

Opinion of the European Economic and Social Committee on 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’

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1. Conclusions and recommendations

1.1 The EESC endorses the Commission’s objectives of deploying the initial 5G networks (by 2018) and launching commercial services in Europe (by the end of 2020).

1.2 In the EESC’s view, the key factors will be the success of projects rolled out during the research phase of the 5G-PPP and integrating fronthaul and backhaul networks when transmitting data through high-capacity switches, heterogeneous transmission links and cloud-processing units using several internet providers.

1.3 The EESC recommends that the Commission work with the Member States and international bodies to resolve technical problems relating to frequencies and bandwidth, and to develop standards (without specific standards, mass development is impossible, and without development, there cannot be an affordable equipment market).

1.4 The EESC is aware of the potential risks (a series of factors can throw obstacles in the way of this project) for all urban areas and main transport paths which, in the future, will have 5G coverage. Measures to stimulate demand have proven ineffective with regard to service provision in these areas.

1.5 The Committee is in favour of compensating for the lack of private investment in isolated or sparsely populated areas of Member States through public investment or other financing solutions. At the same time, the EESC considers that the rationale for deciding to use public funds to finance such investment should take into account the impact on the local economy, telework, the provision of healthcare services and new education opportunities (spill-over effect).

1.6 The EESC recommends that procedures be standardised and specifications established throughout the 5G project as a prerequisite for fair labour relations, enabling the social partners to carry out an objective assessment of dysfunctions and the progress made towards meeting the objectives.

1.7 The EESC considers that, through specific characteristics such as interoperability, transparency and data security, 5G networks can make a significant contribution to modernising the public administrations of Member States and to cutting red tape.

1.8 The EESC draws attention to the potential role of SMEs in the digital arena. They can bring new innovative models to the market, and public financing for virtual SME clusters can support start-ups and is an opportunity not to be missed, alongside other innovative and tailor-made financing models.

1.9 In the EESC's opinion, developing digital skills among the general public and among the labour force in particular must be a priority for the EU. EU action on the e-Skills strategy and the Grand Coalition for Digital Jobs links up the social partners, educational establishments and other relevant social players in this field. The EESC points out that particular attention must be paid to disabled people, who must be given easy access to the new 5G technologies.

1.10 The EESC advocates that investment based on the Structural Funds should create a level playing field for all Member States and allow equal and non-discriminatory access for all economic operators.

1.11 The agriculture and forestry sectors and many businesses in rural and remote areas of Europe have consistently been promised faster broadband and 3/4G mobile networks, but these promises have never been kept. If the rural, remote, mountain and island areas of Europe are to have a future, then they surely have a right to demand access to at least 5Mb broadband and 3/4G mobile communications.

2. General comments

2.1 The EESC has always supported the Commission's ICT initiatives in its opinions, considering that these initiatives are a prerequisite for the achievement of the digital single market as a driver for economic and social development in the EU. The EESC welcomes the Commission's involvement in the deployment of 5G networks (ICT for mobile networks) and supports the steps taken by the Commission from the research phase. As for any new product or service, launch and development involve a number of risks and opportunities which must be assessed objectively, so that the policies best suited for delivering the expected results can be implemented.

2.2 Although based on current technology, 5G is quite different from 4G, which incorporates many advanced global technologies such as: LTE and LTE Advanced (TD-LTE, AXGP, LTE-A, TD-LTE-A, LTE with VoLTE), WiMax, WiMAX2, Network Function Virtualization/Software Defined Network (NFV/SDN), HetNets (Heterogeneous Networks) and LPLT (Low Power Low Throughput network).

2.3 The chief advantage of 5G technology over 4G is that it is much faster (Samsung has announced speeds of 7,5 Gbps and Nokia speeds of 10 Gbps, while the University of Surrey in the UK announced last year that it had achieved a mindboggling 1 Tbps, the same as with fibre optic technology — all achieved under laboratory conditions). In addition to speed, the low latency (sub-1 ms in large networks) and high capacity are further significant advantages. If latency under 1 ms is not achieved in real conditions, it will not be possible to develop some of the 5G services envisaged (augmented and virtual reality, driverless cars, tactile internet) with the necessary features.

2.4 Similarly, market reactions by all stakeholders will hinge on the expected technical characteristics. It is important to remember that, with the shift from 2G to 3G, expectations regarding internet access by mobile phone users were disappointed. This option was possible only when technical capacities specific to 3,5G technology were ready, and so the combination of smart phones and mobile broadband networks opened the door to internet access using these devices.

2.5 5G and fibre networks are complementary. Over short distances and in areas with a large number of connections, 5G is the better solution. For transmitting data over long distances, fibre optic networks (backhaul and backbone) are unbeatable: transmission speeds of up to 1 Tb, no danger of interference from other electromagnetic signals which clutter up the air and have an impact on wireless technology and no signal attenuation during transmission.

2.6 Standardisation of the technical specifications necessary for equipment, devices and networks is a key concern for the companies involved and international associations active in this field. Specifications provide instructions for testing and validating important technical components for 5G, and the development of specifications enables industry partners, component and network providers and operators to develop interoperable solutions, as well as contributing to the prestandardisation process. While ITU, 3GPP and other standardisation bodies have made 2020 the deadline for developing 5G standards, mobile providers have picked up the pace to provide 5G services which are as competitive as possible.

2.7 The EESC considers that action plans to develop and deploy 5G on a large scale must be bolstered by support measures (encouraging the demand for affordable broadband internet) and operational measures, so that the optimistic deadlines can be met.

2.8 The EESC is concerned that this development (5G networks) might result in existing developments of 3G and 4G in rural, remote and mountain areas being halted just because there is something better being promised sometime in the next 20 years.

2.9 In many parts of Europe there is no mobile signal, no 2G, no 3G, no 4G. This is because every time new technology becomes available, the rollout of the previous versions stops, which means that many rural, remote and mountain areas of Europe have communication services that became outdated 20 years ago.

2.10 The use of superfast broadband will become an integral part of the 5G network, but what happens if businesses do not have superfast fibre broadband and the speed of their wired network is less than 1 Mb? The agriculture and forestry sectors and many businesses in rural and remote areas of Europe have consistently been promised faster broadband and 3/4G mobile networks, but these promises have never been kept.

2.11 Too few people scattered over a large area is a common problem throughout Europe and is quoted by suppliers as the reason why these areas cannot be serviced. If the rural, remote, mountain and island areas of Europe are to have a future, then they surely have a right to demand access to at least 5Mb broadband and 3/4G mobile communications.

3. Specific comments

3.1 The EESC points out that, given the sky high cost of rolling out a new technology, investment needs in the EU far exceed the actual investment (EUR 4,2 billion) carried out through the public-private partnership in which the Commission is involved. The EESC considers that the measures proposed by the Commission can help support the financial, human and technical efforts provided there is a constant focus on this issue, a framework encouraging private investment and perfect coordination between the work of the Commission and of the Member States.

Action 1. *The Commission will work with Member States and industry stakeholders towards the voluntary establishment of a common timetable to launch 5G networks as rapidly as possible.*

3.2 The Commission's objectives of launching the initial 5G networks by the end of 2018, followed by commercial services in Europe by the end of 2020 depend largely on the outcome of the 5G-PPP projects rolled out during the research phase. These include the crucial 5GXCrosshaul project which aims to integrate fronthaul networks (5G wireless networks) with backhaul networks (which are largely fibre optic) in the transport of data. High-capacity switches, heterogeneous transmission links, cloud-processing units (mini data centres), and points-of-presence of the core networks of one or multiple service providers will be necessary.

Actions 2 and 3. *The Commission will work with Member States to identify a provisional list of pioneer spectrum bands for the initial launch of 5G services (by the end of 2016). Agreement on the full set of spectrum bands to be harmonised for the initial deployment of commercial 5G networks in Europe (by the end of 2017).*

3.3 Radio frequencies used by 3G and 4G are overcrowded, and so solving technical problems regarding 5G frequencies and bandwidth is a global requirement. In addition to working with Member States, the Commission must also take into account action already taken at international level by industry bodies. For 5G technology, ITU and 3GPP, which bring together standardisation bodies such as ARIB, ATIS, ETSI, TSDSI, TTA, TTC and CCSA, have adopted a two-stage plan, with the first stage being research and the second being mass development.

Action 4. *As part of the development of the 5G national roadmaps, the Commission will work with the industry, the Member States and other stakeholders (uninterrupted 5G coverage by 2025).*

3.4 The Commission's objective of ensuring that all urban areas and major transport paths in every Member State have 5G coverage by 2025 will not be easy to achieve. The EESC points out that announcing a schedule with short deadlines for achieving bold objectives is a risky undertaking. The analysis of the deployment of Next Generation Network-type networks and the policies to bridge the digital divide have shown that white and grey areas, as they are called in the Broadband Guidelines, are still widespread. Neither ex ante regulations nor demand incentives have managed to bring about service provision in these areas.

3.5 The EESC points out that promoting and financing projects to deploy 5G networks by scaling back financing for fibre optic networks (NGA and NGN) can deepen the digital divide between regions in some Member States. The lack of private investment in 5G and fibre optic networks in isolated regions and regions with small and scattered populations, due to the limited return on investment, must be counterbalanced by public investment or other financing solutions identified at Member-State level. In making the case for decisions to use public funds to finance such investment, the spill-over effect on the local economy, telework, healthcare services and education opportunities should be considered.

Action 5. *The Commission calls on Member States and the industry to commit to objectives regarding the standardisation approach (initial standards by the end of 2019).*

3.6 5G plans alone cannot protect the network and users. In order to provide an appropriate level of protection, 5G networks and procedures must be standardised. Monitoring 5G network infrastructure, separating management networks from the service network, establishing incident management procedures and other processes can ensure optimum security, for both users and the network infrastructure. Security testing is vital. All interaction protocols must work properly, even when under attack (hackers are constantly trying to pinpoint and use products' weak points).

3.7 The EESC considers that standardising procedures in industrial processes and developing technical specifications for equipment are prerequisites for fair labour relations in the industry, enabling the social partners to carry out an objective assessment of the causes of any dysfunctions and to work together to correct them and achieve the objectives set. The EESC has pointed out in previous opinions that excessive standardisation can become an impediment to progress in this area.

Action 6. *To foster the emergence of digital ecosystems based on 5G connectivity, key technological experiments will need to be planned and applications tested through the 5G-PPP (2017) and detailed roadmaps for the implementation of advanced pre-commercial trials will need to be developed (March 2017) (2018: European leadership in the introduction of 5G).*

3.8 The timely testing of terminals and applications at European level can be an asset in the global race with major players. In commercial terms, large-scale development of 5G requires that a series of conditions be met. The EESC therefore considers that until specific standards have been adopted, mass development is impossible; without development, affordable equipment will not appear on the market; and the lack of equipment means that crucial 5G components will not be available.

3.9 The EESC considers that one of the major challenges for 5G will be attracting investment to develop and deploy 5G on a large scale, when 4G, which most users confuse with LTE, will continue to have significant potential in the future, with considerable scope for operators to generate revenue from previous investment in LTE networks.

3.10 In Europe, migration from 3G to 4G networks is still limited compared to South Korea, the US and Japan. It is possible that operators, and even users, will prefer 4G-type networks, particularly when the ongoing development of 4G networks will continue independently of 5G, as each of the technologies comprising 4G has the potential to yield substantial benefits for operators in the coming years, at a much lower cost than would be required for a new technology.

Action 7. *The Commission encourages Member States to consider using the future 5G infrastructure to improve the performance of communications services used for public safety and security, public protection and disaster relief systems (national 5G roadmaps).*

3.11 The EESC believes that 5G networks can make a significant contribution to modernising public administration, data use and interoperability. Encouraging the Member States to support the use of the future 5G infrastructure by public institutions is one way to promote the new networks. The EESC recommends that the Commission consider investing periodically in replacing equipment used on a daily basis by European institution employees, to show that it intends to act as a consumer to promote 5G. The same recommendation should be made to the Member States with regard to public investment.

3.12 The EESC considers that attracting private investment is crucial for the EU, and so consideration must be given to policy mixes encouraging research and innovation. The Innovation Council set up at EU level can make a major contribution to promoting innovation, along with a number of other instruments.

3.13 A key priority for the Commission must be encouraging research, innovation and development in the EU, urging European firms to boost R&D spending in the EU, and attracting other investors from outside the EU. During the 2007-2015 period, European firms sent increasing amounts of R&D funding outside the EU. This rise in the export of funds to outside Europe (China has become the main destination for corporate R&D spending), together with a decline in imports of R&D funds, has contributed to a loss of investment in R&D in Europe.

Action 8. *The Commission will work with the industry and the EIB/EIF Group (financing of SMEs) to identify the objectives, configuration and arrangements for a venture financing facility (feasibility to be assessed by March 2017, private funding and several sources of public funding).*

3.14 The EESC welcomes the action taken by the Commission to encourage digital firms. The Strategic Policy Forum on Digital Entrepreneurship, set up in 2014, has published the results of its work in this area. The EESC believes that SMEs can play an important role in promoting new innovative models. Devising and implementing financing solutions to create and develop innovative virtual clusters focusing on SMEs is one way to support innovative European start-ups using public funds to develop services and applications, and is an opportunity not to be missed.

3.15 The EESC considers that developing digital skills among the general public and among the labour force in particular must continue to be a priority for the EU, given the deployment of 5G networks. EU action on the e-Skills strategy and the European e-Competence Framework is still relevant today.

3.16 The EESC considers that the Grand Coalition for Digital Jobs can link up the social partners, educational establishments and other public and private players with a view to attracting as many young people as possible to the ICT sector.

Reduced access to 5G network services and specific applications by people in disadvantaged sectors of society, owing to their limited purchasing power, will be a challenge for future EU policies. Particular attention must be paid to disabled people, who must be given easy access to the new equipment and technologies which will be developed by manufacturers.

3.17 The EESC considers that investment plans based on the Structural Funds must create a level playing field for all Member States. The criteria set out in the specifications for the approval of projects must allow equal and non-discriminatory access for Member States and for economic operators from all the Member States. In order to avoid deepening the digital divide between Member States, which would undermine the objective of achieving a digital single market in the EU, the EESC recommends analysing the methods used to implement the Juncker Plan. Lessons must be drawn from the process of correcting dysfunctions, so that the policy decision regarding the financing of 5G networks can become a supporting pillar of improved cohesion within the EU.

3.18 In addition to the risks arising from the technical performance of the new networks, policies and decisions to allocate financial resources from the public purse and the risks associated with commercial considerations regarding taking on the risk of investing in new technology or keeping up investment in improving existing technologies (4G is forecast to reach saturation point in 2030), there are other risks which are being very carefully analysed by investors before they decide whether or not to invest.

3.19 Through constant monitoring of the progress made in deploying 5G networks, it will be possible to correct the inevitable shortcomings that will emerge between the *ex ante* and *ex post* assessments, enabling the two objectives set out in the communication — on standard-essential patents (SEP) (20 % of these must be held by European organisations) and on the minimum 35 % market share to be held by European 5G infrastructure providers — to be met.

Brussels, 26 January 2017.

The President
of the European Economic and Social Committee
Georges DASSIS
