

DEVELOPMENT OF NGA NETWORKS IN MONTENEGRO

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Agenda

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- Digital transformation
- ISP
- Fixed broadband Internet access
- Mobile broadband Internet access
- Agency's activities/measures for increasing NGA
- Goals

Key factors for digital transformation

Connections

Adoption

Usage

Bitrates and
Speeds

Traffic

Central and Eastern Europe

By 2021

72%

of the population will be using the Internet
up from 60% in 2016.



By 2021

32 GB

of Internet traffic per month, per user
up from 15 GB in 2016.



By 2021

3.8

networked devices and connections per person
up from 2.5 in 2016.



By 2021

77%

of all Internet traffic will be video
up from 56% in 2016.



By 2021

45.5 Mbps

average broadband speed
up from 29.2 Mbps in 2016.



By 2021

18 Mbps

average mobile speed
up from 6.6 Mbps in 2016.



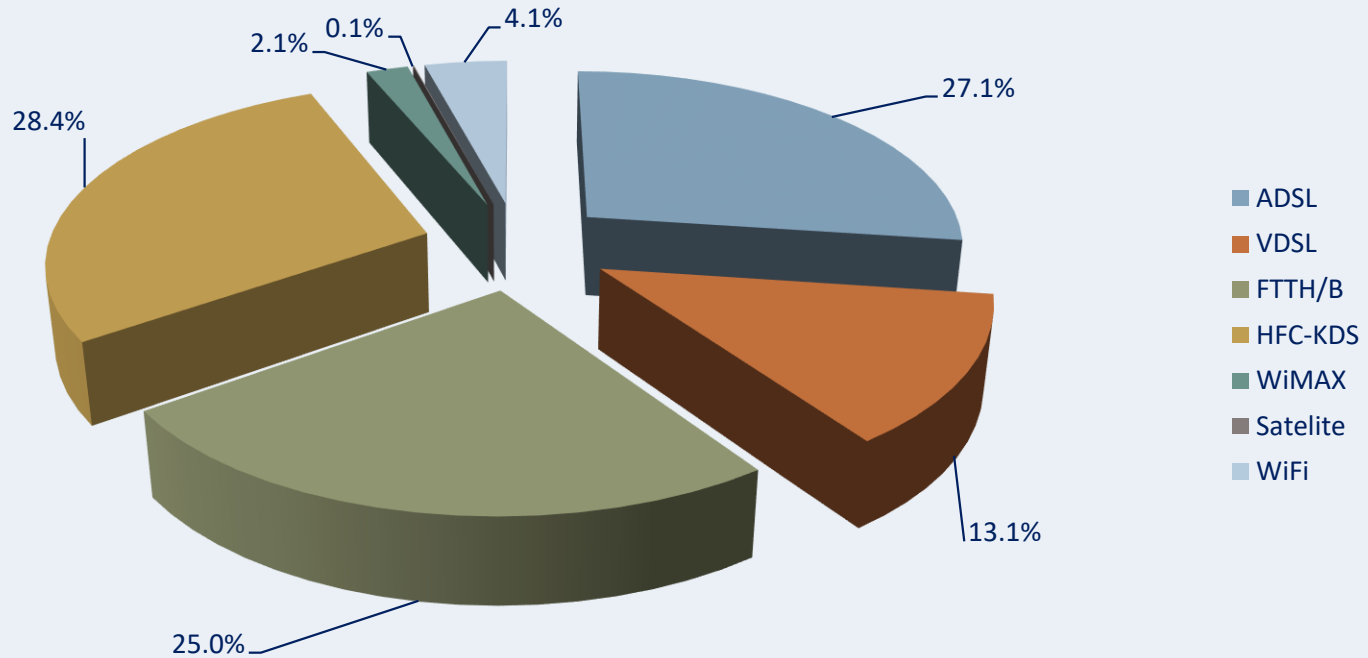
Internet Service Providers

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- Registered 16 – commercial active 11 ISP
- The biggest ISP - Crnogorski Telekom (incumbent)
- Market consolidation (mergers and acquisitions)
- Big ISPs offer bundled services (Most of subscribers are using bundled services)
 - ▣ Double play
 - ▣ Triple play
 - ▣ Quadruple play

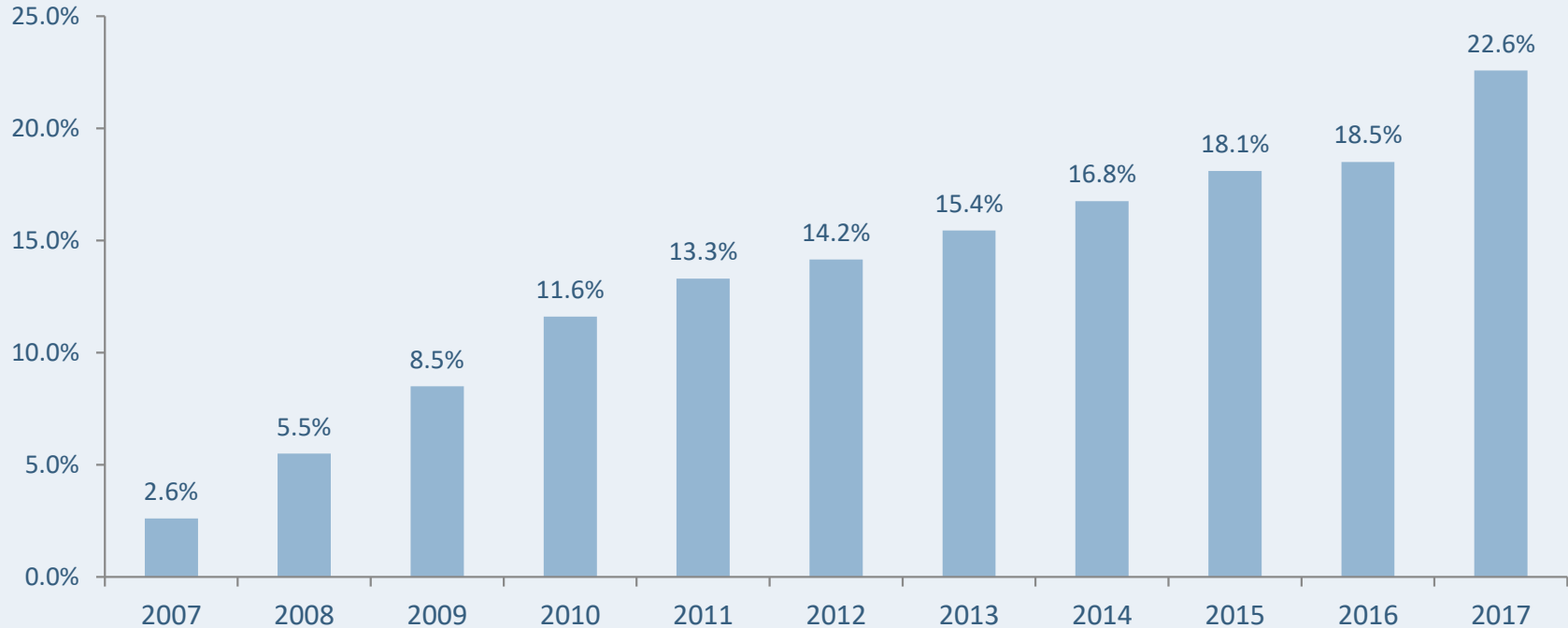
Fixed broadband Internet access subscriptions — technology

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Fixed Broadband Internet access penetration (% population)

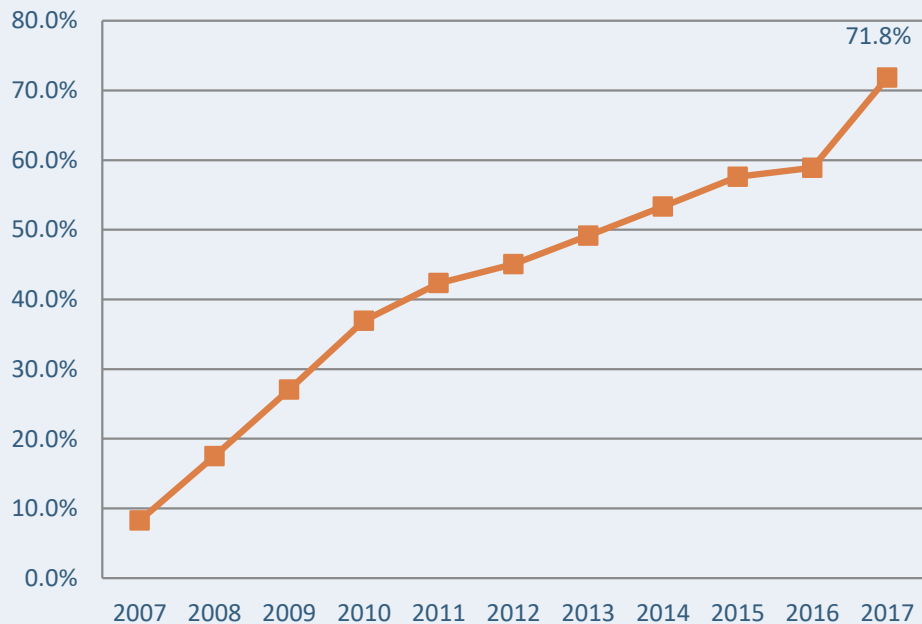
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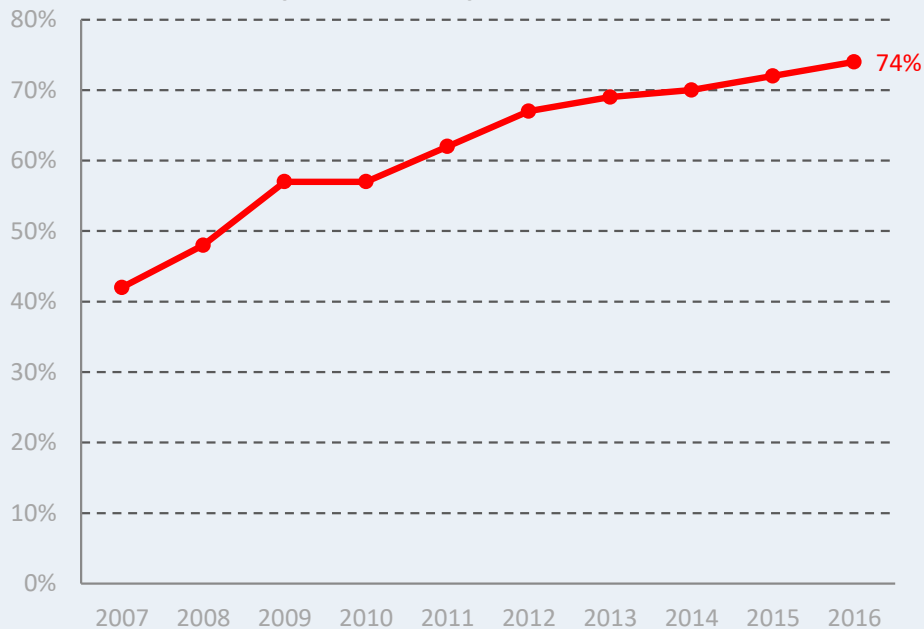
Fixed Broadband Internet access penetration (% households)

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Homes with a fixed broadband Internet access subscription in Montenegro (% household), 2007 - 2017



Households with a fixed broadband subscription at EU level (% household), 2007 - 2016

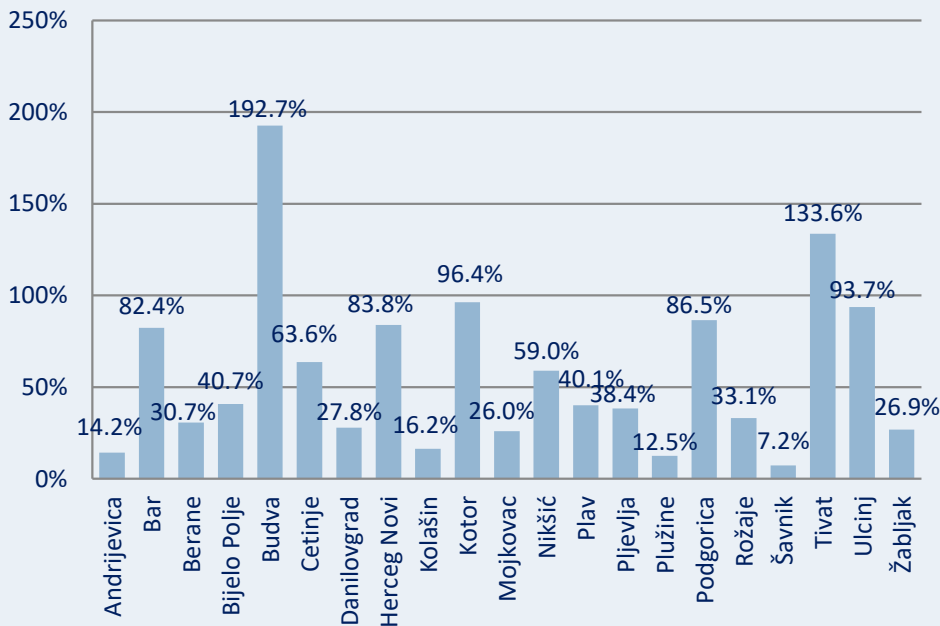


Source: Eurostat (ICT usage in households and individuals)

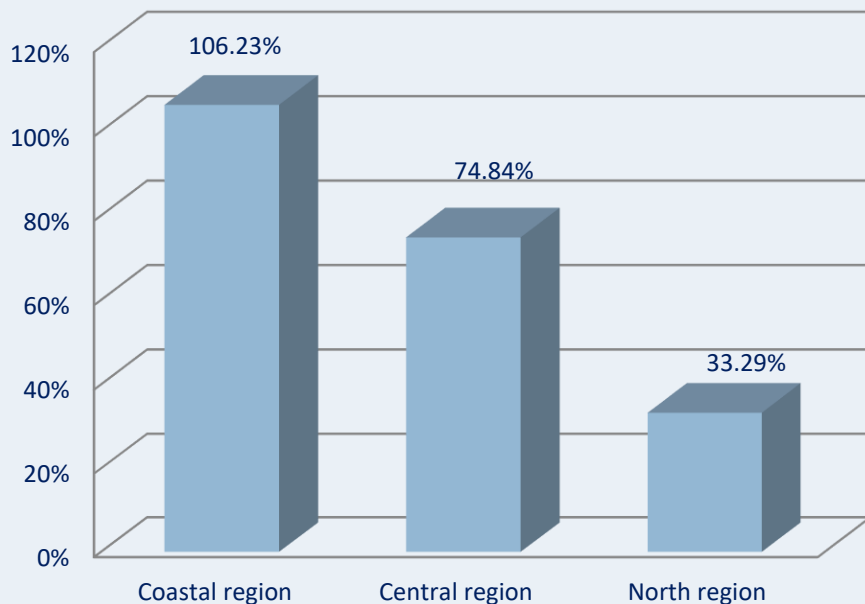
Fixed Broadband Internet access penetration (% households) - geographic distribution

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Fixed Broadband Internet access penetration (% households) by municipalities



Fixed Broadband Internet access penetration (% households) by regions



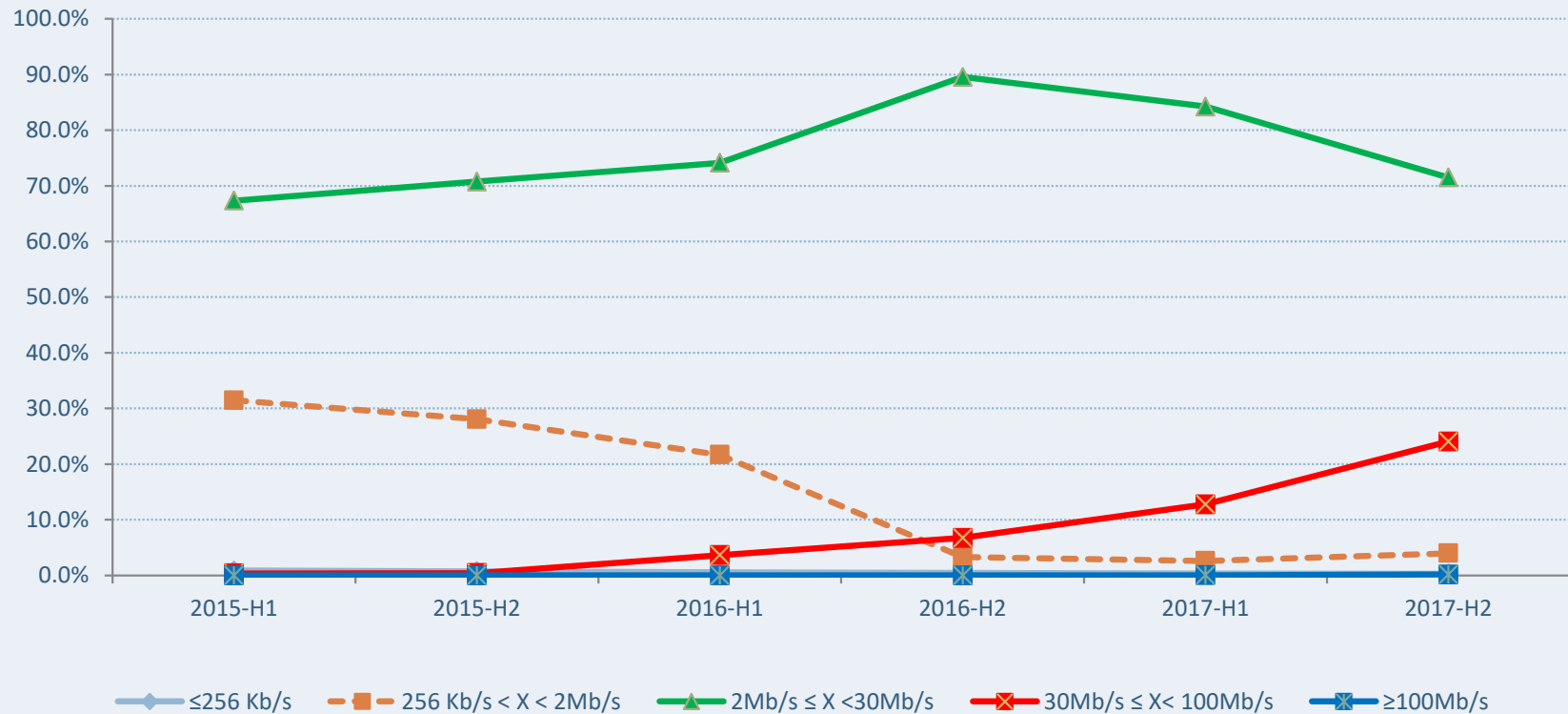
Competition in fixed broadband Internet access in Montenegro

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- 5 municipalities – 1 ISP (3,3% population)
 - ▣ Plav, Plužine, Šavnik, Žabljak, Gusinje
- 3 municipalities – 2 ISP's (5% population)
 - ▣ Andrijevica, Danilovgrad, Kolašin
- 15 municipalities - ≥ 3 ISP's (91,7% population)

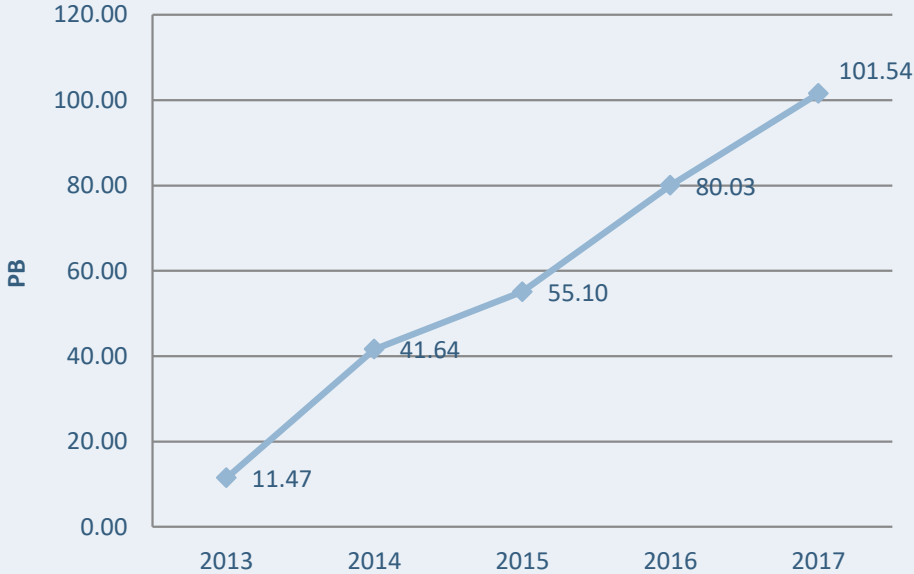
Fixed broadband Internet access subscriptions — access download speed

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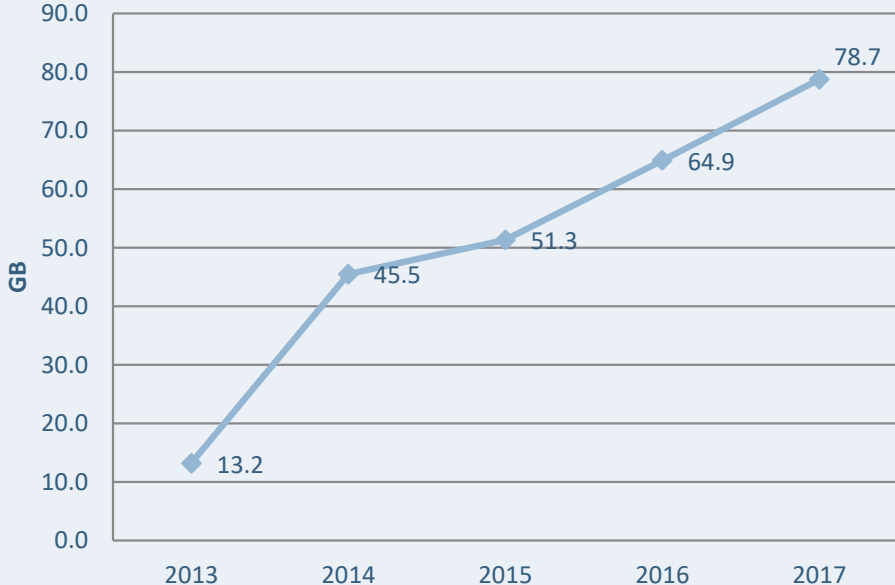


Internet traffic in fixed networks

Internet traffic in fixed networks - total



Monthly Internet traffic in fixed networks per subscriber



Comparison with EU data

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Montenegro

- ❑ NGA – 48.3% Coverage
- ❑ NGA – 66.5 % broadband subscriptions
- ❑ FTTH/B – 36.3% Coverage
- ❑ FTTH/B – 25 % broadband subscriptions
- ❑ 24.2 % Fast broadband access \geq 30 Mb/s

EU

- ❑ NGA - 76% Coverage
- ❑ NGA – 42 % broadband subscriptions
- ❑ FTTH/B – 24 % Coverage
- ❑ FTTH/B – 11 % broadband subscriptions
- ❑ 37 % Fast broadband access \geq 30 Mb/s

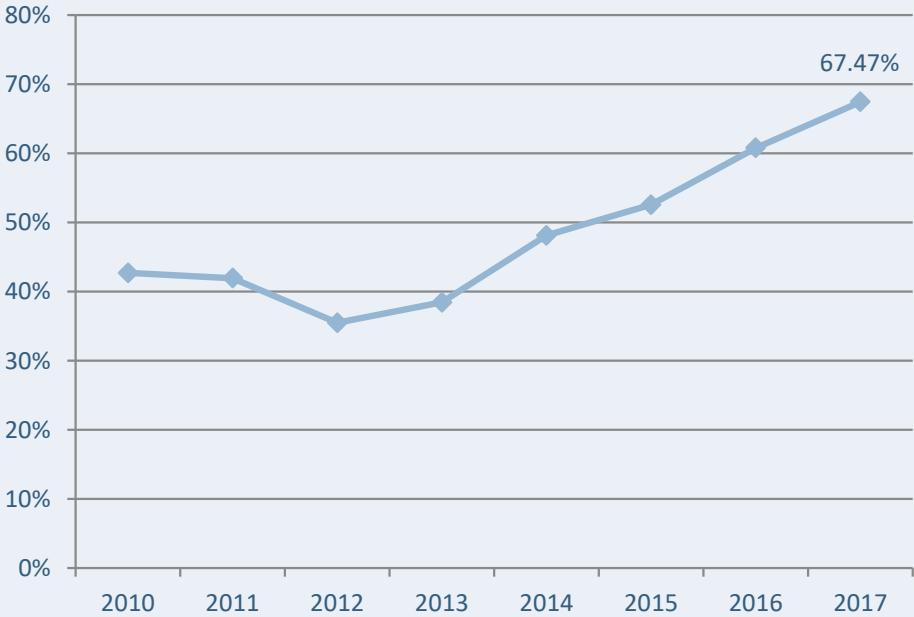
Source: Europe's Digital Progress Report 2017 – Connectivity

4G coverage of population

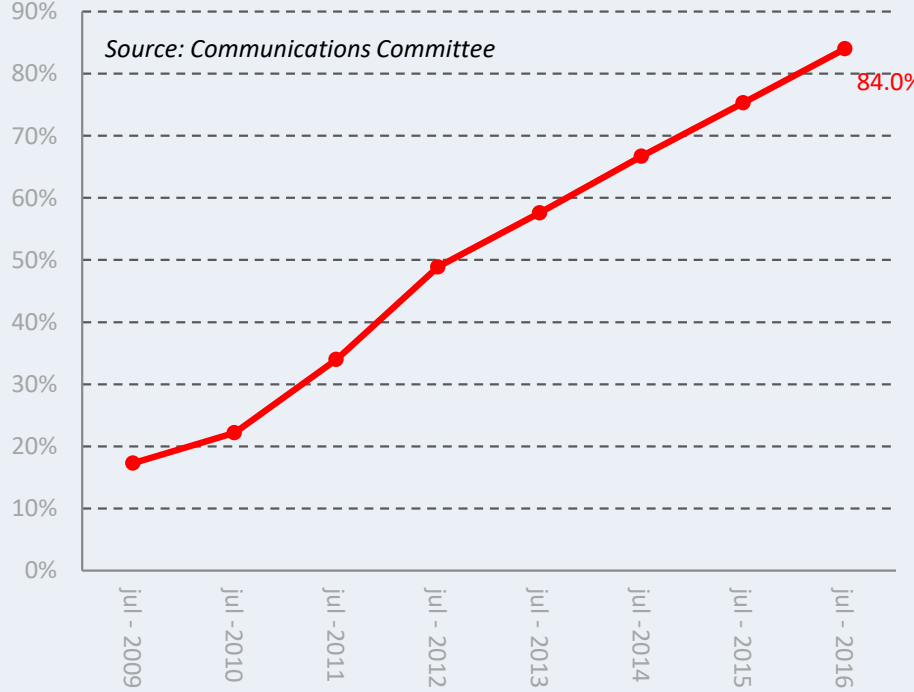
- Mobile operators implemented LTE technology;
- 98 % population is covered by 4G network of at least one mobile operator;
- At the end of 2017. > 95% population is covered by 4G network of two mobile operators;
- Max download speed depends of implemented technology and reaching 300 Mb/s

Mobile broadband Internet penetration

Mobile broadband penetration in Montenegro, 2010- 2017



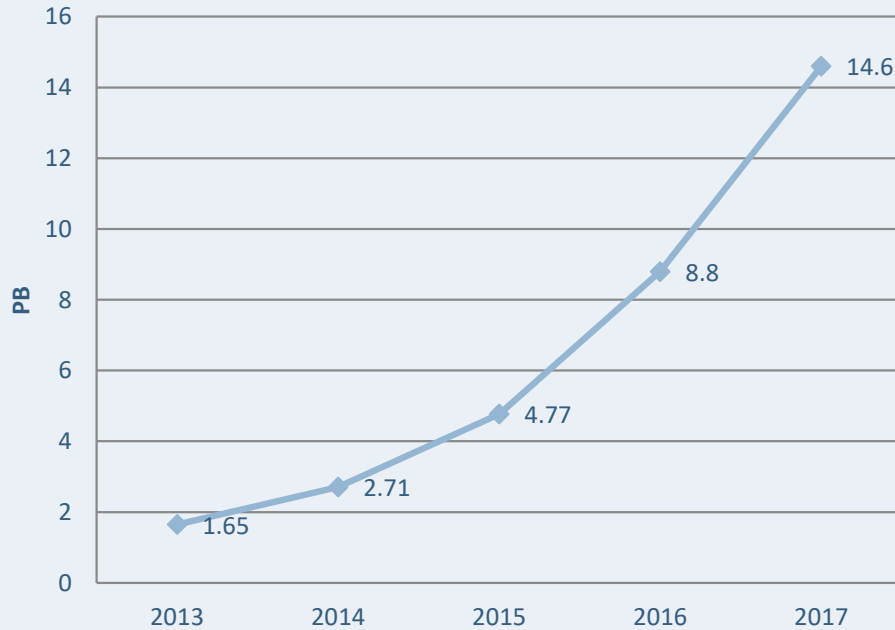
Mobile broadband penetration at EU level, July 2009 - July 2016



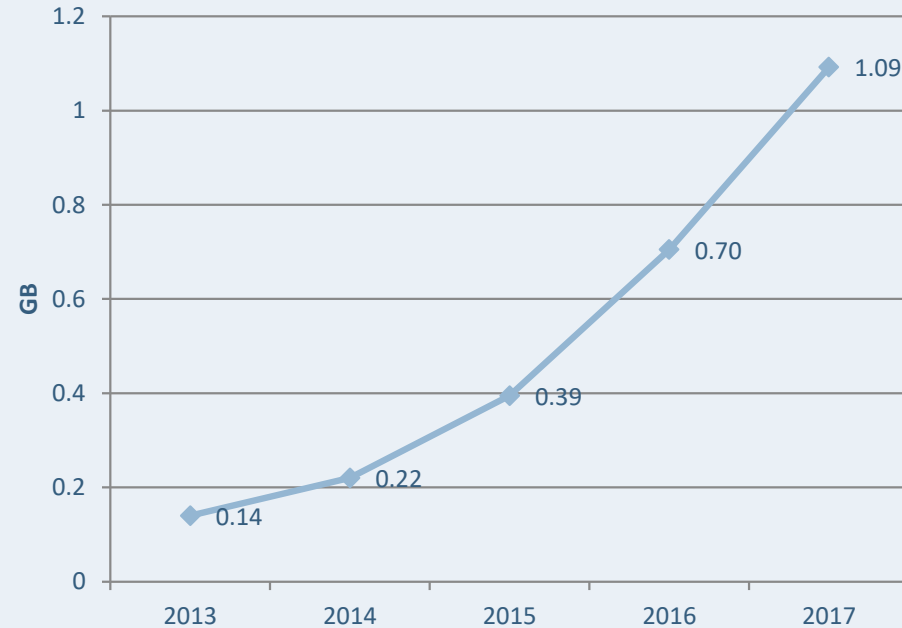
Internet traffic in mobile networks

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Internet traffic in mobile networks - total



Monthly Internet traffic in mobile networks per subscriber



Agency activities – measures for increasing NGA access

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- Shared use of electronic communications infrastructure (regulatory control of conditions for shared use);
- Spatial planning documents contain recommendations for building fibre access networks;
- Technical conditions for building of telecommunications networks in residential and commercial buildings for high speed electronic communications networks;
- Establishment of MIXP (MONTENEGRO INTERNET EXCHANGE POINT);
- Mapping of electronic communications infrastructure;
- Enabling the use of the necessary radio frequency spectrum:
 - Digital dividend 2 (694-790 MHz (or band 700 MHz)) – for MFCN;
 - Specific coverage requirements for 800 MHz band for Crnogorski Telekom.
- Tool for monitoring QoS for broadband Internet access;
- Reducing the prices of broadband internet access services through further competition improvement.

Strategy for development of information society 2020. - Goals

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Indicator	2016	2017	Strategy goals 2018	Strategy goals 2020
NGA Coverage % households covered with NGA (³ 30 Mbit/s)	26,5%	48,35%	60%	100%
Fixed broadband penetration (% households) Share of households using at least fixed broadband access (³ 2 Mbit/s)	53,3%	68,51%	80%	100%
Share of Fast broadband subscriptions Share of fast broadband subscribers in fixed networks (³ 30 Mbit/s) in total number of fixed broadband subscribers	3,6%	25,31%	30%	70%
Ultrafast fixed broadband penetration (% households) Share of households using ultrafast fixed broadband access (³ 100 Mbit/s)	0%	0,12%	20%	50%

Future goals /activities

- Strategy for development of information society 2020.
 - ▣ Broadband coverage 2Mb/s for 100% population - 2018.
 - ▣ Fast broadband coverage $\geq 30\text{Mb/s}$ for 100% population - 2020.
 - ▣ Using ultrafast broadband access $\geq 100\text{Mb/s}$ - 50% households - 2020.

- Mapping of broadband access;

- Ministry of economy is preparing draft Law on measures to reduce the cost of deploying high-speed electronic communications networks - Directive 2014/61/EU

Thank you for attention!

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