

Digital (broadband) connectivity under the WBIF

21.03.2018

- Background of digital (broadband) connectivity**
- Adoption and scope of digital connectivity in the WBIF**
- Broadband connectivity challenges in Western Balkans**
- Possible WBIF-projects**

1. INTRODUCTION

This guiding note identifies fixed broadband internet connectivity as an area where potential WBIF support should focus on. Future calls might include other aspects of digital development, but for the time being potential support should focus on fixed broadband.

This paper provides background information on (i) the importance of broadband internet connectivity in general, (ii) the priority given to it in Western Balkan and EU strategies, and (iii) the specific needs in the Western Balkans. Finally, this note provides an indication for preparatory projects in fixed broadband connectivity.

The 17th WBIF Steering Committee, which took place in December 2017, decided to extend the WBIF eligibility sectors to Digital (or ICT) sector in order to be able to provide future funding, in particular for preparatory technical assistance (TA) to the digitalisation of the Western Balkan region. The main goal of this decision was to widen the scope of "Connectivity" to cover digital connectivity (broadband) and hence allow support from the WBIF in the following areas:

- i) analysing the broadband needs and the gaps (both for the digital service infrastructure and the broadband networks); and
- ii) Supporting the rollout of broadband networks to bridge infrastructure gaps through TA to prepare relevant projects in efficient and timely manner.

The above two points primarily align with the policy area 'broadband connectivity' in the digital action plan adopted at the Trieste Summit in July 2017. Furthermore, the initial objective of adopting 'digital' in the WBIF is to mainly TA-oriented and should prepare projects that in the future could be considered for investment support.

This note has been prepared by DG CONNECT and DG NEAR.

The WBIF Steering Committee will launch the next TA call in June 2018 with the expected deadline in September 2018.

2. BACKGROUND –DIGITAL (BROADBAND) CONNECTIVITY

2.1. The key role of high-speed broadband networks

The development of high-speed networks today is having the same impact as the development of electricity and transportation networks had a century ago. Services are converging and moving from the physical into the digital world, universally accessible on any device, be it a smartphone, tablet or a personal computer. Digitalisation is a precondition for industry to develop and remain competitive.

A fast and secure Internet of high quality is a prerequisite for a modern, futureproof society and economy. Broadband infrastructure and services are fundamental components of the Internet. The Western Balkans has significantly lower broadband penetration rates than the EU Member States average. Especially rural areas are lacking broadband connections. This is a challenge, but also an opportunity. The Western Balkans can leapfrog, i.e. passing to a state of the art, fibre based broadband without passing the multiple copper-based stages that is usual for the early adopters of broadband. Fibre is cost-efficient and reliable, something that can accelerate the rollout pace.

The development of broadband infrastructure lags behind in several areas – i.e. certain projects are but not bankable for private sector actors. Investment support could enable the much-needed development of broadband infrastructure to connect, for example, rural, less densely populated areas. Western Balkan economies are increasingly prioritizing these investments but flag the need for blended investment mechanisms – e.g. investment grants, blended financing, interest rate subsidies.

2.2. Broadband connectivity in the Digital Agenda for the Western Balkans and part of the 'Berlin Process'

In the framework of the 'Berlin Process', the Western Balkans Summit in Trieste (July 2017) endorsed a multi-annual action plan for digital development as part of the "Regional Economic Area". This plan enhances cooperation between the different economies, while including them into already existing EU structures in order to facilitate the exchange of best practices and reduce the digital divide. The digital action plan focuses on four key policy areas:

- (i) Broadband connectivity;
- (ii) Cyber security
- (iii) ESkills; and
- (iv) Digitisation of industry

The first policy area focuses on broadband networks – and should ultimately result in large-scale efficient and smart investments in broadband infrastructure. Focusing on a higher level of broadband connectivity (both in penetration and speed) is interconnected to, and key for, achieving tangible results in the other three policy areas. These policy areas require good digital service infrastructures in order to ensure the supply of innovative and competitive services to both consumers and businesses (and could therefore act as an important lever for socio-economic development, high value jobs generation and a vibrant knowledge-based society).

In other words, the full economic and social benefits of a digital transformation will only be achieved if a widespread deployment and take-up of high capacity internet networks is achieved – both in urban as in rural areas and across all actors in society.

On the 6th February 2018, the European Commission presented "*A credible enlargement perspective for and enhanced EU engagement with the Western Balkans*". The Digital Agenda for the Western Balkans is one of the six flagships for this initiative. Action 5.2 of this flagship aims to support the deployment of broadband in the Western Balkans.

2.3. The Digital Single Market Strategy

The Digital Single Market Strategy for Europe sets out the following target for 2025: "*All European households, rural or urban, should have access to networks offering a download speed of at least 100 Mbps, which can be upgraded to 1 gigabit*". The DSM has an ambitious agenda that needs to be backed with necessary investments in the current EU member states to achieve these targets.

The Western Balkan economies await a challenging task to close the gap with the current EU member states – in general the internet speed and connections in the Western Balkans are significantly below the EU average. Furthermore, the economies have to work towards the ambitious goal set out in the DSM. Therefore, a large amount of investments will need to follow in the coming years to efficiently use, improve and extend the current broadband infrastructure. While most of these investments should come from private operators, it is clear that in certain areas some form of public (co)financing will be necessary. Public intervention should focus on preparing digital projects and reducing the cost of investments, and where necessary provide public funding within the framework of national broadband strategies.

3. THE ADOPTION AND SCOPE OF DIGITAL CONNECTIVITY IN THE WBIF

TA under the WBIF should lead to the identification and establishment of mature projects that are eligible for investment funding. These projects have to be connected to the EU's strategy on connectivity for a European Gigabit Society. Achieving this objective will be very challenging in rural areas and other disadvantaged regions (remote, mountainous or sparsely populated areas) where depopulation and a lack of economic opportunities are higher. Today, broadband projects are struggling to find grants and funds for investment. In order to support the Western Balkan economies and private investors, as well as to promote economic growth and opportunities, WBIF funding could provide financial tools that can boost broadband investment in the region.¹

4. BROADBAND CONNECTIVITY CHALLENGES IN THE WESTERN BALKANS

The Western Balkan region faces important and different challenges than most of the EU member states when it comes to the development of their broadband connectivity. Achieving convergence is necessary in the light of a possible accession to the EU's DSM, but also to achieve a robust level of economic development.

¹ For an overview of EU funding for Broadband (not accessible for Western Balkan economies): <https://ec.europa.eu/digital-single-market/en/news/overview-eu-funding-broadband>

Large-scale investments are necessary to catch-up with the EU and to enable a digital transition. Investments have to ensure that the developments of their broadband infrastructure is future-proof and focused towards the most pressing needs - i.e. overall penetration rate, rural-urban divide, low broadband speeds and connecting schools, governments and health institutions.

4.1. The low level of broadband penetration rates

The following table highlights one of the main critical challenges: the broadband penetration rate in the Western Balkans is significantly lagging behind the EU-average.

Note: most EU-economies have achieved a certain level of maturity in their broadband penetration rate – i.e. a percentage between 30-40% which corresponds with universal broadband access for all inhabitants. Western Balkan economies need to catch-up with the European Union

Table 1 - Fixed broadband penetration rate (per population) in 2016

	EU28²	AL	BA	ME	MK	RS	KS
2013	29.2%	6.4%	13.4%	15.4%	N.A.	16.4%	9.2%
2014	30.5%	7.3%	14.2%	16.7%	N.A.	17.2%	10.5%
2015	31.6%	8.8%	16.6%	18.1%	N.A.	18.7%	11.9%
2016	32.7%	9.3%	17.4%	18.5%	18.4%	20.5%	13.1%

Obtaining higher penetration rates is necessary to enable a digital transition in Western Balkan economies – in other words; a further development of broadband penetration rates is needed for the development of a digital ecosystem or to simply provide access to e-commerce, e-government, e-health applications. The current globalized and interconnected economy requires also internet access for the efficient functioning of an economy – e.g. transportation, logistics, and payments.³

4.2. The rural-urban divide in broadband access

Particularly challenging in the Western Balkan economies is the significant gap of broadband coverage between rural and urban areas, and between income levels. This lack of access can distort an even, well-balanced economic development in a country. Nevertheless, it should be one of the key priorities to close this gap or to mitigate this

² Most EU-economies have achieved a level of maturity in their broadband penetration rate – i.e. a percentage between 30-40% which corresponds with universal access. According to the DESI-index, fixed broadband is available to 98% of Europeans, and 76% of European homes can access high-speed broadband (at least 30 Mbps).

³ The Baltic states and Romania / Bulgaria can be interesting examples for the Western Balkan region. These economies have significantly higher broadband penetration rates in comparison to their level of economic development. A result of a well-developed broadband strategy aimed at leapfrogging, but also obtaining optimal economic advantage of the digital transition. Western Balkans economies could learn from these trajectories – or even obtain a higher level of leapfrogging, by adopting best practices in their broadband strategy.

adverse effect in the best possible way – there is a lack of knowledge on this field and a need for TA to obtain better insights.⁴

Most Western Balkan economies are aware of the necessity to develop their broadband infrastructure to connect rural, less densely-populated areas. This 'rural broadband development' should be prioritized, but will be very challenging – TA could enable knowledge- and capacity building in order to define the right projects, type of government support and secure successful implementation with a long-term perspective.

4.3. The low broadband speed in the Western Balkans

Obtaining a higher broadband penetration is one thing, but it says nothing meaningful about the quality of access – i.e. few households in Western-Balkan economies have access to speeds above 10 Mbit/s, which limits the ability to take greater advantage of the internet. Several studies point out that only broadband speeds higher than 10Mbit/s can bring significant economic benefits such as greater innovation and productivity, higher household income, social benefits (improved access to e-services, e-health, education and banking services) and environmental benefits (more efficient energy consumption).

Table 2 – Distribution of retail broadband lines by download speed (2016)

	BA	ME
≤ 2 Mbit/s	4.75%	19.45%
2-10 Mbit/s	65.67%	50.31%
≥ 10 Mbit/s	29.52%	30.24%

A low broadband speed only enables basic internet functions – i.e. e-mail, web surfing; but is not capable of allowing a true digital transformation towards more complex applications. The ambitious goals of the DSM-strategy have to be seen in this light and should also be the key objective for Western Balkan economies when developing their broadband infrastructure because the acquired level broadband speed will be at least 100 Mbps for all European households in 2025.

Note: The infrastructure in the EU28 countries is more developed – i.e. three-quarters (75.1%) of EU homes had access to connections with at least 30 Mbps actual download speed in 2016. The above-mentioned rural-urban divide is significantly narrower because of a strong support by the several EU-investment funds.⁵

⁴ The main standard fixed broadband coverage was estimated to cover 95.5 % of homes within the EU in 2014, whereas the coverage in rural areas was estimated 83.2 %. There exist discrepancies in these figures – Western European economies do not have a significant gap between rural and urban areas, whereas Romania and Bulgaria have for example a gap of around 35% between these areas.

⁵ E.g. Connecting Europe Facility (CEF), European Regional Development Fund (ERDF), European Agricultural Fund for Rural Development (EAFRD), European Fund for Strategic Investments (EFSI).

4.4. A shift towards fibre technology is required in the Western Balkans

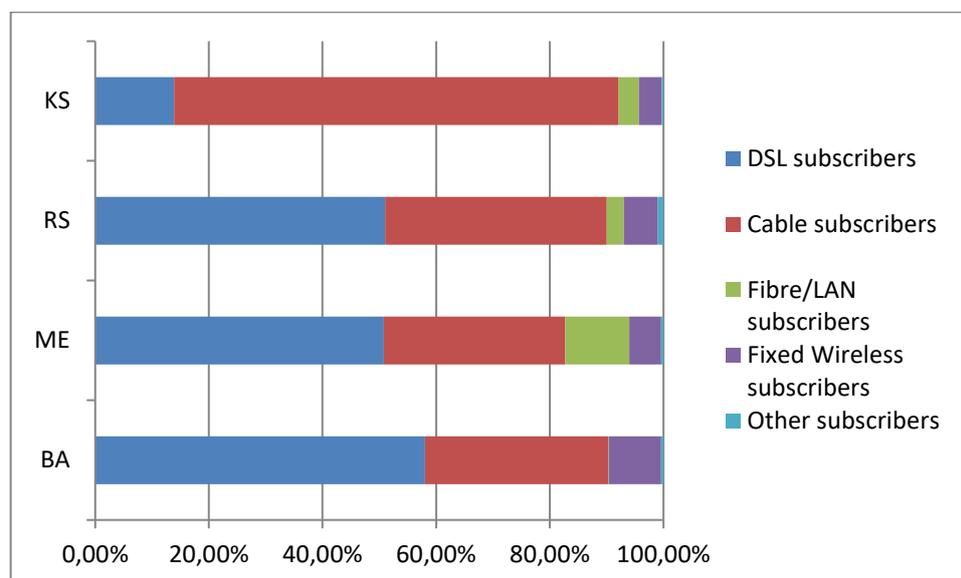
Another key challenge for the Western Balkan economies will be to invest in a broadband network infrastructure that is capable to provide higher broadband speeds. Therefore, it should take into account the future economic development and the high demands put forward in the DSM-strategy.

Fixed broadband can be delivered over different kinds of fixed lines:⁶

- (i) repurposed telecom copper lines (which now support DSL-technologies)
- (ii) coaxial cable (laid mainly by cable television operators)
- (iii) fibre infrastructure

Fibre provides high bandwidth rates over long distances, offers capacity that can be expanded, is more secure and requires significantly less energy. According to a World Bank Group study, only investments in fibre are a long-term viable option in the future to keep up with the growing pace of connected devices, growing demand and fast evolving applications.

Table 3 – Fixed retail broadband by technology (by subscription) in 2016



The main problem with both DSL and coaxial networks are their limitations to keep up with the ever-increasing requirement of higher bandwidth rates. Western Balkan economies should shift their broadband investment strategy towards fibre technology and the creation of new networks rather than relying on the older DSL or cable networks – often controlled by state-owned companies.

4.5. The difference between mobile and fixed broadband infrastructure

Mobile broadband should be distinguished from fixed broadband access. It is necessary to invest in a strong fixed broadband infrastructure for high-end purposes. Only fixed

⁶ For more information about broadband technologies: <https://ec.europa.eu/digital-single-market/en/news/comparison-broadband-technologies>

broadband can fulfil a real digital transformation because of the high-speed requirements of digital applications.

In other words, mobile broadband is an increasingly important complement of fixed broadband access – this should not be underestimated in Western Balkan economies. However, it should not be regarded as a substitute for fixed broadband networks.

Note: nevertheless, in specific cases, it can be regarded as a substitute for fixed broadband networks. Geographic issues (i.e. sparsely populated and difficult accessible areas) could necessitate the reliance on fixed-wireless options.

5. POSSIBLE PROJECTS

- "Broadband Atlas" ALL ECONOMIES

Several economies require TA to develop mapping of existing infrastructure and white zones. These projects should focus on identifying the right projects that can be financed under the WBIF.

They should ideally lead to a common approach in all Western Balkan economies that aligns with the priorities set out in the DSM.

- "Rural broadband development" ALL ECONOMIES

Western Balkan economies struggle to obtain higher penetration rates in rural, more sparsely populated areas. These projects should focus on connecting governments, schools, health institutions; by providing investment support to projects that struggle to attract private sector support.

TA-funding can be used to identify white zones, to develop rural broadband strategies, to set-up the right projects with a long-term view (in line with the EU's DSM).

Albania has submitted a project for TA-funding, which can be classified as a "rural broadband development" project.

Ideally, these studies should focus on the creation of business cases whereby private sector investments can be mobilized by public sector support.

- "Fixed-wireless for sparsely populated areas" ALL ECONOMIES

Serbia signalled their interest to apply for TA and Investment support for projects that could lead to establishment of fixed-wireless infrastructure in white zone areas. Other Western Balkan countries voiced similar ideas.

TA could lead to more knowledge/competence building and expertise in this area. Ideally, (pilot) projects should be identified and the right business cases and cooperation between public and private sector actors.

Fixed-wireless is a substitute for fixed broadband infrastructure in sparsely-populated and/or difficult accessible areas – these technologies are a solution to connected governments, schools, health institutions in the most remote areas.

- "Digital Broadband Highway"

REGIONAL

Western Balkan needs more regional cooperation on the level of infrastructure investments in regional broadband connectivity. TA-funding and subsequently investment support under WBIF can pave the way for more regional interconnectivity in the Western Balkans. It could lead to important joint collaboration projects on digital connectivity in the region.

The World Bank will present a new study in May 2018 – "Balkans Digital Highway Initiative". The study aims at exploring the possibility to establish a regional broadband internet infrastructure over transmission grids of state-owned energy companies.

- "Infrastructure-sharing"

ALL ECONOMIES

TA-funding should explore how the development of broadband connectivity infrastructure projects can be included in other projects – i.e. energy, telecom, rail, road infrastructure projects. It should lead to the adoption of a systematic approach that could lead to mutual benefits and cost-sharing.

- "Broadband Competence Office"

ALBANIA, ALL
ECONOMIES and
REGIONAL

The European Broadband Competence Offices (BCOs) Network connects national and regional authorities supporting broadband deployment across the EU. BCOs provide legal, technical and financial guidance to project promoters and policy makers to support stakeholders in their country or region in accelerating broadband roll-out.

Funding under WBIF could be deployed to set-up or accelerate the capacity/knowledge building of independent BCOs in the region – both on a regional and/or national level.

INVESTMENT AND TA BROADBAND DEVELOPMENT NEEDS PUT FORWARD BY WB6

Note: These projects were a preparation made by representatives of the Western Balkan companies in the framework of a breakout session on digital integration of the RCC MAP Digital Contact Points on the 12th of March 2018. All representatives in this meeting were pleased to hear about the inclusion of 'digital' in the framework of the WBIF.

Furthermore, the representatives emphasized the need for WBIF in the field of broadband connectivity and mentioned several possibilities for future projects. They promised to provide extra input on potential needs and projects.

Digital capital investment needs

Albania - Single project Pipeline

Project for Regional Broadband Infrastructure Development

Description: The project aims to improve the digital connection in the cross border area by creating conditions for cross-border services between the Western Balkan countries and strengthening of economic and social development in the region.

Total Investment Cost: 48,000,000 Euro (Preparation: 3,500,000, Implementation: 44.500.000); Project status / Details: Premature; Strategic importance: Regional

Improving Tourism and business related Infrastructure in the cross border area in Korca, Albania

Description: The project aims to improve the digital connection in the cross border area by creating conditions for cross-border services between the Western Balkan countries and strengthening of economic and social development in the region.

Total Investment Cost: 26,520,000 Euro; Project status / Details: Mature; Strategic importance: National/Regional

Serbia – Economic Reform Program 2018-2020

Development and improvement of the national broadband communications infrastructure

In November 2016, the National Broadband Network Implementation Plan project, which includes analyses of, plans and cost estimates for the further development of the broadband access, was started. During the three upcoming years, Serbia plans to adopt the Law on Broadband Communications Infrastructure; connect education and culture institutions to AMRES; prepare and plan the establishment of a unique national telecommunication network; analyse, prepare and design pilot projects; operationally establish a single national telecommunication network; construct access broadband networks in municipalities across the country.

Funds for financing the reform in the amount of EUR 910,408 are provided by the 2018 Budget Law. The allocation for financing the reform in 2019 and 2020 amount to EUR 646,408 per each year. Potential non-budget funds are provided for 2018, 2019 and 2020 in the amount of EUR 58 million per each year.

This reform is a follow up of the *Economic Reform Program 2017-2019* which envisages the construction of broadband access networks in municipalities across the country and to make the single national telecommunications network operational.

North Balkans Next Generation Access Network (NOBAL NGA network)

A trilateral project of cross-border empowerment of national public networks of Bulgaria, Romania and Serbia.

The main goal of the proposal is to provide the respective government bodies and public institutions with a high-speed protected communication channels to exchange information with corresponding bodies from the other countries. The objectives encompass:

- Establish cross-border links between the NGA public networks of the three countries;
- Invest in NGA broadband development in border regions to reach the Digital Agenda 2020 indicators;
- Provide free active and passive access to research, education, and other public networks relevant to EU funded and supported projects and initiatives;
- Backup the national NGA infrastructure and public services via international passive and active topology loops;
- Develop network protection tools and systems to guarantee high-level cybersecurity of the international feeding links;
- Establish ground and tools for the relevant government bodies to exchange information in a secure and trusted manner;
- Foster a favourable environment for cross-border projects in electronic government, education, health, and other e-services

Kosovo*⁷ - Economic Reform Program 2017-2019

Extending relevant ICT network infrastructure for socio-economic development - As a continuation of ERP 2016-2018 the reform aimed to enhance access and use of ICT through the extension of broadband infrastructure and supporting digital businesses to fully participate and maximize the benefits of digital economy in a global market. Based on NDS, Digital Agenda for Kosovo 2013-2020³⁷ and Strategy on IT³⁸, through this measure it is aimed to achieve the coverage (penetration) with broadband infrastructure to the extent of 98% households. It anticipates:

- Expansion of high-speed broadband infrastructure will continue in uncovered areas with a focus on rural areas and including all schools, libraries, health institutions that are in that area within **2018**. Estimated cost of implementation 9 million EUR.
- Expansion of high-speed broadband infrastructure will continue in uncovered areas with a focus on rural areas and including all schools, libraries, health institutions that are in that area within **2019**. Estimated cost of implementation 9 million EUR.

⁷ * This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence

Broadband connectivity TA needs

Albania - WBIF application

Feasibility Study and Cost-benefit analysis along with a development plan for Regional Broadband Infrastructure Development

The aim of this project is broadband infrastructure development at the national level, covering 2000 public education facilities and 500 health facilities with a minimum bandwidth of 30 Mbps. Also, this project shall ensure broadband infrastructure in 61 LGUs in all the country in order to enable public e-service delivery. The overall objective of this project is enhancement of cross border ICT infrastructure between the Western Balkan countries through digital connectivity improvements. Better access in ICT and broadband connection would strengthen the economic and social development in the country; the project will increase Internet Broadband (IBB) accessibility and connectivity in cross-border areas of the region, and provide connectivity for not only education institutions, hospitals, public institutions and LGUs, but also households. It will contribute to the economic development in the region through better digital broadband connectivity and reduce the digital gap by supporting inclusiveness & networking. The project will raise opportunities of the business in all economic sectors, in social inclusion of all participants, and community through ICT access.