



BEREC-EMERG-EAPeREG-REGUATEL Summit

ENSURING CONNECTIVITY IN A CONVERGENT WORLD

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Encouraging investments in ultra-high capacity networks in Moldova and in EaP countries



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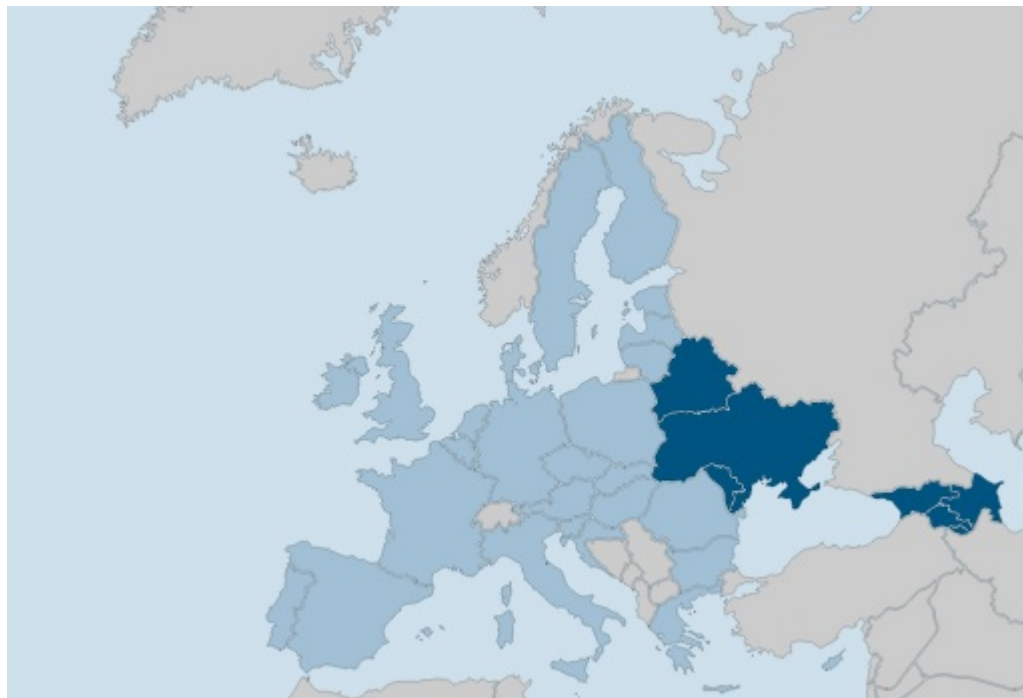
National Regulatory Agency for Electronic Communications and Information Technology of the Republic of Moldova (ANRCETI)

Director



Member Countries:

- Armenia
- Azerbaijan
- Belarus
- Georgia
- Moldova
- Ukraine

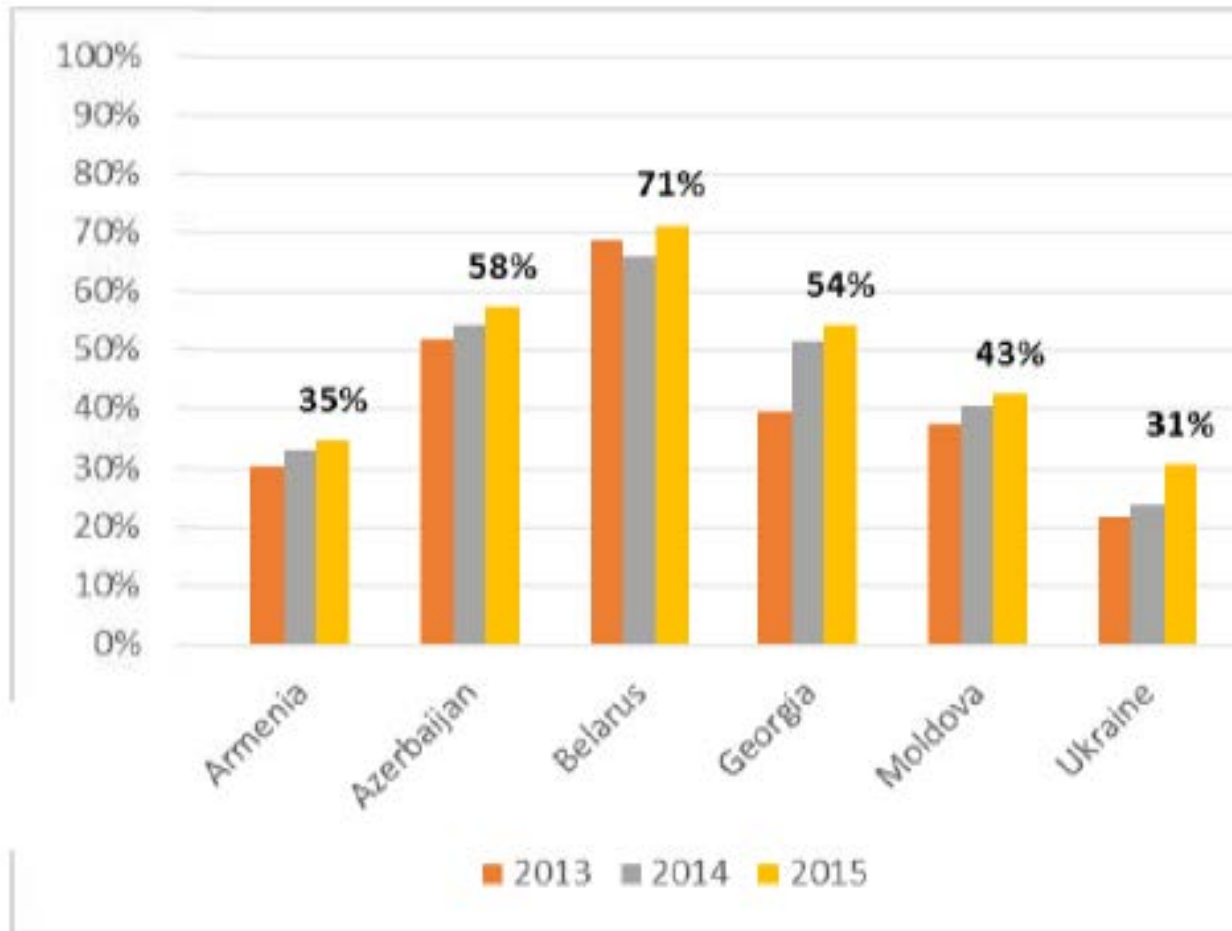


Participating regulators:

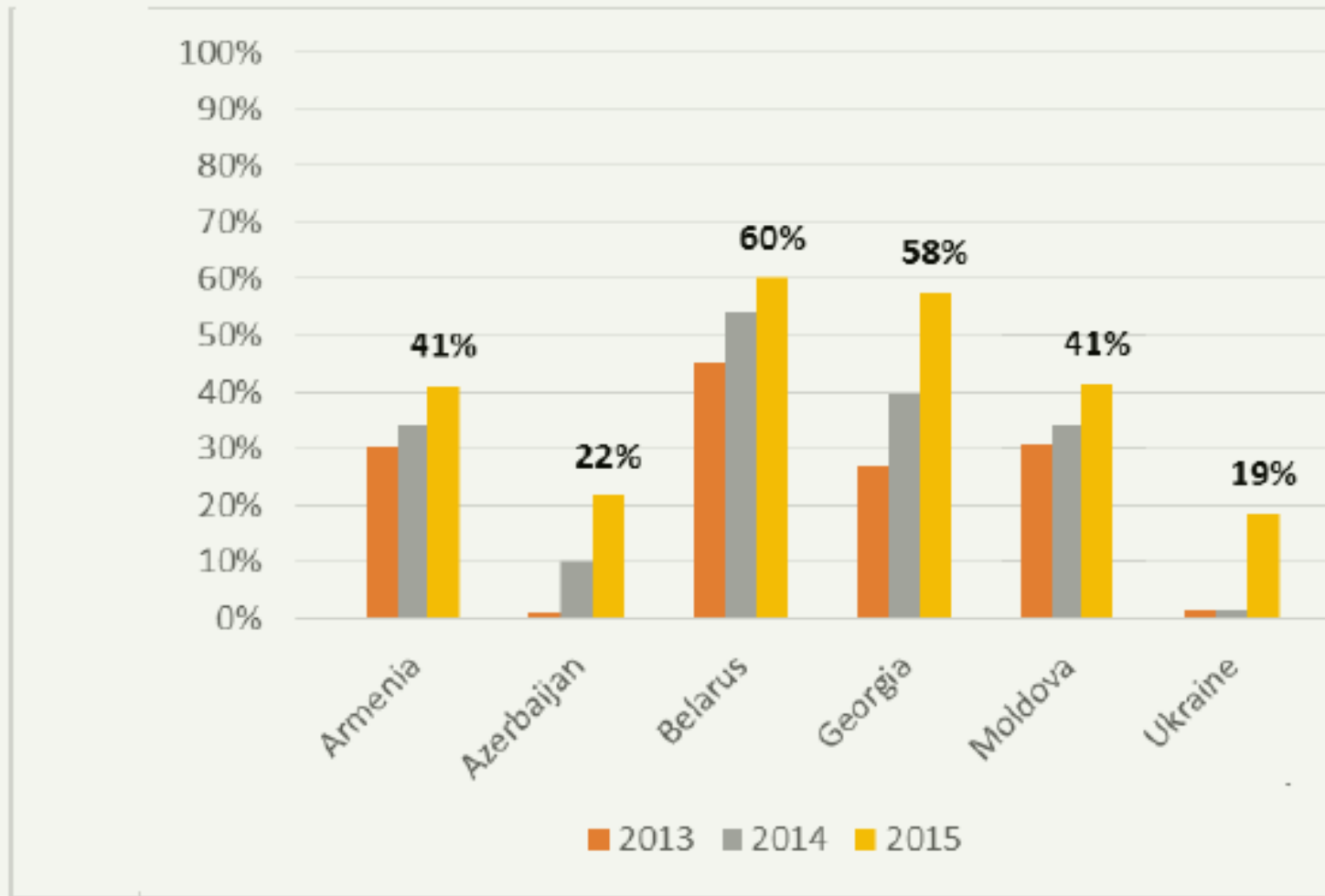
- Public Service Regulatory Commission (PSRC) of the Republic of Armenia
- Ministry of Communication and Information Technology of the Republic of Azerbaijan
- Ministry of Communications and Informatization of the Republic of Belarus
- Georgian National Communications Commission (GNCC)
- National Regulatory Agency for Electronic Communications and Information Technology (ANRCETI) of the Republic of Moldova
- National Commission for the State Regulation of Communications and Informatization of Ukraine (NCCIR)



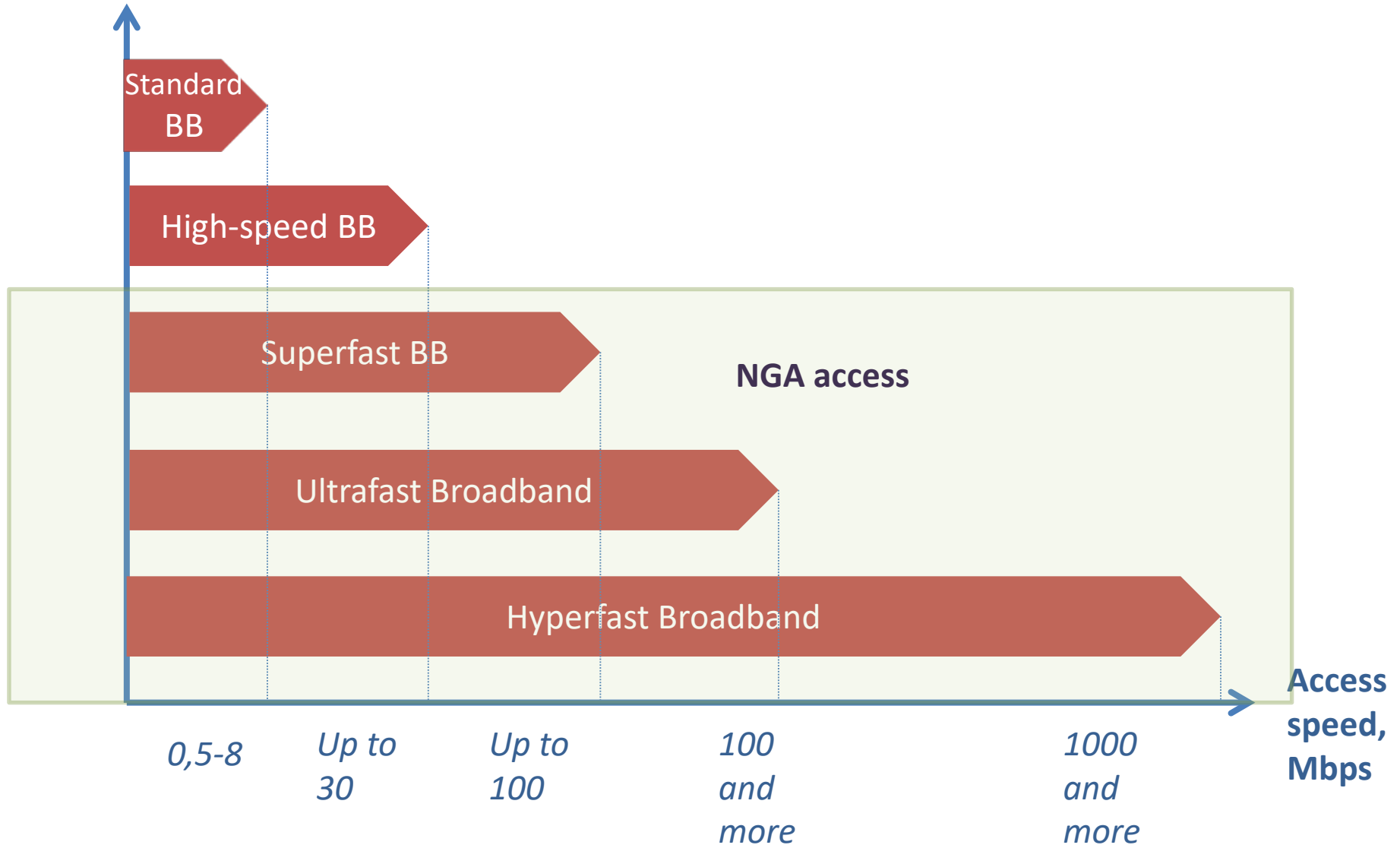
Number of connected households



Mobile broadband development in EaPeReg countries



Broadband speed definition





Wired technologies

- ❑ FTTH based:
 - Active Ethernet

 - PON technologies
- ❑ FTTB + LAN
- ❑ DOCSIS 3.0/3.1
- ❑ DSL based FTTN:
 - VDSL2 vectored

 - Vplus

 - G.Fast, XG.Fast

Wireless technologies

- ❖ 4G (LTE and LTE-Advanced)

- ❖ LTE fixed

- ❖ 5G

- ❖ WiFi

- ❖ Microwave

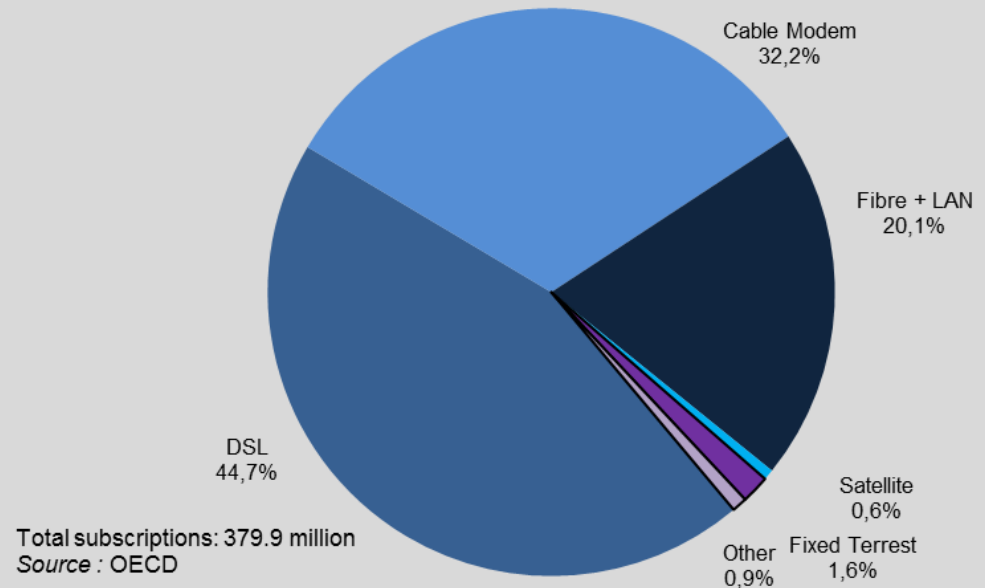
- ❖ WLL

The proportion of different fixed broadband technologies used



| | FTTH+FTTB | | | DSL | | | Other | | |
|------------|-----------|---------|------|---------|---------|------|---------|---------|------|
| | 2013 | 2014 | 2015 | 2013 | 2014 | 2015 | 2013 | 2014 | 2015 |
| Armenia | 28% | 35% | 42% | 65% | 57% | 49% | 7% | 8% | 9% |
| Azerbaijan | 6% | 8% | 8% | 87% | 86% | 86% | 6% | 6% | 6% |
| Belarus | no data | 8% | 16% | no data | 73% | 66% | no data | 19% | 19% |
| Georgia | 47% | 52% | 57% | 42% | 35% | 28% | 10% | 13% | 15% |
| Moldova | 49% | 51% | 54% | 44% | 42% | 38% | 7% | 7% | 8% |
| Ukraine | no data | no data | 32% | no data | no data | 11% | no data | no data | 56% |

OECD Fixed broadband subscriptions, by technology, June 2016



National policies on broadband connectivity within EaP countries



| Country | Digital Agenda Strategy (like Digital Agenda for Europe) | Link |
|-------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Armenia | X | - |
| Azerbaijan | National Strategy on development of information society in the Republic of Azerbaijan for 2014-2020 | http://www.mincom.gov.az/qanunvericilik/dovlet-proqramlari/# <i>(only in Azerbaijani)</i> |
| Belarus | State program of the digital economics and information society development in 2016-2020 | http://pravo.by/main.aspx?guid=12551&p0=C21600235&p1=1 <i>(only in Russian language)</i> |
| Georgia | X | - |
| Moldova | National Strategy for information society development „Digital Moldova 2020” | http://mtic.gov.md/sites/default/files/transparency/public_consults/strateg_857_en.pdf |
| Ukraine | X | - |

Presence of national plans on broadband development



| | AR | AZ | BY | GE | MD | UA |
|--------------------------------|----|----|----|----|----|----|
| National Broadband Plan | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ |

National Broadband Plan is a part of document or separated Plan oriented to the main document like national Digital Agenda Strategy on development of information society.

In Belarus, the main document –is the State program of the digital economics and information society development in 2016-2020.

In Azerbaijan the National Broadband Project was adopted in 2013 and envisages the deployment of FTTH to all territory of Azerbaijan

Moldova realized the National Plan for Broadband for 2010-2013, now there is a draft of Program to develop broadband networks for the years 2017-2020, targeted at achieving the objectives of the National Strategy for information society development [„Digital Moldova 2020”. The draft Program was subject to consultation procedure and is in](#) process to be approved.

In Armenia, Georgia and Ukraine there is no plan for development of broadband networks.



| The European Commission's Digital Agenda | "Digital Moldova 2020" Strategy |
|------------------------------------------|----------------------------------------------------------------------------------|
| 30 Mbps for all by 2020 | All localities shall have availability of broadband speeds above 30 Mbps by 2020 |
| 100 Mbps for half of households by 2020 | At least 60% of households to be connected to broadband by 2020 |

Republic of Moldova, the structure of the electronic communications market



Fixed market

OPERATOR NATIONAL
MOLDTELECOM

StarNet

**SUN
Communications**

About 200 smaller
operators

Ministry
of ICT –
the policy
maker

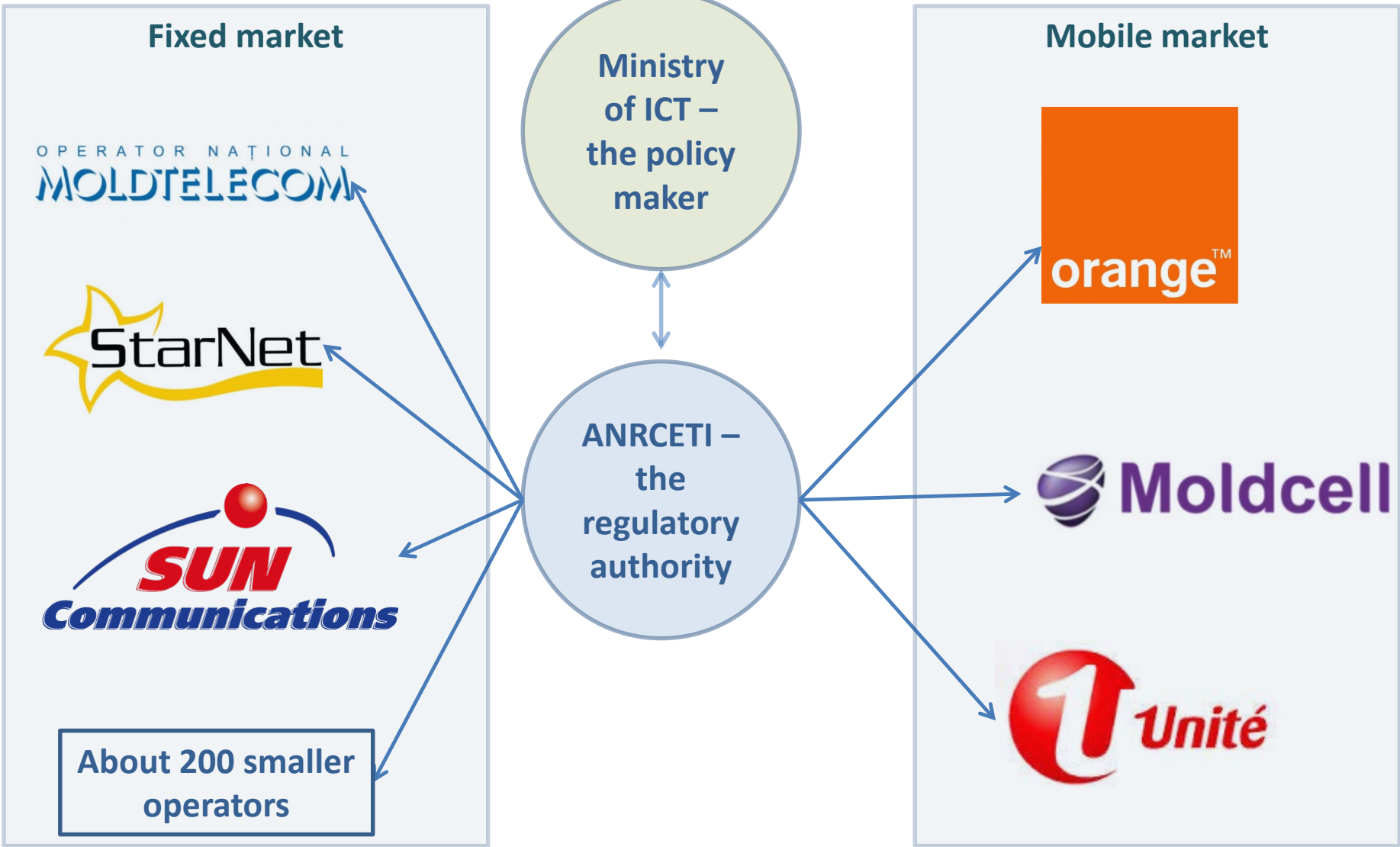
ANRCETI –
the
regulatory
authority

Mobile market

orange™

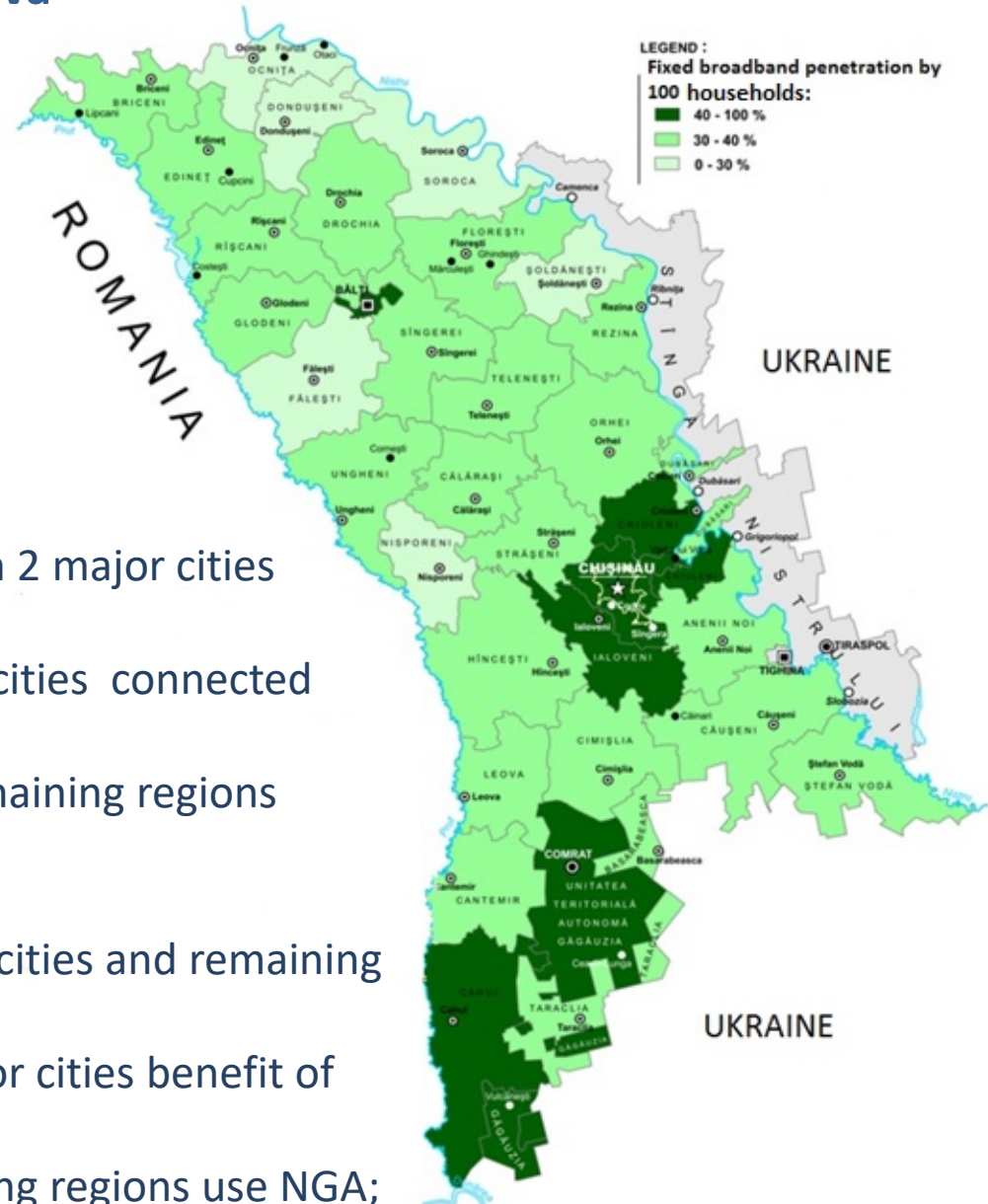
Moldcell

1 Unité

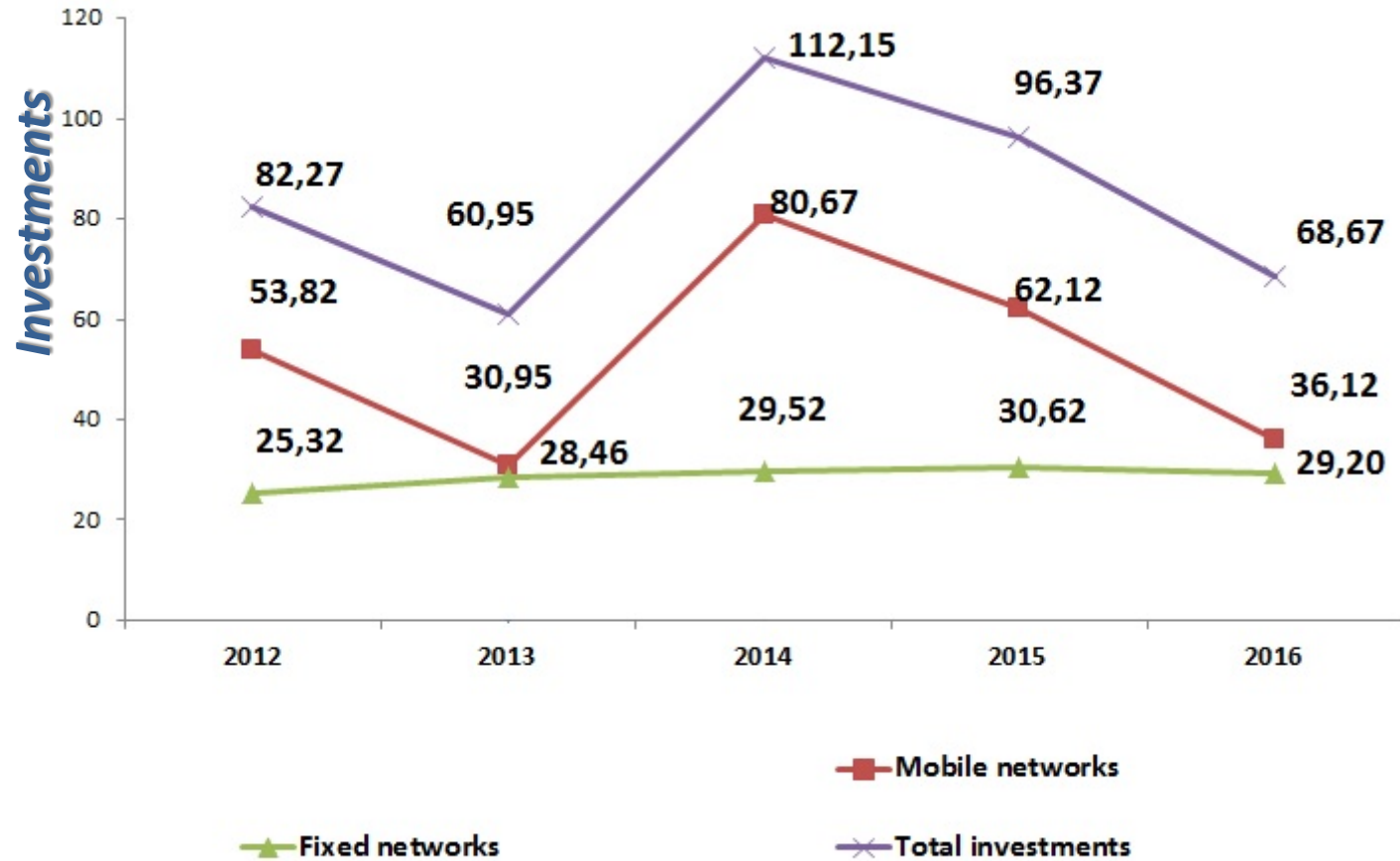


Broadband penetration in Moldova

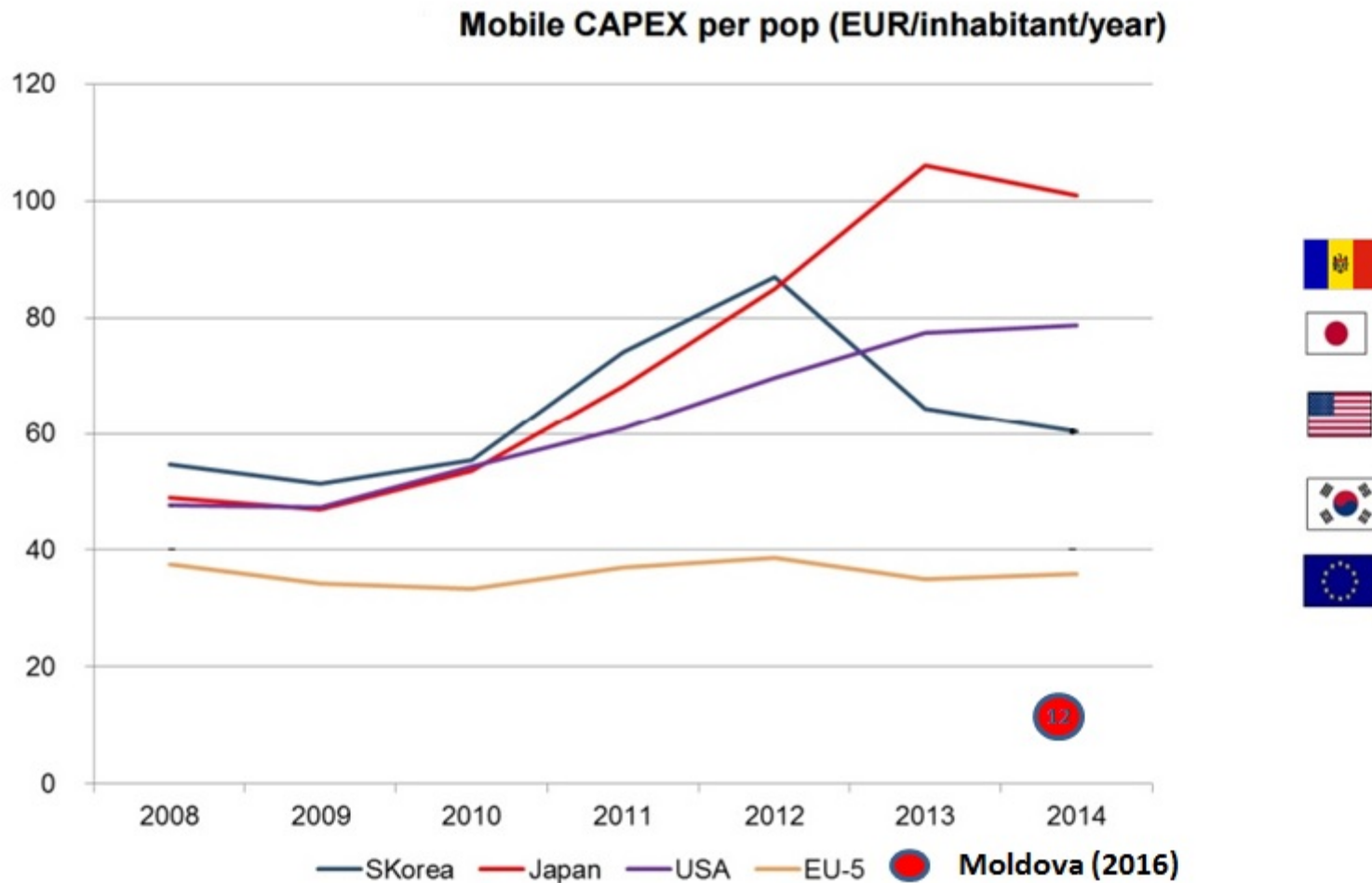
- The average (fixed) broadband penetration in Moldova (year 2016):
 - 46,5% of the households;
 - 15,7% of the population.
- There is a visible digital divide between 2 major cities and remaining regions :
 - around 80% of households in major cities connected to broadband;
 - around 33-35% of households of remaining regions connected to broadband;
- Technology disparity between 2 major cities and remaining regions :
 - around 90% of the subscribers in major cities benefit of NGA technologies (FTTH and DOCSIS 3.0);
 - only 37% of the subscribers in remaining regions use NGA; 62% have to rely on ADSL.



Evolution of investments in main network types in Moldova



The comparative level of investments of mobile operators

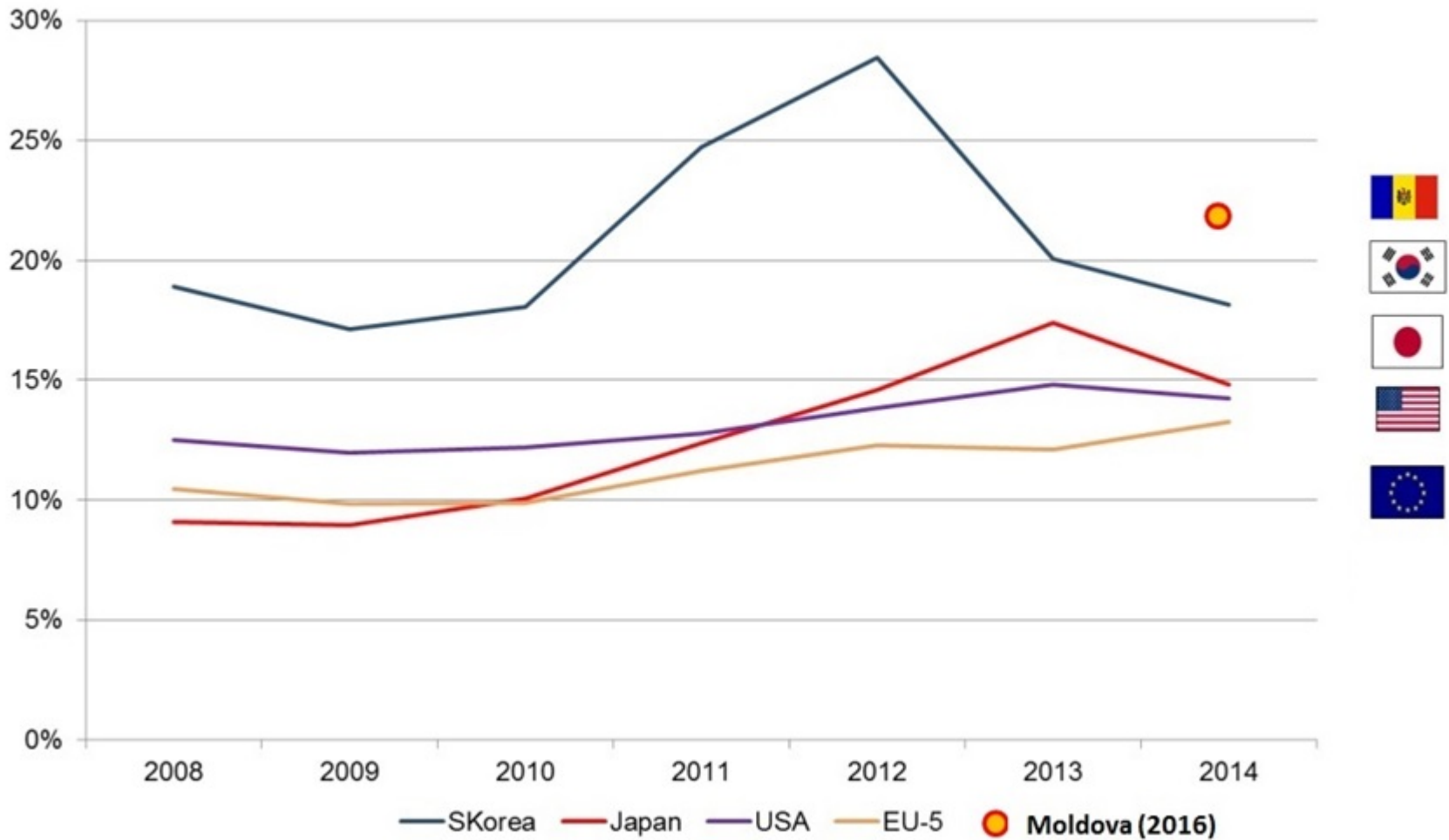


Source: [iDate](#), ANRCETI

The comparative level of investments of mobile operators

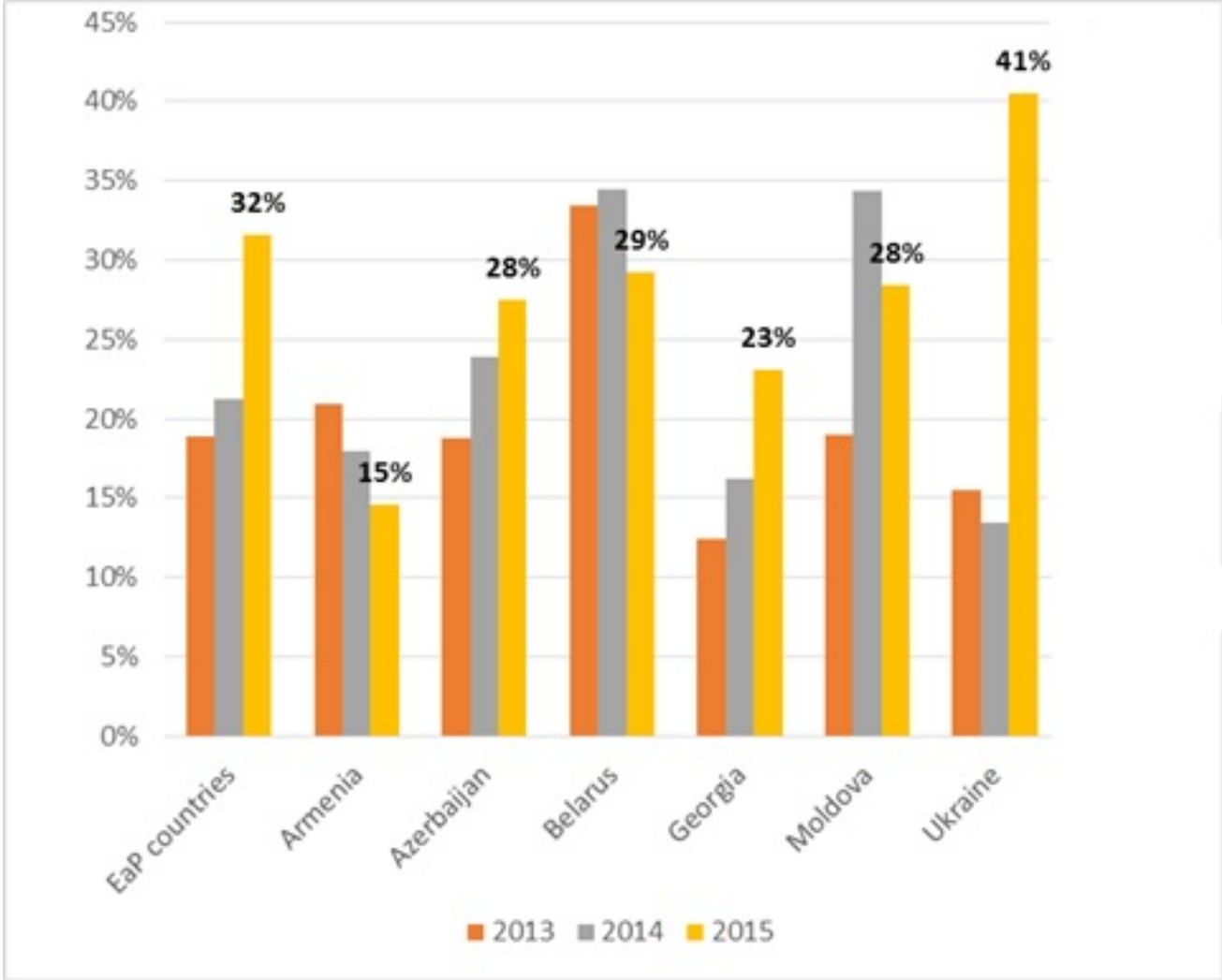


CAPEX/Revenues (% of revenues)



Source: iDate, ANRCETI

The investment level in electronic communications in EaP countries





- 1 *Ex-ante* regulation of the upstream markets
- 2 Access to alternative infrastructures and to public properties
- 3 Encouraging infrastructure sharing and co-investments between operators
- 4 Spectrum release for mobile networks



The *ex-ante* regulation

- Maintaining the *ex-ante* regulation;
- Incentivizing the SMP operator to invest in the access network;
- Provision of virtual access products by the SMP operator;
- Mandating access to the civil infrastructure of the SMP operator in order to allow investments in competing networks;



Law no.28/2016 on access to properties and shared use of the infrastructures associated to electronic communications networks :

- the operators have the right of access to public and private infrastructures to deploy network elements;
- public and private entities have to allow access and negotiate the terms of the access;
- the access shall be granted in a transparent and non-discriminatory manner;
- the tariffs for access should be cost oriented;
- ANRCETI is competent to solve disputes between operators and infrastructure owners;



Spectrum release for mobile networks

- 1 1200 MHz of spectrum to mobile networks, according to RSPP (Radio Spectrum Policy Program of the EU) recommendation
- 2 Republic of Moldova has already allocated 1025 MHz to mobile (85% of the recommended level). Another 60 MHz slice will be released in the coming years in the 700 MHz band.
- 3 45% of the total 1025 MHz have been requested by the operators, mainly in the sub-1GHz bands and 1800 MHz.
- 4 Spectrum caps were used for 800 MHz, 900 MHz and 1800 MHz bands. This helped smaller operators to have equal chances to obtain frequencies suitable for 3g and 4G.
- 5 Technological neutrality principle has been introduced.



Summary

- ❖ The ultra high-speed networks are well developed in major cities of Moldova, where more than 90% of the subscribers are connected via FTTB/FTTH and DOCSIS 3.0.
- ❖ In less densely populated areas ADSL is going to remain the basic access technology. Developing NGA networks in these areas is a challenge.
- ❖ Regulatory conditions were created to develop high-speed broadband networks with deeper fiber. In less populated areas , the replacement of ADSL is likely to produce when technologies like VDSL2 vectoring, Vplus, G.Fast become more affordable.
- ❖ There are being created regulatory conditions for easier access of the operators to existing alternative infrastructures. These measures will help operators to reduce the network deployment time and to save 10-20% of their CAPEX and OPEX.
- ❖ All three mobile operators have obtained enough spectrum for their networks. These networks will be a good alternative for wired networks in areas with reduced access to wired technologies.



Conclusion

- The ultra high-speed networks are being developed rapidly in EaP countries;
- In 3 countries Next Generation Access represents the majority of the total broadband subscribers;
- The investments in modern broadband networks in EaP countries are increasing, showing a technological change and networks upgrade;
- The investments versus revenues indicator exceeds 20% in all the EaP countries;



Thank you!



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