

**Public consultation on
the review of the BEREC Medium-Term Strategy
for 2018-2010**

**Position paper of
the Coalition of Fixed Wireless Access**

THE COALITION OF FIXED WIRELESS ACCESS

Fixed Wireless Access (FWA) technology allows to supply **connectivity services through radio spectrum, without requiring deployment of copper and optical fiber networks for the so called “last mile” segment.** This feature ensures to FWA highly reduced period and cost of deployment compared to the above mentioned wired networks. Thanks to this, the FWA networks had an **important role¹ in reducing first step of the digital divide** (2 Mbps), especially in sub-urban and rural areas.

Our country has more than 8.000 municipalities, a forth² with less than 1.000 residents and a half with less than 2.000³. A so fragmented scenario is an output of our typical orography (we have Apls, Apennines, islands, lakes and valleys), which is frequently not suitable to deploy and maintain a traditional communication network, both from an economic and engineering point of view.

Nowadays, the Italian FWA operators have more than one million of business and residential customers, with a sharply rising trend of customer base which, since 2014, is constantly highlighted in the quarterly report⁴ of the Italian NRA for communications (AGCom).

Current performances of FWA technologies allow operators to supply **connectivity services up to 1 Gbps to business customers, with point-to-point equipment (P-P), and up to 30 Mbps to household,** with point-to- multipoint equipment (P-MP). Moreover, the R&D current state of play foresees an upgrade of FWA offer to households, with services up to 50 Mbps by the end of 2017 and up to 100 Mbps up the end of 2018.

In our country, Fixed Wireless Access technology represents the only one example of that infrastructural based competition at base of the whole European regulatory framework, pointed out as a key factor to achieve development of ultra-broadband services and Digital Agenda for Europe targets⁵.

¹ Cf. page 96 of “Italian Broadband Strategy” by the the Italian Council of Ministers Presidency (2014) and “Achieving the Objectives of the Digital Agenda for Europe (DAE) in Italy: Prospects and Challenges” by F. Caio, J. Scott Marcus and G. Pogorel (2014).

² 1.891, equal to a share of 23,6%.

³ 3.477, equal to a share of 43,5%.

⁴ Cf. “Communication market monitoring system 1/2016” (pages 3, 4 e 5) issued by AGCom (<http://www.agcom.it/documents/10179/4304099/Allegato+6-4-2016/e17e2d92-160d-4b77-9202-9469cc990d14?version=1.1>).

⁵ Access to 30 Mbps connectivity to every European and half of the households with a subscription at 100 Mbps by 2020.

In April 2016, the Italian companies of the FWA decided to group themselves into a Coalition able to represent the whole production chain, from vendors and tower companies (TowerCo) to wireless internet service providers (WISP), system integrators and satellite operators. Therefore, the **association of more than 60 participants** is now ready to play an active role (complementary to optical fiber networks in big urban areas) within the Italian government strategy for ultra-broadband.

In effect, the European Commission stated in his 2013 Guidelines⁶ for deployment of broadband networks, that “at the current stage of market and technological development, NGA networks are: (i) fibre-based access networks (FTTx); (ii) advanced upgraded cable networks; and (iii) certain advanced wireless access networks capable of delivering reliable high speeds per subscriber”. Moreover, such orientation is also confirmed in the “Digital Agenda Scoreboard” of the European Commission, where NGA networks, beyond traditional optical fiber ones, comprises “technologies other than FTTH, FTTB, VDSL and Cable NGA, which are capable of at least 30 Mbps download”⁷.

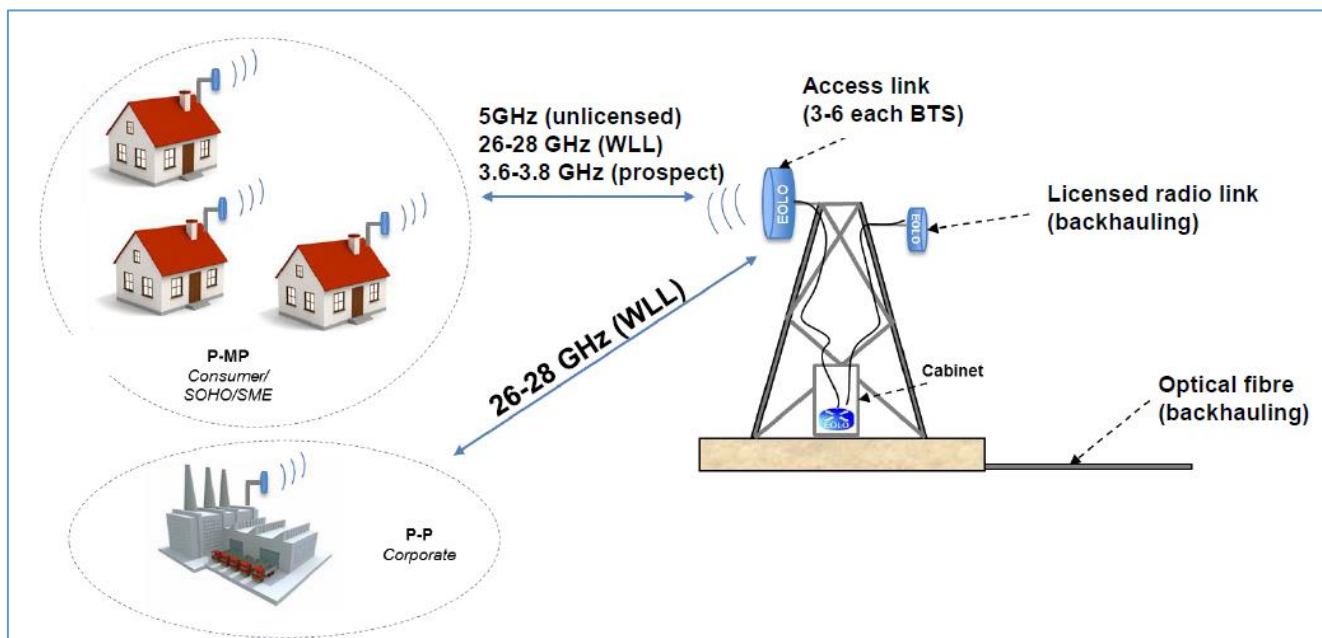


Figure 1: illustrates the functioning of a typical Fixed Wireless Access transmission site

⁶ EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks (2013/C 25/01), par. 58.

⁷ “Digital Agenda targets Progress report 2015”, ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=14330.

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The Coalition of Fixed Wireless Access (CFWA) is thankful to BEREC for the launch of the public consultation on its Medium-Term Strategy (hereinafter MTS) for the period 2018-2020 and for inviting stakeholders to take an active role in the digital ecosystem regulatory process.

CFWA welcomes BEREC's proposed MTS and the opportunity to express its position through the following comments.

SECTION 1 – MARKET AND TECHNOLOGICAL DEVELOPMENTS

SECTION 1-A. END-USERS EXPERIENCE

Addressing the following questions:

- 1) Of the issues listed above, which do you consider to be the most important in shaping the end-user experience? Please explain your answer in detail.*
- 2) How can the interests of digitally disengaged citizens be best protected?*

Networks performance and “digital exclusion”

CFWA supports BEREC's engagement on promoting the highest quality electronic communications services to consumers in EU, that more and more demand for high-speed and high quality internet access.

We do share that end-user experience constitutes a key parameter for programming the new digital strategy according to Digital Agenda for Europe (DAE) 2020, thereby contributing to the further development of the internal market for the ultimate benefit of Europe and Europe's citizens as well.

Although we believe that all of the issues listed in BEREC's consultation paper are equally important in order to sustain the growth of an inclusive digital society guaranteeing a high level of consumer protection, we guess that, from the end-users perspective, **the most important parameters in shaping the experience of the latter are, *inter alia*, “performance of the networks” and “factors influencing the take-up of technologies and digital services”.**

We believe that the current and utmost problem within telecommunications markets in the EU is the so called “digital divide” or “digital exclusion” of those end-users placed in **sub-urban, rural and remote areas** that nowadays remain not covered with high-speed networks.

In the Italian Strategy for Ultrabroadband⁸, these areas are also called as cluster “C” (in which 25% of the Italian population is placed and where infrastructures able to provide at least 100 Mbps can be realized just only with a public intervention) and cluster “D” (areas in which 15% of the Italian population is placed and where infrastructures able to provide at least 30 Mbps can be realized just only with a public intervention).

More precisely, for **cluster “C”** we refer at those situations in which FTTx solutions will not be available before three or four years and where **fixed wireless access networks constitute a temporary solution**. Instead, **cluster “D”** comprises all those areas in which the orography and the economic and social conditions will not ever allow the implementation of the an FTTx infrastructure, even considering public interventions for ultrabroadband approved by the European Commission⁹. In these areas, the **fixed wireless access (FWA) constitutes the only definitive and long-term solution**.

In order to ensure that all citizens could equally benefit of digital innovations, we think that BEREC’s MTS should also consider the ultimate technological developments, the trends in the field of the connectivity and the related market as well as and the increasing businesses volume in FWA sector.

Even though we are aware of the difficulties in developing a proper regulatory framework among NRAs, we deem fundamental to explain the economic and social benefits of the FWA technology in terms of reducing the digital exclusion and achieving the targets of the Digital Agenda for Europe 2020¹⁰ at the same time.

Indeed, our aim is to combat the digital divide providing ultra-broadband (UBB) access especially in sub-urban, rural and remote areas, as **FWA technologies are currently able to supply a real connectivity of 30 Mbps to the households (that will become of 50 Mbps by 2017 and 100 Mbps at the beginning of 2018) and of 1 Gbps to the business users**.

Specifically, our technologies allow to supply connectivity services through radio spectrum without requiring deployment of ducts and cables for the so called “last mile” segment. In this vein,

⁸ Italian Strategy for Ultrabroadband, Presidency of the Council of Ministers (March, 2015).

⁹ Communication C (2016) 3931 final on State aid SA.41647 (2016/N).

¹⁰ The Digital Agenda for Europe set a common target of internet connection availability by 2020. In particular, Member States need to ensure: coverage at 30 Mbps or more for 100% of the European citizens; subscriptions above 100 Mbps for 50% of the European households.

we manage to assure highly reduced time and costs of deployment compared to wired networks, bringing access to ultra-broadband internet services to disengaged citizens, regardless of where they live. As a result, **FWA can be an efficient and crucial solution to ensure the availability of UBB services in the most challenging areas**, where are not foreseen investments in the next years, being complementary (and not a substitute) to the ultra-broadband fixed network and thereby ensuring the ubiquity of access.

We would also like to stress the importance of FWA technology in the achievement of Digital Agenda for Europe 2020 objectives, especially in rural, remote and low population density areas, where number of households with a broadband connection is considerably lower than the European average and where is not likely that an optical fiber network will be deployed in the next years because of the very difficult geographical conditions and the high costs. As a result, FWA can actually constitute a valuable solution for the development of the ultra-broadband.

To these purposes, the role of the FWA has also been underlined both by the Italian Broadband Strategy, that considered fundamental its role in the achievement of the first, second and third target of the DAE 2020, and by the Italian NRA for Communications (AGCom) that, starting from 2014, has constantly highlighted the importance of the FWA in its Quarterly Market Reports and lately affirming that *«the growth of small/medium operators (+1.2% YoY) is firstly due the trend of FWA's customer base»*¹¹.

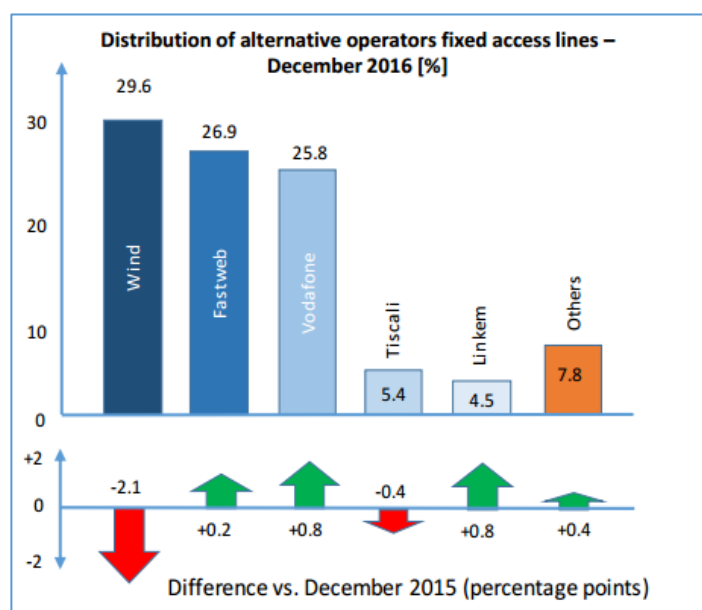


Figure 1 Communication Market Monitoring System n.1/2017 - AGCom

¹¹ AGCom, Communication Market Monitoring System n. 1/2017, www.agcom.it

Given the above reasons, we do **demand to BEREC to consider the positive contribution of the FWA to the EU targets, especially in the so called “challenge areas”**, as well as to develop a proper regulatory framework working with stakeholders, that should not take into account just only the mobile services but also the FWA services, ensuring a proper frequency allocation (below section 1-C).

We do believe that the access to broadband and ultra-broadband internet service by 2020 constitutes a basic essential service that all citizens and industries are entitled to receive and we wish to do our part to bring such services to rural and remote communities.

End-users experience and information

Addressing the following question:

3) What can be done by BEREC to improve the end-user experience by providing more and easier-to-use information?

In view of the best protection of the digital experience of people and businesses, CFWA believes that it is quite important to ensure that consumers have a wide range of information on the availability, speed, quality and the pricing policies of the services provided by UBB operators. UBB operators are indeed aware that the success of their business is also closely linked to the guarantees ensured to the clients in terms of switch supplier as well as of privacy, network security and data protection.

Nevertheless, we wish to express our **concern about the risk arising from a general overload (very impacting small/medium operators) of information requirements and the related dissemination of the relevant information between competitors**. With specific reference to FWA operators we have in fact reason to believe that it may distort competition and affect telecommunication market, since it could lead operators to take (illegitimate) competitive advantage by simply having access to shared and public information that – with reference to rural, sub-urban and remote areas – could be so specific to be focused on a single competitor. This should happen in case of specific knowledge of the mapping of the coverage services of the rural areas or of the operators' customer base, where the share market of a single operator could be specifically identified by competitors.

In order to make the digital market more transparent, we therefore believe that BEREC should promote only not binding information standards for all operators.

Section 1-B – Competitive dynamics in the digital ecosystem

Addressing the following question:

- 1) What aspects of the issues listed above do you believe to be most important? Please explain your answer in detail*

Spectrum resources are scarce by definition and every regulator at the EU or Member States level have to promote the better allocation and use of frequencies to ensure the growth of the digital ecosystem. **In recent years, mobile operators got relevant portion of the spectrum** through public tenders, creating around their services an important ecosystem of technology producers and system integrator. This evolution of the market concentrates de facto spectral resources in the availability of just few operators, a phenomenon that regulators use to call spectrum “over-hoarding”.

While traditional fixed telecommunication market is decreasing year on year, the **FWA sector is still growing thanks to continuous investment on ultrabroadband coverage of the territory that match with not served demand**, giving more and more citizens the opportunity to connect with stable and affordable services. Indeed, FWA operators are contributing concretely to the development of a new “last mile” infrastructure that reach millions of households and enterprises. However, these circumstances led to a strong need of spectrum sources by the FWA operators, in order to manage a rising customer base and provide ultrabroadband services with a high quality of service.

CFWA believes that the most important aspects influencing the competitive dynamics in the digital ecosystem are the tendency towards oligopolistic markets and the appearance of new entrants. Indeed, entering telecommunication business (fixed or mobile) is a prospect limited only to very few companies. Areas with marginal profitability, not served by traditional operators, are the only spaces where new comers can try to enter TLC business.

FWA operators need therefore to be included within the current and new spectrum policies that, recognizing the contribution of these companies to the reduction of “digital divide”, may reserve frequencies for ultra-broadband services.

Moreover, CFWA believes that NRAs need to start analysing spectrum optimization looking to rural, sub-urban and remote areas, where there are very often huge portion of “free spectrum” that cannot be used due to regulation. The following table summarizes the CFWA proposals on the useful spectrum for FWA networks.

Band (MHz)	Range (MHz)	Note
2.300 - 2.400	100	<ul style="list-style-type: none"> Licensed Shared Access band
3.400 – 3.600	200	<ul style="list-style-type: none"> Allocated to few operators Scarcely used in remote areas
3.600 – 3.700	100	<ul style="list-style-type: none"> Scarcely used in the whole country Should be already allocated since 2008¹²
3.700 – 3.800	100	<ul style="list-style-type: none"> Empty band Should be already allocated since 2008
3.800 – 4.200	200	<ul style="list-style-type: none"> Empty band since no more coupled with 3.6-3.8 GHz
5.350 – 5.470	120	<ul style="list-style-type: none"> Scarcely used by Ministry of Defense Close to 5.4 GHz already used by FWA operators
5.725 – 5.875	150	<ul style="list-style-type: none"> Scarcely used by Ministry of Defense Close to 5.4 GHz already used by FWA operators

CFWA believes that **spectrum sharing would not be a valuable option** for associated companies, since it will be strictly dependent from coverage and conditions defined by other operators.

As highlighted in the recent report of the European Parliament “European Leadership in 5G”, “5G is still being defined. Many analysts still see it as an “undefined” standard and concept despite at least three years

¹² As asked by Commission in Del. 2008/411/CE and 2014/276/UE.

of intense discussion. However, **generally the term implies the next major phase of cellular radio communications technology for mobile, nomadic or stationary users**¹³. More in depth, ITU's report on "Minimum requirements related to technical performance for IMT-2020 radio interface" and Communication from the Commission "5G for Europe: An Action Plan"¹⁴ clarify that "*concept of very high performance 5G networks results from a combination of different factors*"¹⁵ like as

- (i) a "downlink user experienced data rate" equal to 100 Mbit/s and an "uplink user experienced data rate" equal to 50 Mbit/s¹⁶;
- (ii) an "average spectral efficiency" equal to 7,8bps/Hertz in downlink and 5,48bps/Hertz in uplink and a "peak spectral efficiency" equal to 30bps/Hertz in downlink and 15bps/Hertz in uplink⁹;
- (iii) a "user plane latency" equal to 5ms¹⁷;

Since **FWA technology will soon satisfy these requirements**, as stated before, it must be considered by Government Authorities within 5G development plan. European and National institutions have to promote policy to reserve dedicated spectrum resources at fair conditions to operators providing FWA.

Section 1-C – Evolution of Networks

Addressing the following question:

- 1) **What aspects of the issues listed above do you believe to be most important? Please explain your answer in detail**

The new challenge of the IoT services

¹³ "European Leadership in 5G" by Directorate General for internal policies - policy department a: economic and scientific policy (December, 2016).

¹⁴ COM(2016) 588 final.

¹⁵ "Commission staff working document on 5G global developments accompanying the 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", European Commission (September, 2016).

¹⁶ "Draft new report ITU-R - Minimum requirements related to technical performance for IMT-2020 radio interface(s)" by Working Party 5D of ITU-R (February 2017).

¹⁷ "Commission staff working document on 5G global developments accompanying the 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", European Commission (September, 2016).

Fixed Wireless Access Coalition believes that development of IoT services will contribute to the increasing value of information created by the number of interconnections among things and the transformation of the processed information into knowledge for the benefit of mankind and society.

Internet of Things is defined as a dynamic network infrastructure with self-configuring capabilities, based on standard and interoperable communication protocols, where physical and virtual “things” use intelligent interfaces and are seamlessly integrated into the information network. The IoT will allow people and things to be connected anytime, anywhere, with anything and anyone. From this point of view, connectivity issues are going to have a significant impact on the overall IoT experience. The growing demand for internet connectivity is generating increasing pressure on broadband networks to provide internet access.

Fixed wireless access involves the use of small outdoor access points delivering high-speed broadband to dozens of subscribers in areas not covered by UBB. These sites can leverage wireless point-to-point and point-to-multipoint connections to access nearby fiber. This makes the technology ideal for hard-to-reach rural locations where fiber is not available for end-users.

CFWA remarks that operators who provide FWA are looking towards a diversification of their business and have significant opportunities to expand their technology in the IoT, Big Data, converged services, smart cities and many more. The Internet of Things is considered a priority for the Italian Government within “National Industry 4.0 Action Plan” (Piano Nazionale Industria 4.0) and the execution of the plan is expected to rise the investment for the development of the innovation technologies.

A proper availability of the spectrum is therefore crucial for the development of fixed wireless access industry, which is especially interested in band packages useful to maximize quality and speed of the service.

According to CEPT ERC/REC 70-03 “Relating to the use of Short Range Devices (SRD)”, the spectrum available for the IoT services is frequency band 862 Mhz-876 Mhz (called 868 MHz) and is used for *M2M/Wide Area Low Power*. Nevertheless, the Recommendation states that the use of all or part of sub-bands may be denied in some European countries that use all or part of these sub-bands for defence/governmental systems.

Our recommendation is to support the harmonization of this bands to ensure that the European industry and in particular European Wireless Internet Providers can introduce IoT connection services across EU territories. In our opinion, these IoT services could not be only provided by mobile operators. Indeed, FWA technologies could contribute to ensure IoT connections

through own infrastructure working with not sim-based device. To guarantee a fair European competitive environment it is important that EU Commission will assure a fair treatment to sim-based and not sim-based IoT devices and connection services.

With a survey carried out by Italian NRA (AgCom) about M2M services, the Authority analyzed some spread spectrum technologies as LoRa, Sigfox, operating at 868 MHz; as a result,¹⁸ AgCom found that today most of IoT device (Low Power Wide Area Network) already support these frequencies. Nevertheless in the Italian regulation, frequency 868 MHz are in the exclusive availability of Ministry of Defence.

The interest of FWA operators is that, once 868 MHz frequencies will be available for future services, they should be assigned to IoT. It is very important to support this decision at European level, to favour the creation of a European IoT industry, able to integrate services within and without the European Union.

Fixed Wireless Access technologies as a potential alternative to certain fixed Next Generation Access networks

Concerning the evolution of networks, we wish also to express our position on the BEREC's assertion considering the Fixed Wireless Technology as a potential *alternative* to certain fixed Next Generation Access (hereinafter NGA) networks.

The European Commission stated in its 2013 Guidelines for deployment of broadband networks that «*at the current stage of market and technological development, NGA networks are: (i) fiber-based access networks (FTTx); (ii) advanced upgraded cable networks; and (iii) certain advanced wireless access networks capable of delivering reliable high speeds per subscribers*»¹⁹. Such orientation has also been confirmed by the “Digital Agenda Scoreboard”, where (other) NGA networks, beyond traditional optical fiber ones, comprises «*technologies other than FTTH, FTTB, VDSL and Cable NGA, which are capable of at least 30 Mbps downloads*»²⁰.

Accordingly, we would like to underline how **FWA does not constitute an alternative to NGA technologies but rather is the NGA technology more suitable for the so-called “challenge**

¹⁸ AgCom, "Fact-finding survey concerning Machine to Machine (M2M) communication services (final report)", www.agcom.it

¹⁹ Communication from the Commission, “EU Guidelines for the application of State aid rules in relation to the rapid deployment of broadband networks”

²⁰ European Commission, “Digital Agenda Scoreboard 2016 Electronic communications market indicators: Definitions, methodology and footnotes on Member State data”, http://ec.europa.eu/newsroom/document.cfm?doc_id=40882

areas”, since it provides itself ultra-broadband services in a fixed location. FWA technology has indeed a spectrum efficiency of 30 bps/Hz, due to the implementation of Massive User – Multiple Input Multiple Output (Massive MIMO 14x14) paradigm and therefore can be an efficient solution to ensure the availability of UBB services in extra-urban/rural areas and to achieve the DAE targets by 2020 to finally implement the principle of net neutrality in the whole wireless industry.

5G deployment and its impact on telecommunication operators

Addressing to the following question:

2) Are there any other significant trends/developments that BEREC should consider in relation to evolution of networks?

The future development of 5G technologies promises to incorporate a range of disparate applications and requirements – from narrowband internet of things technologies and machine-to-machine communications to low latency, high band width use cases, like autonomous vehicles and remote industrial control – in a single network.

The main industry focus for 5G has been on licensed spectrum. In Italy, AGCom launched a public consultation about band 3.6-3.8 GHz. The purpose of the consultation is to introduce a procedure to allocate these frequencies. In March 2017, Ministry of Economic Development started tests of 5G in five Italian cities (Milano, Prato, Bari, L’Aquila, Matera), which promotes early deployment in major urban areas and along major transport paths. However, we warn that this experimentation appears to be only addressed to big mobile operators and prevent the allocation of 3.6-3.8 GHz for the next four years. Even though, according to the European law (Decision 2008/411/EC), this band should be available since 2012.

In this context, it is important to pay attention to maintain homogenous competitive conditions between Telecommunication operators, even those which provide different services (mobile and fixed wireless operators, content providers, device manufactures).

CFWA believes that should be encouraged the convergence between fixed and mobile technologies, but at the same time it is necessary to protect all different interests, given that there is an unbalanced distribution of the frequency spectrum in favour of big mobile operators. It was emerged from the mentioned public consultation on LSA, with a concerning about “over-hoarding” phenomenon.

In the US, operators are looking to 5G fixed wireless access as the first phase of NGN development. Consumers demand for ultra-broadband services (4K contents, VR gaming...) is growing and broadband providers are investing heavily in FTTH, which is a costly proposition. However, to solve the last mile problem, US operators are looking to 5G fixed wireless access, which can provide broadband bandwidth without the need to physically connect every house in a neighbourhood.

Also, UK operators are developing a trial of 5G fixed wireless access services to test network performance (to deliver ultrafast speeds 1Gbps) and a more reliable connectivity to multiple devices. The trial is expected to demonstrate the potential of 5G FWA as an alternative to FTTH and FTTB.

CONCLUSIONS

CFWA welcomes BEREC involvement and is willing to contribute actively to its work, hoping that BEREC initiates a more meaningful dialogue and increased cooperation with the whole FWA industry.

We believe that the most important parameters in shaping the experience of the end-users are “performance of the networks”, which in sub-urban, rural and remote areas can be enhanced by the **positive contribution of FWA operators providing ultrabroadband services**, and “factors influencing the take-up of technologies and digital services”, which we especially point out in a **proper allocation of spectrum sources** and in a **reasonable request and sharing of information** among the telecoms operators and end-users.

The “last mile” is a problem has not been solved yet by traditional operators, while **FWA operators are strongly contributing to cover not-served territories**. FWA is the last frontier of ultrabroadband wireless communication and need to be fully integrated within 5G and IoT coming technologies.

Accordingly, we would like to underline how **FWA does not constitute an alternative to NGA technologies but rather is the NGA technology more suitable for the so-called “challenge areas”**.

Finally, we wish that BEREC and MS NRAs will support FWA development across the European Union, supporting adequate spectrum allocation at fair conditions, detecting all the behaviours of operators that may limit market competitiveness.