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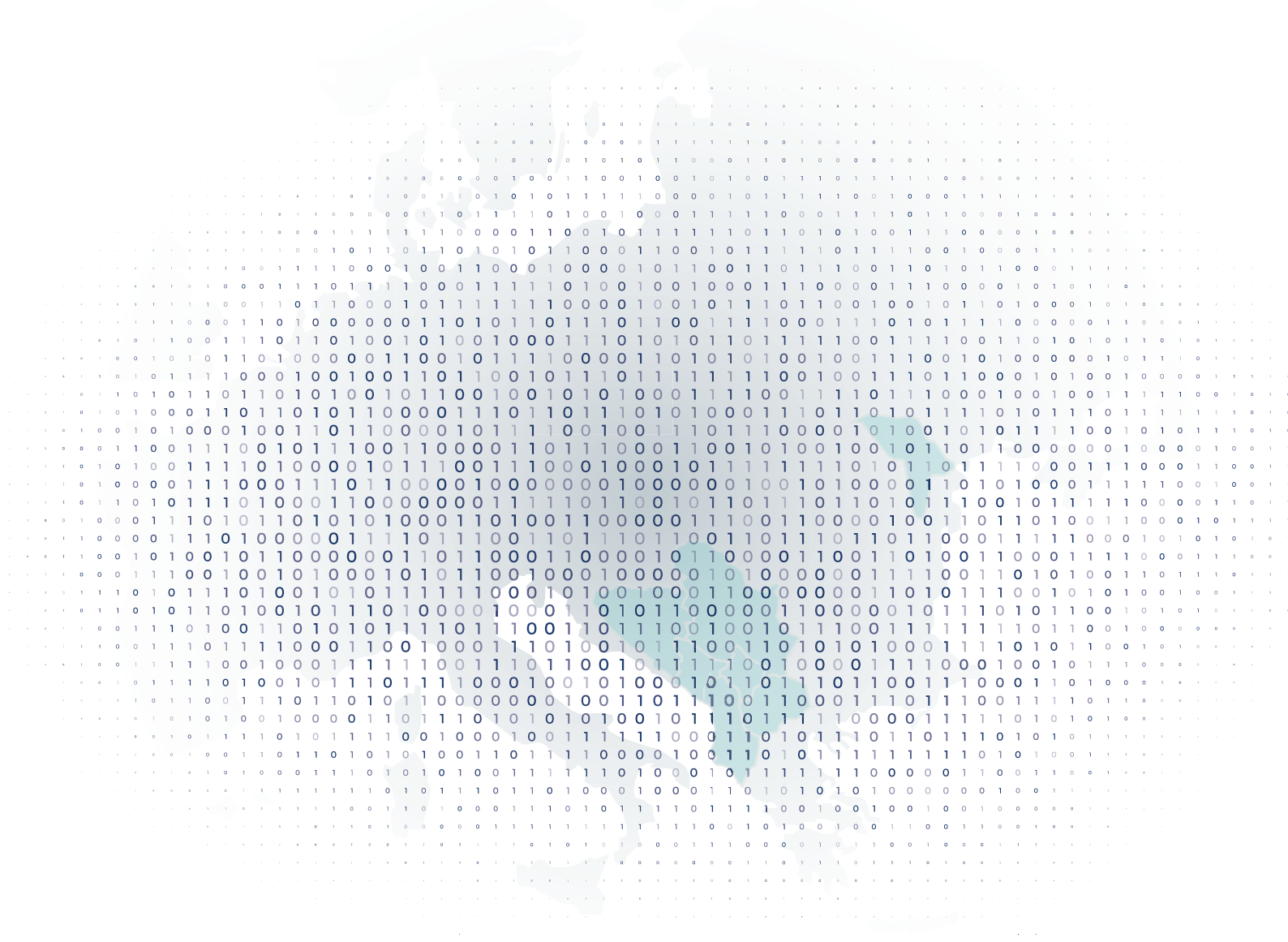

Empowering Progress with Digital Transition
in Western Balkan and Moldova Local Governments

Unveiling the Digitalization Maturity with Opportunities, Practices and Potentials

Project Name: "Empowering Progress: Unveiling the Digitalization Maturity in Western Balkan and Moldova Local Governments with Best Practices and Potentials"

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Foreword

“Empowering Progress with Digital Transition in Western Balkan and Moldova Local Governments”

Digital transition and technological advancements are shaping the way we work, govern and live for decades. Several studies about digital transformation concerning the central governments are available, but the knowledge about digitalization of local governments is very limited. Therefore NALAS and KDZ decided to bring light into this topic and to prepare the report „Empowering Progress with Digital Transition in Western Balkan and Moldova Local Governments“.

The report is part of the BACID III program which is co-financed by the Austrian Development Cooperation and supported by the Austrian Association of Cities and Towns with the main objective to improve good public governance in the Western Balkans and the Republic of Moldova. It’s the first report of its kind in South-East Europe and will help local and central governments to gain an overview of the digitalisation efforts in the region and identify good practices.

We are focusing especially on the activities of local governments and their impact on digitalization, open data and cybersecurity among others. The report shows the current developments, best practices but also gaps where the respective countries still lack resources, political will, or knowledge. The digitalisation efforts in the region are not equally distributed and each country develops solutions at their own pace and prioritizes different topics regarding their specific needs. Nonetheless, all of them have in common that they want to enhance and accelerate building their infrastructure, implementation of different digital services for citizens and the development of smart city strategies.

The findings of the report will be distributed among the local governments in the region with the help of the digitalisation working group consisting of representatives of local government associations.
Big thanks to NALAS digitalization and smart city officer Jana Belcheva Andreevska, international digitalization expert Christian Rupp, Verena Weixlbraun from KDZ and the NALAS Working Group on Digitalization for their important contributions to this report.

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I. List of abbreviations

ADA	Austrian Development Agency
AFD	French Development Agency
AI	Artificial Intelligence
AKM	Association of Kosovo Municipalities
ALA	Association for Local Autonomy of Albania
ALVRS	Association of Local Authorities of Republic of Srpska (Bosnia and Herzegovina)
AMC	Association of Municipalities and Cities of the Federation of Bosnia and Herzegovina
B&H (BiH)	Bosnia and Herzegovina
CALM	Congress of Local Authorities from Moldova
CERT	1Computer Emergency Response Team [1]
CI	Critical Infrastructure
CIRT	Computer Incident Response Team
COP	Child Online Protection
COVID-19	Coronavirus disease of 2019
CSIRT	Computer Security Incident Response Team
DEI	Directorate for European Integration
DEP	Directorate for Economic Planning
DPP	Data and Privacy Protection
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEA	European Economic Area
EIB	European Investment Bank
EU	European Union
FBiH	Federation of Bosnia and Herzegovina
FIRST	Forum for Incident Response Teams
GCI	Global Cybersecurity Index
GDPR	General Data Protection Regulation (EU)
GIZ	German Society for International Cooperation
GNI	Gross National Income
IANA	Internet Assigned Numbers Authority
ICT	Information and Communication Technology
IFI	International Financial Institution
ISO	International Organization for Standardization
ITU	International Telecommunication Union
KDZ	Centre for Public Administration Research
LDC	Least Developed Countries
LGA(s)	Local Government Association(s)
LGU(s)	Local Government Unit(s)
LLDCs	Landlocked Developed Countries
LSG(s)	Local Self-Government Unit(s)
MAP REA	Multi-annual Action Plan for a Regional Economic Area
MLAT	Mutual Legal Assistance Treaty
MOFTER BiH	Ministry of Foreign Trade and Economic Relations
MSMEs	Micro, small, and medium-sized enterprises
NALAS	Network of Associations of Local Authorities in SEE
NCS	National Cybersecurity Strategy
NGO	Non-governmental Organization
OBP	Online Browsing Platform
OECD	Organisation for Economic Co-operation and Development
ORF	Open Regional Fund for South-East Europe
OT	Operational Technology
PAR	Public Administration Reform
PAR	Public administration reform
PARCO	Public Administration Reform Coordinator's Office
PFM	Public finance management
PPP	Public Private Partnership
RCC	Regional Cooperation Council
RS	Republic of Srpska
SCTM	Standing Conference of Towns and Municipalities (National Association of Local Authorities in Serbia)
SDC	Swiss Development Cooperation
SEE	South East Europe
SEECP	South East European Cooperation Process
SIDA	Swedish International Development Cooperation Agency
SMEs	Small and medium-sized enterprises
UN	United Nations
UN SDGs	United Nations Sustainable Development Goals
UNDP	United Nations Development Programme
UOM	Union of Municipalities of Montenegro
WB	World Bank
WB6	Western Balkan 6 economies
WiC	Women in Cyber
ZELS	Association of the Units of Local Self-Government of the Republic of North Macedonia

Codes for Western Balkan (WB6) economies and Moldova

Official state name	ISO 31661–1[2] Alpha 3 code[3]	Internet ccTLD[4]
The Republic of Albania	ALB	.al
Bosnia and Herzegovina	BIH	.ba
Republic of Kosovo[5]	XKV	.xk
Republic of North Macedonia	MKD	.mk
Republic of Montenegro	MNE	.me
The Republic of Molodva	MDA	.md
The Republic of Serbia	SRB	.rs

Furthermore, the following codes are used for Bosnia and Herzegovina:

Bosnia and Herzegovina – State level	BIH_State
Bosnia and Herzegovina – Federation of Bosnia and Herzegovina	BIH_FBIH
Bosnia and Herzegovina – Republika Srpska	BIH_RS
Bosnia and Herzegovina – Brčko District	BIH_BD

2 ISO 3166-1:2013 "Codes for the representation of names of countries and their subdivisions – Part 1: Country codes"

3 Country Codes on the Online Browsing Platform (OBP)

4 Root Zone Database, Internet Assigned Numbers Authority (IANA).

5 "This note is without prejudice to positions on status and is in accordance with UNSCR 1244/1999 and the ICJ Opinion on the Declaration of Independence of Kosovo".

II. About the report

This Report was developed within the Project "Building Administrative Capacities of the Western Balkans and the Republic of Moldova – BACID III", Project Number 8325-00/2021, supported by the Austrian Development Agency (ADA) with funding from the Austrian Development Cooperation and led by the Austrian Association of Cities and Towns, KDZ-Centre for Public Administration Research, ReSPA (Regional School for Public Administration) and NALAS (Network of Associations of Local Authorities in South-East Europe).

Digitalization has emerged as a transformative force in shaping the future of Local Governments, driving efficiency, improving service delivery, and fostering innovation. This Report aims to provide valuable insights and analysis on digitalization in the context of local government in the Western Balkan 6 and Moldova, while highlighting potentials, best practices, areas for improvement, and the importance of collaboration between various stakeholders, central government, EU level, and business and academia.

The Report is built on the principle that decentralisation and local autonomy are key elements of the "Western European Democracy Model" and good governance, and it follows the requirements of the NALAS strategy concerning digitalisation, decentralisation and local governance. Local Government Associations from Southeast Europe (SEE), as members of NALAS, are committed and will consistently uphold their commitment to regional cooperation in promoting the digital transformation of Local Governments through NALAS activities and active participation in the Digitalization Working Group.

The Report identifies gaps, challenges and barriers to effectively implementing/driving digitalisation in SEE Local Governments based on existing reports/studies (desk research) with a focus on the countries of the Western Balkans (WB6) and the Republic of Moldova. The Report also provides an assessment of digitalisation challenges and smart city implementation level based on NALAS Digitalisation Survey, including recommendations to address these gaps and challenges by proposing further action for improvements.

Target Audience

This Report is intended for three primary audiences. First, Local Governments will find this Report valuable in identifying their digitalization potentials, learning from best practices, and understanding areas for improvement. Local Government Associations will strengthen their role to support the process of digital transformation at the local level through regional cooperation and advocacy for an enabling local-level environment overall, while leaving no one behind and ensuring a bridge for preventing the digital divide. Second, central governments need to recognize the significance of involving Local Government Associations in the development of regulations, strategies, and legislations. Recognizing the Local Governments' current status has a crucial role not only in the encouragement of implementation of current legislation and programmes, but also in providing valuable insights for future involvement and consultation with Local Government Associations. Additionally, this Report serves the purpose of benchmarking and learning from best practices on the EU level, central and local levels. Lastly, at the European Union level, this Report helps in better understanding the local government level and involving Local Governments in the accession dialogue. It also aids in promoting local level digitalization programmes, aligning them with the real needs of citizens who rely on Local Governments for the delivery of essential services.

Methodology

This Report is a result of thorough research conducted through desktop research and online surveys carried out by Christian Rupp, International Digitalization and Smart City Expert, Jana Belčeva Andreevska, Digitalization Expert from NALAS (Network of Associations of Local Authorities in South-East Europe), and Verena Weixlbraun from KDZ (Centre for Public Administration Research). The surveys prepared by NALAS were disseminated among NALAS Members of the Digitalization Working Group and NALAS member Local Government Associations, which further distributed them to their respective Local Government Units.

Report Sections

The Report encompasses several sections that cover key aspects of digital transformation in Local Governments, including the current level, plans and potentials, challenges and good practices, in order to be inspirational and motivational in any future advances. These sections include:

Economy Information: Focusing on sector-centred digital transformation, this section explores the multilevel governance and economic development, as well as the overall growth of the countries.

Infrastructure: The foundation of digital transformation lies in robust and modern infrastructure. This section delves into the importance of infrastructure in enabling effective digitalization initiatives.

People-Centred Digital Transformation; Skills and Capacities: Recognizing the crucial role of human resources in digitalization, this section explores the significance of developing workforce skills and capacities.

E-Government: This section examines the digitalization of government services and the adoption of e-governance practices to enhance citizen engagement, transparency, and efficiency.

Open Data: Emphasizing the importance of open data, this section explores the benefits and challenges of utilizing data for transparency, innovation, and improved decision-making.

Cybersecurity: In an increasingly connected digital landscape, cybersecurity is of utmost importance. This section highlights the significance of robust cybersecurity measures to protect sensitive data and ensure public trust.

Holistic and Sustainable Society: This section focuses on developing an innovative and transformative ecosystem that promotes sustainable development and citizen well-being.

Funds for Supporting Digital Transformation: Recognizing the need for financial resources, this section explores funding opportunities and mechanisms to support digitalization initiatives.

Conclusions and Recommendations

This Report offers valuable findings and perspectives that can be utilized by various target groups. Local Governments can use these insights to identify areas for improvement, develop strategies, and implement effective digitalization initiatives. Central governments can benefit from the Report's recommendations to involve Local Governments in policy-making processes and shape regulations accordingly. Central governments can also gain an understanding of the real needs and challenges of Local Governments, enabling them to create inclusive and effective regulations and programmes. At the European Union level, the findings can contribute to the development of programmes and initiatives that align with the specific needs of Local Governments in the region. The Report fosters an understanding of the local government level in the accession dialogue, allowing for more targeted and impactful support for digitalization efforts. It is crucial to relate the results with best practices from the European Union, as well as from the Western Balkans and Moldova region, in order to foster cross-regional learning and collaboration.

In conclusion, authors believe that this Report serves as a valuable resource, offering a comprehensive overview of the current state of digitalization in Local Governments within the SEE and WB6 regions, and identifying potentials to advance digital transformation in Local Governments while addressing various aspects of digitalization. By fostering intergovernmental dialogue and collaboration, aligned with national and EU-level strategies, we believe that the true potential of digitalization can be unlocked, while creating smart cities and delivering efficient and citizen-centric services for the progress of society as a whole.

III. EXECUTIVE SUMMARY

Many studies clearly show that digitalisation, sustainability and general interest services must go hand in hand. In its 2030 Agenda for Sustainable Development, the United Nations defined 17 Sustainable Development Goals (SDGs). This includes transformations in important areas such as energy, circular economy, housing, transport, food and agriculture. Municipalities are also showing demand when it comes to implementing the 2030 Agenda. All three dimensions of sustainability are touched upon: ecology, economy and social issues. Sustainability also increases the municipalities' resilience to any future challenges.

At the same time, municipalities are undergoing a digital transformation process. On the one hand, this relates to administrations, and on the other hand, these transformation processes relate to other areas of municipal design, which are mostly associated with the smart city ideal and enabling data-based solutions in the context of transport and infrastructure, for example.

Only when sustainability and digitalisation are thought out together, can municipalities be successful ("fit for the future"). Sustainable development can be accelerated through effective digitalisation. Digital technologies can strengthen sustainability in many areas, be it through data-driven efficiency improvements or innovations in sustainable urban development. At the same time, digitalisation can also have a negative impact on sustainability and the topic of "Green IT" is becoming increasingly important. Municipalities should therefore act "sustainably digital" in order to fully exploit their technically possible and financially sensible potentials.

The central level has the responsibility to guarantee equal living standard conditions and to support municipalities in turning technological progress into social progress.

Based on this Report authors' experience, existing studies' desktop research and NALAS Survey, we can come up with **five theses** as an executive summary:

- Thesis 1: The potentials of digitalisation are not sufficiently tapped by municipalities in the WB and Moldova. And the more fragmented the municipal landscape is, the more central level coordination is required.
- Thesis 2: Digitisation and sustainability do not yet have such a high priority in the WB and Moldova municipalities and there is a lack of holistic nationwide strategies and support (e.g., data exchange, electronic identities, comprehensive e-service integration, alignment of strategic documents).
- Thesis 3: The organisational anchoring of sustainability and digitalisation is a critical success factor for a sustainable positive development of municipalities.
- Thesis 4: Lack of information on existing funding opportunities hinders the digitalisation of municipalities in the WB6 and Moldova.
- Thesis 5: Lack of digital competences in the WB6 and Moldova municipalities reduces the speed of implementation and increases the risk of cyber-attacks.

This Report is a result of the combination of comprehensive desk research and NALAS Survey, contributions from NALAS Digitalization Working Group and a series of events and presentations organized at the initiative of NALAS Working Group.

An important objective of BACID III Project is to improve capacities of NALAS to support the smart digitalisation of Local Governments in SEE. **NALAS** has established the **Working Group on Digitalization** with a pivotal role in fostering the digital transformation and smart city initiatives within the NALAS region. The Group is strategically focused on two key aspects. First, with a sector focus on Digitalization and Smart City, the Working Group engages in comprehensive planning and experience sharing to enhance the acceptance and implementation of smart digitalization at the local level. The Group took active role in the NALAS Survey, obtaining insights for the preparation of this Report. In addition, the Working Group conducts monitor-

ing and evaluations of the current digitalization level and local capacities, dedicating significant efforts to capacity development activities. Moreover, the Group extends its support in facilitating smart digitalization and assists Local Governments in harnessing digital tools and data for informed decision-making processes, while emphasizing participatory democracy and fostering citizens' engagement through the utilization of digital tools and applications.

Furthermore, the Working Group's advocacy focus entails collecting best practices on the effective implementation of digital tools and smart city solutions by SEE Local Governments and Austrian cities. Leveraging these insights, the Group develops capacity development measures like workshops and study visits under the BACID III Project. The Working Group promotes horizontal cooperation between LGAs of SEE, cities and smaller cities and communities, ensuring an inclusive and enabling environment, leaving no one behind, and bridging the digital divide.

Additionally, the Group empowers NALAS Members and drives vertical advocacy initiatives targeting central government institutions, aiming to influence policies and regulations that support and enable successful digital transformation at the local level. By seamlessly combining these sector-focused and advocacy-oriented approaches, the Working Group on Digitalization serves as a driving force in empowering Local Governments to embrace and thrive in the digital era, fostering sustainable and forward-looking advancements across the SEE region.

The Digitalization Working Group has already undertaken a series of strategic interventions to drive digital transformation in Local Governments across the Southeast Europe region, such as a diverse range of events, workshops, meetings and webinars aimed at enhancing regional cooperation and empowering Local Governments with the knowledge and skills required to embrace the digital era. These interventions also include the establishment of the NALAS e-Academy, an innovative platform offering tailored training courses on digitalization for Local Governments. The Working Group has also been actively involved in developing a resource centre, serving as a digital library of best practices, solutions, and expert knowledge to support Local Governments in their digitalization journey.

Local Governments in the Western Balkans and Moldova have distinct perspectives on the benefits and support resulting from digital transformation. These perspectives provide valuable insights into the areas where Local Governments see the advantages of digital solutions and the specific aspects they select and prioritize for implementation. By analysing these varied perspectives, we can better understand the potential benefits of digital transformation and the particular areas that Local Governments are most motivated and oriented to support through the adoption of digital solutions.

Municipalities in **Serbia** consider that digital transformation is primarily in support of detecting and addressing important urban issues by an innovative approach. Also, it is considered that digital transformation improves cooperation and communication with citizens and businesses in solution co-creation, adding up that digitalization supports the improvement of good governance principles (transparency, participation, openness, accountability and integrity) of the local level administration. This was discovered in the Survey NALAS made for LGUs in Serbia.

Local Governments in **Montenegro** deem that digital transformation is primarily in support of smart, innovative but sustainable and resilient growth of local authorities, as well as improved service delivery for the business sector and citizens, including evidence-based decision-making processes, consultation with citizens and priorities' selection.

Macedonian Local Governments predominantly selected digital transformation in support of improved service delivery for the business sector and citizens, while also stating that it is an innovative approach for detecting and addressing important urban issues, and ensuring infrastructure for quick responses and crisis management. According to the Survey, it is important to stress that 67% of respondents see digital transformation as a means of supporting the improvement of good governance principles (transparency, participation, openness, accountability, and integrity) within the administration, thereby contributing to the restoration of citizens' trust.

Local Governments in **Bosnia and Herzegovina** have indicated improving good governance principles (transparency, participation, openness, accountability and integrity) of the administration as a main area that will be improved by digital transformation.

Kosovo is indicating that deployment of technological innovations is contributing to sustainability, inclusivity, prosperity and human-centric solutions.

Albanian Local Governments demonstrate a broad perspective by considering the digitalization significance across all areas, without specifically focusing on any particular area.

Local Governments in **Moldova** consider digitalization primarily as a means to enhance good governance principles, namely transparency, participation, openness, accountability, and integrity within the administration.

In conclusion, the Survey results reveal a variety of perspectives among Local Governments in the countries surveyed regarding the importance and focus areas of digital transformation. While some municipalities prioritize addressing specific urban issues through innovative approaches, others emphasize the improvement of service delivery, evidence-based decision-making, and infrastructure development. The enhancement of good governance principles is consistently recognized as a key objective across several countries.

The NALAS Survey identified several **weaknesses of Local Governments** with regards to their digitalization efforts. One of the main challenges is the lack of human resources, digital infrastructure, and citizens' habits for using digital services. Many Local Governments are not yet digitized enough and struggle with maintaining their implemented systems or projects' persistence. The insufficiently developed IT infrastructure is another key issue, including the lack of awareness among governments regarding citizens' needs for digital services. Other challenges include poor digital infrastructure, issues related to the environment, transport, traffic, and interoperability, as well as slow progress in expanding the number of various digital services. Another area where many Local Governments fall short is the lack of a Smart City Strategy, which could help guide their digitalization efforts. Additionally, there are few multilingual services available, which can pose a barrier to accessing digital services for non-native speakers. Overall, these weaknesses suggest that there is still much work to be done in order to fully realize the potential benefits of digitalization at the local government level.

Specific survey answers identified - **Weaknesses** of Local Governments:

- Government which is not aware how much citizens need this kind of services
- Human resources, poor digital infrastructure, citizens' habits for using digital services
- Difficulty of maintaining and upgrading the systems implemented or projects' sustainability
- Insufficiently developed IT infrastructure
- Ecology, transport, traffic, interoperability
- Slow progress in expanding the number of various digital services
- Lack of a Smart City Strategy
- Few digital services available
- Multilingual services
- Aging of the population

Some individual answers also point to the following: **Montenegro**: Poor data exchange between the national and local levels, inconsistent legal regulation; **North Macedonia**: The legal framework is still the same as a Local Self-Government, they cannot introduce full and complete digitization of services; **Kosovo**: The number of residents has doubled, and it has increased demands on the LGUs' side, there is no population registration and the Government is not allowing to increase the number of civil servants; **Moldova**: Lack of financial resources and specialists in the field, protection of personal data, cyber-attack.

Opportunities for Local Governments in the field of digitalization are numerous. First, there is an opportunity for effective communication between citizens and the local administration, which can help improve trust and transparency. Second, the existence of support programmes and projects, as well as the implementation of a document management system, can greatly enhance the efficiency and effectiveness of Local Governments. Third, a common platform at the LGA (example of platforms offered by

ZELS[6]) providing services that can benefit local administrations. Fourth, the emergence of new digital technologies presents an opportunity for Local Governments to stay up-to-date and innovative. Fifth, there is potential for improvement in areas such as traffic, ecology, and parks through the use of digital technology. Additionally, Local Governments have received excellent feedback from citizens regarding the digital services introduced so far. Moreover, initiatives towards the development of Smart City Strategies have been undertaken. The concept of digital transformation of the city of Chisinau–2030 is already in place. Finally, there is an awareness of the importance of digital inclusiveness, which is crucial for achieving sustainable and equitable development.

Aggregated Survey results identified the following **Opportunities** of Local Governments:

- Effective communication between citizens and local administration
- Larger cities or administrative centres can play a supportive role and act as hosts for platforms, providing not only their own open data but also offering services to smaller cities or municipalities.
- Various support programmes and projects for digital transformation are currently available, providing ample opportunities for progress and advancement.
- Utilizing electronic services for document management in urban planning as a centralized platform can function as a shared resource for all municipalities.
- The presence of new digital technologies offers municipalities opportunities to progress and advance.
- Smart traffic solutions have the potential to enhance environmental conditions. Excellent feedback from citizens regarding the digital services introduced so far
- Initiatives towards the development of a Smart City Strategy
- The concept of digital transformation of the city of Chisinau–2030 is in place.
- Awareness of digital inclusiveness

The provision of digital services by Local Governments is faced with various **threats**. One of the major challenges is the lack of funds and financial resources for the development, expansion and maintenance of digital services. In addition, the legal framework and government support for digitalization are insufficiently developed, resulting in the absence of legislation and implementation procedures. The competition between the public and private sectors in the salaries of technology employees poses a risk of losing qualified personnel. The safety of digital information is also a concern, and the digital literacy of residents is crucial in ensuring successful adoption and use of digital services. Therefore, it is important for Local Governments to prioritize the allocation of funds, develop an appropriate legal framework and regulations, and invest in education and awareness programmes for their citizens.

Aggregated Survey results identified the following **Threats** in digital services provision:

- Lack of funds, lack of financial resources
- Lack of finances/resources for a continuous expansion of digital services and regular maintenance
- Insufficiently developed legal framework and government support
- Competition between the public and private sectors in the salaries of technology employees
- Safety of digital information
- Digital literacy of residents
- Lack of legislation and implementation procedures for digitalization

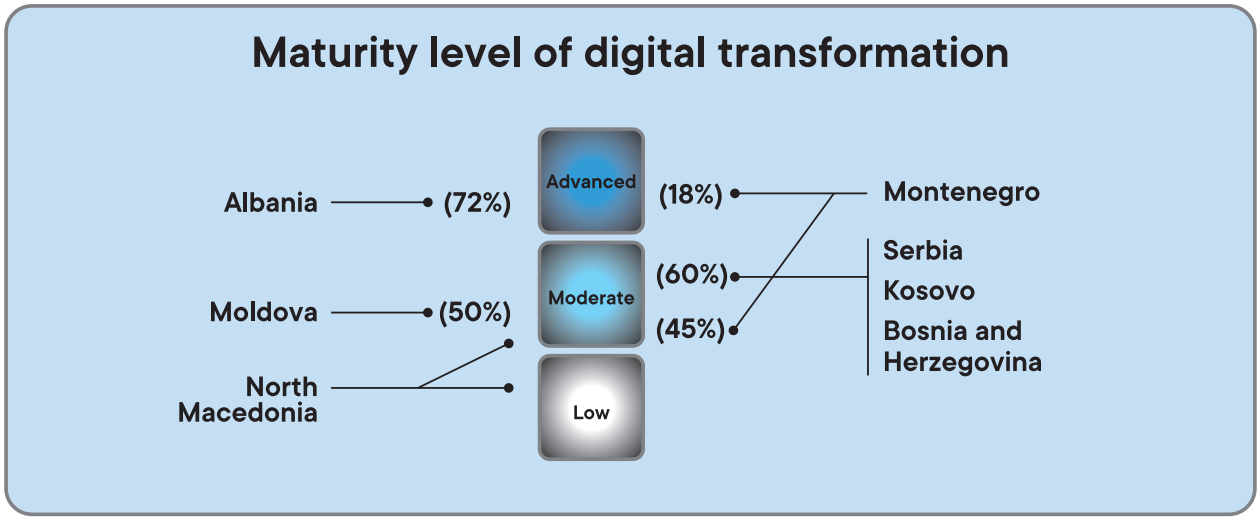
Some individual responses are:

- Security and cyber-attacks pose the greatest threat when providing digital services
- Changing business habits
- Local and regional political and economic situation
- Weak involvement of senior citizens; How to bridge the digital divide between old and young generations
- Some remote and rural areas have no connectivity and therefore, digital divide is created
- Lack of strategic documents.

6 https://zels.org.mk/e-uslugi

NALAS survey: How do municipalities assess the maturity level of digital transformation?

Albanian LGUs considered that predominantly the level of maturity is moderate, an option selected by 72% of respondents. Over 60% of Local Government Units (LGUs) in **Serbia**, **Kosovo** and **Bosnia and Herzegovina** rated as moderate the maturity level of digital transformation, as revealed by the Survey conducted at the local level. **Montenegro** selected 45% moderate responses but 18% advanced. **Moldova** considers it moderate with over 50% of responses. **North Macedonia** revealed a low to moderate level.

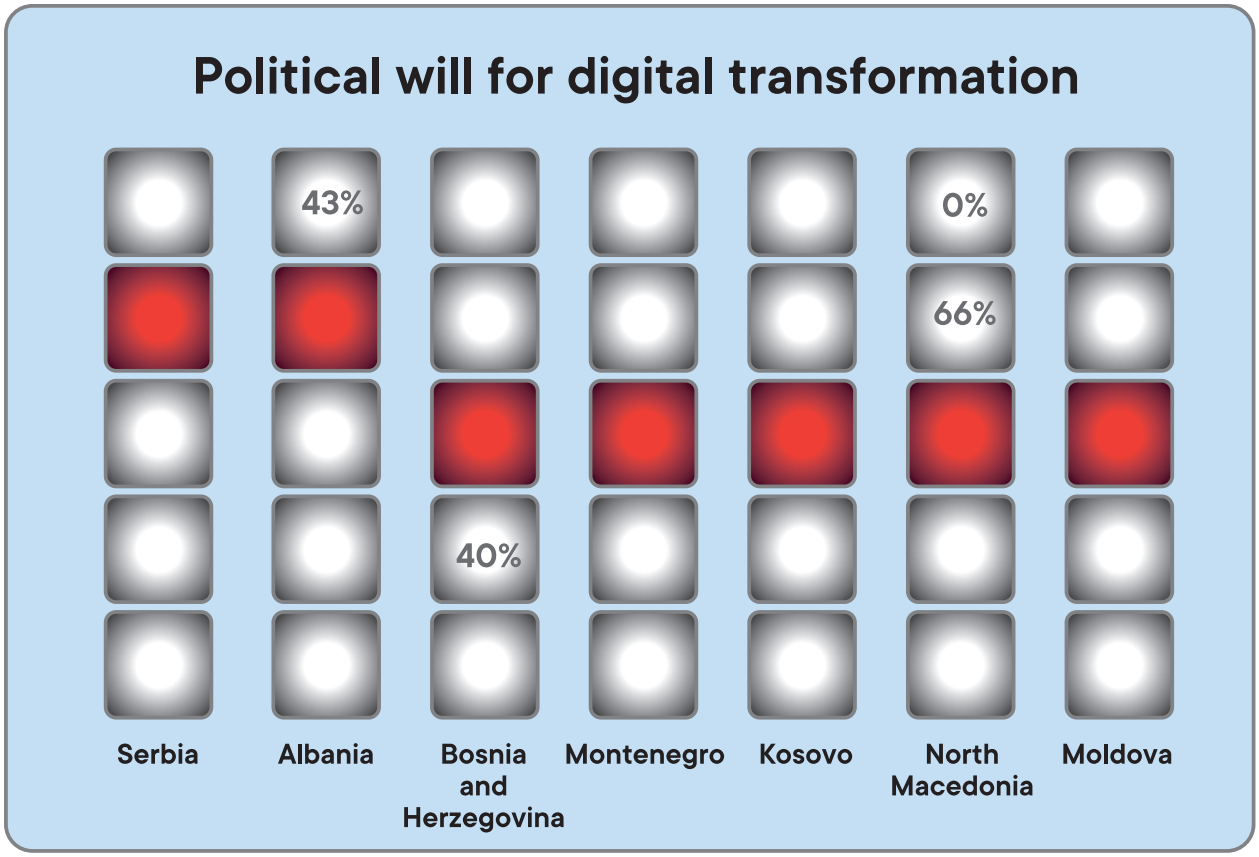


Political Will: A Catalyst for Digital Transformation in Local Government

Political will is essential for driving and sustaining digital transformation at the local government level. It sets the vision, provides the necessary resources, and facilitates collaboration, ultimately enabling Local Governments to harness the power of digital technologies to the benefit of their communities. By prioritizing digital transformation, Local Governments can enhance service delivery, improve citizen well-being, and elevate the overall quality of life within their communities.

In the Western Balkan region, rebuilding trust in Local Governments and local institutions can be achieved through good governance practices and political will that promote inclusivity, participation, and transparency, while fostering a culture of dialogue. The capacity to recognize the benefits of utilizing digital tools for co-creating digital solutions that address the specific needs and challenges of the local community demonstrates the readiness of local level political leadership to facilitate transformative change. Moreover, political will plays a vital role in facilitating partnerships between the local public and local business sectors, universities, and other stakeholders, creating an environment that stimulates digital transformation, economic growth, and knowledge-sharing at the local level.

On this specific question in NALAS Survey across Western Balkan and Moldovan LGAs and LGUs, the overall results show that 54% believe that the level of interest and will is medium, i.e., 3 on the scale of 1 to 5. Still, it is worth



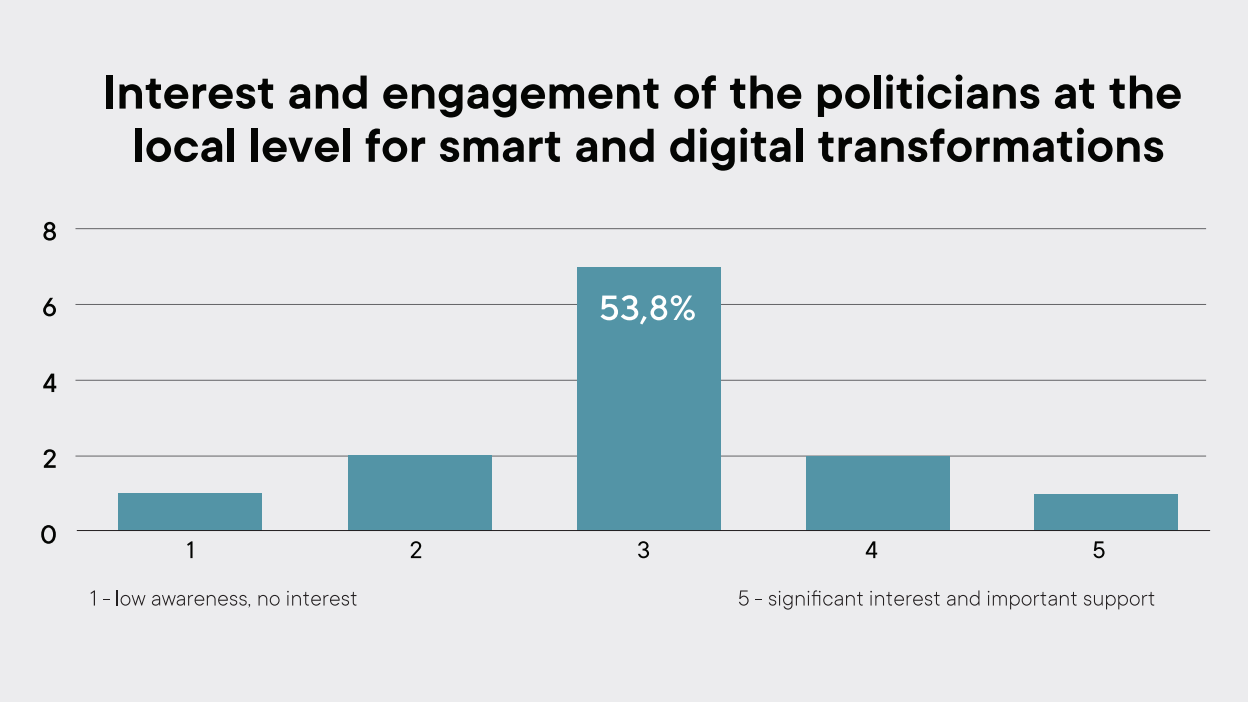
mentioning that results include all levels, from low to significant interest and support.

Based on NALAS Dedicated Survey conducted for Local Government Units (LGUs) in **Serbia**, it was found that interest and engagement of politicians at the local level (municipal council members included) in smart and digital transformation is high (level 4 on a scale of 1–5). This positive response highlights the willingness of local government officials to explore and implement innovative solutions to improve service delivery and enhance the overall efficiency of their municipalities.

Albania is showing the best results in the political will for digital transformation, above level 4, but with significant 43% selecting level high – 5 as an answer.

Bosnia and Herzegovina, Montenegro, Kosovo, North Macedonia and Moldova present diverse outcomes in terms of political will for digital transformation, with an average rating of 3. However, the responses in Montenegro and Moldova span across the entire spectrum of levels, ranging from 1 to 5. In the case of North Macedonia, most of the responses (66%) are at level 4, but with no responses on the high level 5. 25% in Kosovo selected 5–high level as an answer. Bosnia and Herzegovina selected level 2 as a dominant answer of 40% of LGUs.

Figure 1: Political Will (NALAS survey)



IV. Introduction

We are living in the era of convergence of two important phenomena in the history of mankind: acceleration of global urbanization and digital revolution. The United Nations (UN) points out that for the first time ever, more than half of the population on the planet (54.6% or 3.6 billion) lives in cities. Also, UN predictions are that by 2050, urban dwellers will make up more than 70% of the world's population (over 6 billion), 64.1% in developing countries and 85.9% in developed countries. Therefore, cities are the fastest growing form of settlement worldwide, which implies a growing space demand for buildings, infrastructure and the supply of food, water and energy. Around the world, especially its developed part, various initiatives are launched, including funds and legal regulations, such that modern cities can cope with these challenges and become "smart cities".

These challenges are big because cities were and will always be complex and permanent (and sometimes chaotic) growing entities. Each city has its own history, geography, population, and in particular, local political circumstances.

The **Principles of Public Administration**[7] set out what good public governance entails in practice and outline the main requirements to be followed by administrations during the European Union (EU) integration process. Good public governance is key to achieving economic growth, competitiveness and a better quality of life. Democratic governance and the rule of law require capable, accountable and effective public administrations. In its 2014 and 2018 Enlargement Strategies, the European Commission (EC) highlighted public administration reform (PAR) as one of the three "fundamentals first" areas of the EU enlargement process.[8]

Digitalization and smart city strategies at the local government level incorporate a variety of essential elements to drive effective digital transformation. Strategies start with a clear vision and goals, such as improving e-government services for citizens and the business regarding applications, getting documents or certificates and payments, enhancing efficiency, promoting innovation, smart city elements, initiating administrative procedure, and fostering economic growth. The importance of digital infrastructure and broadband/high-speed internet access, data centres, data management and frameworks for data governance, sharing, and analytics enabling evidence-based decision-making and service delivery is also stressed in the strategies.

Strategies at the local government level in Europe recognize **collaboration and partnerships** as vital and foster cooperation with other Local Governments, central Government, private sector, and civil society organizations to get expertise, share resources, and drive innovation. Digitalization Strategies also prioritize skills and capacity building programmes for necessary digital competencies of local public administration staff.

The **alignment of local government digitalization strategies with central and EU levels** is essential for achieving coherence and interoperability. These strategies need to be consistent with both national and EU digital agendas and policies to ensure harmonization, interoperability of systems, and access to funding opportunities. Collaboration and coordination between local, central, and EU levels are important in supporting synergies, avoiding duplication of efforts and creating a harmonized digital ecosystem across all levels of government.

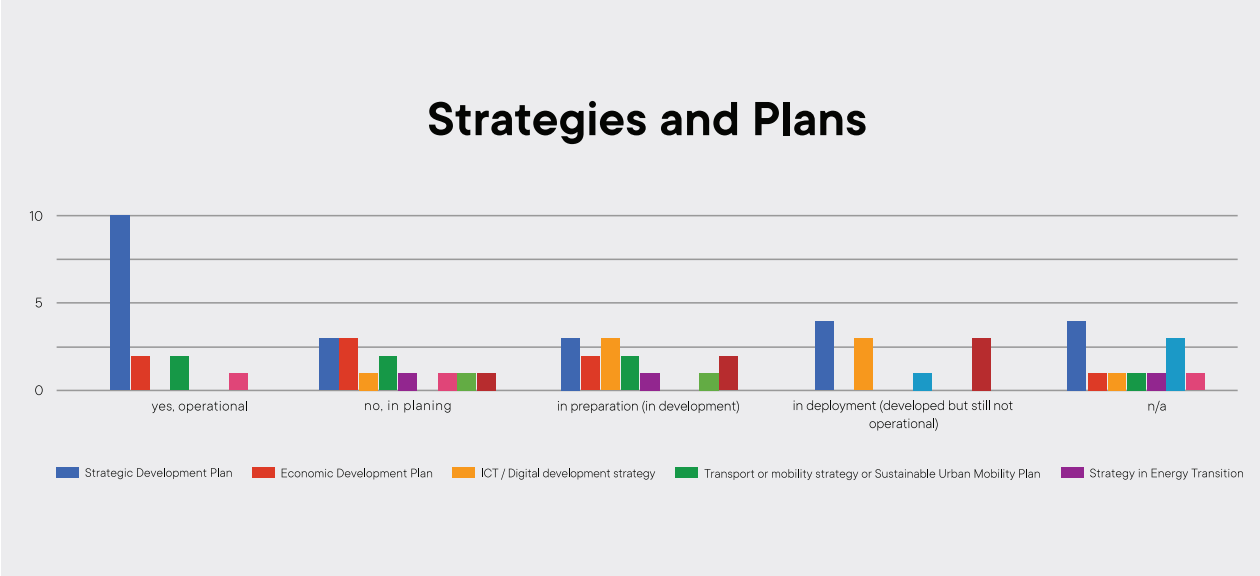
Strategies should align with the EU values, which encompass principles of good governance, inclusivity, and citizen participation. As discussed in the Perspective section, Local Governments emphasize citizen engagement and participation by involving citizens in the digitalization process through consultation, participatory platforms and feedback mechanisms.

Over the past years, the **Western Balkan 6 administrations** have been implementing reforms and initiatives to modernise and meet the growing demands of citizens and businesses. They are also preparing for their future EU membership: to be competitive on equal terms in the inter-

7 OECD (2017), The Principles of Public Administration, OECD, Paris http://www.sigmaweb.org/publications/Principles-of-Public-Administration-2017-edition-ENG.pdf

8 European Commission (2018), A credible enlargement perspective for and enhanced EU engagement with the Western Balkans, p. 4, https://ec.europa.eu/info/sites/default/files/communication-credible-enlargement-perspective-western-balkans_en.pdf.

Figure 2: Strategies and Plans (NALAS survey)



nal market, and to uphold standards of good administration, democratic governance and the rule of law.[9]

This Report identifies the gaps, challenges and barriers to effectively implementing/driving digitalisation in SEE Local Governments based on existing reports/studies (desk research) with a focus on the Western Balkan (WB6) and the Republic of Moldova. The Report also provides an assessment of digitalisation challenges and smart city implementation level in SEE, based on a **NALAS Digitalisation Survey**. The Report includes some detailed findings from survey results, as well as recommendations to address these gaps and challenges, including further action or improvement. There, the overarching EU strategies in this area and the relevant chapters in the EU accession process will be taken into consideration. Additionally, there are good practices into how other LGs in the EU are approaching similar initiatives in order to inform best practices that can be adopted by NALAS LG members.

Both Western Balkan and Moldovan administrations have a formally approved **"Digital Agenda"** in place that is no more than five years old, as a separate policy document or part of the general service delivery policy that establishes clear objectives for administrative simplification. In some countries, the responsibility for steering administrative simplification is explicitly assigned to a central institution or unit in these administrations.

NALAS Survey findings indicate that there is progress being made in the development of **Digitalization and Smart City Strategies** among Local Government Units (LGUs). Approximately **20%** of the LGUs surveyed have already prepared their Digitalization and Smart City Strategies, demonstrating a proactive approach towards digital transformation. Another **20%** have Strategies in their preparation phase, indicating their recognition of the importance of such strategies and their commitment to developing them. Moreover, a significant portion of **60%** have plans to prepare Digitalization and Smart City Strategies in the future, indicating a growing awareness of the need for structured approaches to harnessing the benefits of digital technologies.

These findings highlight the increasing emphasis placed on digitalization and the recognition of its potential in driving innovation, efficiency, and improved services at the local government level.

9 For an overview on progress in the rule of law area, see European Court of Auditors (2022), EU support for the rule of law in the Western Balkans: despite efforts, fundamental problems persist, p. 32, https://www.eca.europa.eu/Lists/ECADocuments/SR22_01/SR_ROL-Balkans_EN.pdf.

Many international organizations are supporting development of strategic documents. 25% of LGUs are relying on international organizations for strategy development (UNDP, EIB, EBRD, AFD).

Figure 3: Service Delivery 2021 - value and progress[10]

	ALB	XKV	MNE	MKD	SRB
Citizen-oriented services	4 ↑ 1	2 ↓ -1	2 =	4 ↑ 2	4 ↑ 1
Fair and efficient administrative procedures	4 =	4 ↑ 2	4 =	4 =	4 ↑ 1
Enablers for service delivery	4 =	2 ↑ 1	2 ↑ 1	3 ↑ 1	3 ↑ 2
Access to public services	3 ↑ 1	2 ↓ -1	2 =	2 ↓ -1	3 ↑ 2

Positive and success stories are listed as examples in this Report. And as excurses.

Advancement in policies, regulations and back-office enablers such as system interoperability translated into faster and higher-quality public services by central Governments. Albania and Serbia stand out as having made significant progress in **service delivery**. This demonstrates that when resources and consistent political direction are provided, public administrations can transform and improve rapidly. **Digitalization of public services** has been a key priority in many government agendas, and the COVID–19 pandemic accelerated the sense of urgency. NALAS Report[11] clearly indicates that SEE Local Governments have been at the forefront in responding to the COVID–19 pandemic social and economic crisis. Their challenges are heard and they must be understood and supported to address and mitigate any future crisis challenges in the most effective and efficient manner.

In absolute terms, however, performance varies significantly across dimensions of the service delivery area, with enablers such as digital identity and accessibility to on- and offline services for all users in need of further improvement.[12]

As advancements in digital technologies continue to shape and transform our societies, the role of Local Governments and their capacities to utilize these technologies for the purpose of improving their capabilities to deliver services in the digital world has become increasingly important. There are repeated patterns in every urban area which, together with the new ICT technologies, form the basis for an entirely new scientific view of the city and the development of various eGovernance models.

Weak mechanisms to improve service accessibility

These efforts still result in a mixed picture when it comes to simplified procedures, shortening of waiting times and efficiency of service delivery processes related to both citizens and businesses. Certainly, many services have been improved and have become more efficient, though several popular services assessed still tend to suffer from cumbersome procedures. Weak mechanisms for improving service accessibility to disadvantaged groups. Besides the policy on improving accessibility to public services via online portals, in-person services are limited. Even though the number of one-stop shops is increasing and thus providing better access to public services across the Western Balkan countries and Moldova, the creation of these shops has proceeded more slowly than planned and not all municipalities (except for large cities) and rural areas are part of it yet.

10 https://par-portal.sigmaweb.org/areas/5/?country1=AVG&country2=SRB&year1=2021&year2=2021

11 http://www.nalas.eu/nalas-survey-see-local-governments-in-post-covid-19-socio-economic-recovery/

12 https://par-portal.sigmaweb.org/

Given the recent cyber security attacks in the Western Balkan region and also Moldova, there is a significant need to prioritize **cybersecurity** measures, ensure robust data protection and privacy safeguards to maintain trust in digital services. By embracing these elements and aligning them with central and EU levels, Local Governments can effectively drive digital transformation, empower their communities, and create a digitally inclusive and prosperous future..

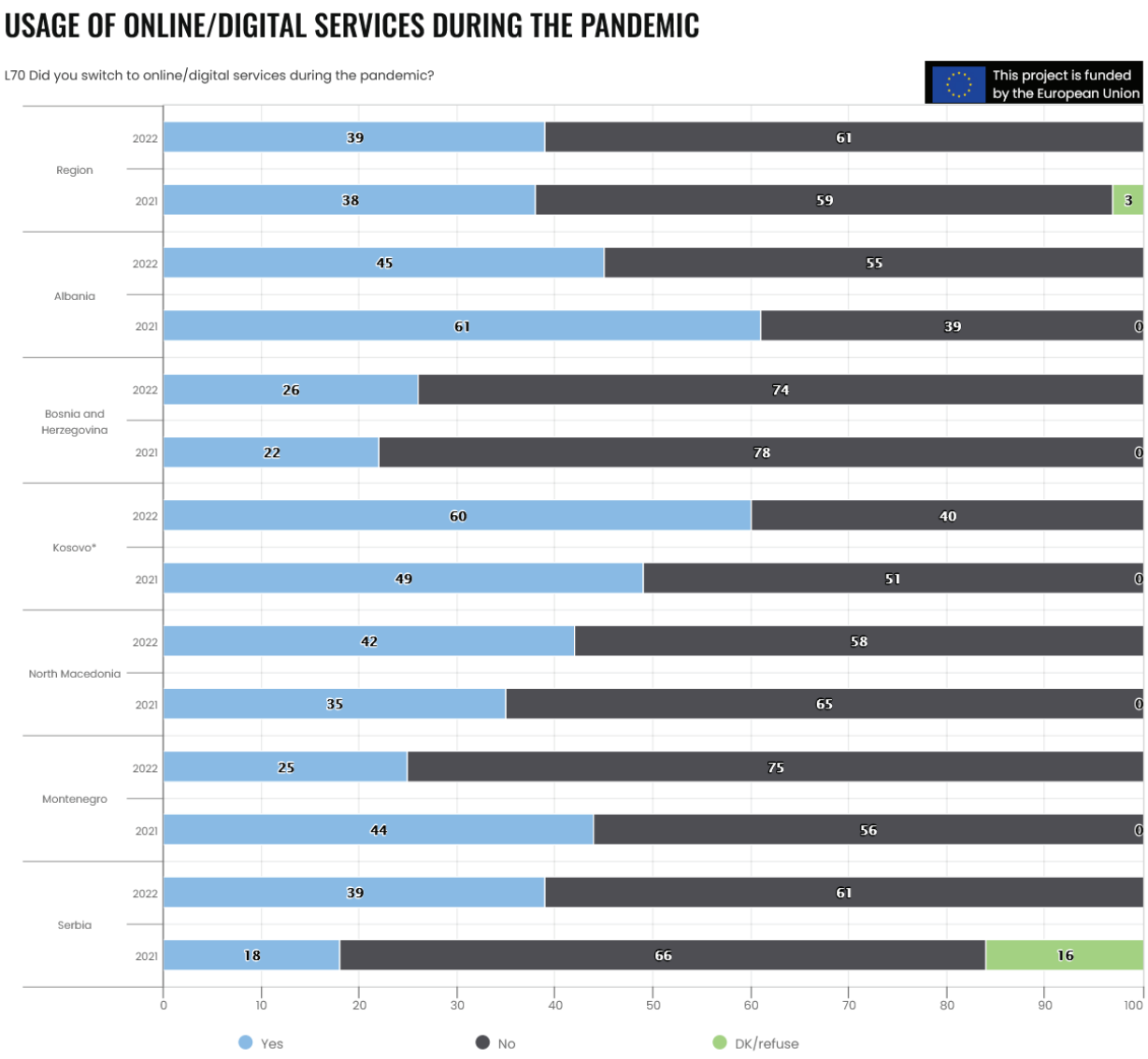


Figure 4: Balkan Barometer 2022 Usage of Online/Digital Services during the pandemic[13]

New technologies, such as **Artificial Intelligence (AI), and AI-enabled solutions**, are opening up new opportunities for service provision in cities and presenting a high potential for sustainable development growth. With sophisticated solutions being deployed in urban settings at an unprecedented pace, AI has the potential to greatly improve the way cities are built and managed. However, these op-

13 https://www.rcc.int/balkanbarometer/results/2/public

portunities are associated with challenges and risks such as potential bias and discrimination, privacy violations, and other human rights violations, thus leading to the acceleration of existing problems, reinforcement of structural inequalities and biases in communities. As a result, researchers and practitioners must design and implement robust solutions to address the challenges and promote resilient, inclusive, and sustainable communities. It is also vital to have a good understanding of local government capacity gaps in relation to AI, and LGUs' current strengths and needs to use AI in order to enhance service delivery and ultimately improve the living and working conditions of all.

EU Good Practice

- As part of their 2018 action plan[14], France already set up a lab 2019[15] for in-house experts to assist government agencies in their efforts to use artificial intelligence.
- The Netherlands is improving the supervision of the government's use of algorithms through their 2020 action plan. The commitment includes the development of an algorithm and human rights impact assessment and improvements in the transparency of algorithm procurement (IAMA).[16] The government is working on the development and application of instruments that support governments and companies in complying with existing legal obligations. So that AI and algorithms are used responsibly. Extra attention is paid to preventing violations of human rights. Relevant instruments have been brought together in the "Ethical Innovation Toolbox"[17].

14 https://www.aiforhumanity.fr/

15 https://www.opengovpartnership.org/wp-content/uploads/2018/08/France-Action-Plan-2018-2020-English.pdf

16 Impact Assessment for Human Rights in the Use of Algorithms: https://www.rijksoverheid.nl/documenten/rapporten/2021/02/25/impact-assessment-mensenrecht-en-en-algoritmes

17 https://www.digitaleoverheid.nl/overzicht-van-alle-onderwerpen/nieuwe-technologieen-data-en-ethiek/publieke-waarden/toolbox-voor-ethisch-verantwoorde-innovatie/

1. Economy information – sector-centred digital transformation

Our Report benefited from the valuable data and insights gathered from the "Fiscal Decentralization Indicators in South-East Europe", a publication which marks its ninth edition. The presented information on economy and statistics is a result of the collaborative efforts of the NALAS Task Force on Fiscal Decentralization; the publication was developed by NALAS with the support of: ADA, KDZ, BACID.eu, and Swiss Government.

Detailed information on fiscal decentralization in the region serves as a basis for future analysis, providing crucial benchmarks to understand the challenges and opportunities that lie ahead for building smart, resilient and sustainable communities.

Overview of territorial organization, demographics and economy in SEE

Number and types of sub-sovereign governments

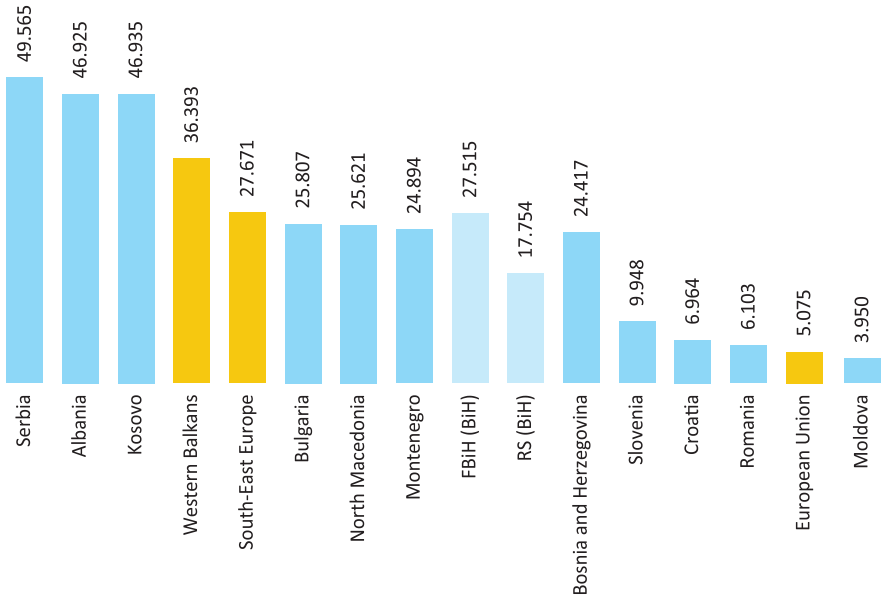
Demography in the SEE and particularly in the Western Balkans is characterized by **low birth rates**, aging population and **migration** from rural areas to cities, where the most attractive cities are the **capitals**. In addition, **brain drain** is a critical development challenge for all SEE economies. Economic and social implications are significant, from the types of services that must be provided, to the revenue that can be generated in smaller municipalities. Negative demography trends are also reflected in the limited digital transformation progress, particularly at smaller or rural municipalities, such as **limited digital skills** of the population (administrative, gender and social gaps), migration of experts and young professionals, **fewer innovations** and **limited funds** and access to donors.

As stated in the Report: *"The oversized importance of capital and metropolitan cities in the region skews economic activity towards single metropolitan areas. This creates a number of challenges to decentralization and the overall local government development. These developments bring the need to continually adapt and periodically improve the equalizing transfers based on objective and easy-to-measure indicators for both the local needs and the available local revenue base. … there is a need for new financing instruments tailored to reducing regional development*

Figure 5: Number and Types of Sub-Sovereign Government

	Levels of Sub-Sovereign Government	Types of Sub-Sovereign Government	Number of Municipalities	Second & Third Tier/ Regional Level
Albania	2	Counties; Municipalities	61	12
Bosnia and Herzegovina	3	Entities; Cantons; Municipalities	144	11
FBiH (BiH)	2	Cantons; Municipalities	80	10
RS (BiH)	1	Municipalities, Cities	64	
Kosovo	1	Municipalities	38	
North Macedonia	1	Municipalities	81	
Moldova	3	Autonomous Province; Raions/ Regions; Municipalities/Communes	898	32
Montenegro	1	Municipalities	25	
Serbia	2	Autonomous Provinces; Municipalities	145	
Western Balkans			494	23
European Union			89.289	1.176

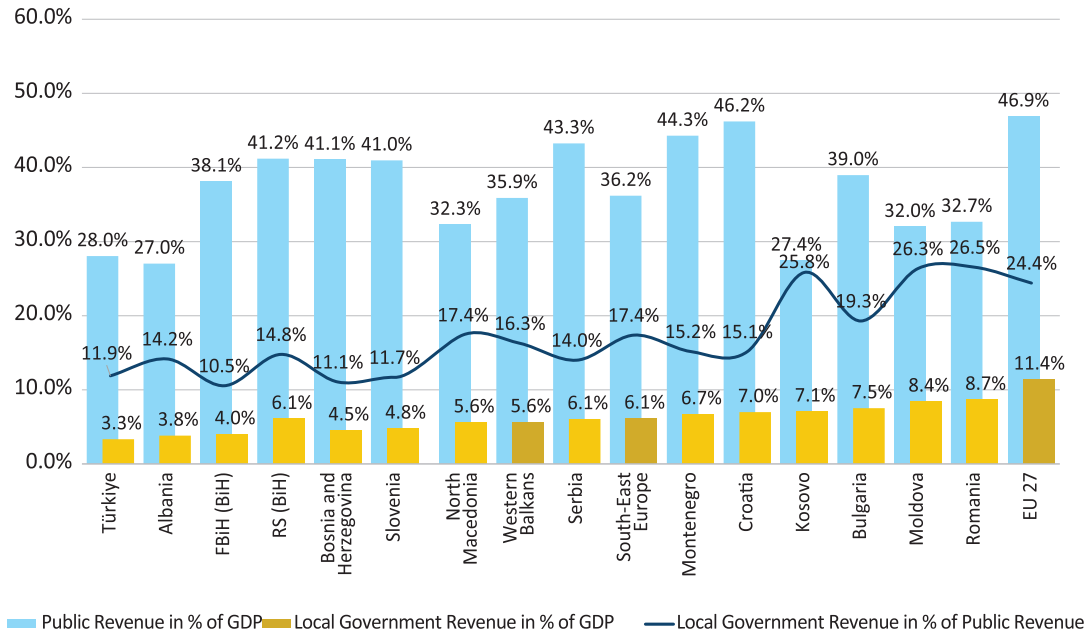
Figure 6– Average Population of 1st Tier Local Governments



disparities." It is important to cross-reference the digital transition progress of Local Governments with their local revenues and include it as an indicator for further fiscal decentralization policies and consultations with Local Government Associations.

One of the key indicators of the relative size of local government finance is shown in Figure 7, which presents the revenues of both the Local Government and the total public revenues (the General Government revenues).

Figure 7 Public Revenue and Local Gov Revenue in South-East Europe 2021



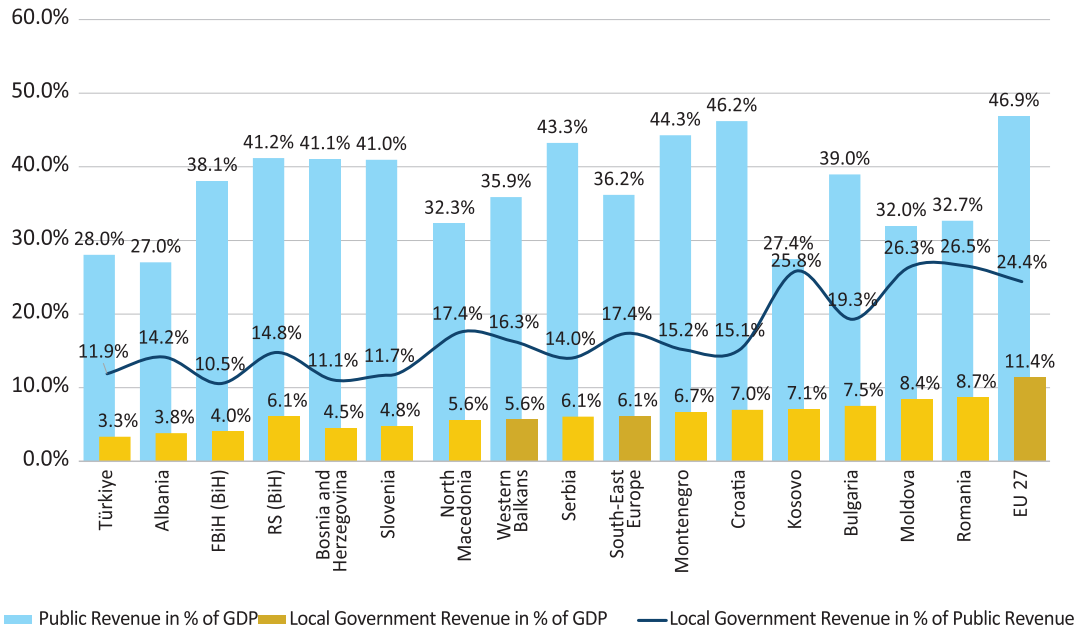
It is important to recognise that digital transformation opens up opportunities for local government to to make the best use of available human and financial resources for improved service delivery. Nevertheless, the prerequisites thereof include intergovernmental dialogue and cooperation in infrastructure and connectivity coverage, as well as support in strategy development and implementation of regulations, utilisation of interoperable platforms and inclusion of the local level in fund distribution consultations, including the support for EU funds allocation and absorption.

Figures clearly indicate that transformation at smaller municipalities is threatened, so therefore, special attention is required to improving the know-how and implementing ready-made and replicable solutions and platforms for groups of municipalities, thus ensuring local engagement reduction.

The following Figure focuses on the perspective of wide differences and disparities in terms of per capita local revenue in SEE region and the EU. As stated in the Report: "*On average, Local Governments in WB dispose of 11 times less Euro per capita than their European counterparts*".

Figures presented have highlighted the need for Local Governments to embrace digital transformation in order to maximize their limited resources. This Report is also a contribution to the understanding that with current financial and human resources, progress can only be achieved through the effective use of technology and automation. Digital transformation can be an enabler to increase efficiency by streamlining processes, improving decision-making and providing access to data and services for the administration, as well as citizens. Comprising a digitally enabled approach is essential for sustainable, smart and resilient growth of Local Governments.

Figure 8 - Local Government Revenue, in Euro per capita, 2021



ALBANIA

Area total: 28,748 sq km

Population: 3,101,621 (2023 est.)

0–14 years:
17.9% (male 290,624/female 264,536)

15–64 years:
67.53% (male 1,030,436/female 1,064,217)

65 years and over:
14.57% (2023 est.) (male 207,960/female 243,848)

520,000 pop in TIRANA (capital) (2023)

12 Regionas (second and third tier):
Berat, Diber, Durres, Elbasan, Fier, Gjirokaster, Korce, Kukes, Lezhe, Shkoder, Tirane, Vlore

61 Municipalities

In 2005, the Government started a more extensive digitalization programme called the "Digital Agenda". A number of laws have been issued in compliance with the EU Directives[18], while there have been a number of actions supporting eGovernance at the local level.
These include:

(i) Implementation of the unified informative portal and electronic services for LGUs;
(ii) Fostering system interaction between LGUs and central systems such as property registration, business registration, etc., including integration of services related to LGUs in the service portal e-Albania, starting with information related to local tax obligations;
(iii) Establishment of IT platforms for the administration of documents and tracking of service dissemination in LGUs;
(iv) Development of local infrastructure access toward broadband and digital services. Interoperability systems between the central government and local government include the implementation of the unified informative portal and electronic services for LGUs.

One-stop shops were established in Local Government Units with the support of the STAR 2 Project. Fifty-nine local municipalities have a one-stop-shop operating system installed, providing over 70 services. In some municipalities, front desks are in the ADISA[19] Integrated Centres (22 provide 750 services from 46 central institutions and 70 local services for a total of 820 public services). According to the Albanian Government, in 2022, there were 1225 public e-services for both citizens and businesses on the https://e-albania.al/ platform.
Albanian Digital Agenda 2022 – 2026 is a strategic document based on 4 main pillars: digital governance, digital businesses, digital education and digital citizens. The 'digital governance' pillar is based on enabling digital policies, intelligent processes and advanced solutions on secure platforms (AI, machine learning, IoT cloud, blockchain), while the 'digital business' pillar is more focused on accessible, proactive services and business-ready operations. (eResidence, FinTech, increasing the use and application of tech-in-development for businesses). The 'digital education' pillar is focused on transforming learning and education (e-learning, digital skills, curriculum modification and inclusion of ICT in schools, more startup programmes, safer internet for kids). The last pillar 'digital citizens' relates to citizens and privacy, data transparency and citizen services (increasing the involvement of citizens in decision-making and legal acts related to privacy, green solutions, smart cities/villages) and it is strongly related to local government priorities.
The main issue remains the harmonisation of territorial planning legislation and the extension of the telecommunication network at the municipal level, while improving ICT infrastructure at the local level and increasing ICT skills both for the local administration and citizens to enable them to benefit from the provision of e-services.

18 Law No. 9918, dated 19.05.2008, "On the Electronic Communications in the Republic of Albania"; Law No.2 / 2017, "On Cyber Security"; Law No.107 / 2015, dated 1.1.2015 "On Electronic Identification and Trusted Services"; Law No. 9880/2008, dated 25.2.2008, "On Electronic Signature"; Law No.10273, dated 29.4.2010 "For the Electronic Document"

19 https://www.adisa.gov.al/

BOSNIA AND HERZEGOVINA

Area total: 51,197 sq km

Population: 3,807,764 (2023 est.)

0–14 years:
13.14% (male 258,937/female 241,581)

15–64 years:
69% (male 1,319,995/female 1,307,304)

65 years and over:
17.86% (2023 est.) (male 277,555/female 402,392)

346,000 pop SARAJEVO (capital) (2023)

3 first-order administrative divisions
- Brcko District (Brcko Distrikt), Federation of Bosnia and Herzegovina (Federacija Bosne i Hercegovine) , Republika Srpska.

144 Municipalities

In general, as the Study will demonstrate in great detail, strategic planning documents in Bosnia and Herzegovina tend to be short on detail and frequently lack verifiable performance indicators, as well as the funding required to implement their goals.

Policy design and delivery capabilities and systems are insufficient, challenged by complex vertical and horizontal cross-governmental coordination, which undermines the quality of public service delivery and the possibility to lift its growth potential. The speed of public administration reform is slow, guided by the Strategic Framework of Public Administration Reform in Bosnia and Herzegovina 2018–2022.[20]

It is important to note that the extremely complex constitutional and political set-up of institutions would have necessitated a much more in-depth examination of sub-national strategies and priorities, but with the limited timeline and availability of key interlocutors, this was not possible.

20 Reference: http://rju.parco.gov.ba/en/o-rju/strateski-okviri-za-rju/

KOSOVO

Area total: 10,887 sq km

Population: 1,964,327 (2023 est.)

0–14 years:
23.1% (male 235,379/female 218,359)

15–64 years:
68.75% (male 706,495/female 643,982)

65 years and over:
8.15% (2023 est.) (male 69,676/female 90,436)

218,782 PRISTINA (capital) (2020)
Pristina (Prishtine, Prishtina)

38 Municipalities (komuna)

The Government of Kosovo has taken several initiatives to promote digitalization. These initiatives are aimed at raising awareness of the benefits of technology, while supporting a successful digital transformation that is inclusive and empowering and contributing to Kosovo Government efforts to digitalize and support businesses through ICT.

International organizations and donors (EU and bilateral) are committed to supporting a successful digital transformation that is inclusive and sustainable, while raising awareness of technology benefits in business and building new and advanced power generation capacities.

The EU Benchmark Reports in digital public administration and interoperability framework observatory do not include Kosovo data, so only the Progress Report is available from official Kosovo Government information and donors' reports.

Kosovo is systematically advancing in key digital transformation areas, such as digital skills, digital economy, digital governance and digital society, with the support of UNDP and World Bank. While Kosovo is on a good track toward digital infrastructure development, there are still challenges such as low internet penetration, lack of digital literacy, limited e-services and low trust in online transactions.

A need for more comprehensive digitalization, particularly in Local Self-Governments and public services is required. More sustainable and climate resilient municipal infrastructure and services will be supported by further assistance to municipalities and cities to develop Action Plans and continue capacity-building in order to strengthen their municipal digital transition and provide digital services.

MOLDOVA

Area total: 33,851 sq km

Population 3,250,532 (2023 est.)

0–14 years:
18.01% (male 301,432/female 284,034)

15–64 years:
66.37% (male 1,087,397/female 1,069,902)

65 years and over:
15.62% (2023 est.) (male 203,889/female 303,878)

488,000 CHISINAU (capital) (2023)

32 Anthonomus Provinces and Regions
(second level)

898 Municipalities

Along the way, the Government of the Republic of Moldova has developed several policy documents in the field of e-Transformation of Governance, as a platform for the implementation of which the Electronic Government Agency was created[21] .

On 15 March 2023, by the Decision of the Government of the Republic of Moldova No. 126, the Public Administration Reform Strategy of the Republic of Moldova for the years 2023–2030[22] was approved. The Strategy contains the compartment "De-bureaucratization and development of electronic services", in which it is mentioned that the use of the Internet is quite widespread in the Republic of Moldova: according to the latest statistical data, there are 2,782,137 users with mobile internet access and 782,391 fixed internet subscribers, the number being in constant growth in recent years. Access to the virtual world has become increasingly easier in recent years and has allowed for new types of communication to become firm elements in the daily life of the population of the Republic of Moldova.

21 https://www.egov.md/en/about-ega

22 https://www.legis.md/cautare/getResults?doc_id=136555&lang=ro

MONTENEGRO

Area total: 13,812 sq km

Population 602,445 (2023 est.)

0–14 years:
17.93% (male 55,690/female 52,340)

15–64 years:
64.65% (male 194,334/female 195,127)

65 years and over:
17.42% (2023 est.) (male 45,993/female 58,961)

177,000 PODGORICA (capital) (2018)

25 Municipalities

The Government of Montenegro has taken several initiatives to promote digitalization.
The Digital Transformation Strategy23 of Montenegro 2022–2026 acknowledges the need for further development of the digital infrastructure, especially in the context of balanced regional development. The Strategy has two strategic goals: improving the capacities and capabilities for digital transformation, and improving the quality of life and business competitiveness through digital transformation. It also provides a set of recommendations to support the public administration in implementing digital transformation.
The 2018–2024 Smart Specialisation for Montenegro Strategy follows three key strategic directions: healthier Montenegro, sustainable Montenegro and digitized Montenegro.
Education System Digitalization Strategy 2022–202724 has three main goals: fostering the innovation of ICT, enhancing the quality of education through the use of ICT, and improving the efficiency of the education system through the use of ICT.
The Unified Information System for Electronic Data Exchange (JISERP25) between public bodies, public administration bodies and other entities is a significant shared system established by the Ministry of Public Administration.
The Ministry of Public Administration cooperates with the Ministry of Finance in the NS-NAT, the body responsible for implementing the information system administrative fee collection. The NS-NAT system will enable in-person payment to both public administration bodies and local self-government bodies via the card, as well as the payment of fees electronically on the electronic services web portal.
However, none of the Local Self-Government Units are using the system yet.
The scores on eGovernment performance26 across policy priorities are still lagging behind the EU average, with transparency of 37 in Montenegro (64 in EU), User centricity of 64 (88 in EU), Interoperability (organizational and interoperability governance) level 2 and 3 (4 in EU). Digital Public Administration indicators show that only 30% of the population interact electronically with public authorities (EU level, 57%).
Podgorica, the capital city, developed its Smart City Action Plan between June 2020 and December 2021 with the support of AFD. It is a holistic and systemic vision of Podgorica's smart city ambitions completed through a co-constructive process for defining transversal courses of action. In the process of Action Plan development, digital maturity of Podgorica was evaluated by these fundamental elements: internal organization, connectivity, data management, local ecosystem and electronic public services. Good digital competences in the IT Department, excellent connectivity and constant increase in digital services were recognized, but also a lack of strategic approach to resource (people and data) management.
The transformation map includes short – mid – long term actions towards becoming a European standard smart city at the service of citizens and offering good quality of life. Some important actions include Living Labs/Resource Centre on smart and green buildings, promotion of BIM solutions, extension of online services and super app, digital twin and modelling tools, open data policy and IoT infrastructure strategy.
In 2020, Siemens developed its Smart City Study on Development of Energy Efficient Infrastructure and Services in Podgorica. It recommends and proposes smart technology applications in the energy sector, and traffic and communal services. Priority projects are identified, as well as project funding opportunities from EU Funds. Other local level Green Agenda initiatives in Podgorica strengthened by Smart City activities important and worth mentioning are: cadastre of green areas using GIS – http://kzp.podgorica.me/ and Tree crowdfunding platform - https://goplant.me/ etc.

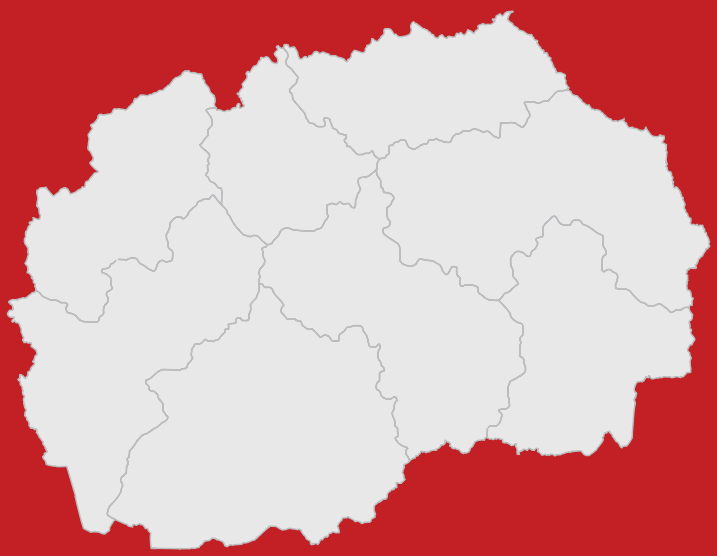
23 https://www.gov.me/en/article/digital-transformation-strategy-for-development-of-digital-montenegro

24 https://education-profiles.org/europe-and-northern-america/montenegro/~technology

25 https://www.gov.me/ResourceManager/FileDownload.aspx?rId=411103&rType=2&alphabet=cyr

26 Digital Public Administration infographic 2021 of EU (europa.eu) https://joinup.ec.europa.eu/sites/default/files/inline-files/NIFO_DPA_Infographic_Montenegro_vFinal.pdf

NORTH MACEDONIA



Area total: 25,713 sq km

Population 2,133,410 (2023 est.)

0–14 years:
16.06% (male 177,156/female 165,540)

15–64 years:
68.69% (male 742,990/female 722,359)

65 years and over:
15.25% (2023 est.) (male 143,539/female 181,826)

611,000 SKOPJE (capital) (2023)

81 Municipalities (including the Capital city with prescribed status of competencies)

The Programme of the Government of the Republic of North Macedonia for 2021, focused on the modernisation and increased efficiency of public administration27. Under the same Programme, the Minister of Information Society and Administration is in charge of establishing a central institution for coordination and implementation of the digitalization process, and also for full IT support to the national level public institutions, including active work on further digitalization of services and their availability. National e-Services Portal was established28 and very actively used during Covid19 time. The backbone of the National Portal of e-Services is the National Population Register, and all forms in the portal are prefilled with data from it. The portal consolidates and integrates data from several other registers using AI and in case of any discrepancies, it informs the register's owner. With it, by registering on the e-Services Portal via the Single Sign-On System (SSO), data is exchanged faster and more efficiently between institutions, citizens get an electronic identity eID and direct access to electronic services. The portal is open for offering e-services by Local Governments and their public companies, but from the list of registered ones, none provides any service.

The Strategic Plan of the Ministry of Information Society and Administration defines the measures to be taken in two areas: (i) public administration reform, covering capacity building and introduction of a modern human resource management system, administration's professional development and regulatory reform; and (ii) information society, covering infrastructure and support, e-Services, e-Citizens, single-point-of-services and open data. North Macedonia is making progress in digitalization, but there are still challenges to overcome. In the field of digital public administration and legislation, there is no progress reported and the scores on eGovernment performance across policy priorities are still lagging behind the EU average, with transparency of 32 in North Macedonia (64 in EU), User centricity of 64 (88 in EU), Interoperability (organizational and interoperability governance) level 3 (4 in EU). Digital Public Administration indicators show that only 25% of the population interact with public authorities (EU level, 57%).

While North Macedonia is on a good track toward digital infrastructure development, there is still a need for a more comprehensive digitalization, particularly in Local Self-Governments and public services. Relevant national institutions should provide continuous, timely, detailed and practical guidelines to LGs, related to national strategies and projects. Improved coordination and collaboration between national and local institutions, including joint projects, will improve the coherence of activities and articulation of targets.

27 Digital Public Administration Factsheet 2021 Republic of North Macedonia

28 https://uslugi.gov.mk/

SERBIA

Area total: 77,474 sq km

Population 6,693,375 (2023 est.)

0–14 years:
14.45% (male 498,534/female 468,853)

15–64 years:
65.81% (male 2,216,701/female 2,188,267)

65 years and over:
19.74% (2023 est.) (male 547,344/female 773,676)

1.408 million BELGRADE (capital) (2023)

117 municipalities (opstine, singular - opstina) **and** 28 cities (gradovi, singular - grad)

Legislation prescribes the obligation of the entire public administration to enable electronic administrative proceedings. Specifically, the Law on E-Government (Official Gazette No. 27/18) stipulates those administrative authorities, including Local Self-Government Units, that are obliged to provide conditions for the establishment of electronic administration, such as adequate equipment and software solutions, organization of work and tasks, appointment of administrators for tasks, published electronically. They are required to possess the necessary expertise, experience and qualifications for the application of administrative and management procedures, as well as adequate training in the areas of open data, use of information and communication technologies, application of information security standards, etc.

The Portal of Local Tax Administrations[29] enables citizens and businesses to see their tax obligations, as well as to file an application for determining their property taxes electronically. Local Tax Administrations are also the first institutions that, in accordance with the Law on E-Government, started submitting Tax Decisions on the determined property tax through the e-Delivery module in a single electronic mailbox of users. Currently, the support of the Office of Information Technologies and eGovernment is focused on providing assistance to employees in the areas of: e-ZUP – electronic gateway for data exchange between public administration bodies, e-Baby – electronic procedure for entry into the register after baby's birth and e-LPA, e-Inspector and the State Professional Exam and the Registrar's Exam – electronic procedures for obtaining different certificates, which have limiting factors and are insufficient, given that some Local Self-Government Units, especially the underdeveloped ones, require more comprehensive support in the introduction of e-Government.

Serbian Local Self-Government Units offer their services on the central e-Government portal – euprava.gov.rs, but often, they also have their own webpages focused on local service delivery. Several Local Self-Government Units have implemented a system of swift submission of complaints and requests related to specialized local services, particularly utilities (e.g., waste disposal, public transport, road maintenance, etc.), known as the "48-h system."

29 https://lpa.gov.rs/jisportal/homepage

Moreover, Local Self-Government Units provide in-person services, which they are increasingly organizing as one-stop-shop service halls, often created in collaboration with central authorities that provide services in a deconcentrated manner (in the territory). So far, such one-stop-shops have been established in 14 Local Self-Government Units, with the support of the MPALSG. The main goal of this process is to simplify the procedures, while making service delivery more efficient for all, including public administration, citizens and businesses.

RDO – Smart city indicators, state of play in 2019

REGIONAL DECENTRALIZATION OBSERVATORY INDEX is one of the flagship products of NALAS, measuring the progress in many aspects of decentralization and local governance in Southeast Europe (SEE). More than 50 experts from NALAS, OSCE and Local Government Associations have designed and agreed upon 99 indicators, organized into four dimensions within the overall RDO Index: 1 Autonomy of Local Governments; 2 Quality of Local Services; 3 Participation and Responsiveness; and 4 Local Government Associations (LGAs) Involvement in Policy Dialogue.

Dimension 25 under the Index D2 Quality of Local Services is focusing on Smart Cities measuring the **Prosperity** (Innovations; Employment; Equity; Green economy; Economic performance; and Attractiveness & competitiveness), **Governance** with both Policy and Concept established in the local administration, **Planet** (Energy & mitigation; Water; Land; Climate resilience; Air quality; Municipal solid waste and Ecosystem), **People** (Health; Safety; Access to

Figure 9 Dimensions and Indices of the Composite Regional Decentralization Observatory (RDO) Index

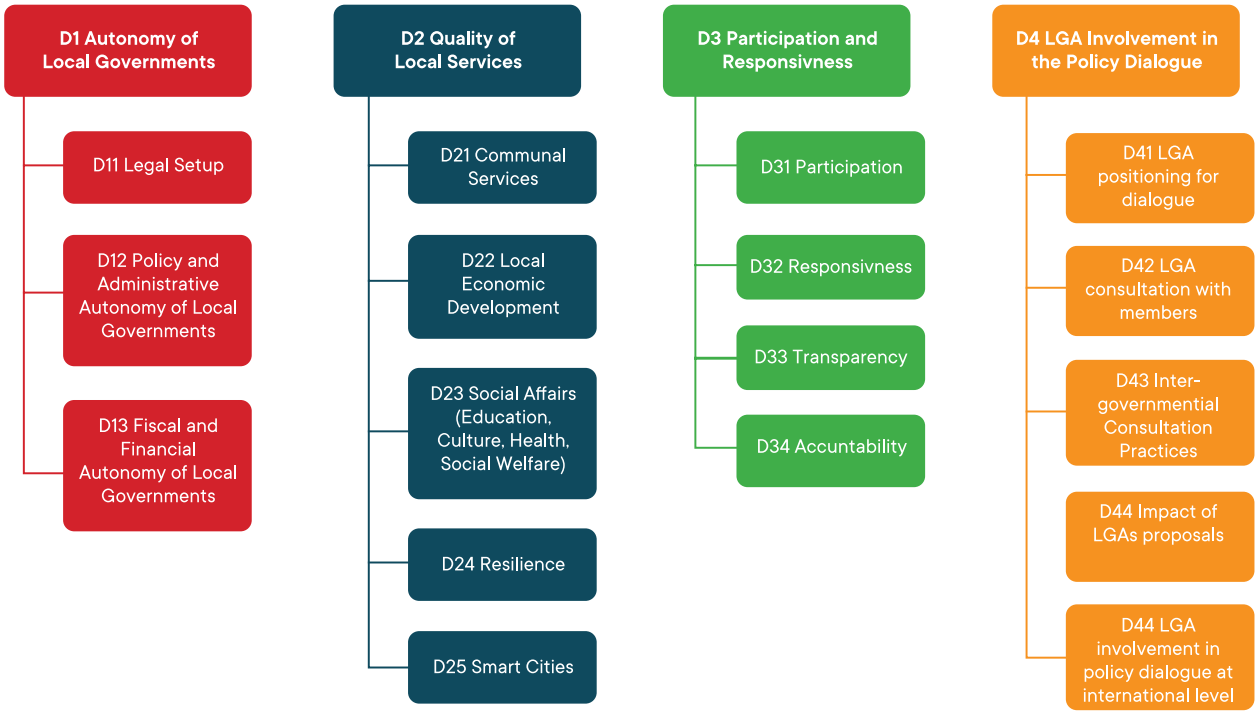


Figure 10 *RDO Smart city dimensions*

other services), and **ICT** (Infrastructure and Open Data).

Results from 2019 are the baseline for progress monitoring. The RDO Index will be upgraded by additional indicators during 2023 and the RDO update will be provided accordingly.

NALAS Survey 2021

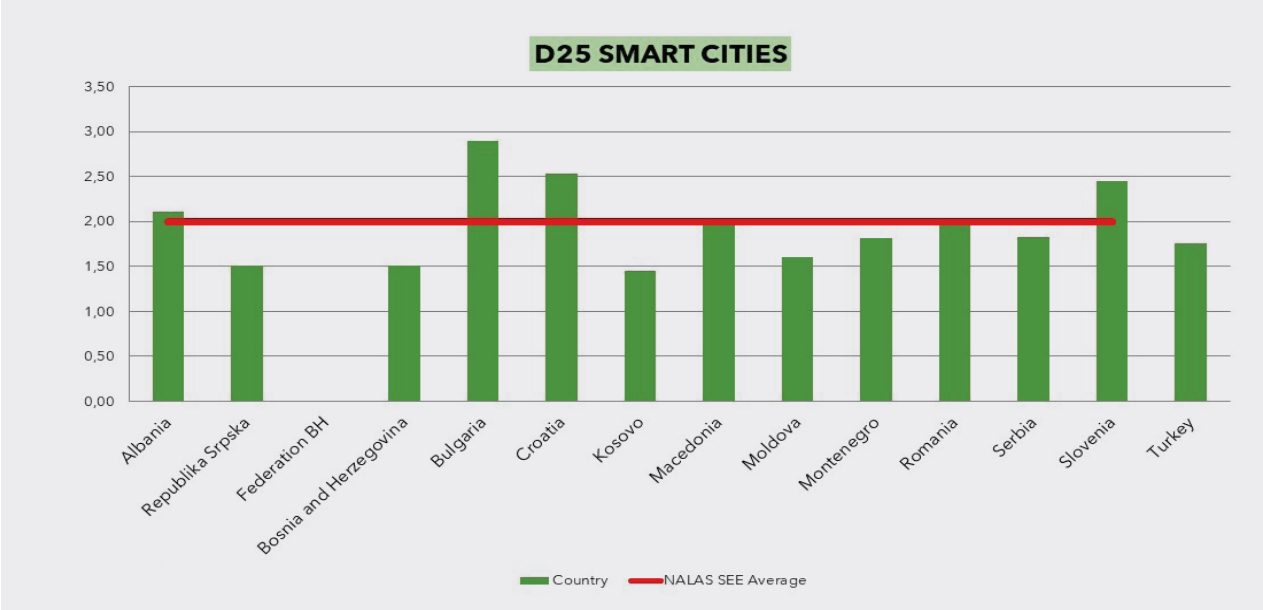
According to the NALAS Survey results, over 64% of LGs in the region have developed and deployed digital services related to mobility, such as multimodal connectivity, traffic, parking, and public transport. Education services, including enrolment, inclusion, and consultation, were also found to be prevalent among the digital services from LGUs, with availability of over 64%.

The Survey also showed that around 50% of LGUs in the region have offered digital services focused on innovation and resources for startups, as well as participation and citizen inclusion in decision-making processes. Environmental services, such as air quality information, sensors, open data, and citizen participation, also accounted for about 50%.

Urban planning, including transparency, participation, and public consultations, was also an area where digital services were available.

Lastly, culture, tourism, and cultural heritage also had a significant percentage of digital services available in the region.

Figure 11 *RDO Smart City Dimension across SEE*



The List of digital services available for citizens includes:

- >64% mobility (multimodal connectivity, traffic, parking and public transport...)
- >64% education services (enrolment, inclusion, consultation, ...)
- 50% innovation and resources for startups
- 50% participation/citizen inclusion in decision-making processes
- 50% environment (air quality information, sensors, open data, citizens' participation, noise pollution....)
- 50% urban planning (transparency, participation and public consultations)
- 50% culture, tourism and cultural heritage

These findings suggest that the region is making progress in adopting digital services, particularly in areas such as mobility and education. However, there is still room for improvement in other areas such as environmental issues, urban planning, and cultural heritage, where the adoption of digital services could further enhance the services provided to citizens.

In a separate economy level LGU Survey, results are different. Macedonian LGUs show presence of digital services for urban planning (building permits), water and sanitation, but very limited for mobility (except for parking management), environment and resilience (safety and security).

Montenegro shows results in mobility, social and educational services, but is limited in the energy sector and has almost non-existent results in the environment.

In **Kosovo,** there is a strong focus on the water and energy sector, but still a lack of digital services in the environment and education.

Survey results in **Bosnia and Herzegovina** are detecting strong interest in the environment and air quality information.

Albanian LGUs are focused on tourism and cultural heritage, and services that support that sector. The environment and climate change resilience are not covered.

Moldova has covered various segments with digital services, having a strong focus on education, water and sanitation, but also urban planning transparency and culture.

Activities of Local Government Associations

Local Government Associations hold a crucial role in advancing the digitalization of LGs. Digital Strategies and the EU Digital Agenda demand a collaborative approach involving different stakeholders – Local Government Associations, Local Governments, relevant national institutions, and other stakeholders. NALAS remains committed to assisting LGAs and expanding effective projects, initiatives and capacity-building programmes tailored for LGs and their public entities in the field of digital transformation.

The following section of the Report observes the ongoing initiatives at the LGA level.

- **Albania ALA**

The Association for Local Autonomy supports the strengthening of local government and the process of decentralization in order to increase local government efficiency through: the implementation of the administrative-territorial reform; improving the process of decentralization of public finances; increasing the quality and modernization of public services at the local government level, based on European standards; increasing the transparency and accountability of local government in relation to the community; increasing the involvement of citizens and interest groups in decision-making at the local government level and activities of an educational, social-cultural and sports nature.

- **Association of Municipalities and Cities of Federation BiH – AMC**

Training and capacity building of municipalities is the focus area of the AMC. Active participation in Modernization of Municipal Services, supported by GIZ ORF, initiated the cooperation in implementing the Project "Smart Cities – towards the Digital Transformation of Cities in Bosnia and Herzegovina". The Project aims to support Local Governments in the initial realization of their vision of digital transformation into a smart city. The focus is on improving the readiness and capacity of Local Self-Government Units for the modernization of municipal services by using the internationally accepted "smart city" concept and solutions. In addition, information on online platforms offering Smart City trainings is provided for municipalities.

- **Association of Local Authorities of RS ALC of Bosnia and Herzegovina**

ALC is implementing the Project "Smart Cities – towards the Digital Transformation of Cities in Bosnia and Herzegovina" whose goals encompass heightened awareness of digital transformation's significance for Local Governments and fostered understanding of emerging trends among municipalities. Additionally, the Project aims to fortify the Association's role as an intermediary by enhancing its capacity to support member municipalities in knowledge dissemination, while also establishing the Smart City Council to facilitate networking and exchange of experiences on digital transformation, organization of webinars and dissemination of best practices via Newsletters of the Smart City Forum. ALC also supports smart city solution implementation within the DeveloPPP Project of GIZ ORF.

- **Association of Kosovo Municipalities AKM**

AKM has a strong focus on empowering and enhancing Kosovo municipalities in their digital transformation endeavours. AKM has established its working group Collegium for Information Technology as an inclusive mechanism comprising IT Officers from Kosovo's municipalities, focusing on issues related to their domain. It offers insights, suggestions, and recommendations to various institutions, aiming to promote effective work models and disseminate best practices. The Collegium addresses crucial matters within its scope, such as providing professional assistance to decision-making bodies, aiding law implementation, cooperating with other bodies, and engaging with local and international partners. Lobbying and defending the interests of municipalities in national strategies, laws and regulations is a strong function of AKM, as well as the function of a modern training centre offering most important capacity building trainings in addition to best practices and peer-to-peer learnings.

- **CALM Moldova**

CALM actively engages in digitization efforts through collaboration with key entities such as the Electronic Government Agency, the Public Services Agency, and the Information Technology and Cyber Security Service. It also participates in law project consultations related to digitization and has established an internal information system and town hall database. CALM manages the e-platform for local government (e-platforma.calm.md), providing training, support services, resources, and tools to enhance cooperation among local authorities, promote learning, and facilitate sustainable community development. Additionally, CALM utilizes its website and social media platforms to foster communication and networking between mayors and professional networks.

- **Union of Municipalities of Montenegro (UOM)**

A strong focus on digitalization is incorporated in the Annual Working Plan and Financial Plan.

Engaged in various areas encompassing: (1) Training and capacity building, as well as exchange of experiences with EU municipalities using the TAIEX mechanism and workshops on smart cities, including: TAIEX workshops held in 2022 on a strategic approach to the Smart City Concept; Implementation experiences regarding the multi-level governance approach to e-government and e-services at the local level; Open data and transparency; and the latest TAIEX in 2023 on a strategic approach to the E-Governance Concept. (2) Deploying a common software solution for Local Public Revenues (LARIS), financed by the UOM, including annual maintenance costs; and (3) Development of a common software platform for records of Building Owners Assemblies and software for public assets' recording and monitoring. For the empowerment of municipalities, UOM is establishing a UOM Digitalization Task Force.

- **ZELS Association of Local Self-Governments of North Macedonia**

Strongly committed to the digitalization of Local Governments and actively participating in multi-level consultation on digital transformation of municipalities, ZELS[30] plays a significant role in advancing the digitization of municipal services. Aligned with its mission, ZELS promotes innovative approaches and the integration of ICT advancements and financial policies for municipal development. Its strategic goals encompass the continual enhancement of modern services, especially in ICT, along with supporting capacity growth and process standardization, while administering various e-services with common applications.

Existing common applications for municipal e-services deployed on ZELS platform[31] include: E-Construction Permit;

30 https://e-zdravstvo.mk/

31 https://zels.org.mk/e-uslugi

E-Matters; E-Contract Monitoring and E-Construction Land.

The E-Construction Permit System facilitates efficient and transparent processing of construction-related requests. The system enables electronic submission, processing, and issuance of building permits, offering real-time notifications to stakeholders through email and SMS text messages.

This practice of establishing central systems and applications placed ZELS as a pioneer in the field; however, challenges of effective maintenance and updates of existing applications continue.

Current efforts of ZELS include development of software applications for an e-taxation system and a system supporting gender-responsive budgeting.

- **Standing Conference of Towns and Municipalities of Serbia (SCTM)**

From 2017 to the end of 2020, SCTM executed several projects to enhance administrative efficiency, including the implementation of the **Register of Administrative Procedures on municipal websites** (21 in total). This Register encompasses comprehensive information about procedures conducted by LGUs, covering submission requirements, authority-collected data, decision timelines, appeal rights, etc. However, electronic submission is not yet feasible through this Register, with plans to establish full functionality thereof in accordance with the Law on the Register of Administrative Procedures.

SCTM focused on implementing the Central Electronic Office to facilitate electronic processing within municipalities and it played a pivotal role in **fostering dialogue between local and national authorities** through online meetings that enabled LG employees to engage with representatives from the Prime Minister Office, while emphasizing the importance of involving LGUs in discussions about the e-Office.

The **Budget Portal**[32] operates as an innovative financial electronic reporting and communication system, designed to offer a simplified and accessible view of local self-government budgets, especially for councillors, while ensuring easy monitoring of monthly budget execution. Positioned within municipal websites as a distinct section, the portal provides citizens with the opportunity to access and understand the utilization of budget funds, and also to track the expenditures planned and their related activities.

32 The project was implemented with the financial support of the Swedish International Development Agency (SIDA), and based on the agreement signed between SCTM and UNDP

2. Infrastructure - the foundation of digital transformation

The International Telecommunication Union (ITU)[33] is the official source of global UN ICT statistics. The ICT Data and Analytics (IDA) Division is part of the ITU's Digital Knowledge Hub Department within the Telecommunication Development Bureau (BDT). One of the core activities of the Division is the collection, verification and harmonization of telecommunication/ICT statistics for about 200 economies worldwide.[34] [35]

Figure 12 ITU Dashboard [36]

ITU dashboard 2021	ALB	BIH	MDA	MKD	MNE	SRB	XKV
4G coverage	99%	93%	99%	100%	98%	98%	
Households with internet	88%	75%	67%	80%	81%	82%	96%[37]
rural	n.a.	74%	58%	77%	71%	75%	
urban	n.a.	78%	80%	81%	84%	86%	
Mobile cellular subscription*	92	114	127	92	178	124	
Active mobile broadband subscription*	72	56	88	67	90	104	
Fixed broadband subscription*	20	24	25	24	30	26	
Individuals using internet	79%	76%	61%	83%	82%	81%	
age 15–24	95%	100%		98%	98%	98%	
age 25–74	68%	74%		70%	79%	79%	

According to the ITU Digital Dashboard for 2021, 99% of the territory of **Albania** has 4G coverage, and 72 out of 100 inhabitants have mobile-broadband subscriptions, while other 20 out of 100 inhabitants have fixed broadband subscriptions. 88% of households have internet access at home. The price for an internet subscription in ALB is relatively affordable, being under the European average. At the same time, this cost insignificantly exceeds the threshold of 2% of the GNI.[36]

In **Bosnia and Herzegovina,** 93% of the territory has 4G coverage, and 56 out of 100 inhabitants have mobile-broadband subscriptions, while other 24 out of 100 inhabitants have fixed broadband subscriptions. 75% of households have internet access at home (74% rural, 78% urban). The price for an internet subscription in Bosnia and Herzegovina is relatively affordable, being under the European average. At the same time, this cost slightly exceeds the threshold of 2% of the GNI.

Moldova has 4G coverage in 99% of its territory, and 88 out of 100 inhabitants have mobile-broadband subscriptions, while other 25 out of 100 inhabitants have fixed broadband subscriptions. 67% of households have internet access at home (58% rural, 80% urban). The price for an internet subscription in MDA is relatively affordable, being under the European average. At the same time, this cost insignificantly exceeds the threshold of 2% of the GNI.

According to the ITU Digital Dashboard for 2021[37], 98% of the territory of **Montenegro** has 4G coverage, and 90 out of 100 inhabitants have mobile-broadband subscriptions, while other 30 out of 100 inhabitants have fixed broadband subscriptions. 81% of households have internet access at home (71% rural, 84% urban). The price for an internet subscription in Montenegro is relatively affordable, being under the European average. At the same time, this cost slightly exceeds the threshold of 2% of the GNI. According

33 https://www.itu.int

34 Digital Development Dashboard, ITU Statistics https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx

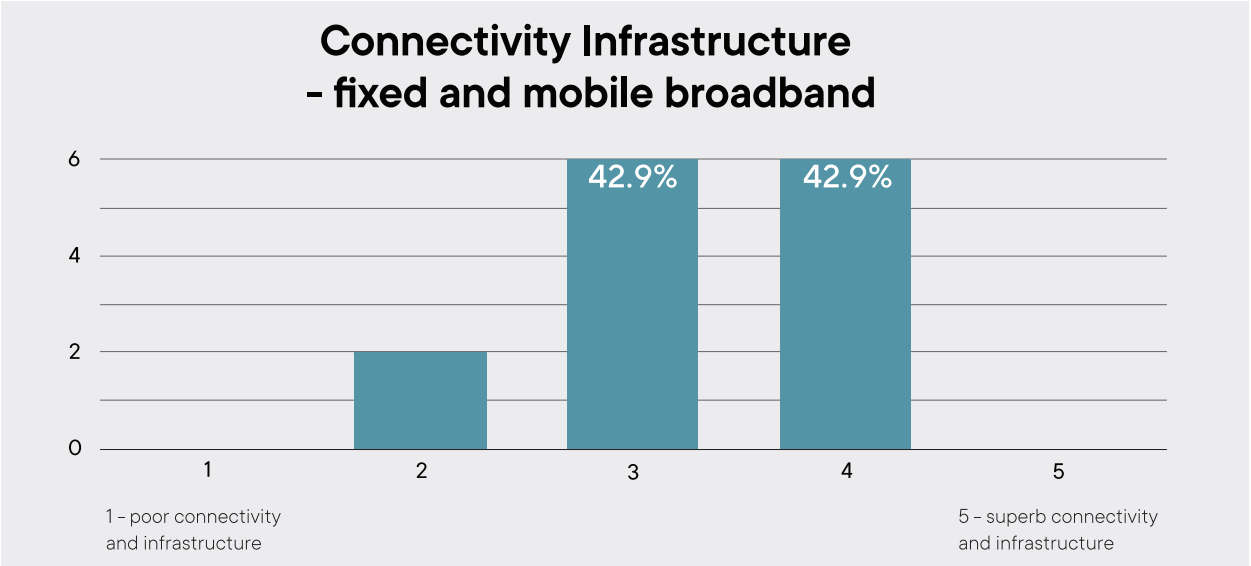
* per 100 inhabitants

35 Data from Eurostat 2020: https://ec.europa.eu/eurostat/en/

36 The maximum cost for broadband internet, which guarantees services' affordability, established by the UN Committee

37 Digital Development Dashboard, ITU Statistics

Figure 13: Connectivity Infrastructure (NALAS survey)



to the official measurements of the Agency for Electronic Communications (EKIP), the 5G network of "Crnogorski Telekom" is available to about 76% of the population in Montenegro (https://telekom.me/o-kompaniji/media-centar/telekom-i-zvanicno-ima-najbrzu-i-najvecu-mobilnu-mrezu-u-crnoj-gori)

In **North Macedonia,** 100% of the territory has 4G coverage, and 67 out of 100 inhabitants have mobile-broadband subscriptions, while other 24 out of 100 inhabitants have fixed broadband subscriptions. 80% of households have internet access at home (77% rural, 81% urban). The price for an internet subscription in MKD is affordable compared to the EU average. However, at the same time, this cost exceeds the threshold of 2% of the GNI.

Serbia has 4G coverage in 98% of its territory and 104 out of 100 inhabitants have mobile-broadband subscriptions, while other 26 out of 100 inhabitants have fixed broadband subscriptions. 82% of households have internet access at home (75% rural, 86% urban). The price for an internet subscription in **Serbia** is relatively affordable, being under the European average. At the same time, this cost slightly exceeds the threshold of 2% of the GNI.

With the World Bank support, **Kosovo** has one of the highest numbers of high-speed internet subscriptions per household in Europe[38]; it outpaces leading EU countries according to data published by EUROSTAT (2021)[39]. Its timely and well-implemented rural broadband programme leveraged private capital and brought a digital lifeline to remote locations where it was needed the most – schools, health centres, and homes. Kosovo achieved 99.8% broadband penetration.[40]

The assessment of connectivity infrastructure, encompassing fixed and mobile broadband, conducted across the Western Balkans and Moldova, reveals an overall score of 3.5 on a scale of 1 to 5.

The results from specific surveys conducted in each economy indicate that there are similar findings with no significant differences.

In **Serbia**, 80% of LGUs consider that city/municipal wide connectivity and infrastructure – fixed and mobile broadband, is 3.5 on a scale from 1 to 5, and only 15% consider it below 3. The same results are found in **Bosnia and Herzegovina**, having no LGs with the highest score of 5.

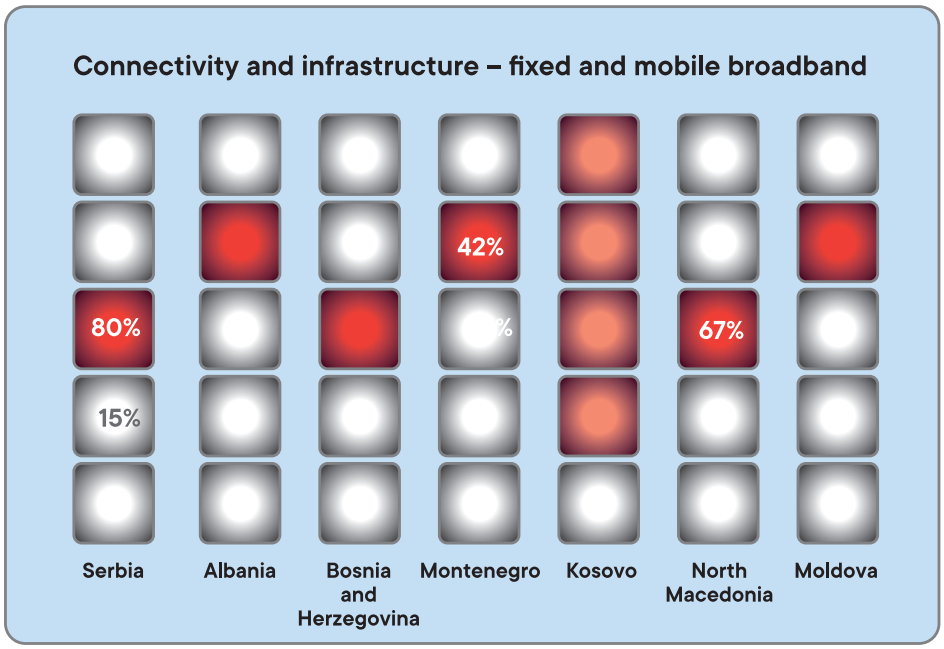
Similar results can be seen in **Montenegro** with 42% indicating level 4 on the same scale, but 16% are still lagging behind with inadequate and poor infrastructure.

Survey results in **N. Macedonia** are revealing level 3 of connectivity infrastructure with 67%, but the highest and poorest infrastructure is also selected in 10% of Local Governments.

38 https://arkep-rks.org/desk/inc/media/a7e593c8-f95c-48b9-a4ab-72d05775ddfa.pdf

39 https://ec.europa.eu/eurostat/en/

40 https://digital-strategy.ec.europa.eu/en/library/kosovo-closes-digital-divide



In **Kosovo**, the Survey results indicate a diverse range of infrastructure connectivity, with an equal distribution of responses across the scale scores, ranging from 2 to 5.

Albania is showing results with a score of 4, having no LGs with poor or inadequate connectivity.

Connectivity in **Moldova** is indicated as 4, but having a distribution of results from 1 (5%) to 5 (28%).

Infrastructure and connectivity play a crucial role in facilitating digital transformation and enabling the implementation of smart solutions in Local Government Units (LGUs). The gap between rural and urban areas is a challenge for the digitalization and service delivery.

It is essential to ensure that all citizens have access to digital services provided by LGUs, thus promoting the inclusivity and leaving-no one-behind principles. It is important for Western Balkan (WB) Governments and LG Associations to prioritize the targets highlighted in the EU Digital Compass, for 5G and broadband internet coverage, advocating for equitable infrastructure and connectivity across all LGUs.

5G will also be a key enabler of artificial intelligence systems, as it will provide real-time data collection and analysis. At the same time, it will bring the cloud to a new dimension by enabling the distribution of computing and storage, such as edge cloud, and mobile edge computing, throughout the infrastructure.

By actively pursuing these targets, Governments and Associations can contribute to bridging the digital divide and ensuring that every LGU benefits from the opportunities offered by digitalization.

The Digital Compass: The European way for the digital decade adopted in 2021 sets an additional target to cover all populated areas with 5G by 2030. 6G systems will allow for a shift from Gigabit to Terabit capacities and sub-millisecond response times. This will enable new applications such as real-time automation or extended reality sensing (the Internet of Senses). It will also make data available to facilitate the creation of a digital twin of the physical world.

Recommendations in general:

- Identifying, in partnership with the key operators and civil society, the incentives required to ensure broadband internet connectivity for remote localities (to ensure better last-mile delivery). Determining current priorities: speed (5G) versus access.
- Promoting public programmes focused on ensuring access to Internet for all, such as access to Wi-Fi connection in public spaces.

3. People-centred digital transformation (skills and capacities)

Digital skills are nowadays seen as a key factor in countries' digital transition, necessary for the success thereof. Strengthening digital skills has therefore become an integral part of national digital transformation strategies. The importance of digital skills is explicitly recognised in the Economic Reform Programme, where "insufficiently developed entrepreneurial-innovative and digital competences" are listed as a key barrier to growth and competitiveness. Accordingly, "Introducing key competences in curricula, with a focus on entrepreneurial and digital competence" is stated as one of the programmatic priorities.

In the private sector, there is an increasing demand amongst companies for intermediate and advanced digital skills, and currently, there are not enough people with those skills in the job market. The following are some key job types that the industry needs to fill, in order to drive its businesses:

- Cloud computing
- Artificial intelligence
- Cybersecurity
- IT architecture
- Mobile technologies
- Robotics and automation

For more than a decade, the **EU Digital Competence Framework** (DigComp) has provided a common understanding, across the EU and beyond, of what digital competence is, and thus provided a basis for framing digital skills policies, developing curricula and assessing digital skills, both in the education sphere and for the labour market. In March 2022, the updated version DigComp 2.2[41] takes account of emerging technologies such as Artificial Intelligence, the Internet of Things and datafication or new phenomena, such as the new teleworking conditions that have led to new and increased digital competence requirements.

41 https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

42 https://www.fit4internet.at/view/verstehen-das-modell/&lang=EN

43 https://dig-cert.at/en/about/home

Good Practice, Austria: Fit4Internet and Dig-Cert:

Austria has developed the EU DigComp further to its own "Digital Competence Framework for Austria" (Version of April, 2023: DigComp AT 2.3)[44] which defines 27 individual competences in six areas:

- Foundations, access and digital understanding
- Information and data literacy
- Communication, interaction and collaboration
- Digital content creation, production, and publication
- Safety and sustainable use of resources
- Problem solving, innovation, and continuous learning

and eight competence levels:

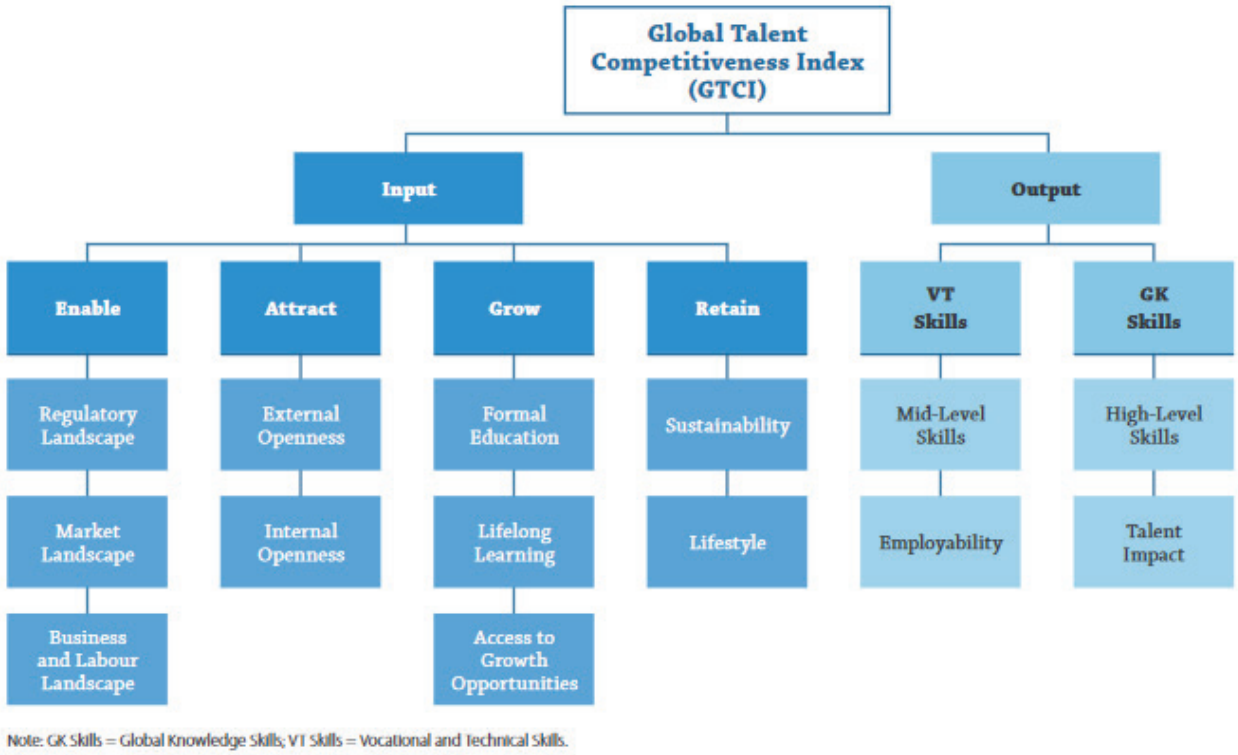
- Elementary FOUNDATION
- Solid FOUNDATION
- Solid INTERMEDIATE
- Upper INTERMEDIATE
- Comprehensively ADVANCED
- In-depth ADVANCED
- Strategically HIGHLY SPECIALISED
- Innovatively HIGHLY SPECIALISED

The matching Dig-CERT[45] is currently the only inclusive and scientifically and methodically developed certificate for the recognition of digital competences based on the DigComp AT. It can be obtained by passing a knowledge test. This knowledge test is based on scientific standards and is compatible throughout the EU and comparable across countries. Analogous to language competences, which are clustered in the systematics of the European-wide accepted and standardised reference framework for languages, the Dig-CERT is a quality and qualification certificate for digital knowledge that can be used both privately and in professional settings.

The Austrian DigComp AT System was already transferred in an EU TSI Project to the Republic of Germany.

The **Global Talent Competitiveness Index** (GTCI) 44 is published annually by INSEAD45, the Business School for the World, in collaboration with Portulans Institute.

Figure 14: GTCI Structure



The 2022 Report covers 133 countries and 175 cities from 79 economies around the world across all income groups.

Figure 15 Global Talent Competitiveness Index 2022 rankings and overall scores

Global Talent Competitiveness Index	GTCI 2022 score	Overall rank	Regional group rank
Montenegro	46,83	47	29
Serbia	44,91	52	31
Albania	40,95	65	35
Moldovia	40,00	67	37
North Macedonia	39,55	68	38
Bosnia and Herzegovina	35,74	88	39
Kosovo	n.a.	n.a.	n.a.

44 https://www.insead.edu/faculty-research/research/gtci

45 https://www.insead.edu/

Recommendations in general:

- Facilitating involvement and participation of people with disabilities and ensuring ICT accessibility in education
- Encouraging STEM careers by adjusting policies and connecting to public infrastructure works
- Performing additional research on digital transformation impact on vulnerable segments of population
- Promoting entrepreneurship initiatives among youth, which would facilitate the dialogue between startups and ensure visibility for business success stories
- Updating the legislative framework to comply with international standards on accessibility

The median age of the population in Kosovo is 30.5 and the internet penetration rate stood at 97.0 percent of the total population at the start of 2022.

It has often been emphasised that cities are generally more unequal than other parts of national territories. In a 2014 article entitled 'Urbanisation makes the world more unequal', Kristian Behrens and Frédéric Robert-Nicoud argued that 'skill-biased technological change was one of the reasons most often considered to explain the phenomenon'.[46]

The Global Cities Talent Competitiveness Index (GCTC)[47] indicates that, whatever the average income level in a particular city, talent policies matter—even if the income/talent performance relationship continues to provide a cumulative advantage for richer cities. One of the features of the future of work will be that it will rely more and more systematically on remote cooperation, virtual teams, and online communications. It is therefore likely that new talent inequalities might arise from differences in connectivity. But high-quality

Figure 16: Global Cities Talent Competitiveness Index 2022 rankings and overall scores

Global Cities Talent Competitiveness Index	GCTCI 2022 score	Overall rank
Belgrade (Serbia)	39	104
Skopje (North Macedonia)	25,1	155

connectivity is not the only way in which cities can compensate for talent inequalities. Opportunities to engage in the future of work will naturally be higher for cities that engage in addressing all types of inequalities (gender, underprivileged minorities, etc.). If, however, we remain in the context of the possibilities offered by information networks, it is clear that better connectivity and online cooperation offer new opportunities for cities' talent strategies.

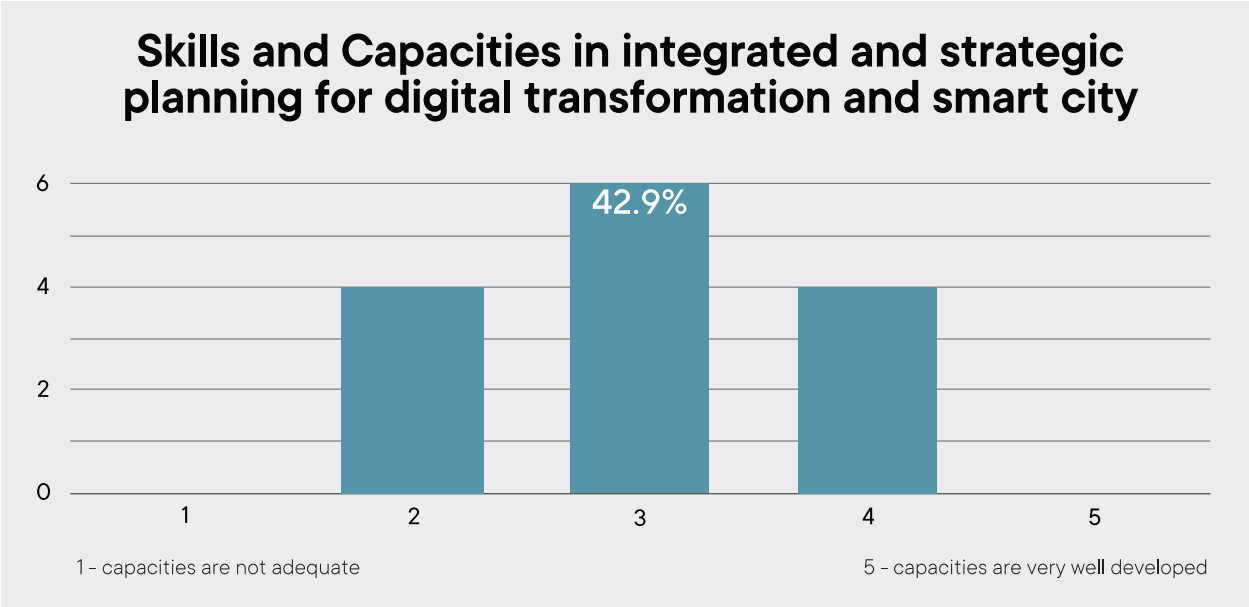
GCTC identified four main methods or actions to take in order to mitigate talent inequalities and use talent strategies as a tool to reduce other types of inequalities between cities. These four methods are to:

- Accelerate the digital transformation of cities by providing online services that not only respond to citizens' needs, but also allow cities to function with less energy and more sustainable strategies (e.g., by developing smart grids (this includes energy, transport, water distribution, and other grids)).
- Design and implement city- or region-centric strategies that offer a unique combination of the comparative advantages available locally. Local talent can find better ways of contributing to the local economy if their work allows them to combine local resources and specificities that convey a strong branding to their respective cities.
- Be future-ready. The future of work will not be based on broadband and smart grids alone. Free agents and gig workers (those working part time for multiple employers) and digital nomads will also be part of this future. Offering local working and collaboration opportunities to these types of talent can include the provision of affordable/shared working spaces, following the example of the city of Tallinn (Estonia), allowing digital nomads to benefit from special e-residency permits.

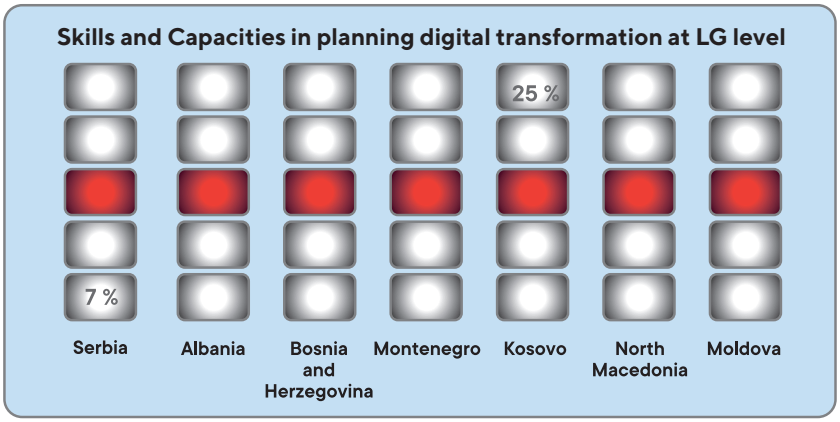
46 Behrens, K., & and Robert-Nicoud, F. (2014). Urbanisation makes the world more unequal. VoxEU, 24 July 2014, available at https://cepr.org/voxeu/columns/urbanisation-makes-world-more-unequal

47 https://www.insead.edu/sites/default/files/assets/dept/fr/gtci/GTCI-2022-report.pdf

Figure 17: Skills and Capacities in planning at LG level (NALAS survey)



- Be smart in your own way. In a global economy that allows high-level talent, inequalities can be reduced among cities by those policies and strategies that will combine local advantages in agile and adaptive ways. This approach does not need to be technology-centric or even technology-driven: e.g., innovative mobility solutions as advanced communication tools.



Building capacities at the LGU level is crucial for successful digital transformation and smart city initiatives. LGUs should take advantage of the training opportunities offered by LG Associations and platforms such as the existing e-academy portals to enhance their skills and knowledge. LG Associations play a significant role by offering specific trainings tailored to the needs of LGUs and some platforms have already been deployed. By leveraging the expertise and resources of these associations, LGUs can access specialized training programmes that address the unique challenges and opportunities they face.

By incorporating training modules on digital transformation and smart city concepts into its e-Academy portal, NALAS can provide a convenient and accessible platform for LGUs to enhance their skills and knowledge in these areas. This would enable LGUs to stay up-to-date regarding the latest developments, best practices, and strategies for integrated and strategic planning in the digital realm.

In addition, various projects and funding opportunities are available that will enable LGUs to access the necessary resources and expertise, facilitating integrated and strategic planning for digital transformation and smart cities.

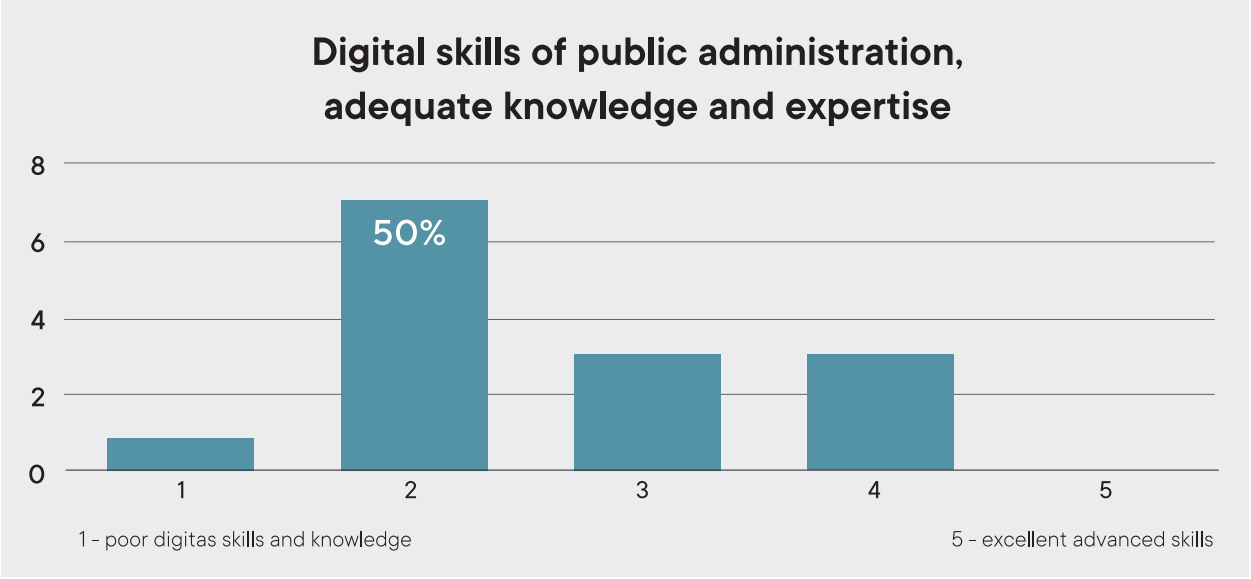
Based on NALAS Dedicated Survey conducted for Local Government Units (LGUs) in **Serbia**, it was found that capacities in integrated and strategic planning for digital

Montenegro Service Upisi.edu.me[50] enables electronic enrolment of children in preschool institutions (first enrolment), as well as students in the first grade of primary and secondary school based on data from the Montenegrin Education Information System (MEIS)[51], the Central Population Register and the Social Welfare Information System. On the portal upisi.edu.me, during 2020, three new applications were set up, through which a request can be submitted for the enrolment of children in preschool, primary and secondary school. Only the child's unique ID number is required to apply for enrolment. All other data are collected from the specified information systems. In 2020, in this way, 87% of children were enrolled in preschool institutions, 85% in primary schools, and 89% in secondary schools. This service is also mentioned as best practice in the EU eGovernment Benchmark 2022[52] as a great facilitation in the work of Enrolment Commissions and process automation. Latest information shows opening of electronic enrolment for universities for the 2023/24 academic year.

transformation and smart city are good (level 3 on a scale of 1–5). Only 7% consider that capacities are very limited and not adequate.

The Survey results for LGUs in **Montenegro** and **Bosnia and Herzegovina** revealed an average level of 3, with no LGU selecting the lowest (1 - poor) or the highest (5 - high) level.

Figure 18: Digital Skills in Public Administration (NALAS survey)



Similarly, the Dedicated Survey conducted for LGUs in **North Macedonia** showed an average level of 3, with no LGU selecting the highest level (5 - high).

Results from **Kosovo** showed an average level of 3, but significant 25% selected level 5 – high capacities.

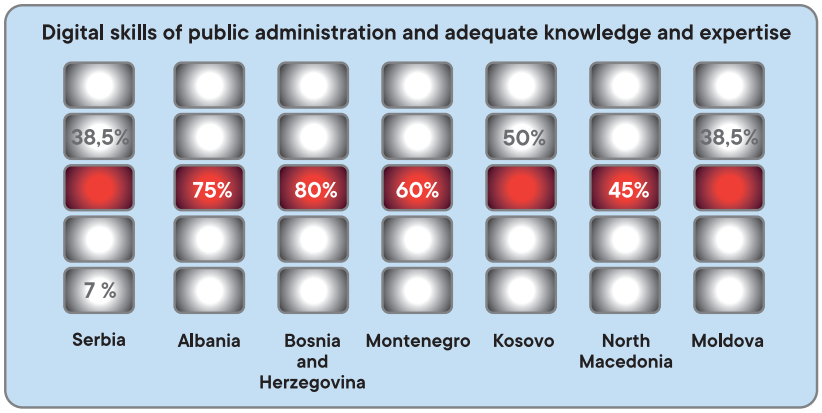
Results of **Albania** and **Moldova** are on the average level of 3, but the results selected vary across all levels, from 1 to 5.

The Ministry of Education of North Macedonia has a system that enables electronic enrolment in secondary schools, e-uslugi.mon.mk. It also enables LGUs to submit applications for capital investment in school infrastructure.[50]

48 https://upisi.edu.me/#/loginPage

49 Montenegrin Education Information System (MEIS) Database. In accordance with the General Law on Education, the institution maintains a database within the Montenegrin Education Information System (MEIS), which is managed by the Ministry of Education. https://www.meisportal2.edu.me/

50 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022



Digital skills of civil servants/administration and adequate knowledge and expertise in LGUs in **Serbia** are rated at 3, but there is a strong 38.5% who have responded with level 4. Digital skills of civil servants/administration and adequate knowledge and expertise in LGUs in **Serbia, Montenegro, North Macedonia, Bosnia and Herzegovina and Moldova** is rated at 3, but in **Moldova** and **Serbia** a strong 38.5% have responded with level 4. The majority of responses from **North Macedonia, Montenegro, Albania and Bosnia and Herzegovina** are for level 3 (45%, 60%, 75% and 80%, respectively). A higher level of skills is identified in **Kosovo**, above 3.5 where 50% of responses were selected for level 4. **Kosovo** demonstrates a clear presence of young and skilled civil servants who actively contribute to the advancement of digital transformation.

A very positive signal is the consideration of LGUs in **Moldova** that citizens are having high skills and willingness to accept digital tools, resulting in a score of above 4. Similarly, in **Kosovo**, the av-

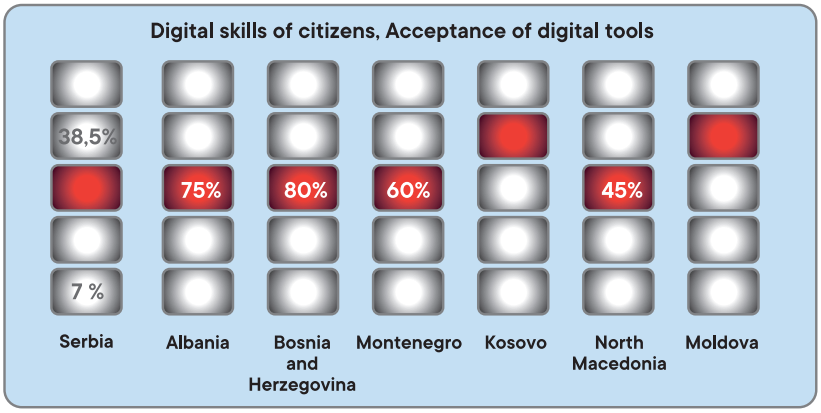
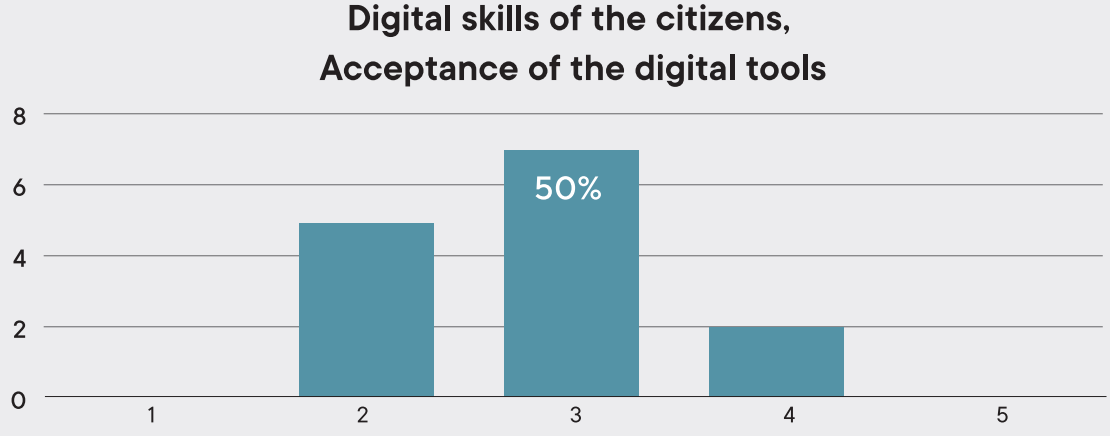


Figure 19: Digital Skills of Citzens (NALAS survey)



A number of initiatives in Moldova already support the mainstreaming of digital tools at all levels of the educational system, such as: Tekwill[53] in every school, Future Classroom initiative[54], National Program for Digital Literacy[55] among Teaching Staff, as well as the online educational platforms studii.md[56] and invat.online[57] etc. Although 18 higher education institutions provide training in the IT area, there is a deficit of personnel in this area, partially explained by the brain-drain among youth. Another imbalance would be the weak representation of girls and women in the sector: only 4.6% of girls go for education in STEM areas (science, technology, engineering, and mathematics) and only 19% of employees in the digital area are women. Such programmes as GirlsGoIT aspire to encourage and help girls to get involved in IT activities. It is imperative to take measures which would ensure a gender equality balance in all the training programmes.

erage is close to 4.

In both **Albania** and **Serbia**, the majority of Local Government Units (LGUs) rated the digital skills of their citizens as above average, with over 85% indicating a score of 3 or higher. Similarly, in **Montenegro** and **Macedonia**, more than 75% of LGUs assessed the digital skills of their citizens as above the average level of 3, reflecting a positive perception of their capabilities in utilizing digital technologies.

In the case of **Bosnia and Herzegovina**, the Survey results indicate that citizens' skills in digital transformation are at an average level of 2.5, with no LGU reporting a skill level of 4 or 5. The digital skills of citizens play a crucial role in driving the transformation of Local Government Units (LGUs). When citizens possess average to high digital skills, their expectations and demands for digital services and solutions increase. Where the needs and demands of citizens for digital solutions exceed the capacity of Local Government Units (LGUs) to provide them, this poses a significant challenge. This situation highlights the importance of bridging the gap by strengthening the digital capabilities of LGUs, but also the need to leverage digital technologies, improve service delivery, and foster innovation in their communities, thus responding to the interest of their citizens.

The Living-in.EU[58] was launched in 2019 as a new multi-level collaboration between all levels of government – national, regional, and city – to ensure technological leadership while respecting European values and diversity, as well as individuals' digital rights. Through co-creation with citizens, they aim to bring the economic and social benefits of this transformation to all local communities and implement an inclusive digital Europe, with powerful digital services, technologies, infrastructures and skills.[59]

Excurse: PEOPLE centric approach in digital transformation - addressing top local challenges

In addition to infrastructure and connectivity, a people-centric approach is vital to implementing digital transformation in Local Government Units (LGUs). It is important to identify and address the top local challenges faced by citizens and prioritize their needs in the digital transformation process. Only by understanding the specific points for improvements and concerns of citizens, can LGUs develop targeted digital solutions to address these challenges and improve the quality of life for their residents. It is crucial that this approach involves citizens' participation in the decision-making process, thus promoting transparency and consultations.

Only by placing people at the centre of digital transformation initiatives, LGUs can create inclusive, accessible, and citizen-centric services that enhance the overall well-being and satisfaction of their citizens.

51 https://studii.md/

52 https://invat.online/

53 https://tekwill.md/

54 https://www.egov.md/en/node/39839 and http://www.test.eac.md/en/programs-and-projects/future-classroom-lab

55 https://www.moldpres.md/en/news/2021/07/06/21004804

56 https://living-in.eu/

57 https://eurocities.eu/projects/living-in-eu/

According to the Survey results, top local challenges include:

- Air pollution,
- Urban planning,
- Mobility, especially public transport, parking management,
- Climate change resilience,
- Heating,
- Environmental problems, e.g., Marmara Sea mucilage for Marmara region,
- Introduction of digitalization into the everyday communication and service delivery for citizens,
- Adoption of adequate legal regulations that accompany digitalization.

Local Governments are facing a variety of challenges, ranging from environmental issues to the adoption of new technologies. Air pollution, urban planning, public transport, climate change, and heating are the top priorities. In addition, there is a need to improve resilience and address environmental problems and mitigate the climate change effects. Another challenge is parking, which is a key issue in many cities. The introduction of digitalization into everyday communication and service delivery for citizens is also a challenge, as is the adoption of adequate legal regulations that accompany digitalization. Local Governments need to find ways to balance their various responsibilities and priorities in order to address these challenges effectively. The positive examples identified include:

Tirana, joined the EBRD Green Cities in February 2017 with a clear vision to become a city with healthy, high-quality living standards in a green, resilient and inclusive environment that makes smart use of resources. Having finalized the Green City Action Plan GCAP in April 2018, Tirana now implements a plan to address environmental issues faced by the city, such as air pollution, urban growth, renewable energy and recycling. Case Initiative “School Streets”: monitoring the streets outside schools, volume of traffic, air quality, careless parking, and promoting cycling to schools.

Priština also joined the EBRD Green Cities in June 2019 and developed its Green City Action Plan GCAP.

Sarajevo smart city initiative (smart.sarajevo.ba) vigorously started in 2018, with the UNDP Project involving citizens’ participation in the selection of priority areas, collaboration between public, private and civic stakeholders and innovative proposals for a more liveable and smart city. Piloting it in one municipality has proved that only in partnership, through an inclusive and transparent process, Sarajevo can design and implement technology-based solutions to address city challenges and produce positive impacts on its citizens. In 2019, together with the city of Vienna and Urban Innovation Vienna, under the BACID Project, Sarajevo prepared the Future Vision Framework for Smart Sarajevo 2030 identifying the status quo, and pending topics such as: Vision and Minimum Viable Strategy, Governance, Open Collaborative Platform, Communication, Digital Transformation and Value of Open Data.

In 2022, Sarajevo was selected for the EU’s 100 Climate-Neutral and Smart Cities Programme. Engaging in this European initiative provides the opportunity for technical, regulatory and financial assistance to set a plan for achieving climate neutrality by 2030.

4. E-Government

The challenge that public administration is increasingly facing is how to offer better services to end users. The provision of services has traditionally been viewed as a passive means for the execution of policies defined by laws. However, as citizens are increasingly getting used to better and digital services from the private sector, the public sector is also seen as another service provider for which citizens and business entities pay taxes. Global trends, new technologies, constant growth and change in citizens' expectations, as well as budget restrictions, create a new environment for public administration work. In order for the public administration to be able to meet these challenges, it is necessary to implement new ways to improve the efficiency and effectiveness of service provision. This implies providing value for money (tax) by improving the quality of services, reducing the costs of these services, automating and digitizing the processes performed by the public administration.

Global practice shows that to build a public sector that is fit for the future, Governments must "reinvent" themselves. Digital transformation is not just about new technologies, but requires an overhaul of organizational structures, work processes, skills, culture and mindset.

Reengineering is a fundamental rethinking and radical re-modelling of processes, with the goal of producing major changes in key performance indicators such as cost, quality and speed of service delivery.

At the same time, there is a requirement for services to be highly available to end users through various (acceptable to them) channels, where currently, mobile applications and platforms enable a high level of user coverage. It is essential to transform and constantly adapt the process and change the paradigm from a sectoral and silo-oriented organization to a process-oriented and service-integrated public administration organization formed according to users' life events.

Figure 20: Principles of reengineering

The **EU eGovernment Benchmark**[58] evaluates the provision and delivery of eGovernment services in 35 countries across Europe, including the 27 EU Member States and Iceland, Norway, Switzerland, Albania, Montenegro, North Macedonia, Serbia and Turkey. Citizens from participating countries assessed digital government services, visiting and evaluating over 14,000 websites.

While administrations across Europe largely rose to the challenge and accelerated digital service transformation in the face of the coronavirus pandemic, the Report garnered three key recommendations aimed at improving eGovernment provision:

1. Prioritise user-centric design to ensure that eGovernment services are inclusive to users in all of their diversity, including users with poor digital skills or those living with disabilities;
2. Rationalise the delivery of eGovernment services so that users may access all services related to their life event via single one-stop-shops;
3. Streamline interoperability between the different layers and departments of government in order to provide a more coherent, less cumbersome experience.

The four pillars against which indicators for eGovernment are aggregated and measured include:

1. User Centricity: The extent to which information and services are available online, supported online, and compatible with mobile devices;
2. Transparency: The extent to which service processes are transparent, services are designed with user involvement, and users can manage their personal data;
3. Key Enablers: The extent to which digital tools such as electronic identification (eID), eDocuments, Authentic Sources and Digital Post solutions, enable identification and communication between a user and a government service;
4. Cross-Border Services: The extent to which citizens and entrepreneurs from other European countries can access online information and services in a usable and integrated way through electronic identification and eDocuments.

The eGovernment Benchmark compares how Governments across Europe deliver digital public services.

The **UNESCO Transparency Survey**[59] published in 2022, analysed the Governments of North Macedonia, Serbia, Montenegro and Bosnia and Herzegovina on the occasion of the World Day for Free Access to Public Information. According to the ATI[60] Survey, the Government of the Republic of North Macedonia is the most transparent in the region, and is even considered as exemplary. The Government of North Macedonia achieved a record 83.43% of the criteria set in the field of transparency. It is followed by Bosnia and Herzegovina with 74.9%, then Montenegro with 59.5 and Serbia with 47.7% of the maximum possible points.

Figure 21: Digital Strategy EU eGov Benchmark 2022

2022	eGovernment Maturity	EU27+ ranking
Serbia	49%	31
Albania	46%	32
Montenegro	38%	34
North Macedonia	35%	35

58 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

59 To recovery and beyond: 2021 UNESCO Report on Public Access to Information (SDG 16.10.2) https://unesdoc.unesco.org/ark:/48223/pf0000380520

60 Out of the 91 countries and territories with Public Access to Information (ATI) guarantees, 71% (65) reported that their respective guarantee specifies the need for public bodies (Ministry/Agency/Department) to appoint public information officers or designate a specific unit to handle requests for information by the public.

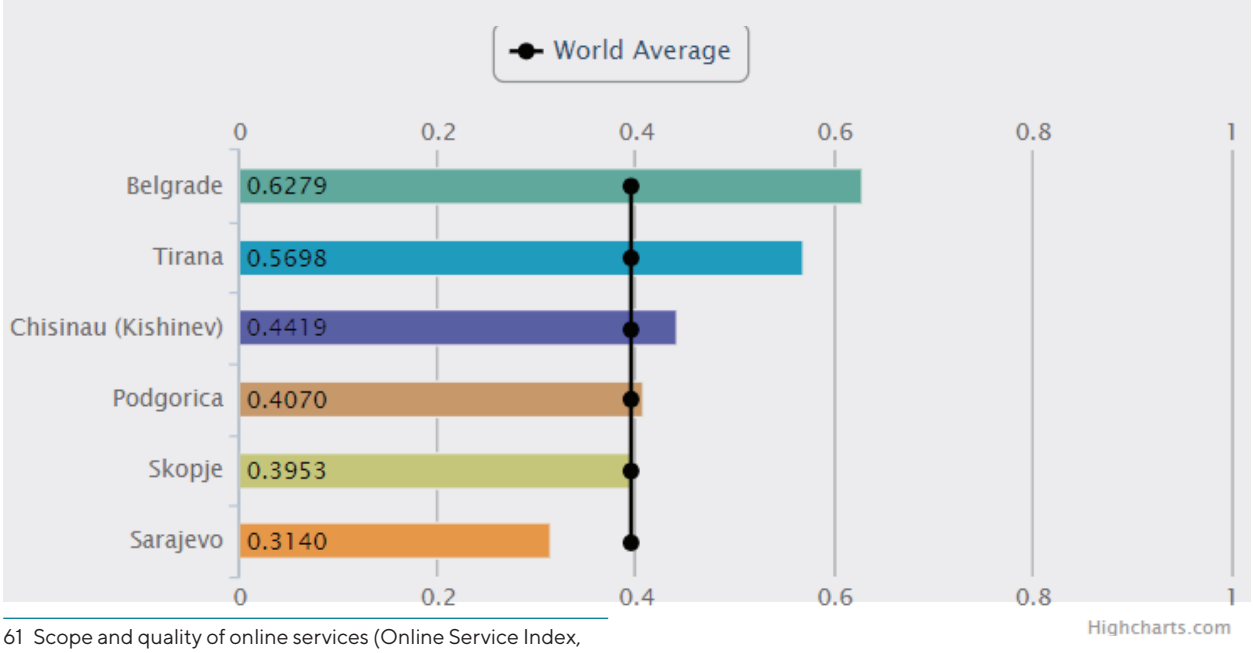
The **E-Government Development Index (EDGI)** presents the state of E-Government Development of the United Nations Member States.

Figure 22: E-Government Development Index (EGDI), Online Service Index (OSI), E-Participation Index 2022

2022	Rank EGDI	EGDI	Rank OSI	OSI[63]	TII[64]	HCI[65]	Rank EPI	EPART
Serbia	**40**	0,8237	**26**	0.8514	0.7865	0.8332	**15**	0.8068
Albania	**63**	0,7413	**33**	0.8182	0.6037	0.8022	**22**	0.7614
Montenegro	**71**	0,726	**93**	0.5528	0.7868	0.8383	**83**	0.4659
Moldova	**72**	0,7251	**60**	0.7380	0.5760	0.8613	**47**	0.6818
North Macedonia	**80**	0,7	**66**	0.7020	0.6417	0.7562	**43**	0.6932
Bosnia and Herzegovina	**96**	0,6256	**108**	0.4898	0.6382	0.7489	**72**	0.5341
Kosovo	**n.a.**	n.a.	**n.a.**	n.a.	n.a.	n.a.	**n.a.**	n.a.

The 12th edition also marks the first study to incorporate an assessment of e-government in the most populous city in each of the 193 United Nations Member States.[64]

Figure 23: Local Online Service Index 2022



61 Scope and quality of online services (Online Service Index, OSI)

62 Development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII)

63 Inherent human capital (Human Capital Index, HCI)

64 https://publicadministration.un.org/egovkb/en-us/Data/City

Local Online Service Index (LOSI) is obtained by categorizing the assessment questions into 5 discrete thematic areas forming 5 subindices: institutional framework (IF), services provision (SP), content provision (CP), technology (TEC) and e-participation (EPI)—with the OSI as a whole calculated based on the normalized values for each subindex.

The legislative and policy framework in the Western Balkan administrations aims to increase the accessibility of services to people with disabilities, alongside standards for accessibility. The legal, policy and institutional framework for accessibility of citizens with special needs is in place in all administrations, but is not equally implemented in practice. Buildings and related facilities are subject to mandatory accessibility standards in all administrations and sign language is officially recognised, except in Montenegro. On the other hand only in Albania do central guidance or training capacities exist on how to improve access to public service users with special needs and is the use of plain language promoted.[65]

Progress has not been easy, and a mechanism to centrally monitor the accessibility of services for disadvantaged groups has not been established; therefore, the relevant data is scarce. Common guidelines for government websites exist, except in North Macedonia, but government websites continue to contain many errors as there is no set standard with which they must comply, since there is no formal obligation for public administration websites to comply with the Web Content Accessibility Guidelines (WCAG) except in Montenegro and Serbia.[66]

- While service delivery has improved in the Balkan region, it still requires more political and administrative leadership to maintain sustainable progress and guarantee ownership in order to initiate and co-ordinate service delivery improvement initiatives.
- The harmonisation of General Laws on Administrative Procedures with secondary legislation needs to be intensified and steered away from a too-often purely legalistic approach, in order to be integrated with the simplification, digitalisation and re-engineering of process plans.
- To increase the uptake of digital signature, like in Albania or Serbia, Governments in the region should continue to make digital signatures and e-payment more appealing by offering user-friendly solutions and promoting their use.
- Developing and monitoring service standards and tracking performance are a key challenge. This should be a key focus in order to increase the use of general quality management instruments and tools in public institutions.
- The legal and policy framework to improve digital public service accessibility for people is in place, but Governments have to take more measures in cooperation with representative organisations, especially in rural regions, to implement, monitor, evaluate and communicate on the implementation of online service accessibility improvement.

65 https://www.sigmaweb.org/byexpertise/strategicframeworkofpublicadministrationreform/Regional-Overview-Western-Balkans-Monitoring-February-2022.pdf

66 Sigmaweb Common Standards and Quality of Government Websites

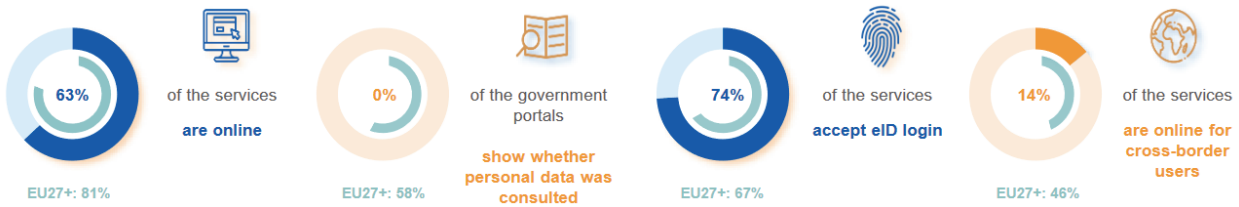
E-Government Best Practices:

Albania

Albania ranked as 32nd in the **EU eGovernment Benchmark 2022** (eGovernment maturity of 46% - the performance on the EU level was 68%).[67]

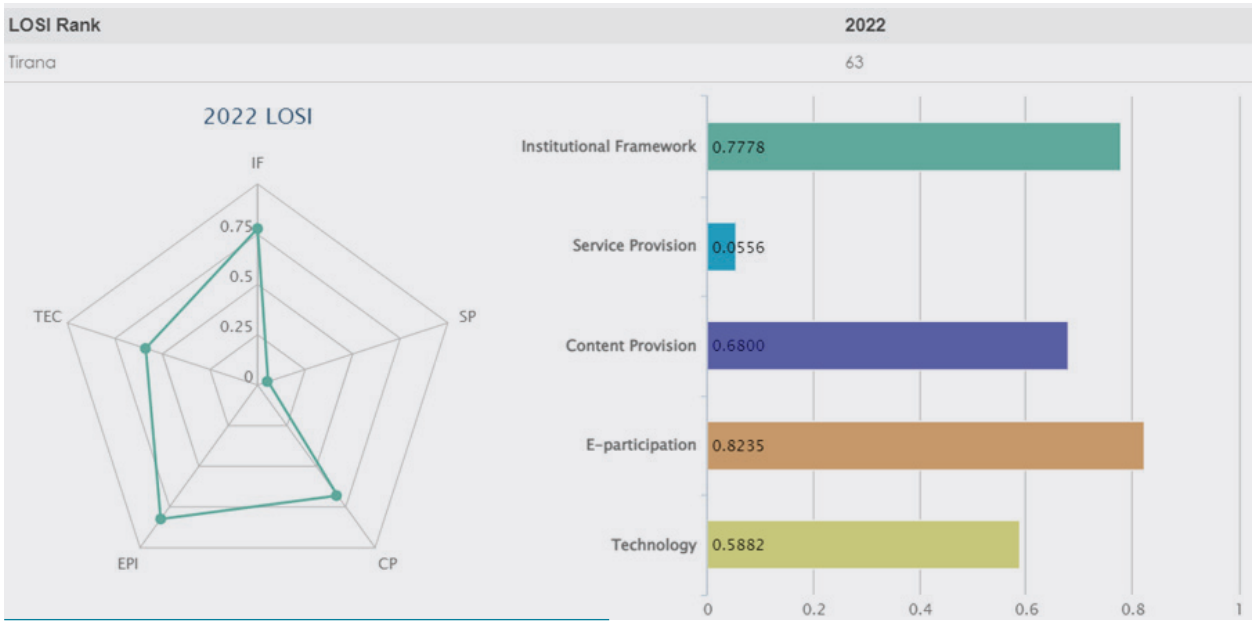
The **"Regular Business Operations Life Event"** assesses the extent to which entrepreneurs are facilitated in their government-related business activities. This value in Albania is 56% compared to the EU average of 76%. The overall maturity of **"Health"** has the average for EU27+ of 63%, compared to Albania with 43%. The **"Starting a Small Claims Procedure Life Event"** evaluates to what extent Europeans can start a small claims procedure online. The procedure is designed to simplify and speed up cross-border claims of up to EUR 5 000 and is applicable in all EU

Figure 24 Albania eGovernment performance (EU Benchmark 2022)



Citizens often visit an overarching government portal to find out how to obtain their service and whether they are eligible. The **e-albania.al** portal website is mentioned in the eGovernment Benchmark 2022 by the EU Commission and it combines information on different types of services from multiple public organisations, also known as one-stop-shop.[68]

Figure 25: Tirana Local Online Service Index 2022



67 https://ec.europa.eu/newsroom/dae/redirection/document/88517

68 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

Member States. All non-EU Member States have similar procedures, which makes this life event suitable for comparison. This value in Albania is only 18% compared to the EU average of 56%. The **"Moving Life Event"** evaluates the level of online service provision for European citizens when moving houses and places. This could be registering your new address with the Government, informing the Post Office and, at a later point in time, requesting proof of residence. The EU27+ average maturity for the "Moving Life Event" stands at 71%, compared to 48% in Albania. In the transition to a more sustainable way of living, more and more Europeans will be using public transport and, if they do need a car, they will be using electric vehicles for their daily commutes. The **"Transport Life Event"** reflects these changes. At the lower end, WB6 economies have a maturity score lower than 50% (EU27+ average is 65%), including Albania with 25%.[69]

The last check before closing this Report shows significant improvements, with 78 institutions offering 1225 e-services.

Albania is actually in the **UN E-Government Development Index 2022** ranked as 63rd of 193 (compared to rank 59 in 2020) and in the E-Participation Index, it is on rank 22 of 193 (compared to rank 36 in 2020).[70]

In the UN Study assessing the e-government portals of selected cities using the **Local Online Service Index** (LOSI)[71] the capital **Tirana**[72] ranked as 63rd of 193.[73]

Implementing eServices and Smart City solutions in **Tirana** is one of the most important actions of the local government. Activities are initiated by identifying immediate needs, funding budget for piloting and defining the business model for implementation. Success has been achieved by launching the Tirana IME app where reporting to citizens and real time data-sharing is enabled. Friendly Free Wi-Fi enabled in 13 public places is provided. Establishing the Tirana Tech https://tech.tirana.al/rreth-nesh/ provides citizens with a new opportunity to be involved in technology and with all the latest projects, programmes, initiatives and activities. To mention some that are important:

Tirana Application eTirana – This application is dedicated to provide citizens with real time 24/7 information about events, documentation, procedures and services that the Municipality of Tirana and the Administrative Units provide. In the category of services, about **168** services are included, categorized by service provider: Tirana Municipality – Transport, Civil Status, Culture, Urban Economic Development and Migration, Human Resources, Fuel, Co-Ownership, Cleaning, Territorial Planning, Social Service, Fire Protection and Rescue, Housing or Services by Administrative Units. Citizens' participation is facilitated by online surveys as a consultation mechanism. Internally, digital transformation is empowered by the Document Management System supported by a Digital Archive, that improves efficiency, human resources and service delivery, with 2 million scanned pages and indexed documents. Tirana Data Store serves as a Data Bank for the whole Tirana Municipality, Administrative Units and municipal institutions. It is part of Tirana Tech and serves as a platform created to centralize the collection, analysis and management of data from municipal units and support data analytics.

Tirana Municipality with the Office of Land Management and Protection has developed a programme for farmers and rural areas around the capital city. The electronic system provides data recording, location registration, analysis and reports, and real time access to information on the crops planted, accurate cadastral parcels, implemented policies, benefits and supported programmes.

69 https://ec.europa.eu/newsroom/dae/redirection/document/88516

70 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/2-Albania

71 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

72 http://www.chisinau.md

73 https://publicadministration.un.org/egovkb/en-us/Data/City/dataYear/2022/dataCity/186

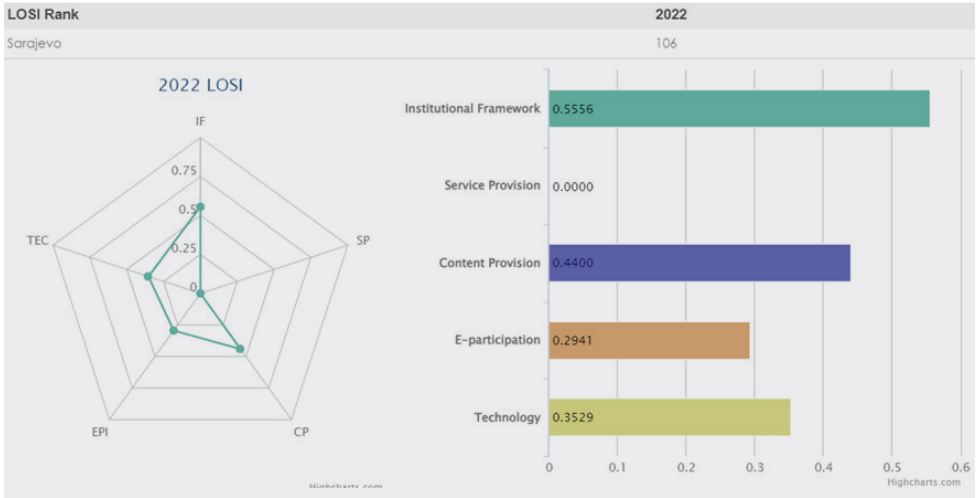
Bosnia and Herzegovina

Currently, there is no national e-government portal in Bosnia and Herzegovina. There are very few e-government portals at the entity or regional level (e.g., Portal of Public Administration of the Republic of Srpska[74]). There are no further details in the EU E-Government Benchmark available. Federation of BiH established its eGov portal http://euprava.fbih.gov.ba/, Brčko District BiH has an eCitizen segment and service catalogue https://euprava.bdcentral.net/.

Regarding registers and the level of their digitization, the information provided is limited. However, it can be concluded that there are certain basic registers, such as main registers, tax registers, registers of business entities.

Master birth registers are established and connected in both entities, enabling citizens to acquire the relevant documents, independent of place of birth. B&H has a well-established infrastructure and process regarding personal documents (IDDEEA Agency for Identification Documents, Registers and Data Exchange of Bosnia and Herzegovina)[75].

Figure 26: Sarajevo Local Online Service Index 2022



There are also practices of connecting registries through web services; for example, the residence verification service or services that were developed for the needs of the eBeba (eBaby) Project, where, for example, 10 web services were developed in the Republic of Srpska, and for the same service, there are developed web services that connect the systems of Centar Municipality and the Ministry of Internal Affairs of the Canton of Sarajevo for the registration of a newborn child.

Both systems of the eBaby Project in RS B&H entity and the Pilot Project for Sarajevo Centar Municipality used web services offered by IDDEEA in order to connect multiple data registers. B&H started issuing eID in 2013 (among the first in region).

Regarding the establishment of advanced document management systems, DMS systems were established in public administration institutions on either a smaller or larger scale at all administrative levels. Regarding their modernization, certain activities were undertaken through the procurement of additional components for the solution, such as the e-Office Information System during 2020/2021, which was implemented by the Ministry of Local Administration and Self-Government of the RS.

Bosnia and Herzegovina is actually in the **UN E-Government Development Index 2022,** ranked as 96th of 193 (compared to rank 94 in 2020) and in the E-Participation Index, it is on rank 72 of 193 (compared to rank 87 in 2020).[76]

In the UN Study assessing the e-government portals of selected cities using the **Local Online Service Index** (LOSI),[77] the capital **Sarajevo**[78] ranked as 106th of 193.[79]

74 http://www.esrpska.com/

75 https://www.iddeea.gov.ba/

76 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/22-Bosnia-and-Herzegovina

77 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

78 https://www.sarajevo.ba/

79 https://publicadministration.un.org/egovkb/en-us/Data/City/dataYear/2022/dataCity/174

Kosovo

The creation of an e-government begins with mapping the current situation and developing a strategy based on it. eGA Experts[81] consulted the Government of Kosovo to develop a strategic framework for public administration and the e-Government Strategy.

The Information Society Agency has built the State Data Centre (SDC). SDC is used as a state "electronic repository" for the accumulation, administration, dissemination, and storage of electronic data. SDC, in addition to the physical space it possesses for the deployment of hardware resources, also enables through "Cloud" services to reduce the costs of purchasing hardware resources for the purpose of facilitating the interoperability[82] of various systems, increasing the efficiency of electronic service delivery and providing higher electronic data security.

Moldova

In 2010, the Government of the Republic of Moldova launched the e-Government Transformation process. This strategic programme sets out the objectives of this process and provides a unified vision of public services modernisation and governance streamlining.[85] An Interoperability Framework was implemented to increase government performance due to efficient data exchange within the public sector, as well as between the public and private sectors.[86]

In August 2010, the State Chancellery established the public entity e-Government Centre – a team of professionals with an innovative and systemic approach towards the modernization of public services to bring the Government closer to Moldovan citizens.[87]

The Strategy on the Public Administration Reform for 2016–2020[88] aims to establish a general framework for the public administration reform for 2016–2020. The general objective of this reform is to establish modern and professional public administrations, which provide high-quality

Good Practice

As of 2014, the Electronic Governance Centre is running the data exchange and interoperability platform MConnect, as a technical solution that ensures the exchange of data between information systems administered by ministries, central public authorities subordinated to the Government and organizations from the same area of competences, regardless of the period of their establishment. It was estimated that in the 2017–2019 period, 8.2 million lei were saved as a result of the free exchange of data among institutions. Due to this platform, citizens will benefit from quick, simple and free access to the services provided by public institutions.

One of the services are „e-Indemnizatii" (e-Indemnity)[82] provided by the National House for Social Insurance. In the specific case of this service, the administrative burden decreased by 29% for the final consumer as he/she is no longer obliged to visit the Service Provider's Office, but can submit the documents online.

The Central Electoral Commission also benefits from data exchange with other institutions via MConnect Platform, by updating a series of data from the National Register of Voters in real time especially during the period of elections.

Similar data exchange and interoperability models exist in many developed countries, where the Moldovan Platform is based on the Belgian model that is considered one of the most efficient in the EU and around the world.

80 https://servicii.gov.md/en

81 https://ega.ee/project/kosovo-e-government-strategy-2022/ Duration: 08/2022-03/2023, Budget 140.000 EUR

82 Kosovo Interoperability Framework: https://mpb.rks-gov.net/ap/desk/inc/media/3B80B17C-BD15-415A-8C60-35BFB-16C79C2.pdf

Modernisation Programme for Technology of Governance (e-Transformation): http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=340301

86 Government Decision No. 656 of 5 September 2012 on the Approval of the "Interoperability Framework Programme", https://www.legis.md/cautare/getResults?doc_id=103190&lang=ro

87 https://www.egov.md/en/about-ega

88 https://cancelaria.gov.md/en/apc/public-administration-reform

Reusable e-Governance Microservices[84]

- A shared e-governance platform was designed to facilitate development of sectorial e-services.
- All cross-cutting functionalities such as authentication, authorization, payments, notification, logging in, data exchange and others were implemented as microservices and are being used by most of sectorial public services.
- The information on administrative services was aggregated in a single portal with references to other resources if needed.
- Two archives have been digitized (civil status and cadastre documents) and made available on demand.
- A private Government cloud was designed and implemented.
- An innovative data exchange infrastructure was set up.
- Nearly 150 services can be paid electronically via the Government e-payment Gateway.[85]
- More than 5000 public servants were trained on various digital government topics.

public services. This Strategy serves as a reference document for developing and updating the policy papers that contribute to this reform, in particular, the Public Service Modernisation Action Plan[89] and the Action Plan for Open Government. For monitoring and evaluating the effectiveness of this strategic programme implementation, a series of performance indicators for each measure were set up and are monitored annually.

To achieve the objective and develop an information system for public administrative services delivery at the central and local level, by

- improving access to public administrative services and their efficiency,
- reducing unnecessary administrative burdens and minimising the cost of services for both beneficiaries and service providers, and
- improving the effectiveness of services according to the needs and requirements of beneficiaries,

the Government also adopted the Action Plan for Public Services Modernisation Reform for 2017–2021[90].

By calling 14–909 from a mobile or landline phone, any citizen located on the territory of the Republic of Moldova can receive detailed information about the services provided by the Public Services Agency, including those provided online, or may place an order by phone.[91]

According to the Public Administration Reform Strategy of the Republic of Moldova for the years 2023–2030, and also the Implementation Programme for the years 2023–2026, the Public Administration Reform Strategy of the Republic of Moldova for the years 2023–2030, approved by the Decision of the Government of the Republic No. 352 of 07.06.2023[92], Unified Centres for the provision of public services (CUPS – at local and consular levels) were piloted and implemented, with the primary objectives being the following:

1) Simplifying the process of obtaining quality public services by citizens from rural areas and the diaspora;
2) Diversification of public service delivery channels;
3 Increasing accessibility and improving the experience of service beneficiaries;
4) Development of interaction and cooperation tools between public service providers;
5) Bringing the Government closer to people and increasing citizens' trust in the modernization of public services.

The Republic of Moldova is actually in the **UN E-Govern-**

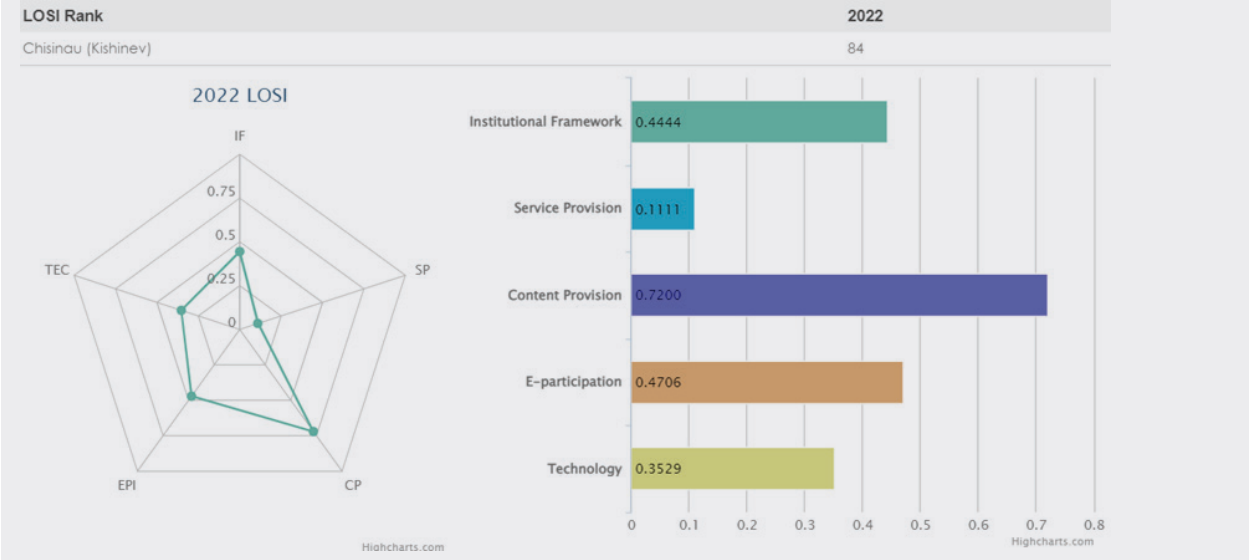
89 https://cancelaria.gov.md/sites/default/files/plan_de_actiuni_12.pdf

90 http://egov.md/en/communication/news/approved-action-plan-modernization-public-services-reform-2017-2021 and Government Decision No. 966 of 18 October 2016 on the Approval of the "Action Plan for Public Services Modernisation Reform for 2017-2021", https://www.legis.md/cautare/getResults?doc_id=110574&lang=ro

91 https://www.asp.gov.md

92 https://www.legis.md/cautare/getResults?doc_id=138009&lang=ro

Figure 27: Chisinau Local Online Service Index 2022



ment Development Index 2022, ranked as 72nd of 193 (compared to rank 79 in 2020) and in the E-Participation Index on rank 47 of 193 (compared to rank 55 in 2020).[93]

In the UN Study assessing the e-government portals of selected cities using the Local Online Service Index (LOSI),[94] the capital Chisinau (Kishinev)[95] ranked as 84th of 193.[96]

An e-platform for Local Government is managed by the Congress of Local Authorities of Moldova (CALM).[97] Within the e-platform, training courses and online support services are offered for representatives of local public authorities and service providers at the local level. At the same time, the e-platform provides beneficiaries with a structured set of resources (normative acts, guides, reports, etc.) and other online tools related to the field of local public administration. The e-platform supports learning, exchange of good practices, improvement and cooperation between local public authorities for sustainable, inclusive and resilient communities.

93 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/139-Republic-of-Moldova

94 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

95 http://www.chisinau.md

96 https://publicadministration.un.org/egovkb/en-us/Data/City/id/109-Chisinau-Kishinev/dataYear/2022

97 https://e-platforma.calm.md

Montenegro

Montenegro ranked in the **EU eGovernment Benchmark 2022** on 34 (eGovernment maturity 38% - the performance across EU countries was 68%).[98]

Figure 28: Monteengro eGovernment performance (EU Benchmark 2022)

Montenegro ranked in the **EU eGovernment Benchmark 2022** as 34th (eGovernment maturity of 38% - the performance across EU countries was 68%).[99]

Citizens often visit an overarching government portal to find out how to obtain their service and whether they are eligible. The **euprava.me** portal[100] website is mentioned in the eGovernment Benchmark 2022 by the EU Commission and it combines information on different types of services from multiple public organisations, also known as one-stop-shop for access to administrative services at the local and central level.[101]

The **"Regular Business Operations Life Event"** assesses the extent to which entrepreneurs are facilitated in their government-related business activities. This value in Montenegro is 41% compared to the EU average of 76%. The overall maturity of **"Health"** has the average for EU27+ of 63%, compared to Montenegro with 51%. The **"Starting a Small Claims Procedure Life Event"** evaluates to what extent Europeans can start a small claims procedure online. The procedure is designed to simplify and speed up

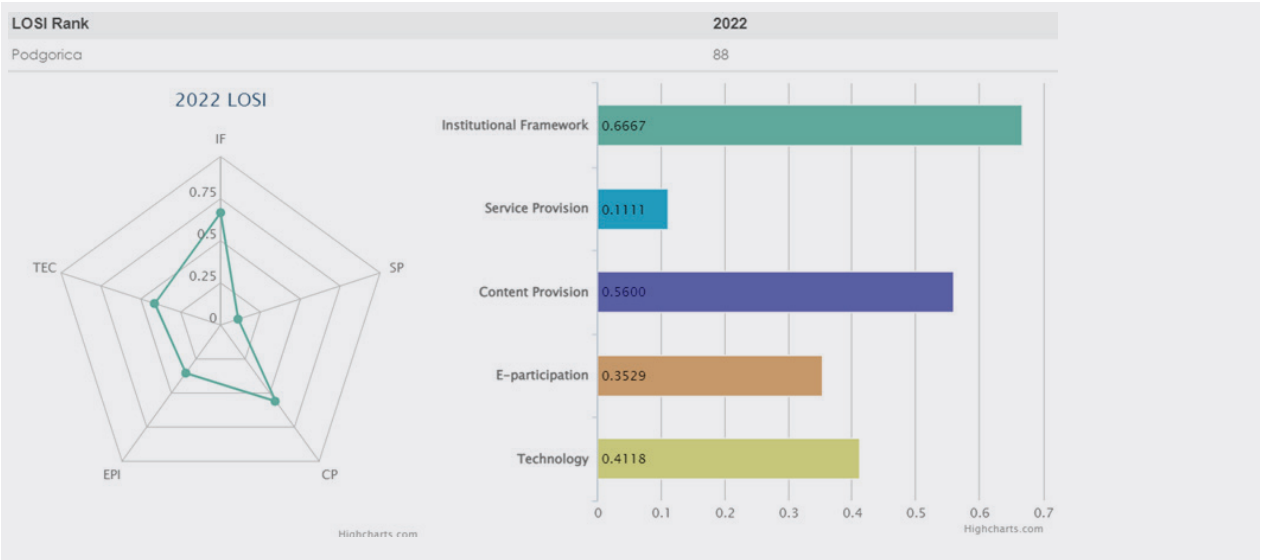


Figure 29: Podgorica Local Online Service Index 2022

98 https://ec.europa.eu/newsroom/dae/redirection/document/88517

99 https://ec.europa.eu/newsroom/dae/redirection/document/88517

100 Also defined by the Law on Electronic Government ("Official Gazette of Montenegro", No. 32/14)

101 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

cross-border claims of up to EUR 5 000 and is applicable in all EU Member States. All non-EU Member States have similar procedures, which makes this life event suitable for comparison. This value in Montenegro is 43% compared to the EU average of 56%. The **"Moving Life Event"** evaluates the level of online service provision for European citizens when moving houses and places. This could be registering your new address with the Government, informing the Post Office and, at a later point in time, requesting proof of residence. The EU27+ average maturity for the "Moving Life Event" stands at 71%, compared to 30% in Montenegro. In the transition to a more sustainable way of living, more and more Europeans will be using public transport and, if they do need a car, they will be using electric vehicles for their daily commutes. The **"Transport Life Event"** reflects these changes. At the lower end, WB6 has a maturity score lower than 50% (EU27+ average is 65%), including Montenegro with 49%.[102]

Montenegro is actually in the **UN E-Government Development Index 2022,** ranked as 71st of 193 (compared to rank 75 in 2020) and in the E-Participation Index on rank 83 of 193 (compared to rank 100 in 2020).[103]

In the UN Study assessing the e-government portals of selected cities using the **Local Online Service Index** (LOSI)[104] the capital **Podgorica**[105] ranked as 88th of 193.[106]

On a local level, expansion of electronic services is notable in Podgorica, but high interest in many other municipalities is identified, including Bar, Kotor, Budva etc.

Podgorica has launched a mobile app offering a large number of e-services that enables communication of city administration and citizens (Moja Podgorica).

102 https://ec.europa.eu/newsroom/dae/redirection/document/88516

103 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/114-Montenegro

104 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

105 https://podgorica.me/

106 https://publicadministration.un.org/egovkb/en-us/Data/City/dataYear/2022/dataCity/157

North Macedonia

The core component of the National e-Services Portal (uslugi.gov.mk) is the Catalogue of Public Services (Best Practice Example in the EU eGovernment Benchmark 2022)[107], whose data is published on the Portal. The Catalogue is a structured register for entry and management of data regarding all public services. The Catalogue is available to authorised public authorities' personnel only. Prior to publication, data are entered, verified and approved by the competent authorities and MISA. Data on 789 out of 1,336 services entered into the Catalogue of Public Services[108] and are published on the National e-Services Portal's public section. The process of feeding the register (entering data, verification of data, approval by Portal administrative owner, translating data, publishing data) is one of the key success factors.[109]

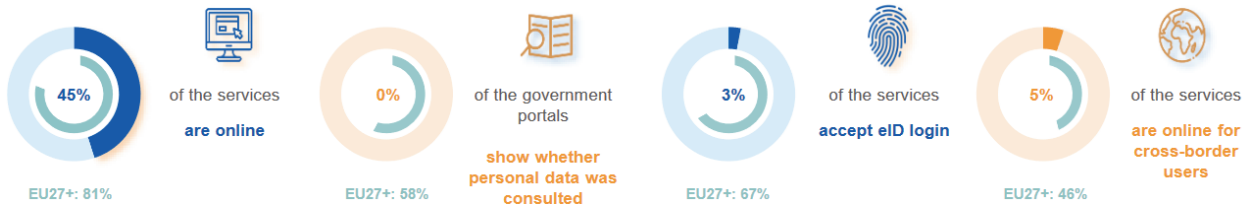
The **"Regular Business Operations Life Event"** assesses the extent to which entrepreneurs are facilitated in their government-related business activities. This value in North Macedonia is 44% compared to the EU average of 76%. The **"Health Life Event"** is new to the eGovernment Benchmark Report. eHealth is one of the key digital policy priority areas for Europe. The overall maturity average of eHealth for EU27+ is 63%, compared to North Macedonia with only 19%.. The **"Starting a Small Claims Procedure Life Event"** evaluates to what extent Europeans can start a small claims procedure online. The procedure is designed to simplify and speed up cross-border claims of up to EUR 5 000 and is applicable in all EU Member States. All non-EU Member States have similar procedures, which makes this life event suitable for comparison. This value in North Macedonia is only 20% compared to the EU average of 56%. The **"Moving Life Event"** evaluates the level of online service provision for European citizens when moving houses and places. This could be registering your new address with the Government, informing the Post Office and, at a later point in time, requesting proof of residence. The EU27+ average maturity for the Moving Life Event stands at 71%, compared to only 24% in North Macedonia. In the transition to a more sustainable way of living, more and more Europeans will be using public transport and, if they do need a car, they will be us-

107 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

108 admin.uslugi.gov.mk

109 Ministry of Information Society and Administration (MISA) https://www.mioa.gov.mk/?q=en

Figure 30: North Macedonia eGovernment performance (EU Benchmark 2022)

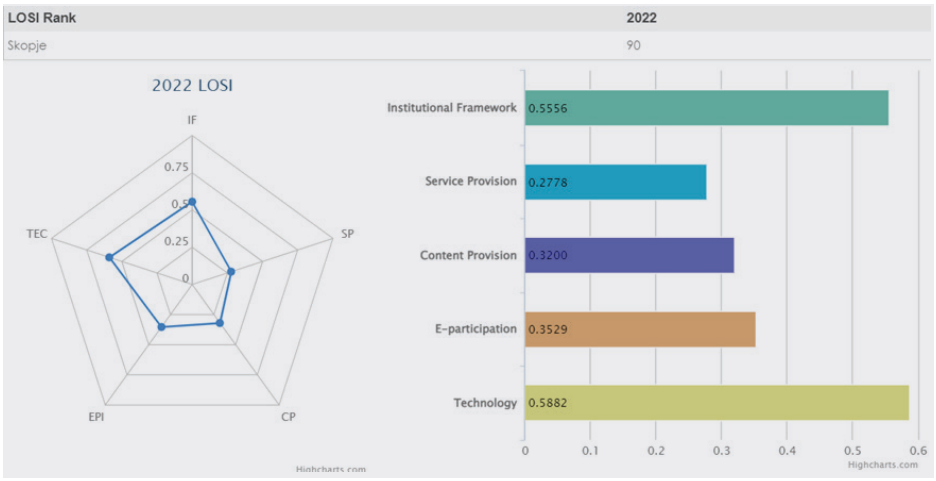


ing electric vehicles for their daily commutes. The Transport Life Event reflects these changes. At the lower end, six WB economies have a maturity score lower than 50% (EU27+ average is 65%), including North Macedonia with 20%.[110]

The Ministries of the Government of the Republic of North Macedonia hold the leading position for transparency, with 62% of the defined criteria in the UNESCO Transparency Survey 2021.[111] The most transparent of them is the Ministry of Information Society and Administration with 82.24% of the criteria achieved. It is followed by the Ministry of Defence with 79.49% and the Ministry of Finance with 77.65%. The Ministry of Interior has 70.39% and the Ministry of Justice has 68.46% of the defined criteria, which also ranks them on a high level. Administrative bodies are evaluated with 40.57%, while the Parliament with 68.15% of the defined criteria. According to the Survey Methodology, the regional transparency index measures the effect of the executive power and Parliament adhering to the principle of good governance, in four principles: transparency, accessibility, integrity and effectiveness.

North Macedonia is actually in the **UN E-Government Development Index 2022,** ranked as 80th of 193 (compared to rank 72 in 2020) and in the E-Participation Index on rank 43 of 193 (compared to rank 38 in 2020).[112]

Figure 31: Skopje Local Online Service Index 2022



In the UN Study assessing the e-government portals of selected cities using the **Local Online Service Index** (LOSI),[113] the capital **Skopje**[114] ranked as 90th of 193.[115]

The capital city of **Skopje** developed an online portal for local tax administrations https://danoci.skopje.gov.mk/ allowing citizens and businesses to get info on their tax obligations, as well as to complete the property tax payment process electronically.

Additional local taxes are included in the same portal. With the support of international organizations, municipalities and cities are initiating similar solutions providing simplified process for citizens living abroad but having land or other property locally. Supported by UNDP, Skopje started the process of digital transformation and e-service delivery through SkopjeLab. The platform offered a list of online applications, communication of administrative units, open data etc., but its sustainability is at risk.

110 https://ec.europa.eu/newsroom/dae/redirection/document/88516

111 https://portal.mioa.gov.mk/?q=en/node/3654

112 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/170-North-Macedonia

113 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

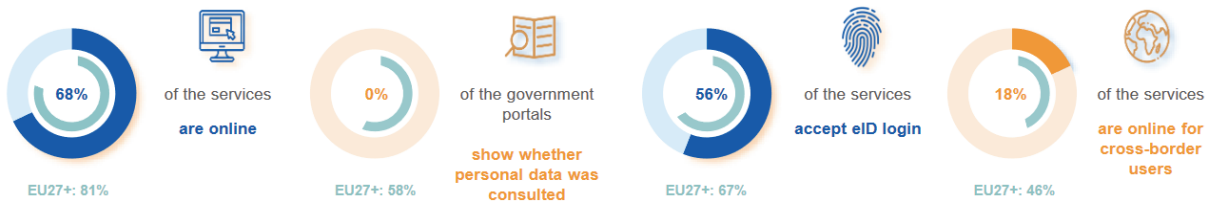
114 http://www.skopje.gov.mk/

115 https://publicadministration.un.org/egovkb/en-us/Data/City/dataYear/2022/dataCity/176

Serbia

The **EU eGovernment Benchmark 2022** evaluates provision and delivery of eGovernment services in 35 countries across Europe. Serbia ranked as 31st (eGovernment maturity of 49% - the performance across EU level was 68%).[116]

Figure 32: Serbia eGovernment performance (EU Benchmark 2022)



Citizens often visit an overarching government portal to find out how to obtain their service and whether they are eligible. The **euprava.gov.rs** portal website is mentioned in the eGovernment Benchmark 2022 by the EU Commission and it combines information on different types of services from multiple public organisations, also known as one-stop-shop.[117]

The introduction of e-Government in Serbia produced some estimated savings of:

- 180 million sheets of A4 paper
- 17,000 trees
- 75 million litres of water
- 5,700 MWh of electricity

The **"Regular Business Operations Life Event"** assesses the extent to which entrepreneurs are facilitated in their government-related business activities. This value in Serbia is 60% compared to the EU average of 76%. The overall maturity of **"Health"** has the average for EU27+ of 63%, compared to Serbia with 47%.[118] The **"Starting a Small Claims Procedure Life Event"** evaluates to what extent Europeans can start a small claims procedure online. The procedure is designed to simplify and speed up cross-border claims of up to EUR 5 000 and is applicable in all EU Member States. All non-EU Member States have similar procedures, which makes this life event suitable for comparison. This value in Serbia is only 18% compared to the EU average of 56%. The **"Moving Life Event"** evaluates the level of online service provision for European citizens when moving houses and places. This could be registering your new address with the Government, informing the Post Office and, at a later point in time, requesting proof of residence. The EU27+ average maturity for the "Moving Life Event" stands at 71%, compared to 58% in Serbia. In the transition to a more sustainable way of living, more and more Europeans will be using public transport and, if they do need a car, they will be using electric vehicles for their daily commutes. The **"Transport Life Event"** reflects these changes. At the lower end, six countries have a maturity score lower than 50% (EU27+ average is 65%) and Serbia stands exactly at 50%. [119]

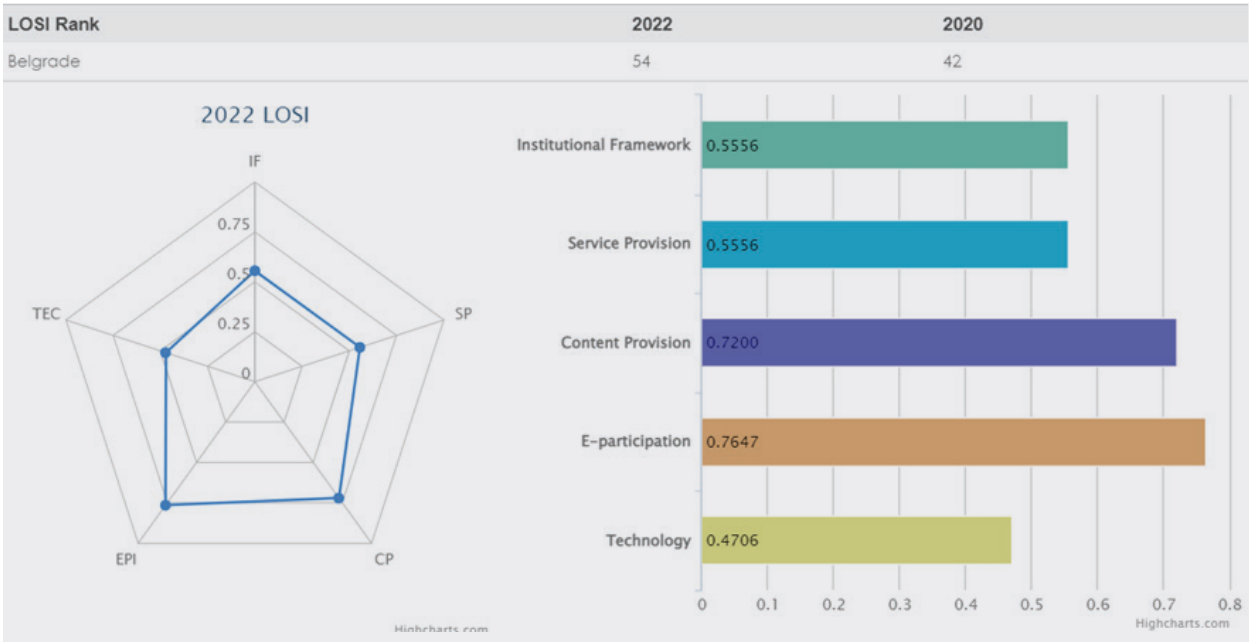
116 https://ec.europa.eu/newsroom/dae/redirection/document/88517

117 https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2022

118 The Republic of Serbia adopted the Law on the Social Card in February 2021 with the purpose of establishing and implementing the Social Card Register that should achieve a fairer and simplified distribution of funds for socially vulnerable groups in the country. Social Card Register increases social visibility of the underprivileged so that they can more easily exercise their right to social transfers in a timely and efficient manner. By introducing the Social Card Register, the Ministry of Labour, Employment, Veterans and Social Affairs is implementing public administration reform activities not only to protect the right to social assistance, but also to facilitate access to information as to enable beneficiaries to claim their rights quickly and in an efficient manner. This reform is related to digitization of social protection service delivery.

119 https://ec.europa.eu/newsroom/dae/redirection/document/88516

Figure 33: *Belgrade Local Online Service Index 2022*



Serbia has recently introduced in its **euprava.gov.rs** portal the first e-service exclusively for people with disabilities, which significantly improved their quality of life and enabled easier mobility in cities and municipalities. Persons with disabilities are now able to complete the entire procedure for obtaining a privileged parking permit online. Previously, it was necessary to physically visit several institutions in order to obtain a series of documents every year. The new e-service enables users to submit a request fully online within just a few minutes, and receive a parking permit sticker by mail at their home address. This brings significant reduction in time and great simplification of the process for around 18,000 users of the parking permit for people with disabilities. This application was mentioned as best practice in the EU eGovernment Benchmark 2022 because all the data required for deciding can be obtained from the municipality electronically, through the central register or other institutions. Furthermore, this e-service was developed, tested and implemented in close cooperation with people with disabilities, cities and municipalities and the Parking Association. The collaboration enabled an optimal design of the e-service.[120]

Another e-service is **"My Info for Banks"** which enables a completely paperless application for banking products that is saving citizens more than 20 million visits to the public institution's counters, yearly. Upon user's consent, the data is retrieved from various public databases and sent instantly to the bank chosen for the purpose of applying for a cash loan. Banks are also qualified to issue national eID for citizens, so instant onboarding and application is possible when people come to the bank physically, which also increased the number of eCitizens overall. This application was also mentioned as best practice in the EU eGovernment Benchmark 2022 on how e-services can be jointly developed successfully between the Government and the private sector. The Central Population Register, a unique and centralized database, enables data to be retrieved from various public databases. Upon user's consent, data is securely sent to the chosen bank.[121]

The **budget portal** is an innovative electronic reporting system for citizens, city and municipal assemblies regarding local budgets, budget acts, capital projects and legal frameworks. Modules/sections of the portal provide information on current achievements/execution of the budget according to various criteria – presentation of income and receipts realized, expenditures incurred and acts – decisions on the budget, rebalances, final accounts, audit reports, current affairs of budget events (e.g., the budget

120 More information can be found on: https://euprava.gov.rs/usluge/7075

121 More information can be found on: https://euprava.gov.rs/usluge/6678

portal of the Municipality of Medveđa http://195.178.62.37/client/dashboard or the Municipality of Šabac: http://213.240.50.205/client/dashboard). The budget portal is a product of the Project "Improving the transparency of local government public finance management", which is implemented with the support of the Swedish Agency for International Development Cooperation – SIDA and based on the agreement signed between SCTM and UNDP (the United Nations Development Programme).

The **electronic database of administrative procedures** gives the opportunity, in a quick and reliable way, to get information about the manner of submitting a request to exercise any rights which are under the jurisdiction of the local self-government. In one place, there is all information on how to do it, by which documents, within what time frame and at what cost. A form can be downloaded from the registry, to be filled out in order to start the desired procedure. The electronic database of local procedures is a product of the cooperation between the Standing Conference of Cities and Municipalities (SKGO) and OPTIMISA (Optimus – Centre for Good Governance) on the Project "Improving the business environment at the local level through regulatory reform", which was financed by the Swiss Government. SCTM Model Register of Administrative Procedures will facilitate the entry of procedures into the Register of Administrative Procedures, which will be on the e-Government Portal. An example of what SCTM did can be found on the website of the city of Niš https://regap.ni.rs/index.php#

Recommendations/Good Practice

The budget portal is an excellent example how data can be shared. Out of a total of 33 LSGs from both phases of the project, 26 LSGs published Budget portal as publicly available. Suggestions for improvements would be to switch to Hypertext Transfer Protocol Secure (https://) as well as to clearly indicate whether the data is open data and therefore under which licence it may be used (see the EU award winner Austrian Budget Portal https://offenerhaushalt.at). Next steps could be the development of a meta data sample catalogue[128] and a data excellence strategy like the City of Vienna.[129]

Serbia is actually in the **UN E-Government Development Index 2022,** ranked as 40th of 193 (compared to rank 58 in 2020) and in the E-Participation Index on rank 15 of 193 (compared to rank 41 in 2020).[122] In the UN Study assessing the e-government portals of selected cities using the **Local Online Service Index** (LOSI),[123] the capital **Belgrade**[124] ranked as 54th of 193.[125]

In Belgrade, the smart city concept encompasses six areas of development: traffic and mobility, public administration, housing, environment, economy, and social and human capital.

122 https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/151-Serbia

123 https://desapublications.un.org/sites/default/files/publications/2022-09/Chapter%203.pdf

124 http://www.beograd.rs/en/

125 https://publicadministration.un.org/egovkb/en-us/Data/City/dataYear/2022/dataCity/66

126 https://github.com/bertelsmannstift/Musterdatenkatalog

127 https://digitales.wien.gv.at/en/data-excellence-strategy-of-the-city-of-vienna/

In General:

Developing a Digitalization and Smart City Strategy involves identifying the specific goals and challenges of the city and developing a comprehensive plan to address them. The elements of a Digitalization and Smart City Strategy typically include not only the vision, goals, technology and infrastructure, but also stakeholders' engagement. Stakeholders' engagement includes involving citizens, businesses and other stakeholders in the planning and development of the Smart City Strategy. This helps to ensure that the Strategy is tailored to the specific needs of the community and that it is sustainable in the long term. Engaging citizens and stakeholders in the development and implementation of smart city initiatives can be a challenging process, but it is essential for the long-term success and sustainability of smart city initiatives.

In March 2023, NALAS hosted a meeting of the Digitalization Working Group, entitled "Enhancing Digital Transformation in Local Governments in WB6 and SEE through Collaboration and Partnership." This meeting was deemed necessary due to the findings of surveys conducted in individual economies, which indicated limited partnership in preparation of Digitalization and Smart City Strategies. The focus of the meeting was to evaluate partnerships with academia, the private sector, and innovative startups in order to support successful smart cities in Local Governments within the WB6 and SEE regions.

Figure 34: cooperation with the stakeholders in strategic planning for smart digital transformation at local level

Western Balkan and Moldova	Partnership with business, citizens, academia, NGOs	with the business community	with academia	with the NGO and citizens
Serbia	3	3	3	2
North Macedonia		- 3.3	- 2.4	- 2.5
Kosovo		- 2.8	- 2.8	- 3
Bosnia and Herzegovina		- 2.6	- 2.4	- 3
Montenegro		- 2.5	- 2.1	- 2.3
Albania		- 3.6	- 2.9	- 3
Moldova		- 2.8	- 2.8	- 3.5

5. Open Data

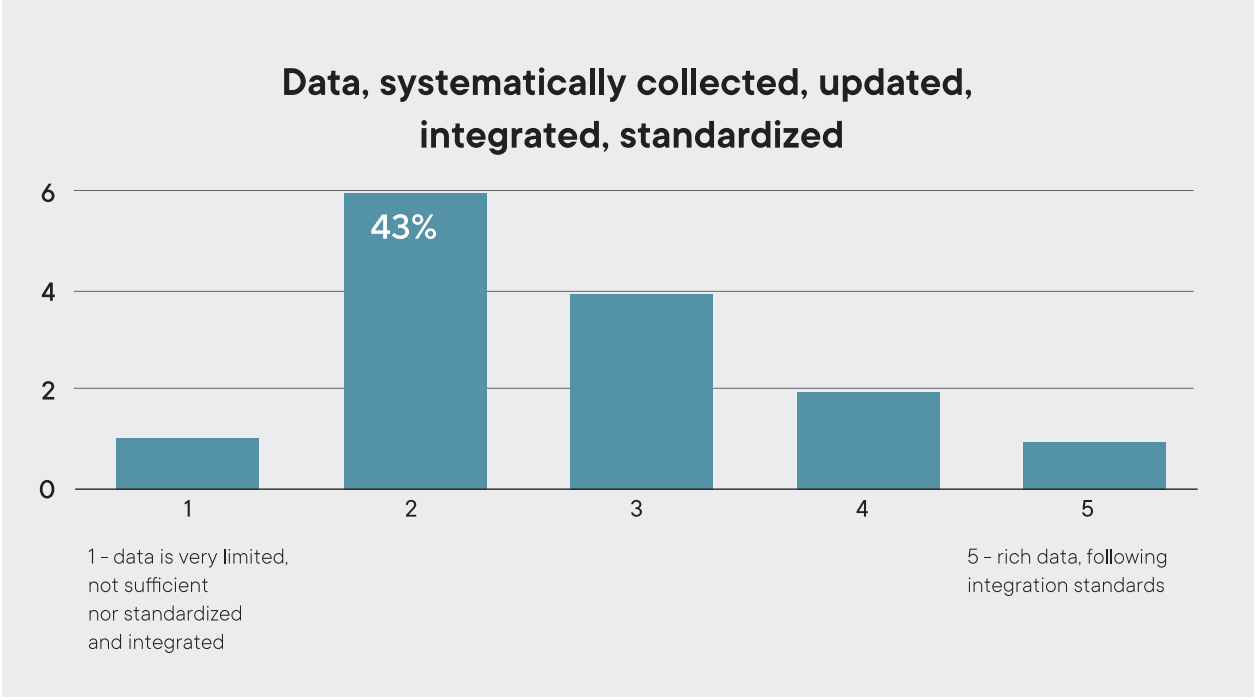
Public administration bodies produce and collect a large amount of information that has significant potential. Open data is data available on the Internet, which can be reused for a purpose different from the one for which it was created. Data reuse includes the ability to download, distribute, customize, connect to other data, integrate into business processes, products and services, etc. By publishing it in an open format, data becomes available to a wider circle of users. Therefore, the publication of data in a format that allows reuse is extremely important for the transparency of public sector work. It is published in a machine-readable format that can be computer processed and analysed.

An open format is a document format that is independent of the software platform used and is available to the public without the restrictions that would prevent the reuse of such data. A machine-readable format is a file format that is structured in a way that a software application can easily identify, recognize, retrieve, and reuse it for various purposes.

Effective data management is a key competence required for Local Governments to achieve smart city goals. This includes skills in data creation, archiving, storing, integrity and confidentiality, data analytics, and working across departments for horizontal and vertical data integration and sharing. Without proper data management, it becomes difficult to make informed decisions and plan strategies that are based on accurate, reliable, and comprehensive information. Local Governments must be able to collect and analyse data from various sources to effectively respond to the needs of their citizens and improve their quality of life. Furthermore, data management is essential for transparen-

The findings highlight the importance of continuing efforts to promote transparency and data sharing across different sectors of local government, fostering a more comprehensive and inclusive approach to open data initiatives.

Figure 35: Data systematically collected, updated, integrated, standardized (NALAS study)



cy, accountability, and improving public trust in government. Smart city initiatives depend on the ability of Local Governments to manage and leverage data effectively.

According to our NALAS Survey, 43% of Local Governments in the region have reported having very limited data management competencies. This highlights the need for greater investment in training and resources to improve the capacity of Local Governments to manage, store, and utilize data. Without adequate data management competencies, Local Governments may struggle to fully realize the potential benefits of smart city technologies and initiatives. Therefore, it is imperative for Local Governments to invest in the development of data management competencies and establish robust data management systems to achieve smart city goals.

Based on NALAS Dedicated Survey conducted for Local Government Units (LGUs) in **Serbia**, it was found that 38.5% of respondents rated data management at a level of 3 on a scale of 1–5. However, a considerable 23% expressed concerns that the availability, adequacy, standardization, and integration of data were limited.

The quality of data in **Montenegro**, as well as in Serbia, is indicated at a level of 3 on a scale of 1–5. However, in Montenegro, there is a higher percentage of 33% reporting poor and very limited data quality.

Kosovo reveals an average score of 3.25, similar to **Montenegro** and Serbia, but also indicating that 25% have excellent quality of data management.

The same results appear in **Bosnia and Herzegovina** with the same average, but having no LG with excellent or poor data management.

It is worth highlighting the positive example of Serbia's data center in Kragujevac[130], opened in December 2020. It offers data infrastructure, security, and accessibility to municipalities in the southern region of Serbia. This data centre is located on a parcel of 4ha, it consists of 2 buildings with a total of 14.000m^2.

128 https://www.srbija.gov.rs/vest/en/165244/state-data-centre-opened-in-kragujevac.php

The data portal data.gv.at in Austria functions as a central inventory or search engine of all open public sector data available in Austria and is in turn linked to the European Data Portal. Through the "Cooperation Open Government Data Austria"[131] (Federal, Regions, LGUs/LGAs), the portal has been available to all administrative units since 2011. The Working Group Metadata Austria has developed a metadata structure[132] that is used for OGD in Austria.

The survey results from **Macedonian** Local Governments revealed an average score of 2.22, indicating significant room for improvement in building capacities and fostering a culture of data sharing and collaboration among different departments within the Local Government.

The survey conducted in **Albania** reveals a diverse range of results, with an average score of 3 indicating a moderate level of performance. However, when examining the individual responses, it is evident that there is variability across the entire scale of 1 to 5, highlighting differing levels of data management among the Local Governments in Albania.

The average score in **Moldova** is 3.2, indicating a moderate level, but there is a significant diversity among Local Governments in terms of data management practices.

In terms of challenges, most economies see the necessity to further raise awareness about open data in their territory and to better organise legal and governance aspects around it. Human and financial resources are also among the most frequently mentioned issues.

129 https://www.data.gv.at/infos/cooperation-ogd-oesterreich/

130 https://www.ogdcockpit.eu/Metadaten

Figure 36: Open Data Portals in WB6

Country	Open Data Portal	Geo Data	Others
ALB	opendata.gov.al	geoportal.asig.gov.al	opendata.al
BIH		www.fgu.com.ba/en/	cbbh.ba/Content/Read/1133
MKD	htdata.gov.mk	www.katastar.gov.mk	data.sobranie.mk/en/
MDA	date.gov.md	geoportalinds.gov.md geodata.gov.md/	data.gov.md/en/
MNE	data.gov.me	www.geoportal.co.me	ekatastar.me/ekatastar-web
SRB	data.gov.rs	geosrbija.rs	en.rgz.gov.rs
XKV	opendata.rks-gov.net	geoportal.rks-gov.net	

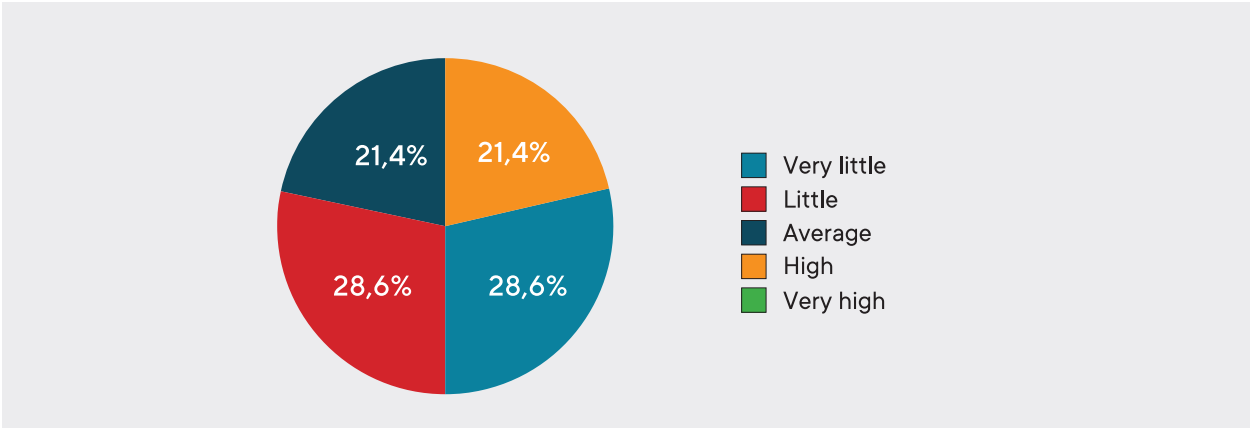
Each Western Balkan economy has Open Data initiatives or mechanisms that foster such culture.

According to the Survey results, the Open Data quality, accuracy, and update at Local Governments in the region has a mixed picture. 29% of respondents reported a very low maturity level, followed by 29% reporting a low maturity level, and 21% reporting an average maturity level. The remaining 21% reported an above-average maturity level in Open Data quality, accuracy, and update. This indicates that there is still a significant portion of Local Governments in the region that have yet to fully embrace Open Data and its potential benefits. However, the percentage of those that reported an above-average maturity level is encouraging and suggests that some Local Governments are already making progress in this area. It is important to note that Open Data quality, accuracy and update are crucial elements for effective data management in Smart Cities.

The ability to access reliable and up-to-date information enables Local Governments to make better-informed decisions and improve service delivery to citizens. Therefore, it is necessary for Local Governments to continue investing in data management and Open Data initiatives to maximize the potential benefits of Smart City development.

The Survey results indicate that Local Governments in the region have already realized the potential of Open Data in certain areas. In particular, mobility has seen the highest utilization of Open Data with 66.7% of respondents indicating its use. In addition, the environment and culture/tourism sectors have also seen significant use of Open Data with 50% and 58.3% of respondents reporting its implementation, respectively. These findings demonstrate that Open Data has already proven to be a valuable tool for Local Governments in improving these areas.

Figure 37: Open Data and maturity in quality, accuracy, update at LGs (NALAS survey)



The production of Open Data in these areas is essential to smart cities as it allows for the development of innovative solutions to urban challenges. It is interesting to analyse and discover if data on mobility are already in use to help in creating efficient transportation systems and reducing traffic congestion and if data on the environment are aiding in mitigating air and noise pollution. Smart parking solutions have been identified, but no transport and traffic management applications based on Open Data, so this is creating opportunities for further enhancement.

Open Data production in the field of culture and tourism can contribute to the promotion of local tourism and cultural heritage. Therefore, Local Governments should continue to invest in Open Data production and ensure that the data produced are of high quality and accuracy to drive the development of smart cities. As stated by the World Bank, open data's key benefits are as follows: Transparency, Public Service Improvement, Innovation and Economic Values, Efficiency (better interoperability of institutions).

According to the Report "Open Data Misconceptions: Experience from the Western Balkans",[131] some details of the economies are highlighted:

The **Republic of Moldova** with its strong policy and legislative framework related to open data, enabled bridging the open data gaps between 2012 and 2019. In 2014, Moldova adopted a Policy Concept on the Principles of Open Government Data and its existing environmental legislation promotes access to and dissemination of environmental information held by public authorities. The Republic of Moldova launched an Open Data Portal in 2011 to provide a single point of access to open data.

Further documents include:

- Government Decision No. 701 of 29 August 2014 on the Approval of the "Methodology for publishing open government data"[132]
- Government Decision No. 700 of 26 December 2014 on the "Policy concept on the principles of open government data"[133]
- The Law on Access to Information[134] requires for public authorities to disclose all public information. Recently, this Law was superseded by the Law on Access to Information of Public Interest, No. 148 of 09 June 2023[135], which established clear principles for providing information of public interest.

In addition to the Law on Public Sector Information Reuse,[136] the Republic of Moldova approved a national open data policy to concretise the principle of "open data by default" within the Government. This policy brings clarity to the data dissemination process, provides recommendations for machine-readable formats to be used for the dissemination of data and defines standards on data collection, archiving and publishing. Each ministry and government agency are to embed an Open Data Action Plan into their sectoral e-Transformation Action Plan.[137]

The **Open Data Inventory** (ODIN)[138] measures how complete an economy's statistical offerings are and whether their data meet international standards of openness. Moldova ranks 19th (out of 187) in the Open Data Inventory 2020, with an overall score of 73. The overall score is a combination of a data coverage sub-score of 57 and a data openness sub-score of 86.

The overall maturity level of Open Data in Local Government Units (LGUs) in Moldova is generally considered to be high to average. Data primarily focuses on areas such as educational services, social services, and culture. However, the Survey results revealed a diverse range of data across various activities carried out by LGUs. This indicates that while certain sectors have made significant progress in opening up their data, there is still room for improvement and expansion across a wider spectrum of activities.

131 https://metamorphosis.org.mk/en/blog/open-data-misconceptions-experience-from-the-western-balkans/

132 https://www.legis.md/cautare/getResults?doc_id=118577&lang=ro

133 https://www.legis.md/cautare/getResults?doc_id=18535&lang=ro

134 https://www.legislationline.org/documents/id/6394

135 https://www.legis.md/cautare/getResults?doc_id=137908&lang=ro

136 https://www.legis.md/cautare/getResults?doc_id=106313&lang=ro

137 https://rm.coe.int/moldova-handbook-on-transparency-and-citizen-participation-en/16807893c1

138 https://odin.opendatawatch.com/

Figure 38: Open Data Inventory (ODIN) Index 2020[139]

Country	Rank in 2020	Data Coverage (100)
Moldova	19th	57
Republic of Serbia	47th	56
Montenegro	66th	43
Albania	75th	51
Bosnia and Herzegovina	123rd	46

All economies, with the exception of Bosnia and Herzegovina, have an Open Data Policy in place with an Action Plan for measures to support the publication and reuse of open data. With the exception of Bosnia and Herzegovina and Montenegro, all economies provide evidence that their national strategy or policy outlines measures to incentivize the publication of, and access to, real-time or dynamic data. Bosnia and Herzegovina indicates that their Open Data Policy and/or strategic measures support the reuse of open data by both the public and the private sector.[140] For Montenegro and Serbia, the Open Data Policy and/or strategic measures support the reuse of open data by the private sector only. Montenegro encourages the use of open data for the development of startups, business communities, and various business models through the organisation of events, such as competitions for digital solutions and hackathons.

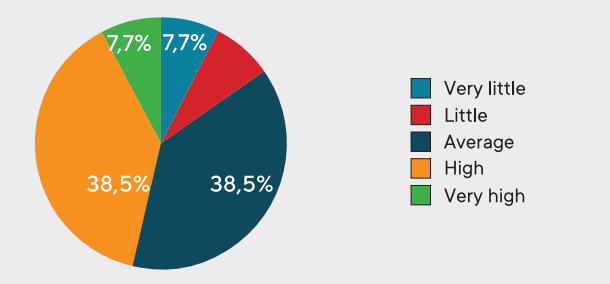
Serbia, as stated in the Office for Information Technologies and eGovernment's website, launched its Open Data Portal that contains data categorized within the following themes: Public Safety, Energy, Education, Management,

At the local level, NALAS Survey results are showing that open data are high in quality and above the average and only 15% marked their open data below 3. Most frequent local level open data include data sets concerning education, social services and urban planning. Second in the list are data concerning culture and tourism, environment and public space management.

139 https://odin.opendatawatch.com/Report/countryProfiles

140 Action Plan for Strategic Framework for PAR 2018-2027

Figure 39: Open Data Quality (NALAS survey)



Health and Environment. The portal includes a section on what is open data and the benefits from such data. A platform which depicts data about the COVID–19 situation in Serbia has also been developed and implemented within a short timeframe, with the aim to provide real-time data about the situation.

At the local level in Montenegro, according to the NALAS Survey, mobility and traffic data, as well as urban planning data are mainly published by LGUs. The assessment of Open Data maturity is average to high.

Podgorica publishes its open data via: https://podgorica.me/stranice/otvoreni-podaci

Montenegro, within its Ministry of Public Administration, Digital Society, and Media, has established an Open Data Portal which offers data categorized in different themes such as: Energy and Mining, Finance, Education, Agriculture etc. Through the platform, users can download datasets from these categories, and get instructions on how to use the platform, thus adding to its usability.

Among other things, **Serbia** plans an analysis of how to engage the private sector in the Open Data initiative and give support to public sector organisations and higher education institutions for projects that are focused on open data reuse and the promotion of open data. In all economies with the exception of **Bosnia and Herzegovina**, high-value domains or datasets have been identified and prioritised for publication.

Only initial activities are being undertaken to open the data available to the public administration. Thus, a Pilot Project for the Council of Ministers of Bosnia and Herzegovina "Open Data Portal" was implemented, which will enable the availability of public data through the public administration infrastructure. Bosnia and Herzegovina's Action Plan outlines the intention to "Ensure that citizens and the business community can make correction of their own data by implementing all identified key prerequisites through online authentication and access."

Furthermore, all economies indicate that there are policies in place to support the publication of, and access to, geospatial data.

https://opendata.gov.al/ is the **Albania's** Open Data Portal, a platform that exists as part of Albania's commitment to the Open Government Partnership. This portal offers data from 20 institutions and mechanisms to filter data based on categories, institutions and type of data (table, graph and map). Statistics reveal 17,187,263 visits to e-Albania platform and 22,630,945 transactions on the Government platform. Several other platforms utilize open data, such as: Open Corporates – open data on the private sector in Albania; Open Procurement Albania – data regarding public procurement in Albania; Open Spending Albania – data about all spendings of the Government, as well as about information on public officials' wealth and income.

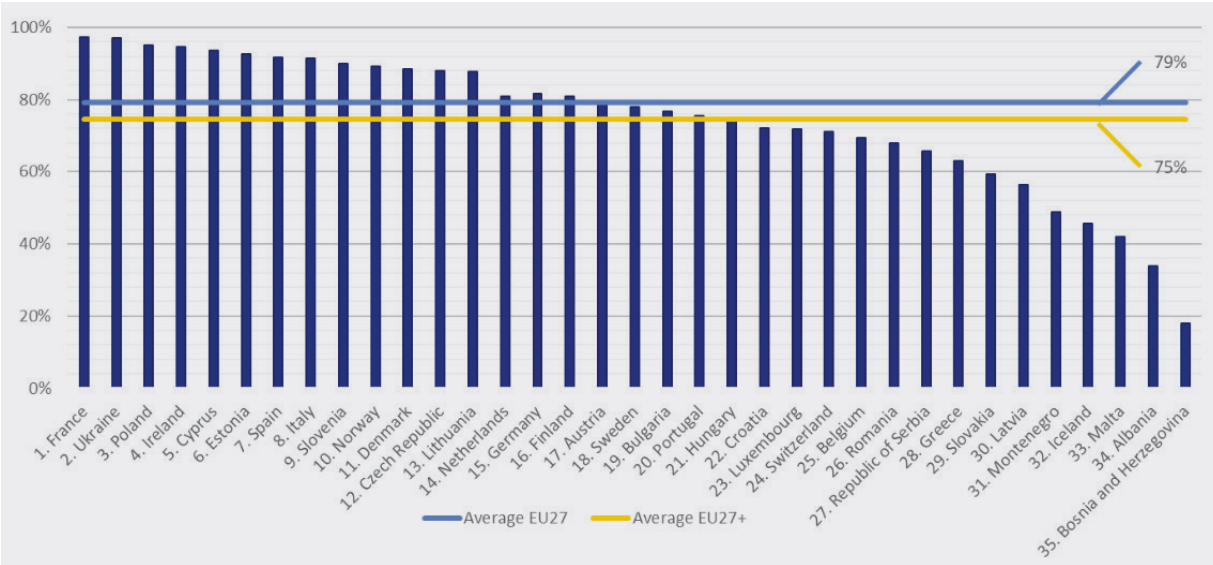
Except for Bosnia and Herzegovina, all economies indicate that they involve relevant stakeholders in their prioritization processes. Albania and Montenegro confirm that they are preparing to make sure that public bodies holding high-value datasets will denote those datasets as such in their metadata, following the publication of the related EU implementing regulation. The same tendency to follow EU policymaking can be seen in the fact that all candidate countries/economies, as well as Bosnia and Herzegovina, indicate that their open data policies and/or strategies are aligned with the European Commission's priorities for 2019–2024,[141] especially when it comes to "A Europe fit for the digital age."[142].

According to the NALAS Survey, open data at the local level in Albania is limited, and only the Municipality of Tirana on https://opendata.tirana.al/ publishes data in an open and easily-analysed format (196 datasets from infrastructure, to local finances). This is a platform of different statistical data on the municipality in open data format from the Directorate of Control and Development of the Territory, the Directorate of Cleaning, the Directorate of Environmental Policies, APR, AMK, DPN1. This site increases transparency and provides citizens with various data regarding jobs, investments and any services performed in the city. Open data from other municipalities are mainly data on tourism and cultural heritage.

141 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024_en

142 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en

Figure 40: The overall Open Data Maturity scores of the 2022 EU assessment[143]



The maturity of European countries is concentrated on the higher end of the spectrum (above 65%).

Figure 41: Open Data Maturity scores EU Western Balkan and Moldova[144]

Country	Policy	Portal	Impact	Data Quality	Open Data Maturity 2022
Republic of Serbia	475	445	385	364	66%
Montenegro	375	312	200	355	49%
Albania	352	303	70	135	34%
Bosnia and Herzegovina	200	185	40	30	18%
Moldova	417	464	239	396	Data from 2020

In Montenegro and Serbia, the governance structure ensures that all local and regional open data initiatives are facilitated and supported at the national level. Also, in Albania and Montenegro the governance structure designates official civil services' roles dedicated to open data.

All economies, with the exception of Bosnia and Herzegovina and Montenegro, state that a regular exchange of knowledge and experiences takes place between the different public sector bodies related to open data. In Montenegro and Serbia, this exchange also takes place between public sector bodies and open data users. In all countries, open data is promoted through events.

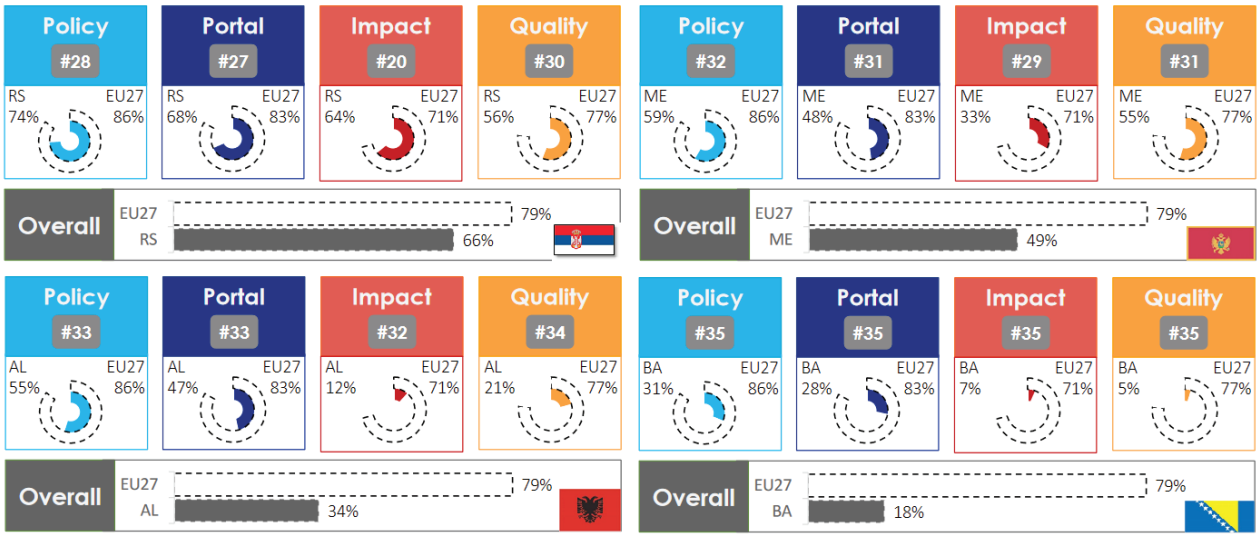
Finally, in Montenegro and Serbia, a professional development or training plan is offered to civil servants working with data. After completing these plans or training activities, certification is offered that is recognised within public bodies.

Montenegro, Serbia, and Ukraine offer annually some national, regional or local events (e.g., hackathons, courses, conferences, user meet-ups, summer/winter schools) to promote open data and open data literacy in their economy, also in cooperation with civil society and the private sector.

143 EU Open Data Maturity Report 2022, https://data.europa.eu/sites/default/files/landscaping_insight_report_n8_2022.pdf

144 https://data.europa.eu/en/publications/open-data-maturity/2022

Figure 42: Overall Open Data Maturity Level



In the WB6 EU candidates and Bosnia and Herzegovina, activities are in place at the national level to assist data providers in their publication process. For example, there is a Rulebook on how to publish information in an open format with a Manual (in Montenegro), and training on different topics (in Serbia). With the exception of Bosnia and Herzegovina, all economies report that there are processes in place to ensure that their open data policies or strategies are implemented, such as quarterly or yearly reporting.

In the absence of a systematic approach to data opening, advanced Local Governments in **Bosnia and Herzegovina** are relying on independent or customized solutions. Overall maturity level of open data is below average. Data mainly includes environmental, statistical and participatory information.

In the SEGMENTATION OF THE OVERALL MATURITY LEVEL, Serbia and Moldova are considered as “followers” and all others as “beginners”.

As one of the participants in the Smart Cities Project – towards the digitization of cities and municipalities in Bosnia and Herzegovina, the Municipality of Tešanj has implemented the recommendations and published a special page for open data, which are regularly updated. Prijedor opted for a more sophisticated solution – the local Open Data Portal, which was developed with the support of UNDP. This portal is based on state-of-the-art technologies, using an open data management system called CKAN[147].

145 https://ckan.org/

North Macedonia has developed multiple mechanisms which advance the usage of open data. Significant progress in government financial transparency has been made with the Open Finance platform. Data is obtained from the Treasury of the Ministry of Finance and enables users to gain valuable insights into financial activities and expenditures of both central and local governments. It provides users with access to wide-ranging data on budget transactions by all users of the National Budget, including Local Self-Government Units (LSGUs) and their related budget institutions. North Macedonia also has other platforms which provide access to open data such as Open Data. gov.mk and Data Gov, which is an open data ecosystem in which data is produced, opened, enriched and reused. During 2020 and 2021, the prominent Metamorphosis Foundation, within the USAID Citizen Participation Project, and in cooperation with the Ministry of Information Society and Administration, implemented activities on advancing open format datasets from central and Local Government Units and Planning Regions.

Kosovo adopted the open data movement by developing the Open Government Data Portal back in 2015, developed by Open Data Kosovo. Kosovo also implemented the Open Data Charter[146] in 2016, integrating open data practices within public institutions in Kosovo. There is an e-procurement platform, advanced and including extensive data about public contracts. Open Data Kosovo has developed numerous open-data-driven digital solutions such as Open Contracts (with OCDS), Open Businesses and The Future Workplace. In addition, according to the legislation in force, every public institution besides the Official for Access to Public Documents, has to have an Official for Open Data. In addition, at the local level, Municipality of Priština is highly committed to open data by developing a platform which contains data about revenue, spendings, budget, and other comparison tools regarding income and spendings. Among open data, most frequent are data on education, energy supply and energy transition. In the context of promoting an open Government, in September 2018, MPA launched ODRA Open Data Readiness Assessment Report,[147] prepared by local and international experts according to the World Bank methodology, which provides a comprehensive overview of the situation in the field of Open Data in Kosovo.

NALAS Survey results revealed that maturity of the open data in terms of quality, accuracy and update is average. Main datasets include: financial data, urban planning data, educational services and culture.

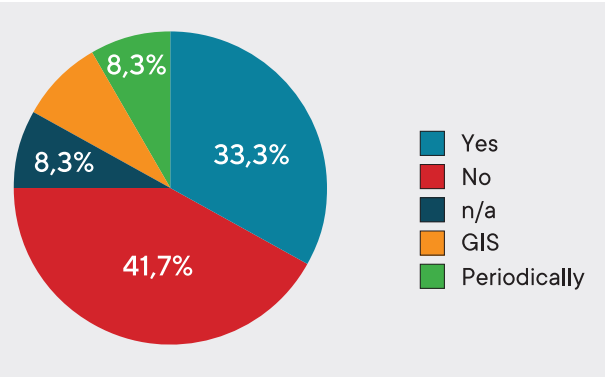
Excurse: EARTH OBSERVATION DATA – Use of earth observation data (satellite, aerial, Lidar, drones) in Local Governments' operations

According to the NALAS Survey results, only 33.3% of Local Governments in the region are currently using earth observation data in their operations, while 41.7% are not using it at all. 8% of respondents reported using the data in GIS tools, while another 8% only use it periodically.

Over 50% of Local Government Units (LGUs) in Serbia and Moldova have incorporated the use of Earth observation technologies such as satellite imagery, aerial photography, Lidar, and drones in their city and local government operations, as revealed by the survey conducted at the local level.

Bosnia, too, has 75% of LGUs using EOD, Montenegro 65%, Macedonia, Albania and Kosovo 30%.

Figure 43: Earth Observation Data (NALAS survey)



146 https://mpb.rks-gov.net/desk/inc/media/6E0C6824-1761-4537-9230-EB6C9F54F266.pdf

147 https://map.rks-gov.net/desk/inc/media/7402A1E1-6B67-4A7A-9FF0-3540A3E54D30.pdf

Earth observation data provides valuable information about the Earth's surface, atmosphere, and oceans, which can be used to monitor and manage a wide range of activities, including environmental management, disaster response, agriculture, and urban planning. By utilizing this type of data, Local Governments can improve their decision-making processes and better understand the impact of their policies and actions on the environment.[148] The low adoption of Earth observation data among Local Governments suggests a need for greater awareness and capacity-building efforts to enable wider use and maximize the potential benefits of this valuable resource.

Some positive examples in the use of GIS systems at the municipal level are the Public GIS in

- **Tirana Municipality** https://gis.tirana.al/NexusPublicPortal/ where citizens have access to geo-data on the road and railway infrastructure, land use, streets and addresses, parking, cycling network, school streets, tourist attractions, tax zones as well as digital and technology learning corners.
- **Skopje** published its 2012 General Urban Plan in GIS format https://gisapp.skopje.gov.mk/gup/ allowing access to citizens, businesses and the community to all layers of importance for urban development. There are two additional applications in GIS format, GIS for the citizens http://gis.skopje.gov.mk/GisZaGragjani and Citizen initiative http://gragjani.skopje.gov.mk/korisnik/.

148 https://www.euspa.europa.eu/european-space/eu-space-programme/what-earth-observation or https://www.earthdata.nasa.gov/

Recommendations/Good Practice

- In Serbia, there was an Open Data Working Group, which included stakeholders from the public sector, academia, Central Statistics Office, and the tech community.
- Also, in Serbia, every year, the National Open Data Week[151] is organised in collaboration with the open data community of users.
- The Chamber of Commerce of Montenegro prepared an online lecture on "Open Data and Entrepreneurship" within the "Open Data for Open European Innovation" Project.
- In practice, WB6 and Moldova need to publish more data on their Open Data Portals – and be more proactive, as well as keep data up to date through frequent updating and providing a public API to access these data in order to leverage the economic benefits.
- Furthermore, more competences in data creation, archiving, integrity and confidentiality, data analysis and data sharing across the local public administration are required.
- The Bertelsmann Foundation, together with GovData, KDZ - Centre for Public Administration Research and the Open Knowledge Foundation Germany, developed a model data catalogue[152] under Licence CC0.[153]
- Best Practice_ data excellence strategy like the City of Vienna.[154]

149 https://hub.data.gov.rs/en/2022/03/18/open-data-week-begins/

150 https://www.bertelsmann-stiftung.de/de/unsere-projekte/daten-fuer-die-gesellschaft/projektnachrichten/der-neue-musterdatenkatalog-mehr-kommunen-und-neue-struktur

151 https://github.com/bertelsmannstift/Musterdatenkatalog

152 https://digitales.wien.gv.at/en/data-excellence-strategy-of-the-city-of-vienna/

6. Cybersecurity

Effective mechanisms and institutional structures at the national level are required to reliably deal with cyber threats and incidents. The absence of such institutions and lack of national capacities poses a genuine problem in adequately and effectively responding to cyber incidents. National Computer Incident Response Teams (CIRTs) or Computer Emergency Response Teams (CERTs) or Computer Security Incident Response Teams (CSIRT) play an important role in the solution.

Adequate legal framework and fully trained and functional CERT bodies are a critical factor in the success of the process of digitization of services, since secure systems are the key to their successful use.

The **ITU Global Cybersecurity Index** (GCI)[153] is a trusted reference that measures the commitment of countries to cybersecurity on a global level – to raise awareness of the importance and different dimensions of the issue. As cybersecurity has a broad field of application, while cutting across many industries and various sectors, each economy's level of development or engagement is assessed along five pillars:

i. Legal Measures,
ii. Technical Measures,
iii. Organizational Measures,
iv. Capacity Development, and
v. Cooperation – and then aggregated into an overall score.

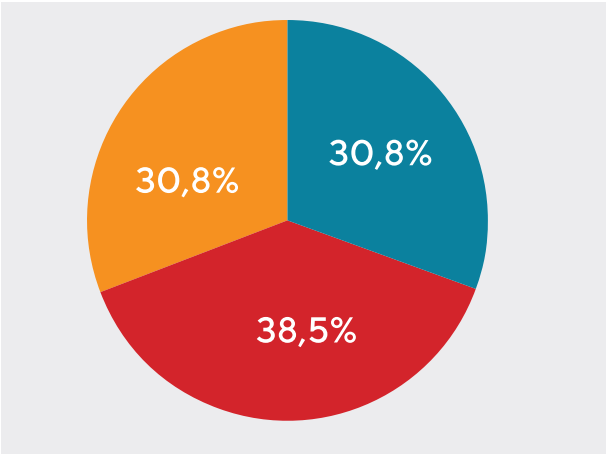
Figure 44: 4th ITU Global Cybersecurity Index (data collected 2020, published 2021)

GCI 2020	*Score*	*Rank World*	*Rank EU*
North Macedonia	89.92	38	24
Serbia	89.80	39	25
Moldova	75.78	63	33
Albania	64.32	80	40
Montenegro	53.23	87	41
Bosnia and Herzegovina	29.44	110	43
Kosovo	n.a.	n.a.	n.a.

153 https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx- the 5th Edition will be published in 2023

One of the four pillars of the Digital Agenda for the WB is to increase cybersecurity, trust and digitalization of (the) industry. The rest of the pillars refer to: broadband connectivity; strengthening the digital economy and society (enhancing the digital skills); and boosting research and innovation.

Figure 45 Level of protection of sensitive and personal data across local governments in the Western Balkans and Moldova



The EU Network and Cyber Security Directive[154] is currently a valid EU Directive, which regulates ICT security measures and is implemented by the specialized EU Agency, ENISA (European Union Agency for Cybersecurity).[155] In accordance with the Directive, an obligation to establish a national prevention and protection team is determined, i.e., a National CERT.

Albania

The ITU's Global Cybersecurity Index ranks Albania on the 40th place in Europe and the 80th place in the world.

The National Authority for Electronic Certification and Cyber Security (NAECCS)[156] has the responsibility for overseeing the enforcement of Law No. 9880/2008 "For Electronic Signature"[157], Law No. 107/2015 "For Electronic Identification and Trusted Services"[158] and Law No. 2/2017 "For Cyber Security"[159] and bylaws issued for the implementation thereof.

Under the "National Security Strategy 2014–2020"[160] and the "Cybersecurity Policy Paper 2015–2017,"[161] Albania has taken important steps to improve its cybersecurity situation. Alongside the developments in the technology and information field, and the public services digitalization revolution, the legal framework on cybersecurity was completed and upgraded. Due to this progress, Albania has improved its rank in the Global Cybersecurity Index. However, this process has not yet reached the change scale and pace required to stay ahead of the fast-moving evolution of the various cyber threats. Cybercrime is undoubtedly one of the major threats to modern global security and for this reason, cybersecurity has become an important part of national security. Therefore, the development of a National Cybersecurity Strategy 2020–2025 is a prerequisite for the establishment of relevant institutional mechanisms that will improve the cybersecurity level in the country.[162]

154 https://www.enisa.europa.eu/topics/cybersecurity-policy/nis-directive-new

155 https://www.enisa.europa.eu/

156 Autoriteti Kombëtar për Certifikimin Elektronik dhe Sigurinë Kibernetike (AKCESK) https://cesk.gov.al/index.html

157 https://cesk.gov.al/publicAnglisht_html/wp-content/uploads/2016/04/ligji9880.pdf

158 https://cesk.gov.al/publicAnglisht_html/wp-content/uploads/2016/04/ligji107.pdf

159 https://cesk.gov.al/publicAnglisht_html/wp-content/uploads/2016/04/Ligji%20_Per_Sigurine_Kibernetike_Nr_2_Date_26.1.2017.pdf

160 https://www.files.ethz.ch/isn/155586/albania_english-2004.pdf

161 https://cesk.gov.al/publicAnglisht_html/rreth-nesh/raportidokumentittepolitikave.pdf

162 Albania National Cybersecurity Strategy and its Action Plan 2020-2025 https://cesk.gov.al/publicAnglisht_html/legjislacioni/National%20Cybersecurity%20Strategy%20and%20its%20Action%20Plan%202020-2025.pdf

Figure 46: 4th ITU Global Cybersecurity Index for Albania

Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
64.32	18.13	13.12	13.18	12.12	7.78

Source: ITU Global Cybersecurity Index v4, 2020

A comprehensive approach by the structures of the Ministry of Defence MoD/FA and the armed forces in Cyber Defence was also gradually introduced in order to gain a clearer understanding of cyberspace and its vulnerabilities; operational capacities of the national security agencies were increased with regard to various aspects of cybersecurity; awareness of the staff of cybersecurity was increased.[163]

National Committee on Internet Safety among AKCESK and iSIGURT[166]

National Conference: "Cyber security challenges in Albania" organised by the National Authority for Electronic Certification and Cyber Security (AKCESK), in cooperation with SID Albania.

Awareness activities in schools and public spaces on safe internet in cooperation with Education Authorities and Teachers across Albania (Safer Internet Day).

Publication of the Annual Report "Internet Safety in Albania 2022"

Online Campaign "Online Sexual violence against children is a CRIME! REPORT IT!", and a National Campaign "Report Online Hate Crimes and Speech".

163 Albania Cyber Defence Strategy 2021-2023 https://www.mod.gov.al/images/PDF/2020/Strategjia-Mbrojtjen-Kibernetike-2021-2023.pdf

164 https://www.isigurt.al/

Bosnia and Herzegovina

The Bosnia and Herzegovina Presidency, through the Reform Programme adopted in 2019, recognized the implementation of cyber security in Bosnia and Herzegovina through the development of a strategic framework for cyber security as one of the goals.[165]

The Ministry of Transport and Communications of Bosnia and Herzegovina planned (and this was adopted in the Work Programme of the Ministry of Interior of Bosnia and Herzegovina) the drafting of the necessary law. Activities related to the creation of a Cybersecurity Strategy have not been initiated. As a competent institution, the Ministry of Security of Bosnia and Herzegovina conducts consultations and coordination regarding the model of the strategic document. There is an open issue of competence, due to the RS Government's position that the issue of cyber security lies exclusively within the jurisdiction of the entity and that the relevant area should be regulated at those administrative levels.[166]

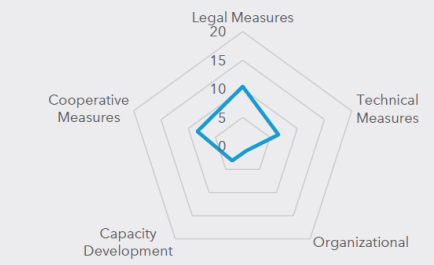
A CERT body for the institutions of the CoM of Bosnia and Herzegovina is located in the Ministry of Security of Bosnia and Herzegovina based on the decision of the CoM of Bosnia and Herzegovina, but it has not been operationally established yet. At the entity levels in the Federation Bosnia and Herzegovina, a draft of the law was prepared, which is now in further legislative procedure. In the Republic Srpska, there is a legislative framework that includes, in addition to the fundamental Law on Information Security, other necessary decrees and regulations. There is also an operational CERT unit within the Ministry for Scientific Technological Development, Higher Education and Information Society. There are plans and procedures related to the security of IT systems in Brcko Distrikt Bosnia and Herzegovina, but the required legal framework is missing.[167]

The ITU's Global Cybersecurity Index ranks Bosnia and Herzegovina on the 43rd place in Europe and the 110th place in the world.

In the past years, **IFS-EMMAUS**[170] implemented a comprehensive programme on prevention of online child abuse and exploitation through digital technologies in cooperation with the Bosnia and Herzegovina Ministry of Security, law enforcement and judicial agencies, Ministries of Education, and Pedagogical Institutes, civil society organisations, and regional and international actors. Activities have included the establishment of the first online SOS Hotline for reporting online child abuse and exploitation – the interactive web portal sigurnodijete.ba – as well as education and prevention activities for children, teenagers, parents and educators, particularly computer science teachers across Bosnia and Herzegovina.

Figure 47:
4th ITU Global Cybersecurity Index for Bosnia and Herzegovina

Bosnia and Herzegovina



Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
29.44	10.41	6.56	1.02	3.12	8.33

Source: ITU Global Cybersecurity Index v4, 2020

165 PARCO 2018-2022: Report on the Implementation of the Action Plan of the Strategic Framework for Public Administration Reform in Bosnia and Herzegovina 2018-2022 (2027) – Draft Report: https://parco.gov.ba/wp-content/uploads/2023/04/Report-on-PARSFAP-implementatio_draft.pdf

166 PARCO 2018-2022

167 PARCO 2018-2022

168 International Forum of Solidarity – EMMAUS https://www.sigurnodijete.ba/

Kosovo

Unfortunately, there is no available data from GCI with regard to Kosovo. The 2022 Progress Report of the European Commission on Kosovo notes that Kosovo has developed "basic capabilities" in terms of cybersecurity.[169]

The FIT Center[171] has implemented numerous projects in various fields such as children's rights, digital entrepreneurship, promotion of democracy, anti-corruption, advocacy against bullying, financial literacy, research on internet risks of children, and so on. Some of the donors of the FIT Centre are the American Embassy in Priština, the European Union, Save the Children, etc.

The National KOS-CERT Unit[171] plays a key role in safeguarding electronic communication networks and services and its users in the Republic of Kosovo. KOS-CERT operates within ARKEP[172] to effectively face security challenges, coordinate actions to solve the security incidents and effectively prevent them.

The Cyber Academy[174] founded in Priština is one of the first institutions in the SEE region that provides a hands-on programme diving deep into different subjects of technology while presenting a new learning theory "Learn by Doing" where students are more focused on practical knowledge and skills development.

169 https://metamorphosis.org.mk/en/blog/a-recent-look-towards-cybersecurity-in-the-western-balkans-how-can-we-improve-the-cybersecurity-level-in-the-region/

170 https://fit-ks.org/

171 https://www.kos-cert.org/

172 https://www.arkep-rks.org/ (Regulatory Authority of Electronic and Postal Communication)

173 https://cyberacademy.co/

Moldova

The ITU's Global Cybersecurity Index ranks Moldova on the 33rd place in Europe and the 63rd place in the world. The country's joining in 2009 the Convention on Cybercrime of the Council of Europe and adoption of the National Cyber Security Programme for 2016–2020 have established the legislative parameters for a safer digital environment. The next step towards cyber resilience was the adoption of the Information Security Strategy of the Republic of Moldova for 2019–2024, which transposes the NIS Directive (the acronym for Network and Information Security, but also the short name of the first European Directive on Cyber Security) into the national legislation and creates a framework of action against cyber risks.[174]

CERT-GOV-MD[175] is the national Computer Emergency Response Team for Moldova (in accordance with Government Decision No. 482 of 07/08/2020 regarding the approval of measures required to ensure cyber security at the governmental level and the amendment of Government Decision No. 414/2018 regarding measures to consolidate data centres in the public sector and rationalize the administration of information systems) and it assists beneficiaries in the use of ICT systems of public administration authorities while implementing proactive and reactive measures to reduce the risk of IT security incidents and to assist in responding to incidents. The Centre also examines incidents occurring in Moldovan networks and reported by citizens and institutions in the Republic of Moldova, as well as abroad. CERT-GOV-MD is part of STISC. The Information Technology & Cyber Security Service (STISC)[176] is a public institution whose purpose is to ensure the administration, maintenance and development of information technology infrastructure, the Telecommunications System of public administration authorities as part of the special communications network and public information systems, the management of the single infrastructure of the Government's public key, as well as the implementation of state policies on cyber security.

Recently, the Law on Cybersecurity No. 48 of 16 March 2023[177] was approved and it transposes several EU Directives.

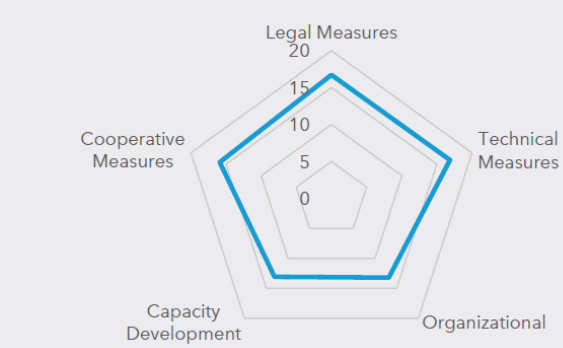
174 Digital Moldova 2020 https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/Moldova_2013_strateg_857_en.pdf

175 https://stisc.gov.md/ro/cert-gov-md

176 https://stisc.gov.md/ro

177 https://www.legis.md/cautare/getResults?doc_id=136732&lang=ro

Figure 48: 4th ITU Global Cybersecurity Index for Moldova



Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
75.78	16.73	16.86	13.21	13.09	15.89

Source: ITU Global Cybersecurity Index v4, 2020

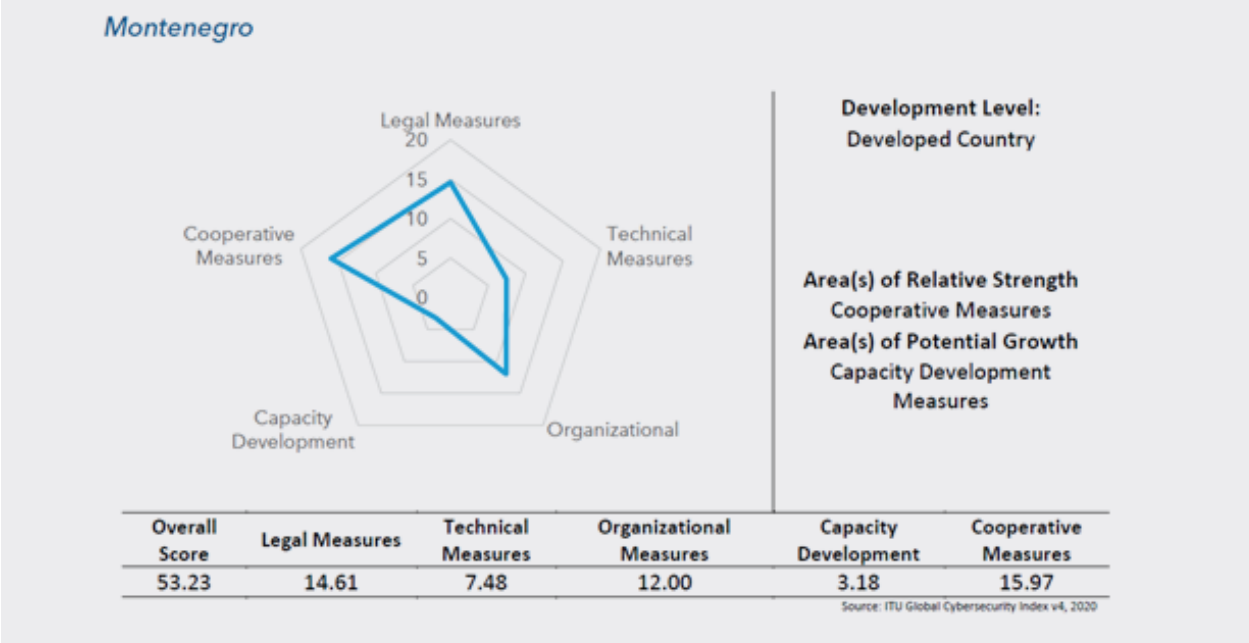
La Strada Moldova[180] exists and operates to ensure respect of the rights and legal interests of children to stay free from violence at all levels – individual, legislative, and executive. We do so by applying a comprehensive change model to our work, through information and education, providing direct support and assistance to children who suffered from online sexual exploitation or sexual abuse, strengthening communities, and developing policies. It operates an online helpline that aims to provide counselling in all cases related to child safety online issues and a safe reporting mechanism available on www.siguronline.md for online child sexual abuse cases.

178 https://lastrada.md/

Montenegro

The ITU's Global Cybersecurity Index ranks Montenegro on the 41st place in Europe and the 87th place in the world.

Figure 49: 4th ITU Global Cybersecurity Index for Montenegro



Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
53.23	14.61	7.48	12.00	3.18	15.97

Source: ITU Global Cybersecurity Index v4, 2020

Montenegro's strategic objective is to build an integrated, functional and efficient cyberspace, in accordance with international standards and principles.[179]

Strategic planning of cyber security in Montenegro is based on the Cyber Security Strategy for Montenegro 2018–2021,[180] which defines mechanisms and instruments for implementing the interests of national security. In institutional terms, the establishment of the Directorate for Information Security and Computer Incidents (CIRT)[181] in 2012 was a key measure in the field of information and cyber security. The National CIRT is the central institution for coordinating the prevention of and protection against online security incidents and other security risks.

Montenegro is reported to have adopted its new Cybersecurity Strategy 2022–2026.

179 National Cyber Security Strategy for Montenegro 2013-2017 https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/Montenegro_2013_Cyber%20Security%20Strategy%20for%20Montenegro.pdf

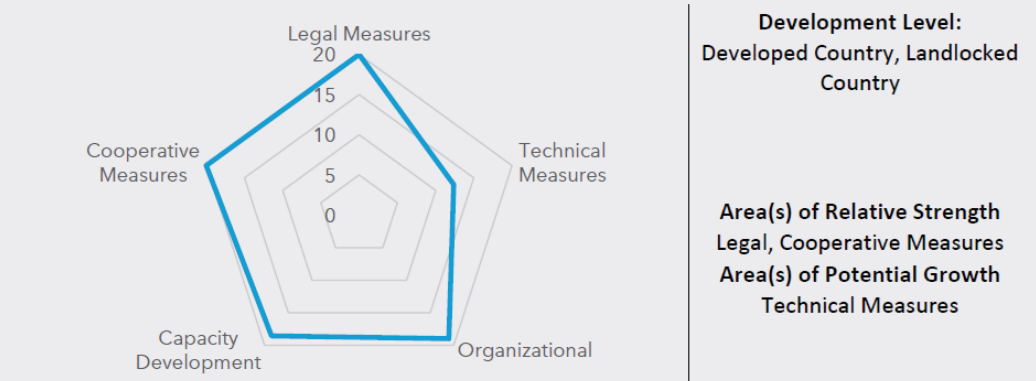
180 https://www.gov.me/dokumenta/fa4f3ed4-d059-4958-8847-d6111360a477

181 https://www.gov.me/cirt

North Macedonia

The ITU's Global Cybersecurity Index ranks Macedonia on the 24th place in Europe and the 38th place in the world.

Figure 50: 4th ITU Global Cybersecurity Index for North Macedonia



Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
89.92	20.00	12.37	18.98	18.57	20.00

Source: ITU Global Cybersecurity Index v4, 2020

The National Cyber Security Strategy[182] of the Republic of North Macedonia is a strategic document that fosters the development of safe, secure, reliable and resilient digital environment, supported by high-quality capacities, based on cooperation and trust in the field of cyber security. According to Article 26 of the Law on Electronic Communications, the National Centre for responding to computer incidents (MKD-CIRT)[183] is set up within the Agency for Electronic Communications as a separate organizational unit, as the official national point of contact and coordination in dealing with security incidents in networks and information systems that will identify and provide a response to security incidents and risks.

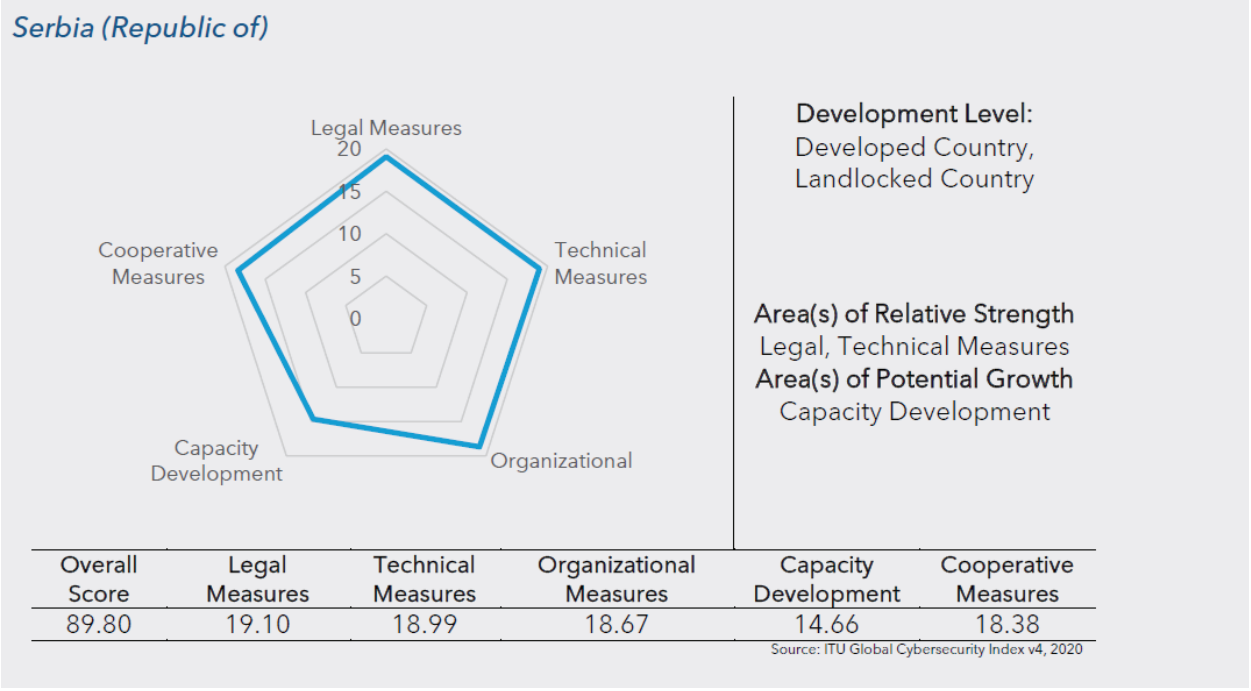
182 Republic of Macedonia National Cyber Security Strategy 2018-2022 (https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/Macedonia_ns_sajber_bezbednost_2018-2022.pdf) or https://www.mioa.gov.mk/sites/default/files/pbl_files/documents/strategies/cyber_security_strategy_macedonia_2018-2022_-_eng.pdf

183 https://mkd-cirt.mk/

Serbia

The ITU's Global Cybersecurity Index ranks Serbia on the 25th place in Europe and the 39th place in the world.

Figure 51: 4th ITU Global Cybersecurity Index for Serbia



Overall Score	Legal Measures	Technical Measures	Organizational Measures	Capacity Development	Cooperative Measures
89.80	19.10	18.99	18.67	14.66	18.38

Source: ITU Global Cybersecurity Index v4, 2020

Over the past decade, Serbia's digital policy has been focused on attracting foreign investment, deepening the digital transformation across the public and private sectors, and promoting economic growth in line with the EU targets. These objectives have been operationalised through a series of strategies, notably the Strategy for the Development of Information Security for the period 2017–2020 and 2021 bis 2026[184] as well as the Strategy for Combat against Cybercrime 2019–2023.[185]

The Regulatory Agency for Electronic Communications and Postal Services (RATEL[186]) has been designated as the National Centre for the Prevention of Security Risks in ICT Systems of the Republic of Serbia (SRB-CERT[187]).

Safer Internet Centre Slovenia[188] is a national project promoting and ensuring a better Internet for kids. The project is co-financed by the European Health and Digital Executive Agency (HaDEA). In Slovenia, financial support also comes from the Government Information Security Office. The project is run by a consortium of partners coordinated by the Faculty of Social Sciences at the University of Ljubljana, Academic and Research Network of Slovenia (ARNES), Slovenian Association of Friends of Youth (ZPMS) and Youth Information and Counselling Centre of Slovenia (MISSS).

184 http://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2021/86/1/reg

185 http://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/strategija/2018/71/1/reg

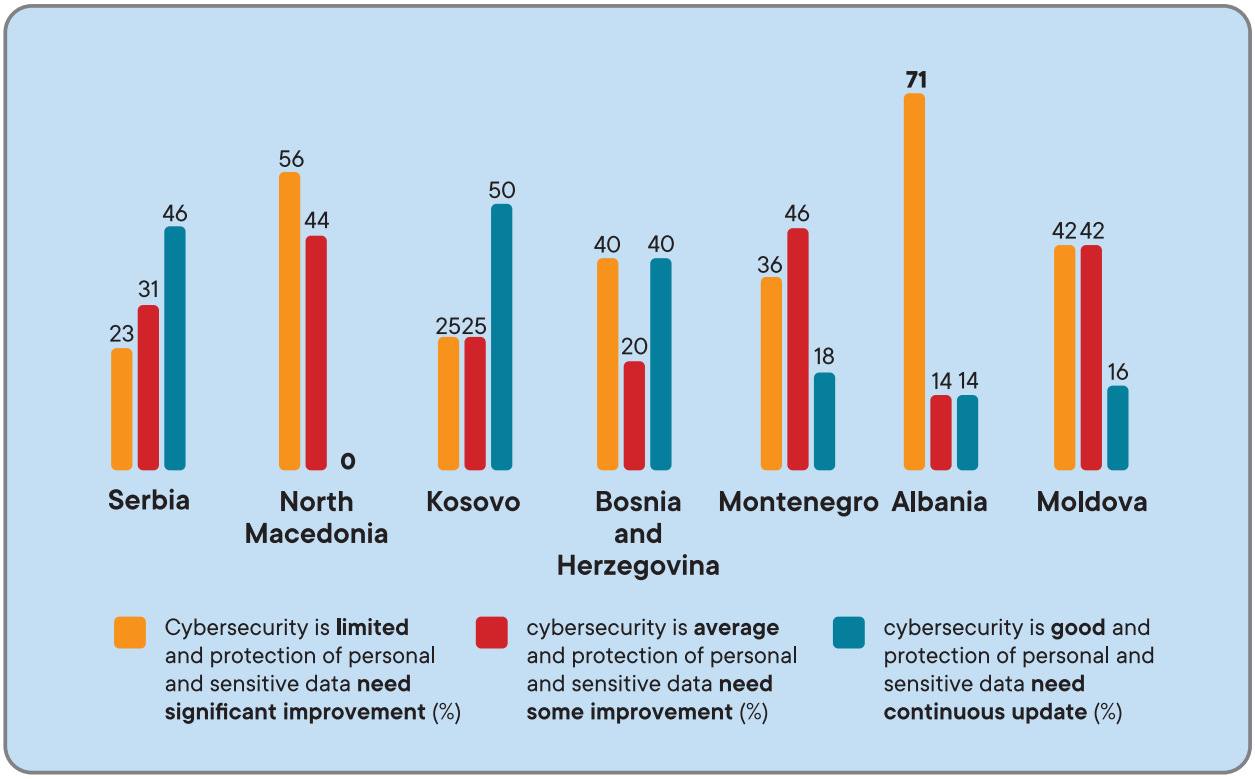
186 https://www.ratel.rs/en/

187 https://www.cert.rs/en

188 https://www.safe.si/

As revealed by NALAS Survey conducted at the local level, **protection of sensitive and personal data in City/ Municipality or Local Governments** in general shows different results:

Figure 52: NALAS survey on cyber security at Local government



The ITU Child Online Protection (COP) is a global challenge, and it requires a holistic approach and a global response, international cooperation, and national coordination to protect children from online risks and potential harm and empower them to fully benefit from online opportunities. The Council Working Group on COP has defined actions which include raising awareness of child online safety issues and assisting and supporting Member States in developing and implementing roadmaps for the COP initiative.[189]

According to the (ISC)² Cybersecurity Workforce Study,[190] women's participation currently makes up approximately 24% of cybersecurity workforce, with even fewer women holding managerial or senior positions. On top of that, the number of unfilled cybersecurity positions in 2021 was of 2.7 million. There is a need for enabling women to be trained and supported to take on opportunities in the cybersecurity sector across all stakeholder groups (government, private sector, technical community, civil society/ academia). The goal is to work towards closing the workforce gap and fostering more inclusivity in what has been primarily a male-dominated field. Ultimately, the objective is to ensure a more secure cyberspace for all.[191]

189 https://www.itu-cop-guidelines.com/implementation

190 https://www.isc2.org/research/women-in-cybersecurity

191 The Women in Cyber (WiC) Pilot Programme, launched in March 2021 by ITU, the Forum for Incident Response Teams (FIRST https://www.first.org/), with the support of EQUALS (https://www.equalsintech.org/), has matched expert women mentors from all over the world and 70 mentees from 18 different countries

In North Macedonia, Montenegro, and Albania, amid the cyber threats, a higher focus is shared towards the increase of capacities at national levels in order to provide prevention and support the cybersecurity level. Currently, an EU funded project is being implemented by the e-Governance Academy (e-GA) targeting the three countries: North Macedonia, Montenegro and Albania. The aim of the 1.8 million EURO project is to strengthen cybersecurity governance through the expert advice towards the economy's cybersecurity legislation, as well as raise the professional capacities of Computer Security Incident Response Teams to respond to cyber crises.

The EU funded Twinning Project "Strengthening Cybersecurity Capacities in Georgia" (1.3 million EURO) aims to strengthen Georgia's preparedness and resilience to cyber threats and attacks, by capacity building of Georgian stakeholders and creating enabling cybersecurity frameworks, implemented by Austria (Federal Ministry of Digital and Economic Affairs) in line with the EU's approach, standards, and relevant legal and policy frameworks, notably related but not limited to the NIS Directive.

IT security incidents in municipalities are on the rise. Therefore, in Germany, the association of cities in NRW[194] has decided to set up a municipal CERT[195] in North Rhine-Westphalia as a central point of contact for preventive and reactive measures in the event of IT security incidents in order to avert damage to cities.

192 https://www.staedtetag-nrw.de/positionen/beschluesse/2021/kommunale-cert-dienstleistungen

193 http://kommunal-cert.nrw/

7. Holistic and sustainable society – developing an innovative and transformative ecosystem

In order to create a holistic and sustainable society through the development of an innovative and transformative ecosystem at the local level, it is essential to take into account all sustainability aspects. This includes: understanding how different stakeholders can collaborate effectively; implementing cutting-edge technologies that are appropriate for the given situation; and promoting innovations that support long-term social and economic growth while also addressing environmental challenges. Only by creating and encouraging transformation and innovation and promoting partnership with the private sector, startups and academia, local and central governments can ensure that SEE region remains resilient even when faced with difficult circumstances and crises.

There is a live startup community in the Western Balkan 6 that is contributing to its growth. Main challenges are common in the whole region, such as lack of funding and brain drain, but the Western Balkan region is noticed by investors, experts and international organizations[194] as a startup destination with a lot of potential. There are also local ecosystem partners and organizations, such as the Western Balkan Startup Alliance,[195] that are working to strengthen the startup ecosystems in the Western Balkans.

Moldova, too, has a growing startup ecosystem that is supported by different organizations and events, such as Startup Moldova[196] and StartupEcosystem of Moldova.[197] Moldova has several fast-growing startups and is advancing on the visibility front with events that have attracted the attention of global investors.

Local level startup ecosystems are led by capital cities, but the Digitalization Working Group of NALAS with its activities of sharing best practices and success factors can encourage smaller Local Governments to also support startups through initiatives like coworking spaces, technology parks, events and creating partnerships in applying for funding.

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

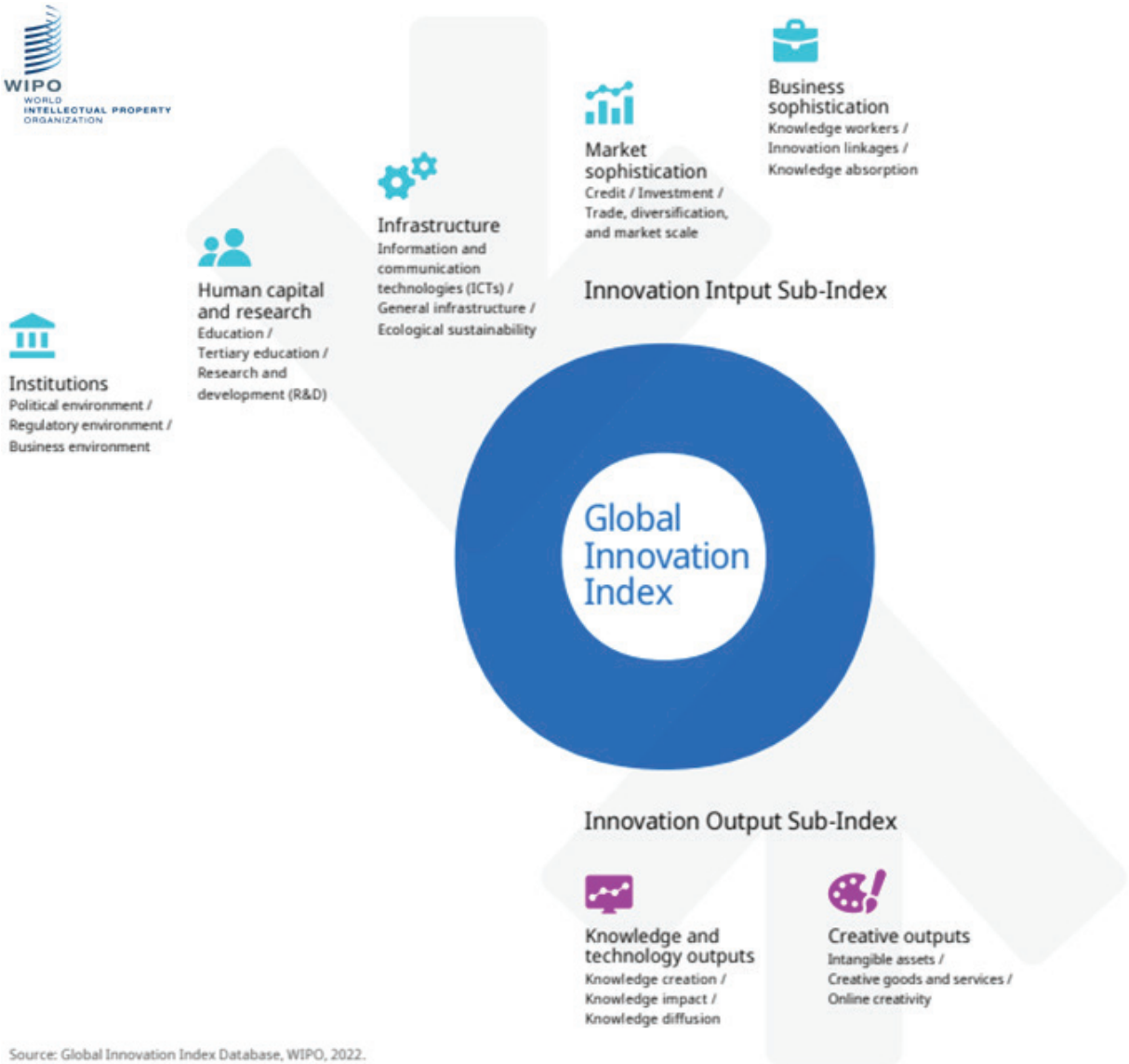
194 Strengthening the Startup Ecosystem Yields Returns for Western Balkans (worldbank.org) https://www.worldbank.org/en/news/infographic/2023/04/26/strengthening-the-startup-ecosystem-yields-returns-for-western-balkans

195 WB Startup Alliance https://wbstartupalliance.org/

196 Home - Startup Moldova https://startupmoldova.digital/en/

197 https://www.startupblink.com/startup-ecosystem/moldova

Figure 53: WIPO Global Innovation sub-indices (input and output)



Source: Global Innovation Index Database, WIPO, 2022.

Figure 54: WIPO Global Innovation Index from WB6 and Moldova[198]

2022		Innovation		sophistication		Infra-structure	knowledge and technology	creative	human capital and research	Institutions
	GII Rank	inputs	outputs	market	business	output				
ALB	84	80	89	91	56	57	96	82	89	84
Bosnia and Herzegovina	70	64	75	25	98	55	63	83	67	94
XKV										
MKD	66	60	77	34	59	49	57	93	75	88
MDA	56	78	46	58	79	84	49	43	62	98
MNE	60	51	72	53	58	44	72	71	61	59
SRB	55	55	58	83	65	38	48	76	52	53

Albania

Relative to GDP, Albania's performance is as expected for its level of development.

Albania produces less innovation outputs relative to its level of innovation investments.

Albania performs best in Business Sophistication and its weakest performance is in Knowledge and Technology Outputs.

The capital Tirana demonstrates positive examples by establishing in 2022 the platform https://digital.tirana.al/ekosistemi-startup/ to bring together the private and public sectors and support startups and ecosystem actors in providing new developments with their high potential in ICT.

Bosnia and Herzegovina

Relative to GDP, Bosnia and Herzegovina's performance is as expected for its level of development.

Bosnia and Herzegovina performs better in Innovation Inputs than Innovation Outputs in 2022.

Bosnia and Herzegovina performs best in Market Sophistication and its weakest performance is in Business Sophistication.

Kosovo

Kosovo ranks 40th out of 190 economies on ease of starting a business in 2018 (Doing Business Report 2018). With increased government support and no capital or fee required to register a business, Kosovo is developing into a potential location for those interested to start a business in technology. [199]

Innovation Centre Kosovo ickosovo.com is the main hub and innovation centre to support smart city projects of the capital **Priština**.

198 https://www.wipo.int/publications/en/details.jsp?id=4622&plang=EN

199 https://archive.doingbusiness.org/en/data/exploreeconomies/kosovo. Some of the examples include: Kosovo* Startup Europe Network https://startupeurope.network/ecosystems/xk.

Moldova

Relative to GDP, the Republic of Moldova's performance is above expectations for its level of development.

The Republic of Moldova produces more Innovation Outputs relative to its level of Innovation Investments.

The Republic of Moldova performs best in Creative Outputs and its weakest performance is in Institutions.

Montenegro

Relative to GDP, Montenegro's performance is as expected for its level of development.

Montenegro produces less Innovation Outputs relative to its level of Innovation Investments.

Montenegro performs best in Infrastructure and its weakest performance is in Knowledge and Technology Outputs.

North Macedonia

Relative to GDP, North Macedonia's performance is as expected for its level of development.

North Macedonia produces less Innovation Outputs relative to its level of Innovation Investments.

North Macedonia performs best in Market Sophistication and its weakest performance is in Creative Outputs.

Serbia

Relative to GDP, Serbia's performance is as expected for its level of development.

Serbia produces less Innovation Outputs relative to its level of Innovation Investments.

Serbia performs best in Infrastructure and its weakest performance is in Market Sophistication.

Science Technology Park Belgrade (STP Belgrade) supports startups and growing companies in their development and commercialization of innovative products and services. STP Belgrade's member companies are currently developing more than 130 innovative products and services, employing more than 1200 highly educated persons, and exporting to more than 40 countries worldwide. Since its formation in 2015, it has supported the accelerated development of more than 120 companies.

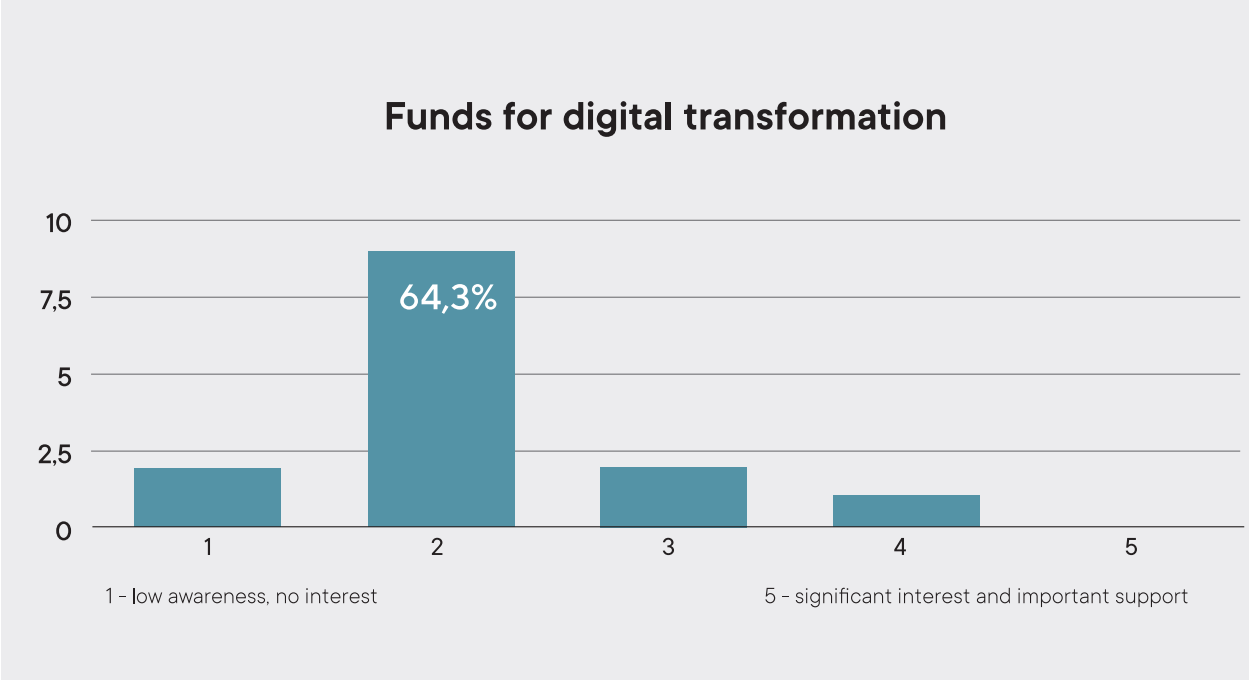
Established through a partnership between the Government of the Republic of Serbia (on behalf of the Government, the Ministry of Education, Science and Technological Development), the City of Belgrade and the University of Belgrade, with the support of the Swiss Government, drawing on best international practices, STP is a point where businesses, science and institutions converge and interact. With its activities, programs and services, STP Belgrade has a key impact in shaping the development of Serbia's innovation ecosystem.

STP is open to all those who wish to take part in the creation of a vibrant hi-tech community and thus generate added value to boost their business development and contribute to entrepreneurship development in Serbia.

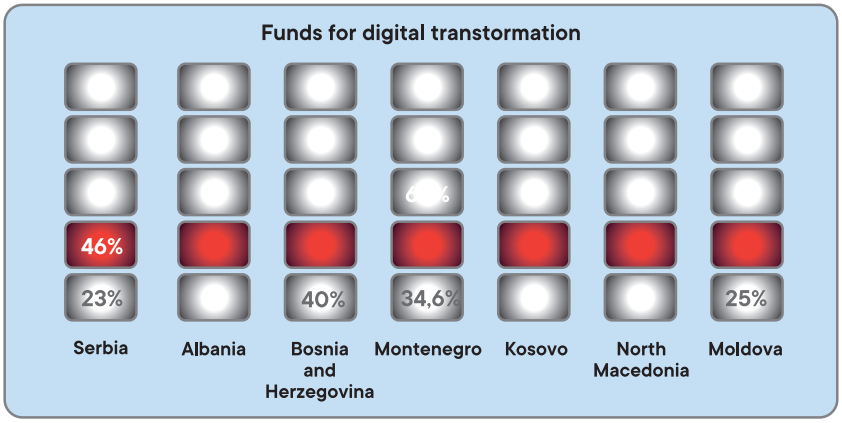
STP Belgrade premises currently host the Business Technology Incubator of Technical Faculties Belgrade (BITF) and the Innovation Fund of the Republic of Serbia.

8. Funds

Figure 55 Availability of funds (NALAS survey)



Based on NALAS Dedicated Survey conducted for Local Government Units (LGUs) in **Serbia**, every municipality responded that **funds** are an issue. It was found that 46% of respondents rated insufficient funds for digital transformation as level 2 on a scale of 1–5. A considerable 23% expressed concerns that funding is a critical issue. The Survey conducted at the local level in Serbia indicates a stable budget allocation for smart city initiatives, without any significant increase.



The Survey conducted in **Montenegro** highlighted the challenge of funding, as 36.4% of Local Government Units (LGUs) indicated that funds are critical. The average score in this regard is level 2. On the other hand, the results for **North Macedonia** indicate a score of less than level 2, further emphasizing the critical issue of limited funds for digital transformation. **Kosovo** indicated the same score, i.e., level 2, having no LGU to select poor funding (level 1) or excellent funding (level 5). LGUs in **Bosnia and Herzegovina** showed a score of level 2, but significant 40% have expressed critically poor funding (level 1). Similarly, **Albania** scored 2, but having diversity in the spectrum from level 1 to level 5. Diversity in the answers by LGUs in **Moldova** showed above 25% of critically poor funding (level 1). The majority selected level 2 (44%), but the overall score is again level 2.

Local Governments (LGs) often face budget constraints, and fiscal decentralization in the region still lags behind the EU standards, as evident from statistical data. To achieve a successful digital transition, funds are required without compromising essential citizen services. Thus, additional funding from central governments and specific EU Funds dedicated to municipal digitalization becomes crucial. NALAS plays a vital role in empowering LG Associations to advocate for fiscal decentralization and negotiate with central governments. NALAS and KDZ continuously support capacity development in approaching funding mechanisms, including the "EU Project Development Guide for Local Governments,"[200] which enhances LGs' EU project absorption capacities.

The Digital Europe Programme (DIGITAL)[201] is a new EU funding programme (with a planned overall budget of €7.5 billion in the 2021–2027 period) focused on: bringing digital technology to businesses, citizens and public administrations; supporting projects in five key capacity areas, such as: supercomputing, artificial intelligence, cybersecurity, advanced digital skills; and ensuring a wide use of digital technologies across the economy and society, including through Digital Innovation Hubs. By the association agreements signed in June 2023,[202] the Digital Europe Programme is also accessible for Montenegro, North Macedonia, Albania and Serbia, on the margins of the Regulatory Dialogue with the Western Balkans.[203]

Where to find EU Funds? Funding opportunities[204]

1. European Commission Funding and tender portal[205]
2. EuroAccess Macro Regions[206]
    - Search engine for EU Programmes and EU Calls
    - More filters and more programmes than Funding and Tender Portal
    - Personalised newsletter-option
    - Initiative of PA10, now supported by DSP
    - Relaunch in 2022 in German and English - Partners for further language options welcome
3. Connecting Europe Facility (CEF2digital[207]) 2021–2027 focus on:
    - Transport, Energy and Telecommunication
        - 5G and Gigabit networks
        - Resilience of digital backbone infrastructure
        - Digitalisation of transport and energy networks

Concepts and investments linked to Trans-European Networks

- Example Calls:
    - 5G for Smart Communities - Works
    - Interconnection of backbone networks for cloud federations - Studies
    - 5G coverage along transport corridors - Studies

4. EUROPEAN URBAN INITIATIVE innovate.share.inspire[208]
European Urban Initiatives - Innovative Actions better known as Urban Innovative Actions (UIA) research and development - but more "hands-on" than Horizon

- ERDF co-financed focus on cities >50.000 inhabitants - BUT - also regional applicants (group of municipalities and cities) possible focus on local improvements with local partnerships, exchange with other cities necessary3
- High funding rate (80% + FLC+ external expert) very solution-oriented Programme Management
- Co-funded by the European Union
- Example Calls: New European Bauhaus Example Project: BRISE Vienna - Digital Building Permission Procedure

200 http://nalas.eu/eu-projects-guide/

201 https://digital-strategy.ec.europa.eu/en/activities/digital-programme

202 https://neighbourhood-enlargement.ec.europa.eu/news/digital-europe-programme-opens-candidate-countries-montenegro-north-macedonia-albania-and-serbia-2023-06-30_en

203 https://digital-strategy.ec.europa.eu/en/news/second-regulatory-dialogue-between-eu-and-western-balkans

204 Presentation by Michael Gansch and Johannes Gabriel

205 https://commission.europa.eu/funding-tenders_en

206 https://www.euro-access.eu/en

207 https://digital-strategy.ec.europa.eu/en/activities/cef-digital

208 https://www.urban-initiative.eu/

5. Interreg[209]
    - Cross-Border Cooperation (CBC) or Transnational
    - Interreg Alpine Space
    - Interreg Central Europe Interreg ADRION
    - Interreg MED
    - Interreg Danube Region
    - Interreg Europe
    - URBACT
    - *Focus on Regional Development with defined Funding Priorities*
        - Smarter, greener, better connected, governance
        - climate resilient and green, carbon neutral and resource sensitive, innovation and digitalization,
        - cooperatively managed and developed
        - Smarter, greener- low carbon, more social, better cooperation governance
6. LEADER - Liaison entre actions de développement de l'économie rurale[210]
    - rural development programme bottom-up approach
    - municipalities/cities < 30.000 inhabitants
    - local development strategies with local objectives and development goals
    - for smaller projects (initiation, studies etc.) funding rates depend on the LEADER region
    - no consortium needed
    - local support - local LEADER office
    - If you are a rural community with less than 30.000 inhabitants-check whether you are part of a LEADER region and get in contact.

Other available EU financial instruments for SEE (Western Balkans) countries:

- Connecting Europe Facility (CEF)[211]
- Horizon Europe[212]
- Programme for environment and climate action (LIFE)[213]
- Pre-Accession Assistance – IPA III – 2021–2027[214]
- Western Balkans Investment Framework (WBIF)[215]
- URBACT IV[216] Eligible for WB countries for the first time –use their resources: partner search tools, news and opportunities –became a member of the big, happy URBACT family
- European territorial cooperation – INTERREG VI – 2021–2027[217]

LESSONS LEARNT:

LGAs and LSGs shall nominate an employee in charge of following EU financial funds and calls on https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/home

STRATEGIES FOR SUCCESS[218]:

- Liaison with relevant national authorities (policy makers and strategies developers)
- Cooperate with other LSGs (intermunicipal cooperation, common solutions, models replication, exchange of know-how, peer learning...)
- Build international and multi-stakeholder partnerships (sister cities, LSGs from other economies, targeted "good practices", academia, private companies, innovative companies, startups...)
- Use NALAS support potentials (funding screening, triangular partnerships, partner matching, project application development)

209 https://interreg.eu/

210 https://ec.europa.eu/enrd/index.html

211 https://digital-strategy.ec.europa.eu/en/activities/cef-digital#financial-instruments

212 https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/horizon-europe_en

213 https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/programme-environment-and-climate-action-life_en

214 https://neighbourhood-enlargement.ec.europa.eu/enlargement-policy/overview-instrument-pre-accession-assistance_en

215 https://wbif.eu/news-details/european-commission-launches-32-billion-investment-package-western-balkans

216 https://urbact.eu/get-involved

217 https://interreg.eu/

218 Presentation by Darko Mrvaljevic

9. Intergovernmental dialogue

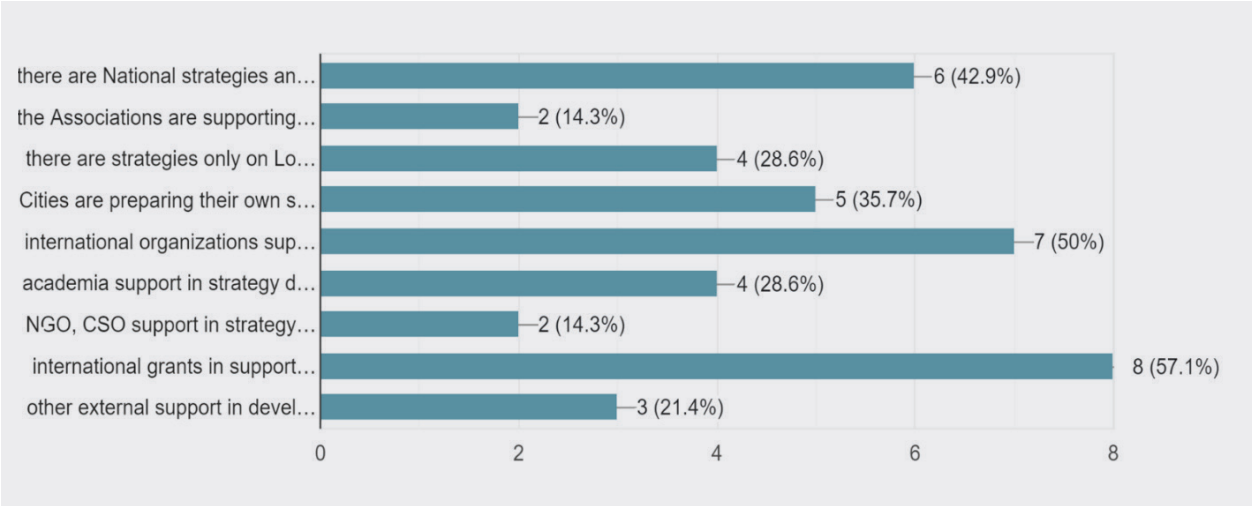
The role of intergovernmental dialogue in advancing digital transformation and smart city initiatives implies

- Importance of aligning local with national and EU-level strategies for digital transformation, e-services and smart city initiatives
- Dialogue with the EU (via NALAS Members in CEMR WG) and EU initiative for the cities and local government (Living in the EU, Living Labs, Digital Compass)
- Identifying opportunities for collaboration and knowledge sharing of successful intergovernmental/EU dialogue initiatives, examples of successful alignment of local, national and EU-level strategies and initiatives

Intergovernmental dialogue is crucial to advancing digital transformation and smart city initiatives. The alignment of local and national government strategies for digital transformation and e-services is necessary for a successful digital transformation. The cooperation of different levels of government is key to creating effective policies that address the needs of citizens and the challenges of the local environment. Intergovernmental dialogue enables the sharing of knowledge, resources and expertise between the different levels of government. This dialogue can foster innovation and lead to the creation of new solutions that address the complex challenges that cities face. The establishment of a strong intergovernmental dialogue is essential for the creation of sustainable and inclusive smart cities that can provide efficient and high-quality services to their citizens.

Dialogue with the EU is also important for the advancement of digital transformation and smart city initiatives. Through NALAS Members in CEMR WG, Local Governments can participate in EU initiatives such as Living in the EU, Living Labs, and Digital Compass. These initiatives provide opportunities for collaboration and knowledge sharing on successful intergovernmental/EU dialogue initiatives. The alignment of local, national and EU-level strategies and initiatives is necessary for the development of effective policies that can address the challenges of the local environment and improve the quality of life of citizens. Local Governments can benefit from the EU's knowledge, expertise and resources to improve their services and infrastructure. Therefore, the dialogue with the EU is an important means for Local Governments to learn from the best practices and experiences of other cities and to apply them in their own context.

Figure 56: Multilevel government collaboration for digital transformation (NALAS Survey)



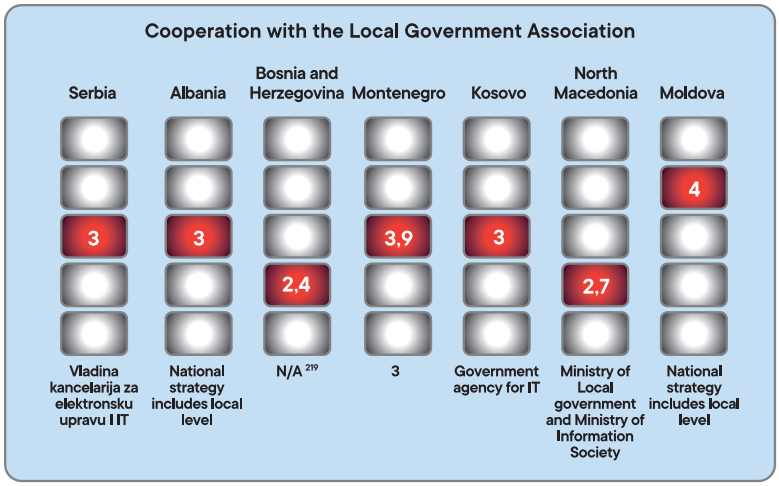
Who is facilitating digital transformation at the local level?

According to the Survey results, 60% of respondents gave a positive response to the question of whether they consider the existence of strategies and methodology guidance to be helpful in facilitating digital transformation at the local government level. This indicates that there is a recognition of the importance of having clear and well-defined strategies and methodologies in place to guide digital transformation initiatives. Such strategies can provide a roadmap for Local Governments to follow, ensuring that they are making informed decisions and taking a structured approach to their digital transformation efforts. Additionally, having such guidance can help to ensure that resources are allocated in a more effective and efficient manner, avoiding duplication of efforts and ensuring that the most pressing needs are addressed. Overall, the positive responses to this question suggest that there is a desire for clear guidance and support in this area, and that the existence of such strategies and methodologies could play a key role in facilitating successful digital transformation at the local government level.

According to the Survey results, 75% of the Local Government Associations in the region are involved in the development of National Plans for Digital Strategy. This indicates that Local Governments are aware of the importance of aligning their strategies with the national-level initiatives for digital transformation. The involvement of the majority of Local Government Associations in the National Plans also suggests that they have an active role in shaping the digital agenda of the country. This can be beneficial for Local Governments, as they can participate in the decision-making process and ensure that their needs and priorities are adequately addressed in the development of the national strategy.

The participation of six out of eight Local Government Associations in the National Plans for Digital Strategy development is a positive sign for the region's digital transformation. It shows that Local Governments are taking an active role in the development of the digital agenda on central/national levels and are working towards aligning their strategies with the national-level initiatives. The involvement of Local Government Associations can also facilitate the exchange of knowledge and best practices among the different Local Governments in the region. This can ultimately lead to the development of more effective and efficient digital strategies and initiatives at the local level.

According to the local level assessment in the Western Balkan 6 and Moldova, the question regarding the level of cooperation with the Local Government Association on strategic planning for smart digital transformation at the local level, revealed the following findings:



NALAS and KDZ continuously empower LG Associations for intergovernmental dialogue by providing evidence and comparative data, reports and studies to rely on and build a strong and informed position. The Digitalization Working Group provides empowering activities to enhance capacities for influencing policies and regulations that foster successful digital transformation at the local level across the SEE region. By leveraging credible information, this Report also ensures that arguments will be well-supported and based on insights and relevant data, thus increasing the effectiveness of negotiations in the intergovernmental dialogue.

219 Complex administrative setup, one specific link cannot be singled out. There are examples of effective mechanisms established for collaboration, i.e., coordination mechanisms for PAR, following the current PAR SF and AP 2018-2023. Most activities are led by PARCO Office. Also, for the FBiH entity, there are PAR Coordinators for the cantonal level (https://parco.gov.ba/hr/2019/06/07/sastanak-koordinatora-za-rju-federacije-bih/)

V. Conclusions and Recommendations

This Report showed the strengths of the SEE and WB6 in certain aspects of digitalization, as well as the areas for improvement. There are several key areas that need to be addressed adequately by political leaders on a national and local level. Some of the recommendations are more relevant to some economies than others. Nevertheless, all of them are important for a digital and more citizen-centric future in Local Governments.

Digital Skills. Local government digital skills are of paramount importance, as citizens often possess more digital proficiency than the administration tasked with delivering digital services.

NALAS' Role. As the sole organization that has assessed local level digital transformation across the entire Western Balkan and Moldova region, NALAS is uniquely positioned to offer tailor-made trainings for LGAs and LGs in order to enhance their skills and capabilities. The existing NALAS eAcademy platform will be upgraded, and a resource centre in the form of a digital library containing practices, examples, solutions, and expert resources can also be established. Gradual training programmes, starting from foundational levels, will address the lack of initial knowledge, while advanced trainings can be facilitated in partnership with universities that already provide Digitalization for government curricula. The active involvement of the Digitalization Working Group will be crucial in developing the Resource Centre.

Digital Competences have to be built up in municipalities within a short time; virtual cooperation and new ways of working such as mobile working have to be tried out. This is where NALAS can provide support in sharing experiences and coordination of trainings. The pandemic in particular has shown how important digitalization and the use of digital communication tools are in order to maintain the administrations' ability to work and act. The use and further development of communication tools for work purposes also support the design of a sustainable workplace in administrations.

Administrations are increasingly becoming targets of cyber-attacks and must be adequately prepared and able to react thereto. The topic of **cybersecurity** is thus getting a greater focus, especially in small and medium-sized municipalities. Risks lie, for example, in digital attacks on important infrastructure areas. Establishing and expanding municipal cybersecurity can make a significant contribution to fighting crime. National CERTs/CIRTs in the Western Balkan 6 must offer cybersecurity guidance for municipalities **(NALAS can support the distribution and offer special trainings).**

Multilevel Strategic Approach. Strategic thinking and coordination across all NALAS Members are crucial to support the local level digitalization with the required funding opportunities, legislative measures, and policy tools. It is vital to involve LG Associations and strengthen their role in the process of digital transition to safeguard the interests and capabilities of Local Governments. Initiatives supported by central governments of the Western Balkans and Moldova should never burden Local Governments economically or administratively. Support for LGs by European initiatives and programmes needs to be promoted with greater involvement of stronger LGAs, considered as recognized partners in regulations and funding negotiations. NALAS' primary role needs to be focused on coordinating and connecting its Members or SEE LGAs, and on strengthening their capacities to support local level digital transformation.

Digital Infrastructures are the backbone of every municipality. With increasingly rising demands for digitalization, the municipal need for data centres, broadband access and 5G networks is also increasing. In combination with intelligent and sustainable smart city concepts, synergies can be created to achieve sustainability goals. NALAS has its specific role in implementing inclusive digital Local Governments and bridging digital divide, while promoting democratization and non-discrimination. NALAS should strengthen LGAs to ensure adequate digital infrastructure financing; push and promote the need for nationwide expansion of fibre-optic and mobile networks, but also monitor progress and report to national authorities for their further negotiations with operators.

In the dynamic world of digitalization, municipalities have to adapt ever faster. Used sensibly, digitalization can opti-

mize and simplify processes in municipal administrations. Artificial Intelligence (AI) and chatbots can be invaluable in cases where there is a shortage of workforce in local level administration. They can effectively handle tasks such as answering repeated questions from citizens, providing support in repetitive processes, and even assisting with more complex analytics and decision-making processes. In the area of sustainability, municipalities can also use digitalization to achieve their sustainability goals more effectively.

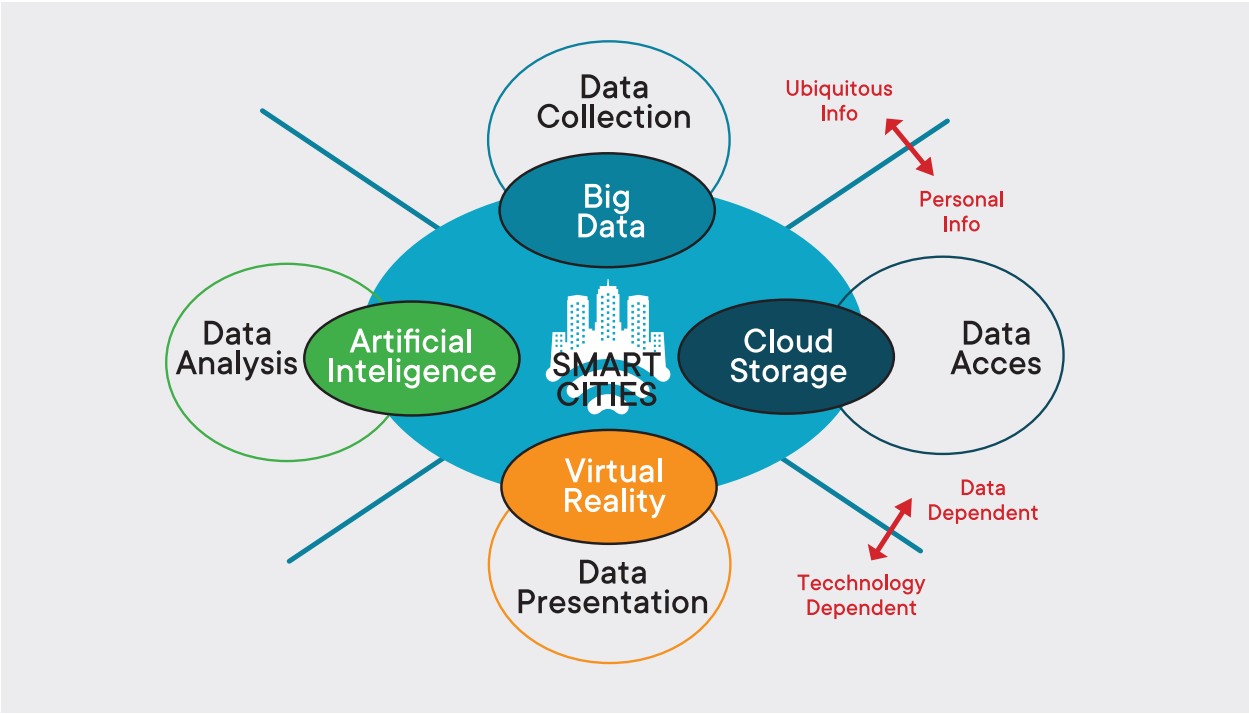
However, identifying and classifying new technology trends and their potential is not an easy task, nor is assessing the concrete added value for one's own municipality. Nevertheless, it is undisputed that digitalization offers numerous opportunities that municipalities should also seize. It is important to note that digitization is not an end in itself. Rather, it is important to use it in the sense of local-specific needs in such a way that it creates added value for the quality of life, work and location.

Municipalities drive digitization individually depending on local conditions and priorities, and different technologies come to the forefront to achieve their goals. Important is the understanding that growth in digital technology is no longer about traditional software and hardware technologies. Increasingly digital innovation is being driven by the power of data, data analytics and artificial intelligence.

DATA

A strong focus is needed on identifying the importance of ethically and socially responsible data usage, co-creation with and engagement of citizens, and open and interoperable standards. NALAS has a strong role in promoting, emphasizing and recognizing the significance of data for Local Governments. Trainings on implementing interoperable local data platforms that enable digital technologies to integrate data flows via open standards within and across local systems are exceptionally important. The key to achieving significant improvements in digital transition lies in realizing that Data Platforms serve as the beating hearts of local digital transformation. Connecting, relating, combining and analysing, and visualizing various data created within the local framework, play a crucial role in driving progress and advancement for LGs. NALAS has its role in promoting interoperability and data sharing that not only benefits Local Governments, but also fuels growth in

Figure 57 -GDRC Smart City Framework, SmartCityResearchInitiative (SIRI) gdrc.org



the private sector and encourages innovations that can leverage data to deliver smart and efficient services, but also strengthen local economic development.

Experts see the highest potential in cloud computing, AI and open source. The topics of digital twins and blockchain are the focus of many current funding programmes.

Cloud Computing. Device-independent central storage of data offers municipalities an opportunity to cost-effectively optimize human and financial resources and processes by digitalization, and offer more scalable, secure and reliable e-services to citizens. By providing IT infrastructures and platforms from the cloud, municipalities eliminate the need for extensive on-premises infrastructure and maintenance expenses, ensure data protection and invest directly in improved energy efficiency. At the same time, they sustainably cut CO2 emissions because they need fewer energy-intensive data centres of their own. In addition, cloud computing opens up the possibility of greater scalability and reusability of digital services, which could accelerate administrative digitization. So far, public administration has been rather hesitant regarding cloud use. The claim to digital sovereignty, special requirements of the administration regarding data protection, IT security and confidentiality, as well as the lack of knowledge, are justified obstacles. As a first step, an overview of suitable data centres and providers in WB and Moldova could help policy makers to focus on the offer of local cloud providers and thus accelerate the development of a suitable service portfolio.

Open data has the advantage of being cost-free with unlimited usage rights, removing two major barriers to progress. It can lead to new innovations driven by data analytics, providing: greater transparency and integrity of the public sector, and the possibility to track public money flows. Also, the advantage of **open-source** applications is that they can be used and further developed for other users and use cases, as the code is made publicly available. Through further development of the existing code, it is improved and can in turn be offered as open source. Since the application fields of municipalities usually overlap to a certain extent and existing applications can thus be replicated from municipality to municipality, open-source applications and open data represent a high potential. Many open source and open data platforms for Local Governments exist, but the level of participation of LGs is limited. NALAS will initiate trainings in Open Data and Open-Source potentials for LGs, and in particular cases, work and strengthen the LG Associations in their efforts to promote, advocate and propose integrated platforms, solutions and trainings thereon. NALAS can also monitor progress and evaluate their involvement, and produce regular reports on development trends.

The implementation of digitalization and the use of digital technologies has resulted in a steadily growing volume of **big data**. Big data is characterized by the variety of data in different forms and formats, e.g., data based on sensors, cameras, various counters and media such as images, audio or video. Municipalities can also benefit from the findings if they process, analyse and classify datasets in a structured manner. If the right benefits are derived from big data, administrations can establish better decision-making processes and at the same time even reduce the number of applications used in the administration and work more efficiently. One possibility is the creation of **data-driven ecosystems**, in which various databases of a municipality's administration are consolidated and a fully comprehensive database is created. Central and interoperable data management is, for example, also the basis for the use of an Earth observation systems and **digital twins**. Twins are virtually representing the reality and enable simulations and modelling for informed and data-driven decision-making regarding urban planning, infrastructure development, disaster management and resource allocation. By using real-time data, a digital twin can thus also be used as a control instrument – for example in the context of better urban development, environmental factors and energy. Through the intelligent use of different data points, interrelationships of different dimensions of a sustainable municipality can also be developed and used by decision-makers. The potential of this technology is recognized only by a few large cities. **NALAS will support Connected Urban Twins through open data guides and a sample data catalogue or lighthouse projects, and develop what-if scenarios.**

A lot of optimization potential in existing processes in administrations can also be raised through the use of **artificial intelligence**. It can be used to intelligently automate administrative processes, to accelerate and simplify interaction between citizens and administrative staff and as a data-based decision-making aid. The foundation for

this, however, is data. Without it, the potential of AI cannot unfold. Until now, municipalities have lacked precisely this data infrastructure, which must first be built or made accessible. **NALAS will provide support with a database of AI tools, best practices and training.**

Blockchain technology offers the possibility of exchanging data in a forgery-proof and decentralized manner without the use of a singular database. For this purpose, the data is stored in a chain of blocks at all users in a network. Blockchain also offers numerous potentials for administrations, be it in the more efficient and secure administration of documents or the diverse use in identity management. **NALAS will promote the exchange of successful examples of blockchain.**

Municipalities not only take on self-administrative tasks from their own sphere of action, but to a large extent also carry out tasks transferred from the central and regional levels. They thus play a key role in our society. This requires not only appropriate administrative staff but also adequate financial resources. A transparent and manageable **funding system** can be a decisive factor for the successful implementation of transformation projects. For the municipal level, the funding system is an important guide for the implementation of digitization and sustainability efforts. **NALAS will provide a transparent overview of funding sources, and support creating partnerships for project applications.**

Small cities and municipalities have a lot of catching up to do when it comes to professionalizing digitization issues. They do not have a dedicated **digitalization manager** (CDO/CIO) or external state digital agencies, but often only an IT Department, if any. The establishment of roles and functions with a clear scope of responsibility is essential for the professionalization of both large and small municipalities in order to implement digitization projects in a targeted manner. Too often, this responsibility is simply added "on top" of existing structures. **NALAS can support this in cooperation with universities in their training (for International Master of eGovernment, Master of Artificial Intelligence for Public Administration, Master for Digitalisation).**

Further recommendations:

- Municipalities must be enabled to approach digitization and sustainability according to their individual starting position. This also includes identifying trends and potentials at an early stage and effectively integrating them into the strategies and implementation of measures.
- Sustainability and digitalization must be consistently thought of and implemented together. Digitalization can support the fulfilment of the requirements for municipal sustainability and thus contribute to future-oriented services of general interest.
- The main topics of administrative digitalization and smart city must be considered in an integrated manner. For this, municipalities need a holistic perspective in order to recognize design potentials beyond administrative digitization.
- Sustainability and digitization strategies must be developed systematically and participatively in order to be aligned with the requirements and needs of the respective municipalities.
- The involvement and networking of knowledge and idea contributors must be multidisciplinary and structured, both within the local community and beyond. Administrations should establish "community engagement" and involve civil society as an active co-creator for the topics of sustainability and digitalization.
- To ensure long-term success, municipalities must integrate sustainability and digitalization into their own organization through clear responsibilities. Close professional interlocking through interdisciplinary teams is required for holistic perspectives and approaches to solutions.
- Information deficits about overarching strategies, funding programmes and initiatives must be eliminated through better target group-specific communication. The NALAS Digitalization Working Group is a good starting point.

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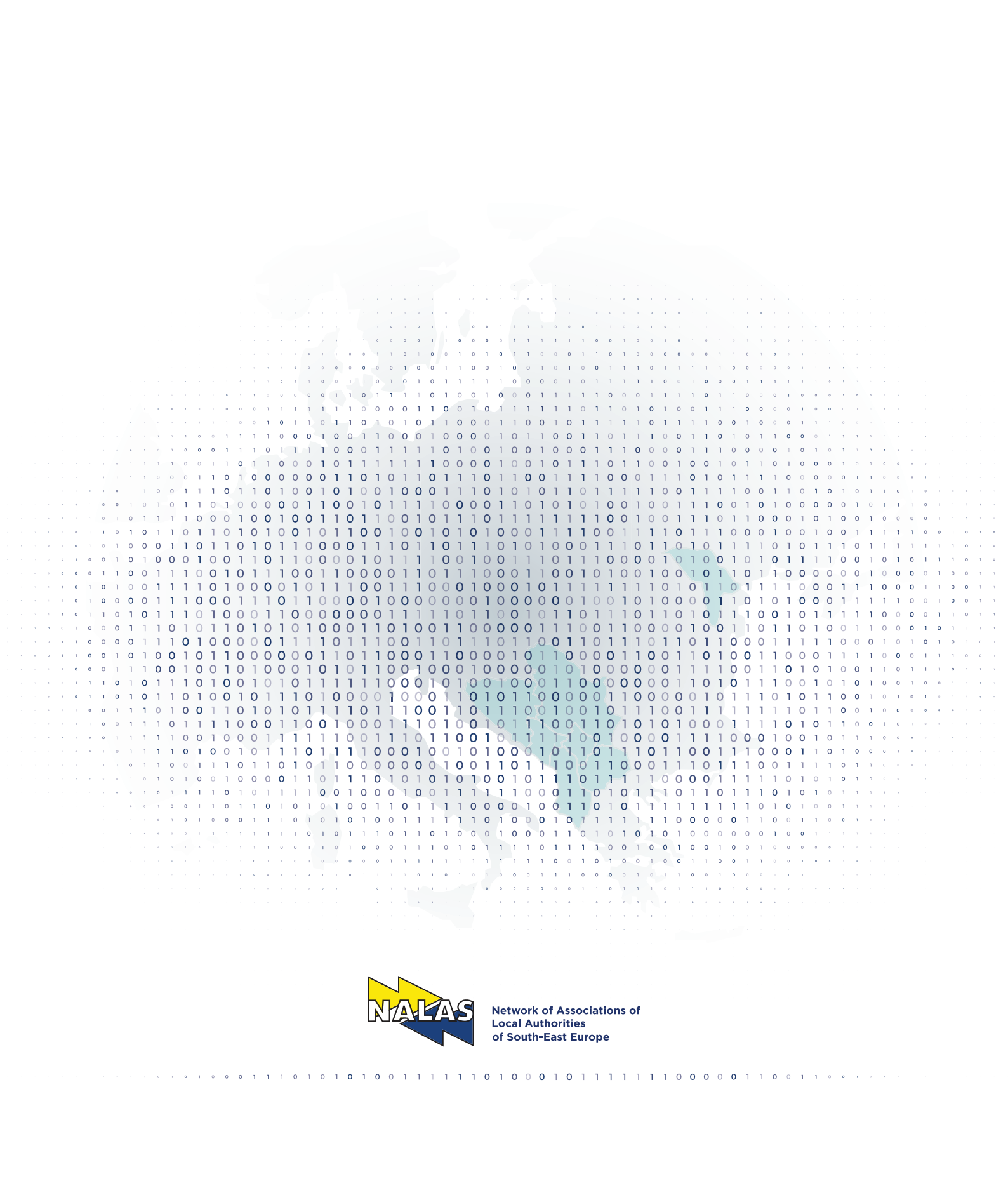

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