

A market systems analysis employment opportunities for women in digital in Kosovo: the case of the *Cybersecurity market segment*

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EXECUTIVE SUMMARY

This exploratory study was conducted to identify opportunities to improve access to decent jobs for female workers in Kosovo. The study focuses on the cybersecurity services market, as part of the larger vibrant IT scene. It was conducted in July and August 2022. During the field visit in Pristina between 19 and 22 July, a Memorandum of Understanding between the Government of Kosovo and the Grand duchy of Luxembourg was signed. This agreement defines the scope of future investments including a new intervention area in “inclusive and sustainable growth”, with gender as a cross-cutting issue. The subobjectives of the study are to identify opportunities in this new intervention area and to find out to what extent a market system analysis can contribute to the Luxembourg 2030 cooperation strategy, aiming among others at developing multi-stakeholder partnerships for more efficiency.

Cybersecurity has been highlighted as a key strategic area for the Government of Kosovo, mainly from a national security perspective but also as an emerging economic field. Luxembourg has strong capabilities in that area. With the perspective to prepare a transition from cooperation programmes towards more economic cooperation, the cybersecurity services market segment is a good candidate offering interesting features to improve access to employment for women: it is a high-added value market segment, strongly regulated and part of a blooming digital sector.

The IT sector in general is driven by the exports market. Companies in Kosovo have positioned themselves as trusted service providers, providing high quality services, a skilled workforce perfectly fluent in English but also in German. With a general shortage of digital skills in North America and Europe, companies in Kosovo have become key service providers. The IT sector has exploded over the last three years, with many companies having double digit growth rate. Kosovo also now faces challenges with a lack of highly skilled staff. Salaries for senior staff in the IT sector have skyrocketed. This doesn't seem to be a deal-breaker on the exports market but has led to several internal challenges.

The perspective of attractive salaries creates an aspiration effect: the public sector faces challenges to cover its mission mainly due to a shortage in staff. Young people are massively trying to enter the private IT sector, without necessarily having the required level of competences. Companies have created their own academies to prepare integration of new staff. These academies are an opportunity as they incorporate internal knowledge, but they are difficult to scale, and many youngsters do not manage to enter this appealing market. For companies, managing the growth has become a key topic. One specific aspect about female workers is that employers are forced by law to pay 70% of the employee's salary during 6 months of the maternity leave. When companies are massively recruiting young people, there are necessarily concerns about the possible cost of maternity leaves.

Different interventions have been identified and may increase the dynamism of the sector and its potential to facilitate access to employment for women. These interventions relate first to the core value chain: an emerging local market gives the opportunity to develop public-private partnerships, offering fertile grounds for start-ups. As part of the supporting functions, training of highly qualified staff is a key intervention domain. Know-how of academies shall be leveraged without creating market distortions. There is an opportunity to tap into an increasing female labour force if the women economic empowerment agenda can be further implemented. On the rules side, the labour law doesn't necessarily cater for the needs of a dynamic sector like IT. An urgent aspect seems to be the issue of the payments of salaries during maternity leaves as this legal provision creates challenges for companies willing to recruit massively young females. There is a possibility to develop a specific insurance product together with market players to help employers managing the risk.

ABBREVIATIONS

ENISA	European Union Agency for Cybersecurity
ICT	Information and Communication Technologies
ILO	International Labour Organization
IT	Information Technology

MAP OF KOSOVO



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Notes

On confidentiality. All data collected through primary research have been made anonymous so that individuals cannot be identified.

On study limitations. The study is largely developed based on the perceptions and opinions of key sector stakeholders. Although information was triangulated by different sources where possible, it is recognised that not all opinions and perceptions could be cross-checked and validated.

On the views and opinions. The views and opinions in this assessment are those of the authors and not of the Luxembourg aid and cooperation.

1. INTRODUCTION

1.1. Project introduction

This exploratory study is a contribution to the formulation process of bilateral cooperation projects between the Government of the Republic of Kosovo and the Government of the Grand Duchy of Luxembourg following the signature on 21 July 2022 of a Memorandum of Understanding.

The Memorandum of Understanding introduces a new area for bilateral cooperation referred to as sustainable and inclusive growth. It includes digitalization and gender equality as cross-cutting issues.

LuxDev as the bilateral cooperation execution agency had so far been carrying out projects in the field of vocation education and training as well as health and has been managing a technical assistance facility in the context of European integration of Kosovo. A preliminary study for a market systems approach has been carried out to assess the potential of this type of approach to initiate new multi-stakeholder approaches under the sustainable and inclusive growth compartment.

A market systems approach is one which aims to address the root causes of why markets may not be meeting the needs of certain subsets of the population, including people living in poverty, youth, women and other disadvantaged people. The approach builds on the capacities and incentives of market actors – both private and public – to increase the likelihood that positive results are sustained and even scaled-up after intervention.

Box 1: What is a market system?

A market system is the inter-connected network of actors and factors that interact to shape the outcomes of an economic exchange. These exchanges are governed by a range of:

- *supporting functions*: the context and sector-specific functions that inform, support and shape the quality of exchange; such as information, skills, infrastructure, finance and access to markets;
- *rules and norms*: the legislative and regulatory environment, including policies, voluntary standards and social norms that guide day-to-day attitudes and conduct.

Supporting functions and rules are carried out by a wide range of market actors, from businesses to financial institutions, trade associations, regulators and government agencies. When certain rules or functions do not operate well, a market system *constraint* is created that reduces the effectiveness of the system and reduces the value captured by the people and market actors involved in the transaction.

Market systems development programmes aim to create positive systemic changes. A systemic change takes place when there is a lasting improvement in one or more market system constraints which leads to improved outcomes for target groups, be they workers suffering from poor safety and health conditions, or young people excluded from the labour force. Programmes discover why market actors have not addressed such constraints themselves, and then work on improving their incentive and capacity to perform new or improved roles.

From ILO the Lab brief [“A Market Systems Approach to Decent Work”](#), 2016

1.2. Study purpose and scope

This market systems analysis was conducted to identify the key constraints in the creation of decent jobs in the cybersecurity value chain as a specific segment in the digital industry, along with the corresponding root causes that limit functionality within this market. For this study, the analysis looks into the dynamics of the market for female workers, with a focus on boosting access to employment as a contribution for poverty reduction.

When opting for the cybersecurity market segment, a trade-off was made in the Jobs Triangle¹. The study mainly aims at improving access to decent jobs for women and increasing job quality. The digital sector in general is blooming in Kosovo. Cybersecurity is a niche, initially chosen because the sector is a high priority for both Governments of Kosovo and Luxembourg. From a market systems development perspective, the cybersecurity market segment presents several interesting sides. First, it allows to better capture rules and supporting functions than digital in general. Second, as a highly regulated market segment, it can facilitate access to jobs for certain categories. Bearing in mind that the Luxembourg cooperation has a clear focus on women and youth, the study was carried out with a clear focus on access to employment for young females. Finally, as a high value-added market segment, the cybersecurity segment was also chosen as it offers good chances to increase quality of jobs.



1.3. Study methods

The research was carried out in two main phases:

- **desk research:** available literature was gathered to provide a framework for the primary data collection process. This included review of studies (cybersecurity maturity assessment, social rights, childcare availability, etc), national strategies and laws (digital strategy, labour market), sector data and market trends (national statistics, surveys by the ICT Business Federation) as well as studies and research reports (maternity leave, cybersecurity market analysis framework, women economic empowerment forum, etc.);
- **field research:** primary research was conducted in Pristina between 19 and 22 July 2022. The field research was conducted after neighbouring Albania had shut down Government systems and online public services on 17 July after a massive cyberattack.

During this stage, a total of 19 businesses and organisations were interviewed. The interviews were semi-structured and conducted with government officials, public institutions (government, public procurement authority, regulatory bodies, agencies), companies (software editors, service companies, start-ups), training institutions (higher education institute, academies) and civil society representatives (cybersecurity association, women's network). The interviews provided an in-depth picture of the sector from a diverse set of actors and opinions. A detailed list of all the interviewed stakeholder organisations is included in Annex A.

¹ Farole, T, Sanchez Puerta, M.L., Sole Canut, A., Rizvi, A. (2018). *Jobs in Value Chains Survey Toolkit*. World Bank, Washington, DC.

The research is also building on:

- a previous field mission to Kosovo end of April 2022 that had a different focus. However, important stakeholders like the ICT Business Federation (STIKK) and the Innovation and Training Park in Prizren could be met at that time;
- a high-level mission organized by the Luxembourg Ambassador to Kosovo and led by the Digital Advisor to the Prime Minister who came to Luxembourg with a small delegation on 2-3 June 2022 with the perspective to develop an economic cooperation between Kosovo and Luxembourg.

The research is based on the methods of ILO's Value Chain Development for Decent Work guide² and the Springfield Centre's Operational Guide on the M4P Approach³. Results were validated through triangulation of data and methodologies. This means the research uses different types of data (i.e. primary and secondary) and multiple methods (e.g. observation, surveys).

1.4. Report structure

The report first provides an overview of the ICT sector, how the sector has developed over time and how the sector impacts the target group of the study (Section 2). It then looks at two embedded market systems: cybersecurity services and women labour market, their key constraints and their possible root causes (Section 3). The analysis findings are then used to develop a project strategy, which includes an assessment of the incentives and capacity of market actors to intervene in the market and identification of potential interventions which could help address the identified root causes in a sustainable way (Section 4).

² International Labour Organization: [Value Chain Development for Decent Work – How to create employment and improve working conditions in targeted sectors](#) (2015).

³ Springfield Centre: The Operational Guide for the Making Markets Work for the Poor (M4P) Approach, 2nd edition (2014).

2. SECTOR STRUCTURE

2.1. Market overview

1 237 business were active in “Information and Communication” in 2020 according to Statistics Kosovo⁴. The cybersecurity market segment is a small portion of this sector. Around ten companies mainly active in cybersecurity services were identified, with many others have a cybersecurity component as part of their service offer.

	2015	2016	2017	2018	2019	2020
B Mining and quarrying	165	162	154	161	194	168
C Manufacturing	4528	4674	4770	4930	5027	5357
D Electricity, gas, steam and air conditioning supply	59	44	55	65	73	55
E Water supply, sewerage, waste management and la	150	162	132	126	123	139
F Construction	2629	2628	2664	2849	3318	3177
G Wholesale and retail trade, repair of motor vehicle	16920	16557	16393	16143	14036	16614
H Transportation and storage	1219	1291	1304	1351	1165	1554
I Accommodation and food service activities	3713	3621	3599	3683	3979	3915
J Information and communication	881	849	908	982	1249	1237
L,M,N,R,S Other service activities	3201	4708	4943	5250	6105	7840
Total	33465	34696	34922	35540	35269	40056

Table 1: Number of active enterprises by economic sections and year

According to the Statistical Repertoire, the number of new companies in information of communication⁵ in Q1 2022 is 175. 580 new companies were registered in that sector in 2021 which tends to outline an acceleration in the dynamics of the ICT sector.

This dynamic is not specific to the ICT Sector with 2000 to 3000 companies created by quarter since 2015 compared to between 400 and 500 enterprises terminated by quarter. The number of active enterprises has been increasing by +20% (7000 new active enterprises) in that period. Other service activities (+144% between 2015 and 2020) and Information and Communication (+40% in the same period) demonstrate a “servitization” of the Kosovo economy⁶.

The number of employees in the ICT Sector varies between 12 823 (Q4 2020) and 15 525 (Q1 2020) with an average of 13 894 over 2020. 10 432 were men, 3 462 (24.9%) were women.

Description of economic sector		2015	2016	2017	2018	2019	2020
B	Mining and quarrying	3.042	2.780	3.313	3.499	3.632	3.917
C	Manufacturing	23.651	24.457	26.095	27.125	30.425	33.841
D	Supply of electricity, gas, steam and air conditioning	8.045	7.770	7.467	7.306	7.128	7.023
E	Water supply, sewerage, waste management and land revitalization activities	4.380	4.560	4.721	4.947	5.023	5.602
F	Construction	15.354	16.687	18.206	20.533	19.822	21.705
G	Wholesale and retail trade, repair of motor vehicles, motorcycles	55.768	54.609	57.862	60.349	67.968	70.867
H	Transportation and storage	6.810	6.634	7.202	7.531	7.608	8.408
I	Accommodation and food service activities	12.965	11.895	12.773	13.955	16.551	15.711
J	Information and communication	8.019	8.714	9.597	10.603	11.243	11.502
L,M,N,R,S	Other service activities	17.100	18.398	19.859	22.004	16.918	12.445
Gjithsej		155.135	156.504	167.095	177.852	186.316	191.021

Table 2: Number of employees and self-employed by economic sector in 2015-2020

⁴ https://askdata.rks-gov.net/pxweb/en/ASKdata/ASKdata__Structural%20business%20statistics/asn01.px/table/tableViewLayout1/

⁵ <https://ask.rks-gov.net/media/6833/statistical-repertoire-of-economic-enterprises-in-kosovo-q1-2022.pdf>

⁶ <https://ask.rks-gov.net/media/6642/statistical-repertoire-of-economic-enterprises-in-kosovo-q4-2021.pdf>

To give an overall idea of the sector's growth, the total workforce in ICT in 2013 was only approximately 1 716 employees, showing an average of 1 000 new jobs creation per year.⁷

2.2. History and trends

According to research carried out by the ICT Business Federation (STIKK), the IT Barometer (2020), 91.18% of the IT companies participating, mentioned that they export their services/products to international markets, compared to 5.88% of companies that work only locally.

The countries where the respondents export the most currently are Germany (46.88%), followed by North America (United States of America and Canada) with 46.88% and Switzerland (37.50%)⁸.

Companies in general expect an increase in number of employees for 2021, 20% of the participating companies expect to have an increase of 10%, 40% of the participating companies expect to have +25% employees, and 30% of the participating companies expect to have an increase of 50% of employees. The graph below represents in more detail the expectations of the participating companies.

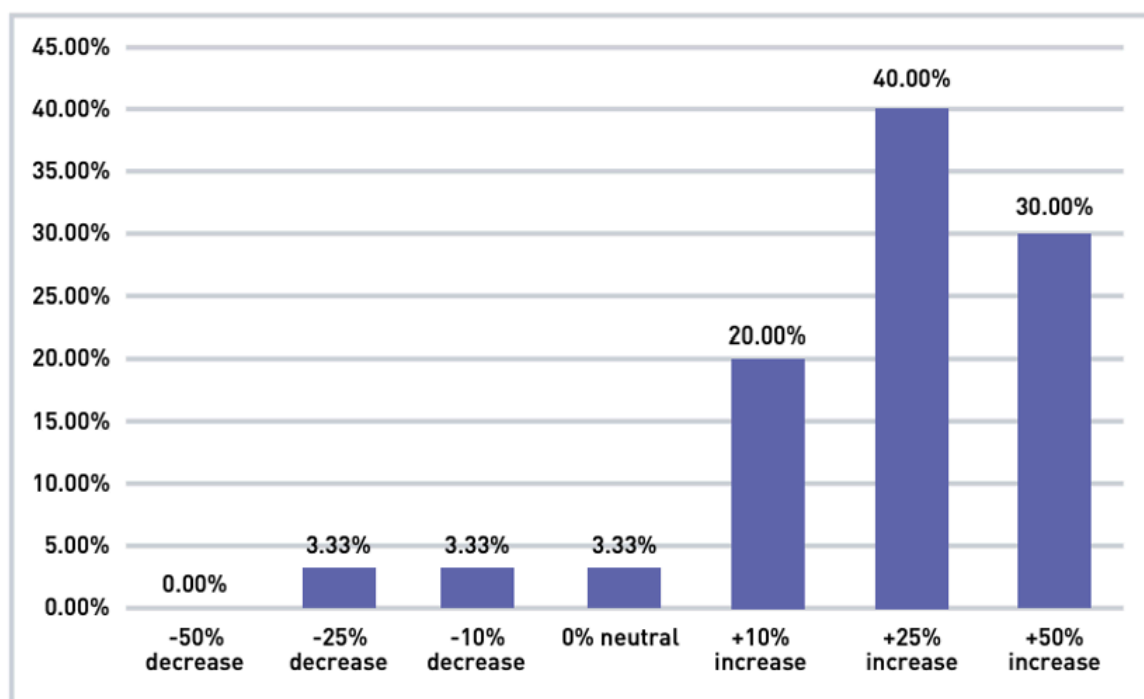


Figure 1: How do you expect your number of employees to change in the next year? (N=30), STIKK, IT Barometer 2020⁹

The average wage in ICT was 696 EUR, above an average of 403 EUR according to the National Statistics Agency. The survey conducted by the Business Federation confirms higher salaries in the IT sector than average.

⁷ <https://kiesa.rks-gov.net/desk/inc/media/4D52C708-01FC-4BBE-BE6D-2FBC6453235B.pdf>

⁸ <https://stikk.org/wp-content/uploads/2021/06/IT-Barometri-2020.pdf>

⁹ <https://stikk.org/wp-content/uploads/2021/06/IT-Barometri-2020.pdf>

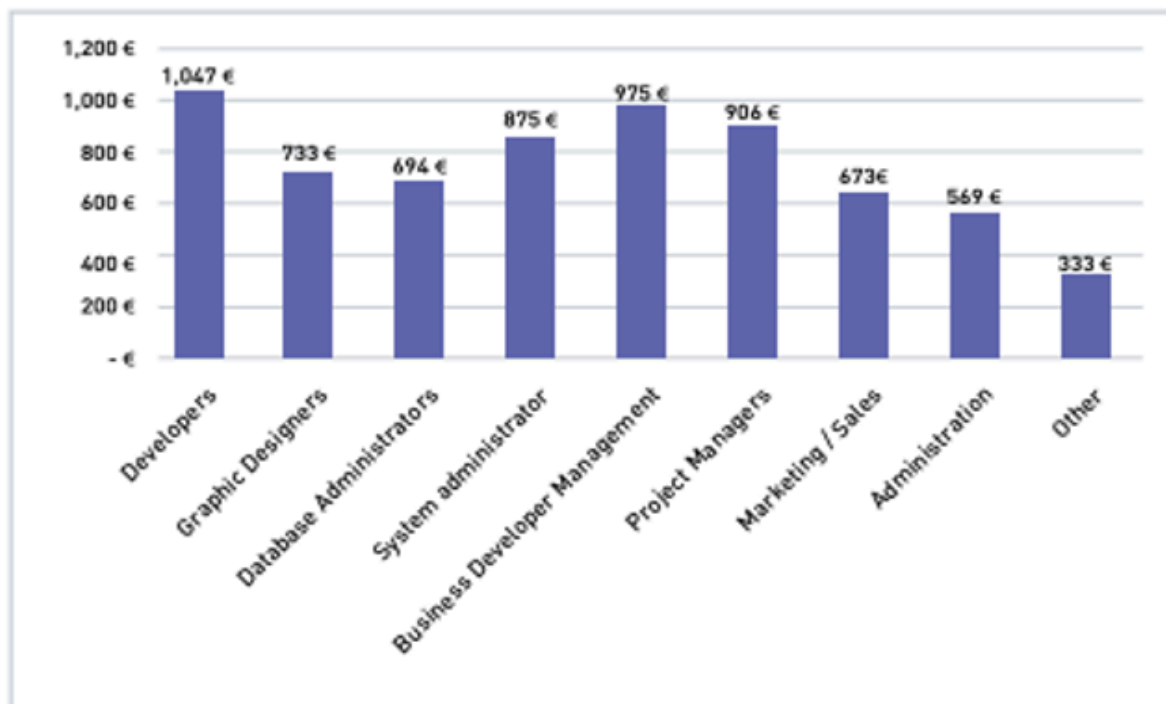


Figure 2: What have been the average monthly salaries for the year 2020 (as per labour contract) for the following positions (N=31), STIKK, IT Barometer 2020

Cybersecurity in Kosovo is in its early stages as outlined by a maturity assessment carried out by the Global Cyber Security Capacity centre in 2019. However, it is on the highest national priorities. In the graph below, most of the assessed criteria position Kosovo in a start-up or formative status, still far from a dynamic stage, but with improvements from the previous assessment in 2015.

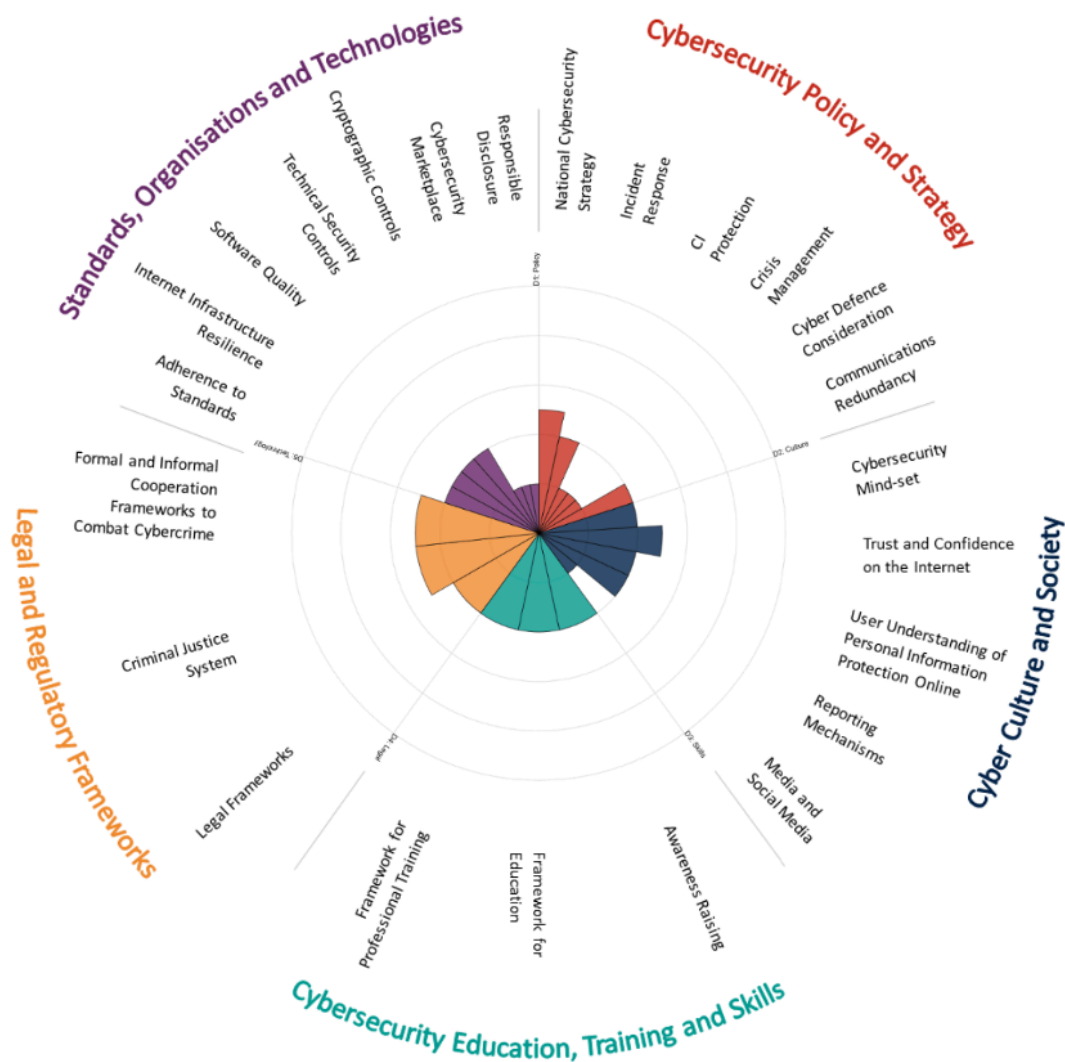


Figure 3: Overall representation of the cybersecurity capacity in Kosovo¹⁰

The government is addressing the cybersecurity agenda with a high sense of priority. A coordinator for the development of a National Cybersecurity Strategy has been designated within the Office of the Prime Minister. A draft cybersecurity law has been drafted and shall be approved by the Government before the autumn 2022. A dedicated cybersecurity agency will be created.

The Kosovo Computer Emergency Response Team (CERT), located within the telecommunications regulation agency, is accredited since July 2017. Other CERTs have emerged within research institutions (University for Business and Technology in 2018) or within critical infrastructures (police, defence, etc). The National Strategy on Cybersecurity (2016-2019) is being reviewed (workshops were conducted end of 2021 and in 2022) and shall be approved before the end of 2022.

The main issue faced by the sector is the difficulty to keep skilled staff within the public sector. While all key roles seem to be fulfilled, staff mentioned a sense of duty or a desire to serve the country. However, the recent trend of the IT-export oriented private sector to skyrocket salaries leads to an increasing gap that challenges many individual choices. The differences of monthly salaries are in an order of magnitude of 1 to 5 at least. The draft law on salaries caters for certain exceptions to the civil servant's salary grid including for IT staff. This law is however quite sensitive in a difficult economic context. Even if solutions can be identified, there seems to be consensus around the necessity to develop public-private partnerships with a limited number of civil servants defining the strategy and an enabling framework allowing the private sector to develop required services.

¹⁰ Cybersecurity Capacity Review, Republic of Kosovo, March 2020 (Global Cyber Security Capacity Centre).

On the private sector side, the level of expertise seems to be extremely high, with many companies active on North American or Northern Europe markets, serving very prestigious references.

Interviewed companies like Sentry, Kutia Software, StarLabs or 3CIS all mentioned that there are no longer gaining new clients because of lower costs of services but mostly because of their recognized or certified expertise. Companies active in cybersecurity are typically ISO27001 certified. Several entrepreneurs mentioned that the most difficult aspect in their job is to manage the growth.

The opportunity of an emerging local cybersecurity market doesn't look attractive to companies rather active on international markets. However, companies recognize the high sensitivity of a national cybersecurity environment and are willing to provide their expertise to support the development of a national infrastructure and capabilities.

2.3. Role of the target group: female workers

2.3.1. A low employment rate for females

From 39.5% (483 823 persons) of the population that is economically active, 25.8% (124 657 persons) are unemployed.¹¹

Looking at key indicators, women are participating less in the labour market (14.1% for female, 42.8% for male) but they also experience a higher unemployment rate (32.3% for female, 23.5% for male).¹²

Key labour market indicators (%)	male	female	total
Labour force participation rate	56.00	20.80	38.30
inactivity rate	44.00	79.20	61.70
employment rate (20-64 age group)	42.80	14.10	28.40
Unemployment rate	23.50	32.30	25.90
Unemployment rate, young people (15-24 years old)	45.20	57.20	49.10
NEET rate (15-24 years old)	34.00	33.20	33.60
percentage of volatile employment to total employment	19.00	11.00	17.00

Table 3: Key labour market indicators in 2020

The women employment rate in Kosovo (14.1%) is much lower than in neighbouring countries. The second lowest women employment rate in Southeast Europe is 37.3% in Bosnia and Herzegovina, significantly higher than Kosovo (table 4).

Southeast European countries (age group 15-64)	Employment rate		
	2020		
	Total	Male	Female
Kosovo	28,4	42,8	14,1
Albania	60,6	67,8	53,6
North Macedonia	54,7	63,7	45,3
Montenegro	50,3	56,1	44,4
Serbia	58,8	65,6	52,0
Bosnia and Herzegovina	48,8	60,2	37,3

Table 4: The rate of employment, 2020¹³

¹¹ <https://ask.rks-gov.net/media/6355/lfs-q1-2021.pdf>

¹² Performance of Western Balkan economies regarding the European pillar of social rights.

¹³ <https://ask.rks-gov.net/media/6259/labour-force-2020.pdf>

The unemployment rate for women is also significantly higher in Kosovo than in neighbouring countries: 32.3% in Kosovo and less than 19% in other neighbouring countries (*table 5*).

Southeast European countries (age group 15-64)	Unemployment rate		
	2020		
	Total	Male	Female
Kosovo	25,9	23,5	32,3
Albania	12,2	12,0	12,4
North Macedonia	16,6	16,9	15,6
Montenegro	18,3	17,8	18,8
Serbia	13,3	12,5	14,2
Bosnia and Herzegovina	16,2	14,4	19,0

Table 5: the rate of unemployment, 2020¹⁴

Statistics show that Kosovo faces specific challenges on its labour market, especially for females. Social norms are probably only one of the reasons explaining the specificity of the Kosovan job market. Despite the strong particularities of each of the Balkan countries, the country has partly common social patterns with its neighbours.

2.3.2. Feminisation of the workforce

Figure 4 provides an interesting overview of the labour force and the dynamics within the population by gender between Q1 2018 and Q1 2021. The female workforce has grown by 42.8% between Q1 2018 and Q1 2021 (+41 865), when during the same period the male workforce has decreased by 6.5%.

Out of these 41 865 additional active women, 13 518 were unemployed and 28 348 could find a job. The proportion of women among the employed has increased from 20.4% in Q1 2018 to 27.3% in Q1 2021, but at the same time proportion of women amongst the unemployed has increased from 22.7% to 33.3%.

There is a clear trend towards a feminisation of the workforce, which comes with a higher pressure on job creation for women.

¹⁴ <https://ask.rks-gov.net/media/6259/labour-force-2020.pdf>

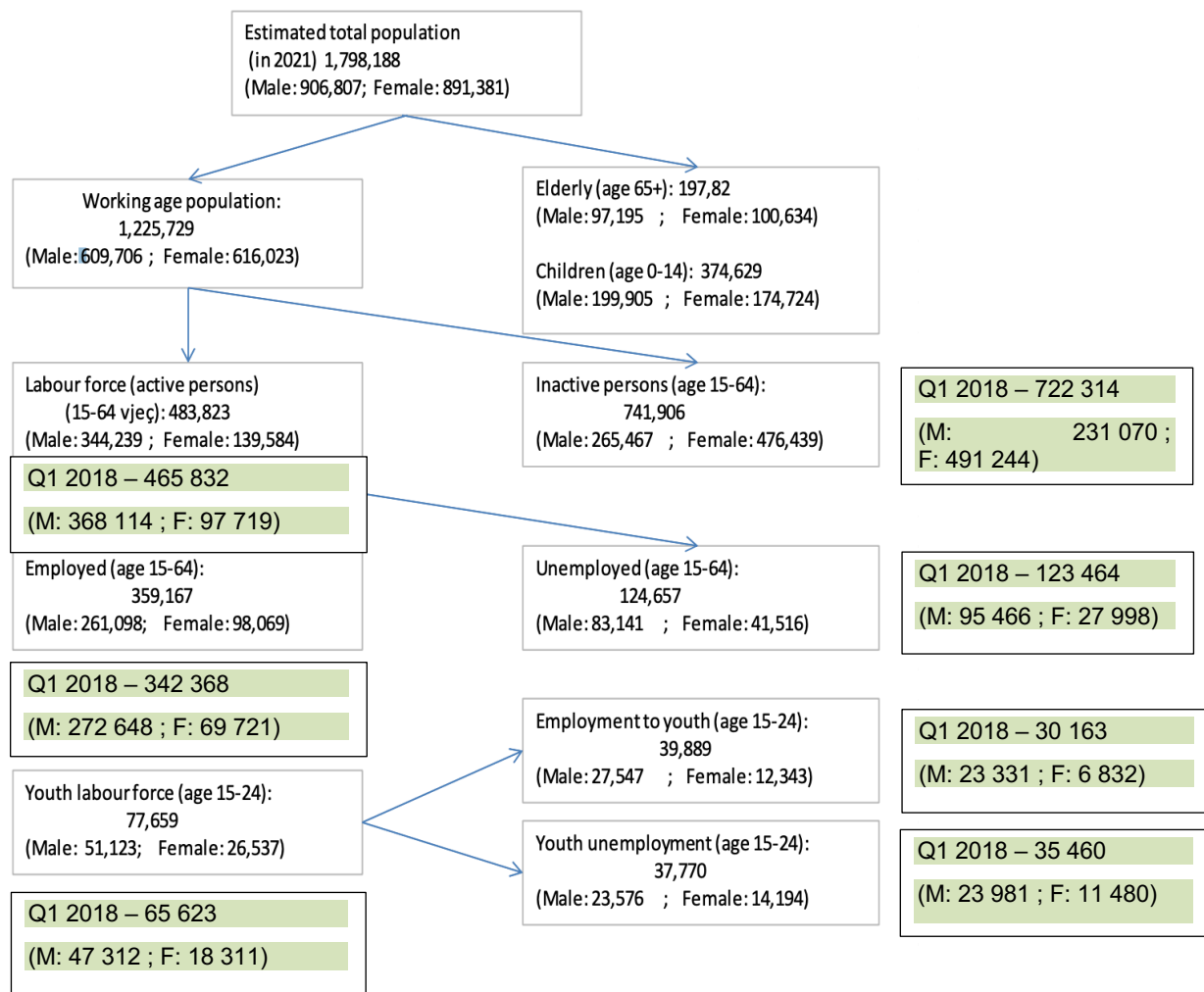


Figure 4: Key indicators of the labour market, quarter 1-2021 versus quarter 1-2018 (highlighted in green), adapted¹⁵

¹⁵ <https://ask.rks-gov.net/media/6355/lfs-q1-2021.pdf>

2.3.3. Difficult access to employment for women, more specifically in the private sector

In 2020, females were occupying 24.8% of all jobs (*table 6*). Looking at sectors, education, activities of human health and social work seem to be the sectors with a more balanced workforce and providing most of the jobs for women, besides the trade sector.

Kosovo (age 15 and over)	Male	Female	Total
Agriculture, forestry and fishing	14,2	2,7	16,9
Mining and ore	3,5	0,2	3,8
Manufacture	34,9	6,6	41,5
Supply of electricity, gas, steam and air conditioning	7,2	0,7	7,8
Water supply, sewerage, waste management	3,7	0,4	4,1
Construction	38,2	0,6	38,8
Wholesale and retail trade, car and motorcycle repairs	43,2	16,4	59,6
Transport and storage	11,2	0,9	12,2
Accommodation and food service activities	17,8	4,0	21,7
Information and communication	10,4	3,5	13,9
Financial and insurance activities	4,5	1,7	6,2
Properties activities	0,4	0,0	0,5
Professional, scientific and technical activities	7,3	3,4	10,7
Administrative and support service activities	10,6	4,4	15,0
Public administration and defense, compulsory social security	18,3	5,2	23,5
Education	18,0	17,5	35,5
Activities of human health and social work	9,3	12,0	21,3
Arts, entertainment and recreation	2,8	1,1	3,8
Other service activities	5,5	4,0	9,5
Household employment activity	1,2	1,3	2,4
Activities of the institutions and extra-territorial organizations	1,6	0,6	2,2
Total	263,8	87,1	350,9

Table 6: Employment by activity and gender in 2020 (in thousand)¹⁶

Data suggests that women tend to work in sectors where the public sector is a main employer. According to the OECD "Government at a glance" analysis, the public sector provides more than 30% of jobs which is higher than in the Western Balkans, but only 29.2% of employees are women which is lower than the average in Western Balkans and much lower than OECD.

¹⁶ <https://ask.rks-gov.net/media/6259/labour-force-2020.pdf>

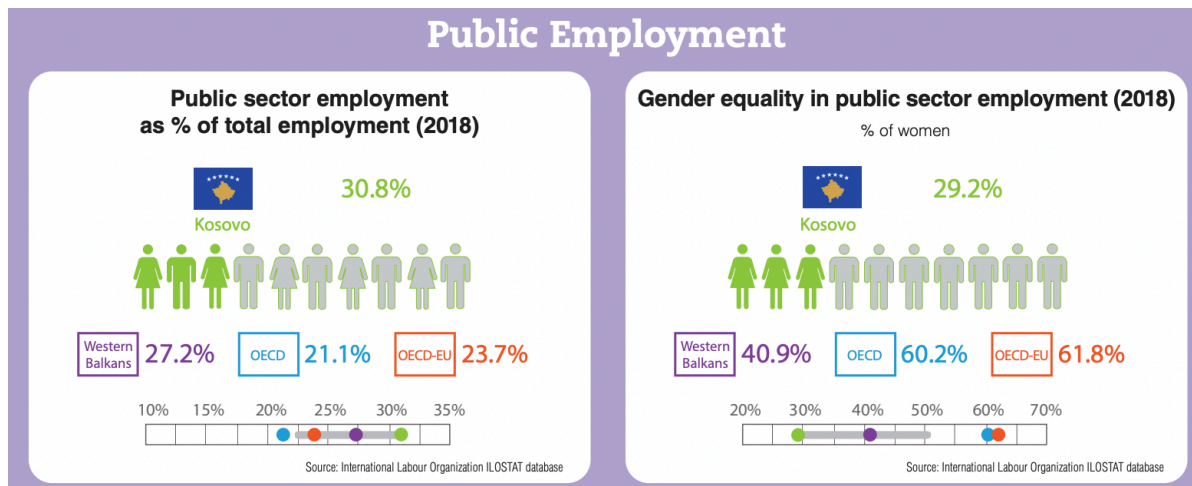


Figure 5: Gender perspective on public employment¹⁷

With 24.8% of all employments occupied by women and 29.2% of public jobs occupied by women, data suggests that the private sector is underperforming in its capacity to create jobs for women.

Women are very hardly hit by a difficult access to employment, more specifically in the private sector.

The difficult access to formal employment could partially be explained by informal employment, a chronic feature of Kosovo's labour market. A survey from the Millennium Challenge Corporation in 2017 found out that the prevalence of vulnerable employment could be estimated at 34.7% and undeclared employment at 40.8%. According to the Labour Force Survey 2020, female workers do not appear to be more hit by vulnerable employment than male, but the survey confirms the difficulty to access permanent contracts.

Of the persons who had an employment contract, only 42.3% had a permanent contract for their main job (40.8% for males compared to 46.0% for females), while 57.7% had temporary contracts (59.2% for males compared to 54.0% for females). The notion of "permanent" contract may be interpreted in different ways. A typical practice is that contracts are renewed on an annual basis. This might be understood as permanent contracts for some, as temporary contracts for others.

Persons, who had temporary contracts, were asked why they had this type of contract and 89.5% of respondents reported that there was no other type of contract available. When asked if they were entitled, in their main job, to benefit from an occupational social security scheme, survey data showed that 6.7% of employees were entitled to this.

2.3.4. Access to employment strongly correlated with the level of education, especially for women

Data on vulnerable employment shall be interpreted together with the educational level of the workforce. Almost half of the women employed (47.6%), representing 41 200 persons in absolute numbers, have a tertiary level of education. Less than a quarter of the male workforce (24.7%) has a tertiary education. It shall be noted that female workers have less chances to get access to jobs for any type of education. However, among the categories of people with a tertiary level of education, women represent 39% of total occupied jobs, significantly higher than for jobs occupied with a secondary education where women occupy only 17.9% of jobs.

Women with a tertiary education significantly increase their chances to get employed (48.5%) whereas women with a secondary education have only 15% of chances to be employed.

¹⁷ <https://www.oecd.org/gov/government-at-a-glance-kosovo.pdf>

Kosovo	Male	Female	Total
EMPLOYMENT (IN THOUSAND)			
No formal education	0,5	0,4	0,9
Primary	38,1	10,6	48,7
Secondary education, vocational	117,9	20,9	138,8
Secondary education, gymnasium	39,6	13,4	53,0
Tertiary	64,5	41,2	105,7
Total	260,6	86,5	347,1
EMPLOYMENT RATE (%)			
No formal education	6,8	1,9	3,3
Primary	25,5	3,8	11,3
Secondary education, vocational	45,2	15,1	34,8
Secondary education, gymnasium	40,0	14,9	28,0
Tertiary	70,6	48,5	59,9
Total	42,8	14,1	28,4

Table 7: Employment by education level¹⁸

Access to decent employment seems to be strongly correlated with the level of education of the workforce, especially for women.

There is strong evidence that access to employment is extremely difficult for females in Kosovo. When looking at improving access to the labour market for female workers, it is recommendable to focus on a market segment requiring highly qualified staff as women increase their chances to get access to employment with their level of qualification. The digital sector in general and the cybersecurity market segment more specifically are interesting candidates to that respect. The fact that the IT sector offers higher wages is also interesting when it comes to the quality of possible jobs.

¹⁸ <https://ask.rks-gov.net/media/6259/labour-force-2020.pdf>

3. THE MARKET SYSTEMS

Figure 6 shows an illustrative market system for cybersecurity services in Kosovo, which includes a simplified value chain surrounded by the supporting functions and rules/regulations, which strongly influence and constrain market performance. Going forward, the analysis (Section 3) and opportunities (Section 4) sharpen the focus on women – the target beneficiaries of Luxembourg cooperation – with a view to improve access to employment.

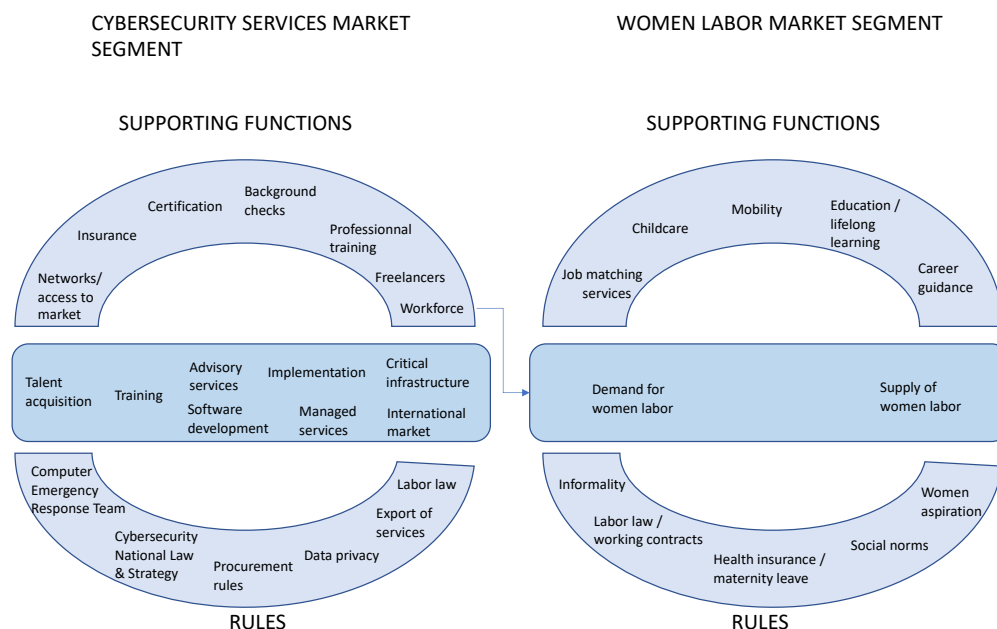


Figure 6: Illustrative cybersecurity services market system and its relationship with the women labour market

3.1. Core market – cybersecurity services

3.1.1. Strong market perspectives in the export segment

IT firms in Kosovo share a strong export orientation. Close to half of the companies having taken part in the cybersecurity maturity assessment survey named overseas markets as their primary customer base. The limited size of the domestic technology ecosystem only offers restricted potential to scale up for local companies, leading them to seek out more profitable contracts abroad.¹⁹

Companies interviewed during the field visit all claimed that >95% of their business is export oriented. The United States, Northern Europe, Germany and Switzerland seem to be the main markets.

Companies tend to specialise in the value-chain and seem to be well networked, opening commercial leads to partners in the ecosystem if they get a request out of their core business. Companies in the cybersecurity market segment are typically ISO 27001 certified. They are often subject to audits by their partner companies abroad.

According to ENISA market analysis framework (figure 7), the cybersecurity value chain is composed of seven different activities of the value stack.

¹⁹ https://me.rks-gov.net/repository/docs/Cybersecurity_Maturity_Assessment_for_the_Republic_of_Kosovo_2019.pdf



Figure 7: Market analysis framework, ENISA²⁰

Companies in Kosovo are mostly active in managed services, also offering implementation services, advisory and consulting and education. Companies take care of responsibilities according to a defined budget and service level agreement. In many cases, dedicated teams are integrated in a larger team of a client or partner. Outsourcing is also very common for other IT services than cybersecurity services. Companies receive instalments on a regular, monthly basis. Contracts are over a minimum period of time (>6 months) and with a minimum budget. Margins can be comfortable, but quality cannot be negotiated. This results in very skilled profiles needed to carry out projects.

Cybersecurity services are very international by nature. The software, hardware and R&D components are provided by major international players. An integrator or service company in the country of the final client often acts as a services aggregator. Companies in Kosovo either work on behalf of these service aggregators or sometimes directly for final clients on the export market.

Those export-oriented companies tend to attract staff from the public sector but also from banks that used to provide better conditions on the market. Salaries in the public sector have not been reviewed for a while. A draft law on salaries is currently in the legislative process. Even if specific provisions were included for IT / cybersecurity experts among others, there is a recognition that the public sector will never be competitive with the private IT sector. This results in the emergence of new paradigms of public-private partnerships that will be fostered by the national cybersecurity strategy and law, both at a final preparation stage. Secondary legislation shall also set the cybersecurity requirements for critical infrastructures. This will overall result in the emergence of a national cybersecurity market.

The main asset locating the value chain locally are human resources. As a consequence, the value chain is presented from the perspective of identifying talents and accompanying them towards the delivery of high-added value services. Staff benefits from conditions that are extremely competitive on the local market: high salaries, benefit packages, flexibility on working hours, etc.

3.1.2. Salaries

Salaries are extremely variable, starting at 700 EUR for a junior developer, 2 000 EUR for a middle level and more than 4 000 EUR for senior developers. These figures have to be understood in an extremely dynamic local context. According to research carried out in 2019²¹, the average expected salary in IT was 385 EUR, very much in line with other sectors. Most companies met in July 2022 report that it is now impossible to hire a junior developer for less than 800 EUR, but expectations seem to be even higher. In comparison, salaries in the public sector including for senior staff is in the range of 400 – 500 EUR.

There seems to be a high competition for highly qualified staff. Companies exporting IT services are able to offer salaries comparable to what is offered in Germany or in the US, as their clients abroad struggle to find highly qualified staff on their home market.

²⁰ ENISA Cybersecurity Market Analysis Framework (ECSMAF), 2022.

²¹ Employment and labour market analysis, RIINVEST, 2019.

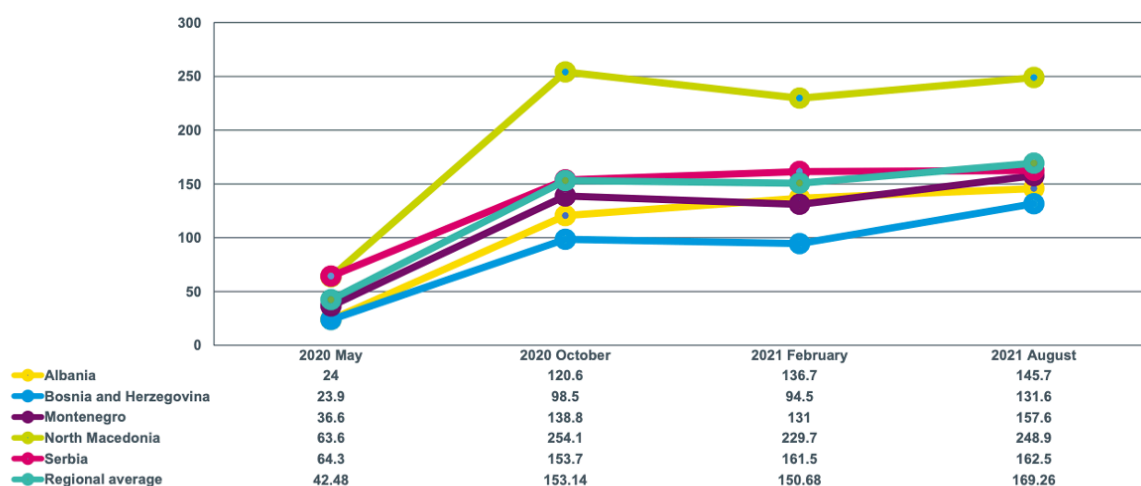
These clients continue to look for cheap labour force in certain destinations (i.e. Pakistan, etc.) but many companies in Kosovo position themselves on high-added value segments building on a skilled labour force, fluent in English - and often German -, and with their senior staff having worked for several years according to international standards.

A major concern exists with senior staff going for consultancy-based models, and possibly in some cases informally. Informal work is, by definition, difficult to identify. In the Kosovo IT ecosystem, there seems to be a limited use of platforms like Freelancer.com or Upwork, etc reserved for low-cost jobs. Most stakeholders mentioned that they knew people working as freelancers (informally or declared) for very high amounts of money and that those people were not interested in a paid job. Companies active on the local market cannot afford senior staff and are forced to use such consultancy work that seem also to be favoured by some international companies. This drive towards consultancy-based assignments seems to be a major threat for the IT Industry as it challenges resource planification.

“Remote work is the elephant in the room. Believe me: many local IT companies will go bankrupt in the next 5 years because they won’t be able to hire staff” according to one of the companies interviewed.

Also, possibly a specific challenge for Kosovo as these activities are not necessarily transparent from a tax perspective.

Statistics from neighbouring countries confirm a high increase of freelancers after the Covid-19 period. This trend has now to be confirmed under a new normal. In addition, it seems that these platforms are only a minor part of the growing trend of remote work or consultancy-based work.



Source: Compiled by PPMI using data from Public Policy Research Center (2021). Gigmeter reports are available here.

Note: Data on Kosovo was not available.

Figure 8: Number of online freelancers per 100 000 population on Upwork, Freelancer.com and Guru.com platforms²²

Companies were unanimous on the fact that the limit to their growth is their capacity to integrate new staff. Two companies mentioned cases where they had to refuse commercial opportunities that they considered as too big for their current size. They didn’t want to take any reputational risk if they were not able to deliver the required services.

Companies invest in future skills, anticipating future assignments and configure their team by mixing senior and junior staff. Free-lancers are not used to absorb short term needs. Companies would rather cooperate with partner companies in the ecosystem.

3.2. Adjacent market – women labour market

Women are more active in the IT Market segment than in any other sector of the economy. Yet their relative contribution with 24.9% of total jobs in 2020 stays far below male’s contribution.

²² <https://www.etf.europa.eu/sites/default/files/2022-07/Embracing%20the%20digital%20age.pdf>

The extremely low contribution of women in the Kosovo workforce cannot be explained by a single factor. Two aspects can be highlighted:

- women have the responsibility for childcare and the cost of childcare compared with an average monthly salary often leads to an arbitration not encouraging women to keep active on the labour market;
- legal provisions for maternity leave cater for a 70% salary to be paid during six months by the employer.

The Women Economic Empowerment forum has highlighted these issues and is working towards implementing recommendations.

In the IT sector, the issue of childcare seems to be less sensitive as salaries are higher: employees can afford childcare services. More flexible working conditions can also usually be obtained. However, **the cost of maternity leaves for employers** is a major factor discriminating access to jobs for women.

The labour law is being updated. The issue of the maternity leave seems to be partially addressed, moving towards a more balanced contribution by the Government and employers in maternity leaves and a one-month parental leave. However, employers would still have to cover the most important part of maternity leaves leading to possible discriminations on the labour market.

3.3. Supporting functions

3.3.1. *Training and professional academies*

According to a survey conducted by the ICT Business Federation, 82.3% of surveyed IT companies mention that they face a deficit in qualified workforce.²³

There are existing curricula in universities and vocational and education centres. There are also many programmes supported by donors that aim at teaching digital skills. While curricula from universities seem to be relevant, there are only a few and students mostly acquire theoretical knowledge. Short term trainings in general do not seem to address the needs of companies interested in highly qualified staff.

The industry has developed its own way of preparing talents by integration programs, often in the form of an academy. Many IT Companies provide intensive training when hiring staff. Programmes include the Beetroot Academy, Cactus Education, the Cyber Academy, the Digital School, Gjirafa Leadership Institute of Future Engineers, etc. All have demonstrated a strong capacity in designing curricula that answer market needs.

It was mentioned that an average of six months internal training is needed before staff is operational.

Candidates usually pay to take part in these academies that may ultimately lead to well-paid jobs. The access to these programs is extremely competitive. Figures are variable depending on the programme but all receive more candidates than places available. In the case of Gjirafa Leadership Institute of Future Engineers, for the first edition, there were +1 500 candidates and only 92 available places. The number of places is defined according to the number of jobs offered for that specific case, but there are also limits in relation with the availability of teachers and staff needed to follow group work.

The retention rate of trainees, that are offered internships and can be employed later on is not always very high: Gjirafa Leadership Institute of Future Engineers makes initially a hard selection and offers a job opportunity to all graduating candidates; others make a job offer to average one out of 10 participants in academies. The most widespread model is that best students are offered an internship and out of those some will be offered a job. It seems that graduates are rapidly absorbed by other players in the local market.

Even though most academies are accessible against a fee, most promoters consider it as an investment as there is a huge involvement of their internal staff in the programme, besides the costs of running the program itself. In the case of Gjirafa Leadership Institute of Future Engineers, the programme is entirely free upon the condition that graduates accept to work at least two years within the company offering a job. Currently, two companies are participating: Gjirafa, the fastest growing start-up in the region and Kode.

It is obviously a must to increase the number of highly qualified staff that can enter the job market.

²³ <https://stikk.org/wp-content/uploads/2021/06/Women-in-ICT-Report-2021.pdf>

3.3.2. Other supporting functions

Identifying job opportunities does not seem to be a major issue in a very dynamic market. One of the surveyed companies has a strong partnership with “KosovaJob”, a web portal dedicated to advertising job opportunities. A Swiss-funded project is further bridging the gap between offer and demand by developing a job matchmaking platform. Many candidates source opportunities by their own networks.

Background checks are dealt with highest seriousness and are often subcontracted to specialised providers. New staff is often approved by the client.

3.4. Rules and Regulations

3.4.1. Informality

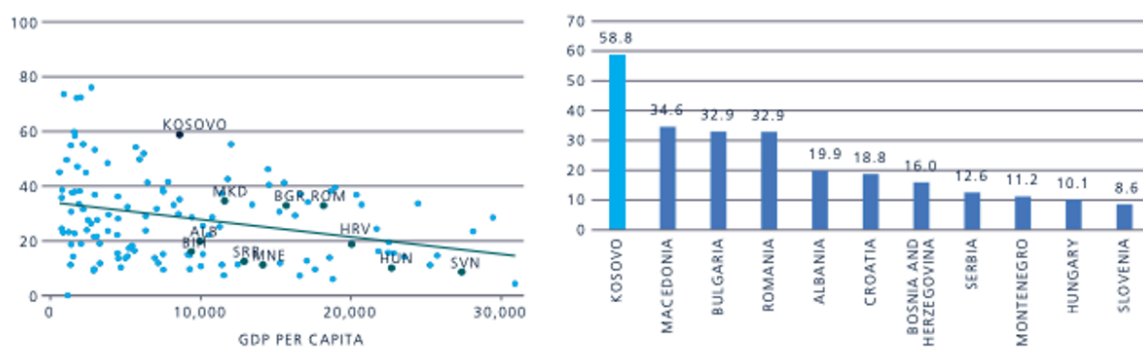
Labour law, meant to protect workers, doesn't seem to be adapted to the needs of a dynamic economic sector. Working contract can either be permanent or concluded for a defined period. Employers mention that it is almost impossible to break a working contract. Most of them go for contracts that are renewed on annual basis. Some companies with promising perspectives in the IT sector also propose permanent contracts as a differentiator to attract staff.

In case an employer breaks an annual working contract, the company is obliged to pay all remaining salaries until the end of the contract.

An employer mentioned that during a recent talk with the Minister of Labour, he questioned the rigidity of the law by asking: “*did you ever see an IT company firing good staff?*”

IT companies seem to be competing to recruit good staff, but the relative inflexibility of the labour law for the employer hinders permanent jobs creation. In the IT sector, most companies seem to be proposing contracts in due form, but it is current practice in many sectors to hire staff without any contract.

Informality in general stays a widespread concern for the Kosovo economy. This is less of a concern for cybersecurity services as companies are subject to audits by their clients. However, more and more international companies tend to hire IT staff directly. Examples were mentioned during the survey. Self-employed staff has to comply with fiscal and social regulation, but this is obviously difficult to track. According to a Worldbank study (figure 9), Kosovo was one of the countries with the highest rate of informality at least in the Central Europe subregion.



Source: Authors' calculations using BEEPS (circa 2013) and WDI (GDP per capita in 2013, PPP (constant 2011 international \$)).

Figure 9: Percentage of firms in Kosovo that complain that they are “majorly” or “severely” affected by competition from informal sector²⁴

3.4.2. Maternity leave

Employers face high direct and indirect costs from hiring young women because of maternity leave provisions. Kosovo ranks on the high end of Europe and Central Asia countries in terms of the total duration of paid maternity leave. Women are entitled to nine months of paid family leave and three months of unpaid family leave. In addition to the long duration, the cost of maternity leave is borne largely by employers, who are responsible for two thirds of leave allowance – this is at variance with the

²⁴ <https://openknowledge.worldbank.org/bitstream/handle/10986/27173/ACS21442-WP-PUBLIC-ADD-SERIES-KosovoJDWEB.pdf?sequence=1>

ILO recommendations on maternity leave that payments be made through compulsory social insurance or public funds in order to protect the women's position in the labour market (World Bank, 2015a).²⁵



Figure 10: Replacement rates for maternity leave in Kosovo²⁶

Employers in Kosovo pay a large share of maternity leave benefits compared to other countries.

Kosovo's maternity leave policies place approximately two-thirds of the burden of paid maternity leave on the employer and therefore do not comply with ILO recommendations on maternity leave. ILO Convention No.183 suggests that, in order to protect women's position in the labour market, the payments made to women on maternity leave should be made through compulsory social insurance or public funds or in a manner determined by national law and practice. The convention states that the employers should not be liable for the direct cost of any such monetary benefit to a woman employed by him or her without that employer's specific agreement.

A study carried out as part of a master thesis work show that the potential for pregnancy has a significant impact on access to employment.

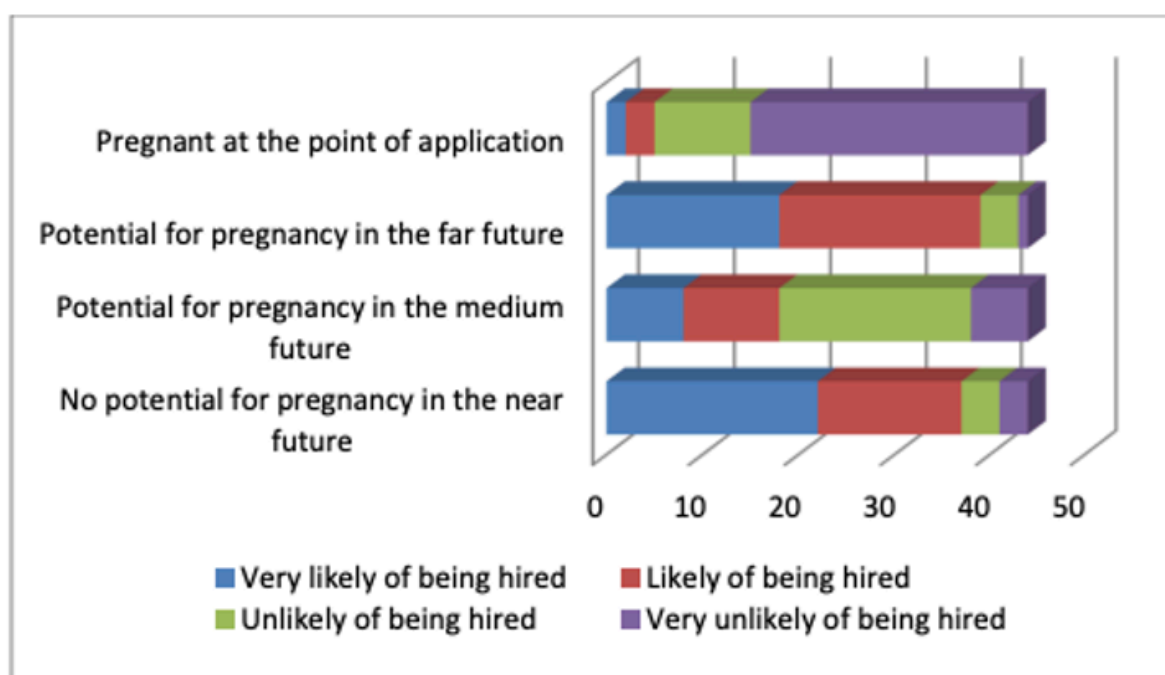


Figure 11: Ratings of prospective employees based on their pregnancy prospects²⁷

²⁵ <https://openknowledge.worldbank.org/bitstream/handle/10986/27173/ACS21442-WP-PUBLIC-ADD-SERIES-KosovoJDWEB.pdf?sequence=1>

²⁶ https://www.researchgate.net/publication/324430542_Maternity_Leave_and_Women's_Labor_Market_Status_in_Kosovo_Five_Key_Messages

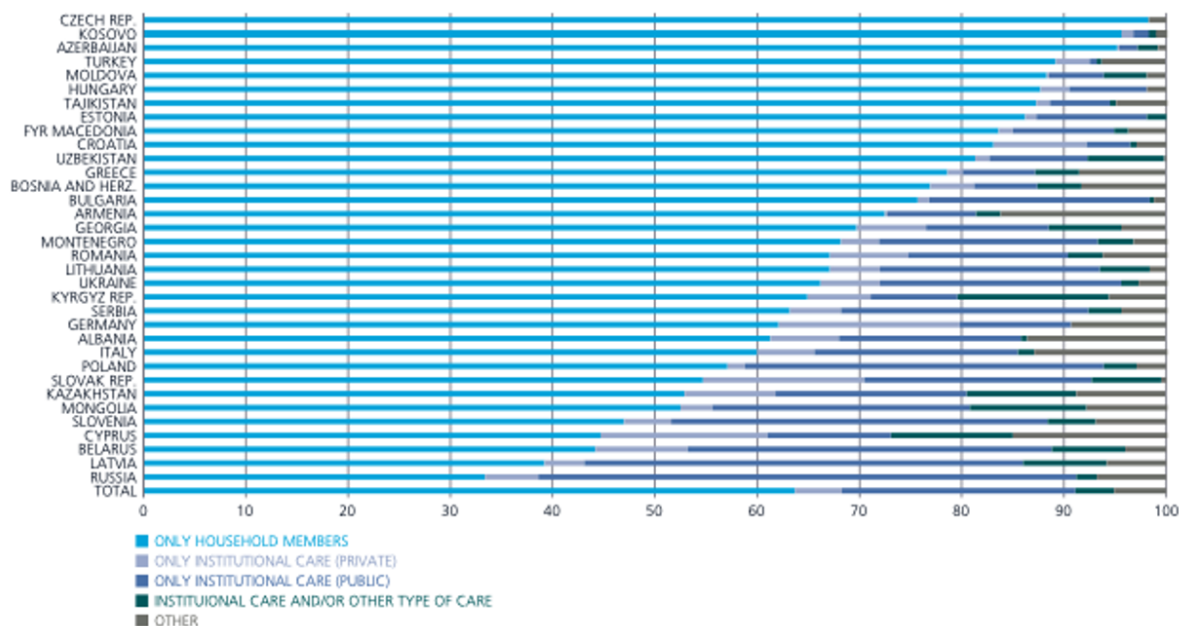
²⁷ <https://scholarworks.rit.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=10206&context=theses>

3.4.3. Childcare

Despite access to childcare facilities seems to be a lower problem in the IT sector, the Kosovo Jobs Diagnostic carried out by the World Bank shows that it is the reason for more than 2/3 of females in all age categories to remain unactive in the labour market.²⁸

There is a lack of affordable childcare facilities, a lack of a day care school system and a lack of access to caretaking services for the elderly. As an example, only 10.4% of children aged 3-4 years old were in preschool education.²⁹

There are about 150 private and 5 community-based kindergartens, mainly located in big cities, the majority in Pristina (51). Kosovo ranks second worst among Europe and Central Asia countries in terms of provision of childcare facilities.



Source: Staff estimates based on Life in Transition 2016 data.

Figure 12: Provision of childcare in the Europe and Central Asia region (2016)³⁰

The potential of having access to a female skilled workforce is important if there would be an easier access to childcare.

²⁸ <https://scholarworks.rit.edu/cgi/viewcontent.cgi?article=11644&context=theses>

²⁹ ESAP Social rights

³⁰ <https://openknowledge.worldbank.org/bitstream/handle/10986/27173/ACS21442-WP-PUBLIC-ADD-SERIES-KosovoJDWEB.pdf?sequence=1>

3.5. Constraints summary

The constraints identified throughout the above sections have been summarised in the below table.

Table 8: Constraints Summary Table

Constraint	Underlying Causes	Impact on market/decent work
Core Market		
Low interest of companies for local market	Local market cannot offer business opportunities that matches conditions on the exports market. The market is not structured in the sense that businesses cannot survive on the local market with the current level of salaries imposed by highly qualified staff.	Atomisation of capabilities as workers tend to go for consultancy-based work. Growth of the sector is limited by the number of highly qualified staff – limited job opportunities for junior staff. Most IT talents leave the public sector that has a key responsibility in national IT security.
Staff shortages hampers capabilities of public sector to develop framework conditions	Staff leaves for the private sector.	Key aspects of the cybersecurity strategy cannot be implemented due to a lack of staff in most public agencies leading to a low uptake of the local cybersecurity market.
Supporting Functions		
Insufficient access to a highly skilled workforce	Tertiary education is often good but theoretical due to a weak connection with the industry. Industry has developed academies that prepare staff to be operational but are not scalable and offer a fragmented professional training landscape.	Insufficient number of highly qualified professionals increases pressure on salaries and encourages staff rotation.
Rules and Regulations		
Limited number of permanent contracts	Cost of compliance with legal provisions, more specifically labour law, tends to be perceived as very high.	Employers mostly propose short term contracts that are renewed on a regular basis. Incertitude on compliance with tax regulation of self-employed people.
Maternity leave	Cost of maternity leave mainly on employer's shoulders.	Possible discrimination of women in access to employments.

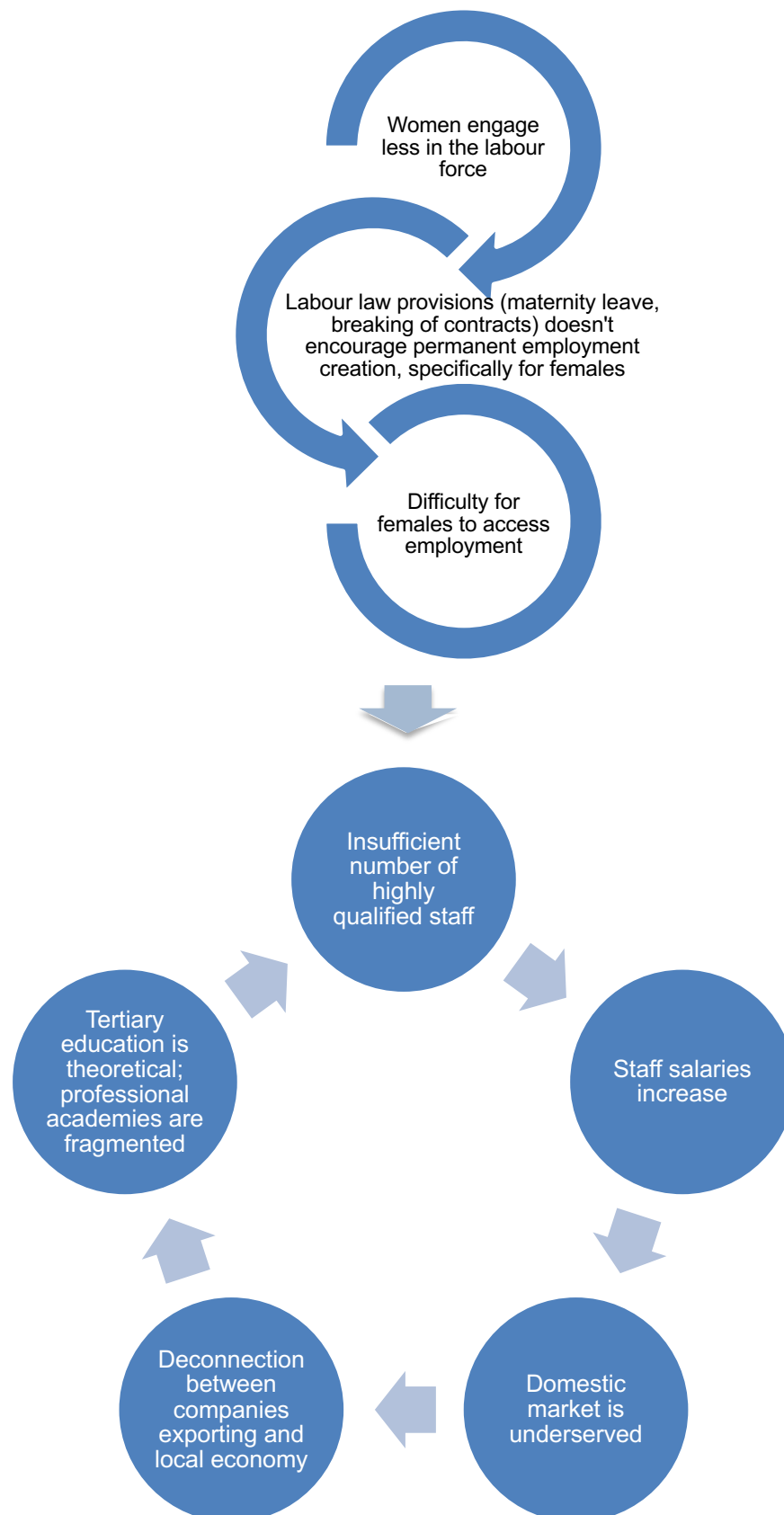


Figure 13: Summary of two embedded vicious circles fuelling a disconnection between a dynamic export market and a weak local market, reducing opportunities for female employment.

4. OPPORTUNITIES

A market systems approach seeks to identify, address and remove system-level constraints inhibiting the growth of more inclusive markets. By nature, projects using the market systems approach pilot many different interventions, hoping that some gain traction and drive a larger systemic change benefitting the many while expecting that some never make it to a point where they can have significant impact (though do no harm). The reason for this is that lots of factors, many of which are often outside of programme control, determine the success or failure of a pilot intervention. Such factors could include partner capacity and motivation, and market forces which affect prices and demand.

Once pilots are tested and have been demonstrated as effective for access to decent jobs of female workers, the project could then try to see how these approaches can be upscaled to have further impact. Sustainability and scalability will be a central focus, ensuring that business and intervention models can be scaled up and replicated by market actors to further increase the long-term impacts.

4.1. Key market actors

For sustainability purposes, it is recommended that the project implement with existing market actors taking the lead in delivering interventions. To help ensure that the partners have the right incentives and abilities to take initiatives forward, the below table summarises perceived organisational motivation and human and financial resource capacity to drive change in such initiatives.

Box 2: Facilitating market system interventions

Traditional value chain development projects tend to orient their interventions towards the question of “what problems do value chains have and how can the project solve them?” rather than focusing on “why isn’t the market environment providing solutions to these?” and “how can the project address the constraints that prevent it from effectively doing so?”

A market systems approach opts for a ‘light touch’ way of intervening, running a temporary package of activities designed to stimulate lasting behaviour change among public or private market players. The facilitation approach encourages market actors to take on new or improved roles which will lead to systemic change in the market system.

Anything is possible with facilitation: from ‘hard’ tactics like cost-sharing and technical advice, to ‘softer’ tactics like brokering relationships - as long as the facilitation stays true to the MSA principles on developing a more efficient and inclusive system that benefits the poor and which doesn’t have to rely on continued external support. There is no ‘correct’ single way to do facilitation and decisions must always be contextual.

Some general ‘rules of thumb’ are outlined in the ILO Lab brief [“Market systems facilitation, how good are you?”](#) 2017.

Table 9: Key Stakeholders in the Sectors

Sector / Organisations	Relevant Information	Motivation / Capacity ³¹
Insurances, maternity leave Illyria, Raiffeisen Insurance Broker, etc. Central Bank of Kosovo	<ul style="list-style-type: none"> no demand expressed on the market for an insurance covering staff salary during maternity leave. However, IT companies have started recruiting massively young women and now seem to be carefully managing their growth as the cost of maternity leaves could become a risk for their business; insurance companies haven’t developed a product addressing the issue as this would be a new and very specific product addressing a feature of the Kosovo labour market. IT companies however 	Motivation: medium Capacity: high

³¹ Motivation indicates the perceived organisational motivation to drive change in the sector. Capacity is related to human resource capacity to drive change in the sector. Both of these were gauged by the team based on the semi-structured interviews which took place during the field research.

Sector / Organisations	Relevant Information	Motivation / Capacity ³¹
	<p>propose health insurances to their employees as a benefit. Life insurances covering invalidity, long-term sickness and salaries paid by employers during maternity leaves could probably be envisaged. Insurance companies are well established on the market;</p> <ul style="list-style-type: none"> the regulator (Kosovo banking association) is open to assess a demand for a product issued by an insurance company as long as it remains a product subscribed on a voluntary basis; an insurance broker based in Luxembourg, is interested in providing technical expertise to develop this type of product, building on its experience of managing complex insurance policies for expatriates and sailing crews. 	
<p>Training academies</p> <p>Cyber Academy, Beetroot Academy, LIFE from Gjirafa, Digital school, Cactus Education, etc.</p> <p>ICT Business Federation: STIKK</p>	<p>Private companies are extremely active in developing specialised curricula mostly addressing their own need of recruiting staff but with a spillover effect on the industry.</p> <p>Programmes could probably be enlarged as they answer a need from the market. Participants seem to easily find job opportunities. One of the main reason why these programmes are not extended is that these curricula require a huge investment from the companies' own staff (training and mentoring). Companies are interested in investing in these academies to cater for their own internal staff needs but do not want to increase the investment / spending beyond as no academy has reached a breakeven point.</p> <p>Competition of programmes funded by donors prevent the creation of a sustainable market.</p> <p>There are options to build upon the expertise of these academies while supporting the uptake of a dynamic lifelong learning market.</p> <p>The ICT Business Federation (STIKK) could play a key role in structuring a professional training offer.</p>	<p>Motivation: medium</p> <p>Capacity: high</p> <p>The motivation is medium as developing these programmes comes with a cost for companies that currently already invest at a level that is considered to fulfil their own needs.</p> <p>STIKK:</p> <p>Motivation: high</p> <p>Capacity: medium</p> <p>The Business Federation is extremely active and engaged in many projects. The capacity is rated medium since the academies were developed individually by different companies.</p>
Main cybersecurity market players	<p>The model of a public-private partnership will be difficult to achieve as the international market is more attractive than the local market. However, market players and the public sector recognize that public-private partnerships are probably the only way to address staff shortages in the public sector in a sustainable way. Public and private sector recognize the strategic importance of missions carried out by the public sector to safeguard</p>	<p>Motivation: high</p> <p>Capacity: medium</p> <p>(ndlr: capacity is rated medium due to the current absence of an</p>

Sector / Organisations	Relevant Information	Motivation / Capacity ³¹
	<p>the sovereignty of the country and its reputation on the international IT scene.</p> <p>Sentry is exclusively providing cybersecurity services to its international clients. The company has serious references and seems to have established long-term relationships with its clients. The company is willing to offer its support to identify opportunities to cooperate in a smart way between private and public sector. The company is not the single one. 3CIS has very valid references -even if working on broader topics- and Cactus is developing a cybersecurity department. Other companies like Void or PCB (not met during the study) seem to have similar expertise. It seems advisable to start a working group between Government and main market players in order to shape the scope of a future public-private partnership that may be delivered according to national PPP procedures.</p>	<p>economic model, technical capacities do not seem to be an issue. The absence of an economic model does not seem to hamper the motivation of actors as there are overwhelming reasons justifying their implication on the topic).</p>
<p>Public institutions: Agency of Information Society, Information and Privacy Agency, KOS Cert, Office of Prime Minister</p>	<p>Public institutions have a key role in setting a strategic framework for cybersecurity and defining an enabling environment for services development. A national cybersecurity agency is in the process of creation. Other stakeholders who will be working in close touch with the future agency (computer emergence response team, data privacy, E-government) have all demonstrated a strong willingness to achieve the goals as defined in their mission but a lack of human resources to be able to cover their mission.</p> <p>Despite having rated the capacities “weak”, it should be outlined that there is no question about the leadership exercised by the managers of all these organisations.</p> <p>Two main factors hinder the fulfilment of open job positions:</p> <ul style="list-style-type: none"> • first, salaries are not sufficiently attractive for certain profiles; • second the process of recruiting is extremely cumbersome, with an obligation to open any position to other administration before being able to open it to the public. With a general lack of IT skills, the process can be extremely frustrating when after 6 months of procedures, it turns out that the profile should be less specific or that recruited candidates finally opt for another position, usually in the private sector. More agility would be welcome. One example could be to open in parallel the process to other administrations and to the general public, possibly with a preference for existing public staff if there was a candidate. <p>In general, organisations are looking for capacity reinforcement by sharing good practices or acceding to staff training. This is an area where Luxembourg could leverage its expertise (<i>Commission Nationale de Protection des Données</i>, Security Made in Luxembourg, etc.) in “traditional” cooperation programmes.</p>	<p>Motivation: high Capacity: weak</p>
<p>Universities and Institutions</p>	<p>Bachelors and Masters in ICT related domains are available in public Universities. Private universities or institutions of higher education institutions like the University of Business and Technology, AAB College,</p>	<p>Motivation: high Capacity: high</p>

Sector / Organisations	Relevant Information	Motivation / Capacity ³¹
of Higher Education	<p>the Rochester Institute of Technology in Kosovo also offer ICT related higher education degrees.</p> <p>There is an opportunity to increase the contents of the currently theoretical knowledge taught by developing collaborative research and development leveraging the recent participation of Kosovo in Horizon Europe (December 2021).</p>	

4.2. Potential areas for intervention

Based on findings of the constraints analysis and given the assessment of the key market stakeholders, several potential areas for intervention have been identified. These interventions are focused on addressing the underlying causes to key constraints. They also have a sustainability and scalability focus, such that businesses and organisations can continue, scale-up or replicate interventions beyond the life of the project.

The below is tentatively proposed as an action plan for the project to take forward. This should be reviewed and updated with regularity when new market information or analysis becomes available in light of changing sector dynamics. The identified interventions take a portfolio approach: it is recognised that some may never get traction while others may become very successful. The idea here is to test many initiatives and put resources into those that succeed while minimising investment into those that do not.

The proposed interventions can be summarised into an intervention strategy, based on three key areas:

- lower access to employment barrier for women focusing on maternity leave:
 - engage with insurance companies in order to develop new insurance products covering salaries paid by employers during maternity leave (as part of invalidity, long sickness policies),
 - support women economic empowerment agenda with a perspective to lobby in favour of a less discriminatory legal provisions,
 - raise awareness of women of employment opportunities in the digital sector / cybersecurity segment, including by providing scholarships;
- extend capabilities to train more highly qualified staff:
 - support extension of specialised programmes offered by private companies (academies) by addressing current factors limiting capacities. Possibly provide scholarships to women if relevant,
 - support development of curricula in universities and higher education institutes focusing on Master's degree. Improve market preparation of students by developing collaborative research and development;
- ensure key functions of the national cybersecurity strategy are delivered:
 - assess opportunities to develop public-private partnerships with private companies offering some of the required services at prices that would remain realistic for the Government and still attractive for local companies,
 - further encourage development of local expertise by promoting entrepreneurship: engage with organisations like the Albanian cyber association or Innovation Centre Kosovo and provide seed-funding.

4.2.1. Core Value Chain

Intervention 1

Assess opportunities to develop public-private partnerships with private companies offering some of the required services at realistic prices for Government and local market and still attractive for local service providers.

Most market players in cybersecurity are active on international markets.

On the local level, the banking sector is more mature with regards to cybersecurity services. Banks tend however to have their own staff as 9 of the 11 banks in Kosovo are part of an international group with core aspects of cybersecurity being addressed at the level of headquarters.

The public sector manages to maintain staff to cover strategic functions. The KOS-CERT located at the National Regulation Agency for Telecommunications (ARKEP) has been certified in 2017 and delivers key functionalities. The Agency of Information Society runs a state-of-the art datacentre hosting the digital infrastructure for all administrative services including eKosovo, the national digital interface for citizen. The Information and Privacy Agency is based on a 2019 law established in conformity with the European General Data Protection Regulation. The Agency has started providing awareness raising services and delivering some audits.

Yet, all these institutions know that the level of services should be extended, more specifically to reduce risks in relation with cybersecurity or to help companies addressing compliance with personal data protection regulation. The marginal efforts to increase the level of security or the scope of services requires human resources that the public sector cannot attract. Even if changes in the law on salaries were approved, all stakeholders see an opportunity to partner up with the private sector. Public private partnerships could be an option with public services addressing strategic aspects of the cybersecurity national strategy / personal data protection strategy and opening the floor to viable business models for private companies.

National companies in Kosovo have a clear preference for international clients as the contracts are way more profitable. However, companies also mentioned that they are keen to contribute to efforts undertaken by the public sector, as this will reinforce the attractiveness of the national ecosystem and at least to avoid any reputational damage in case of a massive attack on the government.

An emerging local market could probably reinforce international visibility of the Kosovo-IT scene, more specifically on cybersecurity issues. It could also open possibilities for new actors to enter the market. With a higher number of highly qualified staff trained (see Intervention 3), salaries are likely to reach a cap opening possibilities to develop viable business models for the local market.

Intervention 2

Further encourage development of local expertise by promoting entrepreneurship: engage with organisations like the Albanian cyber association or Innovation Centre Kosovo.

The limited number of companies active in a key topic like cybersecurity may threaten the development of the sector. Even market pioneers and leaders would benefit from a flourishing ecosystem as this can only reinforce the international recognition of Kosovo as a vibrant IT hub. The local market could also benefit from new market entrants if the quality of services can be warranted.

Innovation Centre Kosovo has demonstrated a strong expertise in developing acceleration programmes and offers specialised training in cybersecurity (cyber unity, a 200h training over 6 months). Building on the experience of the Fit4Start programme in Luxembourg, Innovation Centre Kosovo could develop a vertical to encourage creation of start-ups in the cybersecurity field.

The Albanian cyber association gathers the community of ethical hackers and cybersecurity experts in Albania and Kosovo. It offers a relevant platform to attract youngsters to the profession among others through challenges offering bounties to winners.

The expectation in the intervention is to encourage development of new companies in the sector and to attract more talents.

4.2.2. Supporting Functions

Potential interventions to address root causes of underperformance within the supporting functions.

Intervention 3

Support extension of specialised programmes offered by private companies (academies) by addressing current factors limiting capacities. Possibly provide scholarships to women if relevant.

The sector benefits from the experience of companies having entered the international market and built their success by providing high quality services. Those companies have developed their own internal training to identify and prepare their future staff. Many internal programmes or programmes run by sister companies were identified: Beetroot academy, the Cyber Academy, Cactus Education, Gjirafa Leadership Institute of Future Engineers, the Digital School, etc. In addition, many trainings are provided by other operators like Innovation Centre Kosovo, University of Business and Technology, etc.

Programmes seem to be run very professionally but the selection is extremely tuff with selection rates of up to 1 out of 150. This figure illustrates that students with merits probably don't manage to get access to these trainings, while at the same time the market needs more highly skilled staff. The reason why

programmes are not extended is that those mostly serve internal purposes and basically consist in an investment from organizers.

Different options can be considered to scale these successful programmes. A voucher scheme offering scholarships to certain categories of students can be an option to extend the offer if these vouchers cover a market price or the full cost of trainings. Another option is to look into possibilities to leverage digital trainings, at least for core basic modules. CyberAcademy has developed a 1 000h, one year training, specialised on cybersecurity. Students take their module online and at the end pass an exam based on a real-life case in real life situation (students have to manage when they work on the exam, when they rest).

Intervention 4

Support development of curricula in universities and higher education institutes focusing on Masters degree.

Improvements are observed with regards to higher education: the share of the population aged 30–34 with tertiary education is increasing, from 9.3% in 2012 to 20.9% in 2018. A greater improvement is observed among women, whose share increased from 6.5% in 2012 to 20.8% in 2018, compared to 12.1% for men in 2012 and 20.9% in 2018.

The gross enrolment rate in higher education is higher than neighbouring economies. In 2018-2019, the gross enrolment rate of age group 22-28 was 66.1% (KEEN, 2019), which places Kosovo at a higher level compared to some of the economies in the region, such as Albania, Bosnia and Herzegovina and North Macedonia, but it remains lower in the list compared to Slovenia, Serbia, Croatia, Turkey and some European Union Member States.³²

Universities are training staff with a decent knowledge. The market does not necessarily expect to recruit professionals who can work on business projects on day 1. Most are aware that Universities provide a more theoretical approach, but their students have the basics. At the opposite, large short-term programs aiming at bringing digital skills to youngsters do not meet the expectations of IT employers.

The University of Business and Technology, a higher education institute, trains approximately 250 IT students per year at Masters level in two faculties: information systems and computer science. There is a cybersecurity major followed by approximately 50 students. There is also a bachelor.

Public universities also train students at bachelor and Master's level:

- the University of Pristina provides IT curricula in two faculties: the faculty of electrical and computer engineering and the faculty of natural mathematical science. The enrolment seems to be almost balanced between female and male according to a survey conducted by STIKK who mentions a number of programs who have contributed to raise awareness on Science, Technology, Engineering and Mathematics for young women;

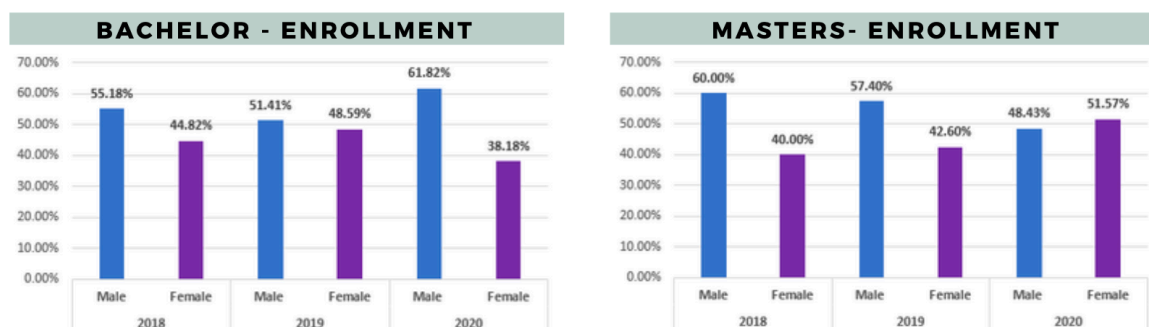


Figure 14: Male / female enrolment at Bachelor and Masters level at the University of Pristina³³

- there is also a Faculty of Computer Science at the University of Prizren and at the University in the Northern part of Mitrovica, two faculties offer majors related to the ICT Field.

The drop-out rate seems to be rather high (around 30%), mainly because students might enter the labour market before having finalised their studies. Some of the entrepreneurs mentioned that they didn't finalize their studies because they wanted to embrace an entrepreneurial challenge. A diploma is considered as a door opener but does not provide an advantage from a salary perspective on the market.

³² Performance of Western Balkan economies regarding the European pillar of social rights, 2021 review of Kosovo, European pillar of social rights.

³³ STIKK, Women in ICT.

The main improvements possible here are:

- on the qualitative side, offer Universities opportunities to work on more practical aspects. This can be attained by improving connections between industries and Universities, mainly through collaborative R&D. The recent participation of Kosovo in Horizon Europe offers perspectives to connect with European stakeholders as the local demand for R&D is rather low but could also be improved by professionalising knowledge and technology transfer;
- on the quantitative side, there seems to be room to increase the number of students with a higher education degree.

Intervention 5

Raise awareness of women of employment opportunities in the digital sector / cybersecurity segment, including by providing scholarships.

The number of females enrolling in IT higher education degrees and the number of females entering the labour market are increasing. Awareness raising campaigns and actions of organizations like Women in Tech Kosovo, Junior Geeks and more generally vulgarisation of successes in technology carried out by Innovation Centre Kosovo encourage females to opt for careers that are traditionally less favoured in science and technology.

A partnership with WIDE, Women in Digital Empowerment, a Luxembourg social impact company having developed expertise in promoting access to digital careers for women can foster local communities in Kosovo.

4.2.3. Rules and Regulations

Potential interventions to address root causes of underperformance within the rules and regulations.

Intervention 6

Engage with insurance companies in order to develop new insurance products covering maternity leave (as part of invalidity, long sickness policies).

Following clearance by the regulator, the Kosovo Central Bank that there is no obstacle towards developing a specific product to cover salaries paid by employers during maternity leave, market players could be invited to consider the opportunity to develop a new product as part of life insurances. This type of life insurances could obviously add to a benefit package that employers are currently looking to provide to employees and at the same time it would mutualise the cost of maternity leaves over a broader population and as such mitigate a risk of discrimination on the labour market.

Intervention 7

Support women economic empowerment agenda with a perspective to lobby in favour of a less discriminatory legal provisions.

Riinvest Institute, as the initiator, in cooperation with other funding organizations have collaborated in creating an independent, comprehensive and unifying platform known as the “Women’s Economic Forum”. The cooperation of the organizations in the Forum has produced this National Agenda for Women’s Economic Empowerment which is a guiding document for future engagements; which serves as an anchor measure of advocacy engagements of organizations, businesses, employees representatives, public institutions, and donors. Riinvest Institute has identified four main areas of improvement for full realization of the economic potential of women in Kosovo:

- labor law and more specifically maternity leave. Employers who are mostly bearing the costs of maternity leaves may have concerns when recruiting many young women. The fact that the labour force is young adds to the problem. The Forum looks into a more balanced contribution between employers and the society (Government) and advocates in favour of a parental leave which would obviously be less discriminatory;
- the Forum also notices that some occupations like ICT and manufacturing were not very attractive for women whereas emerging trends like digital transformation could actually offer real opportunities to women;
- looking at perspectives for women to become entrepreneurs, access to loans would appear to be more difficult for women due to the absence of collaterals. Women are usually not owning properties;
- childcare and day-care (mostly for kids but also elderly people) is mainly considered as being a responsibility for women. Pre-school is still not very common in Kosovo, but the problem remains when school starts. There seems to be a lack of affordable options for families.

The Forum analysed different options to organize childcare like public-private partnerships, increasing community-based services, converting partly schools suffering from a decrease of pupils into kindergartens, etc. Staff in the IT Sector is less concerned as the salaries usually are higher and staff may afford day care services. There are good examples like Raiffeisen bank offering an additional premium / benefit to their staff who have children.

5. CONCLUSION

The exploratory study on the potential of employment creation for women in cybersecurity services in Kosovo has confirmed the opportunity of this specific segment in the broader digital sector to offer women a better access to jobs and a higher quality of jobs.

The digital sector in general seems to be building a strong national brand on international markets and benefits from the global digitalization trend. The sector growth is mainly conditioned by the capacity to further bring highly qualified staff to the labour market. While capacities can be increased, the main workforce reserve resides in a growing number of young women arriving on the labour market, often with higher education degrees. The study has shown that integrating new staff is a challenge for companies and among those a young female workforce can be a challenge for businesses who are supposed to pay 70% of salaries during six months to cover maternity leaves. While the issues on the labour law will probably have to be addressed from a broader perspective, the IT sector seems to be in capacity to trigger a change, partnering up with the insurance sector. If the maternity leave issue can lead to a flagship project and position the IT sector as a door opener for women employment, there are other important issues that need to be addressed in order to safeguard the reputation of IT companies.

Cybersecurity services can be a promising market segment but shall also be considered from the perspective of the country's national security and compliance with European regulation. The emergence of a national cybersecurity market, despite being less attractive for established businesses than international clients, can offer the opportunity to develop a full-fledged ecosystem with start-ups entering the market. Well-established companies can also benefit from the recognition of Kosovo as a strong player in the field.

The existence of academies incorporating the experience of well-established companies in training programmes is a relevant starting point to enhance capacities of the sector. However, any intervention in that area shall be designed carefully as there is a huge training sector emerging and donor programmes might prevent its development. The study outlines the opportunities to support the development of the sector by increasing the number of students with a higher education degree, by targeting specific categories (i.e. scholarships for young females) or by encouraging the use of E-learning and digital technologies to expand existing programmes.

Finally, it should be noted that although this analysis is considered comprehensive, the project should strive to revisit, update and build upon it as the project team gathers more insights in the sector, its constraints and the market actors. This will help the project more aptly adapt and deliver in a rapidly changing sector.

Annex A:
Research interview list

Tuesday 19 July	
CERT/ National Cybersecurity Unit of Kosovo, Telecommunication regulation body	Public institution (regulator)
Public Procurement Authority	Public institution (procurement)
University of Business and Technology, Higher Education Institute	Education / training
Findbug.io	Company, marketplace
Albanian Cyber Association	Civil society
Wednesday 20 July	
Kutia Software	Company, software
Cyberacademy, Cyberlance,	Company, training
Kosovo Banking Association	Professional association
3cis	Company, services
Office of Prime Minister, Advisor for digital	Government
Thursday 21 July	
Agency of Information Society	Public institution (digital)
Employment Agency	Public institution (labour market)
Starlabs, Digital school	Company, software, services, academy
Cactus	Company, services
Gjirafa Life	Company, training
Friday 22 July	
Illyria	Insurance company
Information and Privacy Agency	Public institution (digital)
Raiffeisen Insurance Broker	Company, insurance
Kosovo Women Network / RII Invest	Civil society / Research institute

Cybersecurity specific documents:

Cybersecurity Capacity Review, Republic of Kosovo, March 2020 (Global Cyber Security Capacity Centre)

Cybersecurity in Kosovo: Strategy, Policy and Initiatives, 24 June 2022, Lulëzon Jagxhiu, Advisor to the Prime Minister on IT

Safeguarding critical infrastructure in Kosovo, KCSS, January 2022

Baka, Tedel, Critical Infrastructure Protection In The Republic Of Kosovo: A Policy Analysis On The Protection Of Electric-Energy And Water-Supply Sectors, Master Thesis, Tlilnn University of Technology, 2021

Enisa Cybersecurity Market Analysis Framework, April 2022

ICT Sector in Kosovo:

Comprehensive analysis of the ICT Sector in Kosovo, EYE Project – Swiss cooperation, January 2020

Kosovo IT Barometer 2020, STIKK, May 2021

Kosovo IT Strategy, STIKK, 2016

Labour market in Kosovo:

International Comparative Legal Guides - Employment and Labour Law 2020 – Kosovo

Jobs Diagnostic Kosovo, Alexandru Cojocaru, World Bank group, 2017

Labor force Survey, Q1 2021, National Statistics

Labour force survey 2020, National Statistics - <https://ask.rks-gov.net/media/6259/labour-force-2020.pdf>

Performance of Western Balkan economies regarding the European pillar of social rights, 2021 review of Kosovo, European pillar of social rights

Robaj, Avdullah (University of Peja), The legal nature of the individual employment contract in the spirit of Kosovo's integration in the European Union, Juridical tribune, March 2020

Women economic empowerment:

National agenda for women's economic empowerment, Riinvest Institute, 2017

Facilitating empowerment – factors influencing women's economic decisions in Kosovo, Riinvest Institute, 2018

Women in ICT, STIKK – Kosovo ICT Association, June 2021

Women's entrepreneurship, an analysis on doing business in Kosovo, Riinvest Institute, 2017

Baraku, Ema, "Freelancing as a Tool of Increasing Women's Activity Rate in Kosovo" (2020). Thesis. Rochester Institute of Technology.

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Maternity leave and childcare in Kosovo:

Child's Play: The case for developing childcare services to boost women's economic empowerment, ILO – The Lab, July 2020

Kosovo introduces a universal child benefit and extends maternity benefit to unemployed women, ESPN Flash Report 2021/03, European Union

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Maternity Leave and Women's Labor Market Status in Kosovo: Five Key Messages. The World Bank Group, September 2015

Ramosaj, Argjiro (2012): Challenges in implementation of the maternity leave in Kosovo, Munich Personal RePEc Archive

Market Systems Analysis:

International Labour Organization: [Value Chain Development for Decent Work – How to create employment and improve working conditions in targeted sectors](#) (2015)

Springfield Centre: The Operational Guide for the Making Markets Work for the Poor. (M4P) Approach, 2nd edition. (2014)