EMERG Expert Working Group on
International Roaming

Report on Harmonizing International Roaming Pricing and Reducing Roaming Tariffs among EMERG Members

January 2020

EMERG International Roaming Report 2019

PREFACE

This report on "Harmonizing International Roaming Pricing and Reducing Roaming Tariffs among EMERG Members" is part of EMERG Annual Working Plan (2019) goals and refers to the objective of promoting the approximation of EMERG members to the European regulatory framework and best practices.

The report was developed by EMERG Expert Working Group on International Roaming Regulation, comprised of representatives from:
Israel (MoC) - chair, Bosnia and Herzegovina (CRA), Switzerland (BAKOM), Italy (AGCOM) and Egypt (NTRA).

The outline of this report was presented to EMERG members during the Workshop on International Roaming, which took place in Biel-Bienne, Switzerland on 5-6 November 2019.

The overall supervision and guidance were carried out by DETECON International and WIK Consult GmbH.

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ABBREVIATIONS

AREGNET	Arab Regulators Network of Telecommunications and Information Technologies
BEREC	Body of European Regulators for Electronic Communications
EaP	Eastern Partnership (Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine)
EaPeReg	Eastern Partnership Electronic Communications Regulators Network (consists of Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine)
EC	European Commission
EEA	European Economic Area
EMERG	European Mediterranean Regulators Group (The Southern Partnership)
EU	European Union
FUP	Fair Use Policy
GATS	General Agreement on Trade in Services
GCC	Gulf Cooperation Council
IMTR	International Mobile Termination Rates
IMS	IP Multimedia Subsystem
IOT	Inter-Operator Tariffs
IoT	Internet-of-Things
IRS	International Roaming Services
IR-EWG	EMERG International Roaming Expert Working Group
ITU	International Telecommunications Union
M2M	Machine-to-Machine
MENA	Countries of the Middle East and North Africa
MNO	Mobile Network Operator
MoU	Memorandum of Understanding
MVNO	Mobile Virtual Network Operator
NRA	National Regulatory Authority
Regulator	Unless otherwise stated, the term implies an independent regulatory authority or a Ministry in charge of regulating the telecommunications market in its country
RLAH	Roam Like at Home
RRA	Regional Roaming Agreement
SMP	Significant Market Power
SMS	Short Message Service
WB6	Western Balkan Six (consist of Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia)
WTO	World Trade Organization

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INTRODUCTION

There is a widespread conviction that international roaming charges are excessively high due to unjustifiably high-level of IOTs and high profit margin for the operators. Therefore, a significant number of consumers switch off their data roaming while being periodically abroad. Thus, it is evident that the exorbitant international roaming prices impair the ability of consumers to enjoy ubiquitous connectivity.

With the objective of enhancing consumer protection and increasing the transparency of roaming prices several initiatives to encourage the reduction of roaming tariffs were taken by individual NRAs. Although, it has been proven that due to the cross-border nature of roaming services in most cases a unilateral action to reduce roaming prices is inefficient. Hence, nowadays it is commonly agreed that a reduction of roaming prices would be best accomplished through bilateral and multilateral agreements.[1]

In that aspect, the EU's RLAH regulation can be regarded as the most efficient measure implemented on a reciprocate basis. Aiming to maximize social benefits and harmonise national policies, RLAH changed the international roaming market in the EU while removing obstacles for the adoption of new business models and facilitating investments. For instance, it enabled the substantial increase in international roaming traffic with the EEA's average roaming consumption of data services increased by 600% in the period from Q3 2016 to Q3 2018.[2] Moreover, the regulatory intervention in the EU has proven to be effective in achieving a level playing field for competition, enhanced transparency and effective consumer protection.

Outside the EU, there have been few regional regulatory initiatives to reduce roaming tariffs to competitive levels, inter alia by the WB6 and the EaP member countries. These initiatives enjoyed a wide domestic political support and in consequence received the support of the EC to their regional process. It is believed that as same as RLAH stimulated the endeavors to achieving the objectives

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of the European Single Market, the harmonization of roaming regulation in both WB6 and EaP will serve the objective of promoting the digital economy and society in these regions.[3]

Taking into consideration that EMERG serves as a platform for sharing experience and best practices among its members and with the EU, it can be exploited for the development of a regional approach toward international roaming regulation. The indispensability of cooperation between EMERG member countries, in particular between its Non-EU member countries, is well noticed and will prove to be essential for the development of a regional initiative.

This report was formulated in the context of EMERG Work Plan 2019 and in accordance with the strategic objectives laid down during EMERG 2019 plenary, which was held in Sarajevo on 26 March 2019. It summarizes the work done by the EMERG IR-EWG and lays down recommendations on how affordable, accessible and reliable roaming services in EMERG region can be provided. The report aims to ensure continuity in workflow and to set the foundations for future discussions on regional roaming agreement among EMERG members.

MAIN POINTS

The purpose of this report is to present a preliminary analysis of the situation of EMERG member countries' international roaming markets, following the recent developments in this field. The composition of this report was undertaken by EMERG IR-EWG, which was established with the aim of fostering the creation of a common space for international roaming among EMERG member countries through the establishment of a regional regulatory approach.

The results of the work done by the IR-EWG members indicate that as concluded by other regional groups, there is a considerable need to regulate roaming services and to ensure their provision on an affordable, accessible and reliable basis. This inference relies on the fundamental acknowledgments that currently, exorbitant international roaming prices undermine consumer benefits and hinder the efforts of EMERG Non-EU members to promote the digital economy and society in their respective countries.

The report introduces the key regulatory issues in regard to International Roaming Services, taking into consideration the norms, tools and best practices developed by the EC, BEREC, ITU, OECD and other international organizations and regional groups. Based on these, it refers to the required

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[3] Agreement on the Price Reduction of the Roaming Services in Public Mobile Communication Networks in the Western Balkans Region (4 April 2019), 2; Third Eastern Partnership Ministerial Meeting on the Digital Economy, *Ministerial Declaration* (Bucharest, Romania 28 February 2019), 3.

steps and recommended elements for the creation of a regional roaming space among EMERG members, in particular among its Non-EU member countries.

Moreover, the working process included the examination of several regional regulatory initiatives that could be relevant for EMERG work in that field. Due to that, EMERG members acknowledge the efficacy of regulatory intervention for reducing roaming tariffs, and for achieving a level playing field for enhanced competition, increased transparency and efficient consumer protection. Along with the aforementioned, a well-coordinated regional process is also perceived as the most promising strategy for removing obstacles to maximization of consumer's benefits and for harmonization of national roaming policies among EMERG members.

In addition, EMERG members performed a preliminary analysis of their domestic roaming markets data to determine whether any further action is necessary in this area. The results of this analysis indicate that unequivocal measures to reduce the excessively high roaming tariffs are requisite.

Noting the importance of an established analysis, EMERG members agree to conduct a more comprehensive study, which will include a profound comparison of roaming tariffs and costs, evaluation of possible intervention schemes and assessment of the impact of the suggested regulation on customers, operators and the adoption of new business models. Hence, the objective of the future study will be to identify and develop the best regulatory approach for EMERG member countries and to set a roadmap for the creation of a common roaming space among them.

In this regard, the collaboration of and contribution from all members is required to the success of the future study and the development of an integrated regional approach. Moreover, as it turned out to be essential for the success of both WB6 and EaP roaming initiatives, the EC's support to EMERG's process seems crucial.

It should be noticed that unlike the WB6 and EaP member countries, currently EMERG members are still lack of political support to this process. In accordance, this report is aiming at providing the ground for the stimulation of national policy evaluation process and highlights the importance of the creation of supportive framework, as already took place in several countries, primarily in Switzerland. The future profound study will follow the efforts of EMERG members to collect applicable data and thus will prove to be a key factor in obtaining the political support and being able to put into effect regulatory measures.

In conclusion, the report highlights the need to ensure ubiquitous connectivity and to promote the digital economy and society. It sets the guidelines for further discussion on regional approach to

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roaming regulation among EMERG members and emphasizes the necessity to continue the work by conducting a profound study. By following a similar path to those taken by the EU, WB6 and EaP, EMERG member countries and its MENA countries, could ultimately pave the way for a greater cooperation and comprehensive economic relations. In that aspect, EMERG members agree that the cooperation through EMERG platform is essential and find the support of the EC to this process as highly required.

The creation of the report was carried out by the IR-EWG and it was presented to EMERG members during a workshop on international roaming held in Biel-Bienne, Switzerland on 5-6 November 2019. All members expressed their support for the work done by the IR-EWG and agreed to extend its terms of operation for the year of 2020. It is expected that EMERG member countries will continue the work for the creation of common space for international roaming in EMERG region through EMERG network, in accordance with a roadmap, which will be developed by the IR-EWG. In that aspect, this report will use as a facilitator to any future discussions regarding international roaming regulation refers to EMERG.

METHODOLOGY

The establishment of EMERG IR-EWG ensued as a result of the objectives set at the 2019 EMERG plenary meeting. Israel was appointed as the chair of the working group and led the team by defining the objectives, organizing the work, setting the timeliness and comprising the final report. Besides Israel, Italy, Switzerland, Bosnia and Herzegovina and Egypt were chosen as members of the working group on the basis of regional affiliation, aiming at emphasizing the unique characteristics of all of EMERG member countries.

Information Gathering and composition of the report

During the working process, information was collected in three phases:

Primarily, a questionnaire attached as Annex 1 to this document was disseminated to all of EMERG members. Answers to the questionnaire provided essential information on EMERG member's domestic legal framework for roaming policies and market data pertaining to the need for creating a regional roaming space. These answers were used, as appropriate, in the revision of the "Data analysis" section of this document. The data analysis and the section on "Examples of international roaming pricing in the EMERG region" were carried out by DETECON CONSULTING.

Additionally, information was gathered as part of the IR-EWG's meetings with experts from the EU, WB6, and EaP. A summary of several initiatives taken by regulators is manifested in the sections on "Regional developments" and "Switzerland study case" and is reflected in the final recommendations laid down in this report. Likewise, the section on "Key international roaming regulatory issues" refers to the pertinent details collected from public sources, including official websites, researches and studies made by the EU, BEREC, ITU, WTO and OECD.

As part of the third phase of information collection, EMERG IR-EWG members presented the draft report and opened a two-weeks consultation process, which enabled all members to provide comments and additional inputs.

Limitation of the report

The report was limited due to the difficulty of data collection, as most of EMERG member are currently lack the legal basis to demand the required information from their domestic operators. For instance, information regarding operators' revenues from international roaming and breakdown of retail and wholesale prices was absent from the analysis and therefore it is difficult to draw any

definitive conclusions from it. This would have been necessary, however, to calculate the average country roaming charges of all operators. It was thus decided to present an example of retail pricing from one German operator to all EU and Non-EU member states of EMERG.[4]

Moreover, considering the lack of legislative power to regulate roaming markets, which characterize most of the EMERG's regulators, the member countries decided to present the Swiss national study case as a possible roadmap for each individual regulator.[5]

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[4] See section on "Examples of international roaming pricing in the EMERG region".
[5] See section on "Switzerland study case".

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REGIONAL DEVELOPMENTS IN THE FIELD OF INTERNATIONAL ROAMING

EUROPEAN UNION – ROAM LIKE AT HOME (RLAH)

The EU's first rules to address overcharging in roaming prices came in 2007, highlighting the need for creating a harmonized approach towards mobile roaming prices. Destined to maximize consumer's benefit, the EU regulation marked a disruptive approach towards international roaming, capping the maximum tariffs for phone calls made and received while periodically travelling within the EU.

Throughout the years, the European regulation was developed with the aim of enhancing transparency and comparability of international roaming tariffs. The regulation was subsequently amended in 2009 and further amended in 2012 introducing regulatory measures binding maximum retail and wholesale roaming charges, which was directly applicable in all EEA Member States. These rules have since been periodically reviewed and reformed, with further reductions in price caps and automatic protections against data roaming bill shocks.

The main objective of the 2012 regulation was to reduce the difference between national and roaming tariffs, and thus to increase competition for improving consumer benefit and creating an internal market for roaming services in the EU. On 11 September 2013, the EC adopted a legislative package for a "Connected Continent: Building a Telecoms Single Market" aimed at building a connected, competitive continent and enabling sustainable digital jobs and industries. Following that proposal, the European Parliament resolved on 3 April 2014, within the framework of the procedure for the adoption of a Regulation for a European Single Market for Electronic Communications, to abolish retail roaming surcharges and allow customers to "Roam Like at Home".[6] In that aspect, roaming services regulation was meant to stimulate the harmonization of telecommunications markets of EU Member States.

The European Parliament and Council presented new rules on roaming charges and, formally adopted regulation (EU) No. 2015 /2120.[7] According to those rules, as of 15 June 2017, prices paid by consumers at home for calls, SMS and mobile data will be applicable wherever they are travelling in the EU. The European Parliament and Council required that a suitable reform in the wholesale

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[6] See BEREC, *International Roaming BEREC Benchmark Data Report April 2018 - September 2018* (7 March 2019), 9, https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/__8468-international-roaming-berec-benchmark-data-report-april-2018-september-2018 Accessed: 14 November 2019].

[7] See Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015, https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32015R2120 [Accessed: 14 November 2019].

roaming market would be introduced. In addition, they entitled the EC with defining a fair use policy of roaming at domestic prices in order to ensure that negative effects of abusive usage of RLAH can be avoided.

The substantially reduced wholesale roaming price caps and the introduction of a fair use policy performed some key elements for the provision of RLAH in a sustainable manner throughout the EU. Although, the implementation of such measures has to be done in terms of shared, transparent and inclusive approach which takes into consideration he need to avoid unduly jeopardizing of MNO revenues. In that aspect, the key element of regulation, which aims to maximize social benefits and harmonize national policies, is the evaluation of possible intervention schemes and formation of the most suitable regulative model. After completing a cost-benefit analysis of possible intervention schemes, BEREC chose RLAH as the preferred model.

In order to assess the impact of RLAH regulation, BEREC is constantly monitoring the roaming services market. The "International Roaming BEREC Benchmark Data Report" was published in both March 2018 and March 2019, presenting the result of market analysis undertaken by BEREC based on round of data collection on European international roaming services.[8] Some of the reported indicators relates to the evolution of pricing and consumption patterns. Furthermore, a summary of international roaming annual developments is broadly elaborated as part of BEREC annual report.

Another field of which BEREC is taking active measures to assess the impact of RLAH regulation is in regards to transparency and comparability of international roaming tariffs. On 6 December 2018, "BEREC Report on Transparency and Comparability of International Roaming Tariffs" was published, based on Information gathered from operators and the National Regulatory Authorities (NRAs). It is should be noted that during the data collection process, some major difficulties in obtaining reliable and comparable data occurred. For that reason, a well-defined methodology has to be created and the NRAs have to be empowered with the competence to collect data from their respective operators.

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[8] See BEREC, *International Roaming BEREC Benchmark Data Report April 2017 - September 2017* (8 March 2018), https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/ 8011-international-roaming-berec-benchmark-data-report-april-2017-september-2017 [Accessed: 14 November 2019]; BEREC, *International Roaming BEREC Benchmark Data Report April 2018 - September 2018* (7 March 2019), https://berec.europa.eu/eng/document_register/subject_matter/berec/ reports/8468-international-roaming-berec-benchmark-data-report-april-2018-september-2018 [Accessed: 14 November 2019].

Examination of RLAH regulation in the EU shows that in fact, even though the decision on roaming regulation is made at the national level, there is no national roaming regulation in the EU Member States. Most of the NRAs in the EU do not possess the authority to take regulatory measures into effect in the field of roaming nor the ability to impose roaming prices reduction on their domestic operators. Basically, they apply the regulation that was taken at the EU level and the BEREC Guidelines.[9]

In conclusion, the ability to regulate both the retail process and the wholesale rates in the EU is allowed thanks to the harmonized regional approach led by the EC, working closely with the NRAs in the EEA. Nowadays, RLAH can be regarded as the best example of "One Single Market" and therefore, EMERG members should regard it as a key regulatory issue to deal with, in order to achieve the common goals of harmonization, approximation and sustainability of the regional cooperation.

As mentioned in the "International Roaming BEREC Benchmark Data Report", published on 3 March 2018, the introduction of RLAH regulation was a pioneer in regards to Voice and SMS services and also coupled with the growing demand for data services and enabled a substantial increase in international roaming traffic.[10] In order to implement international roaming regulation and increase consumer's benefits a suitable approach should be developed, taking into consideration all key international roaming regulatory issues and highlighting the need for consultation (inter alia with the respective telecom operators). In that aspects, BEREC guidelines are getting the utmost consideration from both NRAs and regional networks developing and implementing international roaming regulations and could certainly serve as the basis for any harmonized guidelines, which will be further developed by EMERG members.

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[9] See BEREC, *guidelines for retail roaming regulation*, https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/7005-berec-guidelines-on-regulation-eu-no-5312012-as-amended-by-regulation-eu-no-21202015-excluding-articles-3-4-and-5-on-wholesale-access-and-separate-sale-of-services [Accessed: 14 November 2019]; BEREC, *guidelines for wholesale roaming regulation*, https://berec.europa.eu/eng/document_register/subject_matter/berec/_regulatory_best_practices/guidelines/7116-berec-guidelines-on-regulation-eu-no-5312012-as-amended-by-regulation-eu-20152120-and-by-regulation-eu-2017920-wholesale-roaming-guidelines [Accessed: 14 November 2019].

[10] BEREC, *International Roaming BEREC Benchmark Data Report April 2017 - September 2017* (8 March 2018), 1.

WESTERN BALKANS SIX (WB6) – REGIONAL ROAMING AGREEMENT (RRA)

The WB6 regional group includes six economies, which cooperate on several economic issues, and performs the only homogenous group of countries outside of the EU. Consists of Bosnia and Herzegovina, Montenegro, Republic of Serbia, Republic of North Macedonia, Albania and Kosovo, the group works towards a better-connected region, integrated with the EU transport, energy and digital networks and markets. A joint approach to furthering economic cooperation in the Western Balkans was defined in the WB6 Multiannual Action Plan on Regional Economic Area defined which also presented an agenda for digital integration in the WB6 region.

As part of the WB6 efforts to reach harmonization with the EU digital agenda for 2020 a RRA on "Reducing the Prices of Roaming Services on Public Mobile Communications Networks" was signed on 29 September 2014 between the Ministries responsible for Electronic Communications in Bosnia and Herzegovina, Montenegro, Republic of Serbia and Republic of North Macedonia. Relying on Regulation (EU) NO 531/2012 of the European Parliament and the Council of 13 June 2012 as the preferred benchmark, the RRA constituted a greater regional harmonization of the Western Balkans with EU standards and international roaming best practices. Furthermore, the singed parties declared their intention to expand the RRA for the whole WB6.

In order to introduce the RRA the parties agreed to carry out several amendments to their legislative frameworks and changed their respective laws to allow them to implement a set of reciprocal price control measures on roaming tariffs. That is to say that the WB6 regional cooperation in related to international roaming is performed thanks to the ability of individual NRAs to intervene in their respective telecommunications market. For creating the necessary legal competence and mandate for roaming regulation, a strong political support is required. Thus, the execution of the RRA is largely due to the strong political will of the relevant Ministries, who led the process.

Considering that harmonized principles and guidelines can help foster innovative roaming solutions at the global, regional and national levels the issue of international roaming regulation in the WB6 was brought up to the agenda of BEREC. To support the European Commission's strategy, two high-level meetings were held between BEREC and the WB6 representatives in 2018. As part of the support given by the EC to the Digital Agenda for the Western Balkans both BEREC and the WB6 agreed to cooperate more closely in the fields of roaming, termination rates and capacity building.

For that purpose, the EC arranged several meetings with different stakeholders from public and private sector and examined the perspectives of different stakeholders before deciding to implement a RRA among the WB6 member economies. Finally, on 1 July 2019, a regional agreement was signed between all six Members of the WB6 region, with the view to establish a roaming free region as of 1 July 2021. From 1 July 2019 to 30 June 2021 MNOs in the WB6 region will have to take the necessary steps to meet the requirements. It is evident that the success of the WB6 in developing and signing the RRA was thanks to the support given by the EC.

It is important to take into consideration the homogenous characteristics of the WB6 member economies and the levels of political, economic and administrative cooperation between them. The EC supported the process for achieving harmonisation between the WB6 member economies because they wish to apply for EU membership in the future. In that case, the adoption of RLAH regulatory model is a required step.

As mentioned by the WB6 experts, at first the negotiations between the member countries were detained because of the sensitive political situation. Even though, an agreement was signed and the cooperation started, putting aside political differences and focusing on enhancing consumer's benefits and enhancing the regional harmonization. In that aspect, the ability to develop a regional approach for the price reduction of roaming services (based on a multilateral agreement) requires a strong commitment for cooperation, which can possibly be achieved only through EMERG platform and with the support of the EC.

Continued work on regional roaming policy coordination and implementation of the RRA is still done according to the principles of the WB6 Multiannual Action Plan on Regional Economic Area roadmap. At its final stage a negotiation with the EC regarding integrated agreement is envisaged.

Besides the need to find appropriate regulatory and policy solutions, the WB6 discussions are also addressing changes in business models as well as new opportunities and innovative measures for IoT and M2M communications (in particular for Smart Mobility). Although no roaming regulation has yet referred to IoT and M2M communications, it is agreed upon that such future regulation will be a key enabler for enhanced economic harmonisation in the region.

EASTERN PARTNERSHIP (EaP) – FUTURE REGIONAL ROAMING AGREEMENT

EaPeReg was established as an independent platform of National Regulatory Authorities for Electronic Communications Networks and Services (consists of Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine). The network objective is to improve the cooperation between the EaP countries and contribute to their social and economic development by supporting the development of their electronic communications markets. In accordance, EaPeReg members identified three top priority topics to address and established respective expert working groups.

Following the liberalization process in the EU roaming market a discussion on the creation of regional roaming space was marked as on these topics and the regional Roaming Working Group (IR-EWG) started its work, enjoying a political support at the Ministerial level.[11]

In 2016, a decision was taken to launch the EU4Digital initiative, a three-year EU-funded project (2019-2022) which aims to promote key areas of the digital economy and society, in line with EU norms and practices, and communicates EU support across the digital agenda in the EaP region. In accordance, six thematic areas associated with the EaP countries further harmonisation with the EU were identified and relevant EU4Digital networks were created comprises of representatives from the EaP countries and EU Member states. EU4Digital platform promotes the work of the REWG and assists in achieving the objective of "reducing the difference between domestic and roaming prices and thus supporting the competition on roaming mobile market and protecting of consumers' rights and interests within the Eastern European Partners."[12]

On December 2017 a study on "Harmonizing International Roaming Pricing and Reducing Roaming Tariffs among the EaP Countries," supported by the Directorate-General for Neighborhood and Enlargement of the European Commission was published. The study aimed to lay down the possible schemes for intervention in the roaming market of EaP countries, obtaining harmonization of the roaming markets in the region, based on EU best practices. In this Study, an analysis of the roaming markets in EaP countries and their regulatory frameworks was introduced. Furthermore, the study examined the possible schemes for intervention and presented an assessment of the expected impact of every scheme on the operators and the potential benefits of the society.

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[11] See *Study on Harmonizing International Roaming Pricing and Reducing Roaming Tariffs among the EaP Countries* (6 December 2017), https://eufordigital.eu/library/study-on-harmonising-international-roaming-pricing-and-reducing-roaming-tariffs-among-the-eastern-partnership-countries/ [Accessed: 14 November 2019].

[12] See EaPeReg-REWG website: http://www.eapereg.org/index.php/eu-aquis-3/spectrum-wg-3

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As a result, the "Amended EU Roaming regulation model" (AERRM) was proposed as the optimum regulatory model. The suggested approach under the AERRM would imply a glidepath that would allow full implementation of the AERRM over a period of five years, while ensuring a coherent decrease of roaming charges and giving the operators time to adjust accordingly. As already derived from the experience of the EU with RLAH regulation and of the WB6 with the RRA, it is clear that implementation of roaming regulation on wholesale and retail levels and international mobile termination rates (IMTR) has to be done according to an appropriate timeline.

During the third Eastern Partnership Ministerial meeting on the Digital Economy, the EaP Ministers reaffirmed their commitment to sign by the end of 2020 a Regional Roaming Agreement, in order to reduce the roaming prices according to the roadmap prepared by the REWG. As part of the REWG preparation for signing a RRA, a further assessment of key regulatory issues is made. Nowadays, the REWG is investigating the principals of WTO's Most Favored Nation (MFN) treatment and examining the preferred approach towards regulation on IMTR. Moreover, an updated market impact assessment is done in the form of an analysis of collected roaming data.

The Ministerial support in the EU4Digital initiative, in particular in the endeavor of reducing roaming prices proves to be essential in terms of regional harmonization. Yet, it is highly important to refer to the evident support given by the EC to this process as its main stimulator. As part of the Bucharest Declaration, EU and EaP Ministers also agreed to explore the possibility of a common international roaming space, including the economically sustainable reduction of roaming tariffs between the EaP countries and the EU Member States.[13] This objective is not different from that of the WB6 while both groups are looking to negotiate with the EU on the possibility of being included in the RLAH regulation.

In conclusion, EaPeReg network is probably the most similar to EMERG and thus its endeavors should be further examined and considered by EMERG, in particular by the IR-EWG. It is important that a closer cooperation between the networks will be developed, especially in the field of international roaming regulation, for future approximation and harmonization of EU neighboring countries.

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[13] Third Eastern Partnership Ministerial Meeting on the Digital Economy, *Ministerial Declaration* (Bucharest, Romania 28 February 2019), https://nkrzi.gov.ua/images/news/11/1669/_Ministerial_Declaration_Bucharest.pdf [Accessed: 14 November 2019].

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DEVELOPMENTS IN EMERG MEMBER COUNTRIES

Among EMERG member countries, there is wide recognition of the importance of international roaming services as stimulators of economic growth and enhancers of consumer benefit. Accordingly, throughout the years, several developments were made by regulators in order to facilitate the reduction of international roaming prices. Apart from implementing new measures designed to ensure consumer protection and improve transparency at the national level, certain bilateral and multilateral activities have been taken, recognizing the importance of reciprocity and interoperability.

As a result of the implementation of RLAH regulation in the EU, the issue of high roaming prices received greater consideration in Switzerland, with a considerable public demand and significant political pressure for achieving a reduction in roaming prices. When BAKOM started working on the revision of the "Telecommunications Act" the opportunity for building the foundation for roaming regulation were taken. The new regulation meant to provide BAKOM with the competence signing bilateral/multilateral agreements and imposing tariffs reduction accordingly. The regulation is expected to take effect from the beginning of 2021.[14]

In Bosnia and Herzegovina, progress was made as part of the WB Multiannual Action Plan on Regional Economic Area (MAP REA). RLAH regulation is seen by all of the WB6 member economies as an important part of the EU Digital Agenda 2020 and as a key enabler for many future applications. Therefore, they have developed a regional roaming agreement, which will be gradually implemented in accordance with the approved roadmap.[15]

In Israel, the Ministry of Communications have signed bilateral agreements and declarations with the regulators in Greece, Cyprus, Romania, Poland and Russia for the encouragement of roaming charges reduction between the countries. Moreover, Israel expressed its desire to join RLAH initiative as a beneficiary country and elaborated on the matter in a letter sent to the DG-CONNECT already in 2016. Nowadays, the Ministry is evaluating the need for revising its roaming regulation.

As in Israel, bilateral agreements are receiving an increasing consideration in other EMERG member countries. For example, Turkey has signed several MoUs in the past, some of which include

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[14] See section on "Switzerland study case".
[15] See section on "WB6 RRA".

agreements on facilitating IP Multimedia Subsystem.[16] In Jordan and Palestine, the regulators supported the process to end roaming charges between the countries, which is manifested as an agreement between the operators. In addition, these days a bilateral agreement to reduce roaming prices between Tunisia and Algeria is under negotiations.

In 2005, a study on international roaming charges was performed by AREGNET, due to a substantial increase in the number of consumer complaints that highlighted the problem of excessive international roaming charges. The study indicated that a model should be developed while taking into account the number of countries and the differing market characteristics of AREGNET member countries. However, because of the lack of adequate legal basis to impose tariffs reduction the proposed model was not accepted by all of AREGNET member countries and therefore was not implemented. In later stages, the members of the GCC, a sub-group of AREGNET, further developed the initiative and signed a MoU between them.

The previously mentioned developments signify the growing importance that EMERG member countries attribute to collaboration in the field of international roaming. Considering the experience gained by EMERG member countries in that field, it is believed that a harmonized approach can be developed. In that aspect, the experience gained by EU member countries can be an important accelerator for any attempt to create a regional roaming space.

KEY INTERNATIONAL ROAMING REGULATORY ISSUES

The main objective of international roaming regulation is to maximize the benefits of customers. Nowadays, it is evident that high international roaming tariffs can impair the ability of customers to enjoy ubiquitous connectivity, hamper the adoption of new business models and discourage investments. As previously shown, regulatory intervention to reduce roaming tariffs has proven to be effective in achieving a level playing field for competition, enhanced transparency and effective consumer protection.

TRANSPARENCY AND COMPARABILITY

Transparency refers to the availability of clear information about pricing, including the conditions of each tariff that constitutes the cost structure. Follow the years, initiatives to increase consumers'

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[16] See answers to the second question as part of subchapter "Results" in the chapter of "Data Analysis".

awareness to roaming tariffs were developed by both regulators and operators. Consequently, Mobile subscribers are more cautious when roaming, adjusting their consumption to limit expenditures and increasingly following procedures to limit mobile data consumption.[17] That is, transparency helps to empower consumers by creating a supportive environment for taking informed decisions, based on the availability of necessary information.[18]

Nevertheless, such consumers' behavior reveals that roaming services are not provided on an affordable, accessible and reliable basis. For that reason, transparency itself cannot promise effective results and it has to go along with comparability. According to BEREC, comparability of tariffs refers to the consumer's ability to compare different types of tariffs offered by operators as well as the ability to easily switch between them. Comparability is a key regulatory measure to increase awareness, promote competition and encourage investments.

Lack of transparency and comparability led to the common customers' assumption that roaming services have to be more expensive. This assumption is related to the insufficient transparency of the wholesale IOTs (which are determined in accordance with commercial negotiations between operators). A relevant point should be made that during the years, the transfer cost has decreased while the capacity got higher. Namely, there is a lack of transparency over the justification for any roaming charges. Currently, because of legal incapacity, EMERG members cannot assess whether it resulted a reduction of retail tariffs.

Better transparency allows regulators to assess the impact of roaming tariffs reduction on both operators and customers as well as the benefit, which embodied in such action on the social welfare in each country. Accordingly, EMERG members should have the ability to collect data on traffic in balance, revenues from international roaming, wholesale and retail tariffs and the number of subscribers for being able to present a clear business case.

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[17] See OECD Working Party on Communication Infrastructures and Services Policy, *International Mobile Roaming Agreements*, 7, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2012)2/FINAL&docLanguage=En [Accessed: 14 November 2019].

[18] See BEREC, *Report on Transparency and Comparability of International Roaming Tariffs* (6 December 2018), 2, https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8312-berec-report-on-transparency-and-comparability-of-international-roaming-tariffs [Accessed: 14 November 2019].

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PRICE REGULATION

Determining the real cost of roaming to the MNOs is crucial for understanding whether there is a need for price regulation. According to the ITU-T's "Guidelines for NRAs on International Mobile Roaming Cost Analysis," the structure of the roaming market consists of two different levels: wholesale and retail.[19] Usually, when talking about data wholesale IOTs, termination rates and clearing house fee are influencing the roaming retail tariffs and determining the floor for retail pricing. Therefore, in order to find out the main cause for high roaming prices among EMERG members a further analysis of pricing in both levels is required.
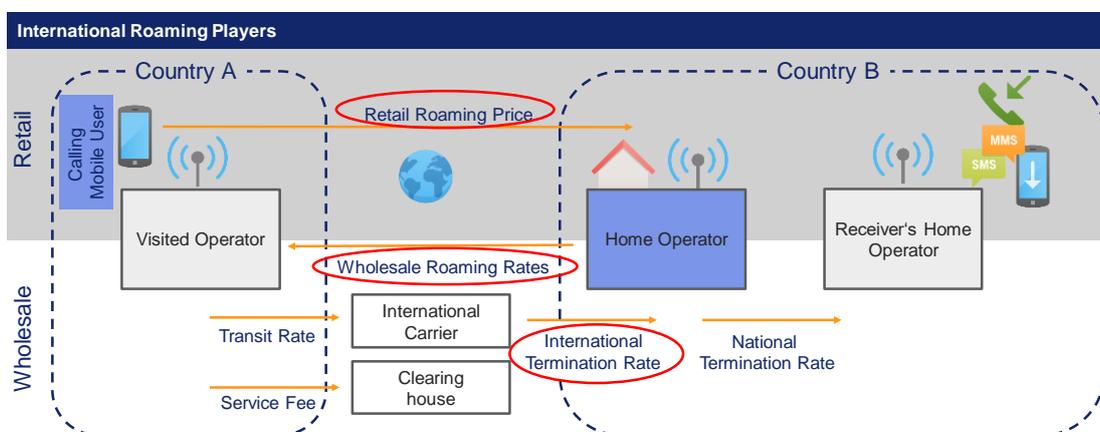
Figure 1: Retail and wholesale roaming prices Source: Dr. A. Heuermann, Detecon 2019

All of the researches made until today by BEREC and other bodies as the ITU, OECD and different regional groups dealing with roaming pricing, suggest that retail roaming tariffs are beyond the social level required and should be closer to the wholesale level. If exorbitant roaming charges are determined, the customers would move to Wi-Fi and switch to OTT services while the idea of ubiquitous and qualitative connectivity is impaired.

It is possible that operators would leverage their revenues from roaming if they will attract more customers to use their services on an affordable and varied basis. Hence, a reduction in roaming prices could turn favorable for both customers and operators. A reduction of retail roaming prices always needs to take into consideration that wholesale roaming rates and international termination

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[19] ITU-T Technical Paper, *Guide for NRAs on International Mobile Roaming Cost analysis*, Version 1 (approved at the ITU-T Study Group 3 meeting Geneva, 12-16 March 2015), 6, https://www.itu.int/dms_pub/itu-t/opb/tut/T-TUT-ROAMING-2015-03-PDF-E.pdf [Accessed: 14 November 2019].

rates are setting the floor. Therefore, all three prices have to be taken into account if lower roaming prices should be achieved.

Analysis of the financial structure for MNOs roaming tariffs shows that besides of cost factors, both high IOTs and high MNOs profit margins lead to high retail tariffs. Thus, a key element for reducing the international roaming tariffs lies in the ability of regulators to analyze the roaming market and to enforce price regulation if needed. Although, in most cases regulatory action at both wholesale and retail levels will prove to be effective only if undertaken by all of the involved countries. Here, the cross-border nature of roaming regulation is embodied.

Cooperation between regulators to reduce international roaming tariffs can be done on several levels: bilateral, multilateral and regional (consists of homogeneous or heterogeneous members). Regional roaming regulation should aim to maximize social benefits and harmonize national policies for the establishment of a common roaming space. Also, regional initiative could turn out as the most effective for removing obstacles since it applies to a broader scope of countries and in most cases coordinated by a regional body who is responsible for the development, implementation and monitoring of the established regulation.

When developing a regional approach, it is important to take into consideration that different countries would have to start from different points. Differences in legislative frameworks, domestic laws, domestic roaming tariffs, wholesale tariffs and termination rates are among the aspects that the regional group will have to deal with. In that case, a process to introduce a harmonized approach into the markets of EMERG member countries will have to be taken throughout several years, as was the case in the EU, WB6 and now in the EaP. Moreover, it is important that a transition period will be defined as part of the glidepath.

In terms of creating a common roaming space, a regional initiative can encourage a further cooperation with other regions through treaties and agreements. For example, both WB6 and EaP are interested in entering negotiations with the EU for reducing roaming tariffs between the regions and already received the EC support to do so in the future (as also suggested by their roadmaps). Thus, regional initiative to implement international roaming price regulation should be considered by EMERG members as preferable.

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COMPETITION

While there is an increased recognition of the need for reducing high roaming prices, there is also acknowledgement that it is necessary to foster competition in the international roaming market. Studies and investigations taken by the EC highlighted that unjustifiably high international roaming rates are in some part a result of anti-competitive behavior. According to the OECD Council, achieving a level-playing field for competition in communications markets can bring significant benefits for consumers and businesses. Wherefore, roaming should be seen in the context of mobile communications being a major accelerator of business activities,[20] and distorted competition in this market should be regarded as a hindering the social welfare.

In recent years, we observe a considerable increase in the demand for roaming services, in particular for data. Moreover, in most EMERG countries there is a consistence growth in the number of roaming consumers. These statistics, along with the wide variety of roaming bundles and offering can imply for a great competition on retail level. Nevertheless, competition on retail tariffs should be examined in respect with national market characteristics.

For instance, in case of SMP it is highly suggested that the national regulator will have the ability to put into effect regulatory measures meant to enhance competition. In order to determine whether a certain operator have SMP, a well-based analysis of roaming market should be carried.

In addition, for achieving a liberalized roaming market the national regulator must allow market entry to MVNOs or resellers. That includes removing barriers that may prevent MVNOs to have access to local wholesale roaming services and ensuring that MVNOs will benefit from wholesale roaming rates between operators in different countries when purchasing wholesale resale roaming in the home country.

Some non-competitive characteristics of roaming markets also exists at the wholesale level and therefore led to high wholesale charges and, in turn, factor in high roaming retail charges. One justification for regulation at the wholesale level is to allow the liberalization of international gateways to facilitate the transmission and reception of international calls. Also, it should be noticed that the competition in clearing houses market should be further examined, as it is not subjected for national regulation but directly leads to high wholesale tariffs.

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[20] See OECD Council, *Recommendation on International Mobile Roaming Services* (16 February 2012), http://legalinstruments.oecd.org/public/doc/271/271.en.pdf [Accessed: 14 November 2019].

MULTI-STAKEHOLDERS APPROACH

Considering the cross-border nature of international roaming a strong collaboration between all involved stakeholders is required. Initiatives to reduce roaming tariffs and to increase customers' awareness were taken in several cases without a need for regulatory intervention, inter alia in Africa, Asia, Australia, the Arab group and the United States. A close collaboration among stakeholders is a key element for maximizing the benefits of both businesses and consumers and therefore it should be encouraged.

The importance of multi-stakeholder approach is significant, mostly in cases where the market situation requires regulatory intervention. Stakeholders should work together to develop regulatory price measures, to enhance competition and to ensure transparency of tariffs and services. The collaboration between stakeholders and their involvement in the data collecting process is essential for ensuring the formulation of best possible approaches and effectively implementing new regulations, which will maximize the social welfare.

When implementing new regulation, an opposition could be seen from the side of the Ministry of Finance, which strives to retain taxes incomes and from the operators who determine to control the prices. All stakeholders should receive the appropriate consideration, remembering that the final objectives relate to enhanced competition and increased value for the consumers.

In the WB6, the EC supported the negotiations, arranged different meetings with the respective governments, and with the relevant operators in order to get the best picture, relies on different points of view. The same process is still ongoing in the EaP, where the consultation process is done on two levels: amongst the different responsible stakeholders within each country and at the international level among the six EaP Countries.

The consultation process is mainly important when the RRA is implemented in several countries with different starting points. Taking into consideration that the operators will have make the required adjustments and face the reduced revenues, it is indeed important to hold a consultation process with main stakeholders and to allow the appropriate time for implementation. In the WB6 as in the EU, a transitional period was set for allowing the operators an adequate time to meet the requirements. It is envisaged that the same procedure will be introduced in the EaP countries.

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FAIR-USE POLICY

During the public consultation process in the EU, some MNOs argued that fair use policy for EU-wide RLAH should apply for occasional travelers. According to them, "more intensive roaming needs for business purposes and border regions are dealt with through specific tariff plans addressing the specific needs of those customers."[21] Sharing the view that excessive use of regulated retail roaming services at the applicable domestic price on a permanent basis would be likely to distort competition and put at risk investment incentives, the EC decided to develop a FUP.

The objective of FUP is to act as a mechanism for preventing abusive or anomalous usage by roaming consumers of regulated retail roaming services at the applicable domestic price.[22] Thus, mobile operators may apply a FUP to forestall the negative effects of abusive usage of RLAH rules, so that all European travellers will enjoy the benefites of RLAH. In that aspect, several operators stressed that it is important that FUP will not apply only for data but will relate to voice and SMS usage too.

In order to ensure that roaming consumers engaged in periodic travel are not subjected to unnecessary or excessive alerts, it was determined that roaming providers would be able to apply to establish a risk of abusive or anomalous use of roaming services after a period of four months.

FUP is designed for protecting both operators and customers, by allowing the fair usage of roaming services on an affordable and competitive basis. However, when developing a FUP it is important to protect the ability of operators and customers to take decisions. For instance, it is important to stress that according to the FUP roles if a customer's four-month plan ended, his mobile operator is not allowed to deprecate his SIM card. To wit, depriving the customer from deciding whether he wants to keep paying higher prices is contrasting FUP terms.

Moreover, for wholesale roaming, FUP potentially presents an obstacle to MVNOs who wish to offer long-term IoT roaming packages such as for smart mobility. Thus, for the wholesale roaming data market, there is a concern over whether it is operating competitively. MVNOs have difficulties in

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[21] See Summary report on the public consultation on the review of national wholesale roaming markets, fair use policy and the sustainability mechanism (23 March 2016), https://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-review-national-wholesale-roaming-markets-fair-use-policy [Accessed: 14 November 2019].
[22] See Commission Implementing Regulation (EU) 2016/2286 (15 December 2016), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R2286 [Accessed: 14 November 2019].

obtaining offers from visited MNOs for roaming packages as they are at a disadvantage in negotiations on wholesale tariffs. Over and above that, taking into consideration the increasing demand for data, FUP can turn out as a major obstacle for future business cases as "Permanent Roaming".

IoT APPLICATIONS AND M2M COMMUNICATIONS

To date, a constant growth in the demand for data is making data traffic become the core of international roaming. Accordingly, we observe a decrease in Voice/SMS volumes in the EU along with a dramatic increase in demand for data.[23] The implementation of IoT ecosystem and M2M communications solutions is based on a sustainable and affordable access to telecommunication networks regardless of location.

According to BEREC, a connected device, which is sold outside of the country of production but uses a SIM card (subscriber identity module) with an International Mobile Subscriber Identity (IMSI) of the country of production (e.g. cars, e-readers, wearable devices) is permanently roaming. Thus, the business model of permanent roaming ensures that IoT applications and M2M devices will be granted with permanent connectivity, wherever they are and whatever border they cross.

The rapidly evolving nature of IoT/M2M solutions implies that the creation of supportive environment is essential. Currently, high roaming prices hamper the permanent roaming business case and threat the ability to maximize the benefits, which deprive from IoT and M2M solutions, for the improvement of quality of life for users and businesses worldwide.

Thus, it is apparent that a creation of supportive regulatory framework is required. To date, we cannot yet assess the possible impact of roaming regulation on the future rollout of M2M solutions and for that reason; it is hard to determine if regulatory measures should be taken. At present, no specific regulations or measures exist concerning IoT/M2M and international roaming although nowadays the issue is addressed by BEREC.

On the technical level, 5G and Narrowband applications (4.0) are better connections than Wi-Fi for M2M technologies in terms of high capacity, low-latency and resiliency. 5G was developed to enable IoT from the outset and therefore it is expected that the operators will move from traditional business

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[23] See Footnote no. 5 to this document.

models to the ones that support IoT/M2M. Roaming prices at national, regional and international level therefore will continue to be an important issue.

Restrictions of permanent roaming are major regulatory bottlenecks for the development of IoT/M2M solutions. In that aspect, both high roaming prices and FUP can prevent the permanent roaming business model as they limit the ability of consumers to enjoy constant, sustainable and affordable connection. At the EMERG Workshop on IOT/M2M Regulations Focusing on Autonomous Driving,[24] EMERG members expressed the importance of regulatory action to facilitate through numbering regulatory solutions and permanent roaming the future rollout of M2M applications. Regional roaming agreement between EMERG members can be a first step towards the creation of a supportive environment for permanent roaming.

WTO – GATS MFN TREATMENT

Price transparency has been dramatically improved by means of regulation. Although, increased consumer awareness does not necessarily prove to be cost-effective and only in few cases directly leads to a price reduction. Thus, Lack of clarity regarding the scope of effect of enhanced transparency on levels of prices and usage suggests that regulators should be empowered with the competence to collect and analyze market data.

A key element for reducing roaming prices is inherent in solutions for reducing wholesale tariffs, in particular high IOTs. The limited impact of initiatives made to for increase transparency and enhance competition lead to the assumption that for reducing roaming prices a regulatory intervention founded on reciprocity is required.

Respectively, initiatives to regulate roaming were developed in multiple levels and marked a new scope of cooperation based on roaming agreements. Nonetheless, it is important to take into consideration the GATS principle of the Most Favored Nation (MFN). MFN means treating trading partners equally on the principle of non-discrimination. Thus, the MFN commitment prohibits a WTO member from maintaining preferential arrangements with any other country. However, according to Article V of GATS, the MFN treatment obligation does not apply where members are parties to an

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[24] The Workshop took place on 26-27 September 2018, in Rome, Italy. See http://www.emergonline.org/2018/09/28/emerg-workshop-iot-m2m-regulation-with-a-focus-on-autonomous-driving/ [Accessed: 14 November 2019].

economic integration agreement between them.[25] For that reason, the EU RLAH regulation is not subjected to MFN obligation.

GATS principles constitute a major obstacle for bilateral, multilateral and in some cases regional roaming agreement and may also affect the ability of EMERG members to take an official measure for reducing roaming prices between them (i.e. signing a regional agreement). In the WB6, for instance, GATS MFN treatment principles put a major obstacle since they give any other country the ability to join their initiative.

Further examination of MFN restrictions is being done by EaPeReg - REWG (Roaming Expert Working Group). EMERG members are attuned to this process and would like to join it in order to find applicable solutions, which will allow them to examine the possibility of signing a multilateral agreement between them. The EC is also well aware of the impediment of WTO obligations and overcoming it will substantially affect future negotiations with the EU.

NATIONAL POLICY - SWTIZERLAND STUDY CASE

Although Switzerland is not part of the EEA, it is surrounded by EU member states and shares with the EU (being a part of EFTA) an agreement on the Free Movement of Persons (AFMP). Therefore, Swiss and EU citizens can easily travel between their respective countries. Despite the decision to facilitate the physical border crossing of persons, there is no yet any arrangement, which pertains to the need to facilitate the relatively high roaming tariffs between Switzerland and the EU. That is to say, despite the recognition of the cross-border nature of international roaming and the possible impact on citizens' benefit and economic growth.

Swiss retail roaming prices were always substantially higher than in Europe. The prices were continually reduced in parallel with the reduction of roaming prices in the EU but they have always remained higher than those have. This is true for outgoing calls, incoming calls and SMS. Yet, data prices are at EU level since 2014. From this moment onwards, the consumption of data has been increasing exponentially.

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[25] Michael H. Ryan, "The Application of the GATS to Bilateral Arrangements for the Reduction of International Mobile Roaming Charges," *International Trade Law & Regulation*, vol. 19, no. 1 (2013), 11, See: http://files.arnoldporter.com/application%20of%20the%20gats%20to%20bilateral%20arrangements%20for%20the%20reduction%20of%20international%20mobile%20roaming%20charges_(europe_12573280_1).pdf [Accessed: 14 November 2019].

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Since the introduction of RLAH regulation in the EU, the issue of high roaming prices started receiving greater attention in Switzerland, with a considerable public demand for reduced roaming prices. The lack of efficient price regulation was reflected in the number of complaints received by the Swiss conciliation body, which significantly increased in accordance.

Due to this situation, the political pressure on achieving a reduction in roaming prices, which had always been high, was even increased. Since 2011, there have been at least seven parliamentary initiatives and interpellations from parliament members in concern to roaming. The mainly discussed issues were the differences between the roaming prices in Switzerland and the EU, the need for roaming regulation in Switzerland (same as RLAH), and determination of price limits for roaming services.

In respective, the answers given by BAKOM refer to three main factors:

- There is a lack of legal basis for any intervention;
- Effective roaming regulation has to be based on reciprocity and therefore access to European regulation would be necessary; and
- unilateral regulation i.e. retail price caps is not effective.

The arguments stressed by BAKOM's representatives referred to the limited impact of retail regulation, if being taken unilaterally.

Taking into consideration the characteristics of the wholesale market, there is even a greater problem in regard to two-sided market. To wit, when a particular operator has a considerable number of clients his importance for foreign roaming partners increases (because he brings a lot of potential roaming volume). As a result, an operator with many clients is able to negotiate better wholesale tariffs and enjoys a bigger margin. A unilateral price regulation would favor the bigger player, which in Switzerland's case is the incumbent, and therefore it is an asymmetric regulation that hinders competition.

The operators have not ignored the pressure exerted by both consumers and politicians and prices were reduced to a certain extent. Now, as there are no more surcharges for roaming in Europe due to RLAH, the service providers felt the need to react. All three MNOs in Switzerland followed the same strategy and included roaming within the EU in their subscription products (starting from

approximatively EUR 70 per month). Moreover, all of them declared in public that they gave up on extra-charges for roaming services.

However, in reality roaming surcharges for voice still exist, not as a per-minute tariff but hidden in the monthly subscription fee. When signing a contract with his operator a client is forced to pay for a specific roaming bundle, even if he will not use it. Furthermore, while the prices for monthly subscribers were reduced, the prices for prepaid customers remained unchanged for years. Accordingly, the difference between prepaid and subscription customers is augmenting. This gives the prepaid customers incentives to switch to a subscription product with a monthly fee.

About 70% of the Swiss mobile telecommunication clients already have a subscription and only 30% have a prepaid mobile phone product. A typical Swiss consumer has a flat-rate subscription in order to have stable expenses at the end of the month and not to have to care about self-consumption. This means Swiss consumers have a risk averse consumer habit and many of them overpay. Swiss operators are taking advantage of this risk aversion by pushing consumer towards high priced subscriptions. In return, consumer do not risk a "bill shock" at the end of the month.

This strategy seems to work: BAKOM data shows that less and less clients are buying options. It is assumed that more and more people have included roaming volume.

Knowing that the prices for many customers are still high (and therefore prevent them from using roaming services) – except from customers that are ready to pay a certain monthly fee – and knowing that the wholesale tariffs decreased meanwhile, BAKOM felt the need for a regulation in order to protect especially small customers.[26]

When BAKOM had the occasion to revise the "Telecommunications Act," it built a foundation for roaming regulation. This regulation took many years to develop and it is envisaged to be in force from the beginning of 2021.

With the aim to find, ways to reduce roaming prices without a unilateral price regulation the following measures have been developed:

- The operators are forced to bill per second / per kilobyte
- MNOs are prohibited from blocking third party roaming services

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[26] In this report, "Small Customer" is a customer that spends less than the average for mobile communication.

- Operators are forced to offer optional tariffs to all clients
- By virtue of the new law, the NRA will be able to fix the retail tariffs in case of an international agreement (namely, to impose tariffs reduction)

As number one destination for Swiss travelers and considering the geographical proximity, Switzerland would be in favor of an agreement with the EU. In an interesting manner, the traffic volumes of voice/data from EU and EEA countries in Switzerland is higher than that of Swiss customers in both the EU and EEA. In that aspect, possible benefit is embodied for both sides and it is even bigger on EU's side. Therefore, an agreement would be of the best interest for both Switzerland and EU/EEA.

Considering the aforementioned, a bilateral agreement seems to be the most efficient option to promote regulation for reducing roaming tariffs and increasing customers' benefits.

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DATA ANALYSIS

The analysis of data conducted as part of this report is based on two data sources. The first and primary source is the results of the 1st round of data collection on international roaming that was undertaken by the EMERG IR-EWG among the network's members. The underlying questionnaire covers qualitative questions to develop an overview over markets and regulatory practices related to international roaming and quantitative questions on roaming volumes and prices.

A first set of results was presented to the EMERG members at the workshop on International Roaming, which was held in Biel-Bienne, Switzerland on 5-6 November 2019. Comments and additional inputs were received until 28 November 2019. A total of 12 EMERG members responded to the questionnaire and are therefore included in the analysis.

The second source for the data analysis comprises of the results of the 23rd round of data collection on European international roaming services undertaken by BEREC. This Report covers the period 1 October 2018 – 31 March 2019, i.e. the Q4-2018 and Q1-2019. The Report also includes data from previous rounds of data collection conducted by BEREC and is a well-established tool for the assessment of the international roaming markets. The findings of the International Roaming BEREC Benchmark Data Report cover all mobile network operators in the European Economic Area (EEA), but do not include EMERG Non-EU members: MENA countries, Switzerland and Bosnia and Herzegovina. Consequently, the results of the report are only used as benchmarks and to identify important trends in the EEA international roaming markets.

During the assessment of the first round of the EMERG international roaming questionnaire results it has become apparent that the measurement of indicators and data around roaming is largely heterogeneous in the Non-EU EMERG member countries. Many of the requested indicators could not be provided as requested and thus lack comparability. In the coming assessments and data collection the data request will be reworked and adopted to match the reporting capabilities of many EMERG countries.

FINDINGS

In all participating EMERG countries, multiple operators provide international roaming services to the users and in most of the countries, all of the operators offer such services to their users. This situation suggests that in EMERG countries operators compete for international roaming customers.

The EU neighboring countries Israel, Switzerland and Palestine see a further need to regulate international roaming services, particularly when looking at the collaboration with the EU.

There is a growing number of tourists throughout the countries that took part in the questionnaire and thus the market potential for international roaming services is increasing in EU and Non-EU countries. It is worthwhile to point out that the number of European tourists in MENA countries is showing above average growth rates for several countries. Considering the evident increase of average data consumption, it is important to further investigating this pattern.

In the EMERG's EU member countries, unit prices for data roaming services have decreased in all but one country from Q1-2018 to Q1-2019. A general increase in the average consumption of data, VOICE and SMS roaming services can be observed throughout the EU member states. It can be concluded that users and operators in EU member states benefit from the RLAH regulation in that regard.

Average inbound data roaming from EU travelers is increasing in the MENA countries that participated in the survey. In addition, European users show notable demand for IRS in MENA countries, the development of these markets may need facilitation to increase welfare.

Jordanian users on average consume more roaming data when traveling to MENA countries, than they do when traveling to the EU. This behavior may point to towards inefficient roaming arrangement between European and MENA countries and should be further investigated.

The Swiss inbound and outbound total usage of data roaming to EU countries show substantial growth rates, with a CAGR of up to 79% in the regarded two years. These growth rates indicate that further agreements on roaming may be needed to protect consumer rights when it comes to IRS.

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RESULTS OF THE QUESTIONNAIRE

Question 1: How many operators supply international roaming services in your country?

Country	Provision of international roaming services (IRS)
Croatia	All 3 operators provide IRS.
Cyprus	All 4 operators provide IRS.
Jordan	All 3 operators provide IRS.
Morocco	13 licenced operators. 7 operators provide IRS.
Portugal	All 6 operators provide retail roaming services. 3 of them provide wholesale roaming services
Spain	No official data on the exact no. of operators. Not aware, that any operators do NOT offer such services. No. of operators in Spain: 30 (MNOs, MVNOs, etc.)
Switzerland	All 3 MNOs and about 20 MVNOs enable IRS. Some to very high prices
Turkey	All 3 operators provide IRS.
Palestine	All 2 operators provide IRS.
Italy	14 operators provide IRS.
Israel	4 MNOs and 4 MVNOs provide IRS
Tunisia	All 3 MNOs and 1 MVNO provide IRS.

Figure 2: Roaming operator, Source: EMERG questionnaire

In all the countries that responded the questionnaire, multiple operators provide international roaming services to their customers and in a majority of them (eight out of twelve countries), all operators do. Both of these observations suggest that users of telecommunication services can chose between several providers of IRS in their markets, when travelling outside of their countries. Roaming services are generally available throughout the EMERG member countries.

Spain, Switzerland, Israel and Tunisia specifically mention that MVNOs are offering IRS in their markets. The service is thus not limited to network operators and is available as a reselling service.

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Question 2: Does the NRA have the authority to impose tariffs reduction on his domestic operators? If not, is its power limited by internal regulation or by legislation?

	NRA can impose tariff reduction on domestic operator	NRA has signed a bilateral agreement or MuO related to international roaming	NRA sees a need to regulate the international roaming market
Croatia	N	N	N
Cyprus	Y	N	N
Jordan	N	N	N
Morocco	N	N	N
Portugal	N	N	N
Spain	N	N	N
Switzerland	Y	N	Y
Turkey	N	Y	N
Palestine	Y	N	Y
Italy	N	N	N
Israel	N	Y	Y
Tunisia	N	N	N

Figure 3: Roaming legislative framework, Source: EMERG Questionnaire

The majority (nine out of twelve) of regulators do not have the legislative power to impose tariff reduction on domestic operators. In the case of Switzerland, tariff reduction can only be imposed as part of an international agreement. In Cyprus, the Commissioner of telecommunications and postal regulation has the power to prescribe and regulate by Decision the framework of charges, including the minimum and/or maximum price levels, in case the undertaking is designated as holding a position of SMP in the relevant market. Similarly, the MTIT in Palestine has the authority to impose tariff reductions on its domestic operators for markets that found to be non-competitive.

Bilateral agreements or MoUs are not common within the group of countries responding to the questionnaire. Only Turkey and Israel have been engaged in such agreements. Turkey signed several MoUs in the past, some of which include agreements on facilitating IP Multimedia Subssystem (IMS). An IMS is an addition to the Packet-Switched (PS) domain. IMS supports new, IP-based multimedia services as well as interoperability with traditional telephony services. IMS is not a service per se, but a framework for enabling advanced IP services and applications on top of a packet bearer IRS.[27] The mobile operators set prices for IRS on commercial means. The Ministry of Communications of Israel has signed several bilateral agreements and reports varying success. As some of the agreements are not effective due to the lack of legislative power of the signees. It can be concluded that the lack of legislative power to regulate roaming markets is hindering the efficacy of bilateral agreements and therefore is one of the reasons for which only two of the aforementioned regulators have signed a bilateral agreement.

Prior to the workshop in Biel-Bienne, the regulators in Switzerland, Israel and Palestine declared that they see further needs to regulate international roaming markets. Switzerland is surrounded by EU-member states which leads to a lack of tolerance for the comparatively high roaming- prices for Swiss people and mobile users from Switzerland. Therefore, the political pressure is latently high. Both Israel and Palestine see a need to improve user experience and affordability of mobile services related to international roaming.

Question 3: Number of inbound tourism for each of the years 2016-2018 for Non-EU EMERG members and EU member states in the EMERG.

Eight out of twelve countries were able to provide data on inbound tourism numbers. The requested breakdown of on MENA, EU and Non-EU member states could not be provided by any of the respondents.

In Croatia, the reported numbers for inbound tourism have increased from 2016 to 2018. The number of tourists from EU countries grew by 8,2% each year to 12,8 million visitors in 2018. The number of tourists from Bosnia and Herzegovina and Switzerland grew with similar rates. No data for tourists from MENA countries was provided.

In Morocco, the number of tourists has increased from 2016 to 2018 as well, from 5,1 million tourists in 2016 to 6,7 million tourists in 2018. A significant part of the arrivals are residents of the EU

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[27] See: GSMA, IMS Roaming, Interconnection and Interworking Guidelines, Version 29.0, 16 November 2018

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countries France and Spain, these two countries make up 53% of arrivals in 2016 and 51% of arrivals in 2018.

With 75,2 million tourists in 2018 Spain has the largest number of tourists within this sample. The total number of tourists grew by 3,8% yearly from 2016 to 2018. In the same timeframe the number of visitors from the EU grew by 3,4% yearly, while the number of visitors from the rest of the world increased by 9,3% yearly. Although tourists from the Non-EU countries make up only 6,8% of the total number of tourists per year in Spain, the percentage is increasing, giving this group an increasing importance.

In Jordan, large parts of the foreign arrivals are from Arabic Nations, the largest group being the Saudi Arabians. Nonetheless, from 2016 to 2018 the share of arrivals from Non-Arabic countries has steadily increased from 31% in 2016 to 35,9% percent in 2018. Important groups with-in the Non-Arabic visitors are Germans (5,4%), British (5,3%) and US Americans (14%). Overall foreign arrivals in Jordan have increased from 3,7 million in 2016 to 4,5 million in 2018.

In 2018 Cyprus had 2,5 million tourists from EU countries, while approximately 360.000 tourists came from MENA countries. Within the group of MENA countries Israeli tourists make up a large share of 64,7% or approximately 233.000 visitors in 2018. Among the countries provided in the data sample, Israeli tourists are the second largest group of visitors to Cyprus after the visitors from the UK.

Palestine has seen a substantial increase in tourists from EU countries. In 2016 approximately 248.000 tourists from EU countries was reported, that number increased to approximately 550.000 in 2018, a CAGR of 49%. The number of tourists from the EU is 11 times higher than the number of tourists from MENA countries in 2018.

The number of tourists from EU countries to Israel has also significantly increased in the regarded period. From 2016 to 2018 the number of tourists grew from 1,2 million to 1,8 million, a CAGR of 24%. Tourism from Jordan and Egypt decreased during that period.

In Tunisia, an increase in the number of tourists from MENA countries, EU states and Non-EU EMERG member countries can be observed from 2016 to 2017. In 2017 the largest group of visitors was the one from MENA countries with 3,9 million visitors. The largest increase in the number of tourists comes from the EU countries, the number increased by 50,6% in one year to 1,1 million in 2017.

Overall, the countries responding to the questionnaire show a couple of common developments. The total number of tourists is increasing in all countries. In all responding MENA countries, the total number of tourists from EU countries is increasing. In addition, there are interdependencies between the EMERG members from different regions. Israeli tourists are among the largest tourist groups in Cyprus, Palestine shows significant growth rates of European tourists and the number of tourists from Switzerland to EU-countries as well as to Israel and Tunisia is increasing. These findings suggest a growing user potential for international roaming markets, in particular in the regarded MENA countries.

Question 4: Information regarding average usage (per user) of incoming roaming services by EU travelers (inbound roaming)

The evaluation of the responses on question regarding roaming data found that for most countries the requested information was not available, or available in divergent terms. The following figures group together countries that reported data using a similar metric. Direct input for question 4 was received from the regulators of Jordan, Israel, Switzerland, Croatia and Spain.

Average Usage figures	Jordan			Spain		
	2016	2017	2018	2016	2017	2018
Incoming voice (min/user)	6,70	6,30	5,80	n/a	n/a	n/a
incoming SMS (SMS/user)	2,30	2,10	2,00	n/a	n/a	n/a
Incoming data (MB/user)	9,00	20,00	41,00	n/a	n/a	n/a
Roaming revenues voice (in €/ min)	0,230	0,160	0,140	0,030	0,026	0,021
Roaming revenues SMS (in €/ SMS)	0,11	0,09	0,06	0,008	0,005	0,003
Roaming revenues Data (in €/ MB)	0,010	0,033	0,016	0,009	0,004	0,002

Figure 4: Inbound roaming by EU travelers Jordan/Spain, Source: EMERG Questionnaire

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Average Usage figures	Croatia				Israel		
	2016	**2017**	**2018**		**2016**	**2017**	**2018**
Incoming voice (min/user)	16,86	28,53	30,16		32,01	22,41	22,59
Incoming SMS (SMS/user)	10,81	13,15	11,64		9,01	5,80	5,07
Incoming data (Mbyte)/user	504,39	609,99	9.809,38		110,75	163,87	237,71
Roaming revenues voice (total)	6.583.151	10.221.418	7.724.860		n/a	n/a	n/a
Roaming revenues SMS (total)	1.670.560	1.190.636	576.891		n/a	n/a	n/a
Roaming revenues Data (total)	15.469.877	35.133.990	27.278.219		n/a	n/a	n/a

Figure 5: Inbound roaming by EU travelers Croatia/Israel, Source: EMERG Questionnaire[28]

Croatia, Jordan and Israel report average roaming usage figures for users from the EU. In these three countries, average data usage is significantly increasing from 2016 to 2018. In the same period, the average roamed voice service consumption has increased in Croatia, while in Jordan and Israel the usage of the services has decreased. In 2018, the average consumption of inbound roaming voice, data and SMS services was highest in Croatia, an EU Country part of RLAH area. Jordan and Spain also provided information on roaming revenues per unit of voice, SMS and data services. In both countries, the average revenues for voice and SMS are decreasing from 2016 to 2018. For roaming data revenues per megabyte, Jordan reports an increase for that period. In Croatia, the total revenues of roaming services for EU users increased for voice and data from 2016 to 2017. After the implementation of RLAH policy in June 2017 both values significantly decreased in the following period.

Total wholesale Usage figures	Switzerland		
	2016	**2017**	**2018**
Incoming voice (min)	462.000.000	533.000.000	588.000.000
incoming SMS	198.000.000	201.000.000	189.000.000
Incoming data (MB)	2.581.000.000	6.140.000.000	12.093.000.000
Roaming revenues voice (in CHF)	53.802.096	51.471.295	46.590.617
Roaming revenues SMS (in CHF)	11.716.837	5.846.915	2.633.953
Roaming revenues Data (in CHF)	118.264.015	231.177.728	181.151.812

Figure 6: Inbound roaming by EU travelers Switzerland: EMERG Questionnaire

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[28] The number of roaming users for Israel is an estimate by the MoC, figures for average usage may be inaccurate

BAKOM from Switzerland has provided information on the total wholesale usage and revenue figures for roaming services. Data roaming by EU citizens in Switzerland has more than quadrupled from 2016 to 2018. The increase in volumes is not reflected in the increase in total roaming data revenues. Roaming data revenues increased by 50% over two years. The total roamed voice minutes are also increasing in Switzerland from 2016 to 2018, while the total revenues decreased.

For Tunisia, a set of information on average revenues per user for inbound roaming services was provided. The information is not limited to EU travelers but gives an indication of the market development. ARPUs are decreasing for voice, data and SMS service. Most significantly, average data revenues have decreased from 300,5 TND per user per month in 2016 to 35,1 TND per user per month in 2018.

Adding to data inputs from EMERG member countries the inbound roaming usage of EU travelers can be assessed using the data collection on European international roaming services conducted by BEREC from October 2019.

	incoming voice			
	minutes/month/subscribers		average wholesale price per min	
	Q1 2018	Q1 2019	Q1 2018	Q1 2019
Croatia	19,891	43,732	2,632	1,935
Cyprus	6,433	17,509	3,041	2,857
France	12,308	30,180	2,162	2,277
Germany	5,007	13,201	2,014	2,033
Greece	25,036	28,012	2,286	2,156
Italy	9,784	51,671	2,407	2,110
Malta	6,351	8,140	2,326	2,101
Portugal	26,148	29,683	2,006	1,888
Spain	10,458	15,759	2,190	1,992

Figure 7: Inbound voice roaming by EU travelers, Source: BEREC data collection

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incoming SMS			
SMS/month/subscribers		**average wholesale price per SMS**	
Q1 2018	**Q1 2019**	**Q1 2018**	**Q1 2019**
Croatia 3,190	12,231	0,494	0,380
Cyprus 9,371	17,758	0,757	0,563
France 14,964	37,635	0,472	0,486
Germany 0,537	1,226	0,303	0,290
Greece 1,598	1,865	0,488	0,409
Italy 0,677	2,336	0,372	0,271
Malta 3,191	3,613	0,370	0,244
Portugal 7,296	7,232	0,445	0,431
Spain 0,189	0,258	0,392	0,251

Figure 8: Inbound SMS roaming by EU travelers, Source: BEREC data collection

incoming data			
GB/month/subscribers		**average wholesale price per GB**	
Q1 2018	**Q1 2019**	**Q1 2018**	**Q1 2019**
Croatia 0,245	0,859	3,439	1,643
Cyprus 0,639	0,191	5,570	6,427
France 0,439	1,751	2,835	2,391
Germany 0,124	0,435	2,543	1,696
Greece 0,148	0,308	3,021	2,033
Italy 0,188	1,259	3,577	1,617
Malta 0,153	0,347	2,378	1,278
Portugal 0,170	0,301	2,294	1,328
Spain 0,269	0,512	2,546	1,577

Figure 9: Inbound data roaming by EU travelers, Source: BEREC data collection

Under the RLAH regime, roaming voice minutes per subscriber have increased in all regarded EU countries from 2018 to 2019. The wholesale prices for the roaming voice service have decreased in 7 out of 9 of the countries in the same timeframe. The usage of voice services with the group of EU EMERG members appears to be high in southern European countries like Croatia, Italy and Portugal in Q1 2019.

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The usage of SMS has increased in all countries, but Portugal. The differences in usage of SMS are far more significant than the differences in voices usage when comparing the countries. While in France and Cyprus the SMS is used comparably often (37 and 17 times per subscriber per month) in Q1 2019, in Germany and Greece subscriber send between 1 and 2 SMSs per month and even just 0,3 SMSs in Spain. Wholesale prices per SMS decreased in 8 out of 9 countries. A slight increase is seen in France.

A similar development can be observed when looking at the usage of data roaming services. The usage of data increased in all presented countries, but Cyprus. Interestingly wholesale prices in Cyprus are also the highest prices within the sample, while most countries report whole prices between 1.2 and 2 cents; the price in Cyprus is at 6,4 cents in Q1 2019.

The table below gives an overview on which information from the 23rd round of data collection on European roaming services was used in the data table (figure 6-8) above.

incoming voice		incoming SMS		incoming data	
minutes/month/ subscribers	average wholesale price	SMS/month/ subscribers	average wholesale price	GB/month/ subscribers	average wholesale price
Figure 8: RLAH, calls received: average number of RLAH minutes per month per total number of roaming subscribers with active RLAH services	Figure 18 and 19: Total traffic (wholesale roaming inbound): Average wholesale price per minute for roaming voice calls	Figure 10: RLAH, SMS services: average number of SMS per month per total number of roaming subscribers with active RLAH services	Figure 43 and 44: Total traffic: average wholesale price per roaming SMS	Figure 12: RLAH, data services: average consumption per month per total number of roaming subscribers with active RLAH services (in GB)	Figures 60 and 61: Total traffic: average wholesale data price per GB

Figure 10: Figures used from BEREC data collection

Question 5: Information regarding average usage (per user) of incoming roaming services by travelers from MENA countries (inbound roaming)

Only Jordan and Israel could provide information on inbound roaming by travelers from MENA countries.

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Total wholesale Usage figures	Jordan			Israel		
	2016	2017	2018	2016	2017	2018
Incoming voice (min/user)	9,08	6,20	5,80	2,83	2,40	3,54
incoming SMS (SMS/user)	1,20	1,00	0,90	0,31	0,26	0,27
Incoming data (MB/user)	16,00	31,00	66,00	89,04	213,64	431,61
Roaming revenues voice (in € / min)	0,23	0,16	0,14	n/a	n/a	n/a
Roaming revenues SMS (in €/ SMS)	0,11	0,09	0,06	n/a	n/a	n/a
Roaming revenues Data (in €/ MB)	0,01	0,03	0,02	n/a	n/a	n/a

Figure 11: Inbound roaming by MENA travelers Jordan/Israel, Source: EMERG Questionnaire[29]

The roaming revenues reported by Jordan for travelers from MENA countries are the same as the revenues for travelers from EU countries. The usage of data roaming services in Jordan is higher for EU travelers than it is for MENA travelers. Comparing the usage international roaming services between Israel and Jordan shows that the consumption of voice and SMS service are in comparable levels. The usage of data services is significantly higher in Israel.

Question 6: Information regarding average usage (per user) of outgoing roaming services by domestic consumers travelling to EU countries (outbound roaming)

Average usage figures	Portugal			Jordan		
	2016	2017	2018	2016	2017	2018
Outgoing voice calls made (min/user)	16	23	39	12	10	8
Outgoing voice calls received (min/user)	20	27	41	n/a	n/a	n/a
Outgoing SMS (SMS/user)	5	8	13	3	2	10
Outgoing data (Mbyte)/user)	37	126	364	2	10	36
No. of subscribers(total number of active EU/EEA roaming enabled subscribers)	63.357.425	54.966.785	58.443.012	n/a	n/a	n/a

Figure 12: Outbound roaming by domestic traveler to EU Portugal/Jordan, Source: EMERG Questionnaire

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[29] The number of roaming users for Israel is an estimate by the MoC, figures for average usage may be inaccurate. MENA countries analyzed are Egypt, Jordan, Morocco and Palestine

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	Croatia				Israel		
	2016	**2017**	**2018**		**2016**	**2017**	**2018**
Outgoing voice (min/user)	n/a	20	97		28	25	24
Outgoing SMS (SMS/user)	n/a	5	15		5	4	3
Outgoing data (MB/user)	n/a	3.577	1.234		293	459	485
No. of subscribers (total number of active EU/EEA roaming enabled subscribers)	n/a	984.582	949.598		n/a	n/a	n/a

Figure 13: Outbound roaming by domestic traveler to EU Croatia/Israel, Source: EMERG Questionnaire

For outbound voice roaming services used by EU traveler similar observations as for the inbound services can be made. The average usage of voice services has increased in Portugal and Spain, while the average volumes in Jordan and Israel have decreased. Outbound data roaming services are becoming more popular in most countries; Croatia is an exception with fluctuating data usages. In general, the usage of outbound data roaming is higher in Portugal and Croatia, the EU countries, than it is in Jordan.

Total usage figures	Switzerland		
	2016	**2017**	**2018**
Outgoing voice	268.000.000	301.000.000	326.000.000
Outgoing SMS	149.000.000	132.000.000	102.000.000
Outgoing data	2.394.000.000	4.343.000.000	7.677.000.000
No. of subscribers (total number of active EU/EEA roaming enabled subscribers)	11.240.971	11.088.598	n/a

Figure 14: Outbound roaming by domestic traveler to EU Switzerland, Source: EMERG Questionnaire

Total usage figures from Switzerland show that outbound voice and data service have increased from 2016 to 2018. Domestic users have increased their data usage in the EU by 79% yearly from 2016 to 2018.

Question 7: Information regarding average usage (per user) of outgoing roaming services by domestic consumers travelling to MENA countries (outbound roaming)

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average user figures	Jordan			Israel		
	2016	2017	2018	2016	2017	2018
Outgoing voice (min/user)	10,00	9,00	6,00	23,96	15,24	4,63
Outgoing SMS (SMS/user)	3,00	2,00	8,00	3,96	1,92	0,46
Outgoing data (MB/user)	43,00	115,00	184,00	0,46	102,40	73,25

Figure 15: Outbound roaming by domestic traveler to MENA, Source: EMERG Questionnaire

The voice usage of Jordanian and Israeli mobile users traveling to MENA countries has decreased from 2016 to 2018.The data usage of users from both countries shows no clear trends and is fluctuating.

Comparing the outbound roaming figures of Israeli and Jordanian users traveling to MENA countries to figures of them traveling to the EU shows that the consumption of data of Israelis is significantly higher when using roaming services in Europe. Jordanians use higher volumes of data, voice and SMS services when traveling to MENA countries.

Question 8: Information regarding M2M traffic and roaming

	Do operators offering global M2M offerings?	Do MNOs have special conditions for M2M traffic?	Roaming revenues per data (MB)
Portugal	N/A	N/A	N/A
Spain	N/A	N/A	N/A
Jordan	N	N	N/A
Morocco	Y	Y	N
Croatia	Y	N/A	N/A
Turkey	N/A	N/A	N/A
Switzerland	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A
Palestine	N/A	N/A	N/A
Italy	Y	Y	N/A
Israel	N	N	N/A
Tunisia	N/A	N/A	N/A

Figure 16: Information regarding M2M Traffic, EMERG Questionnaire

Five of the responses to the questionnaire included information on the topic of global or multinational M2M offerings in their markets. According to the regulators, global M2M offerings have been launched in three of the countries. In Croatia, two of the largest mobile operators, Hrvatski Telekom

and A1, are offering M2M service to their business customers. Morocco and Italy have confirmed the presence of such services in the market. Morocco and Italy also report that MNOs in the respective countries have special conditions for M2M traffic, but do not provide further details on the topic.

EXAMPLES OF INTERNATIONAL ROAMING PRICING IN THE EMERG REGION

The data collected from the Mobile Operators in the EMERG region have been incomplete in most of the countries. In particular, the traffic data for incoming and outgoing roaming services combined with the corresponding revenue figures have not been delivered in most of the cases. This would have been necessary, however, to calculate the average country roaming charges of all operators.

For the time being, we therefore have to rely on examples. In the following figures, we show an example of retail pricing from one German operator to all EU and Non-EU member states of EMERG.

International Voice Roaming Prices

Deutsche Telekom has clustered its roaming tariffs into three country groups, which differ significantly. The classification of countries into country groups and the difference between the groups cannot necessarily be explained by cost drivers like distance or traffic volume.
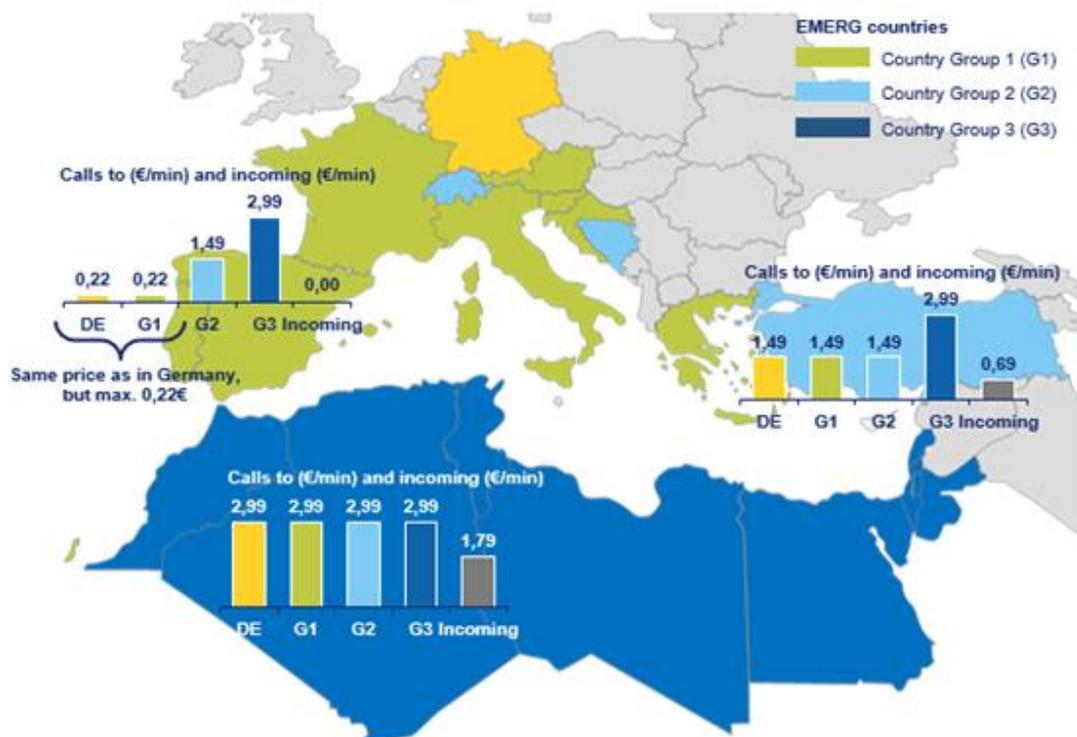

Figure 17: Deutsche Telekom AG voice roaming prices (retail) to EMERG countries Source: Website of DTAG (2019)

EU countries are in Group 1. In the displayed standard tariff, all mobile services are charged with the same rate as in Germany. This is due to the RLAH regulation adopted by the EU in 2017.

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Incoming roaming calls are not charged. In addition, the EU has defined a maximum price. Even when domestic mobile services charges are higher, the regulated maximum charges apply:

Per min fixed/moblie voice	Per SMS	Per MMS	Per MB
0,22 EUR	0,007 EUR	0,23 EUR	0,23 EUR

Figure 18: EU maximum roaming charges (2019)

For all countries in Groups 2 and 3, the incoming voice charge is a minimum charge. For some operators the charges may be higher. An example is the Jordanian operator Umniah Mobile, that charges 0,93€ on top of the displayed price per minute. Deutsche Telekom customers travelling in these countries also have to pay charges for incoming calls.

It may be interesting to compare these charges with the national MTR for German MNOs in 2019. This termination rate is based on a LRIC model used by the German regulator BNetzA. The LRIC model based national MTR for all German Operators has been set by BNetzA at 0,0095€. If costs for origination are assumed to be the same, total cost of a call are about 0,02€.

As shown in figure 18 the capped maximum international roaming retail price in the EU countries is 0,22€, which is already 10 times the cost.

International roaming prices of 1,49€ or 2,99€ in other EMERG countries are exorbitantly expensive and set at 75 and 150 times the cost and 6,8 and 13,6 times the maximum per minute EU internal roaming price.

International Data Roaming Prices

Data roaming often comes in different packages. In addition, Deutsche Telekom is offering several packages with very different prices. For this example, we are using the option "All inclusive", which is part of the large majority of DT's mobile contracts.
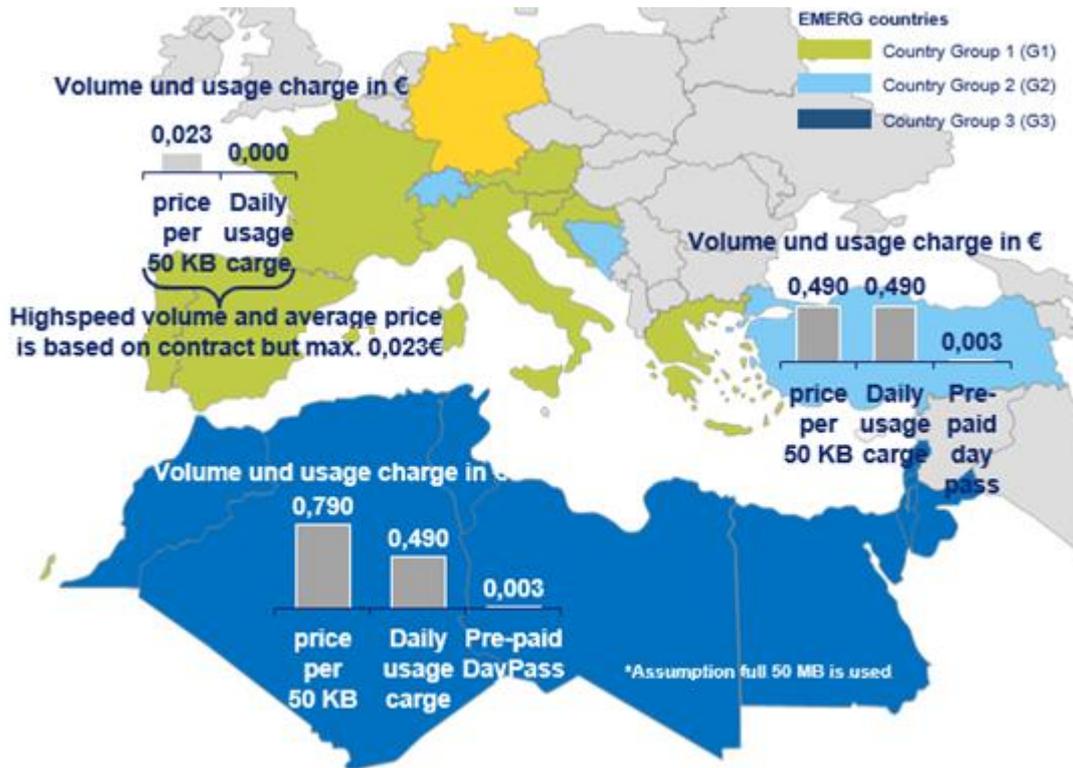
Figure 19: Deutsche Telekom AG data roaming prices (retail) to EMERG countries Source: Website of DTAG (2019)

Besides the displayed "All inclusive" charges per MB, customers can buy set volumes of data that are valid for a predefined period of time (DayPass, WeekPass). Charges for these packages do not differ substantially between the country groups but are much cheaper per 50 KB. In figure 19, the price of a "DayPass" is apparent.

For the displayed tariff options, country Group 1 conditions apply for Switzerland. In Libya and Tunisia, the price per 50 KB is at 0,49€ and thus below the other countries in group 3.

Within EU countries the International mobile roaming data prices are capped at 0,023€ per 50Kbyte. Usually, the prices are much lower and packed in "All inclusive" tariff packages. A daily usage charge does not apply between EU countries.

Roaming charges in other EMERG countries is 21 or even 34 times higher than the maximum allowed EU price. Moreover, daily usage charges are applied. A German Deutsche Telekom traveler roaming in Non-EU EMERG countries may easily pay 9,80€ or even 15,80€ for downloading just one photo with 1MB data volume. When buying a day pass this price is reduced to 0,059€.

According to the above-mentioned price example, it can be concluded that:

- Mobile voice and data roaming prices are varying extremely between EMERG's EU and Non-EU members. This may result in a barrier to international mobile data usage.

- The spread between different retail roaming prices is extreme and obviously not related to costs.

- The difference between national cost-based termination fees and international roaming fees is extremely high. Voice and data roaming in Non-EU EMERG countries is by far more expensive than the maximum allowed prices regulated between EU countries.

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CONCLUSIONS

Currently, exorbitant regional roaming tariffs hamper the ability of consumers in the EMERG region to enjoy roaming services on an affordable, accessible and reliable basis. Given the cross-border nature of roaming services, it is evident that the ability of individual regulator to encourage the reduction of roaming prices is limited. Therefore, EMERG members strive to encourage the reduction of roaming tariffs in both retail and wholesale levels through multilateral cooperation between them.

Following the successful initiatives that were taken and still being taken by the EU, WB6 and EaP, EMERG member countries acknowledge the significant value of regional cooperation for maximizing consumer benefits, removing obstacles and harmonizing roaming prices among them. In accordance, this report aims to promote the endeavors of EMERG members to develop a common view on international roaming regulation.

It is expected that a well-based cooperation through EMERG network will give its member countries the ability to harmonise their national policies and to examine the possibility of developing a regional agreement between them for the reduction of roaming prices. Moreover, it will enable them to further collaborate and negotiate with other regions, including with the EU through treaties and agreements.

As seen in the WB6, regional groups can develop an agreement in the field of roaming regardless of intricate political relations, when the benefits of consumers and businesses are obvious. EMERG performs a unique framework for regional cooperation and harmonization between Non-EU countries (in particular between its MENA member countries) in the field of Electronic Communications. Thus, the creation of common roaming space among EMERG member countries could strengthen the ties between them and serve as an accelerator for further harmonization in multiple sectors.

Due to the differences in the legislative frameworks of EMERG members, their approaches to roaming regulation are not homogeneous. Although, several regulators have already implemented measures to facilitate the reduction of international roaming tariffs in their respective countries and empowering themselves with the competence to sign bilateral and multilateral agreements. In this context, the Swiss national study case should be regarded with utmost consideration when developing a roadmap for the development of a regional common view. The empowerment of BAKOM with the power to impose the reduction of roaming tariffs on domestic operators in Switzerland derived from the considerable political pressure. Therefore, it highlights the importance of ubiquitous connectivity for a growing number of tourists between Switzerland and the EU.

In total, there is a considerable growth in the number of tourists in EMERG member countries. Tourist exchange between MENA and EU countries is substantially increasing, for instance from Spain and France to Morocco and from Israel to Cyprus. Although these findings suggest a growing user potential for international roaming markets, it is evident that the average consumption rates of customers from MENA countries are failing to catch up with the average consumption rates of customers from EU countries.

It can be concluded that users and operators in EU member states benefit from the RLAH regulation in that regard. Meanwhile, an analysis of the retail pricing from one German operator to all EU and Non-EU member states of EMERG suggests that the difference between national cost based termination fees and international roaming fees is extremely high. Also, there is no proven justification for the classification of countries into country groups in terms of operational cost in the investigated business model. While the spread between different retail roaming prices is not related to costs, the exorbitant pricing may result a barrier to international mobile data and voice usage, affecting both EU and Non-EU consumers.

Nevertheless, the data collected from the mobile operators in the EMERG region have been incomplete in most of the countries. That fact makes it difficult to draw unequivocal conclusions and propose an alternative business model for the creation of a common roaming space among EMERG member countries. Hence, a further analysis of the domestic legal and institutional framework for roaming policies in Non-EU countries should be taken, along with an analysis of the characteristics of the roaming markets of EMERG members.

For that purpose, the IR-EWG should follow a well-defined methodology, relying on homogenous research method and measurement of indicators in relation to international roaming, as defined by BEREC and followed by both the WB6 and the EaP. As agreed by EMERG members during the workshop on international roaming (5-6 November 2019, Biel-Bienne, Switzerland), the member regulators from each country will collect data in relation to Roaming traffic, Operators revenues from roaming services, Wholesale and retail prices, Total number of roaming users and any other information that will be requested during the next phase of data collection.

Considering the diverse capacities of EMERG member regulators to collect data from their domestic operators referring to international roaming, the conclusions laid down in this report should be used for justifying the need for empowering regulators with such competence.

In that respect, the main objective of the future study will be to base the need for regulation of and developing a regional approach to be implemented in the roaming markets of EMERG member countries. The report will include a profound market analysis and evaluation of several intervention schemes, considering the assessment of the possible impact of the suggested regulation on both consumers and operators.

The chosen model for cooperation will have to take into consideration the expected impact of reducing roaming prices on the adoption of new business models (i.e. permanent roaming), as it is agreed that regulators should create a supportive environment to push forward digitalization and smart solutions. EMERG members expressed such an approach during the "Workshop on IOT/M2M Regulations Focusing on Autonomous Driving" (26-27 September 2018, Rome) and they are committed to continue along this path. High roaming prices can perform as a major obstacle for the vast rollout of IoT/M2M applications, and therefore any future model that will be developed by the IR-EWG should refer to permanent roaming as a stimulator of IoT/M2M solutions.

By acknowledging the evident importance of the EU support to the success of the initiatives of both the WB6 and EaP, the support of the EC to the conduction of a valuable study is of utmost importance. Moreover, it is highly suggested that EMERG will follow the processes being made by the WB6 and EaP and develop a cooperation between the regional networks in order to exchange information and experience and promote the possibility to create a common roaming space among the EU and its neighbors.

To conclude, this report summarizes the work done by EMERG members and lays down recommendations on how affordable, accessible and reliable roaming services can be provided. Apart of the clear benefit for consumers, the implementation of regional regulation could yield a considerable increase in roaming services usage and therefore could turn out as substantial for the operators as well. Moreover, it can be inferred that the implementation of a regional common view will support the adoption of new business models and drive the development and implementation of innovations and technologies.

This report also supports the sustainability of EMERG and will serve the purpose of enhancing the approximation and harmonization of EMERG member countries with the EU. The joint work through EMERG network in the field of international roaming has the potential to stimulate a greater regional

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harmonization by ensuring the capacity of EMERG network to hold multi-regional negotiations with other regional networks as the WB6 and the EaP, in accordance with EU norms and best practices.

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ANNEXES

ANNEX 1 – EMERG QUESTTIONARE

According to the aforementioned, we would like to ask you to convey the following data:

1. How many operators supply international roaming services in your country? What is their percentage of all operators?

2. Legislative framework:
    a. Does the NRA have the authority to impose tariffs reduction on his domestic operator? If not, is its power limited by internal regulation or by legislation?
    b. Has the NRA signed any bilateral agreement or MoU related to international roaming in the past? If yes, did it help to lower the roaming prices for end users (final consumer)?
    c. Does the NRA see a need to regulate the international roaming market in his country?

3. Tourism: Number of inbound tourism for each of the years 2016-2018 according to the following distribution:
    a. Inbound tourism between your state and each MENA state.
    b. Inbound tourism and outbound tourism between your state and each European Non-EU EMERG member state.
    c. Inbound tourism between your state and EU states.

4. The following information regarding average usage (per user) of Incoming roaming services by EU travelers (inbound roaming):
    a. Incoming voice (per minute)
    b. Incoming SMS
    c. Incoming data
    d. Roaming revenues per voice (min.), SMS and Data (Mbyte)

5. The following information regarding average usage (per user) of Incoming roaming services by travellers from MENA countries (inbound roaming):
    a. Incoming voice (per minute)
    b. Incoming SMS
    c. Incoming data (Mbyte)
    d. Roaming revenues per voice (min.), SMS and Data (Mbyte)

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6. The following information regarding average usage (per user) of outgoing roaming services, by domestic consumers travelling to EU countries (outbound roaming):

   a. Outgoing voice (per minute)

   b. Outgoing SMS

   c. Outgoing data (Mbyte)

   d. Number of subscribers (Should you have this kind of information)

   e. Roaming revenues per voice (min.), SMS and Data (Mbyte)

7. The following information regarding average usage (per user) of outgoing roaming services, by domestic consumers travelling to MENA countries (outbound roaming):

   a. Outgoing voice (per minute)

   b. Outgoing SMS

   c. Outgoing data (Mbyte)

   d. Number of subscribers (Should you have this kind of information)

   e. Roaming revenues per voice (min.), SMS and Data (Mbyte)

8. The following information regarding M2M traffic:
   a. Are the domestic operators launching or have previously offered global M2M offerings?
   b. Do MNOs have special conditions and rates for M2M traffic?
   c. Roaming revenues per Data (Mbyte)

- The report must contain data for each of the years 2016-2018 (in order to being able to show the connection between the tariffs aggravation and the "RLAH" regulation).

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ANNEX 2 – SUMMARY OF EMERG IR-EWG MEETINGS

The process of determining EMERG IR-EWG terms of reference started already in 2018, with the goal of defining its scope of work and assessing its possible contribution. During the year of 2019, the work of the IR-EWG, conducted through virtual meetings and consultations. Although, the efficacy of its work has dramatically improved since the IR-EWG's members convened together to discuss the main issues related to the topic of international roaming. The summaries of the meetings, which were held in Israel and Switzerland, can be find below:

a. Summary EMERG IR-EWG meeting – 2-5 September 2019, Israel

1. Introduction

As a preparation to the workshop on international roaming that will be held in Biel-Bienne, Switzerland, on November 5-6 a meeting of EMERG Working Group on International roaming (IR-EWG), was held on September 2-5, 2019 in Israel. The meeting, hosted by MOC, as the chair of the IR-EWG.

2. Participants:

DETECON – Dr. Arnulf Heuermann;

AGCOM – Ms. Paola Calestani and Mr. Davide Gallino;

CRA – Ms. Natasa Kuzmanovic;

BAKOM – Ms. Christine Rohn;

Israeli Ministry of Communications – Ms. Naama Henig, Ms. Michal Vizan, Mr. Elad Ben David, Ms. Nitzan Livne and Mr. Ariel Steiner.

3. Objectives:

a) Discussing the key regulatory aspects of international roaming regulation and presenting the regional developments made in the WB6 and EaP.

b) Preparation to the EMEREG workshop on international roaming that will be held in Biel-Bienne, Switzerland.

c) Formulization of a draft final report to be presented during the IR workshop.

4. Main topics:

a) The first meeting day (3.9), hosted at the premises of the EU Delegation to Israel in Ramat-Gan.

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- Ms. Naama Henig (MoC) opened the meetings day by welcoming the participants and presenting the objectives of the preparatory meeting to the international roaming workshop.

- Ms. Chrystelle Lucas (EU Delegation to Israel) commended the strong collaboration between EMERG members and highlighted the importance that the EU finds in EMERG success.

- MoC Director General expressed his appreciation to the work made by the IR-EWG. Furthermore, he stated that EMERG is a valuable framework that helps Israel to enhance the communication with its neighbors in related to ICTs and therefore its sustainability is highly important for the MoC.

- During this day, presentations were delivered by experts in the field of International Roaming on the following subjects:

1) **Review on the regional roaming agreement process in the Western Balkans**, presented by Mr. Aleksandar Mastilovic, Expert Advisor to the Director General, CRA (Bosnia and Herzegovina):
   Aleksandar described the consultation process and the main challenges faced by the WB6 group for the development of the regional agreement (setup and implementation of a roadmap).

2) **Review on the regional roaming agreement process in the Eastern Partnership**, presented by Mr. Andrejs Dombrovskis, Deputy Director, Electronic Communications and Post Department, SPRK (Latvia):
   Andrejs highlighted the support of the EU to the process made by the EaP member countries, through EU4DIGITAL program. Andrejs elaborated further regarding the best practices to choosing the right roaming model and the main challenges faced by the EaP regional group in terms of roaming agreement.

3) **Cost modelling and monitoring issues in international roaming**, presented by Mr. Davide Gallino, Head of Unit, Digital Services Development, AGCOM (Italy):
   Davide presented several initiatives to reduce roaming prices that were taken in Asia, Africa and the Arab region. Moreover, he explained the process that was taken in the EU in order to develop and implement the RLAH regulation. Davide highlighted the importance of political support for the success of the project and pointed out the main regulating and monitoring practices in terms of regional roaming agreements and roaming as a whole.

- A meeting of EMERG Secretariat was held in the premises of the EU Delegation to Israel as well. The summary was separately published by EMERG chair.

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b) The second meeting day (4.9) was hosted at MoC premises in Jerusalem.

- During this day, Dr. Arnulf Heuermann delivered presentation on the topics of **permanent roaming and the necessity of roaming regulations**. Dr. Heuermann addressed the question: should we regulate roaming? And discussed several practices that can be taken by regulators who wishes to regulate roaming.

- Additional session was held in order to **determine the framework of the final report on international roaming** that would be submitted to the EC. During this session the following was approved:

  The Israeli MoC will prepare a draft report to be presented to the participants of the workshop on international roaming. The report must contain an overview on EMERG efforts in the field of international roaming, best practices that was adopted by other regional groups, suggested roadmap towards a regional agreement and draft MoU to be signed between EMERG members. The IR-EWG members will approve other subjects that will be included in the report.

In the final meeting, the participants **approved the agenda of the international roaming workshop** that will be held in Biel-Bienne. The participants agreed on the subjects that will be discussed and suggested a preliminary schedule.

b. <u>Summary of the EMERG workshop on international roaming – 5-6 November, 2019, Biel-Bienne, Switzerland</u>

1. Introduction

EMERG workshop on international roaming was held in Biel-Bienne, Switzerland, on 5-6 November 2019 in accordance with EMERG 2019 working plan and following the work of EMERG IR-EWG. The meeting was organized and hosted by BAKOM and chaired by Israel.

2. Objectives:

a) Continuing the work of the IR-EWG in accordance with the result of the data analysis.

b) Introducing the work of EMERG IR-EWG and the draft of the final report to EMERG members.

c) Determining the future steps for promoting the objective of achieving a common roaming space among EMERG member countries.

3. Main topics:

During the workshop, several experts in the field of international roaming delivered presentations on the following subjects:

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a) Dr. Arnulf Heuermann (DETECON) delivered presentation on the topics of **A General Overview on Roaming**. Dr. Heuermann presented the technical aspects of roaming services and discussed the issue of cost modeling. Furthermore, the members discussed the future business models of international roaming, taking into consideration the increase in the demand for data and the need to support future applications as autonomous cars.

b) **Analysis of best practices in the EaP**, presented by Mr. Andrejs Dombrovskis, Deputy Director, Electronic Communications and Post Department, SPRK (Latvia):

Andrejs presented the EU4Digital project and elaborated about the best practices implemented in the EaP initiative. Dombrovskis focused on the main obstacles in developing regional cooperation such as dealing with WTO obligations and bridging the gaps between the countries involved in the process.

c) **Analysis of best practices in the WB6**, presented by Mr. Aleksandar Mastilovic, Expert Advisor to the Director General, CRA (Bosnia and Herzegovina):

Mastilovic provided an overview on the main challenges faced by the WB6 countries and annunciated that for the common goal of enhancing consumer benefits the involved parties can overcome political disagreements. As part of this session, EMERG members discussed the importance of building a well-defined methodology and creating a managing body (e.g. expert working group) that will gather the information and lead the process. Also, Aleksandar remarked that the WB6's RRA was implemented thanks to the assistance of the EC.

d) **The Swiss study case**, presented by Ms. Mirjam Buchmann Aghayev from BAKOM (Switzerland):

Buchmann described the impact of the EU's roaming regulations on the public and political perspective on international roaming in Switzerland. In addition, the process of changing the legislative framework in Switzerland, in order to empower the regulator with the competence to regulate the roaming market was described. Likewise, Buchmann explained the main difficulties and challenges in taking a unilateral action to reduce roaming prices.

e) **EU RLAH regulation and monitoring issues in international roaming** presented by Mr. Davide Gallino, Head of Unit, Digital Services Development, AGCOM (Italy):

Gallino explained the process that was taken in the EU in order to develop and implement the RLAH regulation and marked out the work done by BEREC. In addition, he reviewed several examples of business models from all over the world.

f) Dr. Bernd Sörries from WIK **presented the preliminary data analysis based on the results of the questionnaire**. The lack of sufficient data was evident and thus the participants decided to hold a second session of data collection, which will last until 28 November 2019.

g) In the final session, Mr. Elad Ben David (Ministry of Communications, Israel) presented **the draft of the report on international roaming regulation**. The participants shared their view on the required steps and important measures that the IR-EWG has to take. Furthermore, Elad distributed the work on the various sections of the report between the participants and set the timeline for completing the work.

To summarize, it was concluded to prolong the timeframe for collecting data and suggesting amendments to the structure of the report. The new data collection phase set as no later than 28 November 2019. The work on the report was distributed between EMERG members as follows:

o AGCOM: review and edit the sub-chapter on RLAH regulation.

o CRA: review and edit the sub-chapter on the WB6's RRA.

o SPRK: assist with reviewing and edit the sub-chapter on the EaP.

o DETECON: review and edit the chapter on key international roaming regulatory issues; complete the work on the data analysis.

o TRC/MTIT: provide information on the AREGNET initiative.

o BAKOM: writing the section on the Swiss National Study Case.

Moreover, a virtual meeting on the data analysis was scheduled.