

HOW DOES WiFi4EU INITIATIVE FIT INTO THE DIGITAL ECONOMY OF SMART CITIES AND AGILE COMPANIES?

PhD Student **Procopie-Florin GUȘUL**
“Ștefan cel Mare” University of Suceava, Romania
contact@floringusul.ro

PhD Student **Alina-Ramona BUTNARIU**
“Ștefan cel Mare” University of Suceava, Romania
alinaramonabutnariu@gmail.com

Abstract:

WiFi4EU initiative represents the European Union support for installing free Wi-Fi hotspots in local communities in parks, squares, hospitals, schools, libraries and other public spaces in line with EU objectives and proactive measures to enhance connectivity across EU territory and boost Europe’s competitiveness. This paper aims at discussing regulation of WiFi4EU programme as it offers “Free Wi-Fi for Europeans” in the coming years and the way the estimated results of the public funding mechanism match the principles of digital economy with regards to geographical distribution and current needs of connectivity. As this innovative initiative will have a growing effect upon the development of ICT infrastructure all over Europe, authors assess the possible impact of the winning projects on local economy, making use of some relevant statistical data. Also, results of the analysis are compared to features and indicators of smart cities and agile companies in order to establish a viable connection between this EU initiative and concepts of the new economy. Given the potential of this unique programme, some recommendations for improvement and growth in the near future are expressed in order for the strategic objectives of EU vision for the European Gigabit Society to be successfully accomplished by year 2025.

Key words: ICT infrastructure, digital economy, connectivity, smart city, agile company.

JEL classification: L86, O33.

1. INTRODUCTION

The purpose of this paper is to analyze the regulation of WiFi4EU initiative as an important part of the European “Gigabit Society” strategy which is aimed at boosting connectivity in communities throughout Member States. We propose to examine the mechanism introduced by European Commission (EC) and how specific measures will impact the development of ICT infrastructure in terms of supporting local authorities and private companies to create innovative solutions that bring people and organizations closer together and preparing them to face the challenges of nowadays economy.

The proposed investment of EC is amounted to €120 million from year 2017 to 2019 to promote access to wireless connectivity in public places, such as parks, public squares, schools, libraries and other public spaces or buildings with immense benefits for citizens and institutions. More specific, EC is committed to subsidize the necessary infrastructure with the obligation mandated to the municipalities or local public authorities to maintain the newly created networks functioning for a period up to three years. We estimate that this free mechanism is without charge only partially since it will also create costs for beneficiaries to sustain the local wireless connectivity and also will lead to a necessity for a proper promotion of cybersecurity in communities where projects will be implemented. To such challenges is added the need to tackle digital literacy in a more aggressive and pragmatic manner due to the fast progress of technology and requirements to adopt it in everyday business, with which target groups, i.e. citizens and institutions, are faced in the last decade. We express our conviction that these issues must be faced immediately as we observed an invading marketing of WiFi4EU initiative among mass media, politicians and specialist service providers and citizens are dealing with an abundance of information that opportunities from EU are available and their expectations of an improved lifestyle

must be fulfilled with a serious approach, especially when this kind of projects could make a major contribution to linking the digital gap, with a particular focus in communities that are behind in terms of digital abilities, including rural areas or even remote locations.

Therefore, motivation of the current study lays in the fact that such financing opportunities from EC are not without risks that need to be assessed and measures to decrease or overpass them are mandatory to be debated. In the light of this innovative programme this paper has a twofold objective: firstly, to examine the regulatory implications of the WiFi4EU initiative, trying to perceive the relationships and impact on EC policies and its regulatory tradition to build an European Gigabit Society, and secondly, to weigh, through a qualitative analysis using statistical data, the influence of this particular initiative on real connectivity in Europe, along with the development of digital abilities of EU citizens. In line with the estimated potential of WiFi4EU, we are set out to determine whether there is a connection between the projections of the EC programme and indicators of smart cities and agile companies as part of the new economy of the future. Some recommendations will be expressed at the end of paper in terms of political and economic implications, so as impact of the initiative to be greater, more meaningful and better harmonized with the evolution of society in the upcoming years.

2. THEORETICAL FRAMEWORK

In this section we will concentrate our efforts on defining some of the concepts used in the current section, as well as presenting the WiFi4EU programme regulations in order to better understand the premises on which our study is based. Henceforth, theoretical concepts such as digital economy, gigabit society, smart city, agile company are being discussed and background and description along with implications of WiFi4EU initiative regulation are being presented.

2.1. DIGITAL ECONOMY AND GIGABIT SOCIETY

There is no wonder that we now live in the Digital Age when we consider the well-known fact that an increasing majority of EU citizens are using ICT infrastructure by doing business online, taking their personal lives online or spending their free time in the virtual world. Thus we are faced with a significantly different economy model than the traditional one, which is the digital economy boosted along with the expanding use of the Internet and developing of the sharing economy phenomenon. We might even state that the sharing economy phenomenon is no longer a temporary tendency and might indeed decidedly shift competition across the globe (Parente, Geleilate and Rong, 2018).

With regards to the use of Internet, (Tapscott and Williams, 2006) stated that “The new mass collaboration is driving a historic change in how companies and societies harness knowledge and capability to innovate and create value” and therefore identified four basic principles of the current Internet-centered economy which are as follows: openness (associated, among others, with flexibility, engagement or access), peering (a new form of horizontal organization which rivals with traditional hierarchical organization), sharing (a vital tool in the knowledge-based economy), and acting globally (the new globalization). At the same time, Internet is recognized as being able to shape well-being of people: it changes time use patterns, creates new activities, facilitates access to information, and acts as powerful communication tool (Castellacci and Tveito, 2018).

There is no doubt that high diffusion of Internet infrastructure and high rate of digital device usage are the essential preconditions of the digital economy, which is why we have decided to investigate the Digital Economy and Society Index (DESI), which constitutes as an online tool to measure the evolution of EU Member States towards the digital economy and society. In fact, DESI is a composite index which measures progress in the digital era taking into consideration a number of five components:

- Connectivity includes aspects such as fixed broadband, mobile broadband, broadband speed and prices;

- Human Capital factor measures skills as basic as and Internet use, as well as advanced skills and development as well;
- Use of Internet Services is configured of citizens' use of content, but communication and online transactions too;
- The Integration of Digital Technology is an element in which business digitization or eCommerce are being measured;
- Digital Public Services includes services such as eGovernment (European Commission, 2018).

In 2018, out of the 28 EU Member States, we may observe that the best performing country in this ranking is Denmark (DK), followed by Sweden (SE), Finland (FI) and the Netherlands (NL). At the other extreme, among the worst performing countries are Romania (RO), Bulgaria (BG) and Greece (EL) (figure no. 1).

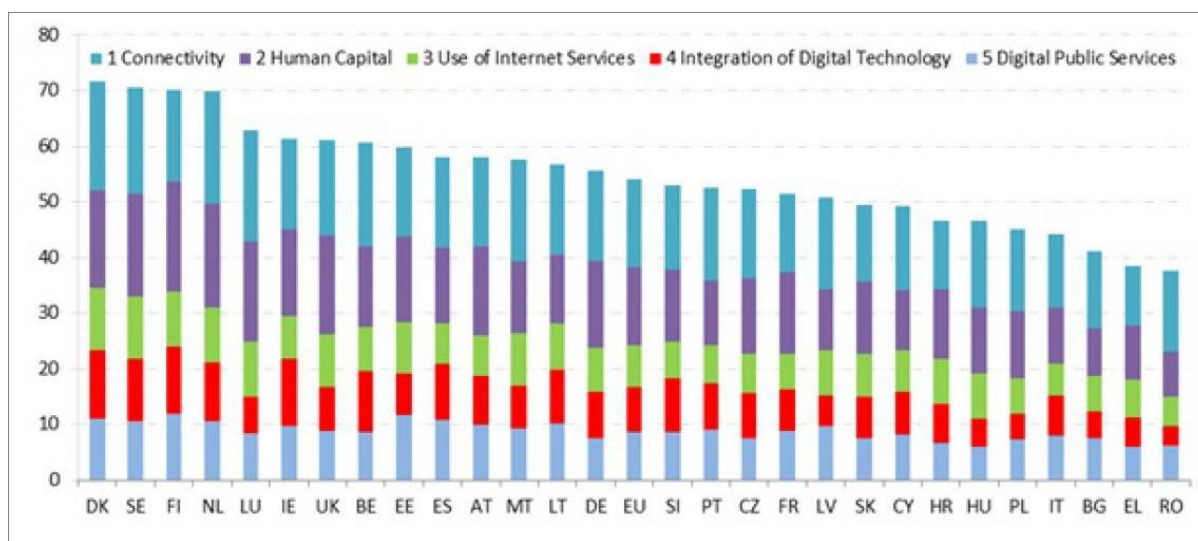


Figure no. 1. Digital Economy and Society Index (DESI) 2018 ranking

Source: <https://ec.europa.eu/digital-single-market/en/desi>

Significant discrepancies among countries and regions continue to exist if we are to compare DESI rankings in the last years. And this is a fact although progress has been registered in what concerns digitalization, IT infrastructure available to population and companies and investments made by several governments. Also, we must not overlook that some of the EU countries are similar and with good results in some of the individual components, while they are underachievers in others. This is relevant to the fact that distinct countries or even regions are in need of different approaches, whether in policy or in investments terms, when it comes to tackle the digitalization issues.

In strong connection with Digital Single Market EU strategy, the European Commission has adopted in 2016 a series of initiatives and legislative proposals meant to improve internet connectivity across EU and even transform it to be the best in the world. Thus, Gigabit Society is a concept that allows all citizens of EU to have access to full digital empowerment by 2025 and be able to make use of the latest innovative services and products. Unrestricted connectivity would be the means by which citizens would access E-services in several fields, such as government, health or education. This cutting-edge connectivity is to be achieved by increase of network speeds above 100 Mbps for all European consumers and 1 Gbps for all public institutions, such as schools, libraries, etc., major transport hubs and businesses that are digitally intensive (European Commission, 2016).

We might consider this vision to be too idealistic, but one thing is sure: the European Commission has embarked to an inclusive approach of European territory in what concerns digitalization and connectivity. There is no prioritization in countries or territories, whether there are rural or urban areas and large investments are required to upgrade existent networks. In order to

achieve such bold and somewhat immediate targets, investors and operators in the field should be able to act with high flexibility in order to address each region needs with the appropriate technology. In equal share, governments should intervene to accelerate the process of achieving high-speed connectivity for all European citizens and businesses by enabling customized technology solutions implemented as a result of simple and transparent legal provisions for operators. We consider this to be a small price in comparison with the benefits to be achieved: a more inclusive, connected, easy-to-communicate and available Europe.

2.2. SMART CITY AND AGILE COMPANIES

Cities are known to be global drivers of growth especially since they aggregate the fast pace of technology and offer numerous development opportunities in a decade marked by deep transformations and changes. The 54% percent of world population living nowadays in cities is estimated to grown to 68% by year 2050 and this increasing in the number of cities population must be thoroughly dealt with in the context of the Fourth Industrial Revolution which addresses new opportunities and challenges in services provided to citizens. It is not only the development of infrastructure, but also processes and conceptions that will have to support the intelligence of cities.

EU defines a smart city as “a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies, for the benefit of its inhabitants and businesses” (https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en#european-innovation-partnership-on-smart-cities-and-communities), that is the smart city is more than the traditional image of urbanization, it is enhanced with innovation, seeking to offer a more enjoyable, more sustainable, more inclusive, greener and cleaner environment to its citizens. The concept of smart city goes beyond the simple use of information and communication technologies (ICT) and its meaning translates into smarter urban transport networks, diverse and efficient methods to light and heat buildings, modernized water supply and waste disposal facilities, more interactive and receptive public administration, safer public spaces and addressing the needs of all disadvantaged categories of population. In fewer words, smart city means creating public value for citizens.

There is an interesting debate regarding smart city concept in the sense that it is not a top-down phenomenon, but a bottom-up one and this is due to the fact that there is no commonly agreed upon well-defined strategic vision of the smart city concept with fix government rules and policies, with shared goals stated from the initial stage of development. On the contrary, we might observe a bottom-up development of the concept, with scarce projects developed with few financing resources, applying technology and innovative ICT solutions to urban problems. In this line of thought, the main stakeholders in this model are universities, research institutions and also private companies which together they develop a smart city idea, using their competences in order to plan and implement smart solutions to support an improved urban life.

Initiatives and big projects in smart city with high impact on society start, however, with products and services on a local ground, with a smaller target group. Citizens in small and medium size communities are thus representative to exhibit and thrive with the benefits and advantages of some smart city solutions.

In our endeavor to discover stakeholders with the highest rate of interest in smart city solutions and development of projects in this area, we found that big contributors to the development of smart city concept are the private companies, especially those activating in high-tech sector or telecom, focused on technological innovations provide solutions for citizens needs in terms of improved or new services. This type of companies with special interest in technology are the ones with a characteristic that is of high importance in a fast speeding economy of disruptive innovations, and that is agility.

According to McKinsey (2018), when looking closely to organizations, we might easily observe that they are like living organisms, with an organizational culture focused on people, at the same time stable and dynamic. These traits are of great importance since agility is closely related to

a company's performance, higher revenue, lower costs or more engaged personnel. In relation to that, McKinsey describes the five trademarks of agile companies as follows:

- All stakeholders are essential since an agile company co-creates value for them, as well as involving them;
- Practicing networks of small teams gives them high-performance and autonomy in the context of the company;
- Model of rapid learning and decision cycles that are iterative as a step forward towards innovation;
- A culture of people-centered leadership that empowers working personnel;
- Technology focused to prepare readiness for changing environment.

At a closer analysis, nowadays economy could not be envisioned without the concept of smart city and agile companies, which are emblems of a technology-ruled society prepared to face challenges of digitized information and disruptive technologies. For this reasons alone it is worth mentioning the fact that all current policies and initiatives must take into consideration issues that affect society and economy in general and people in particular, to be at the same time performing and efficient, but also inclusive and with high regard on individuals' needs and hopes for the future. In this regard, the public system and the private one should join forces to obtain the citizens' approval and endorsement in a collaborative process of communication and engagement with all stakeholders involved.

2.3. WIFI4EU INITIATIVE

The European Commission lacked a strategy meant to support wireless access to internet throughout the whole territory of EU. Connectivity for everyone used to have and still has a vital role, but there were no integrated measures proposed to get access to the Digital Single Market for local communities. In this respect, only scarce projects that promoted free Wi-Fi connection existed until 2016, when the European Commission decided to formulate its vision for the European Gigabit Society in the form of the Commission's communication "Connectivity for a competitive digital single market - Towards a European Gigabit Society" (European Commission, 2016). Among proposed initiatives that were set to build up the regulatory framework to promote greater connectivity for citizens and organizations across EU there was the 'Wi-Fi for Europe' initiative.

The total budget of European Commission to achieve the target proposed of high-speed Internet connection was € 120 million euros. Basically, a multitude of hotspots will be established in approximately 8,000 cities across EU in public places, such as parks, hospitals, schools, libraries, and other public spaces. This way, the Commission wants to finance and support local public authorities to set up Wi-Fi hotspots for citizens that are and visitors of local communities. By implementing this initiative, this wireless network will be able to encourage Internet usage by making 40-50 million Wi-Fi connections per day. This will lead eventually to creating a Union network, which will improve the Digital Single Market.

The mechanism behind WiFi4EU initiative is based upon call for applications from municipalities across EU by using a granted voucher in the value of €15,000 per municipality on the principle of first come-first served. The distribution of the vouchers must be geographically balanced in a way that, by the end of 2019, at least 6,000 to 8,000 local communities across EU could benefit from high-speed connection. At least 15 vouchers will be granted per each EU country during the first call for applications. In this scheme of funding, EU will grant equipment and installation costs for vouchers' winners, while municipalities will have the responsibility of paying for internet subscription, maintenance and operation. The sustainability period for keeping those facilities and equipment in a good state of repair is as long as 3 years. After a series of delays, this high interest initiative was launched and the first call for applications took place in November 2018.

3. WIFI4EU AND DIGITAL ECONOMY. ANALYSIS AND DISCUSSION

As we have stated already, the main scope of WiFi4EU initiative is ensuring improved connectivity across EU. We already know that a large majority of citizens uses Internet on a regular basis and have Internet access or broadband connection. The increased use of the Internet has been integrated in the daily life of citizens, in their educational systems, work life and social participation, and enables individuals to access information and services they need at any time and from any place. It would be safe to state that the growth of Internet usage across EU countries in the period 2007-2016 is a result of an increased number of households with internet access and with broadband connection, as shown in figure no. 2.

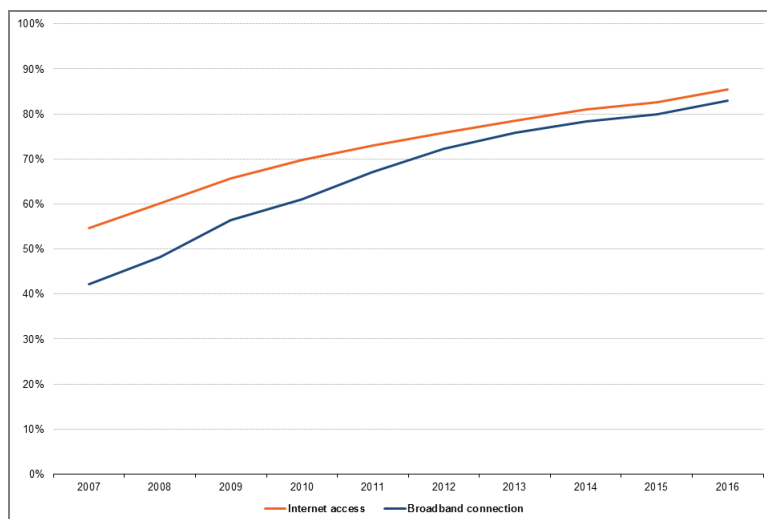
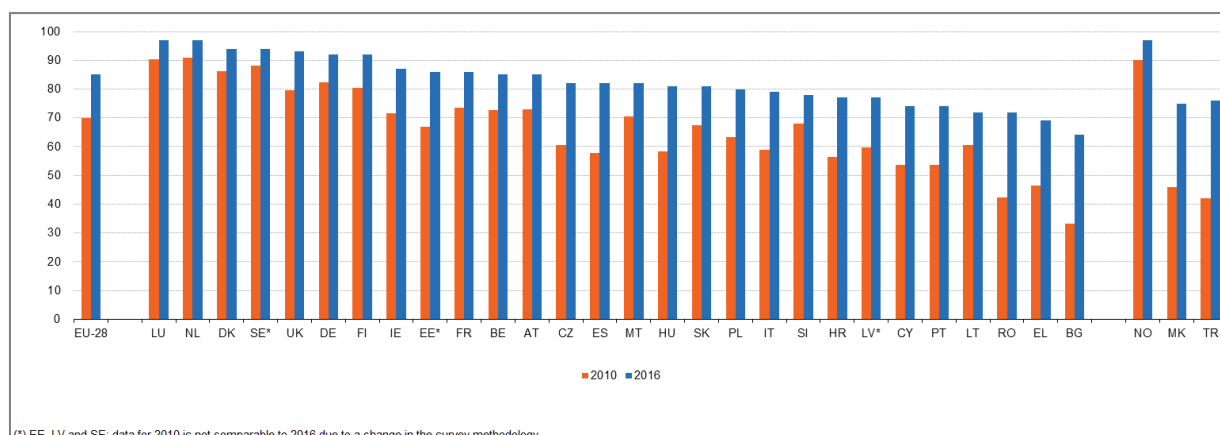


Figure no. 2. Households with internet access and with broadband connection EU-28, 2007-2016 (as % of all households)

Source: Eurostat

In 2016, Eurostat statistics showed some considerable differences related to the usage of the Internet and broadband connection across EU countries. For example, the largest percentages of households with Internet access were found in Luxembourg and Netherlands (over 95%), while the lowest shares were registered in countries such as Bulgaria, Greece, Romania and Lithuania, although these countries have registered big progress when comparing the percentages registered in 2010 (see figure no. 3).



(*) EE, LV and SE: data for 2010 is not comparable to 2016 due to a change in the survey methodology.

Figure no. 3. Households with internet access, 2010 and 2016 (as % of all households)

Source: Eurostat

Still, in 2016, approximately 14% of EU population did not use Internet due to a number of reasons like weak Internet access provided due to the specificities of some remote areas or lack of education in digital competences or elderly individuals not using Internet (see figure no. 4).

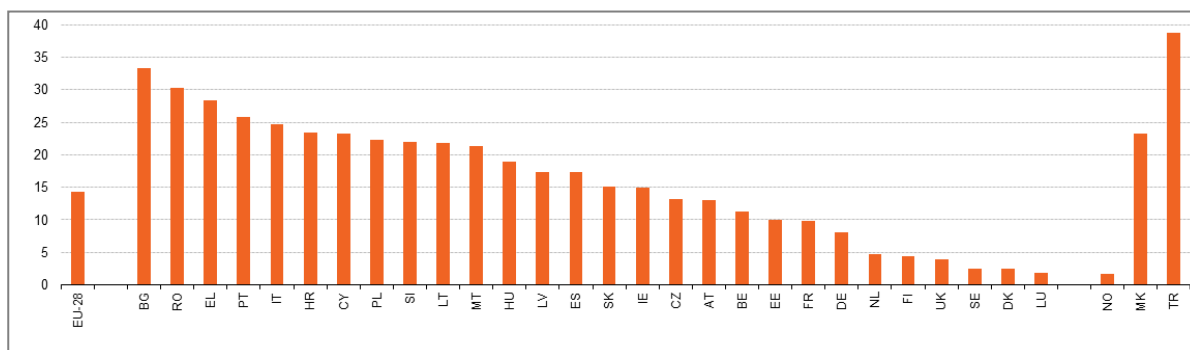


Figure no. 4. Individuals who have never used the internet, 2016 (% of individuals)
Source: Eurostat

All these statistics must have been taken into consideration when legislating the WiFi4EU initiative since once it is established this programme will be beneficial especially to those countries with lower rates of Internet usage and broadband connection. It is only in this way that differences between EU countries will diminish in what concerns connectivity issues that will ultimately lead to economic and innovation growth, improved education systems and social participation.

For these reasons, when analyzing WiFi4EU mechanism and its strict rules of geographical balance, we do not agree that this scheme is the optimal one to ensure achieving its main objective for those areas that need the most such investments delivered by European Commission. However, we propose to look into the statistics of first call for applications to draw some interesting conclusions regarding the interest that communities have had in this EU funded programme.

As such, the total number of applications from municipalities for the first round of WiFi4EU programme was 13,198, reflecting an especially high interest in countries such as Italy (3,202 applications), Spain (2,116 applications), Germany (1,824 applications) and France (1,451 applications) and low interest in Member States such as Latvia (20 applications), Luxembourg (22 applications), Denmark (23 applications), Malta (27 applications) or Estonia (28 applications), as shown in figure no. 5

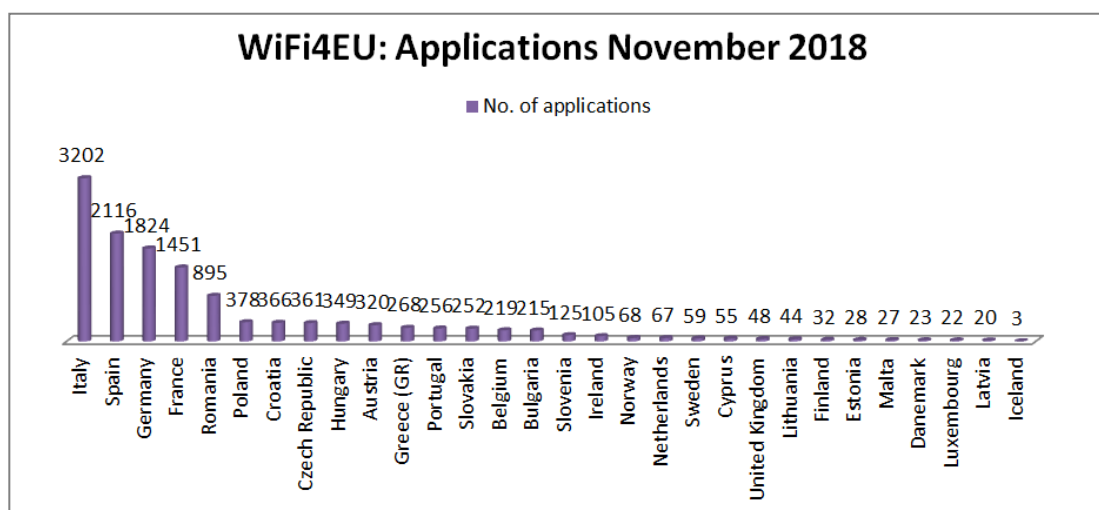


Figure no. 5. Number of application of WiFi4EU initiative per country, first call of application in November 2018
Source: Authors' elaboration

As expected, not all applications that were submitted during the first call were deemed as winners and we dare say that the winning projects are motivating enough for all municipalities to follow-up and wait for the next calls in order to receive winning vouchers that will ensure improved connectivity in local communities. As for the winner projects of the first call of applications, the highest rates were for localities in countries such as Romania (224 winning projects), Greece (119 winning applications) or Bulgaria (115 winning projects), as seen in figure no. 6.

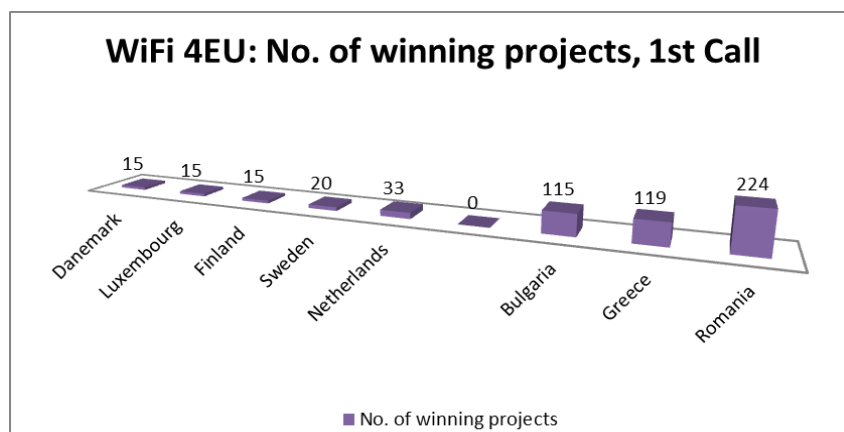


Figure no. 6. Number of winning application of WiFi4EU initiative per country, first call of application in November 2018

Source: Authors' elaboration

In light of these statistics, we might state that, at least for the first call of proposals, the winning projects will ensure achievement of WiFi4EU objective of connectivity in those countries with low DESI ranking and lower rates of Internet usage, which are Romania, Greece and Bulgaria. On the other hand, countries with better connectivity and excellent DESI ranking are among the ones with the fewest winning applications (Luxembourg, Denmark, etc.). We thus conclude that it is worth considering that in future calls for applications, in order to ensure achieving improved connectivity in countries based on registered needs in the fields, linking the winning projects with this DESI indicator or others that measure the local communities identified demand for connectivity.

4. CONCLUSIONS

The digital economy and society index prepared by the European Commission to support the development of the information society shows that progress in this field are still insufficient to achieve the objectives of the Single Digital Market strategy. Besides modest increase in the five components of the DESI composite indicator, the comparative analysis shows that the situation remains very heterogeneous between the Member States. In this context, we believe that WiFi4EU initiative is likely to stimulate connectivity across EU territories, increase competitiveness and diminish the gaps among EU countries related to Internet usage. This, in return will lead to a further development of EU economy and growth of innovation since smart city solutions and agile companies are already integrative part of leading states in Europe and all over the globe.

A few conclusions are to be drawn in relation to the WiFi4EU initiative and among the most obvious ones is the high interest of municipalities across Europe that applied in a large number in the first call of applications, showing that the EU objective of improved connectivity is linked with a real and consistent need, especially in some countries (Romania, Greece, Bulgaria). Also, another important issue is that WiFi4EU initiative is a genuine and original measure that suggests the EC has taken a developmental approach, crossing the boundary of policy and taking pro-active measures in local communities.

We strongly believe that EU vision for the European Gigabit Society is idealistic one and WiFi4EU programme is just one step forward towards achieving the bold targets of EU. This is why, we recommend that some improvements of the mechanism behind WiFi4EU initiative should take into consideration all stakeholders involved, given the fact that this represents in fact public funding and private companies might view this as public interventionism in a domain that usually belongs to private investments. This public intrusion might in the end distort market conditions and innovation dynamics and this should be the basis for negotiating future rules and particular technicalities of the funding scheme.

Of course, we could not elude the complex benefits of WiFi4EU initiative in what concerns long-term economic effects of broadband to the local communities and businesses, economic growth and social participation of individuals. We conclude that this is the optimal pathway to implementing innovative concepts in all territories of EU, even remote ones, concepts that are part of nowadays knowledge economy, the digital future of technology involving individuals and organizations as living organisms.

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