

5G Authorization Auctions in the European Union: A Comparison Between Italy and France

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Abstract

This article focuses on the role and significance of the 5G tendering system in contemporary comparative law, taking the cases of Italy and France as an illustration. While the first part of the article explains the concepts and purposes of 5G Technology in science and comparative methodology, the second part explores and examines the reasons behind Italy and France's decisions to adopt EU regulations and, hence, to amend their domestic laws regarding auctions for the Multi-Band Spectrum. The final part of the article reviews the latest trends in the law relating to 5G project management authorization from a comparative perspective and offers legal diversity as an approach to mitigating the problems related to conflicting laws within the European Union.

I. Introduction

Fifth Generation Wireless Networks (5G) are the next generation of mobile Internet connection, offering faster speeds and more reliable connections for smartphones and other devices than ever before. The networks will help achieve significant improvement in Internet of Things technology, providing the infrastructure needed to carry large amounts of data, allowing for a smarter and more connected world.

The European Union has strongly supported the deployment and introduction of 5G networks, notably with regard to the assignment of portions of radio spectrum, investment incentives and favourable operating framework conditions. Some countries are more advanced than others. For instance, the Italian regulator, AGCOM, has already launched public consultation on assignment procedures and frequency usage rules and has also announced the 5G multi-band spectrum.¹ In France, to prepare for the arrival of 5G, the French regulator, *Autorité de Régulation des Communications Électroniques et des Postes* (ARCEP), has started work on defining the allocation procedures.

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¹ *Autorità per le Garanzie nelle Comunicazioni* (AGCOM) (in English: Authority for Communications Guarantees).

Since there are plenty of European marketplaces for 5G networks, each EU country prefers to address the various legal provisions and instruments for managing the network effectively in its own way. However, this raises the question as to the best way to ensure consistency among legal approaches across Europe with regard to the 5G and Internet of Things tendering processes, given that each jurisdiction wishes to pass the best possible law.

This article focuses on the legal systems regulating 5G networks and to what extent it is possible for these systems to respect the rights and freedoms of all the Member States. One method to solve the legal gap fairly is to amend EU regulations or adopt new laws on 5G and IoT tendering activities.² This paper explores and analyzes the legal perspectives on this problematic issue, focusing on Italian and French law and how they comply with EU regulations.

II. The 5G Vision

The Internet of Things (IoT) has been defined in many different ways. Generally, it describes the revolution led by internet-enabled devices that are capable of sensing or acting on their environment and are able to communicate with each other, other machines, or computers.³ Many personal IoT devices send data to a smartphone or tablet via Bluetooth and then use a fixed or cellular network to send the data to a cloud-based server. Such smart objects rely on vast quantities of data. They are able to communicate, supporting real-time control or data analysis that can reveal new insights, all of which have opened up new opportunities for mobile networks. This rapid growth in the field of IoT will bring opportunities for new products and services to businesses and consumers.⁴

This 5G network enables customers to connect more than one smart application at a time. This will enable greater efficiency across a variety of industries, leading to better management of agriculture, electricity grids, and supply chains. Naturally, 4G technology will not be replaced by 5G immediately, but in the transition phase, the joint use of 4G and 5G together will mean that devices will be equipped for dual use combining the two technologies until 5G becomes the norm.

In the IoT industry, Telecommunication laws constitute a key element in the business strategy for a digital single market in Europe. It relies on establishing a standard for machine-to-machine (M2M) communications over mobile cellular-based networks under the European Telecommunications Standards Institute (ETSI). The 5G system supports the development of connections between devices.

² H. Chris, 'What is 5G, and how fast will it be?' *How-To Geek*, available at tinyurl.com/y7z47apx (last visited 7 July 2020)

³ C. Perera et al, *The Emerging Internet of Things Marketplace From an Industrial Perspective: A Survey* (New York: Institute of Electrical and Electronics Engineers, 2015).

⁴ P. Magrassi and T. Berg, 'A World of Smart Objects' *Gartner research report R-17-2243* (12 August 2002); S. Vongsingthong and S. Smanchat, 'Internet of Things: A Review of Applications & Technologies' *Suranaree Journal of Science and Technology*, 359-374 (2014).

The European Union will work to encourage the next stage and the introduction of such networks through the assignment of radio spectrums, investment incentives, and favorable framework conditions. These processes rely on the results of research, work groups, and stakeholders. In order to reach the most effective worldwide harmonization, designation of new frequency bands above 6 GHz has been placed on the World Radio Conference 2019 (WRC-19) agenda, starting from a list of candidate bands identified at WRC-15.⁵ One core objective concerning 5G networks in the EU is to have at least one major city in every European country ready for this new technology by 2020, and also to have coverage for every city, motorway, and high-speed railway line by 2025. Nevertheless, some countries have made more progress than others. The Italian regulator, AGCOM, has already launched a public consultation on assignment procedures and frequency usage rules for numerous frequencies. In May 2018, AGCOM announced that 5G multi-band spectrum tender procedures (for 700 MHz, 3.6-3.8 GHz and 26 GHz) would be held in September 2018. Seven operators qualified to apply, and the auction process ended on 2 October 2018.⁶ Intense bidding pushed the prices far above expectations, reaching a total of six point fifty-five billion euros, of which four billion euros went towards the highly-coveted mid-frequencies. In France, the regulator, ARCEP, began work on defining allocation procedures in 2017.⁷ These procedures will be available in the course of 2019. ARCEP has engaged with industrial stakeholders to identify new uses for these frequencies and drive market players to create open-trial platforms using small-scale 5G networks. These stakeholders include companies operating in the fields of technology, health, energy, smart cities, and others.

Figure 1. 5G driving industrial and societal changes⁸



⁵ A. Ometov et al, 'Facilitating the Delegation of Use for Private Devices in the Era of the Internet of Wearable Things' *IEEE Internet of Things Journal*, 843-854 (2017).

⁶ G. Samuel, *The Internet of Things* (Cambridge, MA: MIT Press, 2015).

⁷ S. Segan, 'What is 5G?' *PC Magazine online* (14 December 2018).

⁸ '5G Empowering Vertical Industries. White Paper 2016', available at tinyurl.com/h8bcx9u (last visited 7 July 2020).

As technology improves and 5G connectivity becomes more widespread, business processes will undergo major changes. The manufacturing industry will evolve towards a distributed production organization, with connected goods, low energy processes and collaborative robots working across integrated manufacturing and logistics systems.⁹ The automotive and transportation sectors will introduce autonomous and cooperative vehicles within the next decade, with enhanced safety and security standards. Entertainment and digital media sectors will unlock new opportunities for integrating broadcast TV and digital media. E-health will also see new changes.¹⁰ Examples include concepts such as European ‘Personalized or Individualized Healthcare’ and the transition from hospital and specialist-centered care models towards distributed patient-centered models.¹¹ 5G technology will unlock new value propositions and business models to improve cost structures to ultimately benefit consumers.

1. The Technical Specifications of 5G

The ITU (International Telecommunication Union)¹² and 3GPP (Third Generation Partnership Project)¹³ are drivers of the new form of electronic devices. When a new standard is being defined by the ITU, the 3GPP works in parallel on the technical solutions. The 3GPP is responsible for development and ensuring agreement on definitions relating to digital data in a proper way.

However, 5G standards are still being debated today, with more changes coming in the future. The draft release of the first 5G standard by the 3GPP is still in the works.¹⁴ The first launch of the standard was validated in September 2018, and a second release by 3GPP will be underway in March 2020.

⁹ M. Hermann et al, ‘Design Principles for Industry 4.0 Scenarios: A Literature Review’, Working Paper 01/2015 available at tinyurl.com/rkzmuxy (last visited 7 July 2020).

¹⁰ See the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions – E-Health Action Plan 2012-2020 – Innovative healthcare for the 21st Century, available at tinyurl.com/yx6gl262 (last visited 7 July 2020).

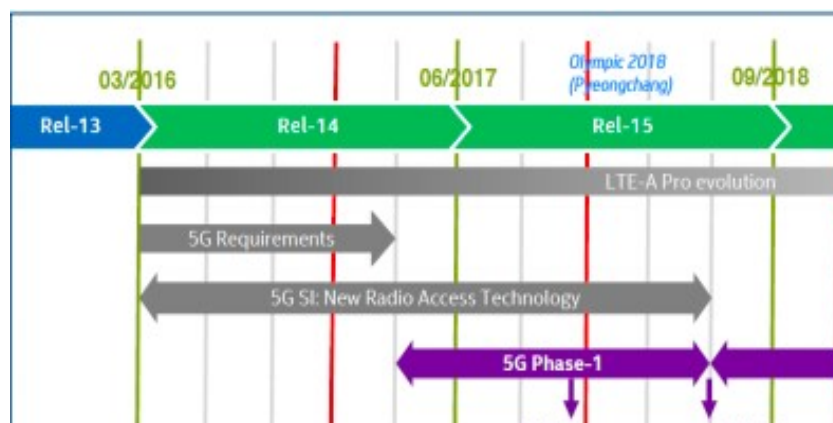
¹¹ ‘The Future of Health Care: Deep Data, Smart Sensors, Virtual Patients and the Internet-of-Humans’, available at tinyurl.com/v452zyp (last visited 7 July 2020).

¹² ITU is the United Nations agency devoted to information and communications technologies. It carries out research and studies through its Working Party 5D, the sub-group responsible for the overall radio system aspects of international mobile telecommunications (IMT).

¹³ The Third Generation Partnership Project (3GPP) is a standards organization that develops protocols for mobile telephony. Its best-known work is the development and maintenance of:

- GSM and related 2G and 2.5G standards, including GPRS and EDGE
- UMTS and related 3G standards, including HSPA
- LTE and related 4G standards, including LTE Advanced and LTE Advanced Pro
- Next generation and related 5G standards
- An evolved IP Multimedia Subsystem (IMS) developed in an access-independent manner.

¹⁴ Definition of the new architecture began in December 2016 and work on the New Radio (NR) interface is set to begin in March 2017.

Figure 2. 3GPP timeline for 5G¹⁵

2. 5G Development Milestone

A number of initiatives are currently in progress around the world to promote 5G development. 5G technology will produce significant socio-economic repercussions, and many countries express their wish to contribute as technological leaders.¹⁶

In Europe, the 5G Public Private Partnership (5G-PPP), dedicated to 5G research and development, was created as one of the European Commission's initiatives in 2013. The main objectives set by 5G-PPP are to create stronger ties between the economic players and academic bodies dedicated to forming more robust connections between the telecommunications sector along the entire project value chain, to encourage the United States of America, Asia and Europe to be independent players on technology market, to regain technological leadership, notably in disruptive technologies by promoting standards through international bodies, to allow innovative business infrastructures to emerge, and to facilitate large-scale experimentation.¹⁷

To achieve its objectives, 5G-PPP set up an ambitious agenda: systems optimizations from the end of 2017 to mid-2019, and a full-size trial stage from 2019 to 2020.¹⁸ The European Union's regulatory framework for electronic communications has recently been reviewed and the new European Electronic Communications Code (EECC) entered into force on 21 December 2018. Member States will have two years to transpose it into national law, which will give a strong push to 5G and high-speed broadband networks as a whole. All Member

¹⁵ See tinyurl.com/vnffbvo (last visited 7 July 2020).

¹⁶ J. Dolcourt, 'Testing Verizon's Early 5G Speeds was a Mess, but I'm still Excited about our Data Future' *CNET*, available at tinyurl.com/yy7a5vqy (last visited 7 July 2020).

¹⁷ See tinyurl.com/sjcwuo5 (last visited 7 July 2020).

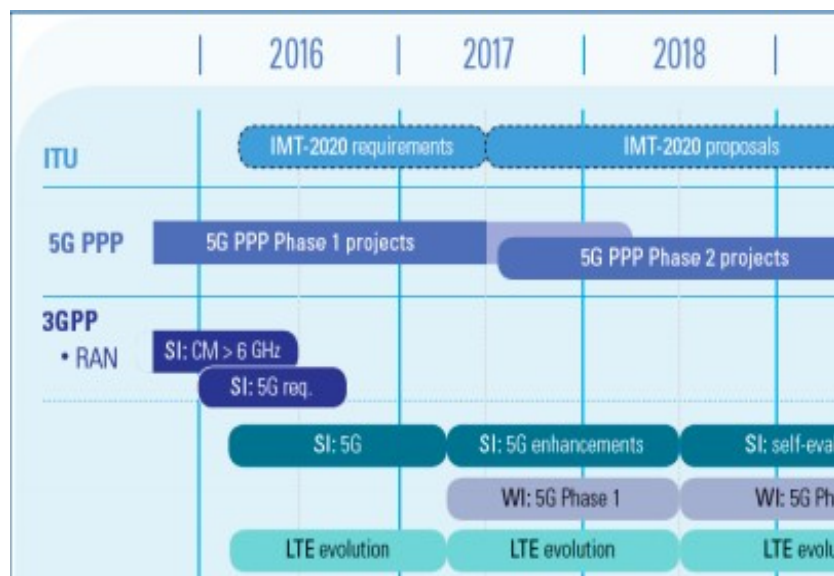
¹⁸ Ch. Gartenberg, 'The First Real 5G Specification has Officially Been Completed' *The Verge*, available at tinyurl.com/yar5cuns (last visited 7 July 2020).

States are required to adopt 5G roadmaps regarding the licensing of the 700 MHz band.¹⁹ With the adoption of the EECC, a connectivity objective has been added to the regulatory framework, which includes the availability of uninterrupted 5G coverage for urban areas and major terrestrial transport paths. All Member States must now clear the 5G ‘pioneer’ frequency bands (700 MHz, 3.5 GHz and 26 GHz) and reassign them by the end of 2020. However, it is unlikely that all countries will meet this target. This will depend on two factors. The first concerns the driving forces behind the 5G campaign. The level of marketing activity is fundamental, as are intense lobbying activities on governments by equipment suppliers and operators and 5G advertising by governments. A second factor is the size of the home market, which needs to be suitable to support the first versions of local 5G products and their improvement through national market testing before global promotional launches.

III. Latest Trends in the Law Relating to 5G Project Management Tendering

Acceleration towards 5G by 2020 will require European countries to develop leading-edge technologies, synchronize with globally accepted standards, acquire consensus over the most suitable frequency bands, and determine auction processes.

Figure 3. 5G PPP v 3GPP and ITU roadmaps²⁰



¹⁹ See the 5G Observatory Quarterly Report 3, 10 (available at tinyurl.com/wcsexma (last visited 7 July 2020)).

²⁰ See tinyurl.com/h8bcx9u (last visited 7 July 2020).

1. 5G European Action Plan

The European Commission has provided a number of targets for each EU member. The main goal of the 5G project is to reach the latest mobility standard in at least one main city for each country by 2025. As a recommendatory measure, in September 2016 the European Commission released the 5G Action Plan to bolster infrastructure and service investments in the Digital Single Market. This plan also clarified the roadmap for public and private 5G investments inside the European Union, including the regulatory framework for those preparing for auctions.

To achieve this plan, the Commission proposed that all EU Member States adopt roadmaps and priorities for coordinated 5G deployment, targeting early introduction of the network by 2018 and moving towards commercial large-scale introduction by the end of 2020 at the latest.²¹

Furthermore, the EU Member States will issue laws to manage the spectrum bands available for 5G ahead of the 2019 World Radio Communication Conference (WRC-19), to be complemented by additional bands as soon as possible and will work towards a recommended approach for the authorization of the specific 5G spectrum bands above 6GHz.²² The Member States will introduce legal measures to promote 5G in major urban areas and on the main transportation lines, also promoting Pan-European multi-stakeholder trials as catalysts to turn technological innovation into full legal solutions.²³ The Member States will facilitate the implementation of an industry-led venture fund to support 5G-based legal innovation, and involve front-role EU States to lead the promotion of legal regulation.

2. 5G in France

In a context of strong industrial, legal and political debate around 5G in France, the regulator, ARCEP, has been preparing for this new generation of technologies over the last few years. 5G requires the use of new frequencies, particularly on high-frequency bands, to increase the capacity of mobile networks. This is the setting for the plan that ARCEP has developed to prepare for the arrival of 5G, namely the creation of legislation to support the allocation of frequency bands for 5G.²⁴

To enable all players, such as operators, industrialists, start-ups, and lawyers, to prepare for the arrival of 5G, ARCEP launched a 5G pilot project in early 2018,

²¹ See 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 5G for Europe an action plan', available at tinyurl.com/v5xya43 (last visited 7 July 2020).

²² 'Factcheck: Large Increase of Capacity Going from LTE to 5G Low and Mid-Band' *Wirelessone.news*, available at tinyurl.com/setbumz (last visited 7 July 2020).

²³ Available at tinyurl.com/ya9hooep (last visited 7 July 2020).

²⁴ Available at tinyurl.com/y7vof6ev (last visited 7 July 2020).

which allowed ARCEP to issue authorizations for the use of new 5G frequency bands, ie 3.5 GHz (3.4-3.8 GHz) and 26 GHz (24.25-27.5 GHz), which are the frequencies for 5G technology. ARCEP is working to free these bands by migrating current users to other bands.²⁵

After 2026, a guard band requirement will be identified to avoid interference from the Ministry of Armed Forces radars below 3.4 GHz. It will also ensure power limitation, as recommended by the European Conference of Postal and Telecommunications Administrations (CEPT) in this part of the spectrum. This guard band is currently estimated at between 10 to 20 MHz, but it could potentially be reduced with improved radio equipment performance. 5G will use new frequencies much higher than those being used today in civil telecommunications, ie those within the ‘millimetre’ bands above 24 GHz.²⁶ These new frequency bands will allow very high networking speeds in order to meet the localized needs of mobile networks in very dense areas, and to develop new 5G services dedicated to industry. Today, only the 26.5-27.5 GHz band is free and can be used by 2020. Subsequently, the entire 5G spectrum should gradually be made available, subject to conditions of coexistence and the improvement of legal rules to control the spectrum. In view of radio astronomy and earth exploration services, work is in progress to evaluate the shared use of the 26 GHz spectrum between 5G systems and satellite earth stations.

In preparing for the EU’s 5G technology, ARCEP intends to define the technical conditions for the of use of bands to avoid interference between neighbouring countries’ 5G networks or with existing users of 5G bands or adjacent bands.²⁷ These conditions will be: firstly, to specify the allocation schedule so as to allow the opening up of 5G services by 2020; secondly, to examine the conditions under which operators can activate a network. In particular, ARCEP has already adopted regulations to enable an operator who has contributed to investment in a network to use supernumerary fibre for the collection of its mobile base stations.²⁸ However, the situation of multi-band infringement is unavoidable.

Furthermore, the 5G provider has to address the legal challenges regarding 5G mobilization through a group of technical experts and to evaluate the feasibility of a legal framework for network sharing, such as the use of microcells, active antennas, macro-cells and microcellular articulation. In addition, it is essential to assess the feasibility and constraints associated with the provision of specialized mobile services on public networks, also promoting 5G enhancement, small cells,

²⁵ ‘Tableau de bord des expérimentations 5G en France’, available at tinyurl.com/y8qr2lwd (last visited 7 July 2020).

²⁶ Y.C. Foo, ‘EU countries, lawmakers strike deal to open up spectrum for 5G’ *Reuters*, available at tinyurl.com/y8m2jcmb (last visited 7 July 2020).

²⁷ ‘Updated: Spectrum for Terrestrial 5G Networks: Licensing Developments’ *GSA*, available at tinyurl.com/y9r2cy3a (last visited 7 July 2020).

²⁸ *Autorité de Régulation des Communications Électroniques et des Postes* 17 May 2018 no 0569-RDPI, available at tinyurl.com/y8getvuw (last visited 7 July 2020).

and generalized best practices, and to set up a working group bringing together best practices for public infrastructure access rules and establishing legal guidance on the best measures to deploy where necessary.

The envisaged use to which 5G will be put requires the mobilization of actors from different perspectives in order to test and create new partnerships within economic and legal frameworks. As a result, pilot 5G started mobilizing actors and identifying new legal issues early last year.²⁹ The twenty-two authorized parties conducted experiments in the 3.4-3.8 GHz band.³⁰ This work will bring about improvements to the format and provisions of future laws relating to frequency allocation.

As mentioned earlier, 4G will not be abruptly replaced by 5G. In France, devices will undoubtedly be multi-modal, initially connecting to the 4G network before transitioning to the 5G network when it becomes available. Upcoming track management is permitted thanks to the introduction of this new technology. The new regulations undeniably support 5G technology. There has been pre-stage testing arranged in order to support the efforts to combine frequency bands that are governed by exclusive licenses. The example is the combination of bands allocated exclusively to a mobile operator, while unlicensed frequency bands are to be regulated by a general authorization.³¹

In France, the regulator has already awarded licenses to use the 700 MHz band for mobile services³² and intends to award spectrum licenses for the 3.4-3.8 GHz band during 2018. It has also held consultations on the future award of the 26 GHz band, but no explicit 5G roadmap has yet been published. The French government has not announced specific government funding for 5G technological development or trials but has invested in improving fibre coverage, which it hopes will stimulate 5G development and infrastructure development in the longer term. The regulator, ARCEP, is actively encouraging 5G trials by offering test licenses for spectrums in the 3.4-3.8 GHz and 26 GHz bands.

3. A Difficult Balance

‘Auctions need to be designed to balance fiscal requirements with the need for investment to enable economic development (...) it is critical that European governments avoid artificial auction constructs which fail to strike a healthy balance for the industry’.³³

²⁹ See tinyurl.com/y7vof6ev (last visited 7 July 2020).

³⁰ ‘GSA launches first global database of commercial 5G devices’, available at tinyurl.com/y8fhdaje (last visited 7 July 2020).

³¹ ARCEP, *la 5G*, mai 2017.

³² ARCEP has actively encouraged industrial players to conduct 5G (and LTE) testing. After awarding licenses for the use of the 700MHz band in 2015, the regulator invited 176 stakeholders to request spectrums for experimentation within the 2.6GHz and 3.4-3.6GHz bands.

³³ W. Rush, ‘IT Needs to Start Thinking About 5G and Edge Cloud Computing’ *PcMag.com*,

ARCEP plans to use the 3.5 GHz band for the next spectrum auction. However, there might not be enough airwaves for all bidders, and this scarcity could eventually drive up auction prices, which results in high prices that may hurt the industry and consumers.

Italy's antitrust authority has also pointed out legal obstacles for 5G deployment in Italy.³⁴ The Italian government has received criticism for the way it set up the auction. The government offered two larger blocks of spectrum in the 3.7 GHz band along with two smaller ones, which pitted bidders in a fight for the bigger blocks. Although European regulators have adopted a consistent approach in attempting to provide legal certainty and incentivize investments for the deployment of 5G networks, there are still obstacles in the way of its mass roll out. The Italian Competition Authority (AGCM) recently issued a report highlighting the obstacles to the installation of mobile telecommunications and broadband wireless access facilities due to municipal, regional and national regulations, which could cause a significant slowdown in the transition to 5G technologies in Italy.

Notably, the AGCM identifies a list of critical issues, such as national electromagnetic emissions and power limits, municipal restrictions on the installation of telecommunications facilities, and the lack of legislative uniformity and a standard authorization process.³⁵ After the record seven point six billion dollars sale in the 5G auction, there is no doubt that telecommunications companies aim to take advantage of this new cutting-edge technology to fight fierce competition and slowing subscriber growth. In order to fully exploit the potential of 5G, a comprehensive compliance strategy needs to be designed carefully.

Having reviewed the differences between Italian law and French law on the subject, this section explores EU regulations and acknowledges the need for a coordinated approach. The European commission, addressing 5G- PPP seeks to ensure that each EU country abides by the regulations and enacts domestic laws and policy to be applied in their States. The results of this work will assist clarification of 5G procedure, and the standardization of work, which is currently ongoing.

Against this backdrop, the overhaul of telecom rules was announced in the digital single market strategy. The purpose of the telecom framework review is to consolidate the single market in telecommunications, supported by infrastructure investments, and to reform the regulatory framework for electronic communications starting from 2009.³⁶ As stipulated in the overarching communication 'Towards

available at tinyurl.com/ycpqedrb (last visited 7 July 2020).

³⁴ L. Gupta et al, 'Mobile Edge Computing - An Important Ingredient of 5G Networks' *IEEE Softwarization*, available at tinyurl.com/yylfyxns (last visited 7 July 2020).

³⁵ R. Maunder, 'A Vision for 5G Channel Coding' (September 2016), available at tinyurl.com/y9fqzk62 (last visited 7 July 2020).

³⁶ *ibid.*

a European Gigabit Society', the European Commission has proposed three new legislative proposals and one non-legislative measure.³⁷ The three legislative proposals include: first, a new European electronic communications code to increase investments in infrastructure; second, a legislative proposal (Wifi4EU), to increase free Wi-Fi access points for citizens; and third, a legislative proposal to reinforce the role of national regulators and the BEREC agency.³⁸

Each of these legislative proposals has been addressed in a separate department. In addition, the European Commission also presented a non-legislative measure in its Communication '5G for Europe': an action plan that foresees a common EU calendar for a coordinated 5G commercial launch next year, as well as joint work with Member States and industry stakeholders in order to identify and allocate spectrum bands for 5G. The EU also organized pan-European 5G trials last year to promote common global 5G standards and encourage the adoption of national 5G deployment roadmaps across all EU Member States. Furthermore, the European Commission has set three related strategic connectivity objectives for 2025.³⁹

The European Parliament, in its resolution 'Towards a Digital Single Market Act', asked the Commission to propose rules fit for the digital age, which would boost investments, competitions, and innovations for over-the-top services and telecom operators, in order to benefit consumers. Besides, the European Parliament adopted the resolution 'Internet connectivity for growth, competitiveness, and cohesion: European gigabit society and 5G'.⁴⁰ This resolution welcomes the Commission's strategy and supports its targets, while calling for an explicit 5G deployment timetable, including a technology-neutral approach to tackle the digital divide, and an ambitious 5G financing strategy, including potential and existing EU funds. It also calls for an investment-friendly regulatory environment for fair competition, a coherent European spectrum strategy with improved coordination in the allocation of spectrums, and the acceleration of the EU's 5G standardization efforts.⁴¹ It also highlights the positive societal impacts that 5G would bring to Europe for improved learning, health, culture, cohesion, and new job opportunities. To this end, it also calls for the development and improvement of digital skills. Finally, the resolution asks the Commission to provide the

³⁷ EP Legislative Observatory, Procedure file on the European Commission, 2016/2305(INI).

³⁸ Body of European Regulators for Electronic Communications.

³⁹ 'A Common EU Approach to the Security of 5G Networks' - Following the support from Heads of State or Government expressed at the European Council on 22 March for a concerted approach to the security of 5G networks, the European Commission recommended a set of concrete actions to assess cybersecurity risks of 5G networks and to strengthen preventive measures.

⁴⁰ European Parliament resolution of 1 June 2017 on internet connectivity for growth, competitiveness and cohesion: European gigabit society and 5G (2018/C 307/23).

⁴¹ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 14 September 2016 on connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society (COM (2016) 587- COM (2016) 58).

Parliament with an annual review of the 5G action plan, indicating progress made and any recommendations. On 28 June 2016, the European Council adopted an agenda advocating deployment of very high-capacity fixed and wireless broadband connectivity across Europe to boost future competitiveness. On 2 December 2016, at the Transport, Telecommunications, and Energy Council, ministers expressed their support for the connectivity objectives in the telecom framework overhaul proposals and agreed on the need to work together to achieve them, including on 5G.⁴² On 4-5 December 2017, the Transport, Telecommunications, and Energy Council (under the Estonian Presidency) signed a 5G roadmap setting out precise deadlines for the harmonization of the spectrum necessary for the rollout of 5G. On 1 March 2018, an agreement on a spectrum for 5G was reached between the European Parliament and the Council negotiation teams as part of the Electronic Communications Code triologue discussions.⁴³ In this agreement, MEPs called on the Commission and the Member States to provide guidelines on how to tackle cyber threats and vulnerabilities when procuring 5G equipment and to establish a strategy to reduce Europe's dependence on foreign cybersecurity technology,⁴⁴ also requesting the Commission to mandate ENISA (the EU Cybersecurity Agency) and to work on a certification scheme ensuring that the rollout of 5G in the EU meets the highest security standards.⁴⁵

IV. Problematic Issues

As this technology is developing globally, it is necessary to ensure the compatibility of 5G and the associated legislation among the different regions. The EU, alone, may be able to draw worldwide agreement regarding spectrum bands and the legal framework for 5G legal for all through some form of international cooperation. The launch of 5G services will also require substantial investment and close collaboration between players in the world of telecom and the key industries. Network operators will not invest in new infrastructure if they do not see clear prospects for solid demand, combined with clear regulatory conditions that make the investment worthwhile.⁴⁶ Equally, industrial sectors interested in 5G for their digitization process may want to wait until the 5G infrastructure is tested and legal regulations have been issued.

⁴² European Council meeting (28 June 2016) – Conclusions (EUCO 26/16), available at tinyurl.com/y7pvy3wt (last visited 7 July 2020).

⁴³ European Parliament, EPRS, at a glance, May 2017.

⁴⁴ Members of the European Parliament: The European Parliament is made up of seven hundred fifty-one members elected in the twenty-eight Member States of the enlarged European Union. Since 1979, MEPs have been elected by direct universal suffrage for a five-year period.

⁴⁵ 'Breaking News, World News & Multimedia' *Les Echos*, available at tinyurl.com/y6eq7p5t (last visited 7 July 2020).

⁴⁶ N.S. Gawai, 'Key Concept of 5G: Future Mobile Technology' 2 *International Journal of Engineering Sciences & Research Technology*, 12 (2013).

The lack of coordination among Member States during the roll-out of 5G networks would create a significant risk that spectrum availability and the implementation of legal standards will become fragmented. As a result, the creation of a critical mass for 5G-based innovation in the Digital Single Market would be delayed. Forty-eight delays have accumulated to hold back the introduction of 5G. Although the legal gap is narrowing down, the various Member States still show significant difference, so the Commission is proposing an action plan as a means of fostering adequate coordination. The plan aims for the vast majority of investors to participate in the 5G ecosystem, while levelling out competition and profits across the EU.⁴⁷

A set of pioneer spectrum bands need to be identified to reflect 5G spectrum requirements in the longer term. WRC-19 focuses on band allocation and increasing the market scale toward the international forum. The ability to share spectrum under license, for instance, should be widely encouraged as a condition for entering the market, in parallel with meeting the legislative goals set out in the EEC Code. This challenge will predict the variety of 5G usage most likely to satisfy all the key legal requirements.

V. Conclusion and Recommendations

1. Conclusion

The success of compulsory 5G investment relies greatly on the cooperation of relevant parties such as network developers, investors, policy makers, and regulators, etc as it will encourage national support.⁴⁸ All the players involved, not only the provider but also the users of this technology, are called upon to support and abide by the common legal framework for the advancement of this project. In the hope of developing the legal framework for 5G in the EU Region, the Commission has requested the public and private sectors to ensure readiness and compatibility between 5G infrastructures and legal regulations. To support investment in 5G network as such, it is also necessary to reduce installation costs. Yet to do so, this latest technology must be upgraded to be more consistent, in terms of administrative conditions and time line, with the provision of the EEC Code and other legal tools.⁴⁹

The European Union is at the starting point of an important journey to develop the backbone of a digital infrastructure that will foster future competitiveness. It has already taken bold steps to develop world-class 5G technological know-how. It is now time to move up a notch and reap the benefits

⁴⁷ See tinyurl.com/y9c908v3 (last visited 7 July 2020).

⁴⁸ 'Press release: EU Negotiators Agree on Strengthening Europe's Cybersecurity', 10 December 2018, available at tinyurl.com/y87mb3rz (last visited 7 July 2020).

⁴⁹ European Parliament, EPRS Briefing, January 2016 at tinyurl.com/y87mb3rz (last visited 7 July 2020).

of public and private investment for the economy and society. The 5G installation plan adopts an ambitious approach and requires the united and sustained commitment of all the parties involved: the EU institutions, the Member States, industry, and the law. It also means achieving the ‘connectivity’ targets set out in the EU ‘Connectivity Toward Social Cohesion’ communication. The proposed legal measures in this region must fit the plan.

2. Recommendations

Recommendations are a combination of legislative and policy instruments meant to protect the EU economies, societies, and democratic systems. With worldwide 5G revenues estimated at two hundred twenty-five billion euros for 2025, 5G is a key asset for Europe to compete in the global market, and its cybersecurity is crucial to ensure the strategic autonomy of the Union.⁵⁰ Each Member State should complete a national risk assessment for 5G network infrastructures. On this basis, Member States should update existing legal measures, which must include reinforced legal obligations on suppliers and operators to ensure the security of the networks. The national risk assessments and measures should consider various risk factors, such as technical risks and those linked to the behaviour of suppliers or operators, including those from third countries. National risk assessments will be a central element in building a coordinated EU risk assessment. EU Member States have the right to exclude companies from their markets for national security reasons if they do not comply with the country’s standards and legal framework.⁵¹

These guidelines are merely regulations without legal enforcement, including unified telecommunication rules, the EEC Rule, and the law on 5G activities and their auction. The recommendation will help Member States to implement these new instruments in a coherent manner when it comes to 5G security.⁵² Moreover, the updated guidance which was mere soft law (without legal binding force on Member States), intending to encourage not only 5G legislation but also the reinforcement of cooperation to protect the security of 5G networks, such as the prevention of cyber-attacks. The legislation would definitely, at least, assist EU Region to achieve good quality 5G network services at a reasonable price. Furthermore, the network operators and providers should not encounter high prices at general auctions.

The most important aspect that the regulator should keep in mind is to assign a sufficient amount of spectrum and to publish future legal roadmaps to support high quality mobile service governance, as well as to allocate sufficient

⁵⁰ P. Teffer, ‘Suddenly, digital single market doesn’t ‘need’ EU agency’ *EU observer*, 5 December 2017.

⁵¹ Commission Recommendation of 26 March 2019 on Cybersecurity of 5G Networks, C (2019) 2335 final, available at tinyurl.com/ybaj7lee (last visited 7 July 2020).

⁵² ‘Press release’ n 49 above, 50.

frequencies and support high-quality network services. Frequency breaks for the same industry or new operators may allow operators to access fewer waves, and even lead to the risk of higher-frequency bands. Also, auction design should not create unnecessary risks and uncertainties for bidders. Lastly, the selection of frequency bands for inappropriate auctions or a frequency provider group that is not flexible and may cause inefficient frequency distribution should be eliminated. When the European Union Region is fully able to manage the legal measures for 5G technology in terms of spectrum auction and regulations to support the connectivity system itself, the EU 5G cyber network will definitely be able to contribute to social and economic growth in the near future.