EXECUTIVE REPORT
ITU REGIONAL ASSESSMENT FOR EUROPE ON EMF EXPOSURE LIMITS AND RISK COMMUNICATION CHALLENGES

Final Version

ACKNOWLEDGMENTS

This paper was developed by the ITU Office for Europe within the framework of the ITU Regional Initiative for Europe on broadband infrastructure, broadcasting and spectrum management. It was elaborated by Mr. Jafar Keshvari, Chairman of IEEE/ICES, and ITU/IEEE/IEC Liaison Expert, in close coordination with Mr. Istvan Bozsoki, Head of the Telecommunication Networks and Spectrum Management Division (TNS) of the Telecommunication Development Bureau, Mr. Julian McNeill, Consultant, ITU Office for Europe, and Mr. Jaroslaw Ponder, Head of ITU Office for Europe. ITU would like to thank Ms. Emilie Van Deventer, Head of EMF Project, WHO, and Mr. Rodney Croft. Chair, International Committee on Non-Ionizing Radiation Protection (ICNIRP), for valuable inputs in the elaboration of this assessment.

The analysis is based on the inputs delivered via a questionnaire to the following institutions: Radiation Protection Commission of the **Republic of Albania**, Federal Ministry of Agriculture, Regions and Tourism (BMLRT) of **Austria**, Ministry of Transport, Information Technology and Communications of the **Republic of Bulgaria**, Croatian Regulatory Authority for Network Industries (HAKOM) of **Croatia**, Deputy Ministry of Research, Innovation and Digital Policy, Department of Electronic Communications **Republic of Cyprus**, Czech Telecommunication Office, Ministry of Industry and Trade, **Czech Republic**, Danish Energy Agency (DEA), **Denmark**, Radiation and Nuclear Safety Authority (STUK), **Finland**, Agence nationale des fréquences (ANFR), **France**, Federal regulatory agency for electricity, gas, telecommunications, post and railway, **Germany**, Greek Atomic Energy Commission (EEAE), **Greece**, National Media and Infocommunications Authority (NMHH), **Hungary**, Ministry of Economic Development, **Italy**, Ministry of Transport, **Latvia**, Ministry of Transport and Communications, **Lithuania**, Department of Media, Communication and Digital Policy, **Luxembourg**, National Regulatory Agency For Electronic Communications And Information Technology (ANRCETI), **Republic of Moldova**, Gouvernement de Monaco / Direction des Plateformes et des Ressources Numériques, **Monaco**, Agency for electronic communications and postal services (EKIP), **Montenegro**, Agency for electronic communications (AEC), **North Macedonia**, Norwegian Communications Authority, **Norway**, The Chancellery of the Prime Minister jointly with the Office of Electronic Communications (UKE), **Republic of Poland**, Autoridade Nacional de Comunicações (ANACOM), **Portugal**, the National Authority for Management and Regulation in Communications of Romania (ANCOM), **Romania**, Ministry Of Economic Affairs And Digital Transformation, **Spain**, Ministry of Transport and Construction, Electronic communication and Postal services Division, **Slovak Republic**, Information and Communication Technologies Authority (ICTA), **Turkey**, Office or Communications (Ofcom), **United Kingdom**, Gibraltar Regulatory Authority, **United Kingdom**, National Commission for the State Regulation of Communications and Informatization, **Ukraine**, Administration of State Service of Special Communications and Information Protection of **Ukraine.**

The paper was prepared as a follow up to the discussions held in context of the ITU Regional Forum for Europe on 5G strategies, policies and implementation held virtually on 22-23 October 2020 and the ITU Regional Forum for Europe and CIS on Spectrum Management and Broadcasting held virtually on 1-2 July 2020.

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1. INTRODUCTION

National legislations on exposure to electromagnetic fields (EMF) intended for the protection of the health of the general public may deviate from each other and do not necessarily follow World Health Organization (WHO) guidance or International Commission on Non-Ionizing Radiation Protection (ICNIRP) EMF exposure Guidelines. The associated administrative procedures for the verification of compliance with the legislations prior to putting in operation (e.g., building, planning permission procedures) have significant impact on the pace of the roll-out of radio networks including 5G mobile networks, making it desirable to have a clear understanding of the applicable Electromagnetic Fields (EMF) exposure limits as well as regulations in deploying the 5G technologies.

Moreover, risk communication on EMF remains a challenge at the national level for many institutions operating in the field. Just as for previous generations of mobile technologies (e.g., 3G or 4G), 5G rollout provides momentum for the spread of misinformation associated with EMF, raising the level of distrust across the population, thus creating further obstacles to rollout. In an increasingly digitally intensive landscape, this recurrence may pose greater negative impact to 5G rollout than compared to previous generation technologies.

It is worth pointing out from the onset that any recommendation regarding EMF exposure levels or other risk management tools, including application of the precautionary principle, is beyond the scope of the Regional Assessment. Nor will this report fill any gap in knowledge, notably on long- term exposure or make any statement on biological effects or health effects of exposure to EMF. This report merely aims at taking stock of some selected and basic aspects of national regulations on the protection from EMF and of the risk communication strategies adopted by institutions. It will conclude, amongst other relevant items, with some suggestions for further stocktaking of national experiences and areas for further cooperation.

2. OBJECTIVE OF THE INITIATIVE

The objective of this initiative is to elaborate a regional assessment on the regulatory and compliance environment of EMF whilst adding the dimension of risk communication challenges faced by institutions

with a focus on 5G rollout. Through this study, the ITU Office for Europe[1] seeks to provide ITU Membership and stakeholders a holistic vision regarding current EMF limit levels in Europe region and risk communication challenges that government ministries and regulators operating in the field of telecommunications are encountering. In addition to studying Member States' inputs, challenges encountered and good practices, concrete recommendations to support ITU members' efforts in addressing EMF at the country level will be outlined.

The Regional Assessment is an important milestone in the implementation of the ITU Regional Initiative for Europe on "Broadband Infrastructure, broadcasting and spectrum management"[2] agreed by WTDC-17, and a contribution to Question 7/2 of the ITU-D Study Groups.[3] Outcomes of the review will also be used as a background document for EMF-, spectrum- and 5G-related initiatives for 2021, as a regional needs assessment and as a tool for developing capacity to deliver targeted assistance to the countries in need. This document would also serve for the preparatory process leading towards the ITU World Telecommunication Development Conference 2021.

3. APPROACH AND METHOD

An "ITU Regional Assessment on EMF level and risk communication challenges" questionnaire survey was developed focusing on EMF Levels and 5G deployment. It builds upon a similar assessment carried out in the context of the ITU Expert Meeting on EMF and 5G rollout held in 2017[4] and upon the discussions held at the ITU Regional Forum for Europe on 5G strategies, policies and implementation[5] in December 2020, as well as those held at the ITU Regional Seminar for Europe and CIS on spectrum management and broadcasting[6] in July 2020.

Based on these developments, beyond the 2017 assessment, this study seeks to expand the analysis to the following areas:

[1] https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/default.aspx
[2] https://www.itu.int/en/ITU-D/Documents/RI_Europe.pdf
[3] https://www.itu.int/net4/ITU-D/CDS/sg/rgqlist.asp?lg=1&sp=2018&rgq=D18-SG02-RGQ07.2&stg=2
[4] https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2017/EMF/Expert%20Meeting%20ReportFinal.pdf
[5] https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2020/5G_EUR/5G_Europe.aspx
[6] https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2020/Spectrum_EUR_CIS/Remote.aspx

- Implementation of the new ICNIRP 2020 Guidelines;
- Identification of ongoing EMF compliance assessment standards;
- Implementation of newly available EMF compliance assessment standards;
- Obstacles to public acceptability of 5G and incidents occurred at the national level relating to EMF in over the course of 2020;
- Institutional risk communication strategies of EMF.

The intended study made use of a questionnaire, which was composed of the following 5 categories of questions:

1. EMF national regulations; comprised of 4 questions;
2. Approval procedures prior to building / planning permission; comprised of 2 questions;
3. Measurement of EMF; comprised of 3 questions;
4. Acceptability by the public; comprised of 2 questions;
5. Risk Communication; comprised of 4 questions.

The original Questionnaire is presented in Annex A.

The questionnaire was targeted towards the Admin and Admin-related offices of the 46 countries of Europe Region[7], which included NRAs and Government Ministries in charge of EMF regulation at the country level. 31 questionnaires have been received from the following 29 countries: Albania, Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Monaco, Moldova, Montenegro, North Macedonia, Norway, Poland, Portugal, Romania, Spain, Slovak Republic, Turkey, Ukraine, United Kingdom.

In terms of institutional segmentation, 3 answers to the questionnaires have been received from National Radiation Protection Agencies, 12 from Government Ministries in charge of ICTs, 15 from National Regulatory Authorities and 1 jointly by the National Regulatory Authority and the Ministry of ICTs. This segmentation reflects the complexity of the subject matter spanning across science, health, telecommunications policy domains.

[7] https://www.itu.int/en/ITU-D/Pages/Contact/Geneva.aspx

4. QUESTIONS AND COUNTRY RESPONSE ANALYSIS

1. **The first category of questions was aimed to identify whether a country has adopted a regulatory framework for EMF based on the regulatory framework of the EU (Directive 2013/35/EU of the European Parliament and Council recommendation 1999/519/EC: Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)) or whether the country drafted its own EMF regulations. The question also aimed to understand whether a country has any exposure limits that are more stringent than the ICNIRP values. An additional point of interest was whether the recommendations by new ICNIRP 2020 Guidelines were already adopted.**

Responses and analysis:

Out of the 20 countries that responded, all countries have some regulation in place to protect the health of workers and general public from exposure to electromagnetic fields (EMF), including 5G technologies. About 79% of the countries have adopted the EMF Directive 2013/35/EU of the European Parliament and about 76% are following Council Recommendation of 12 July 1999 on the limitation of exposure of the general public (Figure 1). Both aforementioned EMF Directive and Council Recommendation are based on the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines. About 21% of the respondent countries have a RF safety regulation that are more restrictive than ICNIRP levels, with the aim of reducing EMF exposure of the general public to levels below the Reference Levels suggested by ICNIRP. The countries with deviating exposure limits have different reasons and historical backgrounds for their deviating approaches. Although few, some countries' EMF limits are reported to be significantly lower than that of ICNIRP recommendations. Few other countries' have lower limits foe applicable in some specific areas. Most of the eastern European countries that used to have EMF exposure limits deviating from ICNIRP, have adopted the European EMF Directive and the Commission's Council Recommendation 1999; the latest example is Poland which adopted ICNIRP limits from 2020.

Considering the adoption of ICNIRP 2020 Guidelines, there are few countries that reported challenges with regards to the deployment of 5G networks, mainly in urban areas. Those countries also report that the development of 5G networks could be more challenging in dense urban and urban areas where several installations are already present due to previous cellular technologies (2G,3G,4G), if the operators

intended to use exclusively the same sites as the systems using the previous technologies. There are only two countries that have already adopted the ICNIRP 2020 revised Guidelines, and several countries are awaiting the revision of the EU Directive 2013/35/EU of the European Parliament and Council recommendation 1999/519/EC. Therefore, it is important that the European Commission revises the EMF Directive and Council Recommendation in a timely manner to include the changes in the revised Guidelines, mostly with regards to the changes for above 6 GHz, which is specifically related to 5G mmWaves.

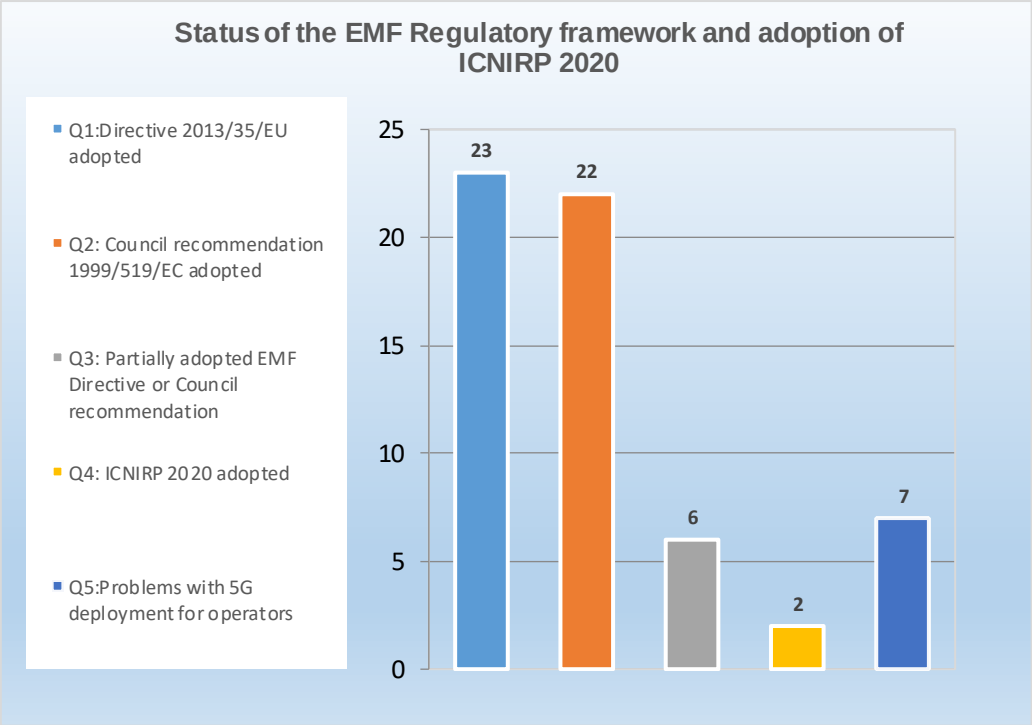

Figure 1. Response from 29 countries showing how many have adopted the European EMF directive 2013/35/EU and 1999 Council Recommendation concerning EMF exposure limits for workers and general public.

2. **The second category of questions regarded approval procedures prior to building / planning permission. The questions enquired about the permit-granting procedure for the deployment of antennas in the country based on the current regulatory framework and whether there is any legal process to present complaints on permits.**

Responses and analysis:

Approval procedures for permit granting for the deployment of antennas varies from country to country. In some countries, different governmental bodies are involved in the permission process, whereas others have a single authority that covers the process. For example, in those countries which involve several bodies, the building grant may be governed by the municipality and the EMF safety approval by the radiation safety authorities.

In few countries, the mobile operators do not have to be granted specific permits for the deployment of antennas. In order to limit procedural delays, some countries apply exemptions for small installations. There are also cases where operators plan and deploy their network independent of the authorities – but have to comply with the applicable Plan and Building Act of the country.

The average duration of an authorization process, depending on number of licences, may take few weeks in some countries and up to 9 months in some other countries. Figure 2 shows the response from 27 countries if multiple permits required and also how long the approval procedure for cellular antennas requires.

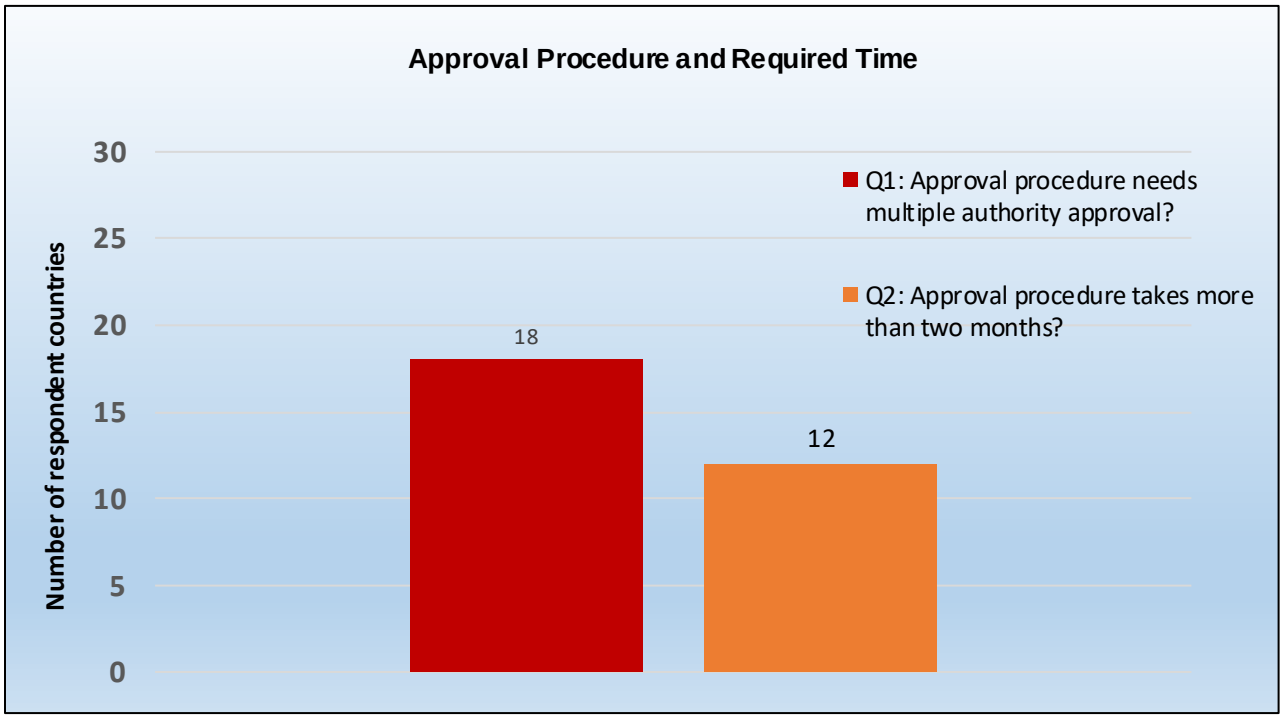

Figure 2. Response from 27 countries showing if multiple permits required and also how long the approval procedure for the cellular antennas requires.

3. **The third category of questions was related to measurement of EMF and whether the country faced any challenges with availability and/or applicability of EMF-measurement standards concerning 5G products.**

Responses and analysis:

The main standard used for the Base Station EMF compliance measurements is based on the European harmonized standard EN 50401:2017 and standard EN 62232:2017. These are indispensable for the use of EN 50401:2017 and are based on IEC 62232 standard. There are also some other applied standards, some examples are listed below:

- IEEE std. C 95.1-1999 – "IEEE Standard for safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz – 300 GHz" - IEEE Std C. 95.3-1991
- IEC TR 62669 ED2: Case studies supporting IEC 62232 - Determination of RF field strength and SAR in the vicinity of radio communication base stations for the purpose of evaluating human exposure.

Concerning 5G EMF measurements, EN 62232 is under revision. The new version of the standard is expected to be published by the end of year 2021. It is also reported that CENELEC, ITU, IEC and IEEE activities are closely followed by regulatory bodies EMF experts to update their relevant national standards and guidance.

There are several countries reporting challenges on the availability of EMF compliance assessment standards for 5G technologies. As seen from Figure 3, out of 29 countries, only about half are aware of ongoing standards development activities related to 5G.

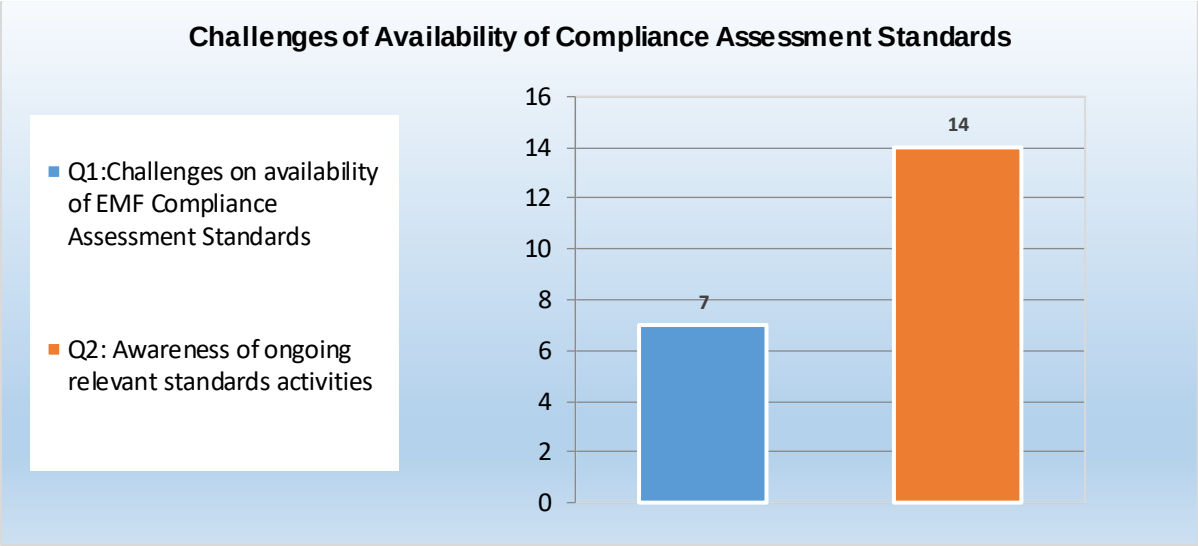

Figure 3. Response from 29 countries showing the number of countries having challenges with the availability of compliance assessment standards. Only half of the countries are aware of the relevant standards activities.

4. **The fourth category of questions aimed to understand the acceptability of 5G technologies, and the factors central for the acceptability by the public concerning 5G deployment. It also addressed whether there have been any public protest/actions against 5G or incidents relating to misinformation in relation to Covid-19 and 5G over the course of 2020.**

Responses and analysis:

It is believed that the issue of EMF and health is complex and not easy-to-understand for the public. Part of the public is exposed to non-scientific information, mainly through the Internet. General concerns about emerging wireless communication technologies are reported. The main source of authorities' concerns for the negative perception is believed to be fake news which is usually spread through social media. This negative perception is reported to be significantly stronger for 5G networks compared to previous mobile generations, such as 3G and 4G.

As the level of public alert varies across countries, some countries have reported that there have been some initiatives opposing the deployment of wireless communication networks, including 5G, but it is believed that a minority of citizens have a negative attitude towards wireless communications technology development. Protests against 5G are reported by several countries.

With regards to incidents, 6 countries have reported serious incidents over the course of 2020, which in some countries have been physical damage and destruction of base stations. Incidents have been primarily attributed to the misinformation on 5G, which has been mixed and exacerbated by Covid-19 misinformation. 18 countries have reported some level of misinformation in relation to Covid-19 and 5G.

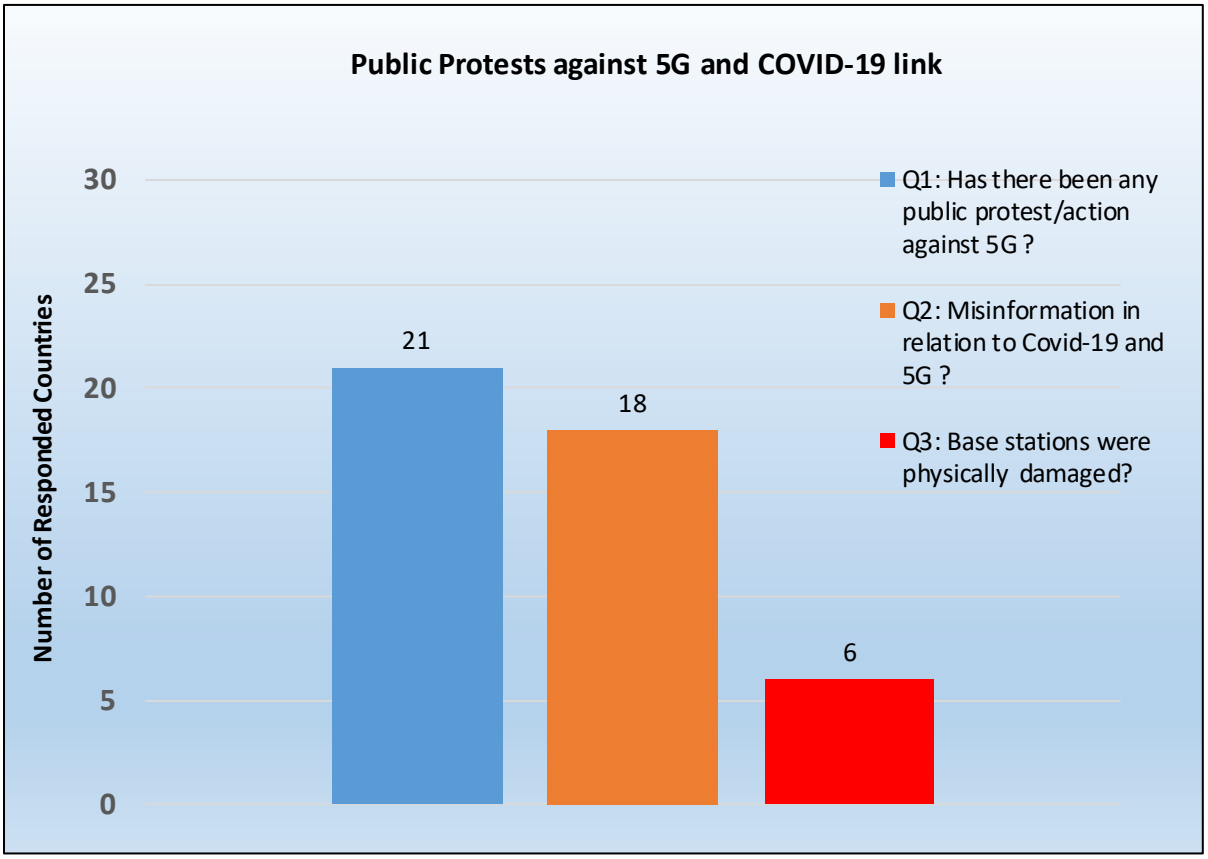

Figure 4. Response from 29 countries showing number of countries that have had protests against 5G technologies, physical damage to the base stations and also number of countries that has reported incidents relating COVID-19 to 5G technologies.[8]

5. **The last category of questions was related to risk communication and how the countries have undertaken or are planning to undertake any information campaign or other action in relation to EMF and/or 5G. It was also asked if the country is familiar with risk**

[8] WHO has released the "Radiation: 5G mobile networks and health" factsheet in February 2020 amid increasing misinformation on 5G.

communication campaigns and risk communication strategies in the field of EMF, for example the World Health Organization's report on "Establishing a Dialogue on Risks from Electromagnetic Fields"[9], or if there are any actions to develop capacity building in the field of risk communication.

Responses and analysis:

Several ways of risk communication models are reported; some examples are noted below:

- Information Campaign carried out by the governmental agencies
- Organizing meetings with the public
- Responding to questions via electronic mail
- Measurement campaigns
- Seminars, conferences

It seems that the primary type of initiative risk communication in many countries is organizing risk communication campaigns, followed by on-site measurement. The objective of the campaigns has been to reach to the highest possible number of places and people all over the country.

However, some countries have not reported any risk communication campaign implemented at the national level nor have reported being familiar with risk communication campaigns and risk communication strategies, such as the WHO brochure on "Establishing a Dialogue on Risk from Electromagnetic fields".

Measurement campaigns have been an efficient way of risk communication by checking the compliance of individual base stations and measuring/calculating the levels of EMF at several points in the vicinity of each base station. Reports of the conducted measurements of electromagnetic fields are shared on publicly available websites.

Finally, it is reported that only about half of the countries are taking actions or planning to take action to develop capacity building, including (training personnel, conducting workshops, etc.) in the field of risk communication.

[9] https://www.who.int/peh-emf/publications/en/EMF_Risk_ALL.pdf

5. OVERALL ANALYSIS AND RECOMMENDATIONS

As was stated earlier, the study was made in the form of a questionnaire in 5 different categories of questions. In this section, an overall analysis for each section will be made and a set of recommendations will be provided.

1. EMF national regulations

Concerning workers, the Directive 2013/35/EU of the European Parliament and the Council on the minimum health and safety requirements regarding the exposure of workers to the risks arising from electromagnetic fields has widely been transposed to national legislation. Regardless of commonly adopted workers EMF exposure recommendation, the adoption of the Council recommendation for the general public is not as widely adopted into national EMF regulations. The reason for this may be lying on the fact that for the workers EMF exposure regulation, there is a directive in place, whereas for general public there is not.

The responses reveal that countries having adopted the ICNIRP limits have not identified as many potential negative impacts on the deployment of 5G mobile networks, whereas countries with a more restrictive approach than the one recommended by ICNIRP reported several negative impacts.

The most important issue from a EMF regulation perspective is the adoption of ICNIRP 2020 Guidelines. Out of the 29 countries that have responded to the question regarding whether they have adopted the latest ICNIRP Guidelines, only 2 countries have responded positively. Several countries have responded that they are expecting the European Commission to revise the relevant European-level EMF Directive and 1999 Council Recommendations so they can update their national regulations, which are based on this EMF Directive and council Recommendation.

Recommendation 1: Taking into account the fact that the revised ICNIRP 2020 Guidelines include changes for the mmWave spectrum, and the fact that 5G networks using mmWave spectrum will be soon ready to deploy, it is recommended that European Commission starts the process of revision of the EMF Directive 2013/35/EU of the European Parliament and Council recommendation 1999/519/EC to reflect the main changes of the ICNIRP 2020 Guidelines.

2. Approval procedures prior to building / planning permission

As seen from Figure 2, approval procedures and procedure time vary greatly from one country to another. From 27 countries that have responded the question about approval procedures and required time, about 66% of the countries require multiple approvals and about 44% reported the time required for the approval procedure taking more than 60 days, and for some countries the process takes up to a year. Multiple approval and long process times would surely have negative impact on the deployment of 5G base stations and will/may delay the development and implementation of 5G networks.

If a country has significantly more restrictive exposure limits than ICNIRP, for example less than 10% of the ICNIRP limits, 5G deployment would negatively be impacted.

Recommendation 2: In support for efficient deployment of 5G, simplified procedures and shorter approval time is needed. Since other obstacle for installation of antennas/radio base stations seems to be related to the concerns with EMF exposure limits and public acceptability putting pressure on regulators, active communication between regulators and public is crucial.

3. Assessment of EMF limits

It seems that about half of the respondent countries are aware of the major standards activities on the compliance assessment of the 5G equipment, but several countries reported about the availability of such standards. Overall, in Europe, the adoption of international standards as European Harmonized Standards (HS) usually takes time, causing challenges in availability of relevant EN standards. However according to New Legislation Framework, since using HS is not automatically presumption of conformity, non-harmonized standards may equally be used.

Recommendation 3: Regulators are recommended to assign a regulatory officer in their office to the major international Standards Development Organizations, to engage in the standardization process and specifically follow up equipment compliance assessment standards progress, get first-hand information and reflect their concerns and needs to the relevant committees.

4. Acceptability by the public

In general, there is a group in the population that respond negatively to emerging technologies, including wireless communication technologies. In the past we have seen this for TV's, Microwave ovens, etc. therefore 5G is not an exception. Specific concerns related to 5G networks reside in the fact that the use of higher frequencies and micro- or pico-cells requirements, results in a feeling of greater exposure and more negative impacts to public health. This may be partly blamed on the lack of clear and unambiguous scientific communication backed by institutional weight, capable of explaining in simple words the mechanisms of interaction between EMF and the human body and the results of scientific and epidemiological studies with the public.

The Internet and social media are primary environments where public protests or even acts of violence are planned. Effective communication and overall public awareness must also be improved by institutional presence in the virtual environment.

Recommendation 4: a) Regulatory bodies should follow evidence-based EMF protection policies.

b) Authorities should be more proactive in conveying information to the general public, including across the Internet and social media where misinformation spreads.

c) Particular attention should be given by authorities to the interplay between misinformation on EMF and other domains, including Covid-19.

5. Risk Communication

Communication of the health risks from mobile networks base stations present a difficult set of challenges for decision-makers. Although regulators are aware of the limit levels from EMF exposure and what the potential health risks are, i.e., risk assessment, recognizing the reasons why the public may be concerned, i.e., risk perception, and implementing appropriate strategy in communicating this risk with the public requires a clear program. Most of the countries have reported having a risk communication program, some of which rely on the publication of measurement data, but a large number of countries with protests against 5G deployment questions the success of such risk communication programs.

Recommendation 5: For the regulators it is crucial to establish a dialogue between all stakeholders concerning the deployment of 5G networks. The ingredients for effective dialogue include consultation with stakeholders, leveraging live or periodic monitoring of EMF levels, implementing capacity building activities, acknowledgement of scientific uncertainty, and a fair and transparent decision-making process. Failure to do these things can result in loss of trust and flawed decision-making.

6. CONCLUDING REMARKS

This study provides aggregated analysis and concrete recommendations based on the inputs of national authorities. The elaboration reiterates the complexity and relevance of this domain from various perspectives, which require the creation of a consistent and sustainable linkage between science, policy and communication. In Europe, this is particularly relevant considering the ongoing rollout of 5G. All relevant parties and actors, in their respective capacities, should find solutions to these challenges in order to achieve a smooth rollout of 5G. The ITU Office for Europe stands ready to support this dialogue among stakeholders to advance a secure and robust implementation of 5G in Europe region. The evidence-based harmonization of EMF regulations across the countries and proactive, transparent and comprehensive communication strategies remain the most solid way of minimizing public uncertainty and acceptability regarding emerging public technologies.

ANNEX A

Expert Questionnaire

Regional Assessment on Electromagnetic field (EMF) levels and risk communication challenges in the Europe Region

The "Regional Assessment on Electromagnetic field (EMF) levels and risk communication challenges in the Europe Region" is an important part of the implementation of the ITU Regional Initiative for Europe on "broadband infrastructure, broadcasting and spectrum management". The assessment builds upon the recently published paper on "Implementing 5G for Good: does EMF matter?" developed in the context of the ITU Regional Forum for Europe on 5G strategies, policies and implementation held on 22-23 October 2020 where Member States clearly expressed the need for coordinated action at the international level in this field, with particular reference to the deployment of 5G.

This questionnaire aims at:

a) *gathering information among European administrations on the potential impact of the national legislations (amongst other) on deployment of 5G technologies with regards to the protection of the health of the general public from exposure to electromagnetic fields (EMF).*

b) *gathering information on the associated administrative procedures for the verification of compliance with this legislation prior to putting in operation (e.g. building, planning permission procedures), on the pace of the roll-out of future 5G mobile networks, on the number/density of antenna sites, on the quality of present and future networks and on the costs of these networks.*

c) *better understanding the current situation in the countries under scope of this questionnaire with regards to the acceptability of the topic by the public, with particular regard to current developments of 5G and in relation to the misinformation spike in the context of COVID-19 in 2020. The questionnaire also seeks to gather information on risk communication strategies at the country level, if any, and identify challenges encountered by government administrations and NRAs in this regard.*

The questionnaire is targeted towards the Admin and Admin-related administrations of the 46 countries of Europe Region. A full list is available at: https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/MemberCountriesinEurope.aspx

Country Name:	
Name of Institution: **Type of Institution:**	
Questions (*please note that sub-questions are aimed at guiding the reply and therefore need no specific answer)	Replies

The elaboration of the responses in a Report will synthetise the experiences of the countries with the intention of assisting administrations in adopting policies, legislations and best practices to more effectively address the rollout of mobile broadband networks, in particular 5G networks. Moreover, the report will seek to identify best practices on risk communication strategies to cope with the rising misinformation on this important topic.

EMF national regulation **1)** Has your country adopted a regulatory framework for EMF based on the regulatory framework of the EU (*Directive 2013/35/EU of the European Parliament and Council recommendation 1999/519/EC: Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)*) or has the country drafted its own EMF regulations? Please provide the website where the regulation can be found. **2)** Have the revised 2020 Guidelines by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) with respect to reference levels been adopted in the national legislation as the relevant EMF Exposure Limits? If not, what is the timeline to adopt ICNIRP 2020 Guidelines. **3)** Are EMF regulations deviating from ICNIRP 2020 Guidelines? If so, please indicate Reference Levels. **4)** Considering ICNIRP 2020 and ICNIRP 1998 Guidelines, have there been any reported limitations from operators with regards to the deployment of 5Gtechnologies? a) Do operators face challenges in planning and densifying their networks (if applicable,	

differentiate "dense urban", "urban", and "rural" environments)? b) Can operators plan their network without taking into consideration the sites in use and EMF generated by competitors in the neighbourhood? c) Does the regulatory framework on EMF create obstacles for site sharing and cooperation between operators? d) Is there any urgent need for adoption of ICNIRP 2020 Guidelines with regards to 5G technologies operating above 10GHz? e) Please add other issues that are not covered by the questions above.	
Approval procedures prior to building / planning permission **5)** Based on the current regulatory framework what is the permit granting procedure for the deployment of antennas in your country? a) Do multiple permits for cellular antennas need to be granted by different authorities? b) What is the average duration of an authorization process? c) Is there any regulatory obstacle/obligation, including EMF, in the deployment process of antennas/base stations?	

6) Is there any legal process to present complaints on permits? a) who has the right to object (local residents, environmental organizations, interest groups, others)? b) what are the most common complaints, if any (e.g. breach of planning regulations, building law, aesthetic regulations)? c) is there any specific complaint relating to adverse health effects?	
Measurement of EMF **7)** Are you facing any challenges with availability and/or applicability of EMF measurement standards concerning 5G technologies? a) Please list EMF measurement standards used for base stations compliance assessment? b) Are you aware of the recent publications on 5G EMF compliance assessment? a. K Suppl. 9: 5G technology and human exposure to RF EMF b. K.121: Guidance on the environmental management for compliance with radio frequency EMF limits for radiocommunication base stations c. IEC TR 62669:2019	

d. IEC 62232:2017 c) Is your country familiar with the ITU-R monitoring report on EMF measurements?	
Acceptability by the public **8)** Which factors are central for the acceptability by the public concerning 5G deployment? a) Is there general negative perception towards emerging wireless communication technologies? b) If so, is the negative perception similar to that experienced with 3G and 4G? please elaborate c) What are the main sources of negative perception relating to EMF in the context of 5G deployment? **9)** Has there been any public protest/action against 5G (or previous mobile technologies) in your country? **10**) Have there been incidents relating to misinformation in relation to Covid-19 and 5G in 2020? a) How many incidents have there been, if any? b) What have been the targets of such incidents? c) What are the estimated financial damages? (*please provide a rough estimation*)	
Risk Communication	

11) Is on-field EMF measurement part of the work of your organisation? a) Is the measurement part of a risk communication strategy b) How is data on EMF measurements made available to the public? **12)** Have you taken or are planning to take any information campaign or other action in relation to EMF and/or 5G? a) If yes, please detail scope, implementation, outcomes (successful/unsuccessful) and takeaways of such campaigns. (In case you are planning to undertake information campaigns what would be the approach?) b) If not, are there other authorities or NGOs that you are aware of that are conducting information campaigns at the national level? **13)** Is your organization familiar with risk communication campaigns and risk communication strategies in the field of EMF? An example would be the World Health Organisation's brochure on "Establishing a Dialogue on Risks from Electromagnetic Fields"? **14)** What are the actions you are taking or planning to take to develop capacity building in the field of risk communication, if any? (e.g. hiring/training personnel,	

conducting workshops for workers in this field at national, regional or local level, etc.)	
Any other comments and considerations	

ANNEX B

Country Responses

- Radiation Protection Commission of the Republic of Albania
- Federal Ministry of Agriculture, Regions and Tourism (BMLRT) of Austria
- Ministry of Transport, Information Technology and Communications of the Republic of Bulgaria
- Croatian Regulatory Authority for Network Industries (HAKOM) of Croatia
- Deputy Ministry of Research, Innovation and Digital Policy, Department of Electronic Communications Republic of Cyprus
- Czech Telecommunication Office, Ministry of Industry and Trade, Czech Republic
- Danish Energy Agency (DEA), Denmark
- Radiation and Nuclear Safety Authority (STUK), Finland
- Agence nationale des fréquences (ANFR), France
- Federal regulatory agency for electricity, gas, telecommunications, post and railway, Germany
- Greek Atomic Energy Commission (EEAE), Greece
- National Media and Infocommunications Authority (NMHH), Hungary
- Ministry of Economic Development, Italy
- Ministry of Transport, Latvia
- Ministry of Transport and Communications, Lithuania
- Department of Media, Communication and Digital Policy, Luxembourg
- National Regulatory Agency For Electronic Communications And Information Technology (ANRCETI), Republic of Moldova
- Gouvernement de Monaco / Direction des Plateformes et des Ressources Numériques, Monaco
- Agency for electronic communications and postal services (EKIP), Montenegro
- Agency for electronic communications (AEC), North Macedonia
- Norwegian Communications Authority, Norway
- The Chancellery of the Prime Minister, Republic of Poland jointly with the Office of Electronic Communications (UKE), Republic of Poland
- Autoridade Nacional de Comunicacões (ANACOM), Portugal
- National Authority for Management and Regulation in Communications of Romania (ANCOM), Romania
- Ministry Of Economic Affairs And Digital Transformation, Spain
- Ministry of Transport and Construction, Electronic communication and Postal services Division, Slovak Republic
- Information and Communication Technologies Authority (ICTA), Turkey
- Office or Communications (Ofcom), United Kingdom
- Gibraltar Regulatory Authority, United Kingdom
- National Commission for the State Regulation of Communications and Informatization, Ukraine
- Administration of State Service of Special Communications and Information Protection of Ukraine