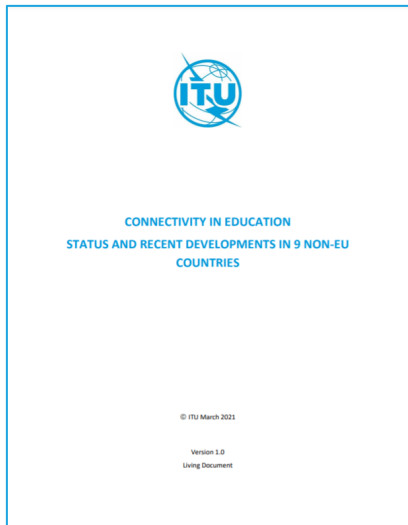
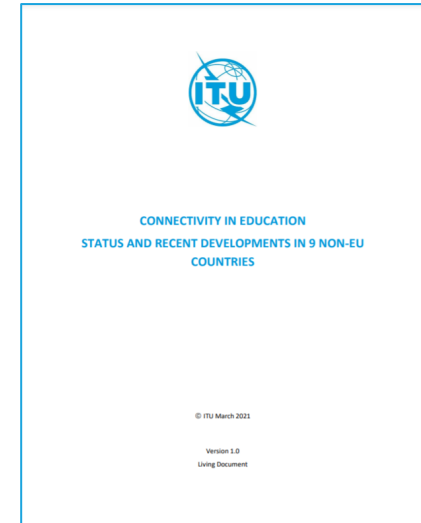


Connectivity in Education: Status and recent developments in 9 non-EU countries



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International Telecommunication Union*





EUROPE

REGIONAL INITIATIVES

BUENOS AIRES ACTION PLAN

2018-2021

EUROPE - REGIONAL INITIATIVE 1

Objective: To facilitate high-speed connectivity with resilient and synergistic infrastructure development, deployment and sharing, whilst ensuring a trusted and quality user experience.


Regional initiative

1

Broadband infrastructure, broadcasting
and spectrum management

Connectivity in Education

Status and Recent Developments in 9 non-EU Countries



CONNECTIVITY IN EDUCATION
STATUS AND RECENT DEVELOPMENTS IN 9 NON-EU COUNTRIES

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Living Document

1. Introduction

1.1 This report highlights the situation concerning meaningful connectivity in public institutions as a driver of digital transformation of the country level. It has been published over the past years in the wake of the global pandemic, the trend has increased as institutions are looking for ways to improve their administrative processes by using telepresence through digitalization, just as the private sector has. It also reflects the World Health Organization's announcement of the COVID-19 as a global pandemic in March 2020, the digitalization of government services had already been widely recognized as a priority to support a more open, friendly and efficient digital environment for citizens at a lower cost.

Among the variety of public institutions, schools and various other organizations offering educational services have attracted particular attention in terms of remote access over the past few years. Digital connectivity has not only allowed for a better administration of the educational system, from the central or local government to the school level, it can also impact curricula and enrich the substance of education by allowing teachers to engage in more pedagogical practices and other strategies of learning modalities. In order to respond to the current and future demands for digital skills in the workplace, several countries around the world have been actively addressing the need of enhancing digital skills among the young population. However, such a career requires adequate infrastructure at the school and country level, including access to appropriate ICT devices and reliable connection to the internet.

As institutions and other service providers address their requirements, several countries will have temporarily moved education from the classroom to the household, eventually checking the need for active learning schools' ICT equipment and connectivity. The WB has also found adaptation to distance learning and digitally enhanced education. This has raised the importance of connectivity, the availability and access to appropriate devices, and the development of adequate digital skills necessary to thrive in the future.

As the pandemic subsides and students make their way back to the classroom, it is critical to foster investment in this important area, digitalizing educational systems while expanding teachers' portfolio of competencies and students' skills, paving the way towards the development of digital skills, has become equally important for the years ahead.

2. Regional Overview

2.1 Overview of the education system and status of broadband

The first section of each country profile aims to describe the specific context in which the data for the analysis. Drawing upon extensive research of the country's main institutions pertaining to education and telecommunications, the author presents general data for both policy areas, thereby providing an updated overview of the situation as of 2021.

In most of the nine countries, large educational reforms can be traced back to the early 1990s, and in many others, similar reforms have been made more recently. In general, the reforms have aimed at modernizing, decentralizing and improving the quality of education. In the context of the digital transformation, these reforms have also aimed at enhancing the quality of education in connectivity with the use of digital technologies. These reforms will continue to play a significant role in the development of digital skills and competencies for the future workforce, including the use of digital technologies.

The following subsections will provide a higher picture by looking into how all the education and connectivity systems are performing in the region. The data is presented in a comparative manner, as all countries have been making progress over time. Despite all, the investigation of the challenges and opportunities will help make a few considerations and observations in relation to the region.

Education Systems Data

Table 1.1: Education Systems Data (2019)

Country	Number of students (Millions)	Number of teachers (Millions)	Number of schools (Millions)	Number of students per teacher (Ratio)	Number of students per school (Ratio)
Albania	1.2	0.1	0.1	12	12
Bosnia and Herzegovina	1.5	0.1	0.1	15	15
Georgia	1.8	0.1	0.1	18	18
Moldova	2.0	0.1	0.1	20	20
Montenegro	0.8	0.05	0.05	16	16
North Macedonia	1.0	0.1	0.1	10	10
Serbia	2.5	0.2	0.2	12.5	12.5
Turkey	20.0	2.0	2.0	10	10
Ukraine	10.0	1.0	1.0	10	10

3.2 Progress of the Paper

Progression in connectivity is a key challenge in school connectivity globally, and this involves both the efficient management and use of resources from a public administration perspective, as well as the possibility of implementing educational policies that include digital skills development in schools. Some non-EU countries in Europe region, indeed, face high barriers in this area, frequently characterized by the high cost of both network equipment and access to ICT equipment coupled with inadequate trained human capital, which often results in the lack of a sound strategic approach at the national level.

ITU's goal is to ensure that these long-term goals are achieved substantially, leading to educational systems that are prepared and able to deliver quality of service for connecting digital services with the goal of accelerating the country's digital transformation and support the attainment of UN Sustainable Development Goals. For this ITU seeks to provide a feasible assessment for investment in school connectivity and the infrastructure underlying it. The report will present available data at the local, regional, and international level.

In its role as a part of the ITU's Digital Skills for Growth Initiative, the organization is committed to addressing the challenge by offering a higher picture on the status of many factors relating to school connectivity, supported by the research of Europe Region.

While pursuing a culture of educational systems and their relationship with connectivity, there is no doubt of the importance of investing in digital connectivity education. However, not all countries in the world, unfortunately, have a similar profile with a standardized practice including the following factors:

1. Overview of the education system and status of broadband
2. Document strategies, status of the quality of education, and the use of ICT
3. Network capabilities and existing connectivity learning modalities in school
4. Network readiness to COVID-19 and pedagogical initiatives for distance education

Beyond the broad picture of the national context, the main focus will be on ICT equipment and connectivity in schools and the policies and actions implemented to address the connectivity gaps in educational institutions in both educational and regional institutions. Countries in the scope of this study are those characterized by a relative potential for investment in this area: Albania, Bosnia and Herzegovina, Georgia, Moldova, Montenegro, North Macedonia, Serbia, Turkey, and Ukraine.

Connectivity in Education: Status and Recent Developments in 9 non-EU countries

Country	Fixed Broadband (Mbps)	Mobile Broadband (Mbps)	Fixed Broadband (Mbps)	Mobile Broadband (Mbps)
Albania	10.0	10.0	10.0	10.0
Bosnia and Herzegovina	10.0	10.0	10.0	10.0
Georgia	10.0	10.0	10.0	10.0
Moldova	10.0	10.0	10.0	10.0
Montenegro	10.0	10.0	10.0	10.0
North Macedonia	10.0	10.0	10.0	10.0
Serbia	10.0	10.0	10.0	10.0
Turkey	10.0	10.0	10.0	10.0
Ukraine	10.0	10.0	10.0	10.0

Source: ITU's Regional Profiles (2021) <https://www.itu.int/ITU-T/development/RegionalProfiles/>

*All data refers to 2020 apart from Turkey (2019) and Ukraine (2014)

Importantly, according to UNESCO, 87% of children or adolescents between 6 and 17 are 100% of school in these countries, representing almost all of the total school population. This reflects that while the school system has been substantially reactivated after the pandemic, there is still a great margin for improvement from an inclusion point of view.

Connectivity Data

ITU's goal is to ensure connectivity, taking connectivity as a key indicator from the UN World Development Indicators Database for 2020. With the aim of providing a picture of the status of connectivity in each of the countries, indicators that measure the penetration of mobile broadband services, the estimated percentage of households with internet access, or, more specifically, the percentage of households with 4G/LTE access, the number of fixed and mobile broadband subscriptions per 100 inhabitants, and the percentage of the population covered by 4G/LTE.

Table 1.2: Connectivity Data (2020)

Country	Fixed Broadband (Mbps)	Mobile Broadband (Mbps)	Fixed Broadband (Mbps)	Mobile Broadband (Mbps)
Albania	10.0	10.0	10.0	10.0
Bosnia and Herzegovina	10.0	10.0	10.0	10.0
Georgia	10.0	10.0	10.0	10.0
Moldova	10.0	10.0	10.0	10.0
Montenegro	10.0	10.0	10.0	10.0
North Macedonia	10.0	10.0	10.0	10.0
Serbia	10.0	10.0	10.0	10.0
Turkey	10.0	10.0	10.0	10.0
Ukraine	10.0	10.0	10.0	10.0

- Albania
- Bosnia and Herzegovina
- Georgia
- Moldova
- Montenegro
- North Macedonia
- Serbia
- Turkey
- Ukraine



Introduction

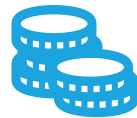
Each country profile covers the following:



1. Overview of the **education system** and **status of broadband**



2. Government strategies, status of the **quality of education**, and the **role of ICTs**



3. Multi-stakeholder partnerships and **financing mechanisms** fostering investment in school connectivity



4. National **responses to COVID-19** and pedagogic initiatives for **distance education**

1. Overview of the Education Systems

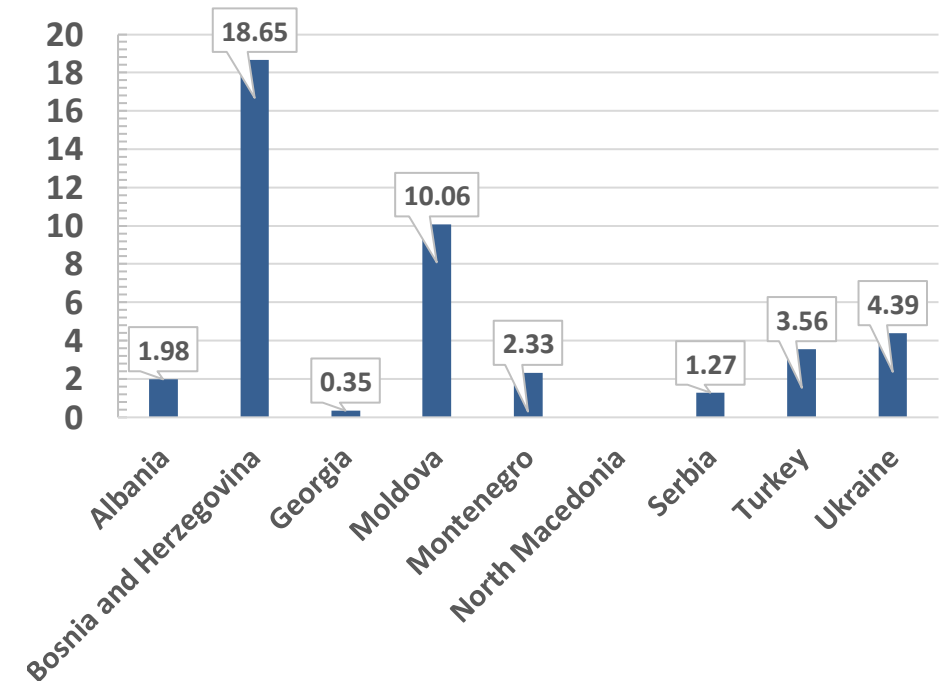


- **25 million pupils** between ages 6 and 17 and around **130,000 schools** covered by the analysis
- All require **eight or more years of compulsory education**
- According to UNESCO, **975,812 children/adolescents** between 6 and 17 still **out of school** in these countries

Length of Compulsory Education

Albania	9
Bosnia and Herzegovina	9
Georgia	9
Moldova	11
Montenegro	9
North Macedonia	13
Serbia	8
Turkey	12
Ukraine	11

Number of children and adolescents out of school (as % of those in school)



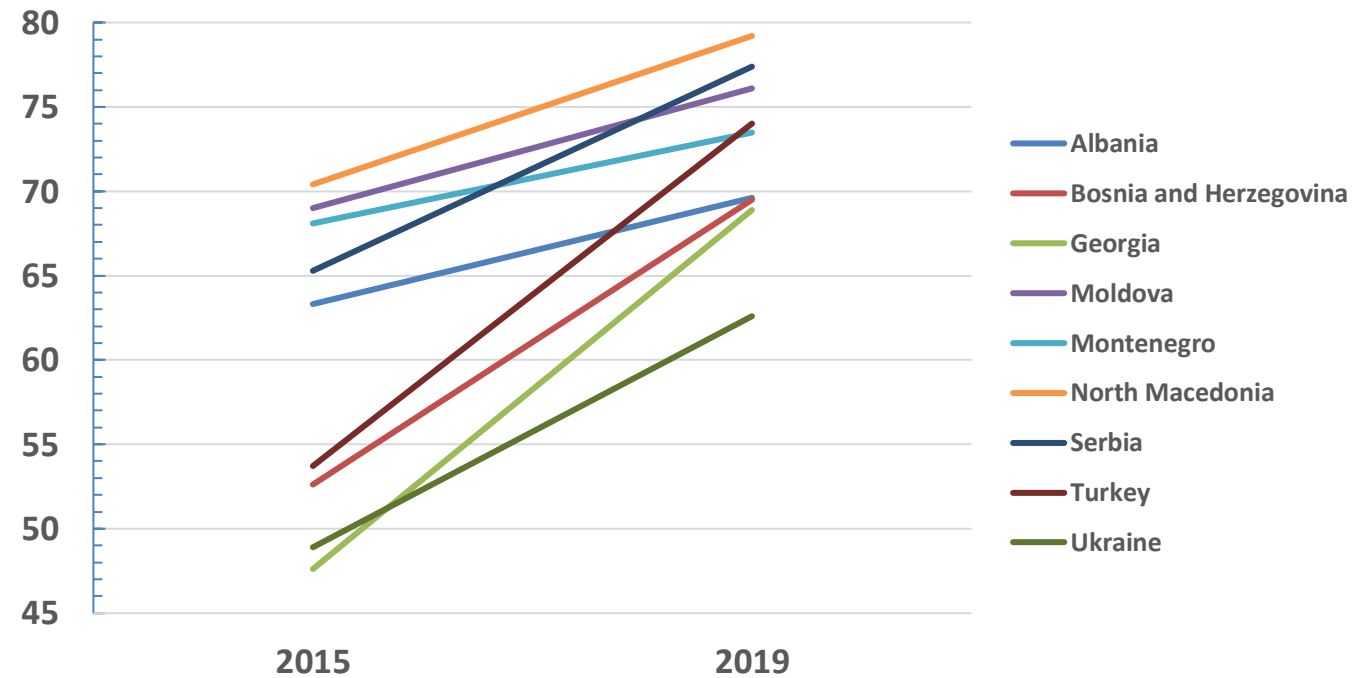
UNESCO country data (<http://uis.unesco.org/>)



1. ICT background and current status of broadband

- **27 million people have been brought online** since 2015
- However, **44 million individuals** do not make use of the Internet in 2019

Internet Users (as % of population)

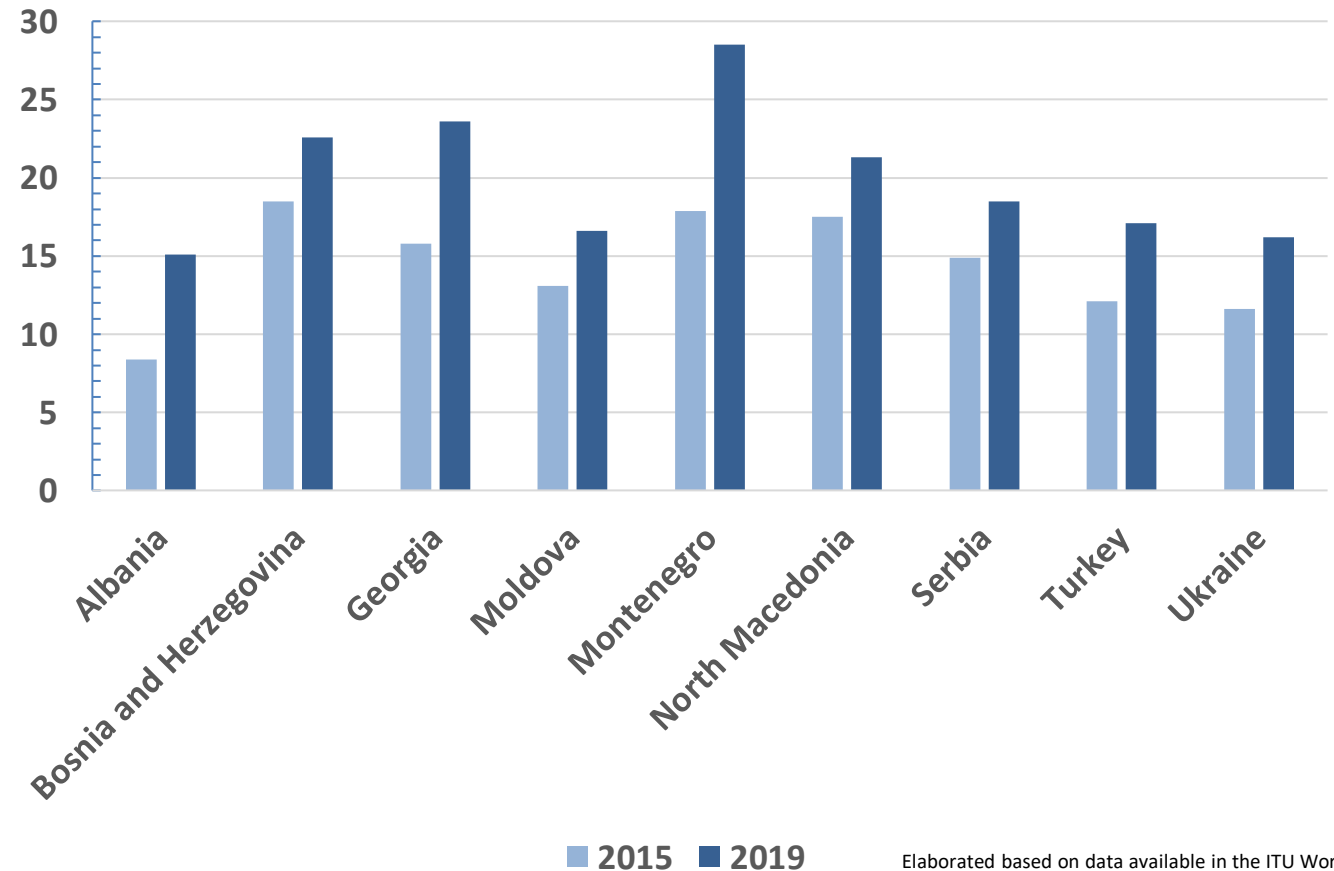


Elaborated based on data available in the ITU World Telecommunication/ICT Indicators Database online (2020): <http://handle.itu.int/11.1002/pub/81550f97-en>



- Fixed broadband subscriptions **average around 20 per 100 inhabitants** in 2019
- In absolute terms, **7.7 million** fixed broadband subscriptions have been activated since 2015.

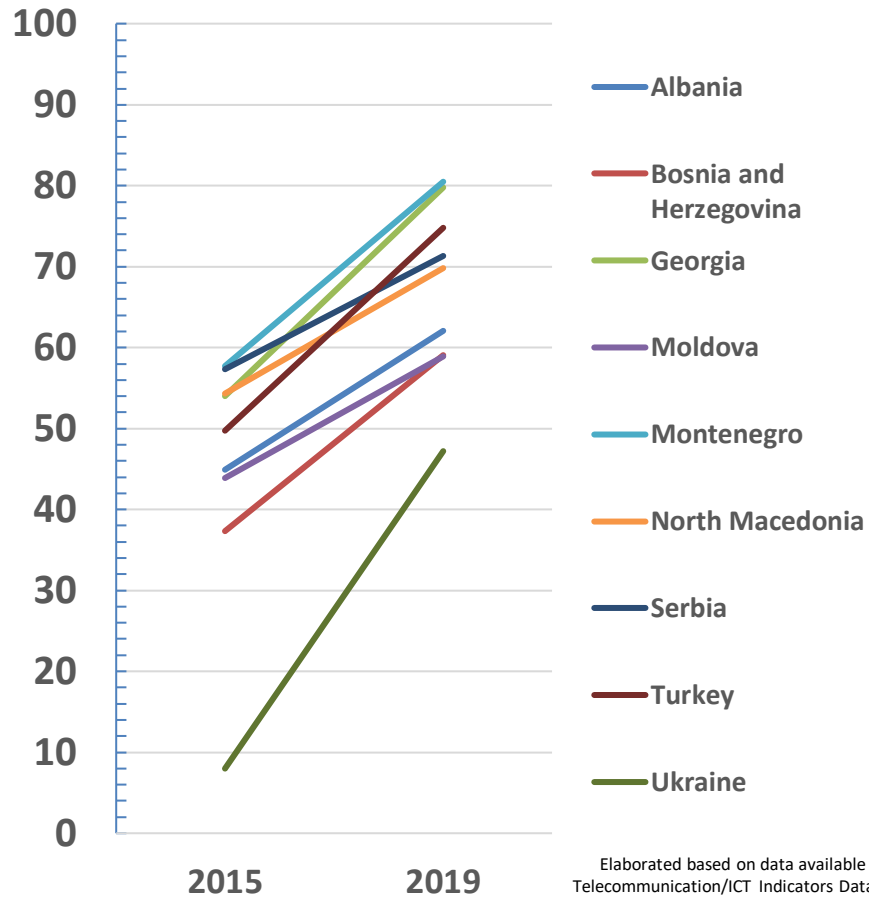
Fixed Broadband Subscriptions per 100 inhabitants



Elaborated based on data available in the ITU World Telecommunication/ICT Indicators Database online (2020): <http://handle.itu.int/11.1002/pub/81550f97-en>

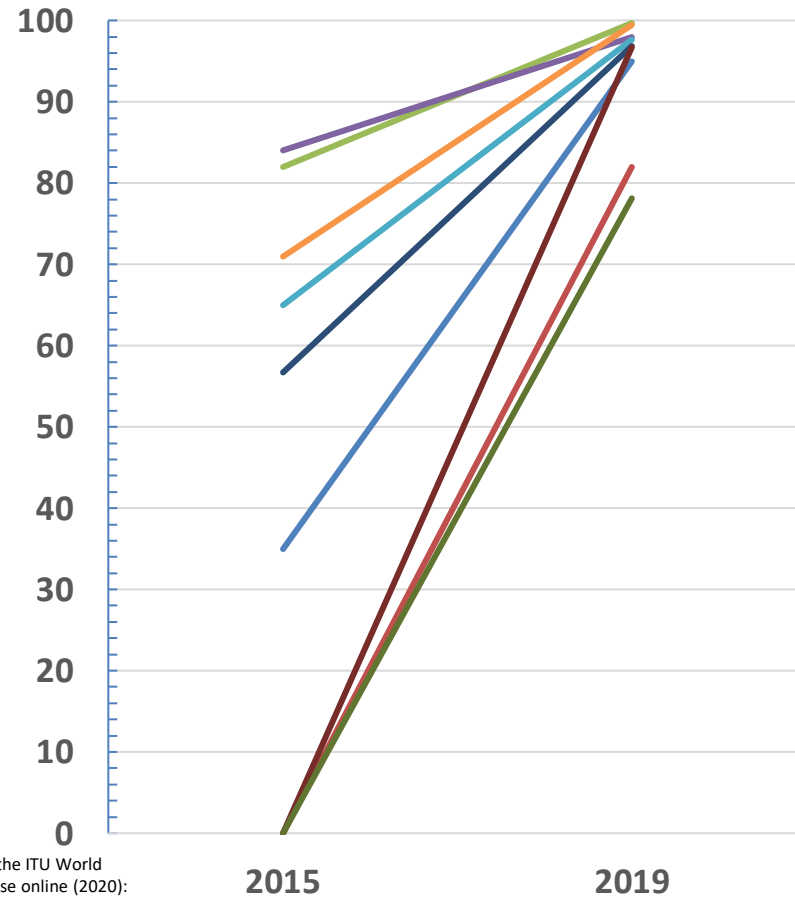


Mobile Broadband Subscriptions per 100 inhabitants



Elaborated based on data available in the ITU World Telecommunication/ICT Indicators Database online (2020): <http://handle.itu.int/11.1002/pub/81550f97-en>

Per cent of population with 4G coverage

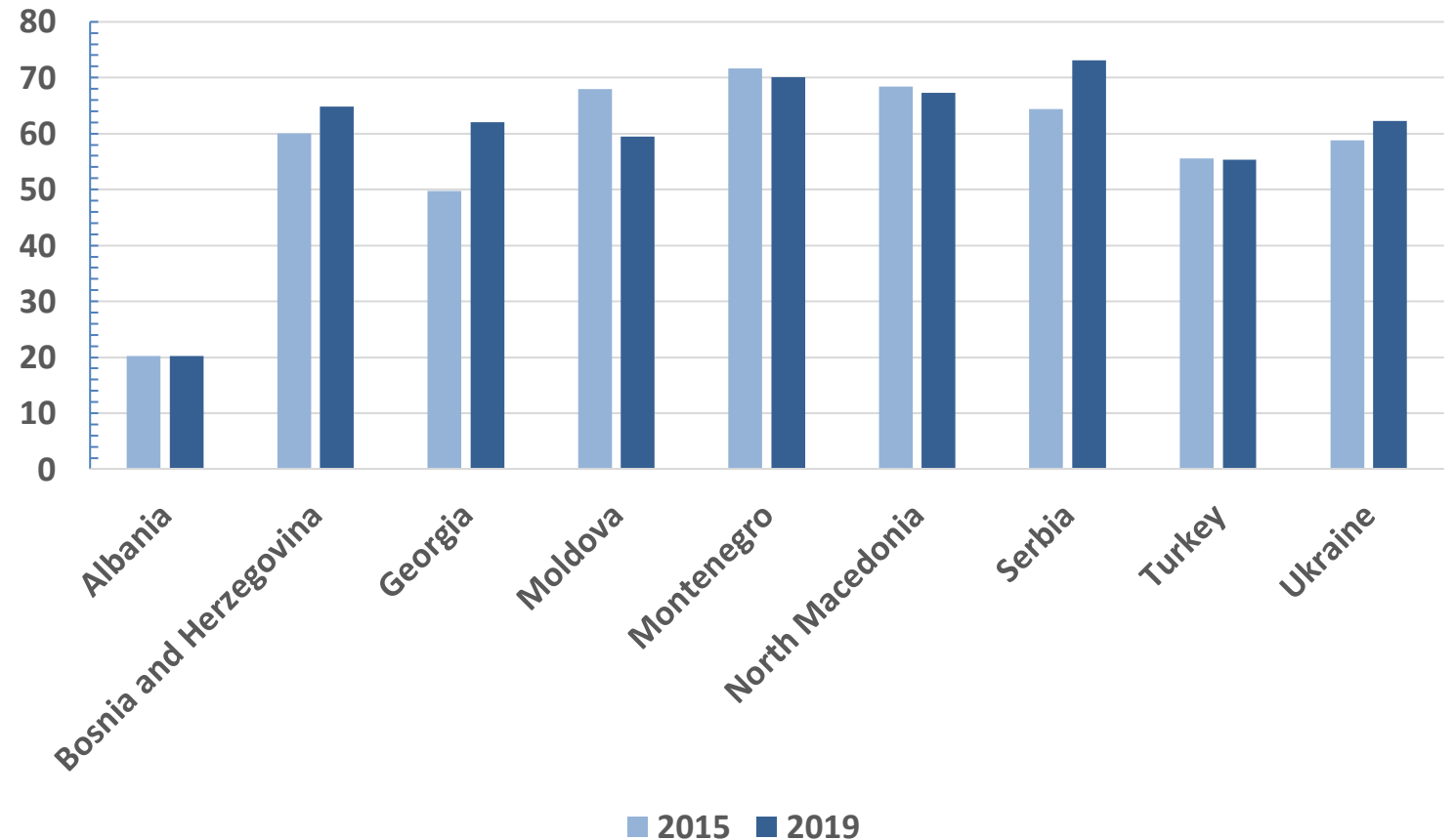


- Real “**boom**” in the number of mobile subscriptions per 100 inhabitants—in 2019, more than **55 million active mobile broadband subscriptions** have been reported throughout the countries
- Population covered by 4G/LTE technology has seen an almost **800% increase** in only five years with total coverage of 91.4% of the population for 2019



- More than **18 million households**, or **41%** are **not in possession of a PC** in 2019.
- Persistent **lack of PCs in households** has **exacerbated inequalities** during the global pandemic

Est. % Households with PC at home

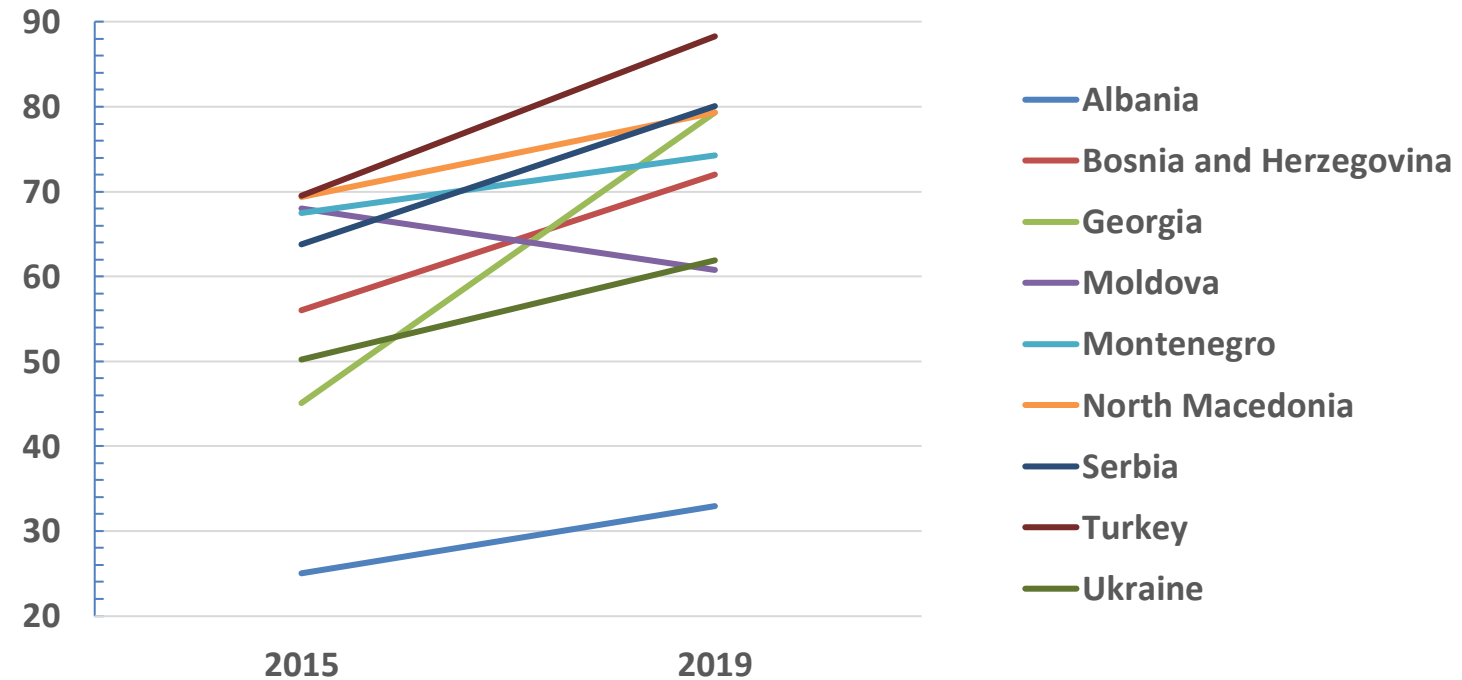


Elaborated based on data available in the ITU World Telecommunication/ICT Indicators Database online (2020):
<http://handle.itu.int/11.1002/pub/81550f97-en>



- More than **11 million households**, or **25%**, **do not have access to the Internet** in 2019.

Est. % Households with Internet access at home



Elaborated based on data available in the ITU World Telecommunication/ICT Indicators Database online (2020):
<http://handle.itu.int/11.1002/pub/81550f97-en>



2. Government strategies, status of the quality of education, and the role of ICTs

Education Quality and Governance

- **Education policy is a strategic priority** in all 9 countries.
- OECD's Programme for International Student Assessment (**PISA**) reveal two significant factors that characterize underperformance in school: the **urban versus rural divide** and the **high-income vs. low-income divide**, two patterns similar to the **Digital Divide**
- Best practices in education management: implementing **Education Management and Information Systems (EMIS)**, **centralized information systems** established to collect, manage and utilize education data more efficiently.



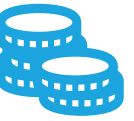
2. Government strategies, status of the quality of education, and the role of ICTs

Existing ICT Gaps in Education

In numbers

- Divide exists, both **number of available devices per student** and **computers connected to the Internet**.
- Need for **better data and indicators** to better understand the gap

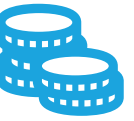
0.15	Number of PCs per students (9 countries assessed)
0.77	Number of Computers per students (OECD average)
80 (est)	% of PCs with internet Access of at least 2Mbps
15 million (est)	Computers needed to reach OECD average



3. Multi-stakeholder partnerships and financing mechanisms fostering investment in school connectivity

Challenges and Opportunities

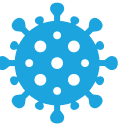
- Some countries have established **minimum requirements for equipment** in public schools (includes the distribution of PCs and the allocation of public budget to provide minimum equipment)
- Connectivity remains a challenge from **financial, technical and logistical** perspective. Schools are often located in **remote geographic areas** where adequate provision of service is not available/commercially viable for operators.
- Ministries in charge of the ICT development tend to **prioritise the financing ICT infrastructure to reach all households** and cover the largest possible share of the population with the highest quality of services. But for rural and remote areas, **focusing primarily on schools can be the solution for bringing connectivity to rural households.**



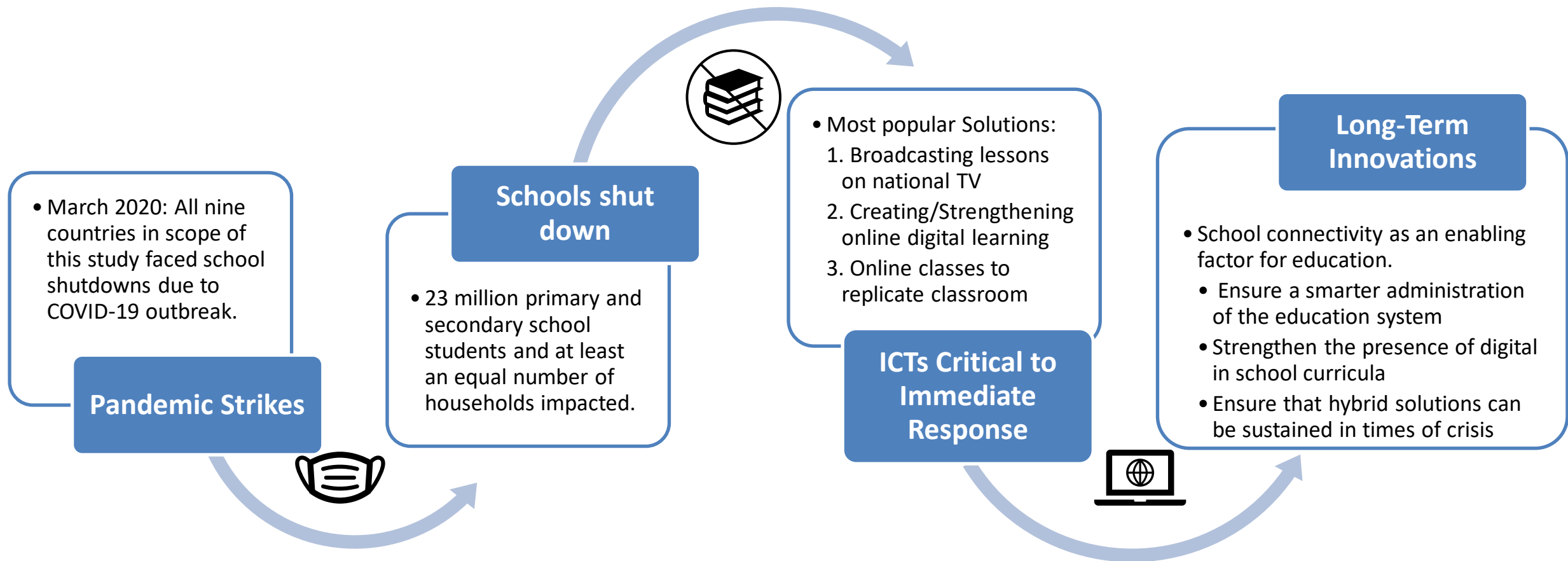
3. Multi-stakeholder partnerships and financing mechanisms fostering investment in school connectivity

Solutions





- **International financial mechanisms** for broader broadband infrastructure investment *are* present (i.e. WBIF with the EIB, EBRD, WB)
- Apart from some notable exceptions, while Ministries in charge of ICTs have been building a constructive dialogue, **Education systems have not captured these opportunities** for school connectivity.
- ITU and UNICEF at the forefront of closing the gap with the **Giga project**

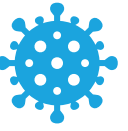


4. National responses to COVID-19 and pedagogic initiatives for distance education



Regional Forum for Europe on Meaningful Connectivity

									
	Albania	Bosnia and Herzegovina	North Macedonia	Montenegro	Serbia	Georgia	Moldova	Turkey	Ukraine



Television broadcasting to transmit lessons	✓	✓	✓	✓	✓	✓		✓	✓
Created/strengthened national online distance learning platforms	✓		✓	✓	✓	✓	✓	✓	✓
Organisation of online classes replicating the physical classroom								✓	

Main Takeaways

- Over the past decade, the **intersection of the policy areas of education and telecommunications** has become more evident, consistent with a wider trend of the “**digitalization of everything.**”
- This integration between education and the digital has evolved in three main directions:
 1. ICTs as a tool for **public administration** in education;
 2. ICTs as a medium to ensure **continuity of digital services** in education in times of emergency; and
 3. ICTs as an **integral part of education curricula** to create a workforce fit for the job market.
- Need of **strategic policies** fostering **connectivity infrastructure** and the **fruition of devices** in schools and households



- Thank you -