



# Digital Innovation Profile **Bosnia and Herzegovina**

ICT centric innovation ecosystem *snapshot*  
**NATIONAL EXPERT ASSESSMENT**



“

ICT centric innovation ecosystems are key to achieve the 2030 Agenda for Sustainable Development. I am delighted to introduce the Digital Innovation Profile of Bosnia and Herzegovina. This brochure provides a snapshot of the country's ICT centric innovation ecosystem and sets out its great potential for sustainable growth and new opportunities both for the country and its citizens.

I look forward to collaborating further on specific projects which will accelerate digital transformation in Bosnia and Herzegovina.

”



Brahima Sanou

*Director, Telecommunication Development Bureau, ITU*

“

Like any other developing country, Bosnia and Herzegovina face constraints which make the digital innovation system evolve at a slower pace. However, fully recognizing that information technology is the driving forces behind every global business operation, its government is committed to implementing the policies and projects which foster an enabling environment for the ICT centric innovation ecosystem in line with ITU's Digital Innovation Framework. This way, Bosnia, and Herzegovina will accelerate the digital transformation and unleash its full potential to bridge the innovation divide.

”



H.E. Ismir Jusko

*Minister, Ministry of Traffic and Communications, Bosnia and Herzegovina*

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FOR THE GOALS

SUSTAINABLE  
DEVELOPMENT  
GOALS



#ICT4SDG

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Digital Innovation Profiles are an important element in the ITU series of snapshots of countries' ICT centric innovation ecosystems. Each Profile assesses and summarizes the opportunities and challenges facing the country's ICT ecosystem. The at-a-glance format enables international comparisons and meaningful measurement of a country's capacity to accelerate digital transformation and of its innovative ICT capability.

Digital Innovation Profiles offer a rapid and straightforward means of analysing and optimizing your ICT ecosystem. This analysis then helps navigate through a country's fast-moving ICT/ telecommunication landscape with a view to building a competitive, sustainable, ICT-enabled economy. Further collaboration with ITU can go on to target specific engagements, including the implementation of co-developed bankable projects which are appropriate to and of high value in the national context.

All Digital Innovation Profiles are developed by experts specially trained in ITU's Digital Innovation Framework process. This features highly structured workshops and facilitated assessments, designed to build national capacity, enhance on-the-ground skills and powerfully accelerate digital transformation. The Framework process equips ITU Members with the tools for ongoing assessment and monitoring of their own ICT innovation ecosystems.

The analysis and the positions expressed in this initial high-level assessment, reflect opinions and research of the national expert, working within ITU's Digital Innovation Framework process and with guidance from ITU Innovation.

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# Background & Context



## KEY INDICATORS

Population: 3,82 million  
Population density: 14.42  
GNI per capita: 4,680  
Region: Europe, Developed

ITU Global ICT Dev. Index 2017: rank 83 /176, score 5.39 /10  
Global Innovation Index 2017: rank 86 /127  
Innovation Efficiency Ratio: ratio 0.5, rank 112 /127  
Global Competitiveness Index 2017: rank 107 /138  
Business Sophistication & Innovation: rank 125 /138

- ▶ Bosnia and Herzegovina is an upper-middle income country with an average GDP growth rate of 0.46 per cent for the period 2009-2017, experiencing a peak of 2.3 per cent in the fourth quarter of 2014. In 2015, the service sector contributed 22 per cent to the GDP, while manufacturing, mining and agriculture contributed 20 per cent, 18 per cent and 10 per cent respectively. Since 2015, the manufacturing sector has grown and employment in this sector has increased.
- ▶ In terms of access and absorption, Bosnia and Herzegovina has in recent years seen a constant increase in the number of internet users, reaching 106 per cent of a total population in 2015. Broadband access is available in urban and rural areas, while in 2015, the share of xDSL technologies was at 58.7 per cent, and declining.
- ▶ However, deployment of optical fiber technologies (FTT) is still very slow. On the ICT development index of ITU, Bosnia and Herzegovina scores 5.25 out of 10, ranking at 80th out of 175, and at 49th out of 50 in the European region. In terms of innovation, the country has room for improvement, with only slight positive changes over the last four years. The OECD ranked Bosnia and Herzegovina as second-to-last in the Western Balkan region in 2017. Among negative factors for doing business in the country, according to the Global Competitiveness Report 2016-2017, are inefficient government bureaucracy, corruption, government policy and government instability.
- ▶ The country's executive structure is complex, with authority distributed

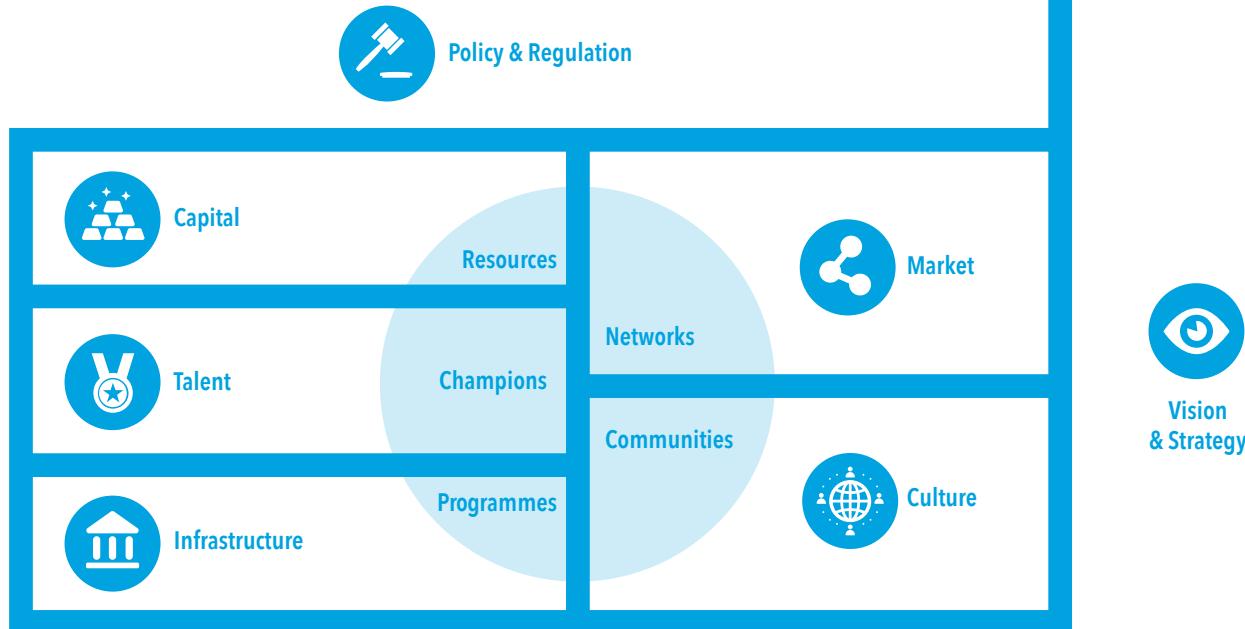
across multiple levels – at state, entity, canton and at more local levels. The consequent lack of coherence and coordination negatively impacts the development and delivery of public services, as well as the implementation of strategic policies decided at national level.

- ▶ As a logical follow-on, strategy and policy in Bosnia and Herzegovina are segmented at different authority levels. ICT-centric innovation and development strategy is developed at state, entity and cantonal levels – all of which recognize the role of research and development and innovation in transitioning from an efficiency-driven economy to one driven by innovation. Some of these policies have elapsed however and no strategic and comprehensive vision has emerged. While research funding is predominantly allocated to state universities, technology transfer is lacking – something reflected in a weak innovation efficiency ratio of 0.5. At this point, entrepreneurship is not targeted towards high-tech industries or innovation but focuses rather on conventional solutions and meeting the basic needs of the population.
- ▶ In May 2017, the Council of Ministers of Bosnia and Herzegovina formally adopted the Policy of Electronic Communications of Bosnia and Herzegovina 2017-2021, which is aligned with the Digital Agenda of Europe. This policy is a milestone in defining a coherent vision for the country's ICT ecosystem: it clearly identifies support for the ICT sector and innovation as a central element in driving the country's economy forward on a range of fronts – enhancing competitiveness within Europe, increasing productivity and efficiency in business, and improving public and e-government services.



## INFO BOX

# Ecosystem Assessment Canvas



*The Ecosystem Assessment Canvas offers at-a-glance an overview of the components that make up the ICT centric innovation ecosystem. It helps assess both the challenges and opportunities for those components essential to building a digital ecosystem that is vibrant and innovative.*

# Current Landscape

## ICT CENTRIC INNOVATION ECOSYSTEM

### VISION AND STRATEGY:

In Bosnia and Herzegovina, development strategy is created at state, entity and cantonal levels. No nationwide strategy exists both for the development of SMEs and for an institutional innovation framework. The central strategy document is the 'Policy of Electronic Communications of Bosnia and Herzegovina 2017-2021' which articulates a vision for a digital society based on knowledge, and defines seven pillars of the ecosystem. This document identifies ecosystem players, describes their roles and how they are related, lists missing regulations, makes recommendations and proposes actionable measures to improve on the current situation. The document also identifies major threats to the ecosystem including the following: the authorities' indifference and unresponsiveness towards the ICT centric innovation ecosystem; a lack of financial support from government for ecosystem development; inadequate skills to qualify for and win EU funding. While the governments of the two entities that make up the country – the Federation of Bosnia and Herzegovina and Republic of Srpska – co-created development strategy documents which have common goals for developing the innovation ecosystem, there remains a serious lack of coordination in achieving set goals.

### CAPITAL AND RESOURCES:

No institutional framework at state level exists to support the development of SMEs and there is a consequent shortage of financial instruments to promote innovation within SMEs. The government of the Federation of Bosnia and Herzegovina provides some financial support, but these measures are inefficient – they do not meet the actual needs of SMEs and are not aligned with stated development strategy. While both the Development Bank of the Federation of Bosnia and Herzego-

vina and the Investment and Development Bank of the Republic of Srpska offer favourable credit terms for SME development, the availability and distribution of these resources in many cases is decided along political lines. Financial resources are segmented at micro level and coordinated mechanisms are missing. Commercial credits are available, but risk capital, so important for early-stage development, does not exist in the ecosystem. Private investments, of limited nature in general, are even more limited when it comes to ecosystem research. While governmental funding for research is divided between entity and cantonal levels, harmonization and monitoring across both sources of funding are lacking. Company spending on research and development in general is very low. Available resources offered through EU funds are underutilized, due to low critical mass of skilled individuals and research staff. Various agencies at the entity level target foreign investments however, while the Council of Ministers has stated in its vision document, that new risk capital funds are needed to target innovation-based start-ups.

### TALENT AND CHAMPIONS:

While talents with technical skills are present in the ecosystem, the availability and level of soft skills needs to be strengthened. Business innovation incubators provide workshops designed to develop soft skills for engineering students. At university level, there are too few laboratories, and practical skills are mainly transmitted through industry internships and hands-on experience in companies. Opportunities arising from student mobility are underutilized. Collaboration exists to some extent across private sector, academia and professional networks leading to jointly organized workshops and regional competitions targeting students – such as 'hackathons'. Good practice, embodied in the like of BIT Center Tuzla and BIT Alijansa Sarajevo, helps provide training to widen the country's talent pool and helps create an enabling environment for the ecosystem. Nevertheless, the country's capacity to retain skilled talent remains weak.

### NETWORKS AND MARKET:

The general picture in relation to accessing domestic, regional and international markets is one of opportunity not taken. Domestic market is

small-scale, often distorted by internal policy mechanisms, ill adapted to embracing new, innovative products. Through the Stabilisation and Association Agreement with the European Union however, Bosnia and Herzegovina have access to EU public procurement markets. The domestic public procurement process is highly complex, with financial requirements making qualification beyond the reach of start-ups. In spite of this, according to OECD reports, Bosnia and Herzegovina public procurement has improved significantly since 2012. Start-ups and SMEs engage mainly in B2B international markets. Clusters do exist in the ecosystem but are not efficient, and the number of clusters becoming inactive reflects a trend of decrease rather than increase. While networks for building innovation capacity and formal professional associations exist, they do not fully exploit opportunities there for the taking.

### **INFRASTRUCTURE AND PROGRAMMES:**

Hard infrastructure in Bosnia and Herzegovina is well developed – there is fixed and mobile broadband connectivity in rural areas as well as in towns and cities. A lack of public and private investment however reduces availability of research infrastructure. In terms of soft skills, there are training resources for employees in governmental institutions. Several ICT business incubators and tech hubs exist in the ecosystem, which provide advisory support regarding entrepreneurship and offer basic hard and soft infrastructure for start-ups. Some collaboration between business incubators and universities takes place but could be improved. University-industry collaboration in research and development is weak. The Ministry of Civil Affairs has been supporting innovators since 2007 through the Support for Innovation and Technical Culture programme. Most other projects targeted at supporting innovation and entrepreneurship are implemented as part of EU and bilateral projects, such as the WIDER project focusing on SMEs in the energy sector.

### **CULTURE AND COMMUNITIES:**

Entrepreneurship in the ecosystem is triggered mostly by a lack of opportunity and the need for job creation rather than by innovation. Young entrepreneurs too often give up their start-up venture and re-enter the

regular work force in large companies, instead of utilizing their initial failure as a learning and personal development platform. New entrepreneurs often emerge from ICT companies. Culture and background often influence young people to stay within their comfort zones, seeking regular employment or public sector jobs. Risk aversion is high, with only a slow trend towards positive change. The ecosystem helps cultivate entrepreneurial mind-sets through workshops and other initiatives in both public and private sectors. Efforts are made to promote entrepreneurial skills and culture through a nationwide entrepreneurial learning strategy. However, a holistic and strategic approach to the promotion of innovation and entrepreneurship culture – including the development of financial instruments (e.g. in higher engineering education) – is still missing.

### **POLICY AND REGULATION:**

The policy and regulation environment is segmented structurally across state, entity, cantonal and local levels, with no effective coordination across different authorities. The public sector recognizes it has a role in the ecosystem, but law adoption and the implementation of recommendations are both slowed at the state level. Similarly, the public sector is aware of the necessity for collaboration within the ecosystem and for the creation of networks. The entity and cantonal governments provide more specific mechanisms and legislation that support innovation and entrepreneurship. According to the SME Policy Index, the country performs poorly in developing innovation-centred policy. There is also a discrepancy between the number of policy frameworks adopted and the implementation of reforms and activities. Policy makers appear not to distinguish sufficiently clearly between the steps of policy development and the separate process of implementing policy. There are strong variances across the country in business environment and infrastructure. These are due to the complexity of administrative structures and different legislations across entities and cantons. The Council of Ministers states the need to establish risk capital funds for innovation-based start-ups. Intellectual property (IP) law and regulation have been adopted at state level. Existing IP legislation is expected to foster collaboration between academia and the private sector, particularly in the domain of public funded research.

# Understanding Digital Transformation Capabilities

INFO BOX

| PILLARS | Vision & Strategy    | Capital                           | Market                          | Infrastructure   | Talent                              | Culture   | Policy  |
|---------|----------------------|-----------------------------------|---------------------------------|--|-------------------------------------|---|---|
| ISSUES  | Scope and objectives | Appropriate Demand side resources | Integration of economic sectors | Inclusive digital infrastructure<br>Resilient & secure broadband Infrastructure<br>Soft infrastructure | Talent appropriateness<br>Champions | Sustainable culture of entrepreneurship and innovation<br>Communities | Comprehensive and grassroots innovation policies & programs<br>Legal frameworks |

The image above sets out the major elements which are key to understanding the country's digital transformation capability.

Digital transformation is what happens when innovation is applied to solve problems through the use of ICT/Telecommunication. The benefits to a country and its people are immense – significantly increased productivity, economic growth and increased employment opportunity. The degree to which these benefits are within reach depends on the vibrancy of the ICT-centric innovation ecosystem and a corresponding, long-term vision and strategy that supports it.

All stakeholders in the ecosystem need to understand their potential for making a difference, as well as their very real capabilities – as they engage in transformation. The ITU Digital Innovation Framework not only helps transfer this understanding but also clearly sets out what enablers can achieve – as well as identifying the barriers they will encounter along the journey of change. Key factors and components that enhance, foster and facilitate digital transformation are clearly clustered and helpfully organized in the diagram above.

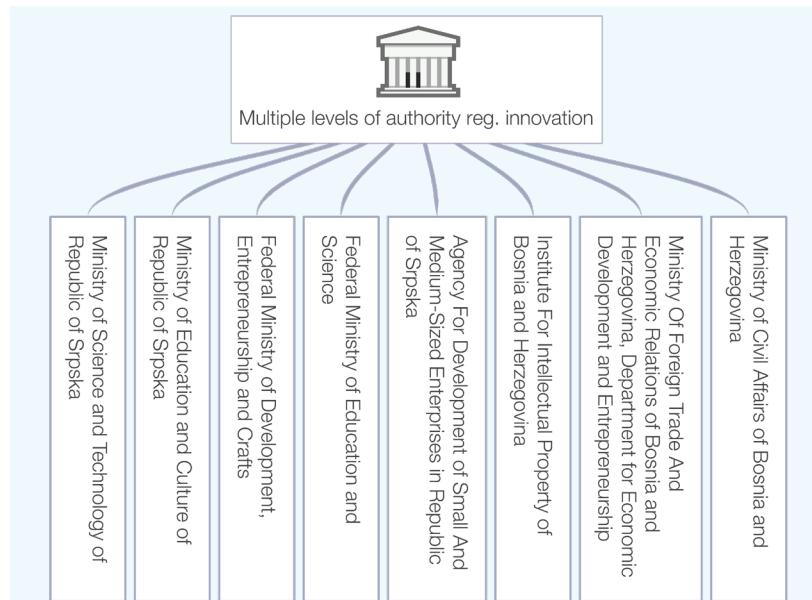
# Key points

## CHALLENGES & OPPORTUNITIES IN THE ECOSYSTEM



### SKILLS GAP

Graduates with technical skills often lack on-the-job, hands-on experience. The ecosystem aims to address this through student internships in industry and specific training in the private sector. Even so, an option to further reduce this gap would be make further investment in hard and soft infrastructure at university level – for example laboratory resources and staff training – as well as better collaboration between university and industry. While there is a trend for students increasingly to opt for STEM subjects and ICT-related studies, numbers currently exceed universities' ability to offer them places. Further loss of value to the ecosystem is its inability to retain the pool of skilled ICT talent that exists. At the same time, higher education is focusing on skills and competences that are obsolete when set against the changing skillsets needed by fast-evolving technology and industry needs – the result is further under-utilization of human capital.



### COORDINATION OF POLICY AND REGULATION BETWEEN DIFFERENT AUTHORITY LEVELS

All stakeholders recognize the public sector's critical role in building the innovation ecosystem. However, in spite of policy efforts to support innovation at several authority levels – all of which share a common vision and goals – the overall system is fragmented with no effective cross-level coordination occurring. There is a clear need to create and implement an effective coordination mechanism to remedy this.

No institutional framework exists at the state level to support and nurture the SME sector. Underlining this very point, young entrepreneurs have expressed a need for a business environment that allows easier navigation, with simpler, less bureaucratic administrative procedures to facilitate basics such as company registration and improved access to soft infrastructure.

## **INNOVATION CAPACITY BUILDING**

Innovation capacity is very weak in the country – with few research specialists and innovators – and there is a clear need to build innovation capacity. While the government is aware of the importance of innovation capacity and its direct link to improved economic performance, major investments have not been undertaken. Government procurement does not include advanced technical products, and the private sector is not encouraged to invest in R&D. There are limited efforts to build those skillsets necessary to apply successfully for EU funds to support R&D projects in education and training. Concrete actions are very much needed if the innovation ecosystem is to thrive and grow. Additionally, targeted support from the public sector would increase the development and commercialization of innovation in SMEs.



# ICT SERVICES

The domestic market is adapted to and ready to use new ICT services. Currently, the private sector (e.g. e-banking) leads the way in delivering these to customers. The many benefits of e-government solutions and ICT-enabled services in the public sector are not currently available. Such services and solutions offer a great opportunity, in many domains: in addition to offering general e-government services, the public sector could for example, incorporate new propositions and approaches in procurement which in turn would be a real driver of innovation.

## PUBLIC ADMINISTRATION RESPONSIVENESS TO SME NEEDS

The operational environment for SMEs in Bosnia and Herzegovina is significantly less positive than average in the Western Balkan region, according to a 2017 OECD report. Bosnia and Herzegovina has made little progress in this respect, and there remains a lack of sophisticated e-government services. These could improve upon existing procedures and could help entrepreneurs and SMEs engage with the public administration. Overly bureaucratic, time-consuming administrative procedures, are making for poor performance in company registrations and business licensing. Were these processes to be simplified and streamlined, SMEs would experience improved responsiveness and the ecosystem itself would benefit significantly.





# Relevant Practices

*The following practices were identified during the assessment process as noteworthy and potentially positive activities in the ecosystem.*

*As a next step in this process and with further engagement, an in-depth collaborative analysis could identify champions and good practices.*

## BIT Center Tuzla

The Business Innovation and Technology (BIT) Center in Tuzla is an incubator providing hard and soft infrastructure for ICT-based start-ups and SMEs. BIT center Tuzla is regarded as representing good practice. Since 2005, it has hosted over 53 companies, employed more than 500 highly skilled individuals and has enabled more than 6 000 people to improve technical and entrepreneurial skills through workshops and training programs. Partnering with the Faculty of Electrical Engineering in Tuzla, the BIT Center established an ICT research lab and implemented the HERD project focused on collaboration

and technology transfer across university and industry. This collaboration is continuing as ERASMUS PLUS project BENEFIT, in which BIT Center fosters soft infrastructure in the local innovation ecosystem and acts as a bridge between academia and industry.

**SEE IT IN  
YOUR HOME.**

## Partnership for innovation

From 2011-2016, USAID implemented the USD 4.7 million 'Partnership for Innovation' project to help young market entrants improve their skills and work readiness to prepare for jobs in the ICT sector. The project consisted of 24 internship programmes, eight work-readiness courses, and fifteen advanced software programming trainings for 2,000 young people. It also helped SMEs to adopt and better use ICT technologies and digitally enabled processes to improve their efficiency and market competitiveness. The project was implemented with partners from Sarajevo, Tuzla, Banja Luka and Mostar.



## High-end furniture industry

Furniture manufacturers like Artisan and MS Wood are successfully integrating innovative digitally-enabled services and ICT applications into their manufacturing processes. ICT is used from initial design stages all the way through to manufacturing, as well as in marketing and distribution – making use for example of augmented reality solutions. This innovative approach has enabled high-end furniture companies to achieve significant efficiencies and increased competitiveness in the global market. The example vividly demonstrates how companies can stay on top of fast-evolving demands in global markets by integrating ICT services and applications.

# Relevant Stakeholders

## SELECTED ACTORS IN THE ICT CENTRIC INNOVATION ECOSYSTEM

### ENTREPRENEURIAL SUPPORT NETWORKS

*Selected stakeholders:* technology parks and innovation centers, such as BIT Center Tuzla, INTERA Technology Park, Technology Park Zenica and ICBL Banja Luka; Research organizations such as the Entrepreneurship Development Centre; Private business support service providers; Inventors Association of Bosnia and Herzegovina.

### PRIVATE SECTOR

*Selected stakeholders:* chambers of commerce have compiled information on SME skills.

### ACADEMIA

*Selected stakeholders:* state universities, University of Tuzla, etc.

### PUBLIC SECTOR

*Selected stakeholders:*

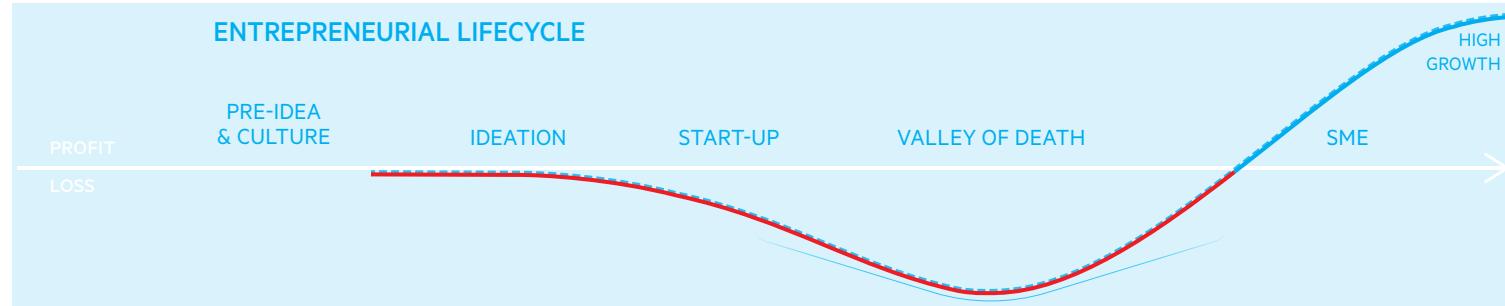
*Government state level:* the Ministry of Civil Affairs co-ordinates policies concerning scientific research and innovation;

*Government entity level:* a) Federation of Bosnia and Herzegovina: Ministry of Development, Entrepreneurship and Craft, and the Federal Ministry of Education and Science; b) Republic of Srpska: Ministry of Science and Technology;

*Government cantonal level:* ministries that co-ordinate policies concerning science, research and crafts in 10 cantons;

*Agencies at the state and entity levels,* such as the Communication Regulatory Agency, the Banking Agency of The Federation of Bosnia and Herzegovina and Agency for the Development of Small and Medium Enterprises in Republic of Srpska; non-government development organizations, such as NERDA Tuzla.

# Innovation Journey Map – Bosnia and Herzegovina



| ENTREPEN.<br>STAKEHOLDERS | ENTREPRENEURIAL LIFECYCLE |                           |                         |                           |                          |
|---------------------------|---------------------------|---------------------------|-------------------------|---------------------------|--------------------------|
|                           | PRE-IDEA & CULTURE        | IDEATION                  | START-UP                | VALLEY OF DEATH           | SME                      |
| ENTREPRENEURS             | ENTREPRENEURIAL INTEREST  | ENGAGE WITH PROBLEMS      | DEVELOP BUSINESS MODELS | BUILD COLLABORATION       | EXPAND                   |
|                           | RESEARCH FUNDING          | SEED FUNDING              | ANGEL INVESTMENT        | VENTURE CAPITAL           | BUSINESS FINANCE & LOANS |
| ENTREPRENEURIAL SUPPORT   | ENTREPRENEURIAL EVENTS    | HACKATHONS & COMPETITIONS | CO-WORKING & SUPPORT    | INCUBATORS & ACCELERATORS | BUSINESS ASSOCIATION     |
|                           | SUCCESS STORIES           | RESEARCH PROGRAMS         | LAB PROGRAMS            | B2B & SUPPORT SERVICES    | SKILL TRAINING PROGRAMS  |
| PRIVATE SECTOR            | ENTREPRENEUR COMMUNITY    | BASIC RESEARCH            | SPIN OFFS               | SOFT SKILL TRAININGS      | HUMAN CAPITAL            |
|                           | VISION & STRATEGY         | IP & R&D SUPPORT          | TAX SUPPORT             | PUBLIC PROCUREMENT        | TRADE POLICY             |
| PUBLIC SECTOR             |                           |                           |                         |                           |                          |

The Innovation Journey Map sets out at-a-glance the work that needs to be done within the ecosystem to harness innovation on a transformative journey from pre-ideation to high growth. It describes each stakeholder's roles in support of entrepreneurs and innovators at each stage of the lifecycle. The colour-coding identifies areas which are well-supported (green), inadequate (yellow) and missing / weak (red).

# Innovation Journey Map

## PROFILING KEY STAKEHOLDER ACTIONS NEEDED TO ACCELERATE DIGITAL TRANSFORMATION

*Narrative summary per stakeholder group*

### ENTREPRENEURS

Entrepreneurs are not thriving and contributing as they could to the health of the ecosystem. A variety of factors contribute to this situation: an underdeveloped entrepreneurial culture; the lack of a state-level strategy for innovation; a scarcity of financial instruments designed to support innovation among SMEs. Significantly more public sector support is needed if entrepreneurs' creative and positive influence on the ecosystem is to meet its potential.

### ENTREPRENEURIAL SUPPORT NETWORKS

A number of entrepreneurial support networks exist, but could be better coordinated, with more monitoring and more rigorous follow-up of business support programs. A sustained effort to nurture and strengthen the currently underdeveloped entrepreneurial culture would significantly help such networks – entrepreneurialism should be supported throughout the ecosystem through campaigns, the fostering of good practices and mentorship programmes.

### FINANCE

Major challenges include adequate provision of seed capital and availability of low-interest commercial financial resources. The banking sector is the dominant source for SME financing. The microfinance sector is well-developed, and there is access to considerable donor funding. Foreign direct investment and venture capital activities are low, and need encouragement in order better to respond to the needs of the ecosystem and drive it forward.

### ACADEMIA

Strategic promotion of entrepreneurship at universities remains a challenge. While most research and development occurs in state universities, cross-fertilization and collaboration between university and industry is neither institutionalized nor systemically promoted. Such sharing of ideas exists solely on the basis of individual effort and without any supporting national strategy. However, some progress has been made through a state-wide entrepreneurial learning strategy adopted in 2012. This has for example introduced entrepreneurial skills into school curricula, has put in place public and private training programmes and has helped promote the concept of lifelong learning.

### PRIVATE SECTOR

Large companies – both state-owned and private – are not encouraged to invest in research and development and are not incentivized to collaborate with young innovators. A range of policies could help remedy this situation, increasing recognition for research and development's critically important role. These include the adjustment of incentive structures through tax concessions and incentives that target infrastructure such as innovation hubs and tech parks.

### PUBLIC SECTOR

While the Policy of Electronic Communications of Bosnia and Herzegovina 2017-2021 provides a clear anchor for the importance and vision of the ICT centric innovation ecosystem, the major challenge of the public sector remains the lack of a coordination mechanism across its various ministries and agencies and the lack of cross-cutting mandates clearly focusing on innovation. Closely related to this are the needs to follow through on adopted policy, and to implement reforms and initiatives that benefit the ecosystem and its stakeholders.

# Perspective on Priorities

## WHERE TO FROM HERE

*The following expresses priority objectives for the ICT centric Innovation Ecosystem, from the perspective of the national expert of Bosnia and Herzegovina.*

Policy makers agree that ICT is a major engine for growth and development for a country's economy, society – and for its human capital. The Council of Ministers of Bosnia and Herzegovina has recognized both the role and benefit of ICT and innovation, and has clearly determined as a strategic goal for Bosnia and Herzegovina, the journey to becoming a knowledge-based digital society. In support of this goal, legal and institutional frameworks that foster innovation are incorporated in development strategy documents at different levels of the administration. However, there is a clear need to establish inter-governmental coordination which will implement and monitor activities across all levels of authority. Additionally, policy interventions should address non-technological innovation.

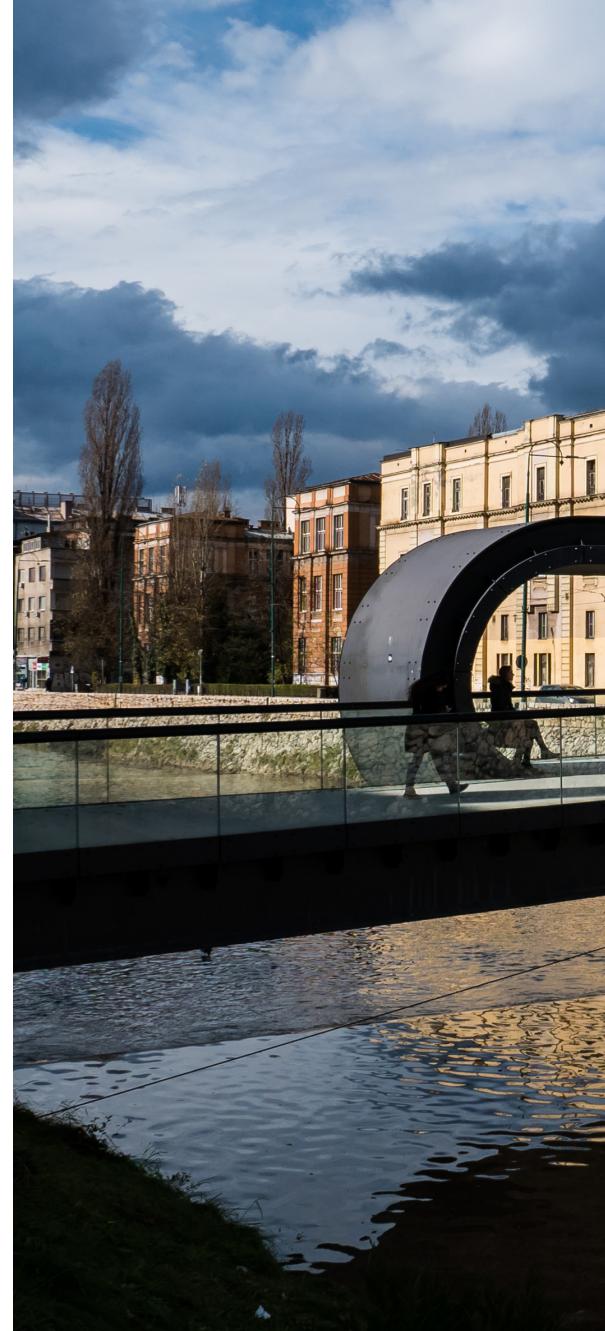
The next priority is to facilitate financing for SMEs and entrepreneurs. Currently, banks and the micro-credit sector are the major sources of capital, but there remains a strong lack of seed funding and credit guarantee schemes for SMEs. First steps in remedying this will involve consultations with stakeholders across the ecosystem, and improved coordination with the chambers of commerce – both efforts designed to identify bottlenecks and adapt the legal framework to the very real needs of SMEs and the ecosystem. Furthermore, introducing monitoring mechanisms that scrutinize the development and use of support funds and credit guarantee schemes will help

increase the availability of financing from non-banking sectors.

Three further areas require scrutiny and improvement: (i) harnessing enhanced public procurement measures or open government mechanisms to facilitate the development of ICT and highly innovative solutions to address the country's key social challenges, (ii) customs and tax legislation that incentivizes and strengthens the ICT industry, (iii) exploring opportunities for e-government services – for example in the areas of e-health, the creative industries and the energy sector (deployment of smart grids etc.).

Strengthening the innovation ecosystem and building innovation capacity are utmost priorities – and will lead to increased SME competitiveness and higher levels of sustainable growth for the country.

The Council of Ministers of Bosnia and Herzegovina has identified both the development of the ICT sector and more investment in innovation and research & development as clear priorities for the country's economy. Ministers' strategy encompasses campaigns to increase public awareness for the ICT sector, boost innovation and encourage entrepreneurship. The next step for us is to transform this vision into reality – through collaboration and coordinated action.



# Next Steps

Next steps for the ecosystem, the process for further engagement and collaboration with ITU Innovation.

This Digital Innovation Profile provides an initial, high-value overview both of the ecosystem and of existing practices. The Profile is designed to raise awareness and generate commitment from all stakeholders to implement flagship projects – which in turn will foster an enabling environment for the ICT centric innovation ecosystem, helping unleash its full potential and ultimately to help bridge the innovation divide.

The value of this assessment – which clearly identifies key barriers and enablers already existing in the ecosystem – is that it constitutes the perfect platform for the launch and development of high impact flagship projects. Each would help accelerate digital transformation and each would be designed to be of unique relevance to Bosnia and Herzegovina.

Building on this platform, and as a next step, further commitment is needed to generate a more in-depth assessment, detailed strategy and thoroughly planned flagship projects designed to help transform the ecosystem – all within the tried and tested ITU Digital Innovation Framework.

## INFO BOX

### Focus for Flagship Project Development

Decisive, active intervention can help transform an ICT ecosystem, making it more innovative and a real engine for accelerated digital expansion into every aspect of society – with real gains in public, business and personal life.

ITU innovation research has shown that three key pillars are of immense importance in exploring and addressing opportunity for digital transformation. These pillars align with Sustainable Development Goal 9 which calls for the building of resilient infrastructure, the promotion of inclusive, sustainable industrialization and the fostering of innovation. These three pillars are as follows:

#### Guiding Innovation Dynamics

Is innovation 'on the map'? How supportive of innovation is the general environment? A dynamic innovation environment demands regulatory organizational settings which are coherent and which guide, facilitate and promote innovation culture, mind-set, projects and programmes.

#### Building Innovation Capacity

Is there an innovation infrastructure? Is that infrastructure sufficiently well developed? Is it the right infrastructure to enable the ecosystem to grow sustainably? Does the infrastructure support, encourage and inspire innovation?

#### ICT Integration into Key Sectors

Is innovation integrated? Is ICT innovation integrated across key sectors? Innovative entrepreneurial ICT ventures realize their full potential only if they scale up well beyond their niche, enabling transformation across other industries.

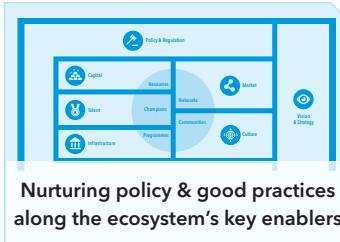
## INFO BOX

# ITU's Comprehensive Approach & Digital Innovation Framework

### DIGITAL INNOVATION FRAMEWORK – ASSESS REALITY



Multi stakeholder and cross sectoral approach



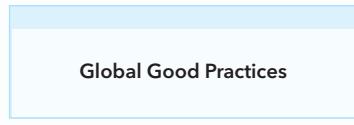
Nurturing policy & good practices along the ecosystem's key enablers



Mapping key barriers in the ecosystem to assist stakeholders through their innovation journey



Tools, policy & project recommendations tailored to your context



Global Good Practices

### CO-DESIGN & IMPLEMENT



Flagship projects, develop & facilitate implementation

ITU's **Digital Innovation Framework** is a scalable approach. It is based on a multi-stakeholder, cross sectoral, high-value analysis which maps both enablers and blockers in potentially vibrant ICT centric ecosystems. It assesses a country's capabilities in progressing towards an accelerated digital transformation.

Through expert assessment, the identification of good practice, capacity-building, tools and knowledge-sharing, ITU enables and empowers stakeholders to transform their own ecosystem.

The Framework's aim is to help countries fully realize their innovation potential and benefit from the enormous advantages this will bring. It first raises awareness of how innovation can address national challenges and subsequently creates sustainable, scalable projects designed to build environments that enable innovative digital ecosystems to flourish.

Knowledge Sharing & Innovation Capacity Development

BUILD CAPACITY & NETWORK

## ITU Innovation Platform

'How do we get started, and how do we know we are heading in the right direction?' These are the questions ITU Members often ask as they embark on a programme to transform their ICT infrastructure into the innovative powerhouse it could be and indeed should be – one that will drive outstanding economic growth and place them squarely at the centre of the 21st century digital opportunity. While the questions can appear daunting, there is a solution – and a step-by-step process that leads the way.

Through its range of powerful products, services and tools that make up the ITU Innovation Platform, ITU supports its members in fostering vibrant innovation ecosystems and in accelerating digital transformation for sustainable growth in the digital economy. The goal is to place ICT innovation front and centre in a country's national development planning.

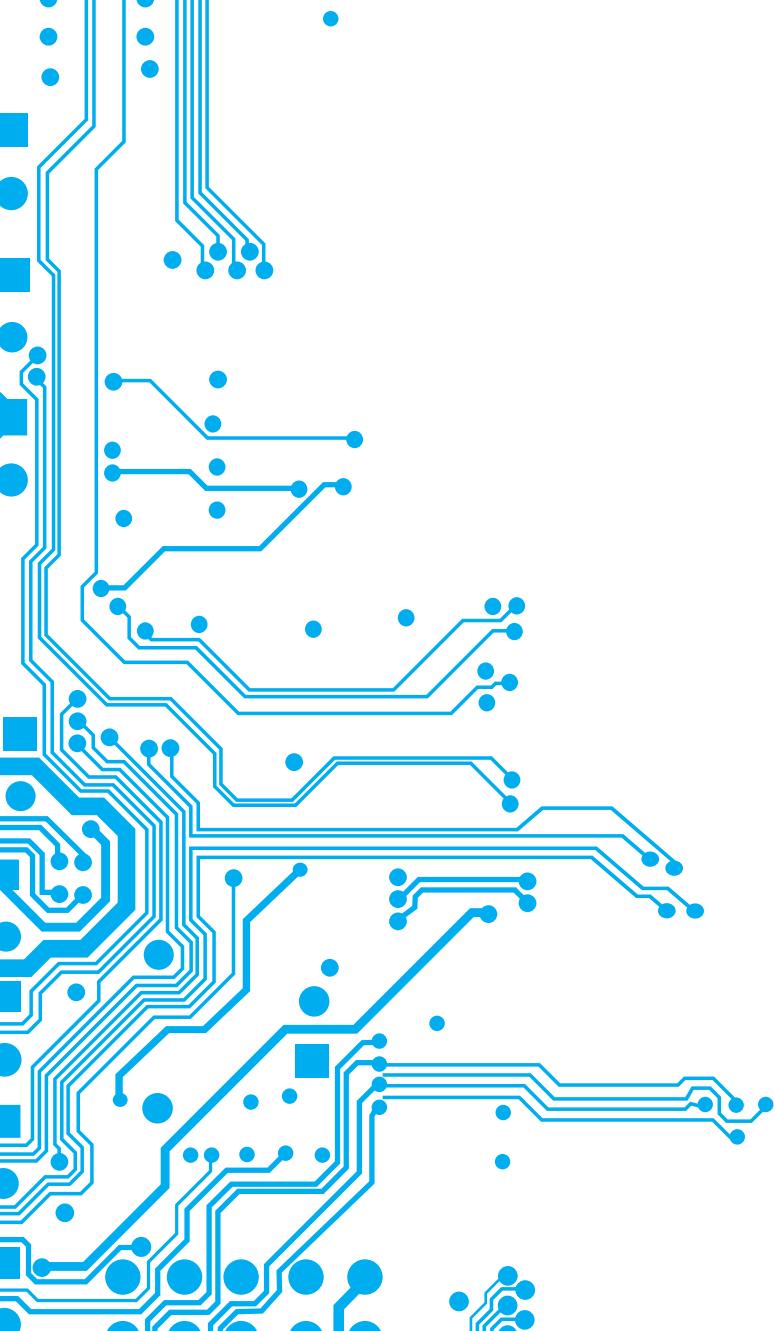
The ITU Innovation Platform offers four powerful elements:

- **Digital Innovation Framework:** a scalable approach mapping enablers and blockers in potentially vibrant ICT centric ecosystems and assessing a country's capabilities in progressing towards an accelerated digital transformation.
- **Country assessments:** powerful and high-value analyses of a country's digital ecosystems and its potential for digital transformation – such as country reviews, digital innovation profiles, and more.
- Co-development of country level **bankable projects**.
- **Knowledge sharing and capacity building:** including dialogues on innovation at regional and global level – and scaling of work through national and regional capacity building.

For more information visit [innovation.itu.int](http://innovation.itu.int) – or contact [innovation@itu.int](mailto:innovation@itu.int)

## Acknowledgements

*The Digital Innovation Profile for Bosnia and Herzegovina has been prepared collaboratively, with contributions from an ITU-trained national expert for Bosnia and Herzegovina, the ITU Regional Office for Europe, and the Innovation Division of the ITU Telecommunication Development Bureau.*



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Geneva, 2018  
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