of the economies except Montenegro and Serbia. These two economies, which accounted for 77% of total inbound data traffic within the intra-WB roaming in 2021, drove the increase of total regional average to 1.2 €/GB.

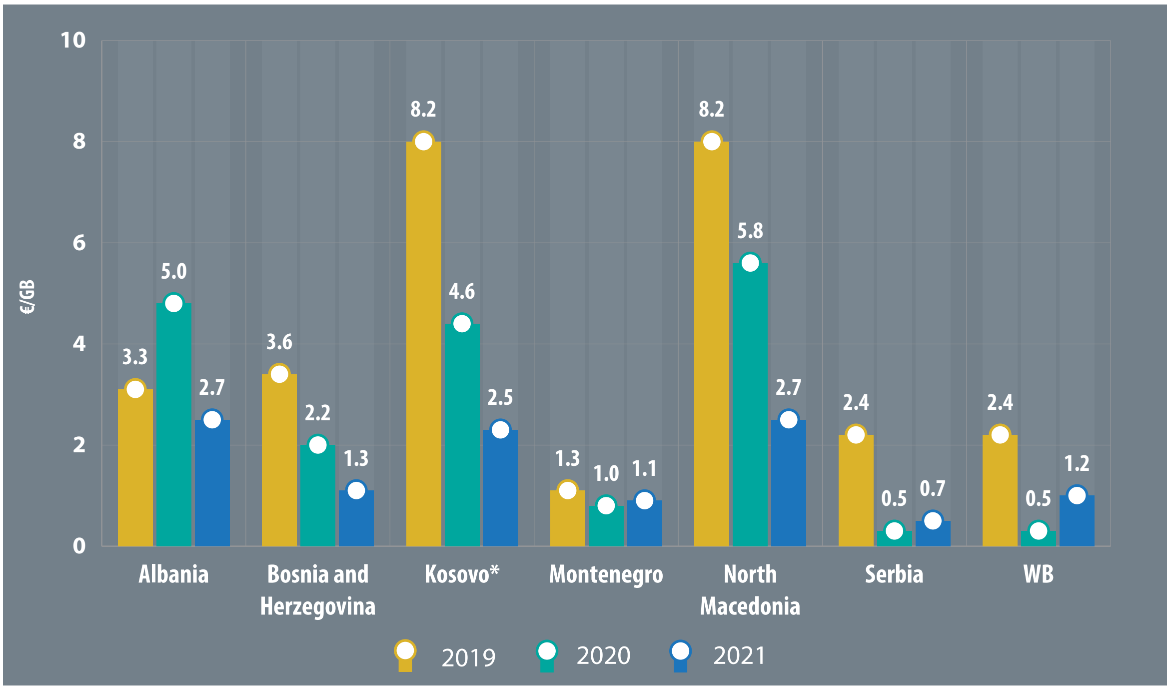

Figure 39 - Wholesale roaming revenue per GB from the WB

Wholesale revenues/GB of data traffic generated by EEA mobile subscribers while roaming in the WB region have been further reduced during 2021, resulting in an average of 4.3 €/GB.

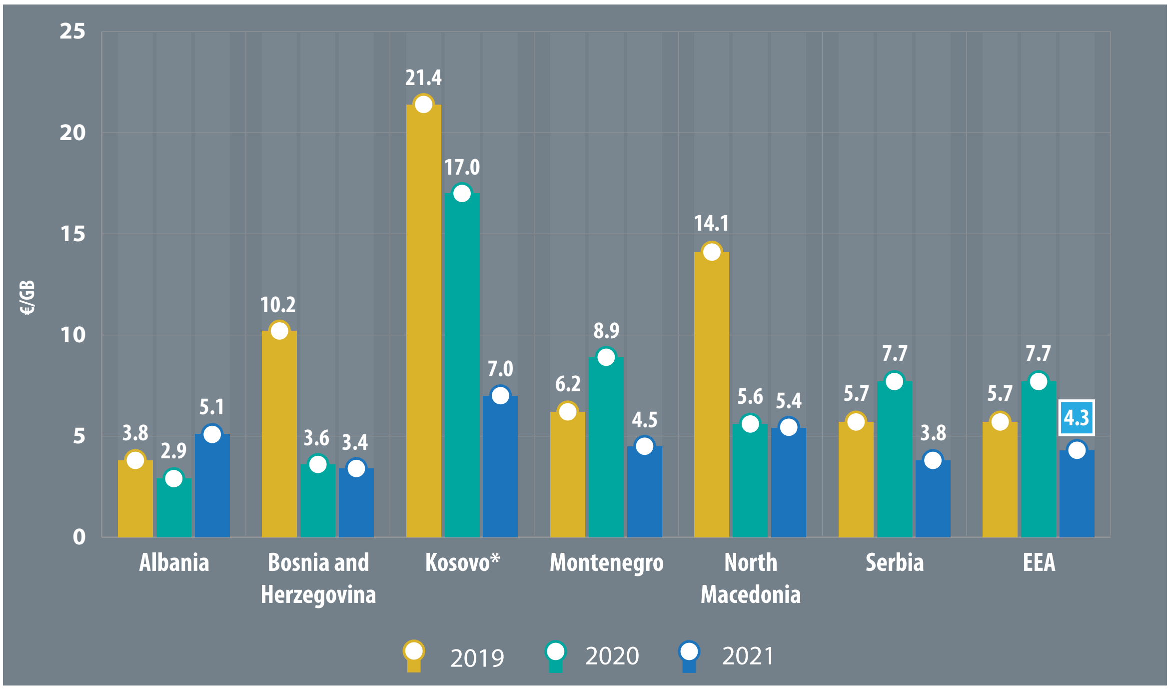

Figure 40 - Wholesale roaming revenue per GB from the EEA

IV WHOLESALE ROAMING COSTS AND MOBILE TERMINATION RATES

MAIN FINDINGS

- The total wholesale cost of WB operators generated by the usage of roaming services in other WB economies in 2021 was 24% higher compared to 2019. Total wholesale cost generated by using roaming service within the EEA increased by 50% compared to 2020, but remained reduced by 35% vs. 2019.
- Wholesale average cost/GB of data traffic that WB operators paid to the EEA operators in 2021 was lower than the wholesale price caps for 2023 proposed by the Roadmap for all of the WB economies except Montenegro and Serbia.
- The gap between the wholesale costs/unit, generated by using roaming services in the EEA and in other WB economies in 2021, is smaller in SMS and data segment than in the voice (due to high international mobile termination rates between the WB and EEA). The average wholesale cost of voice calls made was 27 €cents/min paid to the EEA operators vs. 3 €cents/min to the WB wholesale roaming partners; average SMS cost in the EEA was 1.2 €cents/SMS vs. 0.8 €cents/SMS; data cost was 5.4 €/GB in the EEA vs. 1.9 €/GB in the WB region.

4.1. WHOLESALE ROAMING COSTS SPLIT PER SERVICES

Total wholesale cost generated by WB users while using roaming services within the region amounted to €11.1 million in 2021 and was increased compared to the last two years driven by higher usage. The cost for using data services was dominant in 2021 in intra-WB roaming relations. Wholesale costs generated by WB users while roaming in the EEA amounted to €6.2 million and stayed well below the 2019 level. Costs for voice calls in visited networks in 2021 prevailed in the cost structure with the EEA.

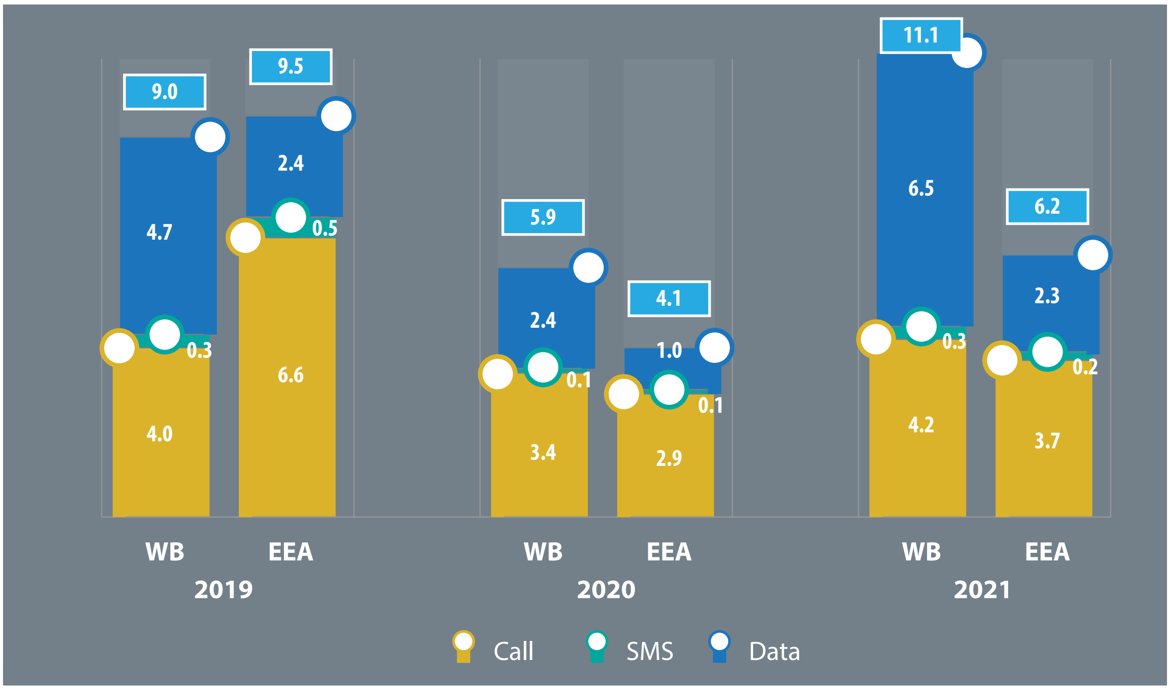

Figure 41 - Wholesale roaming costs in the WB and the EEA

4.2. WHOLESALE ROAMING VOICE COSTS

Wholesale costs generated by WB users while using roaming voice services within the region are being continuously reduced following the full implementation of RRA. The lowest voice wholesale cost/minute in intra-WB roaming in 2021 was registered in Montenegro and Bosnia and Herzegovina, with regional average cost of 3 €cents/min.

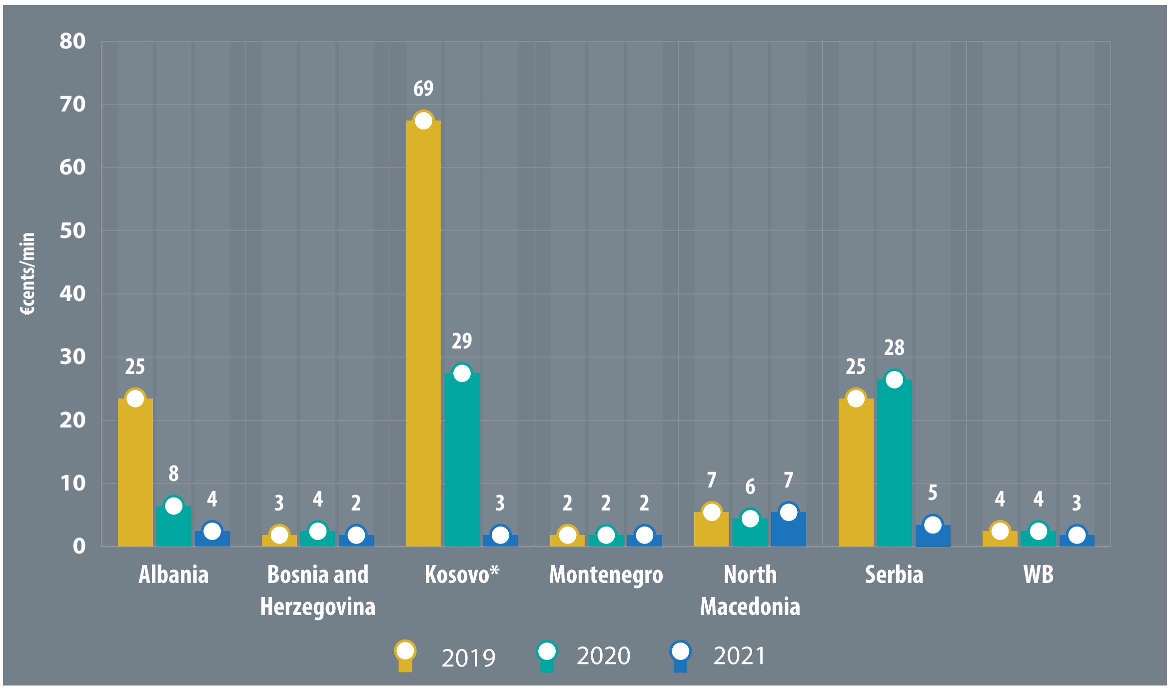

Figure 42 - Wholesale roaming voice costs per minute in the WB

All of the WB economies, except Kosovo*, experienced an increase in wholesale roaming voice costs generated by WB users while using roaming voice services in the EEA in 2021. The average wholesale cost/minute for roaming in the EEA in 2021 was 27 €cents/min, which is 9 times higher than in intra-WB roaming. This is attributable to high MTRs for international traffic between WB and EEA operators.

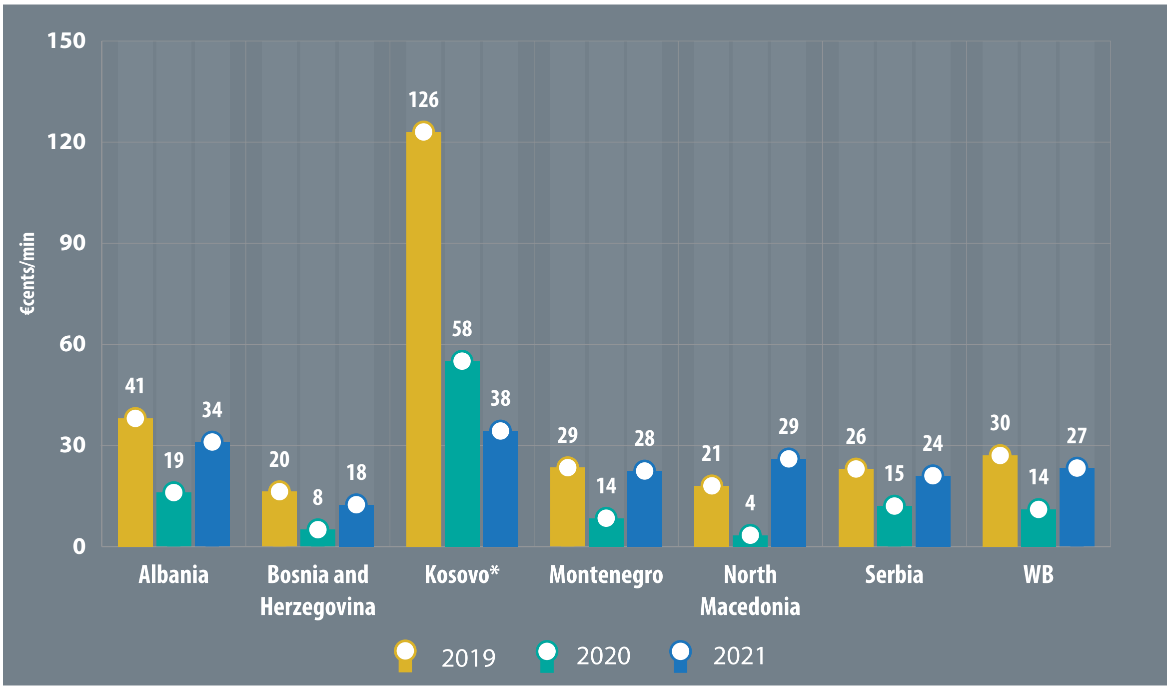

Figure 43 - Wholesale roaming voice costs per minute in the EEA

4.3. WHOLESALE ROAMING SMS COSTS

Following the full implementation of RRA, wholesale SMS costs, generated by WB users while roaming in the region, are further reduced in all of the economies, except in Montenegro where significant increase was registered. Montenegro, being accountable for roughly half of the regional outbound SMS traffic, caused lower regional average cost in 2020. Following this, the average regional cost is slightly increased for 2021 as well.

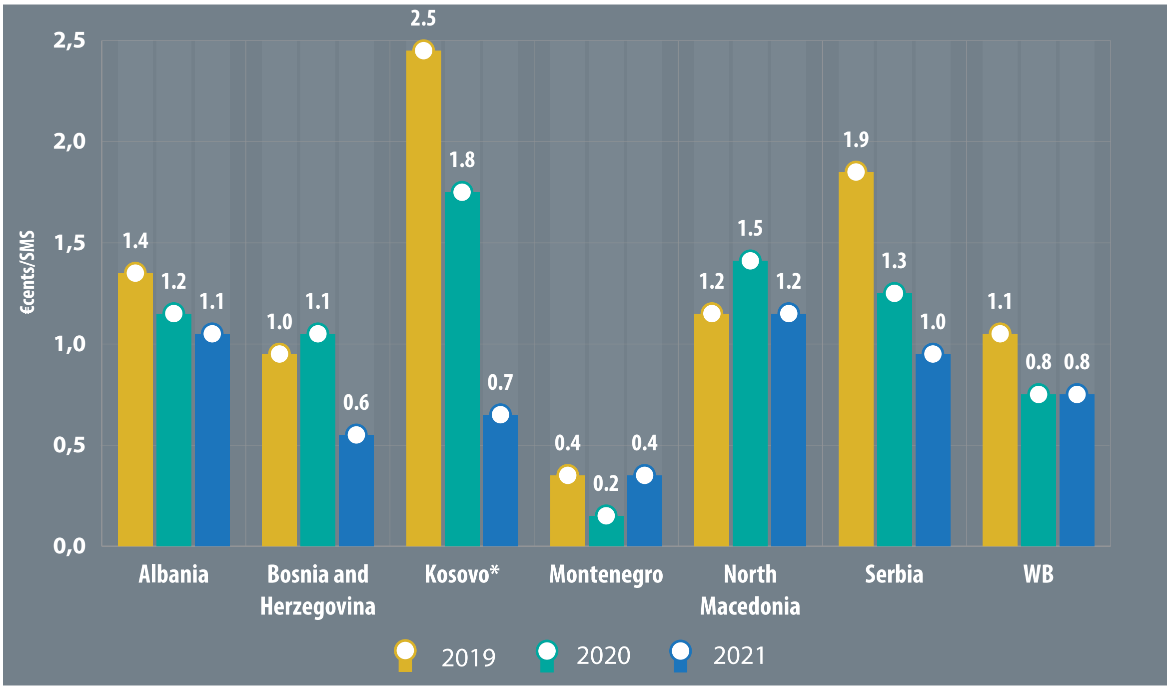

Figure 44 - Wholesale roaming costs per SMS in the WB

The average wholesale costs/ SMS sent by WB mobile subscribers while roaming in the EEA in 2021 remained unchanged. Three of the economies reported increased costs (Albania, Bosnia and Herzegovina and North Macedonia), while in the other three the costs decreased compared to 2020.

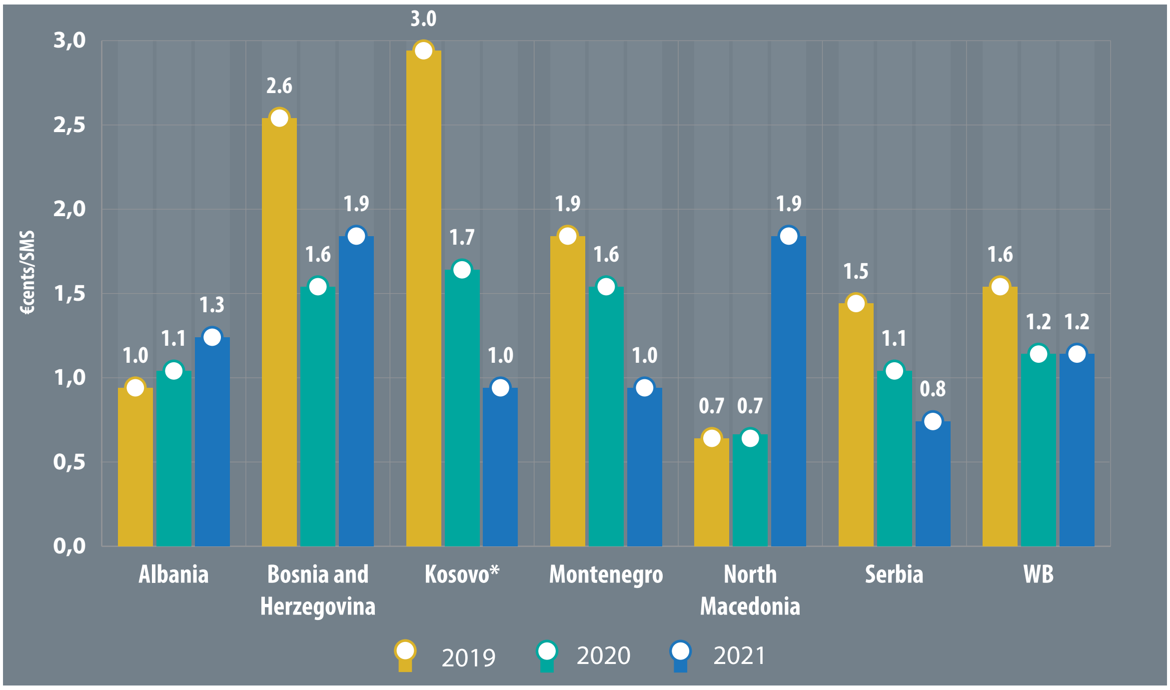

Figure 45 - Wholesale roaming costs per SMS in the EEA

4.4. WHOLESALE ROAMING DATA COSTS

Following the full implementation of RRA, wholesale data costs generated by WB users while roaming within the region are further reduced in all of the economies, except Montenegro which reported a significant increase. Montenegro, being accountable for about 90% of the regional outbound data traffic in 2020, influenced the increase of the regional average in 2021 to the level of 1.9 €/GB.

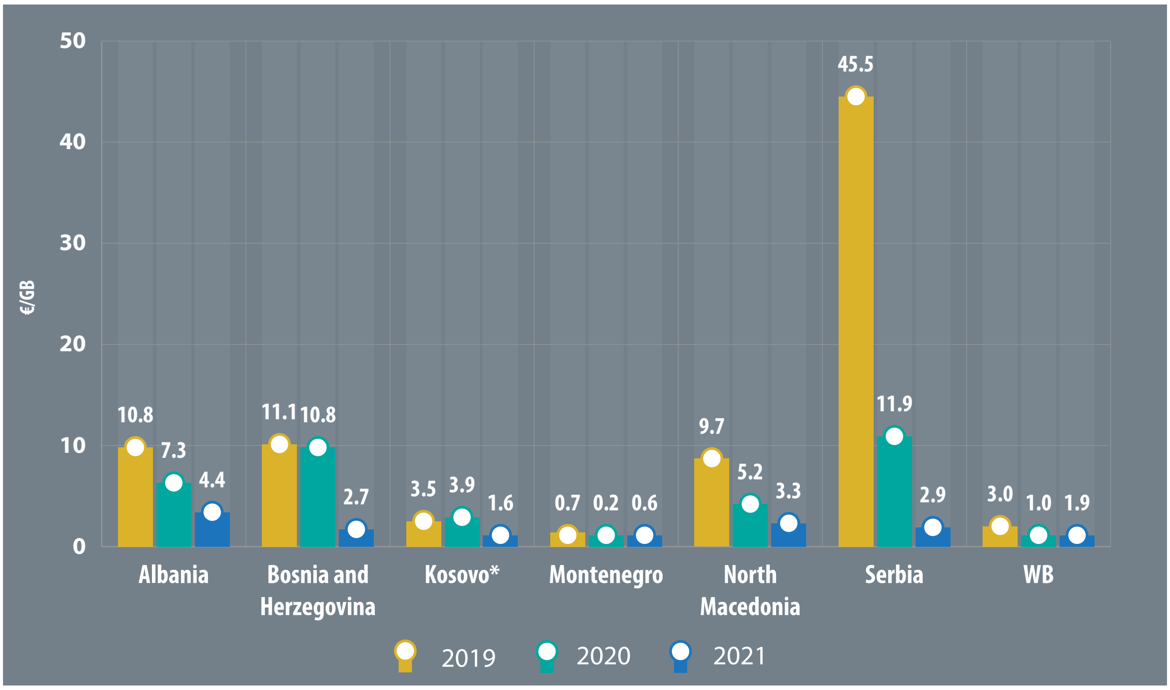

Figure 46 - Wholesale roaming costs per GB in the WB

All WB economies reported reduced wholesale costs per GB of data traffic generated by WB roamers while using data services in the EEA in 2021, except Montenegro and North Macedonia. The regional average wholesale cost/GB has been decreased to the level of 5.4 €/GB.

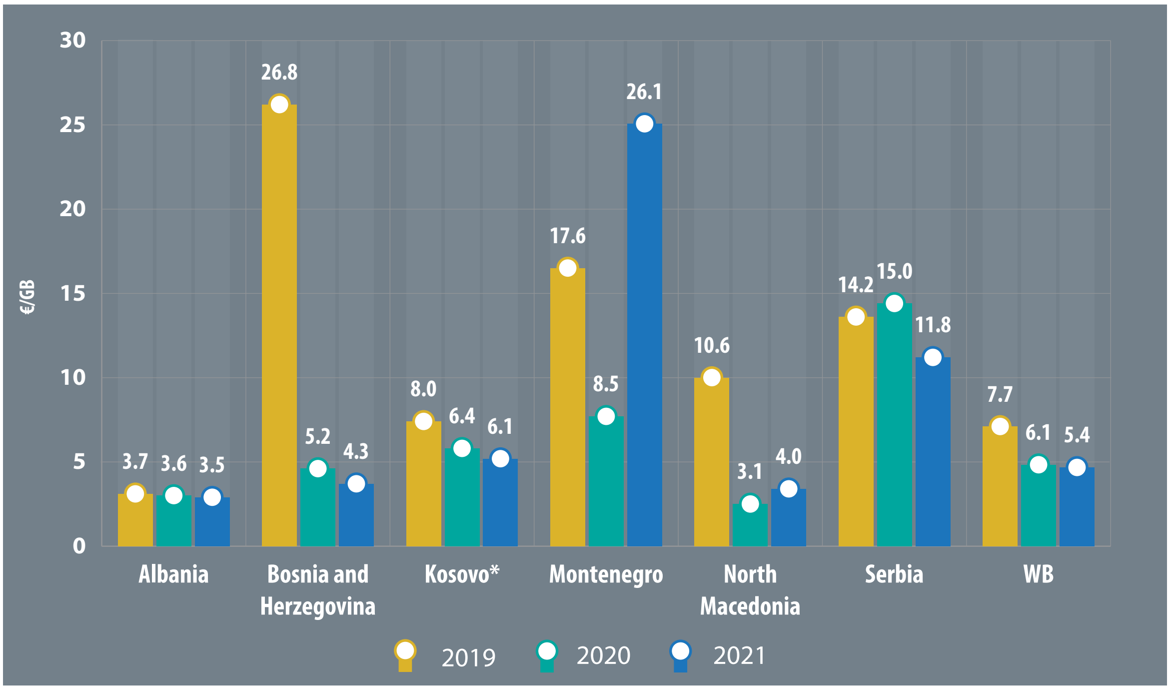

Figure 47 - Wholesale roaming costs per GB in the EEA

4.5. MOBILE TERMINATION RATES

The regulated maximum mobile termination rate of roaming calls originated and terminated in the WB region has been set at 0.016 €/min since 1 July 2021.

Reported average mobile termination rate for roaming calls, charged to EEA operators by WB operators in 2021, ranged from 0.258 €/min in Montenegro to 0.33 €/min in Kosovo*.

V RETAIL ROAMING REVENUES VS. WHOLESALE ROAMING COSTS IN 2021

MAIN FINDINGS

- The total retail revenues generated by WB users while roaming in the WB region (including the revenues from bundles) exceeded the associated wholesale costs by €1.5 million in 2021, enabling WB mobile operators 14% retail mark-up on intra-WB roaming services.

- The total retail revenues generated by WB users while roaming in the EEA (including the revenues from bundles) exceeded the associated wholesale costs of roaming by €23.2 million in 2021, enabling WB mobile operators 374% retail mark-up on roaming service within the EEA footprint.

- Even if revenues from bundles are not taken into consideration, WB mobile operators provided roaming service in the EEA countries in 2021 with extremely high profit margins. Retail revenues for outgoing calls exceeded wholesale costs by 53% (in some of the economies even above 600%); average revenue/SMS was 13 times higher than the related wholesale cost (in some cases even 30 times higher), while revenues/GB of data traffic in the EEA were, on average, 4 times higher than the underlying cost (with maximum mark-up going to 1225% in one of the WB economies).

5.1. TOTAL RETAIL ROAMING REVENUES vs. TOTAL WHOLESALE ROAMING COSTS PER SERVICE

Total retail revenues generated by WB users while roaming in the WB region (including the revenues from bundles) exceeded the associated wholesale costs of roaming by €1.5 million in 2021, thus enabling WB mobile operators 14% retail mark-up on intra-WB roaming services.

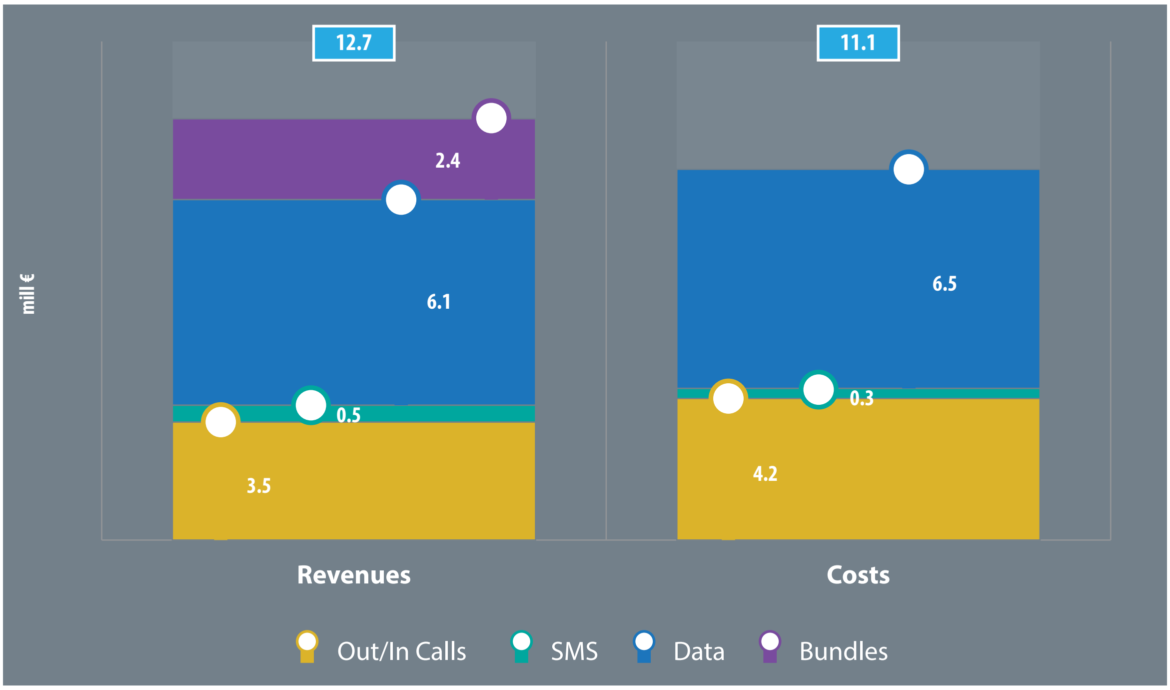

Figure 48 – Total retail roaming revenues vs. total wholesale roaming costs in the WB

The total retail revenues generated by WB users while roaming in the EEA (including the revenues from bundles) exceeded the associated wholesale costs of roaming by €23.2 million in 2021, thus enabling WB mobile operators 374% retail mark-up on roaming service in the EEA footprint.

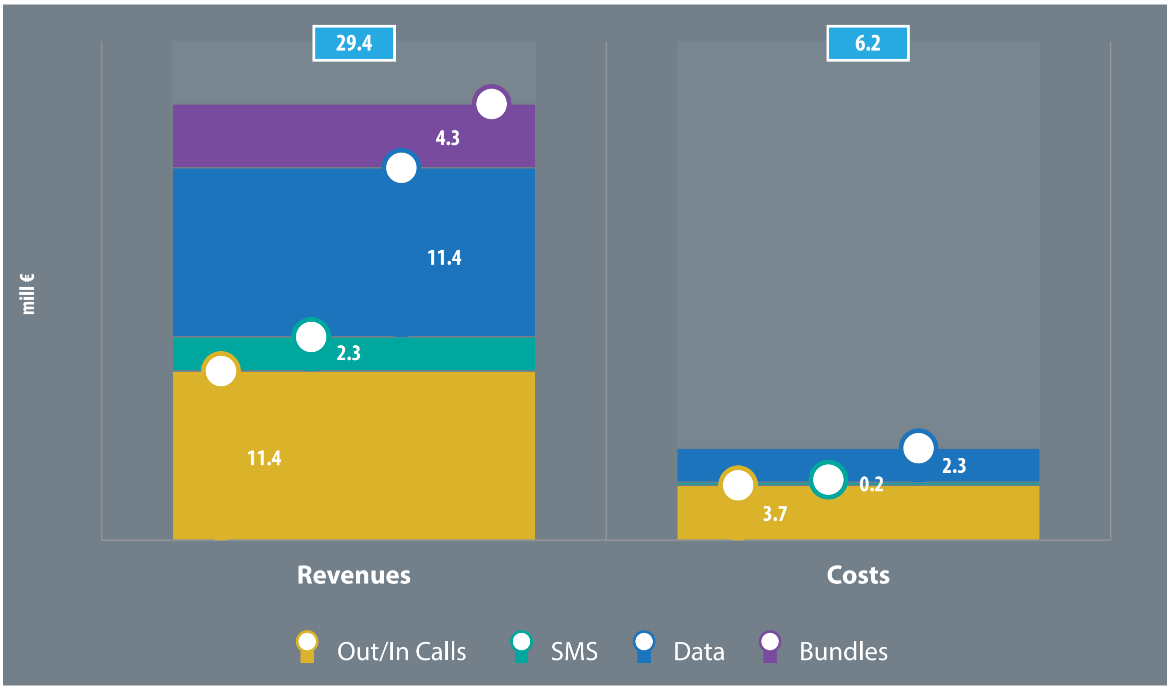

Figure 49 – Total retail roaming revenues vs. total wholesale roaming costs in the EEA

5.2. RETAIL ROAMING REVENUES[5] AND WHOLESALE ROAMING COSTS FOR OUTGOING VOICE

In 2021, only mobile operators from Bosnia and Herzegovina and Kosovo* achieved an average retail roaming revenue/minute of outgoing calls made by WB users roaming within the WB region higher than the related average wholesale cost per minute (bundles excluded). At the regional level, wholesale cost/min is more than double the retail revenue/min.

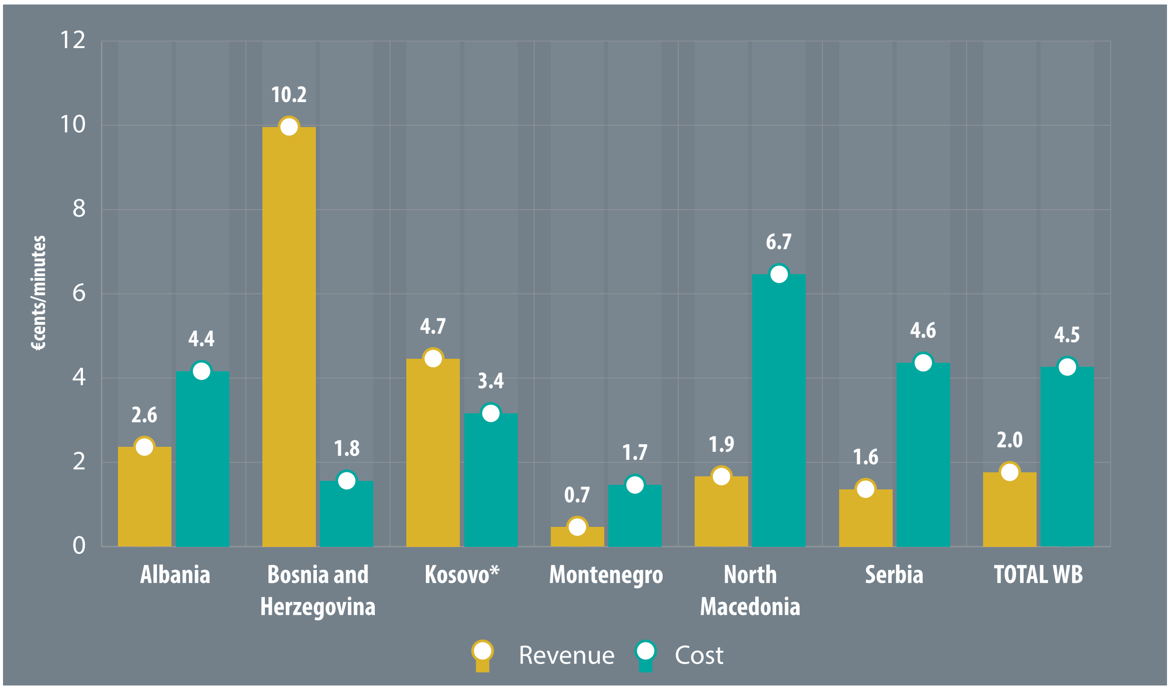

Figure 50 - Average retail revenue/min vs. average wholesale costs/min in intra WB voice roaming in 2021

In 2021, in all of the WB economies with the exception of Albania, mobile operators achieved an average retail roaming revenue/minute of outgoing calls made by WB users roaming in the EEA significantly higher than the underlying average wholesale costs per minute (bundles excluded). At the WB level, average service retail mark-up was 53%, in some economies being even above 400% (Bosnia and Herzegovina) or 600% (Kosovo*).

5 Revenues from roaming bundles are not included

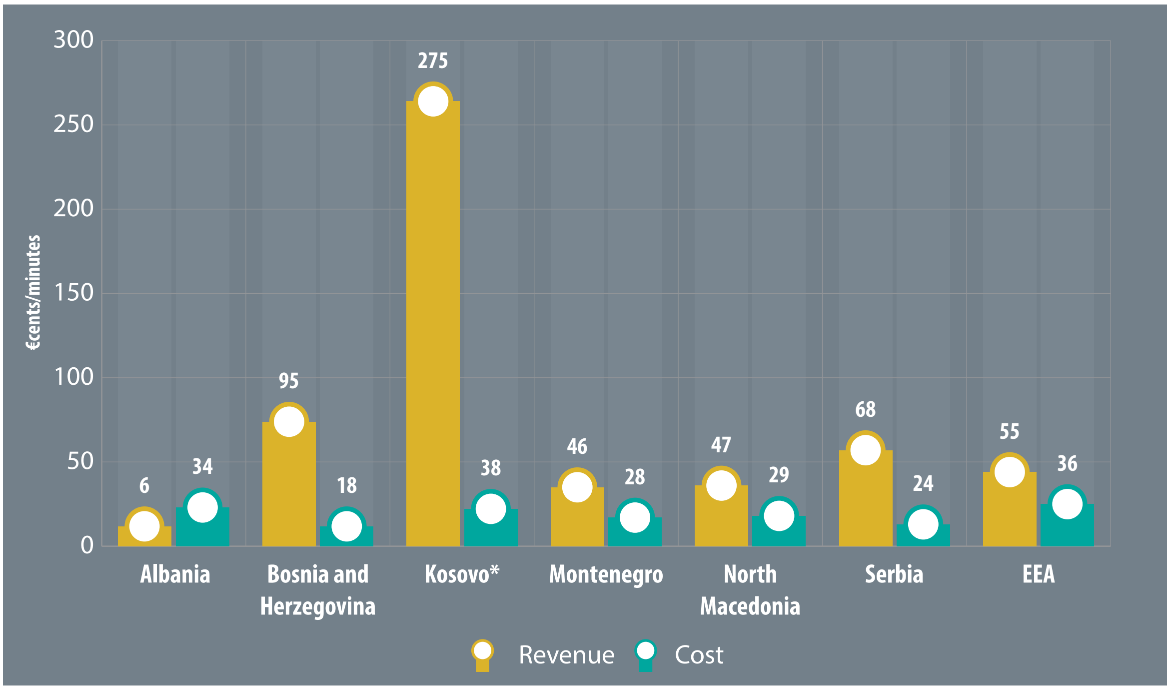

Figure 51 - Average retail revenues/min vs. average wholesale costs/min in the EEA voice roaming in 2021

5.3. RETAIL ROAMING REVENUES AND WHOLESALE ROAMING COSTS FOR SMS

In all of the WB economies, with the exception of Albania and Serbia, mobile operators produced an average retail roaming revenue/SMS sent by WB users roaming across the region higher than the related average wholesale cost/SMS (bundles excluded). At the regional level, average service mark-up was 81%.

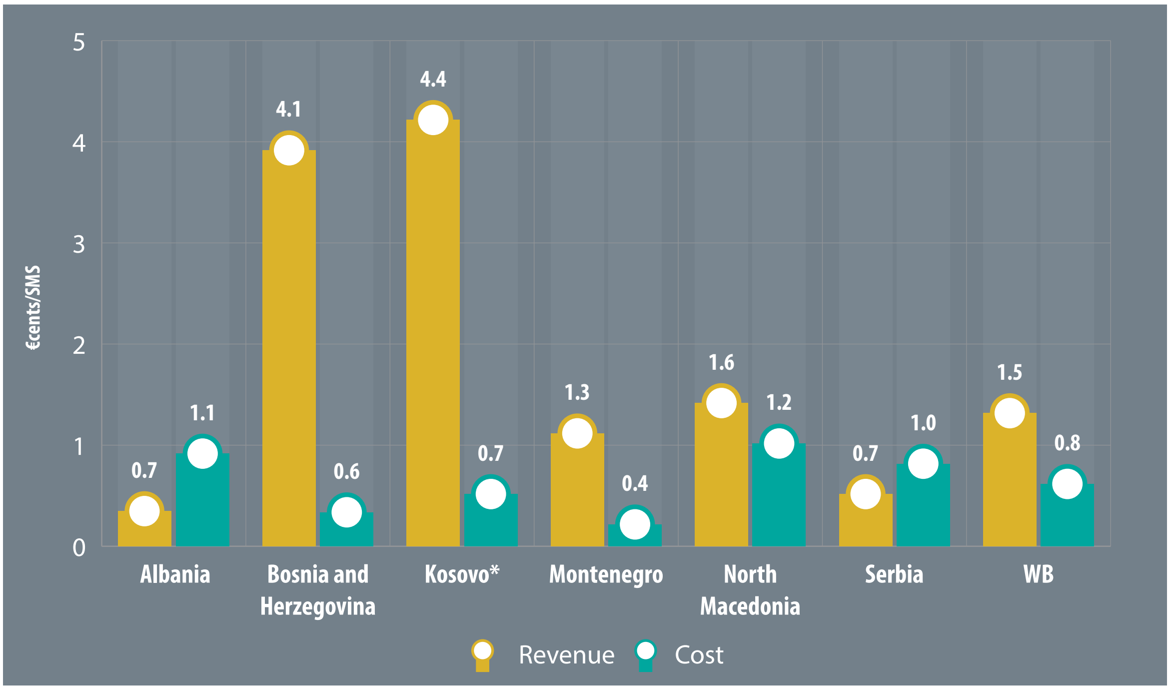

Figure 52 - Average retail roaming revenue/SMS vs. average wholesale cost/SMS in intra-WB roaming in 2021

Mobile operators in all of the WB economies achieved an average retail roaming revenue/SMS sent while roaming in the EEA significantly higher than the underlying average wholesale cost/SMS (bundles excluded). At the regional level, average service mark-up was above 1300%, in some economies even above 3000% (Kosovo*).

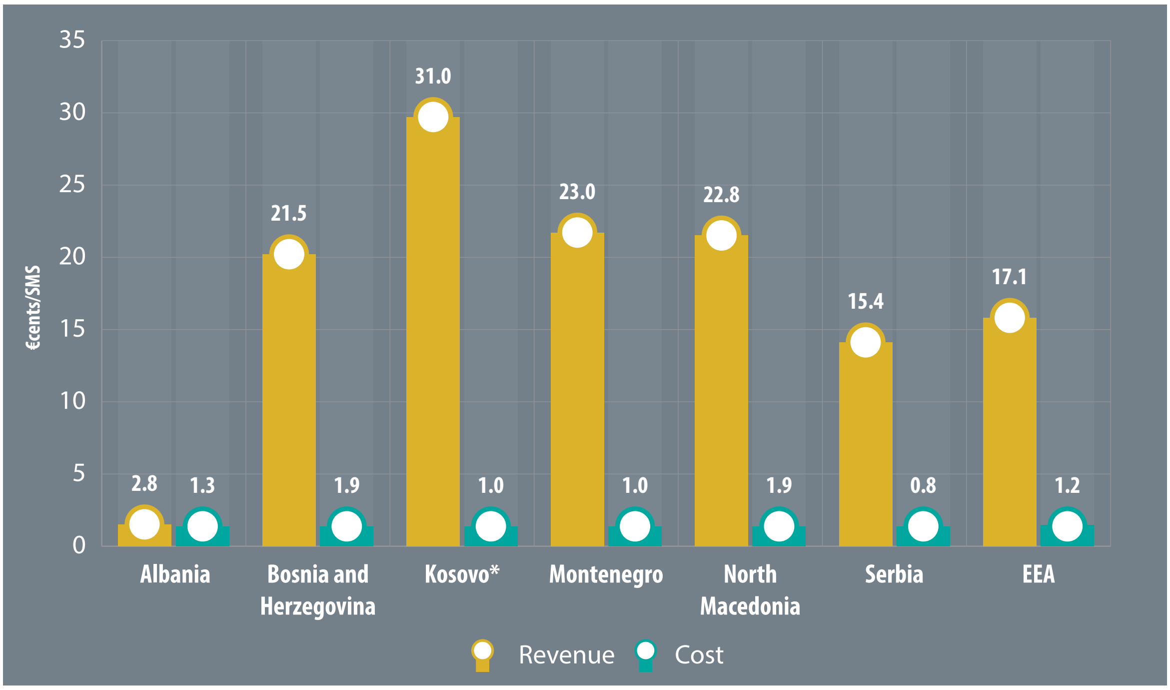

Figure 53 - Average retail roaming revenue/SMS vs. average wholesale cost/SMS in the EEA roaming in 2021

5.4. RETAIL ROAMING REVENUES AND WHOLESALE ROAMING COSTS FOR DATA SERVICES

Only Kosovo* and Serbia provided data roaming services within the WB region with positive margin during 2021 (revenues from bundle excluded). At the regional level, the average wholesale cost per GB of roaming data traffic was slightly above the average retail roaming revenue/ GB.

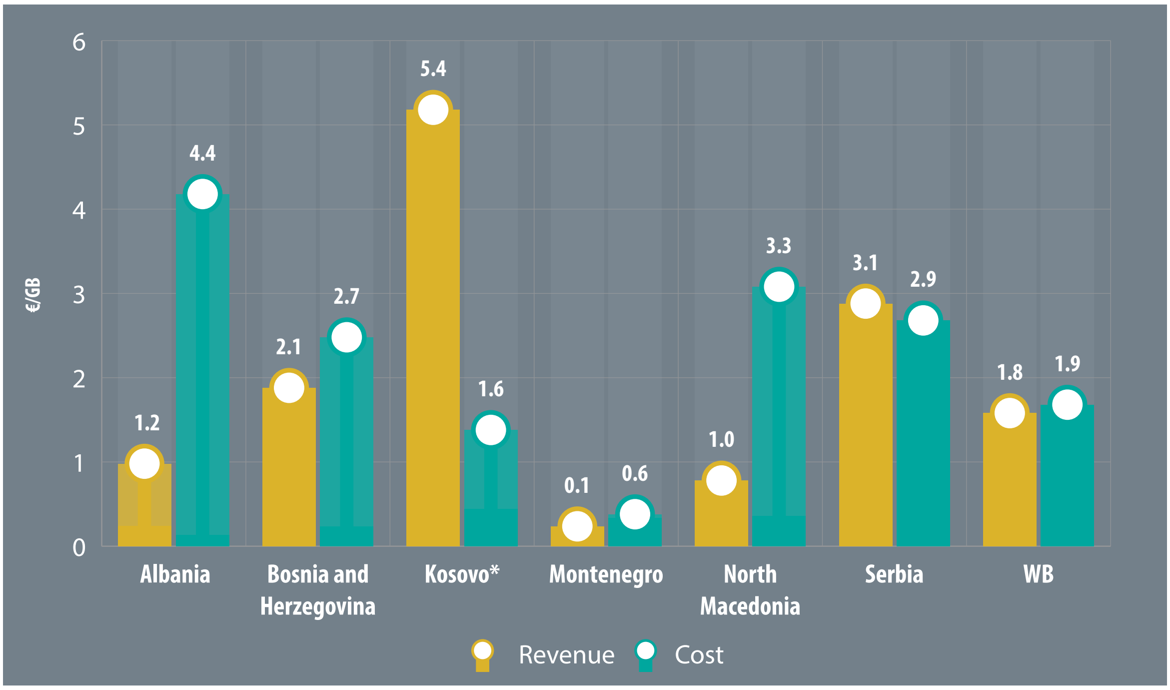

Figure 54 - Average retail roaming revenue/GB vs. average wholesale cost/GB in intra-WB roaming in 2021

In all of the WB economies, except Albania, the average retail revenue per GB of data traffic, made by WB users while roaming in the EEA in 2021, was significantly higher than the associated average wholesale roaming cost per GB. At the regional level, average service mark-up was 396%, in Serbia 800% and in Bosnia and Herzegovina even 1.225%.

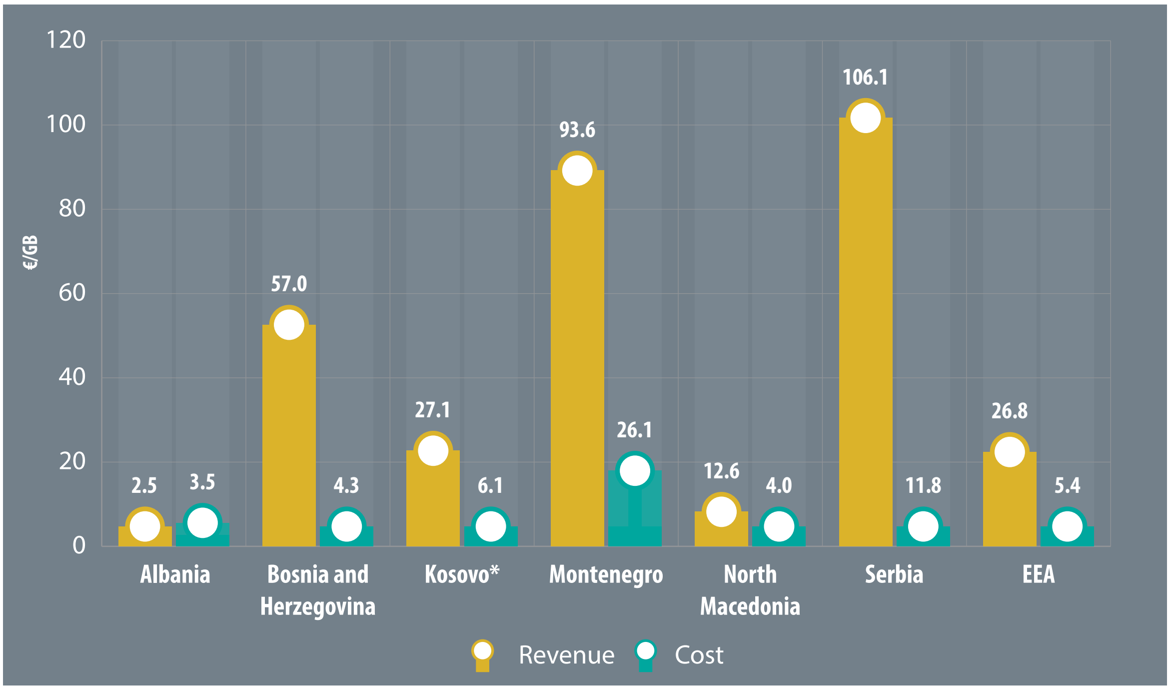

Figure 55 - Average retail roaming revenue/GB vs. average wholesale cost/GB in the EEA roaming in 2021

CONCLUSIONS

The RRA, with roaming free Western Balkans from 1 July 2021 as a final milestone, proved to be a great success story that was warmly embraced by the citizens all over the region. The consumption of all types of roaming traffic has significantly increased in the past 3 years, with 50% growth of total voice volumes and more than doubled data roaming traffic. The impact of RLAH alone is reflected in an increase of call duration per user in H2 2021 vs. H1 2021 from 45% in Kosovo* to as much as 237% in Serbia. In the same reference period, data consumption/user grew from 62% in Albania up to 459% in Serbia.

However, traffic volumes generated by WB users roaming in the EEA in 2021 were well behind the usage registered under the umbrella of RRA. An average WB user made approximately 8 times longer voice calls and generated 7 times more data traffic while roaming in the region in 2021 compared to the WB user that roamed across the EEA footprint.

Lower consumption of roaming services in the EEA by WB users is to be attributed to the high retail pricing. The average retail revenue/minute in 2021 for outgoing roaming voice calls realised in the EEA was 28 times higher than the revenue/minute generated while roaming within the WB region. For incoming calls, SMS and data services, the magnitude of this difference was 46, 11 and 15 times, respectively. The positive exception in this regard is Albania (and North Macedonia in data segment) where lower retail tariffs yielded quite decent average usage per customer in the EEA.

Despite a sharp roaming price decrease in WB region in 2019-2021 period, total roaming retail revenues of WB mobile operators have increased by €2.2 million (28%). At the same time, in the absence of any regulation, retail revenues generated by WB users roaming in the EEA have decreased by 32%.

The difference between wholesale prices for roaming in the EEA and roaming in the region is not as large as in the case of retail tariffs. The average wholesale fee/GB of data traffic paid by EEA operators to their WB roaming partners in 2021 was 4.3 €/GB, while WB operators paid an average of 5.4 €/GB for the counter service. In both cases, charges in 2021 were already lower than the wholesale price cap proposed by the Roadmap for 2023. Retail mark-up on intra-WB roaming services was 14%, while for roaming within the EEA it was 374%. In some of the economies retail revenues from roaming in the EEA exceeded wholesale costs by 600% in voice or even 3.000% in SMS and 1.225% in data segment.

High price sensitivity of WB customers, confirmed during the implementation of RRA and in case of few attractive promotional tariffs for roaming in EEA, provides a lot of opportunities for compensating the negative impact of price reduction. Voice retail and wholesale roaming tariffs remain conditioned with high MTRs for WB-EEA traffic.

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