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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

**on the implementation of Regulation (EU) 531/2012 of the European Parliament and of
the Council of 13 June 2012 on roaming on public mobile communications networks
within the Union, as amended by Regulation (EU) 2015/2120 and Regulation (EU)
2017/920**

1 INTRODUCTION

In October 2015, the European Parliament and the Council adopted Regulation (EU) 2015/2120¹ which mandated the end of retail roaming charges in the Union from 15 June 2017, subject to fair use policy and a sustainability derogation. These new roaming rules have been dubbed "Roam-Like-At-Home" (RLAH).

For RLAH to be provided in a sustainable manner throughout the Union, the co-legislators have agreed to have in place the following measures:

- substantially reduced wholesale roaming price caps²;
- the possibility for operators to apply a fair use policy to prevent abusive or anomalous use of roaming services at domestic prices, such as the permanent use of a SIM card in other Member States than the Member State of that SIM card;
- an exceptional and temporary derogation system for operators to be used only if authorised by the national regulator, under strict circumstances when the end of roaming charges in a specific market could lead to domestic price increases for the customers of the operator.

In accordance with the mandate given by the co-legislators, the Commission adopted on 15 December 2016 detailed rules on the application of fair use policy and on the methodology to be used for submitting and assessing a request for a sustainability derogation³.

The above set of rules has been applicable in the EU/EEA since 15 June 2017.

In accordance with Article 19 (3) of the Roaming Regulation⁴ the Commission has to submit to the co-legislators by 15 December 2018 "an interim report summarising the effects of the abolition of retail roaming charges"⁵. This is the purpose of this report.⁶

¹ Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) 531/2012 on roaming on public mobile communications networks within the Union.

² Regulation (EU) 2017/920 of the European Parliament and of the Council of 17 May 2017 amending Regulation (EU) No 531/2012 as regards rules for wholesale roaming markets.

³ Commission Implementing Regulation (EU) 2016/2286 of 15 December 2016 laying down detailed rules on the application of fair use policy and on the methodology for assessing the sustainability of the abolition of retail roaming surcharges and on the application to be submitted by a roaming provider for the purposes of that assessment

⁴ In this report, Regulation (EU) 531/2012 as amended by Regulation (EU) 2015/2120 and Regulation (EU) 2017/920 is called the "Roaming Regulation".

⁵ Article 19(3) in Regulation (EU) No 531/2012 as amended by Regulation (EU) 2017/920.

⁶ In advance of this mandated Commission interim Report, the European Parliament published an analysis entitled "Roaming: One Year After Implementation", November 2018.

2 THE ROAMING REGULATION'S SCOPE AND MAIN PROVISIONS

Roaming in the meaning of the Roaming Regulation is a service that allows a customer of a Mobile (Virtual) Network Operator (M(V)NO) in one country, to have access to mobile services (voice, SMS or data) from an MNO in another country⁷. The service provider (the mobile operator) ensures that its customers remain connected to a mobile network when travelling abroad while using the same mobile handset (or possibly laptop or tablet in case of data roaming) and the same phone number. The service provider that wants to offer roaming services to its customers ("retail roaming services") in a country has to buy them from an MNO located in the visited country ("wholesale roaming services"). To this end, commercial wholesale roaming agreements between service providers have to be concluded. In practice, when a customer places a call or uses mobile data while roaming abroad, that service is provided by a mobile operator in the visited country. The roaming customer's home operator has to pay the visited operator for that service. This is called wholesale roaming charges. The level of those charges is capped by the EU Roaming Regulation and annually decreasing for data (see below).

Since 15 June 2017 mobile operators have not been allowed to levy any charges in addition to the domestic price for the provision of roaming services (voice, SMS and data) to their customers when they periodically travel in the EU/EEA. In order to prevent abusive or anomalous use of roaming services - such as permanent roaming - at domestic prices that may have detrimental effects on the domestic markets, mobile operators may apply a fair use policy.

Fair use policy is to prevent abusive or anomalous usage of roaming services at domestic price. It aims in particular at ensuring that roaming at domestic price is used when periodically travelling in the EU/EEA. For this purpose, an operator may ask its customers for a proof of residence in, or stable link with, the EU/EEA country where they buy the SIM card to be used at domestic price when travelling abroad. An operator may also check that the SIM card is used more in its country than abroad. If, during a time window of at least four months, the customer has been more abroad in the EU than at home and has consumed mobile services more abroad in the EU than at home, the operator may contact the customer to verify it. After an alert period of 14 days from the date of contact, the operator may apply small roaming surcharges linked to the wholesale price caps if the customer continues to consume mobile services abroad. In addition, in order to allow for the continuous development of the best data offers on domestic markets (e.g. unlimited data), an operator may apply a volume safeguard on roaming data consumed at domestic prices. Beyond that volume, the operator may apply a small roaming surcharge not exceeding the wholesale roaming price cap.

⁷ A roaming service can be provided domestically (national roaming), i.e. a mobile operator uses the network of another operator to provide mobile services to its customers domestically. However, national roaming is not within the scope of the Roaming Regulation. The latter only regulates international roaming in the EU/EEA, i.e. roaming on a foreign network within the EU/EEA.

In exceptional and specific circumstances, in order to avoid a domestic price increase, an operator may obtain from its national regulatory authority (NRA) a so-called sustainability derogation. For this purpose, the operator must demonstrate to the NRA that the provision of roaming services without the application of a surcharge would not be sustainable with its current domestic charging model. In that case the NRA may authorise the operator to apply a small roaming surcharge for one year. In order to prolong such an authorisation the operator must renew its application yearly.

At wholesale level, the price caps have been substantially reduced in 2017 by the Roaming Regulation⁸, in particular for data whose price caps are programmed to further decline every year until 2022, in order to ensure that market players can benefit from wholesale rates that allow for the provision of roaming services to their customers without levying any charge on top of the domestic price. The wholesale roaming price caps also ensure that wholesale costs are fully recovered by the operator providing the wholesale roaming service.

3 RLAH IMPLEMENTATION: OVERALL COMPLIANCE

The Roaming Regulation is directly applicable in all EU Member States and EEA countries⁹. It entrusts NRAs with the task of monitoring, supervising and enforcing the roaming rules in Member States. In order to ensure a consistent approach of all NRAs, the Body of European Regulators in Electronic Communications (BEREC) issued Retail Roaming Guidelines¹⁰ in March 2017 and Wholesale Roaming Guidelines¹¹ in June 2017, prepared in close collaboration with the Commission and after consulting stakeholders. While not binding in themselves, BEREC Guidelines support the NRAs in the monitoring, supervision and enforcement of the new roaming rules in practice. BEREC Guidelines also serve as detailed guidance for mobile operators on how to implement the new roaming rules in their various offers.

Responding to the call by the Commission to ensure a proper implementation of RLAH rules from the first day (15 June 2017), each NRA actively reached out to its mobile operators in the course of the first semester 2017 in order to ensure full compliance with the new rules. NRAs and the Commission remained in close contact throughout the period in order to respond to practical implementation questions from mobile operators ahead of the implementation date.

⁸ In 2018, the following wholesale roaming price caps have been applicable: 0.032 €/minute for calls made, 0.01 €/sms, 6 €/GB. From 1 January 2019, the new cap for data will be 4.5 €/GB and 3.5 €/GB as of 1 January 2020. It will then decrease to 3 €/GB in 2021 and 2.5 €/GB in 2022. In comparison, those caps were 0.05 €/minute, 0.02 €/sms and 50 €/GB until 15 June 2017.

⁹ Norway, Iceland, Liechtenstein.

¹⁰ BEREC Guidelines on Regulation (EU) No 531/2012, as amended by Regulation (EU) 2015/2120 and by Regulation (EU) 2017/920 (Retail Roaming Guidelines), BoR(17)56, available [here](#).

¹¹ BEREC Guidelines on Regulation (EU) No 531/2012, as amended by Regulation (EU) 2015/2120 and by Regulation (EU) 2017/920 (Wholesale Roaming Guidelines), BoR(17)114, available [here](#).

As a result of this preparatory work, general compliance of mobile operators with the new roaming rules has been observed. Where a potential breach of the rules had been detected in a Member State, the NRA swiftly solved the issue with the operator concerned, often before starting any formal proceedings or in the course of such proceedings. In a few cases¹² fines had to be imposed. As required by the Roaming Regulation, the NRAs have to be conferred in all Member States with the appropriate sanctioning powers in case of non-compliance with roaming rules. Where, after 15 June 2017, new implementation questions arose in relation to new types of offers which were not specifically addressed in the BEREC Guidelines, NRAs have coordinated their approach in collaboration with the Commission via the dedicated BEREC International Roaming Expert Working Group¹³.

Sustainability derogations have been granted by NRAs to operators that were expected to be likely candidates for the derogation due to their particular situation, i.e. some MVNOs in some Member States and some MNOs in some of the very low-data-price Member States with high roaming imbalances and/or low revenue per user (Estonia, Lithuania, Poland, Finland). Despite the derogation, many MNOs and MVNOs still offer large volumes of roaming services without surcharges to their subscribers in order to remain competitive on their domestic market. Where they apply the allowed roaming surcharge, the latter is drastically reduced compared to before 15 June 2017 (by more than 90% for data), so that the concerned customers do substantially benefit from the new rules even in such cases (see section 4). In all cases, the surcharges authorised by the NRA and applied by the operator are below, and often well below, the wholesale roaming price cap, in accordance with the rule whereby any surcharge should be applied only to the extent necessary to recover the costs of providing regulated retail roaming services which could otherwise provoke a domestic price increase.

4 EFFECTS OF RLAH ON END-USERS

While successive Roaming Regulations since 2007 had brought tangible benefits to consumers in the form of price reductions for voice, SMS and data roaming services, many Europeans continued to avoid, or curtail, usage of their mobile phones and data services when travelling outside of their home Member State in order to avoid incurring mobile roaming charges. In 2014, more than half of Europeans switched off their data roaming capability while travelling in the EU, and only one in ten Europeans made or received calls as often as in their country¹⁴. The RLAH rules have finally allowed to radically change that situation and to unleash the untapped demand for mobile consumption among travellers in the EU.

¹² As of June 2018, in five cases fines were imposed on mobile operators by NRAs for non-compliance with RLAH rules, according to responses to the Commission's survey of NRAs, June 2018.

¹³ For instance on how to treat new zero-rated services under RLAH, e.g. decisions by [BNetzA](#) (Germany), [ANACOM](#) (Portugal)

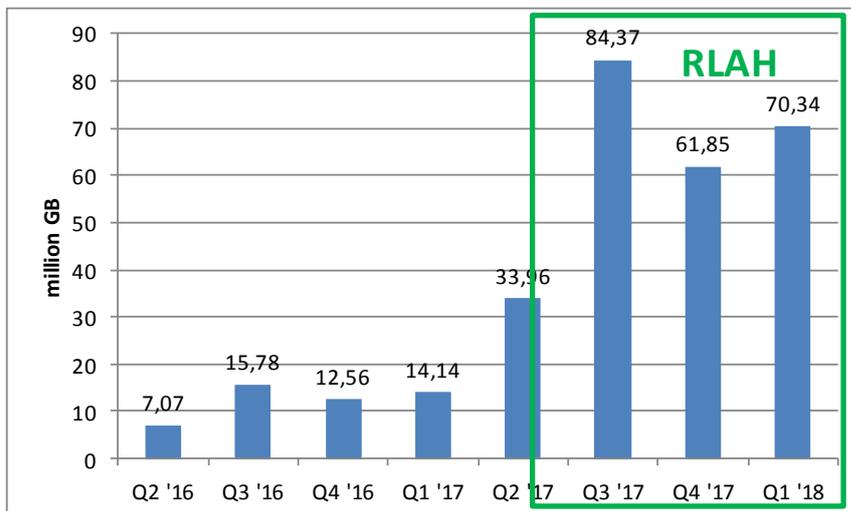
¹⁴ Special Eurobarometer 414, E-communications and telecom single market household survey, March 2014, http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_414_en.pdf

In sections 4.1, 4.2 and 4.3 below the figures quoted are from the latest BEREC International Roaming (IR) Benchmark Reports¹⁵.

4.1 RLAH triggered a massive and rapid increase in roaming consumption

European consumers have immediately and massively started to take advantage of the elimination of roaming charges in the EU/EEA from 15 June 2017. Already in summer 2017, the use of mobile data services while roaming in the EU/EEA was multiplied by 5.35 (+435%) compared to summer 2016, and the volume of roaming phone calls by 2.45 (+145%). In the next two quarters (Q4 2017 and Q1 2018), the use of roaming data remained almost 5 times above its level one year before (Figure 1). In those two quarters, the total volume of roaming voice calls has remained almost twice as high as prior to RLAH. As concluded by BEREC in the 21st Benchmark IR Report, these figures clearly show that the RLAH rules have significantly contributed to stimulate the demand for roaming services and the development of the international roaming market in the EU/EEA.

Figure 1: EEA retail roaming data traffic, Q2 2016 – Q1 2018 (millions of GB)



Source: Based on 21st International Roaming BEREC Benchmark Report, October 2017- March 2018

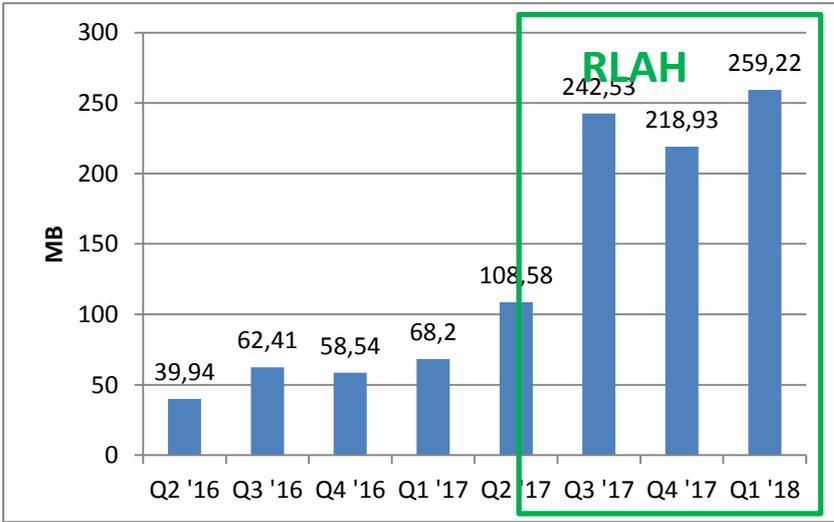
Travellers now use on average almost 4 times more data while roaming than before RLAH (see Figure 2)¹⁶. They also call on average about 1.7 times more while roaming than before the implementation of RLAH¹⁷.

¹⁵ 20th International Roaming BEREC Benchmark Data Report, April 2017 - September 2017, published on 14 March 2018, BoR(18)31, available [here](#); 21st International Roaming BEREC Benchmark Report, October 2017- March 2018, published on 10 October 2018, BoR(18)160, available [here](#).

¹⁶ The increase in total roaming data volumes in the EEA results from larger average consumption by roaming customers but also from more travellers switching on data roaming.

¹⁷ The increase in total roaming voice volumes in the EEA results from larger average consumption by roaming customers but also from more travellers switching on voice roaming.

Figure 2: EEA average data roaming consumption per month per roaming subscriber (in MB), Q2 2016 – Q1 2018



Source: Based on 21st International Roaming BEREC Benchmark Report, October 2017-March 2018

All Member States have experienced a considerable increase in roaming consumption by subscribers since June 2017. Particularly high increases in customers' EU/EEA roaming consumption have been observed by Polish, Romanian, Bulgarian, Croatian and Spanish operators for voice (increases by more than 3 times), and by Bulgarian, Croatian, Czech, Polish, Spanish, and Latvian operators for data (increases by about 10 times and more)¹⁸.

In the three Member States where all MNOs have been granted sustainability derogations since 15 June 2017 (Finland, Lithuania and Estonia¹⁹, see section 3), users have also markedly increased their consumption of mobile services abroad in the EU/EEA in proportions that are similar to many other Member States. This is because operators which were granted derogations nonetheless provided roaming services without surcharges to some extent (section 4.2) and, when applied, the roaming surcharges authorised by the NRA were substantially lower than the surcharges in place prior to 15 June 2017. Therefore customers of these operators have substantially benefitted from the new roaming rules as well and have reacted accordingly with increased demand.

4.2 RLAH is widely available in the EU/EEA

Already in summer 2017, virtually all Europeans could avail of a mobile subscription providing RLAH services: 1.8% of the EU/EEA subscribers were subject to a roaming

¹⁸ Comparing Q1 2018 and Q4 2017 to Q1 2017 and Q4 2016 respectively. See Figures 30-31 and 71-72 in 21st International Roaming BEREC Benchmark Report, October 2017-March 2018.

¹⁹ In Poland, three MNOs were granted the derogation in the course of the first semester 2018. The effect of these derogations is not yet visible in Q1 2018 data.

surcharge due to a derogation granted by the national regulator, and 1.6% for not being resident in, or having no stable links with, the country of the operator. All other subscribers benefitted from RLAH or deliberately chose an alternative roaming tariff in order to meet their particular roaming needs in non-EU countries.

As a result, in Q1 2018 RLAH accounted for more than 90% of the voice and data roaming traffic by EU/EEA subscribers travelling in the EU/EEA²⁰. Even in Finland, Lithuania and Estonia, where all MNOs had the right to derogate from RLAH from 15 June 2017, those MNOs actually provided large volumes of roaming services without surcharges (to a lesser extent in Lithuania). As a result, the vast majority of the roaming traffic by Finnish and Estonian subscribers does benefit from RLAH²¹.

4.3 Overall, domestic-only mobile offers are limited and mostly in the pre-paid segment of the market

According to the most recent BEREC IR Benchmark Reports²², the proportion of EU/EEA subscribers that had a roaming-enabled SIM card has remained stable around 96% since summer 2017. SIM cards restricted to domestic use (i.e. SIM cards providing no roaming service abroad at all) are in most cases pre-paid cards serving local communication needs and/or data-only plans or fixed wireless access products that can only be used at a specific location²³. Domestic-only tariff plans have therefore remained marginal, except in Romania, Estonia, Latvia and Bulgaria where more than 10% of the users have taken up domestic-only offers. This proportion has been declining in Bulgaria and Latvia since summer 2017 but has substantially increased in Romania²⁴. Austria is the only other Member State, in which the share of domestic-only subscribers has substantially increased (from 4% to 9% between summer 2017 and the first quarter 2018, mainly MVNO subscribers). In general, MVNOs have a higher share (and sometimes a significantly higher share) of domestic-only subscribers than MNOs, which is likely to be attributable in part to the customer segments that they typically target. In all EU/EEA countries however, the proportion of domestic-only mobile subscribers remains well below the proportion of the population that has not travelled abroad over the last year. The Commission will monitor the evolution of domestic-only tariff plans as the wholesale roaming data price cap continues to decline.

²⁰ The majority of the rest of the EU/EEA roaming traffic is made under alternative roaming tariffs deliberately chosen by consumers. It is noticeable that the proportion of the latter has decreased substantially compared to the pre-RLAH period (by a factor 2.5 for voice and almost 2 for data), a sign that the new default regime (RLAH) meets the roaming needs of Europeans who need less to resort to alternative roaming tariffs than before.

²¹ See Figures 25-26 (voice) and 66-67 (data) in the 21st International Roaming BEREC Benchmark Report, October 2017 – March 2018. In addition, when applied under the derogation, the surcharges are much lower than surcharges before RLAH, a reduction by more than 90% for data in 2018 compared to May 2017.

²² 20th and 21st International Roaming BEREC Benchmark Data Report, covering April 2017 – March 2018.

²³ BEREC Report on Transparency and Comparability of International Roaming Tariffs, December 2018. Only 17% of operators declared having removed roaming services from some specific tariff plans.

²⁴ The share of domestic-only subscribers in Estonia in Q3 2017 provided in the 20th BEREC Benchmark Report is incorrect due to problems with the underlying data. Therefore, for Estonia, it is not possible to compare with Q3 2017.

4.4 Consumer satisfaction is high

In 2017, the Commission, the European Parliament and national partners (e.g. NRAs, consumer associations) mobilised important resources and channels to appropriately inform European citizens about their new rights as regards roaming when they travel in the EU/EEA. The RLAH reform is widely recognised and appreciated by Europeans. One year after the introduction of RLAH, a Eurobarometer survey showed that 62 % of Europeans were aware that roaming charges had ended in the EU/EEA and 69% thought they, or someone they know, benefit or will benefit. Awareness of the new rules rises to 81% amongst those who had travelled during the preceding 12 months²⁵. In Finland, Lithuania and Estonia where all MNOs have been granted sustainability derogations since 15 June 2017, the derogation, used with some parsimony by operators, did not alter the recognition by consumers of the benefits of the reform, which is even above the EU average in those countries.

The survey also shows a marked change in behaviour while roaming since RLAH rules are in place. Since June 2017, travellers are less likely to make a restrictive use of their mobile phone abroad in the EU (53%) than before 15 June 2017 (66%). The share of travellers who considered that they used their mobile data while roaming as often as at home increased to 34% compared to 15% before 15 June 2017. In contrast, the share of travellers who never used mobile data abroad dropped to 19% compared to 42% before 15 June 2017 (and 52% in 2014). As regards calls made, the share of travellers who used their mobile phone for calling while roaming as often as at home increased to 26% compared to 11% before 15 June 2017.

A recent study by BELTUG²⁶ confirms that RLAH has also brought significant benefits to businesses and their employees, as it has triggered gains in both productivity and expenditures for business travellers, when outside their home country. One conclusion of the study is that the introduction of RLAH has changed the way that employees use mobile communications while on business travel. This calls for businesses to adapt to such changing patterns in order to reap the full benefits of RLAH.

5 EFFECTS OF RLAH ON OPERATORS

5.1 Introduction

The introduction of RLAH has greatly facilitated the consumption of mobile services by EU consumers when travelling within the Union, as shown in section 4. This section focuses on the effects of the end of roaming surcharges from the perspective of the mobile (including virtual) network operators in the Union²⁷.

²⁵ Flash Eurobarometer 468, The end of roaming charges one year later, June 2018, available [here](#).

²⁶ BELTUG, Roam Like at Home in the Business Market, October 2018

²⁷ The RLAH rules have by definition removed the retail roaming source of revenue for operators (except retail roaming surcharges applicable in excess of fair use policy and under the derogation). As a consequence, during the first year of RLAH, an operator's quarterly revenues include no retail roaming surcharges anymore and are compared to this operator's quarterly revenues that included retail roaming surcharges one year before. This has

Roaming services require a bilateral agreement between two mobile network operators, each present in a different country, so that their customers can use the other operator's network when travelling to that country. In this sense, the impact of RLAH can vary markedly between operators depending on the traffic flows of the given operator's customer base. Based on its traffic flows, an operator can be classified as an outbounder or inbounder operator.

An outbounder operator has a customer base which consumes more mobile services abroad (i.e. on the networks of partner operators in other EU countries), than those consumed by the partner operators' customer base on its own network. Conversely, an inbounder operator has a customer base which consumes less mobile services abroad than those consumed by the partner operators' customer base on its own network. The analysis below looks at the impact of the introduction of RLAH on outbounder and inbounder countries separately. Due to tourist flows, typically, operators in Northern European countries are net outbounder operators of roaming traffic, whereas operators in Southern European countries are typically inbounders of roaming traffic, although there are some exceptions.

In this section, the figures are based on the data collected from mobile operators by NRAs for the purposes of the 19th, 20th and 21st BEREC International Roaming (IR) Benchmark Reports covering Q4 2016 to Q1 2018, and on a survey of NRAs conducted by the Commission in May-June 2018. Data analysis was conducted by the Joint Research Centre (JRC) of the Commission²⁸.

5.2 Regulation has triggered competitive dynamics driving considerable reductions in wholesale prices that have benefited net outbounder operators

When a customer from one operator roams on the network of a roaming partner operator in another EU country, the first operator needs to pay charges to access the network of the second, the so-called wholesale roaming charges. The introduction of RLAH was accompanied by considerable reductions in maximum wholesale roaming prices, and appears to have triggered further reductions in actual wholesale prices.

The average EEA wholesale roaming price for voice services was EUR 2.93c/min in Q3 2016 compared to EUR 2.41c/min in Q3 2017 and 2.06c/min in Q1 2018²⁹. Similarly, the average EEA wholesale price for data services was EUR 9.9/GB in Q3 2016 compared to EUR 4/GB in Q3 2017 and EUR 2.7/GB in Q1 2018³⁰. Wholesale prices for net outbound (unbalanced) roaming traffic, which is the part of the roaming traffic generating net payments from one

the mechanical effect of reducing the operator's revenues during the first year of RLAH in year-on-year comparisons. From the second year of RLAH onwards, this mechanical effect disappears since year-on-year comparisons are made for periods fully under RLAH. What remains is the demand for growing volumes of data, including while on travel in the EU/EEA, which grows operators' mobile revenues.

²⁸ The Joint Research Centre carries out research on behalf of the Commission in order to provide independent scientific advice and support to EU policy (see its website [here](#)).

²⁹ 20th and 21st International Roaming BEREC Benchmark Reports, covering April 2017- March 2018.

³⁰ 20th and 21st International Roaming BEREC Benchmark Report, covering April 2017- March 2018.

operator to the other, are even lower (1.84 c/min for voice and EUR 2.6/GB for data on average in Q1 2018). The average across operators of the five lowest wholesale prices for net outbound (unbalanced) roaming traffic reached EUR 1.39 c/min for voice and EUR 1.1/GB for data in Q1 2018.

The decline in wholesale roaming prices was determined mainly by two factors. First, the introduction of RLAH has resulted in significant increases in roaming volumes (as shown in the section 4.1), thereby fuelling competition in wholesale roaming prices. Second, in line with the objective of the Roaming Regulation, regulated maximum wholesale roaming prices have acted as ceilings, triggering competitive market dynamics between operators offering wholesale roaming access below those ceilings.

These declines in wholesale roaming prices should be welcomed for three reasons. First, lower wholesale roaming prices have greatly mitigated any potential impact from the introduction of RLAH on outbender operators,³¹ as they have reduced their wholesale roaming payments. Secondly, such reductions, together with the fact that average wholesale market prices have been below the regulated maximum wholesale tariffs, are persuasive evidence that net inbounder operators have been able to meet the increasing demand in roaming services while at the same time recovering the cost of their network investments, including the cost of capital. Third, such reductions in wholesale roaming prices are a sign of a better functioning internal market at wholesale level, at least as regards a significant share of bilateral relationships between operators. The impossibility to maintain excessive prices for retail roaming services on the various national markets, combined with the release of pent-up demand through the application of RLAH at retail level, appears to have played a positive role in that regard.

5.3 Net inbound operators have benefited from increased roaming demand

In relation to operators in net inbound countries, data gathered from BEREC's IR Benchmark Reports shows that out of the 29 countries included in the exercise (i.e. the 28 EU Member States plus Norway), 13 are net inbounders of roaming data traffic.³² There are some differences in terms of the increase in incoming roaming data traffic experienced by these countries after the introduction of RLAH. For some (e.g. Spain, Cyprus or Italy), the increase in outbound roaming data traffic, starting from low levels compared to inbound roaming data traffic, has been proportionally greater than that in inbound roaming traffic. A similar pattern can be observed with roaming voice traffic.

Net inbound roaming traffic represents typically between 1% and 8% of domestic traffic in inbound countries. For data, it represented more than 10% of domestic traffic in summer 2017

³¹ According to the data from the 21st International Roaming BEREC Benchmark Report, 16 countries out of the 28 Member States plus Norway are net outbounders of data roaming traffic, namely: DE, DK, EE, FI, IE, LT, LU, LV, NL, NO, PL, RO, SE, SI, SK and UK.

³² Net inbounder countries of roaming data traffic include: AT, BE, BG, CY, CZ, EL, ES, FR, HR, HU, IT, MT and PT.

in Croatia, Malta, Portugal, and up to around 20% in Cyprus and Greece. Operators in all net inbound countries have benefited from the increase in demand for wholesale roaming services at market prices that have allowed operators in net inbound countries to recover the costs of providing wholesale roaming access, including an appropriate return on their investments (as described in section 5.2 above).

5.4 In spite of the considerable increase, net outbound roaming traffic still represents a small fraction of domestic demand

When assessing the potential impact of increasing roaming demand on net outbender operators, it is helpful to analyse the net outbound traffic in these countries. In other words, the difference between the outbound and inbound roaming traffic is likely to give an indication of the size of the (net) wholesale roaming payments of these operators. The evidence from BEREC's IR Benchmark Reports shows that, in spite of the massive increase in roaming data traffic, the net outbound data roaming traffic (i.e. outbound roaming data minus inbound data roaming traffic) only represents a small fraction of the domestic data traffic of these operators, typically below 3% and not greater than 6% of the domestic data traffic consumption for any country.

Similarly, in the case of roaming voice traffic, in spite of the fact that a Polish, Romanian or Bulgarian subscriber consumes on average 4 to 5 times more roaming voice calls in the EU/EEA than the average EU/EEA subscriber³³, the net outbound roaming voice traffic in these countries still represents less than 5% of these operators' domestic voice traffic.

5.5 Most mobile operators have implemented fair use policies

Commission's Implementing Regulation (EU) 2016/2286³⁴ laid down detailed rules to ensure a consistent implementation of fair use policies (FUP) that roaming providers may apply in order to avoid anomalous or abusive use of regulated retail roaming services under RLAH that could have detrimental effects on domestic markets. In this regard, the Commission surveyed NRAs in May-June 2018 on the extent of the application of FUPs by their domestic operators.

As shown in Table 1 below, the vast majority of operators have applied a FUP, particularly operators from outbound countries.

³³ See Figure 7 in the 21st BEREC International Roaming Benchmark Report, October 2017- March 2018. The forthcoming price cap on intra-EU calls from May 2019 onwards may have an effect on this particularly high consumption of roaming voice calls.

³⁴ Commission Implementing Regulation (EU) 2016/2286 of 15 December 2016 laying down detailed rules on the application of fair use policy and on the methodology for assessing the sustainability of the abolition of retail roaming surcharges and on the application to be submitted by a roaming provider for the purposes of that assessment (CIR),.

Table 1: Operators applying a FUP

	NO	YES
Inbound countries	20%	80%
Outbound countries	6%	94%

Source: Commission's survey to NRAs (June 2018)

In the case of MVNOs, the share of these operators applying a FUP has been relatively lower than the average presented (67% for MVNOs in inbound countries and 87% for MVNOs in outbound countries). This suggests that MVNOs have been generally more inclined than MNOs to first see how their customers would use RLAH in order to determine whether or not to invest in fair use policy measures.

In terms of the types of FUPs applied, about half of the operators have implemented the residence/stable links criterion.³⁵ Table 2 below shows that the vast majority of operators have relied on the open data bundle limits, albeit less so in the case of MVNOs. This fair use policy allows operators to set limits to the mobile data consumed by their customers while roaming at domestic price, based on the prices of their bundles and the regulated maximum wholesale roaming tariffs applicable at the time.³⁶

Table 2: Types of FUPs applied by operators

	NO	YES
a. 4-month window	<i>A 4 month window to assess prevailing domestic consumption over roaming consumption or prevailing domestic presence of the customer over presence in other MS of the Union</i>	
Inbound countries	74%	26%
Outbound countries	55%	45%
b. open data bundle limits	<i>Roaming customer shall be able to consume volumes equivalent to at least twice the volume resulting from dividing the domestic retail price by the max. wholesale caps</i>	
Inbound countries	21%*	79%*
Outbound countries	13%*	87%*
c. pre-paid limits	<i>Roaming customer shall be able to consume volumes equivalent to at least twice the volume resulting from dividing the credit available by the max. wholesale caps</i>	

³⁵ See Figure 3 in BEREC Report on Transparency and Comparability of International Roaming Tariffs, December 2018

³⁶ For a more detailed description, please refer to the CIR ([here](#)) and the Commission's Q&A on Roaming (available [here](#)).

Inbound countries	75%**	25%**
Outbound countries	62%**	38%**
d. other mechanisms	<i>Other objective indicators such as long inactivity of SIM card with use mostly while roaming or subscription and sequential use of multiple SIM cards by same roamer</i>	
Inbound countries	91%	9%
Outbound countries	70%	30%

Source: Commission's survey of NRAs (June 2018).

* % of responding operators offering open data bundles (75% of the respondents).

** % of responding operators offering pre-paid tariff plans (53% of the respondents).

In contrast, other FUPs available to operators, such as the 4-month window of domestic prevalence, data limits on pre-paid cards or other control mechanisms linked to the other objective indicators referred to in the Commission Implementing Regulation, have been used in practice by operators to a relatively modest extent. The main reason for not relying on these FUP mechanisms has been operators' view that they lack sufficient effectiveness, as shown in Table 3 below.

Table 3: Operators' views on the effectiveness of some FUP mechanisms

	Effective/Partially effective	Ineffective	Unnecessary
4-month window	43.6%	46.4%	10%
open bundle limits	74.6%	15.5%	9.9%
pre-paid limits	49.2%	24.8%	26.0%
other mechanisms	43.1%	33.7%	23.2%

Source: Commission's survey of NRAs (June 2018).

In addition, in relation to the 4-month window mechanism, a significant share of operators surveyed have indicated that they consider it either too complex (63% of operators) or too costly (23% of operators).

Still, a slight majority of MNOs (54%) apply the 4-month window mechanism in outbound countries. In addition, a number of operators have indicated that they are applying a wait-and-see strategy and that they could consider relying on this FUP mechanism in the future depending on the number of customers exceeding the allowed roaming consumption/presence over the 4-month period.

Fair use policy is transparently communicated to roaming customers. Almost all operators applying open data bundles limits inform their customers about the actual value (in GB) of the

limit and the remaining volume available. They also alert them when they reach that limit.³⁷ When applied, the 4-month window control mechanism is part of the customer's contract. About 2/3 of the operators inform their customers about their roaming and domestic usage via their personal customer page (93%) or the call centre (100%). The overwhelming majority of roaming customers however stay abroad for much shorter time periods and therefore do not need to worry about the control mechanism: for 71% of the operators effectively implementing the 4-month window mechanism, between 0 and 1% of their subscribers were subject to an alert for having a prevailing roaming presence/consumption³⁸. Subscribers effectively subject to a roaming surcharge after being alerted are even less numerous. It should be noted that the control mechanism is in itself a disincentive for customers to go beyond the 4-month window, which may explain the low proportion of customers who are effectively alerted. In cases where no control mechanism is applied, the proportion of customers having a prevailing roaming presence/consumption may be higher than in cases where the control mechanism is in place.

5.6 Overall, MVNOs maintain their position on the market

The Commission has analysed the data on MVNOs gathered for the Benchmark reports. Unfortunately, the response rate from MVNOs is lower than for MNOs and unstable over time, with a different number of MVNOs replying to the information requests of each Benchmark report. This means that any conclusions from the analysis of MVNO data should be taken with caution.

The data on MVNOs from the Benchmark reports seems to indicate that for most of the countries for which data is available, MVNOs have successfully maintained their domestic market share (in subscriber numbers) and, in some instances, they seem to have been able to improve it over the period considered. On average, MVNOs' so-called ARRPU³⁹, which is a standard metric used for such comparisons, increased between Q4 2017 and Q1 2018, while it remained stable for MNOs.⁴⁰

The great majority of surveyed MVNOs obtain wholesale roaming access via their domestic host MNOs (71%), only 5% via direct bilateral negotiations with MNOs and 7% via a hub⁴¹. In terms of MVNOs' views regarding potential impediments to MVNO competition with MNOs, some have indicated the absence of wholesale activities (implying no income from incoming roaming) and wholesale prices at the level of the regulated wholesale price cap as the main factors (respectively 35% and 40% of MVNOs surveyed).

³⁷ BEREC Report on Transparency and Comparability of International Roaming Tariffs, December 2018.

³⁸ For the remaining 30% of these operators, between 1% and 5% of their subscribers received an alert under the 4-month mechanism. Source: Commission's survey to NRAs, June 2018.

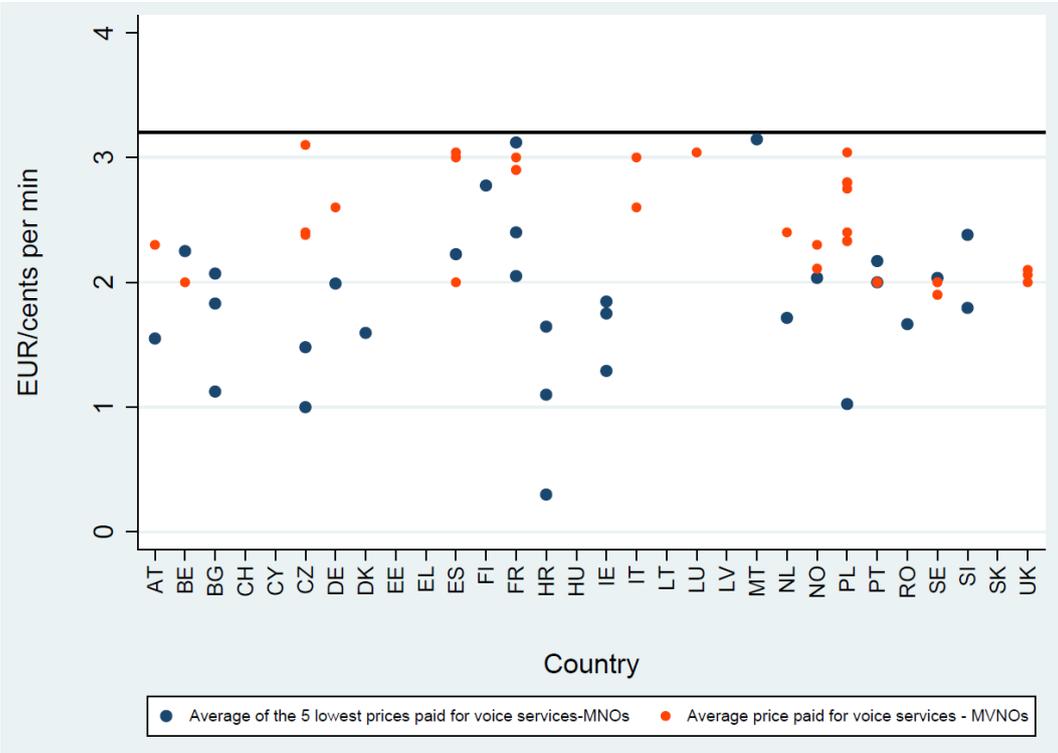
³⁹ Average Retail Revenue per User.

⁴⁰ See Figure 90 in 21st International Roaming BEREC Benchmark Report, covering October 2017- March 2018.

⁴¹ Commission's survey of NRAs, June 2018. 17% of responding MVNOs use other channels which however often imply the host MNO as part of the solution. A roaming hub gives access to hundreds of international roaming agreements.

On this, Figure 3 (for voice) and Figure 4 (for data) below present the lowest wholesale roaming prices paid by MVNOs and MNOs from each country, for each service respectively, showing these prices against the regulated maximum wholesale roaming tariffs.⁴² Although the evidence does not represent the full picture in all countries, as many operators did not provide any data, the following conclusions can be tentatively drawn. First, while it is true that MVNOs typically pay wholesale roaming prices that are higher than those paid by MNOs, and that some pay prices broadly in line with the level of the wholesale roaming price caps, there are many examples of MVNOs that pay wholesale roaming prices well below the regulated tariffs in most EU countries. Thus, it cannot be concluded from this evidence that MVNOs necessarily all pay wholesale roaming prices at the level of the regulated caps. Second, there are a few examples of MVNOs that pay wholesale roaming prices at similar levels to those paid by MNOs.

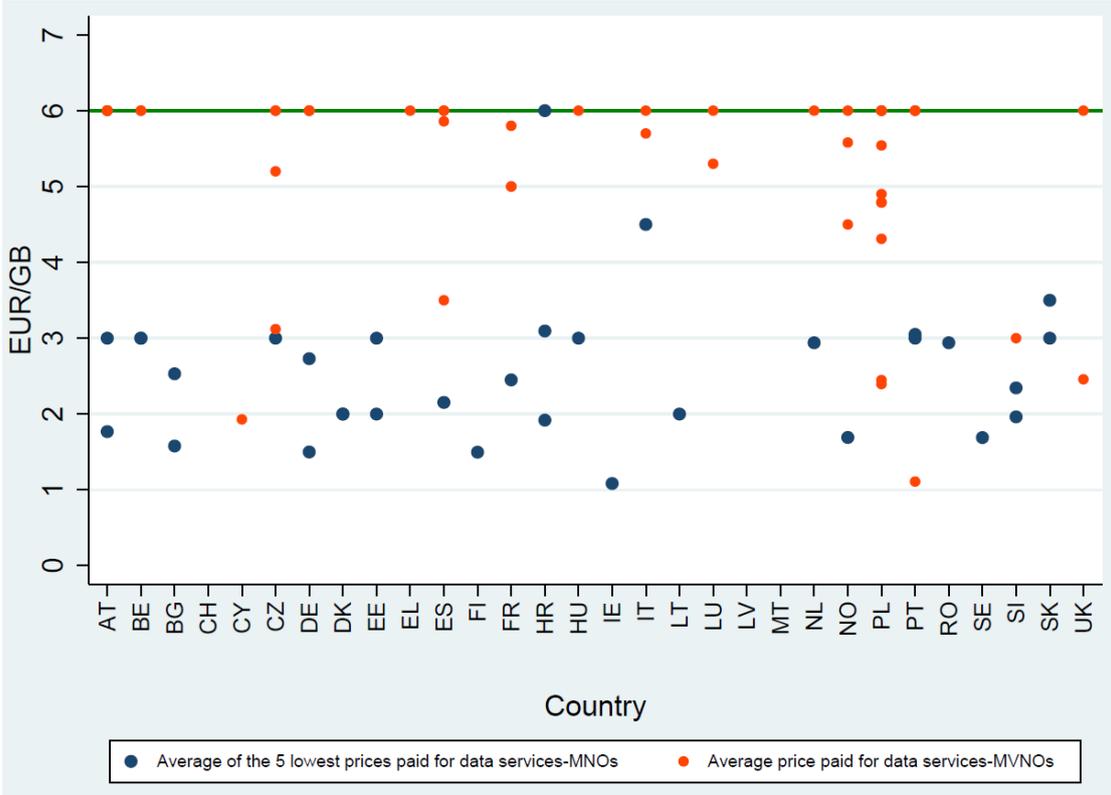
Figure 3: Wholesale prices paid for voice by MNOs (blue dots) and MVNOs (red dots)



Source: 21st International Roaming BEREC Benchmark Report (October 2018) and Commission survey of MVNOs (June 2018). The chart uses the average of the 5 lowest prices paid by MNOs and the average price paid by MVNOs. JRC's calculations.

⁴² The information presented in these figures was collected from the 21st International Roaming BEREC Benchmark Report (October 2018) and Commission survey to MVNOs (June 2018). Thus, information from MNOs and MVNOs may not be entirely comparable. For example, the chart uses the average of the 5 lowest prices paid by MNOs and the average price paid by MVNOs, and may therefore overstate the advantage enjoyed by MNOs.

Figure 4: Wholesale prices paid for data by MNOs (blue dots) and MVNOs (red dots)



Source: 21st International Roaming BEREC Benchmark Report (October 2018) and Commission survey of MVNOs (June 2018). The chart uses the average of the 5 lowest prices paid by MNOs and the average price paid by MVNOs. JRC's calculations.

The evidence in Figure 3 and Figure 4 above seems to suggest that the prices paid by MVNOs can vary significantly depending on factors other than just their condition of being a virtual operator. For example, an MVNO may be able to negotiate different prices depending on its size or its negotiating strategy with its host MNO. On the latter, an MVNO attaching more weight to roaming services may be able to negotiate a better wholesale roaming access deal with the MNO than an MVNO that does not attach such weight to roaming services and prefers to focus its strategy on domestic services.

The second most important factor (35.3% of respondents) highlighted by MVNOs seems to be the fact that they do not own a network and therefore do not have associated revenues from incoming roaming traffic. This, together with the relatively lower volumes of (some) MVNOs (an issue pointed out by 11.8% of respondents to the survey) could explain the relatively higher prices paid by MVNOs when compared to MNOs. These factors are inherent to MVNOs' business models.

5.7 Derogations have been limited to operators in a few countries and should gradually disappear

Mobile operators that have demonstrated that they are not able to recover their actual and projected costs of providing regulated roaming services without increasing their domestic

prices in order to provide RLAH have been granted a sustainability derogation by their NRA. The derogations granted are strictly in order to recover their costs of providing roaming services to their customers and avoid any domestic price increase (see section 2). Table 4 below presents the number of derogations that have been granted during the first year of RLAH, per country, split by type of operator (MNO and MVNO).

Table 4: Sustainability derogations granted by NRAs during the first year of RLAH (June 2017-June 2018), split by MNOs and MVNOs

	Derogations granted in the first RLAH year	
	MNO	MVNO
AT	0	2
BE	0	1
DK	0	1
EE	3	0
ES	0	1
FI	3	1
FR	0	11
IT	0	4
LT	3	1
PL	4	7
RO	1	0
SI	0	1
Total	14	30

Source: Commission's survey of NRAs, June 2018

As expected, MVNOs are the primary users of the sustainability derogation given their specific situation on the wholesale roaming market (see section 5.6). Over the first year of RLAH, about 2/3 of the derogations have been granted to MVNOs (30 vs 14). Still, this is a small fraction of the more than 330 MVNOs existing in the Union. Most of the providers that were granted a derogation have a small market share in their respective countries.

As regards MNOs, there are four Member States in which all MNOs have obtained a sustainability derogation, namely, Estonia, Finland, Lithuania and Poland (the latter only since 2018). Romania's smaller MNO was also granted a sustainability derogation. These countries are characterised by particularly low mobile data prices and high net outbound roaming traffic. Operators in these countries were therefore the most likely to have resort to the derogation foreseen in the Roaming Regulation in order not to affect the level of domestic prices on these markets. Conversely, as expected no derogation has been granted to MNOs in Member States which are net recipients of inbound roaming traffic.

In all of the above cases, operators have used the derogations with parsimony and introduced surcharges only in a subset of their tariff plans⁴³, so that the majority of the outbound roaming traffic from these countries still benefits from RLAH (see section 4.2). In addition, in many cases, the maximum surcharges allowed by the NRAs are below the wholesale roaming price caps.

No new derogation, other than the renewal of already granted derogations, has been granted in the second year of RLAH. In France, a few derogations, and in Denmark the only derogation, have not been renewed. In the other Member States, the derogations that have lapsed have been renewed by NRAs after examination of the new applications submitted by operators. In most cases, the new maximum surcharges allowed by NRAs are lower than those of the first derogations.

The Commission is closely monitoring the derogations granted and renewed by NRAs to ensure consistency in the application of the Commission Implementing Regulation (EU) 2016/2286 across the Union. The Commission has invited NRAs to exercise the same acute scrutiny when reviewing derogation applications. NRAs have the power to reconsider their decisions during the validity period of a granted derogation in view of new developments and/or information regarding the situation of the operator. The Commission expects derogations to gradually disappear, particularly from 2019, when greater declines in regulated wholesale caps for mobile data services will take effect, improving the sustainability of RLAH in these countries.

6 EFFECTS OF RLAH ON DOMESTIC MARKETS

6.1 The declining trend in domestic prices persists overall in the EU/EEA

According to the study “Mobile Broadband Prices in Europe 2018”⁴⁴, in the period from February 2017 to February 2018 (i.e. from 3 months before the introduction of RLAH to 9 months after) there is no trend for increasing domestic prices.

On the contrary, between those two dates, the EU average price has decreased for all voice and data baskets as well as for all data-only baskets, as reflected in the following tables:

	100MB, 30 calls	500MB, 100 calls	1GB, 300 calls	2GB, 900 calls	2GB, 100 calls	5GB, 100 calls	
Change in average EU price for voice and data baskets	-14%	-6%	-6%	-5%	-16%	-20%	
	256MB	512MB	1GB	2GB	5GB	10GB	20GB
Change in average EU price for data only baskets	-10%	-14%	-5%	-12%	-4%	-6%	-16%

⁴³ See section 3.2 in BEREC Report on Transparency and Comparability of International Roaming Tariffs, December 2018.

⁴⁴ Mobile Broadband Prices in Europe in 2018, a study conducted for the European Commission by Empirica

According to this study, only five Member States exhibit an increasing trend in prices for packages that include voice and data (BG, IE, LV, MT, SE) while twelve exhibit a decreasing trend (AT, BE, FR, DE, HU, IT, NL, PL, PT, RO, ES, UK). Prices in the remaining Member States either remain stable or present a mixed trend, decreasing for certain baskets and increasing for others.

The situation is quite similar for data-only packages. Five Member States exhibit an increasing trend (HR, DK, EE, LT, MT) while eight Member States exhibit a decreasing trend (FI, FR, IE, IT, NL, PL, SE, UK).

Such trends do not present major deviations from the ones of previous years, taking also into account the changing maturity level of the data services.

6.2 Increase in mobile broadband take up and 4G coverage continues

The introduction of RLAH does not seem to have influenced mobile broadband uptake in a positive or negative manner nor to have affected mobile operator's investments to expand their 4G networks.

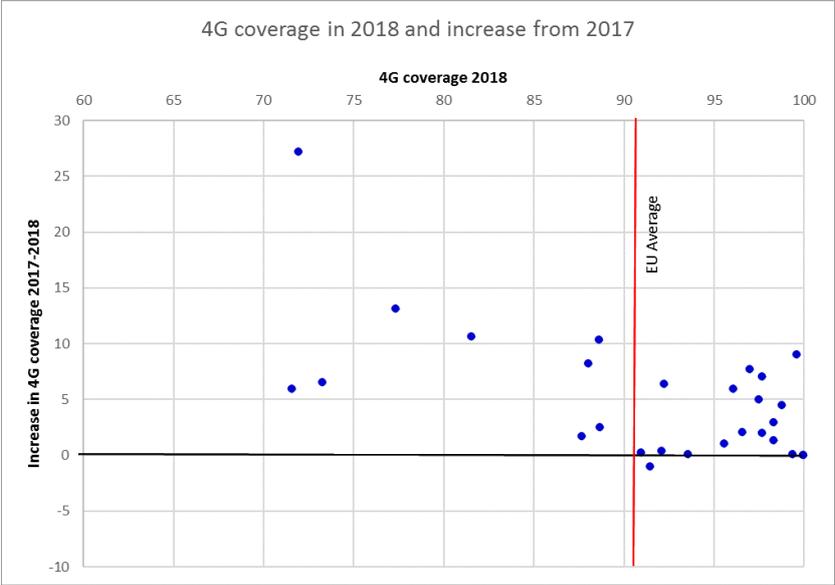
According to the DESI study⁴⁵, mobile broadband uptake continues to increase EU-wide, reaching 90.2% in end 2017 compared to 83.8% in end 2016 and presenting a steady pace of increase compared to previous years⁴⁶.

At the same time, EU-wide 4G population coverage has reached 90.8% in end 2017 (compared to 85.6% in end 2016). In the majority of Member States (see Figure 5), 4G coverage exceeds 90% while in only four it is below 80%. From the Member States where 4G coverage was below 90% in end 2016 (11 in total) the increase achieved during 2017 was in all but two (Germany and Italy) higher than 5%.

⁴⁵ Digital Economy and Society Index (DESI) 2018. Connectivity – Broadband market developments in the EU, available [here](#).

⁴⁶ Only two countries have experienced a slightly (insignificant) reduced mobile uptake, Finland (146.3% in end 2017 compared to 147.2% in end 2016) and the UK (89.8% in end 2017 compared to 91.4% in end 2016).

Figure 5: 4G population coverage in 2018 and increase from 2017 in the EU Member States.



Source: Digital Economy and Society Index (DESI) 2018. Connectivity – Broadband market developments in the EU

6.3 On average non-EU/EEA roaming prices are decreasing

According to the last BEREC data, between Q1 2017 and Q1 2018 retail roaming prices of EU/EEA mobile operators in non-EU/EEA countries have continued to decline on average: -38% for data services and -8% for calls made. Overall therefore, abolishing intra-EU/EEA roaming prices have not come at the price of higher roaming prices in the rest of the world (so-called "waterbed effect")⁴⁷. In particular, more and more operators include some popular non-EU/EEA destination countries in their RLAH offering or apply a reduced roaming fee to those countries⁴⁸.

7 CONCLUSION

With the implementation of RLAH since June 2017 the demand for mobile consumption while travelling in the EU/EEA has rapidly and massively increased. This has revealed the considerable roaming needs of consumers that were previously unmet and, "has significantly contributed to the development of the single market" as noted by BEREC⁴⁹. It is therefore not surprising that consumer satisfaction overall has been high. Mobile operators have by and

⁴⁷ This overall evolution is an average. It does not exclude punctual increases in roaming prices in some non-EU/EEA countries in some tariff plans in some Member States. This may be the case in particular for less visited non-EU/EEA destination countries.

⁴⁸ According to the BEREC Report on Transparency and Comparability of International Roaming Tariffs (December 2018), almost half of the operators do so.

⁴⁹ https://berec.europa.eu/eng/document_register/subject_matter/berec/press_releases/8019-press-release-on-public-debriefing-on-the-outcomes-of-34th-plenary-meetings

large abided by the new rules, accompanied by the vigilant monitoring from NRAs and the Commission. The safeguards foreseen in the Roaming Regulation to avoid distortions on domestic markets, namely fair use policy and the sustainability derogation, as expected have worked adequately where needed. The sharp decline in wholesale roaming price caps, and for some the authorisation to derogate, have in general significantly mitigated the impact of RLAH on outbunder MNOs and MVNOs. The successive reductions of the data price cap established in the Roaming Regulation will further facilitate the provision of RLAH in the years to come. Moreover, these reforms appear to have given significant impetus to internal market dynamics at the wholesale level. In this context, NRAs will need to exercise additional scrutiny when assessing applications from mobile operators to renew derogations.