

# Market needs analysis

Document version / Work Package: Preparation / Task: 2.3

[7 Jan 2020]



DEVELOPMENT OF A MASTER PROGRAMME IN THE MANAGEMENT OF INDUSTRIAL  
ENTREPRENEURSHIP FOR TRANSITION COUNTRIES

**610198-EPP-1-2019-1-ES-EPPKA2-CBHE-JP**

Partners :



Co-funded by the  
Erasmus+ Programme  
of the European Union



The information and views set out in this publication are those of the authors and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.



Co-funded by the  
Erasmus+ Programme  
of the European Union



This document is authored by AYeconomics Research Centre team. The authors would like to thank Central Asian partners for their help in gathering data, and for their helpful suggestions and feedback:

East Kazakhstan State Technical University  
Academy of Sciences of Turkmenistan  
Turkmen State Institute of Economics and Management  
Turkmen State Institute of Finance  
Karaganda Economic University of Kazpotrebsouz  
Technological University of Tajikistan  
Tajik State University of Commerce  
Technological Park – CTA  
Technological Park – FANOVAR  
Educational Centre Business- Pro

Any errors or omissions are the authors' sole responsibility.



## Table of Contents

<b>Introduction</b> .....	4
Labour market in Central Asia: key features .....	6
Employment, work quality and productivity .....	6
Unemployment and job searching .....	14
Regional differences.....	17
Kazakhstan: Employment and unemployment rates by regions .....	17
Kazakhstan & Tajikistan: Needs of educated workforce by regions .....	19
Turkmenistan: Average wage by regions.....	20
Analysis by sectors and firms type.....	22
Skill needs .....	24
Skills analysis .....	25
Skills requirements.....	30
Delphi analysis.....	33
Trends that may affect future skills .....	42
Conclusions .....	45
Main definitions and data sources .....	48
References.....	51



## List of Figures

Figure 1: Employment to population rate (ILO modelled estimates) in CA countries. 2000-2020	7
Figure 2: Employment to population for workers 15-64 in CA countries. 2000-2020	8
Figure 3: Time-related underemployment rate in CA. Years 2005-2020	9
Figure 4: % of employment with high education	10
Figure 5: Minimum and monthly average wage (constant \$ PPP) per worker in CA. Years 2000-2020	11
Figure 6: Working poverty rate (percentage of employed living below US\$1.90 PPP) (%). Years 2000-2020	12
Figure 7: Annual growth rate of output per worker (GDP constant 2011 international \$ in PPP) (%). Years 2000-2020	13
Figure 8: The share of people in high skill occupation for Kazakhstan, Tajikistan, Turkmenistan and European Union 28 for 2018.	14
Figure 9: Unemployment rate in CA. Years 2000-2020	15
Figure 10: Combined rate of time-related underemployment and unemployment in CA. Years 2005-2020	16
Figure 11: Manufacturing employment as a proportion of total employment (%). Years 2000-2020	22
Figure 12: % of employment by sex and industry	23
Figure 13: % of temporary workers by firm size	24
Figure 14: Share of workers by occupation by CA country and sex, 2019	26
Figure 15: Skilled workers by firm size	27
Figure 16: Skilled workers in exporting and non-exporting companies	28
Figure 17: Share of firms identifying practices of competitors in the formal sector as a major constraints by types of firms	29
Figure 18: Share of firms identifying practices of competitors in the formal sector as a major constraints by exporting and non-exporting firms	30
Figure 19: Growth rate of employment and wages by occupation in Kazakhstan. 2015-2017.	31
Figure 20: Skill requirements and mismatch in Kazakhstan relative to OECD countries, 2019	32
Figure 21: Share of urban population, 2019	35
Figure 22: Air pollution, 2010-2018	35
Figure 23: Valuable skills in the labor market. Kazakhstan	36
Figure 24: Valuable skills in the labor market. Tajikistan	36
Figure 25: Reasons for the skills gap. Kazakhstan	37
Figure 26: Reasons for the skills gap. Tajikistan	37
Figure 27: Measures to tackle the skills gap. Kazakhstan	38
Figure 28: Measures to tackle the skills gap. Tajikistan	38
Figure 29: The place where the skills should be acquired. Kazakhstan	39
Figure 30: The place where the skills should be acquired. Tajikistan	40
Figure 31: Trends that might change future skills. Kazakhstan	40



Figure 32: Trends that might change future skills. Tajikistan	41
Figure 33: Valuable skills in the labor market. Turkmenistan	41
Figure 34: Reasons for the skills gap. Turkmenistan	42
Figure 35: Measures to tackle the skills gap. Turkmenistan	42
Figure 36: The place where the skills should be acquired. Turkmenistan	44
Figure 37: Trends that might change future skills. Turkmenistan	45

### List of Maps

Map 1: Employment rate (%). Year 2018	18
Map 2: Unemployment rate (%). Year 2018	18
Map 3: Percent of firms identifying an inadequately educated workforce as a major constraint per region in Kazakhstan and Tajikistan (%). Year 2019	19
Map 4: Proportion of skilled workers per region in Kazakhstan and Tajikistan (%). Year 2019	20
Map 5: Average wage. Year 2018	21



## Introduction

---

Several studies from OECD (OECD, 2016) show that in recent years skill demands have been progressively moving towards interpersonal and cognitive skills, while occupations with high skill requirements are becoming increasingly important for the OECD area as well as the Central Asian countries.

This significant change in demand has produced a growing supply imbalance for numerous countries in recent years, creating *skills shortages*<sup>1</sup> on the market. The consequences of skills shortages are varied, such as a slower adoption of new technologies, reduction of productivity, increasing unemployment rate and etc. Actually, it has been found that most countries with greater imbalance have also shown lower economic growth. However, the main goal is not only to promote economic growth, but also to increase its employment through a combination of sound macroeconomic, industrial and microeconomic policies, as well as education, employment and social policies (Alfers & Moussie, 2019).

Technological change, globalization and migration have considerably changed the skills demand imposing significant economic costs for employers, employees and society as a whole. An analysis by Skills for Jobs database presents that skill shortages are more common in high-skilled occupations, more precisely in 5 out of 10 jobs on average for OECD countries. At the same time, in low-skilled occupations skill shortages are found in just 1 out of 10 jobs (OECD, 2016). Education providers, employers and students should be aware of occupation changes and skills required in short-, medium- and long-term in order the labour market will perform appropriately. Human capital deficit especially is harmful for SME since usually they employ internally and are limited in financial resources to train employees.

The public instruction framework has made slower progress and faces skills mismatch with employers' requests, training quality and job security. Its transition circle from a "brown" economy with its landlocked geographical nature requires anticipation of skilled human resource needs in accordance with improvements in labour market interest, based on qualitative systematic assessment, certification, a sound legal framework in key and potential sectors for green growth (such as hydro-energy) and provision of quality-based training at sectoral level (Kuhn, Milasi, Horne, & Yoon, 2017).

This report is prepared to identify skills shortages and mismatch in Central Asian countries, precisely, Kazakhstan, Tajikistan and Turkmenistan. The European Union average is taken as a benchmark for comparison reasons.

---

<sup>1</sup> As described by OECD: skill shortages are situations when adequate skills are hard to find in the current labour market. On the other hand, there is a skill surplus when certain skills are in excess in the labour market relative to the demand



Data shows critical skills shortage in observed countries caused by external and internal reasons. According to the article of Ajward (2014), despite positive labor market returns Tajik economy continues experiencing significant shortage of skills. Inactive individuals in Tajikistan have altogether lower cognitive and non-cognitive skills than employed individuals. Furthermore, a huge portion of businesses report deficiencies of satisfactorily skilled individuals in the labor force. On average, an OECD study (OECD, 2018) shows that around 35% of workers are mismatched by qualifications, leading to different ways of dissatisfaction at work.

In Kazakhstan, the study showed that skills are notably inadequate in numerous areas. Agribusiness, petrochemistry, IT and business services require a highly qualified workforce for successful economic diversification aimed by the Government. Aptitudes deficiencies are particularly conspicuous at technical level, indicating the need to fortify the VET system (OECD et al. 2019). New workers frequently need essential skills even in the wake of accepting a proper education (OECD (2018)).

In the 90s the economy of Turkmenistan as well as other Soviet republics had to change from planned to market economy. Due to structural changes in the economy of Turkmenistan, the labour market has been experiencing critical skill shortage. Recent graduates having inadequate skills to obtain a job and ex-military personnel account to the majority of unemployed people who lost their job because of lack of their profession at the market. Young people account for more than a half share of job seekers according to employment service centres (Corradini, M., & Dergunova, I. (2012)).

To fulfill the expected growing need for higher-order skills in the work environment, policy makers should address skill formation across the life cycle: from conception to preschool (or early childhood development-ECD-more generally), in general education, and in particular in higher education. At all degrees of education and training, skill formation is urgent to guarantee that abilities are esteemed in the current and future labor market. HEIs have a crucial role in improving the quality of labour force and guarantee that they assemble market-esteemed aptitudes.

This report is aimed to shed light on the skills shortage and uncover causes of market underperformance. The report starts with broad analysis of macroeconomic and labor market indicators to have a general picture of economic performance of observed countries. Then, the analysis is narrowed down to the deeper regional analysis of the labour market within each country discovering interregional disparities and skills shortage in some regions caused by low labour mobility. The next level of research identifies skills needed at the firm level and specify the type of skills by type of firm. Finally, research provides trends and forecasts that will affect the future skills demand. Conclusion is in the final chapter of the document.

## Labour market in Central Asia: key features

---

Before presenting skills shortages, surplus and mismatch for CA countries, labour market basic indicators are analysed to have a better understanding of the CA countries labour markets. The indicators include unemployment rate, employment rate and labour-force participation rate.

### **Employment, work quality and productivity**

Human capital is an important source for economic growth that can be evaluated by their size (amount of people available) and their quality (the productivity of those workers measured through education). Employment rate provides a measurement to which extent countries are using their potential capacity, i.e. how many people are working relative to the population of the same age and sex group that this country has.

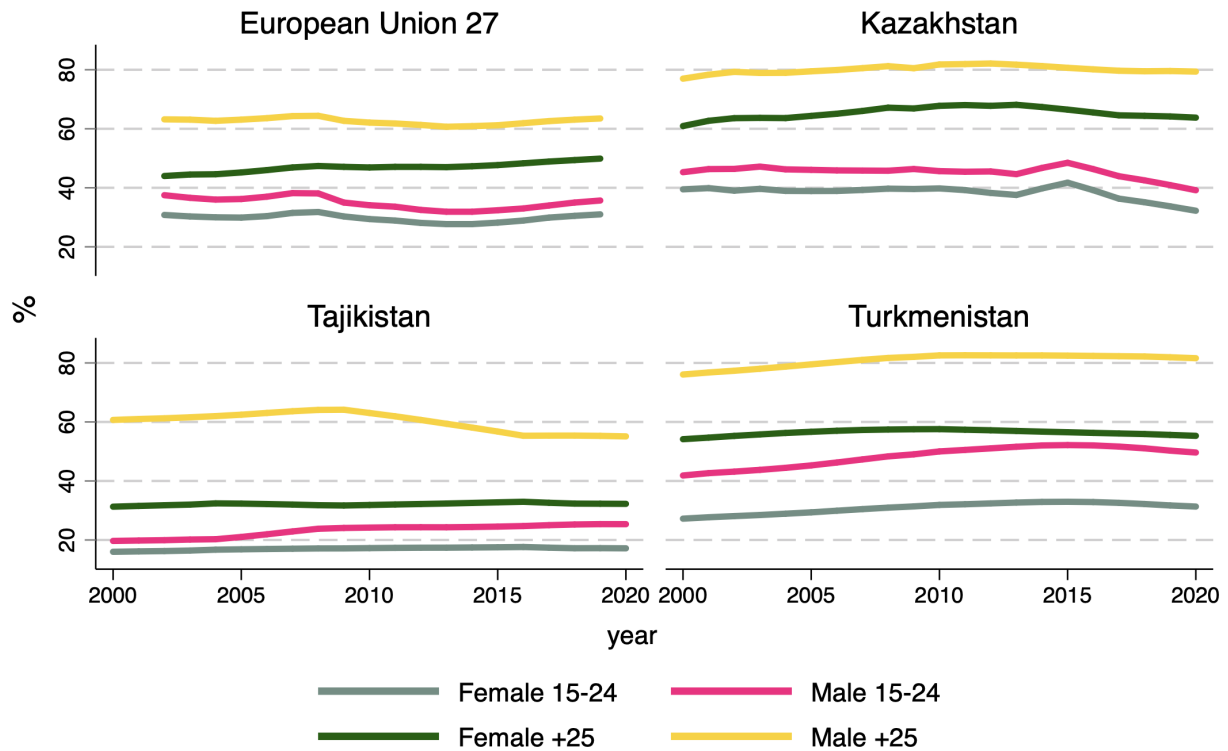
Figure 1 shows the employment rate by sex and age in CA countries. We distinguish between the young population aged 15-24 years old and adults (+25 years old) because the young population may present a lower employment rate than adults due to some of them being still in education (which will increase future productivity) and not employment. We also analyse the employment rate by sex, since women traditionally spend more time of their life cycle not employed which lowers their employment rate and the use of the country potential capacity.

The group of men over 25 is an important benchmark for evaluating the use of capacity, since they traditionally present higher employability than other groups. Turkmenistan and Kazakhstan have similar and stable employment levels of men over 25, at around 80%, while Tajikistan significantly lags behind with the employment rate less than 60%, which has been notably decreasing during the last 5 years. Tajikistan has suffered an important labour migration particularly for men in recent years. Assuming that part of male emigrants have not changed their residence to a foreign country and appeared in the population register of Tajikistan, this will bias the employment to population ratio since part of this population should not be counted as country work resources.

With regard to women employment over 25, the countries rank in the similar way. Kazakhstan is in the lead with more than 60% employment rate, followed by Turkmenistan with a slightly lower level. The employment rate of women over 25 is extremely low in Tajikistan – only 30% of adult women are employed. Notably, the gap between men and women employment is significant in all the countries, especially in Tajikistan and Turkmenistan. Apart from that, the presented figure allows to compare employment of the young population – in this case Turkmenistan leads with about 50% for the group of male 15-24; Kazakhstan has this indicator at the level of 40% which has been declining steadily since 2015. One of the reasons can be that more employers require Master's education for employment which increases years in education or young people. Tajikistan falls below 30%.



Figure 1: Employment to population rate (ILO modelled estimates) in CA countries. 2000-2020



Source: Own elaboration based on data from the International Labour Organization (ILO) and EUROSTAT

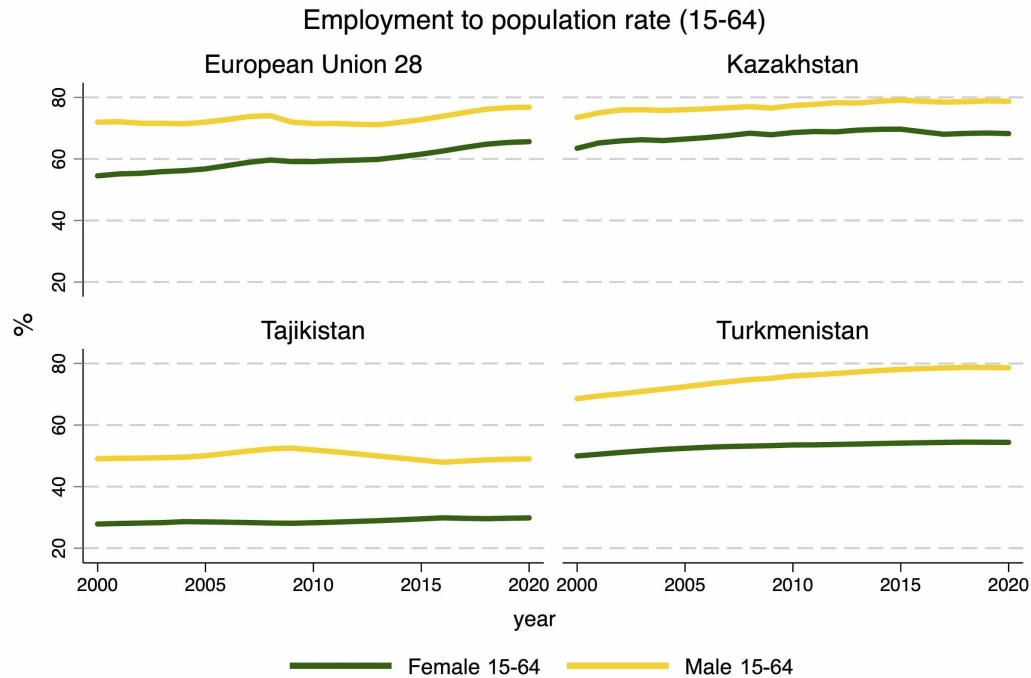
Additionally, the European Union countries are taken as a reference for comparison. The main difference is that the EU rate has been growing steadily since the crisis of 2007 and the gaps between male and female employment of all age groups are far smaller.

A glance on the figure also reveals that overall employment rates are lower in the EU members than in the three countries considered, which raises questions. It is important to note that this indicator can mislead when we compare countries with very different age structures. The ageing of the population in the European countries decreases the employment to population ratio since an important share of the population is retired (those over 65 years old).<sup>2</sup>

The figure 2 includes only the share of population from 15 to 64 years old, as we can see the difference between Central Asian countries and Europe is much less when over 65 population is not taken into account. Central Asian countries have a relatively bigger share of the young population.

<sup>2</sup> The official retirement age in Kazakhstan – 63 for men and 59,5 for women; in Tajikistan – 63 for men and 58 for women; in Turkmenistan – 62 for men and 57 for women. The data is provided as of 01.01.2020. In Kazakhstan, the retirement age for women is increased by 6 months every year, until it reaches 63 years in 2027.

Figure 2: *Employment to population for workers 15-64 in CA countries. 2000-2020*



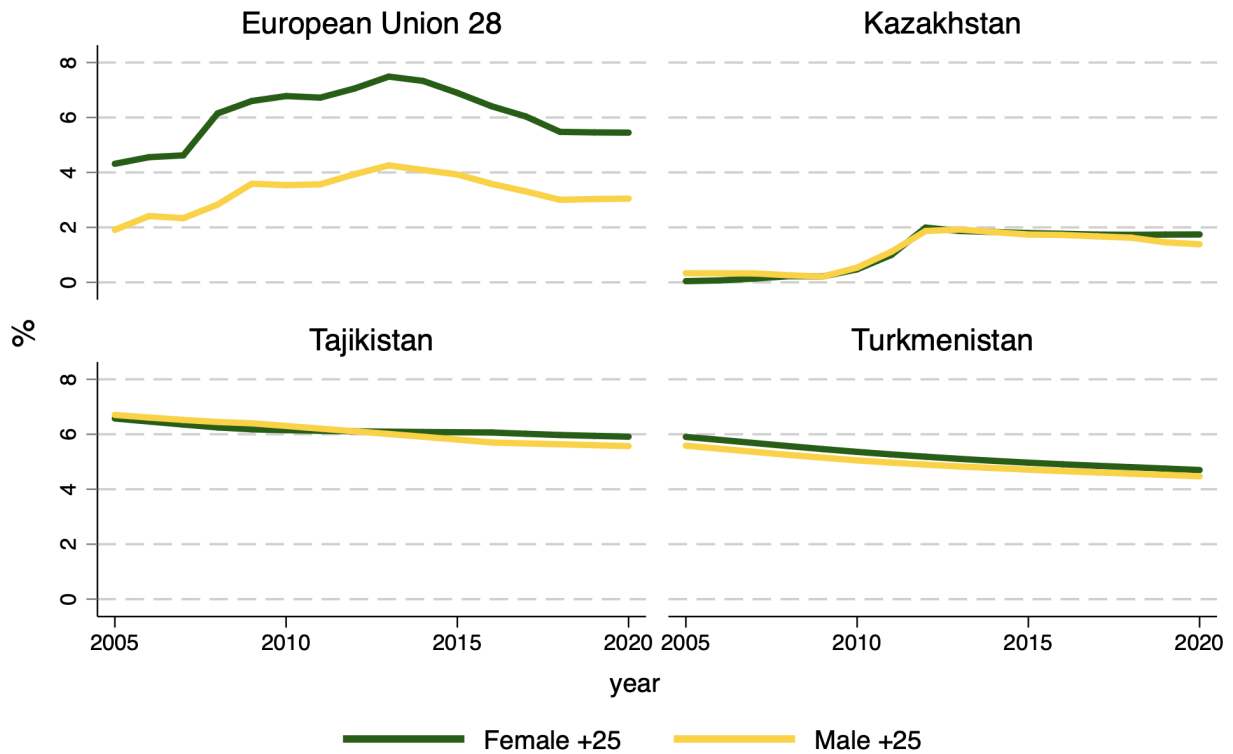
Source: Own elaboration based on data from the International Labour Organization (ILO) and EUROSTAT

However, employment to population rate does not consider the number of working hours. Flexible arrangements may be useful for increasing labour productivity when they are voluntary and working time may be lower because people may have family responsibilities, the type of working duties is dangerous, etc. The inefficiency in the labour market is created when workers are working fewer hours than they would like, i.e. time-related underemployed people. In order to be classified as a time-related underemployed person, the following criteria have to be satisfied: being willing to work more hours, being available to work additional hours, and working less time than a threshold in the reference period.<sup>3</sup> However, this definition is varied across countries, therefore the comparability is limited, especially regarding the threshold.

Thus, time-related underemployment rate, measured as proportion of persons underemployed out of the total persons employed, is presented in figure 3.

<sup>3</sup> Mata (1999) from ILO and the Resolution concerning statistics of work, employment and labour underutilization, adopted by the 19th International Conference of Labour Statisticians, Geneva, 2013

Figure 3: Time-related underemployment rate in CA. Years 2005-2020



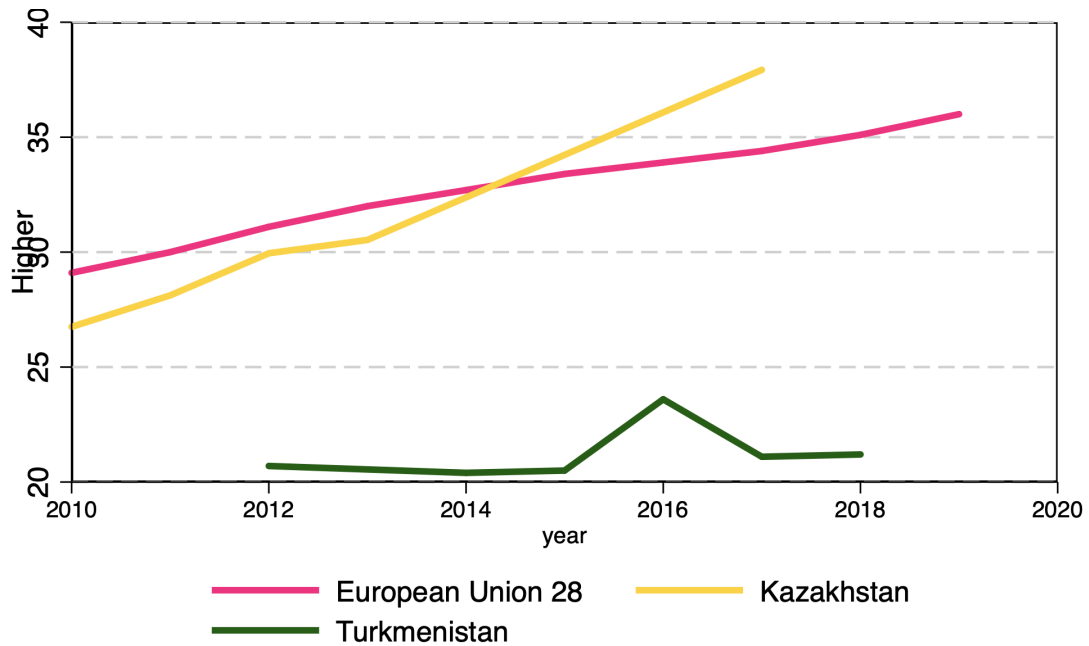
Source: Own elaboration based on data from the International Labour Organization (ILO)

The levels of underemployment are observed in Tajikistan and Turkmenistan – about 6% and 5% respectively. However, public sector shows permanent stability and increasing employment. The rate was relatively stable throughout the entire observed period in Tajikistan and decreased slightly in Turkmenistan. In Kazakhstan the number of workers who would like to work more hours increased up to 2% in 2011 and since then has remained stable – significantly lower than in Europe, where the rate is about 5,5% for women and 3% for men. The underemployment rate of women is higher in all cases and at all times (with the exception of Tajikistan, where the pattern changed this way in 2012). Remarkably, the indicator does not differ significantly by gender in Tajikistan, Turkmenistan and Kazakhstan, but there is a gap in Europe (about 2% difference between male and female underemployment).

Up to this point, we have analysed the number of workers that the economy is using from the potential amount it has, however it is also important to understand the quality they have, i.e. their skills and level of education. For this reason, we will analyse the level of education of workers (skills will be deeper analysed in the next section). Figure 4 shows the number of workers with tertiary education. Turkmenistan presents a lower share of workers with higher education which may be directly linked to its level of productivity and occupational structure

compared with Kazakhstan and the European Union.<sup>4</sup> Nonetheless, the number is rapidly growing in Kazakhstan, outperforming the countries of European Union. According to the article of Dilrabo Jonbekova (Jonbekova, 2020) , the role of university credentials is decreasing. Undergraduate degree is perceived by employers as an incomplete degree forcing students to have “more diplomas” to improve their employability opportunities.

Figure 4: % of employment with high education

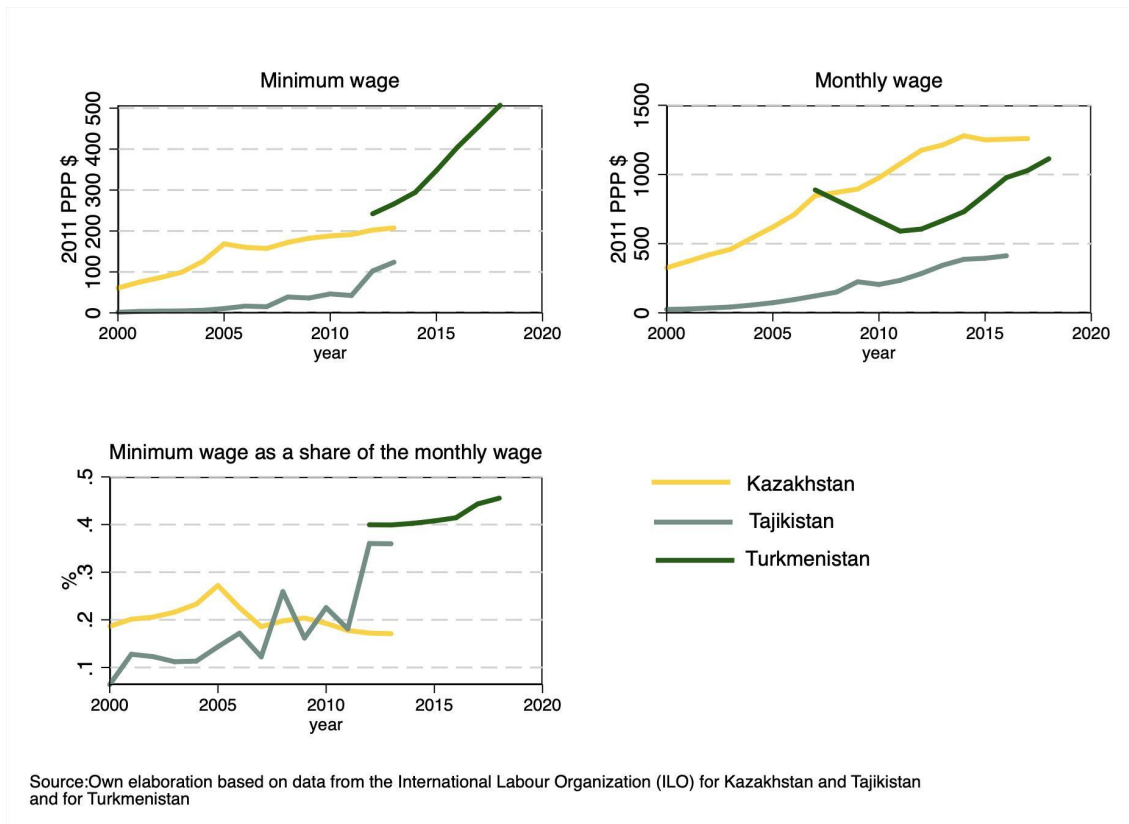


Source: Own elaboration based on data from the International Labour Organization (ILO), EUROSTAT

The International Labor Organization defines decent work as the aspirations of people in their chosen career. It includes opportunities for productive work that generates fair returns, a safe working place and social protection for families, better opportunities for self-development and social inclusion, freedom for people to voice their concerns, organize and take part in decision-making processes that may have an impact on their lives and equal opportunities and treatment for all women and men (Rantanen, Muchiri, & Lehtinen, 2020)

<sup>4</sup> It should be noted that the results for Turkmenistan are based on data from national sources, and this could narrow the difference with Kazakhstan levels and European Union. Methodology will not make the gap disappear.

Figure 5: Minimum and monthly average wage (constant \$ PPP) per worker in CA. Years 2000-2020



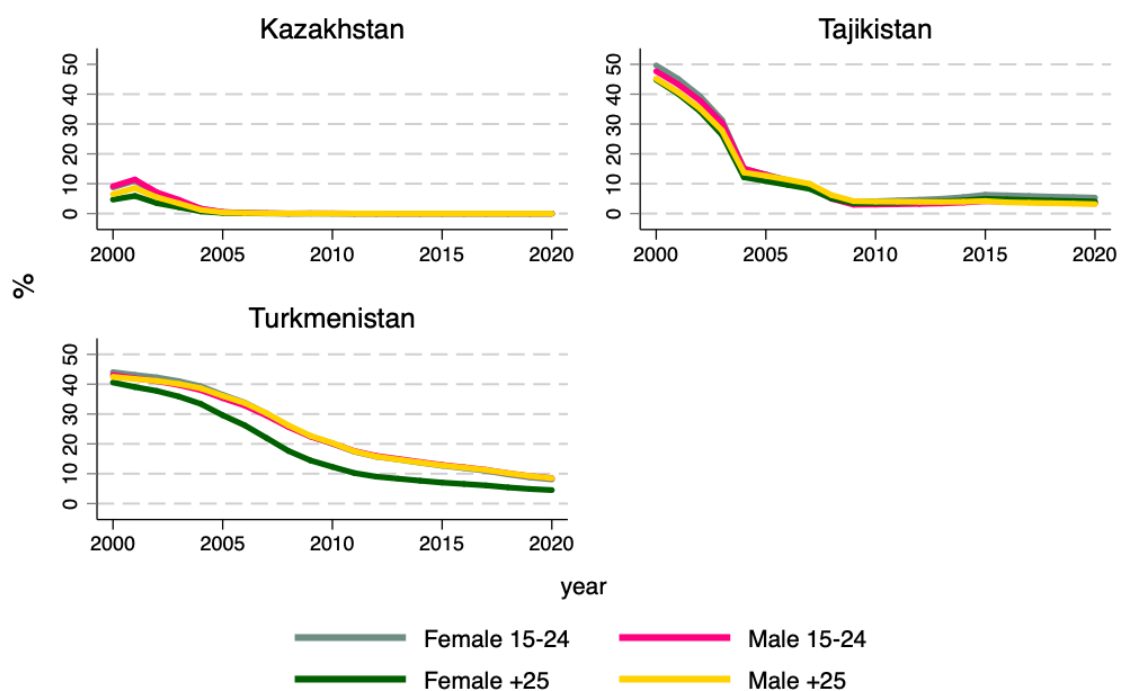
With regard to wages (constant 2011 PPP \$), the values and the dynamics of development vary significantly in the addressed three countries. The examination of the average monthly wage shows that Kazakhstan boasts the highest monthly wage at around \$1250 as of 2017 among the three countries. The amount of the average wage in Tajikistan is half the size being less than \$500 as of 2016; the growth is sustained albeit very slow. Turkmenistan was the only state to have a decrease in the monthly wage in the first decade, but in several years the wages were back to the pre-crisis level and displayed the sharpest improvement, almost reaching the level of Kazakhstan at the end of the observed period. This increase of the monthly wage in Turkmenistan seems to be linked to the strong upward trend of the statutory minimum wage that within the time span of 5 years has doubled up to \$500 in 2018. In fact, the minimum wage as a share of the monthly average wage in Turkmenistan constitutes almost half of the average wage while the ratio in Tajikistan was around 35% and 20% in Kazakhstan.<sup>5</sup> Although, salary as well pensions, social benefits and scholarships rises by 10% annually in real terms. The amount of the minimum wage in Kazakhstan and Tajikistan has been increasing steadily yet slightly, having the values of around \$200 and \$100 respectively as of 2013.

<sup>5</sup> Unfortunately, we do not have data of minimum wage after 2013 in Tajikistan and Turkmenistan.

Other indicators of the labour market and quality of work is the working poverty rate. Employment has to serve as a lift to better life out of poverty. “ Only decent jobs, providing workers with adequate earnings, sufficient (but not excessive) working time, social protection coverage, job security and a safe working environment can contribute to achieving sustainable development, and particularly, the elimination of poverty” (Gammarano, R. (2019).

Figure 6: Working poverty rate (percentage of employed living below US\$1.90 PPP) (%). Years 2000-2020

What comes to the working poverty rate in the selected countries, there has been an overall improvement for all countries since 2000. In the case of Kazakhstan, the rate has been stable at



Source: Own elaboration based on data from the International Labour Organization (ILO)

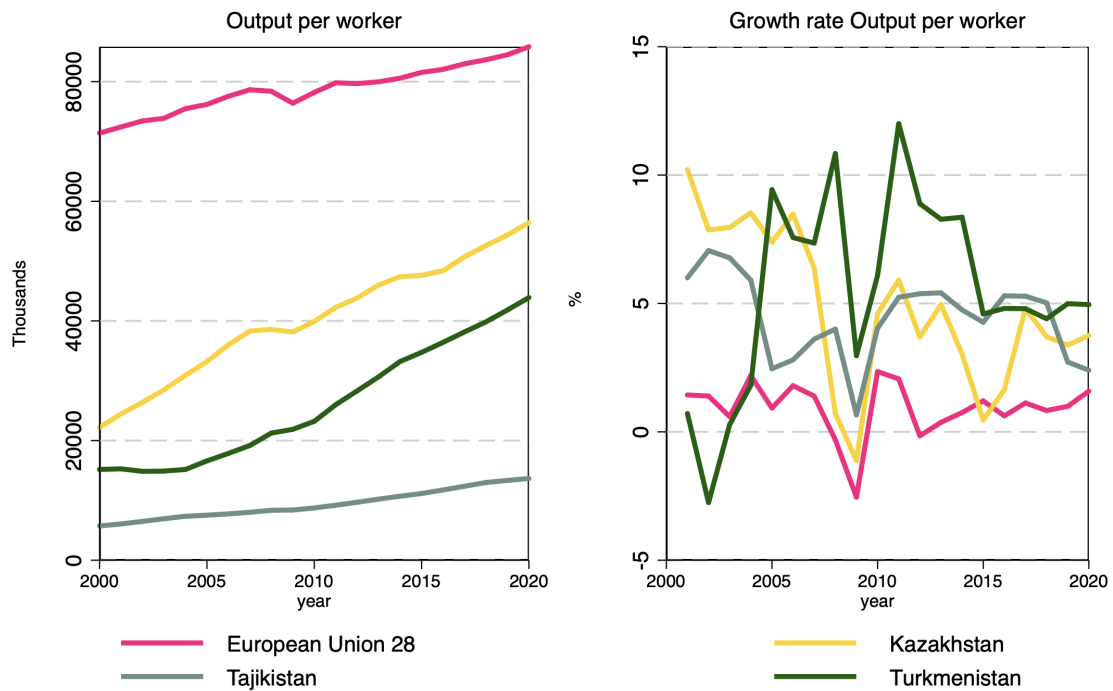
the point of zero since 2005. Tajikistan, having a peak at around 50% in 2000 has the values for all groups at around 5% in recent years, with those for women higher than for men. Turkmenistan has around 10% for men and 5% for women. Nonetheless, figure 6 shows a stable downward trend for Turkmenistan.

Quality of workers as well as quality of work can have effects on productivity. Productivity per worker (measured as the GDP constant 2011 international \$ in PPP per worker) in EU countries is higher than in the countries of Central Asia.

Productivity is an indicator of the ability of a country to use efficiently their resources to produce goods and services and it is a measure of a country's competitiveness, economic growth and living standard. Low productivity usually leads to “working poor” and showing unequal distribution of earnings between employees, employers and investors.

However, in recent years the productivity has increased especially in Kazakhstan and Turkmenistan. As it can be seen in figure 7, the annual growth rate of output per worker has been rising and falling erratically throughout the observed period. After the drastic fall in 2008 the countries managed to rebound with a peak in 2011, yet saw a further moderate downfall. The greatest performance is observed in Turkmenistan, where the rate is at about 5% as of 2020. The values for Kazakhstan are slightly lower, while in Tajikistan they are only about 2.5%. Notably, productivity growth rate in CA countries is bigger than in EU countries on average.

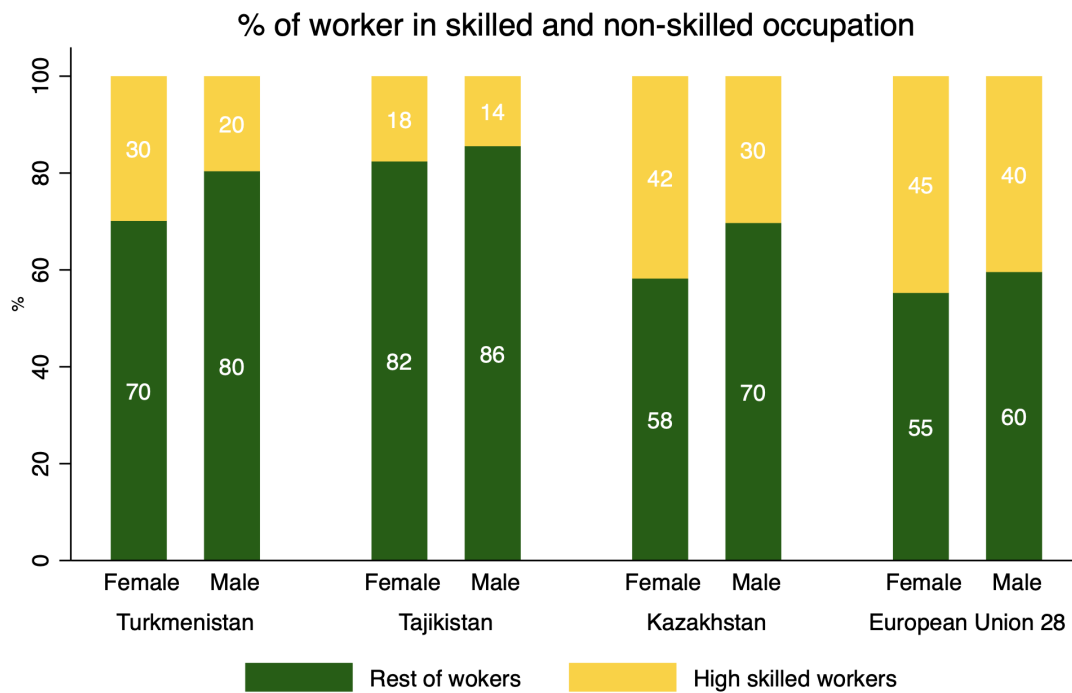
Figure 7: Annual growth rate of output per worker (GDP constant 2011 international \$ in PPP) (%). Years 2000-2020



Source: Own elaboration based on data from the International Labour Organization (ILO)

Figure 8: The share of people in high skill occupation for Kazakhstan, Tajikistan, Turkmenistan and European Union 28 for 2018<sup>6</sup>.

<sup>6</sup> High skill occupations included the groups 1 (managers), 2 (professional and 3



Source: Own elaboration based on data from the International Labour Organization (ILO)

This figure shows the share of highly qualified specialists for Kazakhstan, Tajikistan, Turkmenistan and the European Union 28 in 2018. By analyzing this data, it is obvious that in all the countries represented, the share of unskilled workers prevails in relation to highly qualified workers. And if we consider the gender ratio, the share of highly qualified women workers exceeds the share of men in each country. The lowest level of highly educated specialists was observed in Tajikistan, where the percentage of women is 18% and men - 14%. This is followed by Turkmenistan: the share of high skilled women-workers is 10% higher than that of men, which is 30% and 20%, respectively. Kazakhstan has the biggest difference between female and male high skilled workers, almost half of women are high skilled.

## Unemployment and job searching

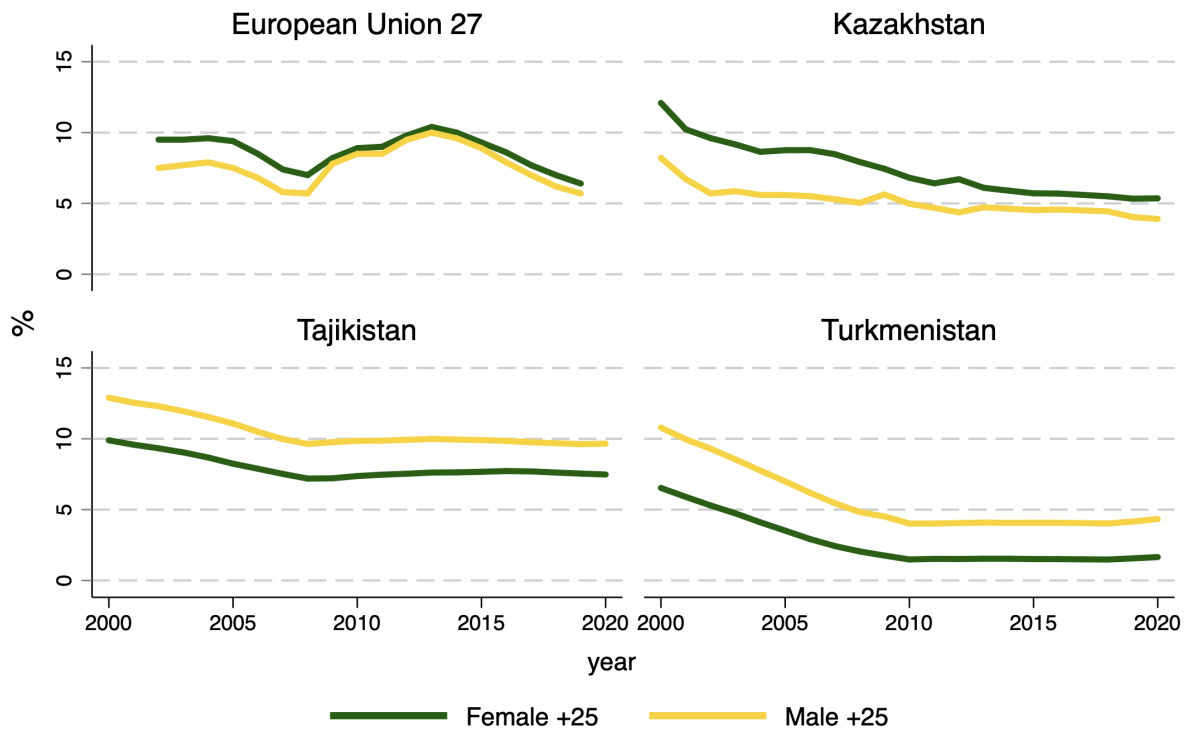
Some of the workers willing to work are not able to find the job. Unemployed workers, i.e. all persons in working age who do not have a job but wish to work and they are actively seeking for job,<sup>7</sup> is one of the main signs of imbalance between labour demand and supply. Please note that we consider all unemployed workers based on the international definition regardless of whether they are registered or not in the national Public Employment Services. The number of registered unemployed workers can be a useful indicator for monitoring particular labour market policies, but it can be biased for measuring the real size of unemployment since the number of people

<sup>7</sup> A complete definition of the indicator is presented in the annex.



willing to register depends on policy incentives such as eligibility for unemployment subsidies and accessibility to the Public employment services.

Figure 9: Unemployment rate in CA. Years 2000-2020



Source: Own elaboration based on data from the International Labour Organization (ILO) and EUROSTAT

As the figure 9 suggests, Tajikistan has the highest unemployment rates (about 10% for men and 8% for women) – the rate has not changed for the last 10 years. Kazakhstan has the unemployment rate at about 5% for both genders and there has been a slight percentage decrease during the observed period. The level of unemployment in Turkmenistan is less than 5% for men and about 2% for women as of 2020. It was declining steadily till 2020 and stayed immutable since 2010.

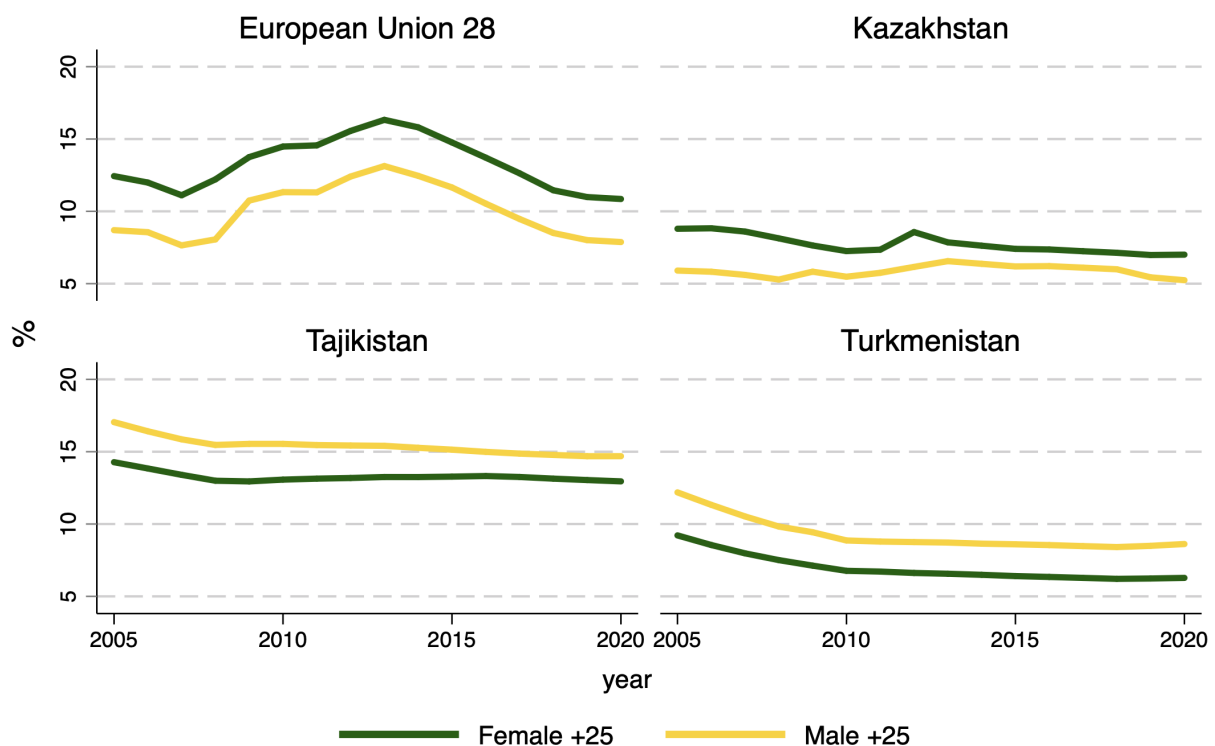
When compared to the European Union (with unemployment rate at about 6% for both genders) Kazakhstan and Turkmenistan have less people unemployed whereas Tajikistan has more. In European countries the unemployment rate has a more obvious descending trend since 2013. There are also differences across countries in a gender perspective, as in Kazakhstan and in

Europe on average the rate is higher for women than men, while in Tajikistan and Turkmenistan the situation is the opposite.<sup>8</sup>

Both unemployment and underemployment (working less hours than desired) can be seen as not using the full capacity of the labour force. These two inefficiencies can be taken into account in the unified indicator such as the share of the labour force that are either unemployed or time-related underemployed.

The figure 10 shows that the highest level of combined rate is observed in Tajikistan – about 15% for men and 13% for women which is higher than in the EU countries (about 11% and 8% respectively). Kazakhstan has a smaller rate than Europe on average. It is also remarkable that in Europe and Kazakhstan this indicator is higher for women, while in Tajikistan and Turkmenistan for men.

Figure 10: Combined rate of time-related underemployment and unemployment in CA. Years 2005-2020



Source: Own elaboration based on data from the International Labour Organization (ILO)

<sup>8</sup> The unemployment rate is higher for young workers (15-24) than for workers older than 25 in all analysed countries. This is especially worrisome in Tajikistan where youth unemployment rate is twice as much as for the age group of over 25.



Tajikistan is leading the underemployment and unemployment rates among three CA countries. There is almost no gender gap in underemployment rate. Although the gender gap still exists it has some downward tendency. In Kazakhstan, the gender gap in unemployment has improved considerably except the last three years when it tended to increase.

## Regional differences

Tajikistan, Turkmenistan and Kazakhstan have limited interregional labour mobility. Permissions to live in the capitals (Dushanbe and Ashgabat) are granted for the people born in the capital or being married to the person born and living there. The restrictions are made to avoid overpopulation of capital. In Kazakhstan there are no restrictions to live in capital, however long distance and vast territories make labour mobility challengeable.

Literature argues that labour market mobility positively affects the economy by increasing matching efficiency and productivity (Tomas Berglund, 2017). ILO confirms labour mobility as a strategic economic driver for Kazakhstan taking into account its economic diverse regions, vast territories and low population density (ILO (2015). Interregional mobility can solve the problem of labour market imbalance where some regions have labour surpluses and others high unemployment.

By analysing the key features of the labour market by region we attempt to delimit labour markets with different characteristics within each country. Low workforce mobility may keep the differences between labour markets.

Regional analysis of the labour market is based on data available. Unemployment and employment data is available only for Kazakhstan. Unfortunately, regional labour market data for Turkmenistan include only average wages by regions.

### **Kazakhstan: Employment and unemployment rates by regions**

Map 1 depicts the employment rate in Kazakhstan by region as of 2018. The highest employment rate is present in the western regions of the country where oil production and oil and gas engineering are extensively developed – Atyrau and Mangistau regions, as well as in Akmola and Almaty regions (> 70.5%). These are followed by Aktobe, Kostanay and Zhambyl regions with the employment rate between 67.6 and 70.4%. Conversely, the lowest level of employment (< 64.5%) is noted in Karaganda, East Kazakhstan, Kyzylorda and Turkistan regions.

Map 1: Employment rate (%). Year 2018



Map 2: Unemployment rate (%). Year 2018



In turn, the unemployment rate in the regional perspective is shown on Map 2. On average in Kazakhstan, the rate is 4.9% as of 2018 and the indicator does not differ significantly across the regions. The highest unemployment rate (>4.82%) was recorded in the south of the country –

Turkestan and Zhambyl regions, as well as in Almaty and Shymkent cities, North Kazakhstan, West Kazakhstan and Atyrau regions. Densely populated Almaty city has the highest unemployment rate of 5.2%, although the indicator has the lowest value for the Almaty region in total along with the Karaganda region.

### Kazakhstan & Tajikistan: Needs of educated workforce by regions

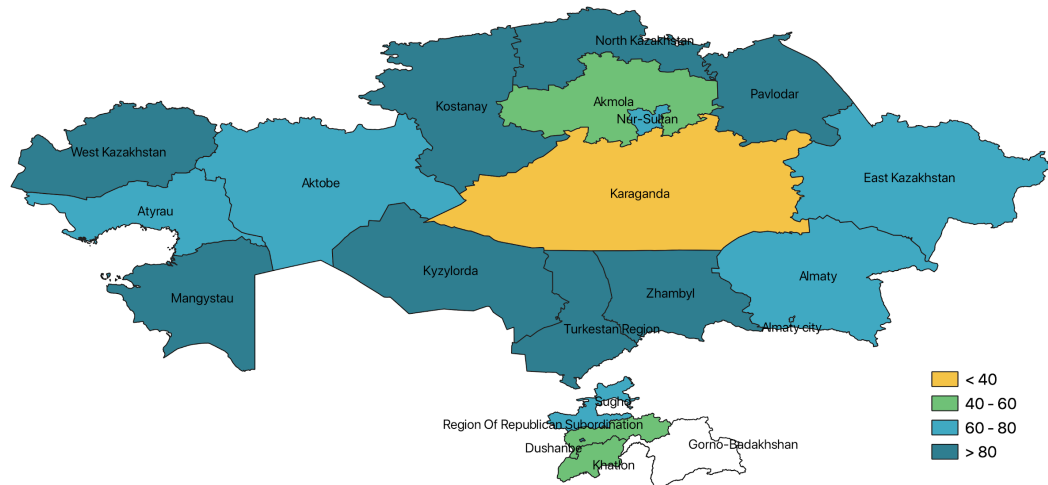
Map 3 depicts the percentage of firms identifying an inadequately educated workforce as a major obstacle, by region in Kazakhstan and Tajikistan for 2019. According to this map, less than 20% of firms in such regions as West Kazakhstan, Aktobe, Mangystau, Kyzylorda, Karaganda, Turkestan Region, Zhambyl, East Kazakhstan reported the lack of educated workforce. While in regions such as Kostanay, North Kazakhstan, Akmola, Pavlodar, this percentage reaches from 20 to 40. These regions are followed by Nur-Sultan and Almaty, with the results of 40-60%, and completing the chain is the region with the highest percentage of firms considering an inadequately educated workforce as the main obstacle is Atyrau, where the indicator reaches up to 60%. North regions are prevailed by agricultural firms and Atyrau is a mono region based on oil and gas mining region.

*Map 3: Percent of firms identifying an inadequately educated workforce as a major constraint per region in Kazakhstan and Tajikistan (%). Year 2019*



The regions of Tajikistan such as Sughd, Region of Republican Subordination, Dushanbe, Khalton, consider as the main obstacle an inadequately educated workforce. And the region with no information provided on this indicator is Gorno-Badakhstan.

Map 4: Proportion of skilled workers per region in Kazakhstan and Tajikistan (%). Year 2019



Map 4 shows the share of skilled workers by region in Kazakhstan and Tajikistan as a percentage for 2019. In Kazakhstan, the region with the lowest percentage of skilled workers is Karaganda, where the share is less than 40%, the indicators are slightly higher in Akmola. In Atyrau, Aktobe, Nur-Sultan, Almaty, East Kazakhstan skilled workers account for 60-80% of the labour force. The regions with the highest proportion of skilled workers are West Kazakhstan, Mangystau, Kostanay, North Kazakhstan, Pavlodar, Kyzylorda, Turkestan Region and Zhambyl with an indicator reaching 80%.

Dushanbe, Khalton in Tajikistan have a share of 40 to 60%. Sughd and Region of Republican Subordination make up 60-80%. And the region with no information provided on this indicator is Gorno-Badakhshan.

#### Turkmenistan: Average wage by regions

Map 5 shows the Average Wages for 2018. Thus, the region with the highest salary is Balkan, where the average salary is 1,800 Turkmen manats. Balkan region has the biggest share among other four regions of industrial outputs which are fuel and energy sectors, and the oil-producing and oil-refining industries; in agriculture region accounts one third of the country's total camel population.

Ashgabat - capital of Turkmenistan, follows with a salary ranging from 1,600 to 1,800 manats. The capital accounts for more than a half of total volume of retail trade turnover. Public administrative institutions and state-owned enterprises are located in Ashgabat.

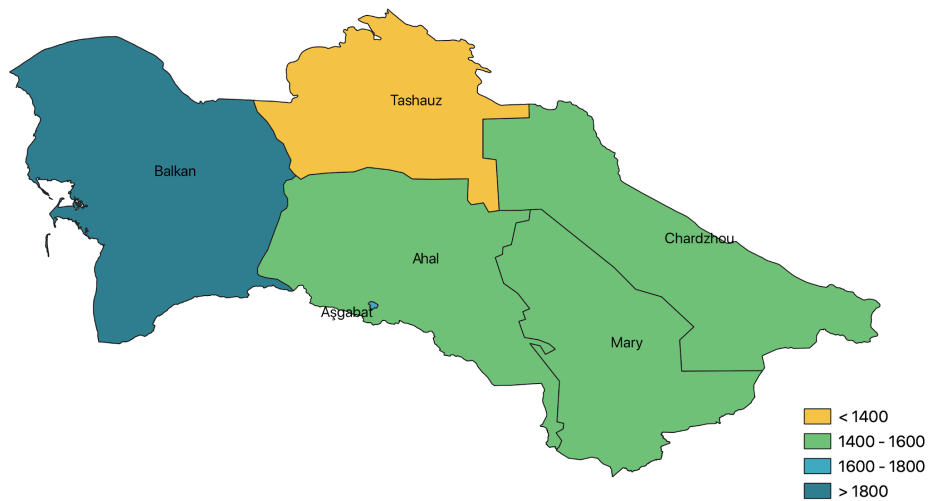
In regions such as Ahal, Mary and Lebap (Chardzhou on the map), the average salary is 1400-1600 Turkmen manats. The Ahal region accounts for one third of the country's agriculture output



which include fruit and vegetables, dairy and meat outputs. The Mary region has the largest share of rural population having important power energy and cotton production.

Region with the lowest average wages is Tashauz, where the average salary reaches 1400 manats. Tashauz is an agricultural region dominated by the agriculture industry mainly cotton production.

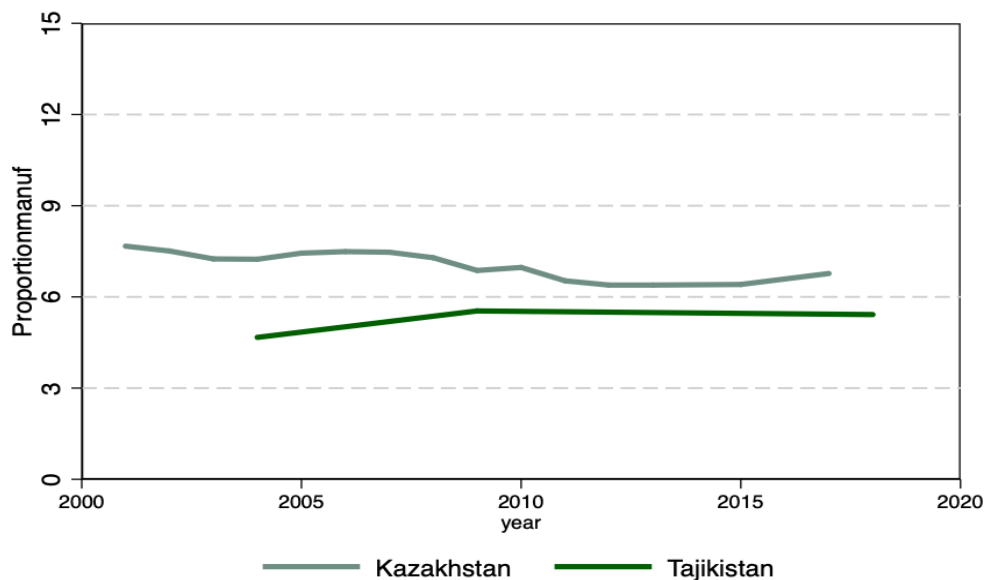
*Map 5: Average wage. Year 2018*



## Analysis by sectors and firms type

The MIETC project is aimed to develop the capacity of industrial entrepreneurs. Sector level analysis provides valuable information on the potential of job creation by the manufacturing sector. As it is seen from the figure below, the percentage of manufacturing employees as a part of all employees is slightly bigger in Kazakhstan than in Tajikistan being at around 7% and 5% respectively. Over the last period, this indicator increased mildly in Kazakhstan and remained stable in Tajikistan. Unfortunately, data for Turkmenistan is not available.

Figure 11: *Manufacturing employment as a proportion of total employment (%). Years 2000-2020*

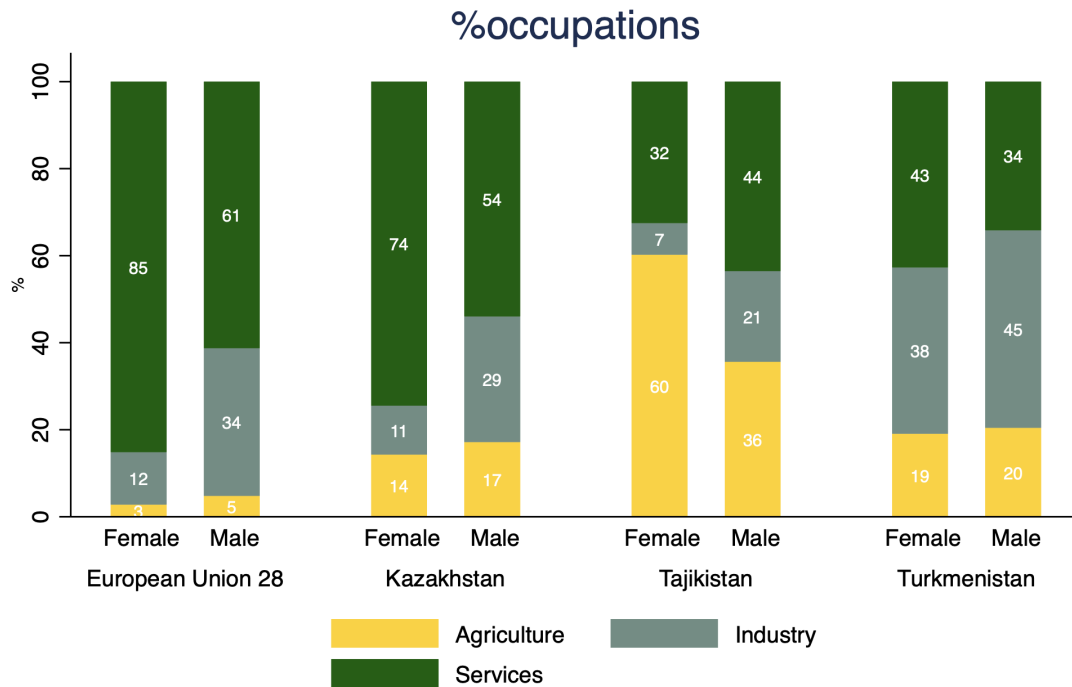


Source: Own elaboration based on data from the International Labour Organization (ILO)

The figure 12 shows employment by sectors and by gender, Turkmenistan has the highest share of industrial employment for females and males. Tajikistan has the lowest share of females working in industry and the highest share of women working in agriculture.



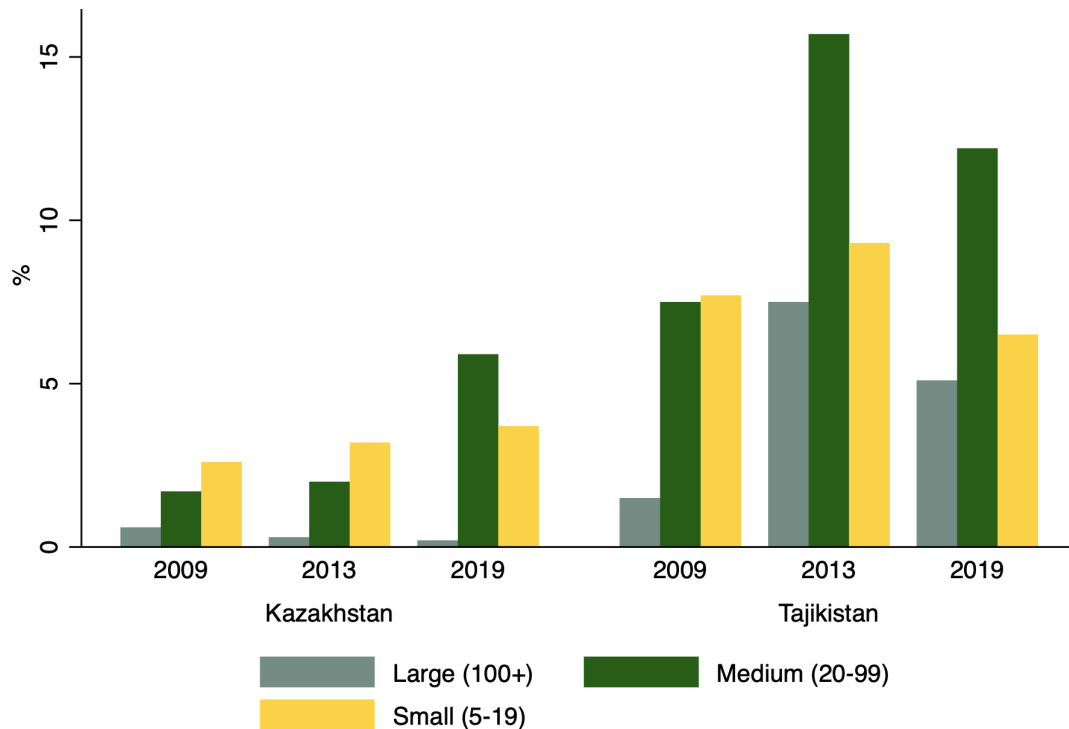
Figure 12: % of employment by sex and industry



Source: Own elaboration based on data from the International Labour Organization (ILO)

The analysis of this figure shows an increasing trend of the share of temporary workers at medium and small size firms in Kazakhstan. The share is decreasing for large size companies. As can be seen from the data for 2009 in Kazakhstan, the majority of temporary workers about 2.5% were employed in small firms. Medium-sized firms contracted about 2%, while large firms had the smallest number of about 0.6%. Analyzing 2013, it can be noted that the changes were small and there was an increase in the share of temporary workers in small and medium-sized firms and a decrease in large ones. Thus, the percentage in small firms was about 3%, in medium ones about 2.2% and in large ones about 0.3%. By 2019, the percentage of temporary workers in large firms continued to decline and amounted to about 0.1%, while the number in small companies kept growing (2.7%), and in medium-sized firms increased sharply (6%).

Figure 13: % of temporary workers by firm size



Source: Own elaboration based on data from Enterprise Surveys (Wold Bank)

Analyzing Tajikistan, it is worth noting that the percentage of temporary workers is several times higher than in Kazakhstan. Thus, in 2009, small firms employed approximately 7.5%, in medium-sized - slightly less - 7.4%, and large firms about 1.8%. 2013 saw big changes and the share of temporary workers in large and medium-sized firms changed dramatically. Thus, in large companies this number increased to 7.4%, and in medium-sized it became more than 15%. At the same time, there were no such sharp changes in the indicators for small firms, although there was a noticeable increase, amounting to about 8.5%. By 2019, the situation had slightly changed and a decrease was noticeable in all indicators. Consequently, the percentage in large firms dropped to 4%, in medium-sized firms to approximately 12%, and in small firms to about 6%.

## Skill needs

This section is divided by two parts: the first part examines levels of skills (from basic to professional skills) by different types of firms and its share; the second part determines market needs in particular skills.



## Skills analysis

In order to classify all the jobs in the world, ISCO-08 is designed so that occupations are arranged into one of 436 unit groups at the most detailed level of the classification hierarchy. Unit groups are in turn arranged into 130 minor groups, 43 sub-major groups and 10 major groups, based on their similarity in terms of the skill level and skill specialization required for the jobs. Skill level is defined as a function of the complexity and range of tasks and duties to be performed in an occupation. There are 4 skill levels and the major groups of occupations map with these levels.

Occupations at Skill Level 1 typically involve the performance of simple and routine physical or manual tasks. Many occupations at Skill Level 1 may require physical strength and/or endurance. For some jobs basic skills in literacy and numeracy may be required. The major group of Elementary Occupations is the one requiring Skill level 1.

Skill level 2 involves the performance of tasks such as operating machinery and electronic equipment; driving vehicles; maintenance and repair of electrical and mechanical equipment; and manipulation, ordering and storage of information. Many occupations at this skill level require relatively advanced literacy and numeracy skills and good interpersonal communication skills. This skill level is required for the following major groups – Clerical Support Workers; Services and Sales Workers; Skilled Agricultural, Forestry and Fishery Workers; Craft and Related Trades Workers; Plant and Machine Operators, and Assemblers.

Skill level 3 involves the performance of complex technical and practical tasks that require an extensive body of factual, technical and procedural knowledge in a specialized field. A high level of literacy and numeracy and well-developed interpersonal communication skills is required. The group of Technicians and Associate Professionals performs technical work and is required to have specialized knowledge.

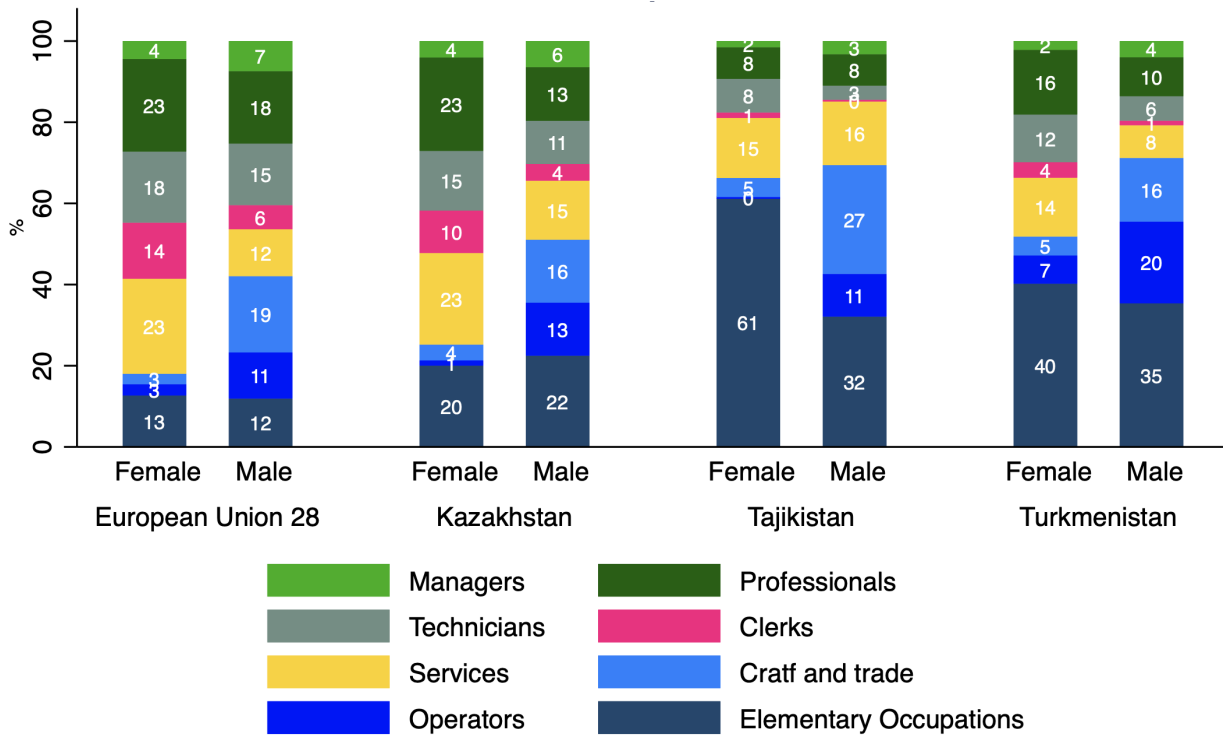
Skill level 4 involves tasks that require complex problem-solving, decision-making and creativity based on an extensive body of theoretical and factual knowledge in a specialized field. These skills usually include the ability to understand complex written material and communicate complex ideas in media such as books, images, performances, reports and oral presentations. The group of Managers get typically involved in complex technical and practical tasks that require the aforementioned skills. The group of Professionals should also have a high level of knowledge, experience and be specialized in their occupation.<sup>9</sup>

The below figure demonstrates the share of workers by major groups of occupations in CA countries and EU average.

---

<sup>9</sup> International Standard Classification of Occupations: ISCO-08 / International Labour Office. – Geneva: ILO, 2012

Figure 14: Share of workers by occupation by CA country and sex, 2019



Source: Own elaboration based on data from the International Labour Organization (ILO)

A glance at a share of workers by occupation as of 2019 reveals the prevalence of elementary occupations in all three countries of Central Asia (figure 14). In comparison, in EU countries a larger share of population is employed in high skill types of jobs and significantly smaller share have elementary occupations.

In Tajikistan, 43% of workers were employed in elementary occupations, the lowest skill type of jobs. It is particularly noteworthy to examine the picture from a gender perspective – as much as 61% of female employees had elementary jobs in contrast with 32% of men. The second largest share of employees was in craft for men (27%) and services for women (15%). The total share of managers is 3% in Tajikistan.

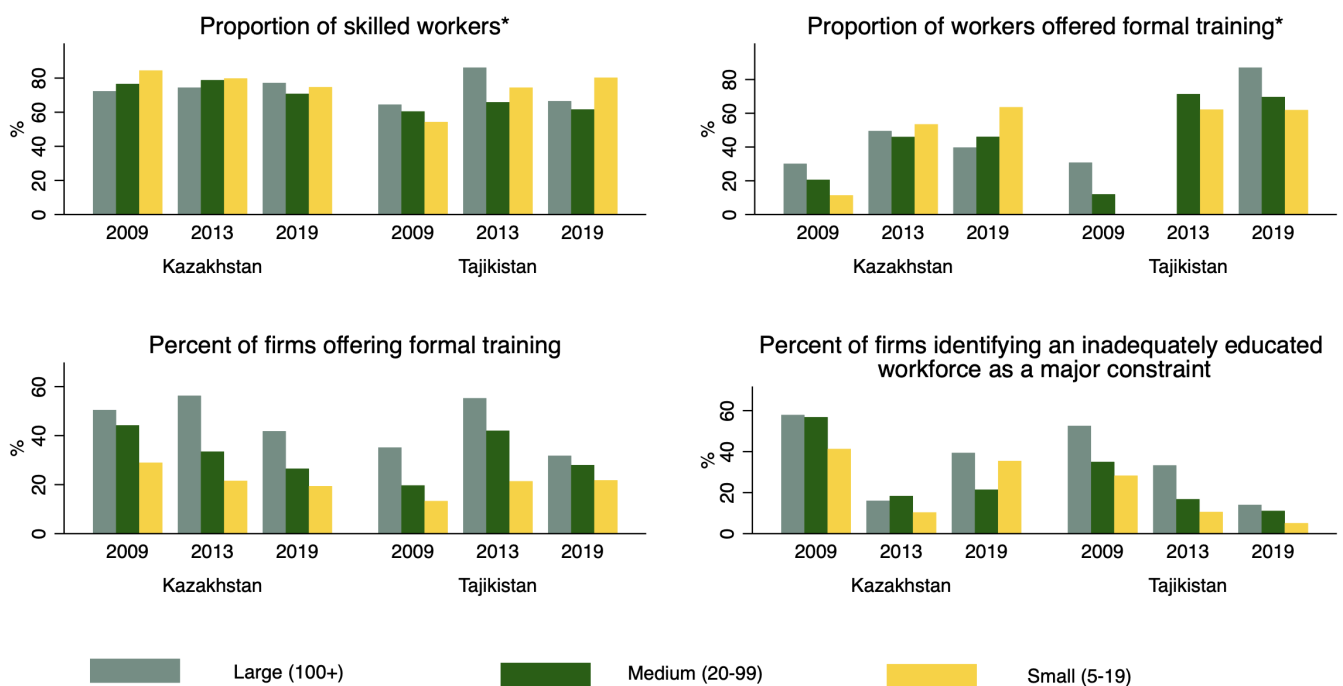
Turkmenistan had more than a third (37%) of its workforce employed in elementary jobs. The share of operators is large too (15%), being even larger for men. The share of managers is 4%.

In Kazakhstan the distribution is more balanced, yet elementary professions still constitute the largest group (21%) doubled in comparison with the EU average. There follow service workers and professionals (18% each), technicians (13%) and craft workers (10%). The share of managers in Kazakhstan is 6%. With regard to distribution of Kazakhstani workers by gender, it is

remarkable that the highest percentage of women is employed as service workers and professionals (23% each) only then followed by elementary occupations (20%) whereas for men the most popular jobs in order of importance are elementary jobs (22%), craft and trade jobs (16%) and jobs in services (15%).

Based on The Enterprise Survey from the World Bank we analyse the skill level and requirements by firm characteristics for Kazakhstan and Tajikistan.<sup>10</sup>

Figure 15: Skilled workers by firm size



Source: Own elaboration based on data from Enterprise Surveys (World Bank)

The figure above shows the proportion of skilled workers in firms of different sizes, the incidence of formal training offers, and firms' perception of the inadequately educated workforce as a constraint in Kazakhstan and Tajikistan.

With regard to skilled workers, the survey reveals a similar number in Tajikistan and Kazakhstan. In Tajikistan, the proportion of skilled workers has decreased since 2013 in all but small firms. Conversely, in Kazakhstan, the share of skilled workers increased slightly only in large firms and decreased in both medium and small.

Whereas in Tajikistan the proportion of workers offered formal training is the highest in large firms (more than 80%), in Kazakhstan the share of employees provided with formal training is

<sup>10</sup> Unfortunately, we do not have data for Tajikistan.

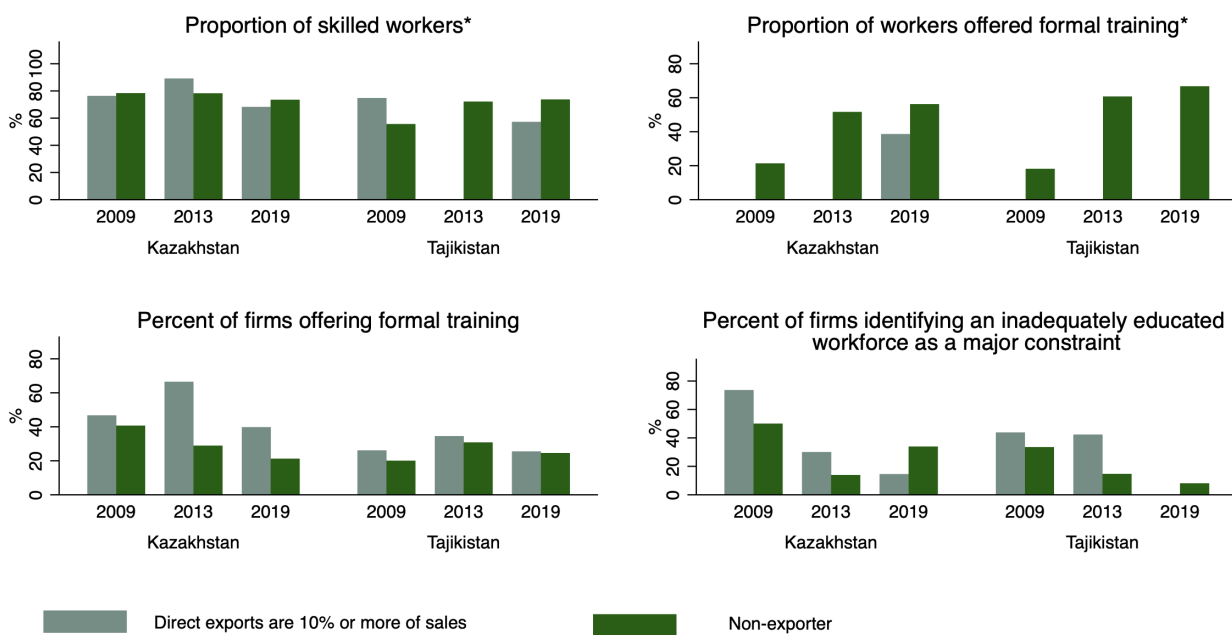


the largest in small firms (around 65%), being especially low in large firms. Only 40% of Kazakhstani employees working in large companies are offered formal training.

Nevertheless, the percentage of firms offering formal training dropped in both countries in 2019 compared to 2013. Thus, around 40% of large firms in Kazakhstan and 30% in Tajikistan provide such an opportunity. In both countries, just around 20% of small firms train their employees.

Inadequately educated workforce appears to be a great concern in Kazakhstan. In Tajikistan, the percentage of firms identifying inadequately educated employees as a major constraint decreased in the firms of all sizes in 2019 compared to 2013, whereas in Kazakhstan it increased in all the firms. According to the figure, about 40% of small and large firms define inadequately educated employees as the main constraints.

Figure 16: Skilled workers in exporting and non-exporting companies



Source: Own elaboration based on data from Enterprise Surveys (Wold Bank)

Figure 16 allows us to compare the same shares in exporting and non-exporting companies. In Kazakhstan, the proportion of skilled workers was higher in exporting rather than non-exporting firms in 2013, whereas in 2019 it turned into the opposite. In Tajikistan, there are fewer skilled employees in exporting forms than non-exporters as well. In non-exporting companies, more than 70% of workers are offered formal training in Tajikistan and less than 60% in Kazakhstan. There is a lack of data with regard to exporting firms.

According to Ajwad et al. (2014) Tajikistan is increasingly in need of the skills that would be necessary for the "new economy." On one hand, there is an increase in new economy and

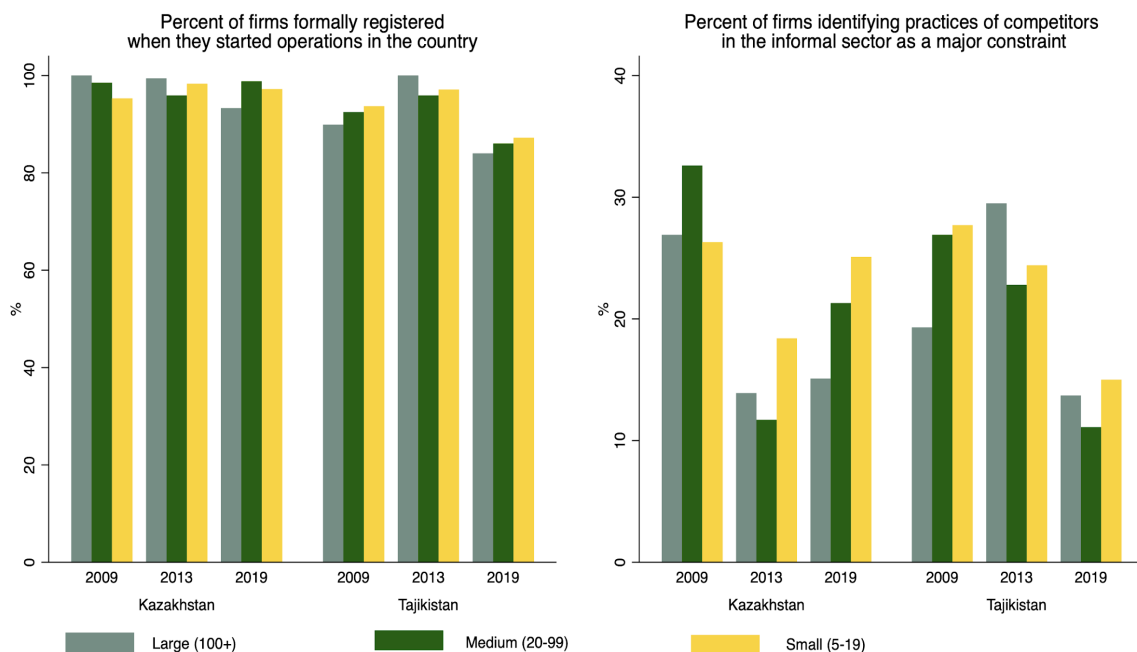
routine cognitive skills, in most cases also in manufacturing and services, and on the other hand, there is a decrease in routine manual skills, mostly in low-productivity agriculture and retail services.

The percentage of non-exporting firms offering formal training in Kazakhstan is almost twice as small as the percentage of exporting firms (around 20% and 40% respectively as of 2019). In Tajikistan, the level is similar for both exporters and non-exporters (about 25%).

Inadequately educated workforce became a more important concern for Kazakhstan exporting firms and less of a problem for non-exporting firms in 2019. In Tajikistan, the share of non-exporting firms who identify poorly educated workforce as the main constraint is just about 10%.

The next two figures show the way to approximate the magnitude of the informal sector in Central Asian countries- Informal employment is very harmful for the labour market by worsening labour conditions, decreasing productivity and quality of labour force.

**Figure 17: Share of firms identifying practices of competitors in the formal sector as major constraints by types of firms**

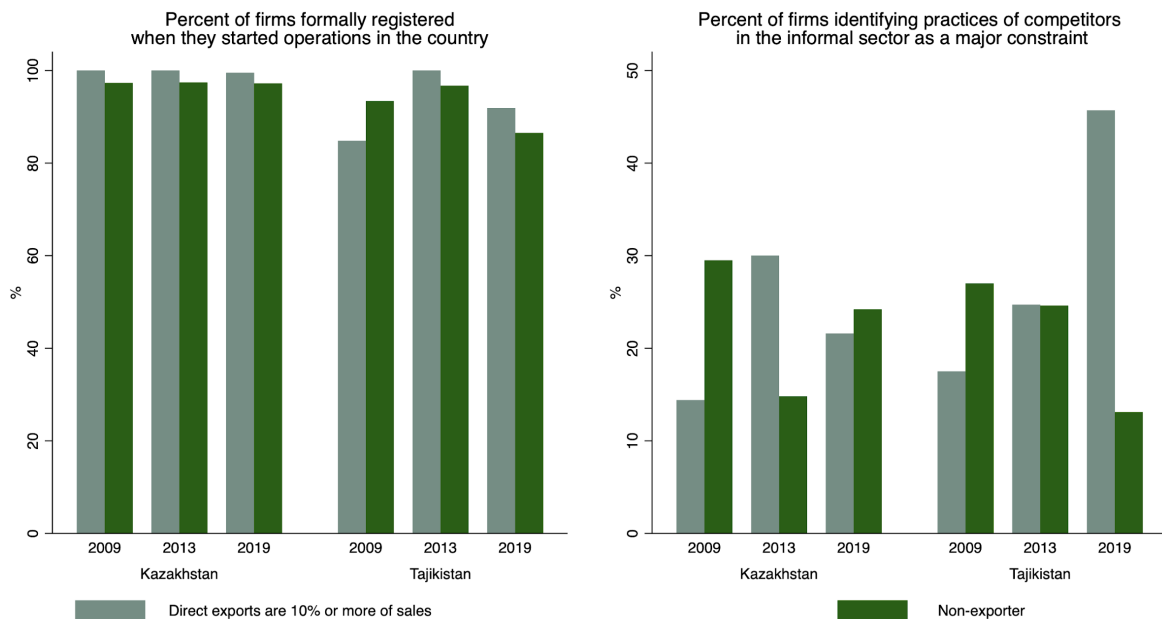


Source: Own elaboration based on data from Enterprise Surveys (World Bank)

The figure 17 demonstrates that the share of firms identifying competitors from informal sectors as main constraints increased from 2013 for all types of firms in Kazakhstan and the growth is bigger for small and medium size firms. In Tajikistan the trend is opposite, showing a declining trend from all types of firms. The study of Ajwad et al. (2014) found a sharp difference was found

between the skills of employees of formal and informal sector, with those working in the formal field having better cognitive and non-cognitive skills.

*Figure 18: Share of firms identifying practices of competitors in the formal sector as major constraints by exporting and non-exporting firms*



Source: Own elaboration based on data from Enterprise Surveys (World Bank)

Likewise, in the perspective of exporting and non-exporting firms, the percentage of formally registered firms has not changed in Kazakhstan – all exporters and almost all non-exporters are registered. In Tajikistan, the percentage improved in 2013 compared to 2009, yet worsened in 2019.

Around 45% of exporting firms in Tajikistan identify practices of competitors in the informal sector as a major constraint (for non-exporting firms the percentage is around 13% as of 2019). Since 2013 the percentage has almost doubled for exporting firms and in contrast has been halved for non-exporting firms. With regard to Kazakhstan, the informal firms were a major obstacle for less exporters and more non-exporters if compared to 2013.

### Skills requirements

According to the OECD skill needs indicator is made up of five complementary subindices and constructed in two consecutive steps. In the first step, subindices for hourly wage growth, employment growth, unemployment rate, hours worked and under qualification are used to provide indications on labour market pressure. The result of the first step analysis allows us to rank the occupations from the scarcest to one of the most redundant in each country of analysis



and create an occupational shortage index. In the second step, the evidence from the occupational shortage index is used to underline skill requirements in observed occupations and professions.

For Central Asian countries (just Kazakhstan is included for the moment), one of the main sources to analyse the labour market needs is the Programme for the International Assessment of Adult Competencies (PIAAC). This programme elaborates detailed information per country, including the most required skills on the labour market.

Shortages occur when the skills sought by employers are not available in the pool of potential recruits. Surpluses occur when the supply of certain skills is higher than the demand for them and can be defined by a high unemployment rate. As no direct measures to identify demand skill demand can be applied, indirect measures must be used to define shortages in different occupations. The following measures can be used to obtain data on shortages and surpluses: volume measures (employment/unemployment rate, vacancies in labour market), price measures (wage growth), work intensity measures (growth in working hours, incidence of overtime) and quality measures (incidence of under qualification and training).

Figure 19: *Growth rate of employment and wages by occupation in Kazakhstan. 2015-2017.*

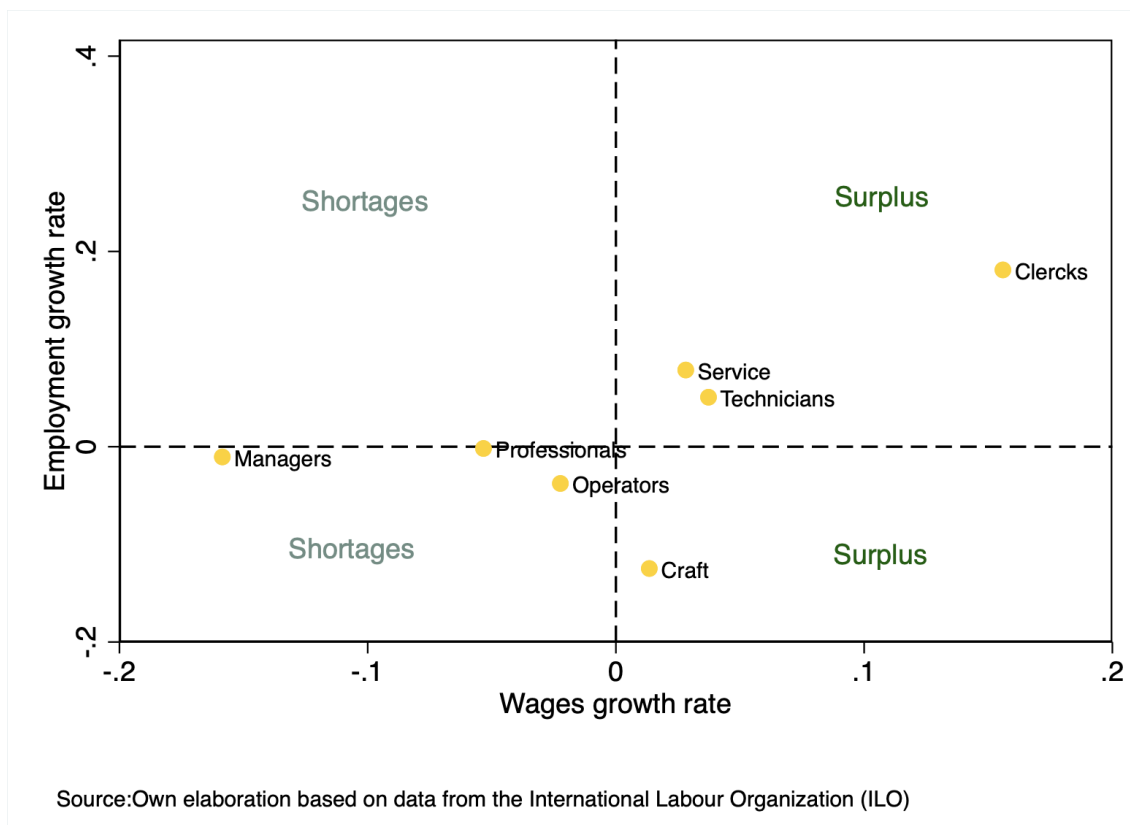
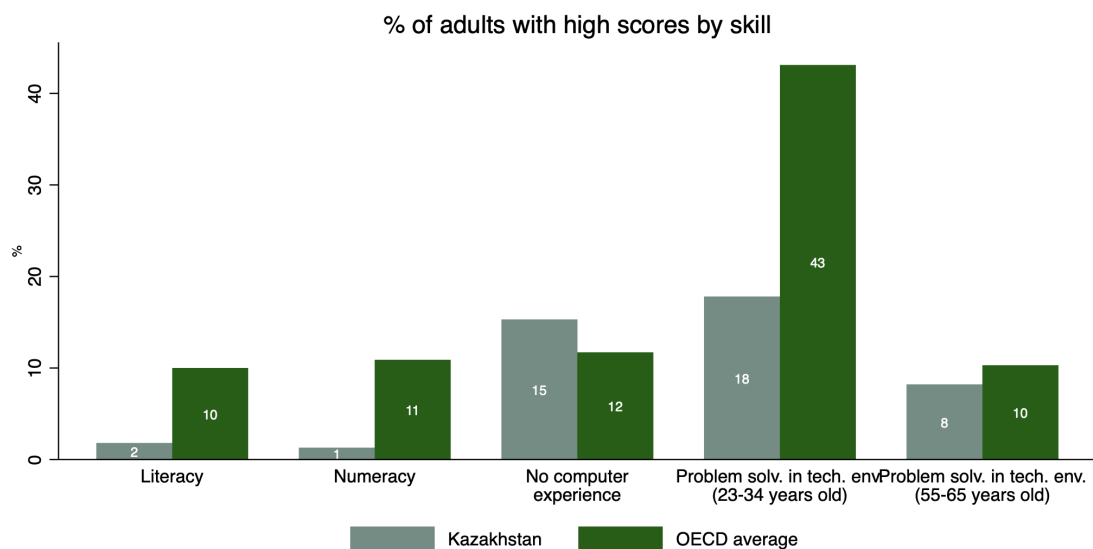


Figure 19 outlines the comparison of different professional groups in terms of growth rates of employment and wages for the period from 2015 to 2017 and indicates the occupations in

shortages and surpluses on the labour market in Kazakhstan. Clerks demonstrated the highest wages and employment growth (both at about 0.2%), followed by service workers and technicians, being in surplus as well. Craft workers indicated the worst employment growth rate and slight wages growth rate, although this professional group is still in surplus. It is noteworthy that the groups of operators, professionals and managers have not improved in terms of both employment and wage growth rates. Managers indicated the most negative wages growth rate. Overall, the figure reveals shortages of managers, professionals and operators and surpluses of clerks, service workers, technicians and craft workers on the labour market in Kazakhstan.

Figure 20: Skill requirements and mismatch in Kazakhstan relative to OECD countries, 2019



Source: Own elaboration based on data from PIAAC (OECD)

In Kazakhstan, the percentage of adults who achieved the highest scale of literacy, numeracy and problem solving is lower than in Hungary and the USA, but higher than in Ecuador, Mexico, and Peru. Approximately 1/2 of adults in Kazakhstan are at Level 2 in both literacy and numeracy, and the proportion of the population scoring at Level 1 or below is close to the OECD average.

According to statistics, on average in OECD countries, every fourth adult has no or only limited experience with computers. In Kazakhstan, the percentage of adults with no or little ICT experience is nearly equal to the OECD average of 19.7%, which is very low compared to Ecuador, Mexico and Peru. Drawing parallels between these numbers in different countries, it is imperative to take into account the context of economic development of these countries and the level of ICT penetration.



Among 25-65 year-olds i.e. adults who have generally completed formal education, proficiency is highest among those with tertiary qualifications and lowest among those whose highest qualification was below upper secondary education.

The difference in literacy proficiency between men and women is negligible. Men have a more substantial advantage in numeracy, scoring about 10 score points higher than women on average. Hungary and Kazakhstan are among the few countries where there is no gender difference in numeracy proficiency. In Hungary, this is mainly due to the very strong performance of Hungarian women. In Kazakhstan both men and women score below the OECD average, with the gap being much less pronounced for women, at only 9 score points as opposed to men at 21 score points. Gaps related to a parent's educational background are much smaller in Kazakhstan than in OECD countries on average.

## **Delphi analysis**

Since we just have found detailed information on workers skills for Kazakhstan using official statistical sources i.e. PIACC database (Programme for the International Assessment of Adult Competencies), we have implemented a Delphi analysis based on experts responses for the three countries: Kazakhstan, Tajikistan and Turkmenistan to determine the current and expected skills gaps in the labour market required for sustainable industrial development. Delphi method attempts to decrease the variability in the experts' responses and arrive at a certain consensus throughout replying to the same questionnaire (anonymously responded) several rounds. In each round, the experts received a representation of average responses from the previous round, so they can adjust the responses in subsequent rounds taking into account the general information of the group and what other experts think.

In order to have a good representation of the skill requirements we selected experts from different segments of the labour market to tackle different aspects such as small and big companies, policy makers from education and labour departments at local level, university researchers on labour market, future job seekers (last year students). Based on the Delphi results, we attempt to identify which are the current and future skills shortages in each country but also which is the better way to tackle the shortages. For this reason, the questions included are about 1) skills hard to find 2) trends that might change future skills requirements, and 3) reasons for skill gaps 3) measures to tackle the skills gap 4) where the skills should be acquired (university, on job training an etc).

Rowe and Wright (2001) indicate that the optimal number of experts goes from 5 up to 20 experts from different knowledge domains and the optimal number of rounds is usually two or three. Thus, initially, we attempted to engage 15 experts from different labour segments (employers, researchers, students and policy makers) for each region/country (East Kazakhstan region, Karaganda region, Tajikistan and Turkmenistan) for the Delphi and to do at least 2



rounds.<sup>11</sup> However, COVID-19 restrictions made the survey implementation really problematic due to the difficulties to reach experts who are not in their offices anymore and poor Internet connection. Consequently, we had to join Kazakhstan regions (East Kazakhstan and Karaganda region) and to show the results for Kazakhstan as a whole). We end up with 15 experts for Kazakhstan, 8 for Tajikistan and 6 for Turkmenistan including representatives of firms, researchers and students (future employees).<sup>12</sup> As a result, in spite of all implementation challenges we were able to keep the number of experts within the optimal range keeping experts from different knowledge domains.

After conducting the first round of the survey, the opinions and suggestions of experts were added to the second round and we added other skills to the questionnaire that may be in shortage such as hard working, multitasking, empathy, international markets and open-mindedness. We have simplified some other skills that can be confusing such as team building and team work. In the second round, we also included results from the first round using similar figures to the ones we are presenting to show the results in this section, so experts can adjust their answers in the second round based on figures provided.

Pandemic situation, lockdown and poor connection have caused that few experts have just replayed the first round or the second round. Communication difficulties made recovering the other round replays impossible, so we opted to present the aggregate results of the Delphi, i.e. responses of the second round plus the responses of first round for those who didn't reply to the second round.<sup>13</sup>

Below we present the results of Delphi analysis for Kazakhstan, Tajikistan and Turkmenistan. For the results interpretation we aggregate the responses "Very hard to find" and "Hard to find" since some people may hesitate on replaying extreme positions such as "very hard" (Tourangeau et al., 2000 ; Podsakoff et al. , 2003). We consider that those skills where more than 50% of experts have replayed hard or very hard to find are skills which are really scarce in the labour market and need to be trained and provided. Those skills with a share of respondents between 50% and 40% are also considered important and very required in the labour market.

The majority of experts from Kazakhstan think that Entrepreneurial skills (63%) and reliability (55%) are the rarest difficult skills to find on the market, i.e. the replies were "very hard" and "hard" to find. The knowledge of International markets (50%), data management (50%) and IT (50%) are the skills that are rare on the market as well. Skills that the market can easily supply are numeracy (45%), ability to follow the instructions (41%) and manual dexterity (36%), i.e. the replies were "very easy" and "easy" to find.

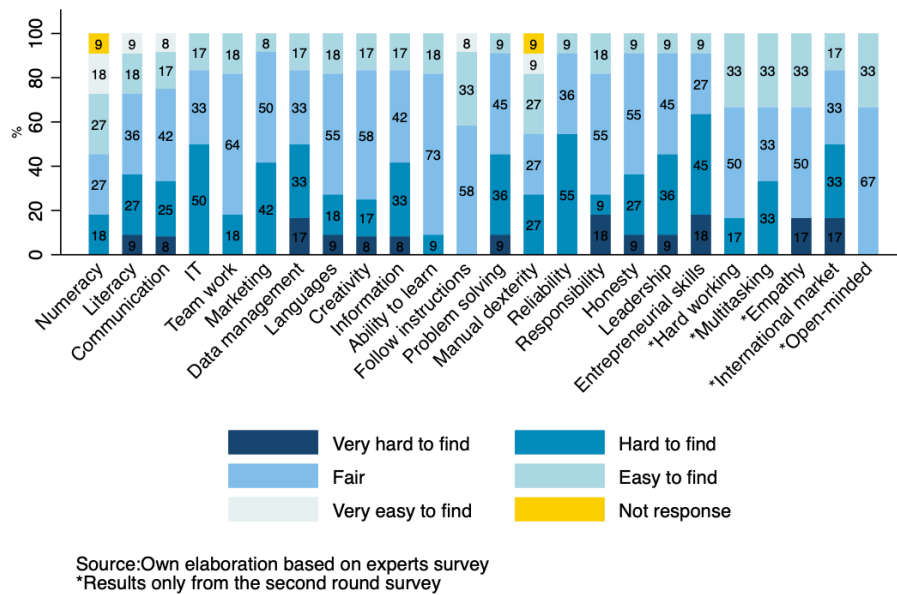
*Figure 21: Valuable skills in the labor market. Kazakhstan*

---

<sup>11</sup> We decided to do Delphi analysis separately for two different regions in Kazakhstan (East Kazakhstan region and Karaganda region) since in the quantitative market needs analysis we have seen important differences per region in Kazakhstan.

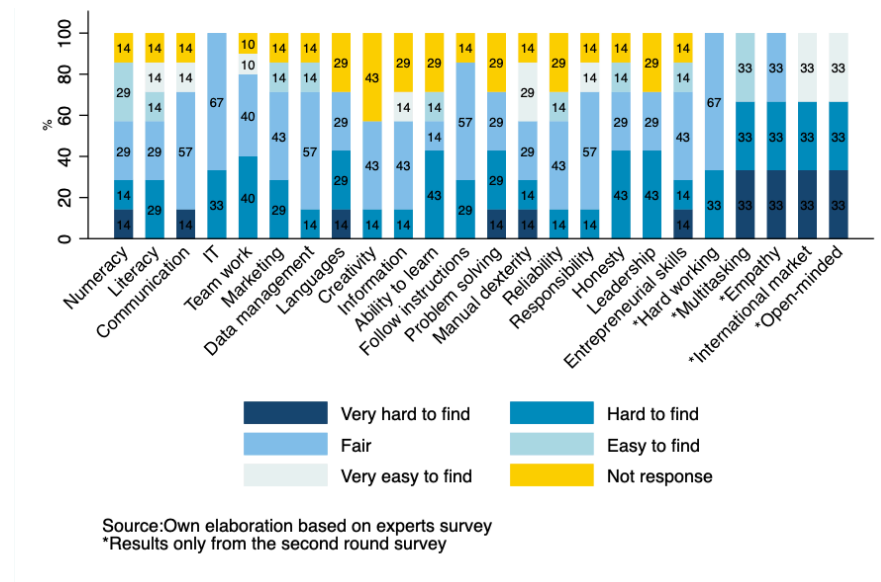
<sup>12</sup> Only one policy maker has replied to the survey in Turkmenistan.

<sup>13</sup> In Turkmenistan we were able to implement just one round



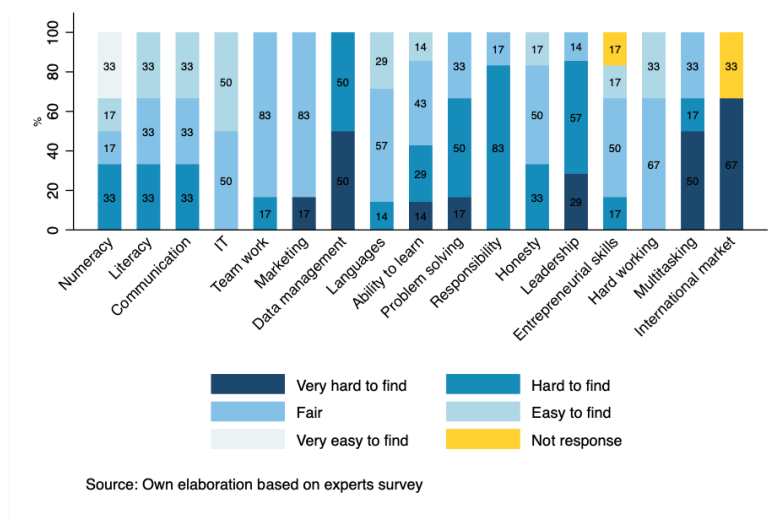
While in Tajikistan, companies are experiencing problems of finding employees, who meet the criteria of multitasking (66%) and open-mindedness (66%). As well as in Kazakhstan, in Tajikistan there is a lack of knowledge in International market (66%). The skills such as empathy (66%), knowledge of foreign languages (43%), leadership (43%) and problem solving (43%) are as well among “hard to find” skills in Tajik labour market. On the other hand, in Tajikistan, information (14%), creativity (14%) and responsibility skills (14%) are the most oversupplied in the market.

Figure 22: Valuable skills in the labor market. Tajikistan



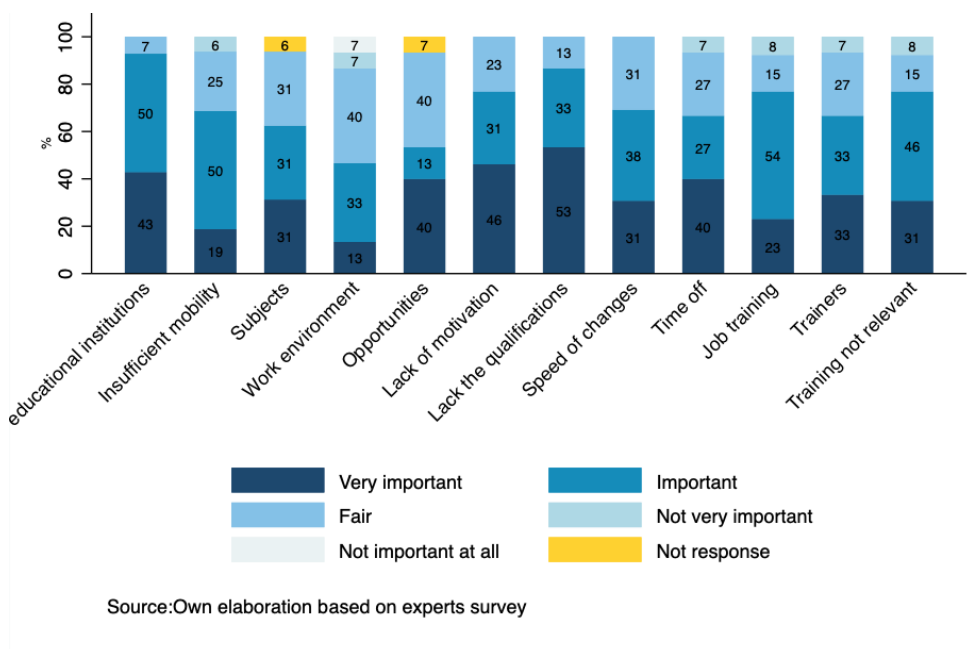
Due to the time limits and low response rate we experienced in Kazakhstan and Tajikistan, the one round Survey was conducted in Turkmenistan. Unsurprisingly, skills in the international market (67%) are the one very hard to find. Multitasking (67%) and data management (100%) were defined as scarce skills on the market. The skills that are easy or very easy to find are IT (50%), numeracy (50%), literacy (33%), communication (33%) and hard working (33%).

Figure 23: Valuable skills in the labor market. Turkmenistan



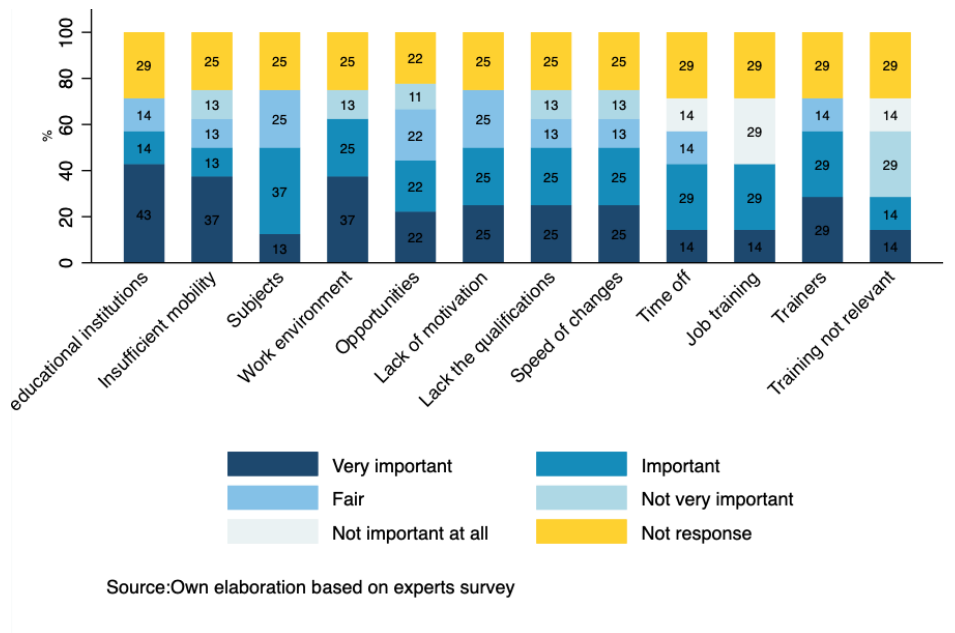
The interesting results were received on the causes of the skills gap of the market. Experts from Kazakhstan argue that the lack of qualification (86%) and motivation (77%), as well as quality of educational institutions (93%) cause the skills gap on the market. Work environment (14%) doesn't contribute to the skills gap in the market according to the experts.

Figure 24: Reasons for the skills gap. Kazakhstan



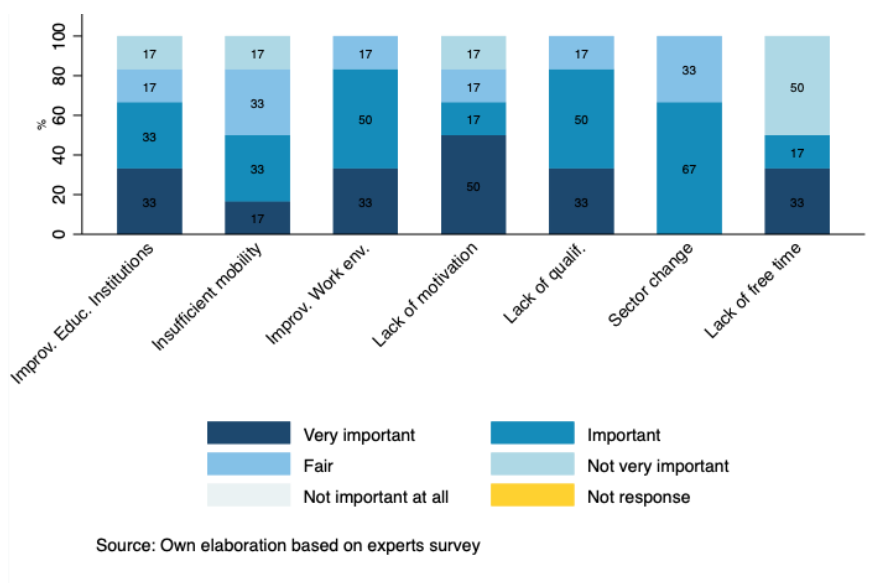
On the other hand, in Tajikistan beside the work environment (62%), quality of educational institutions (57%) and insufficient labour mobility (50%) lead to the skills gap. Experts do not consider the point "training is not relevant for these skills" (29%) as an instrument to fill up the skills gap on the market.

Figure 25: Reasons for the skills gap. Tajikistan



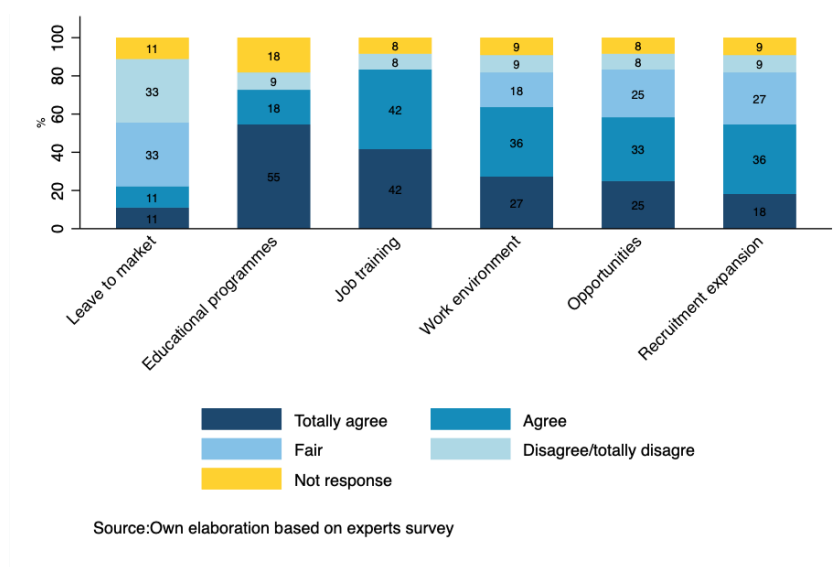
The majority of experts from Turkmenistan consider that the work environment (83%) and lack of qualification (83%) cause the skills gap in the market. Although the data on the answers for "very important" and "important" points was combined, the highest percentage for "very important" point was chosen for "lack of motivation", which was amounted to 50%, and together with the results of "important" (17%) in total were amounted to 67% as the most important reason for the skills gap according to experts. Lack of free time (50%) is not recognized as an important factor affecting skills gap.

Figure 26: Reasons for the skills gap. Turkmenistan



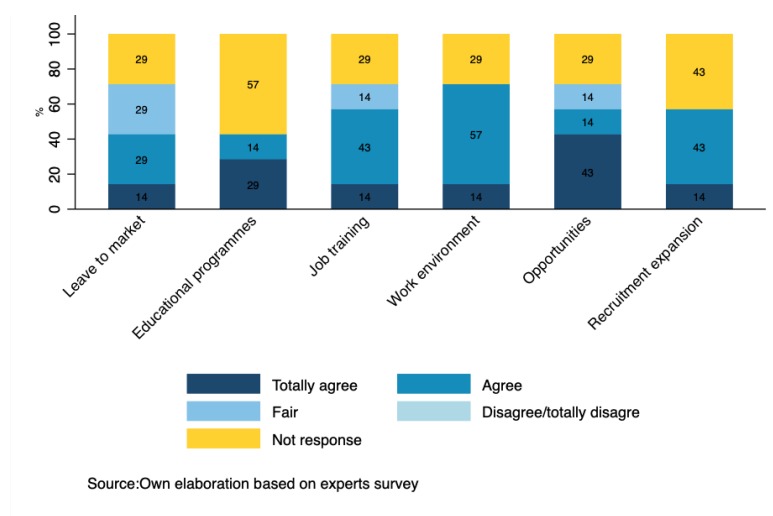
Almost the majority of experts from Kazakhstan argue that job trainings (84%) and improving the educational program (73%) are the best measures to fill in the skills gap on the market. Improving the work environment (63%), work opportunities (58%) and recruitment process are other effective measures to avoid the skills gap by the opinion of experts from Kazakhstan. Experts agreed that leaving the decision to the market (33%) is not a solution to tackle the skills gap.

Figure 27: Measures to tackle the skills gap. Kazakhstan



On the other hand, Tajik experts distributed the importance of measures as follows: improving the working environment (71%), providing job training (57%), recruitment process (57%) and opportunities for employment (57%) as well as educational programs (43%).

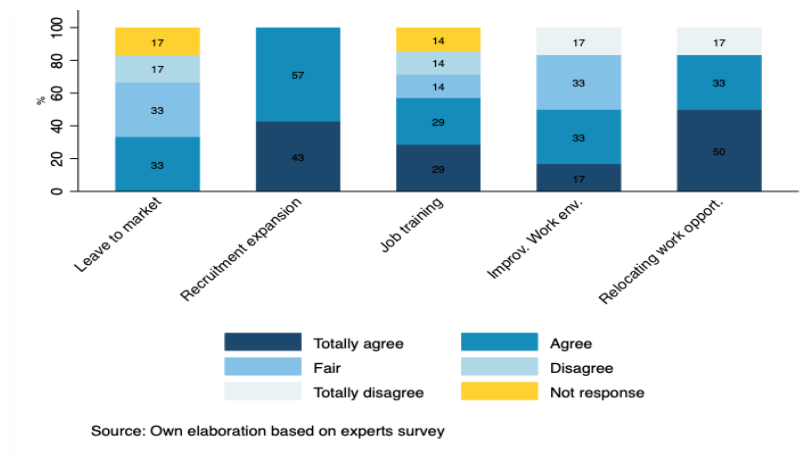
Figure 28: Measures to tackle the skills gap. Tajikistan





Analyzing the results of Turkmenistan on this issue, improving recruitment (100%) and relocation of work opportunities (83%) are considered as effective measures to tackle the skills gap.

Figure 29: Measures to tackle the skills gap. Turkmenistan



According to the figures 30 and 31 - "The place where the skills should be acquired", the results showed that both Kazakhstan and Tajikistan believe that numeracy (91% and 33% respectively), literacy (91% and 56%), foreign languages (83% and 40%) and data management (53% and 50%) should be acquired at Universities. Skills that are innate/cannot be learned - Honesty (53% and 18%)/empathy (83% and 20%)/hard working (50% and 20%). However, experts are divided over the acquisition of certain skills at work. Thus, the majority of experts from Kazakhstan believes that the ability to follow instructions should be acquired on job training (54%), while according to Tajikistan, it is knowledge of the international market that should be obtained at work (67%).

Figure 30: The place where the skills should be acquired. Kazakhstan

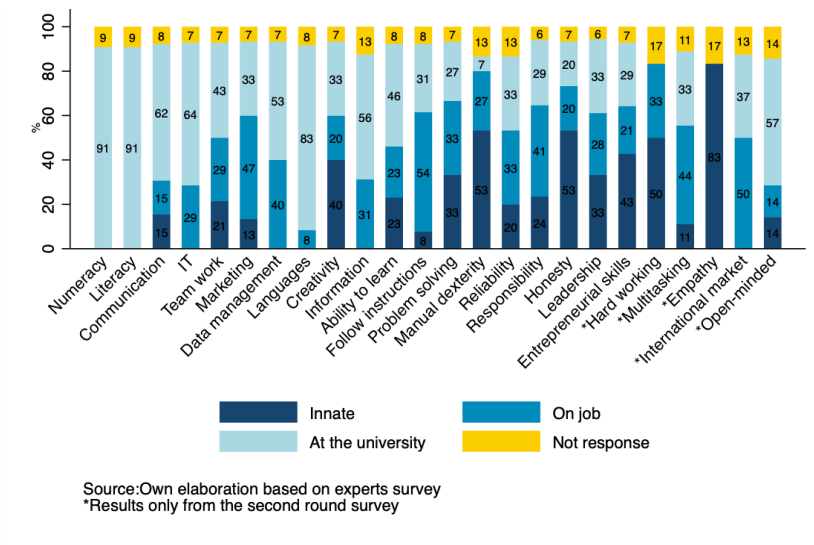
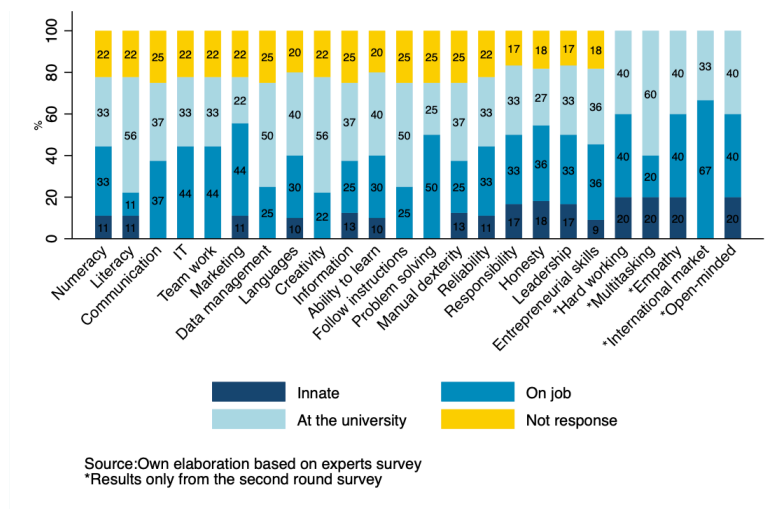
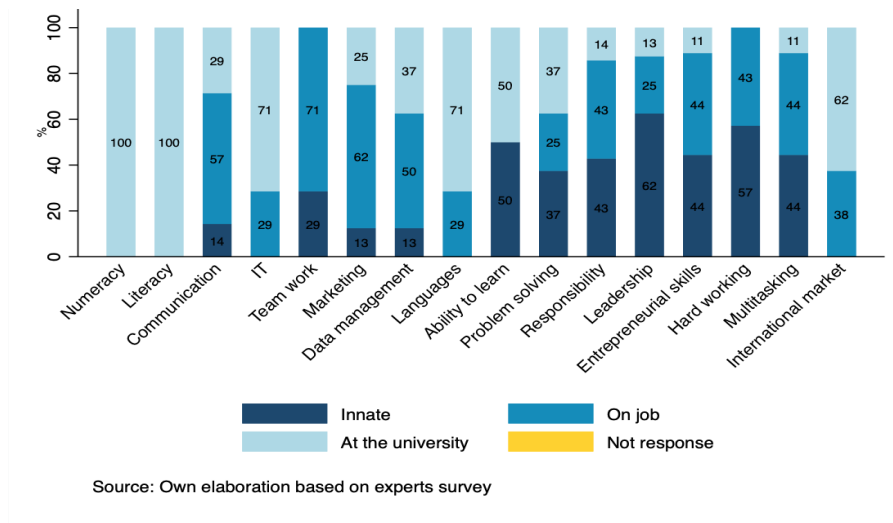


Figure 31: The place where the skills should be acquired. Tajikistan



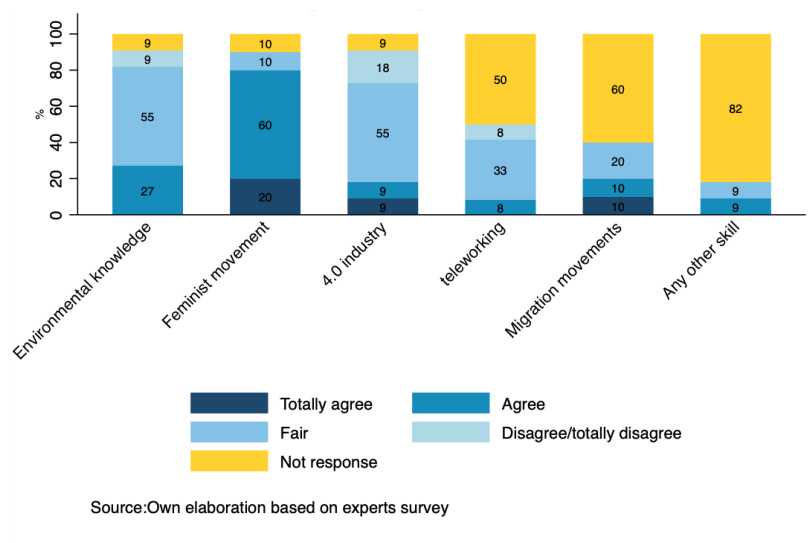
While in Turkmenistan, experts argue that most skills are innate or have to be acquired at work. University has a limited role in providing skills by the opinion of experts.

Figure 32: The place where the skills should be acquired. Turkmenistan



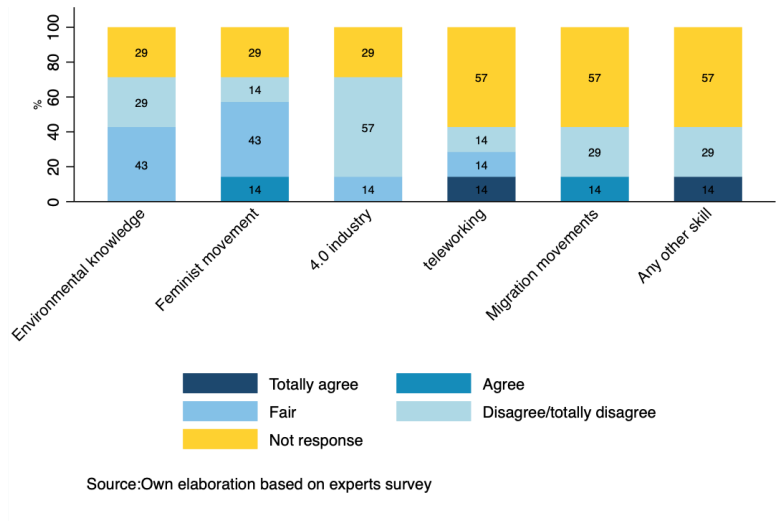
The experts from Kazakhstan recognizes that feminist movement has impacted the demand for future skills considerably (80%). Environmental knowledge (27%) and migration (20%) will affect the future labour market as well. Surprisingly, Industry 4.0 (18%) is not considered as an important factor to affect future skills demand.

Figure 33: Trends that might change future skills. Kazakhstan



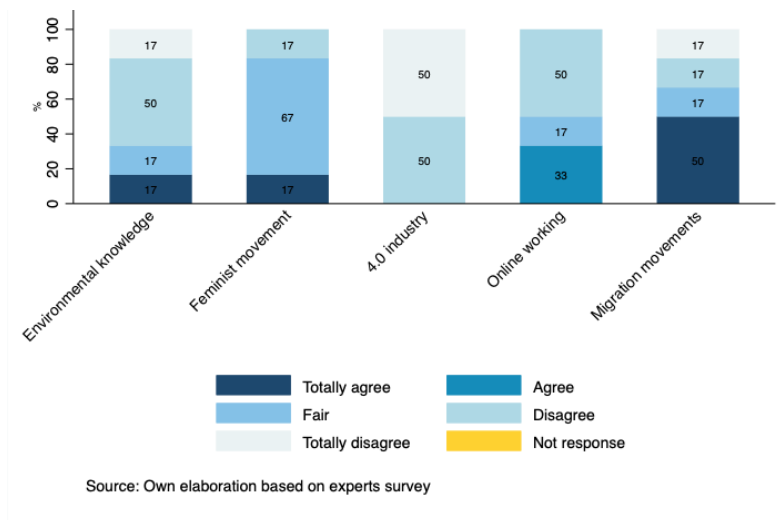
On the other hand, in Tajikistan online jobs (14%), feminist movement (14%) and migration trends (14%) are recognized as the most important impacting future skills. Tajik experts disagreed that new technologies: 4.0 industry (57%) and environmental knowledge” (29%) could change the required skills on the labour market.

Figure 34: Trends that might change future skills. Tajikistan



In Turkmenistan increasing migration movement (50%) is considered as the main driver that will affect future skills demand as well as online working (33%). While 4.0 Industry (100%) is not considered to be a trend that might change skills in the future labour market.

Figure 35: Trends that might change future skills. Turkmenistan



## Trends that may affect future skills

Trends are determined by the reflection to the changing world. This year has affected the labour market considerably by rising the demand for *the flexibility and digitalisation* of employment around the world.

While the total percentage of non-standard work has stayed relatively stable, there has been a rise in “compound” non-standard work, for example part-time work, short temporary contracts and non-contract work.



As well, there are global trends that have been affecting the labour market and future skills requirements. The most prominent one is the goal to ensure *inclusive and equitable quality education*, providing equal opportunity to no matter race, nationality, gender and religion.

The full and effective involvement of women must be ensured; equal possibilities should be provided to guide decision-making in political, economic and public life at all levels.

Sustainable development goals that have been affecting the labour market include the aim to achieve increased levels of economic efficiency through diversification, *technological upgrading and innovation*, and by focusing on high-value and labor-intensive areas.

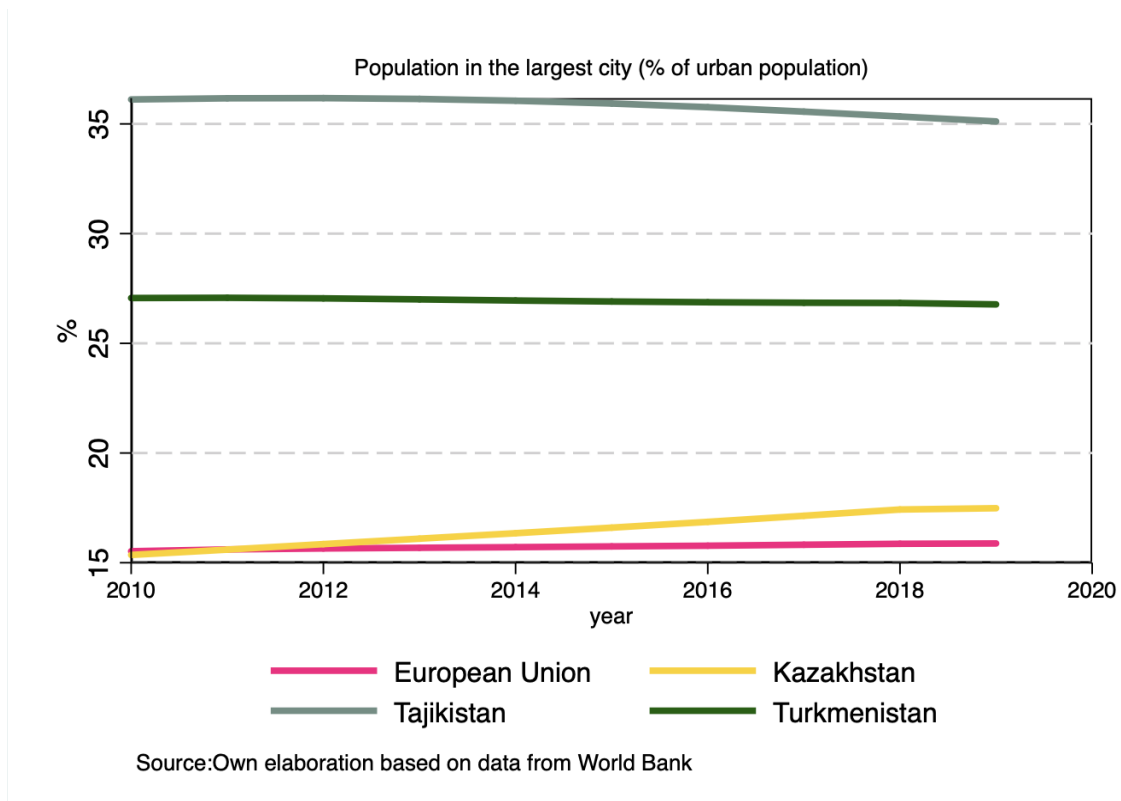
As it was mentioned in the analysis, there is a need in promoting development-oriented policies, supporting productive activities, decent job creation, entrepreneurship, creativity and innovation, and encouraging the formalization and growth of micro, small and medium-sized enterprises, through access to financial services.

It is required to gradually improve global *resource efficiency in production and consumption* until 2030, and to help ensure that economic progress does not adversely affect the environment, in line with the 10-year framework of sustainable consumption and production programs, with a central role held by developed countries.

Full and *productive employment and decent work* are needed by 2030 for all women and men, including young people and people with disabilities, without discrimination in pay for work of equal value.

It is necessary to strengthen *inclusive and sustainable urbanization* and the capacity for participatory, integrated and sustainable human settlements planning and management in all countries by 2030. By 2030, decrease the negative effect of cities on the environment per capita, also by focusing on the quality of air and disposal of household and other waste. Promote positive economic, environmental and social links between urban, peri-urban and rural areas by increasing national and regional development planning.

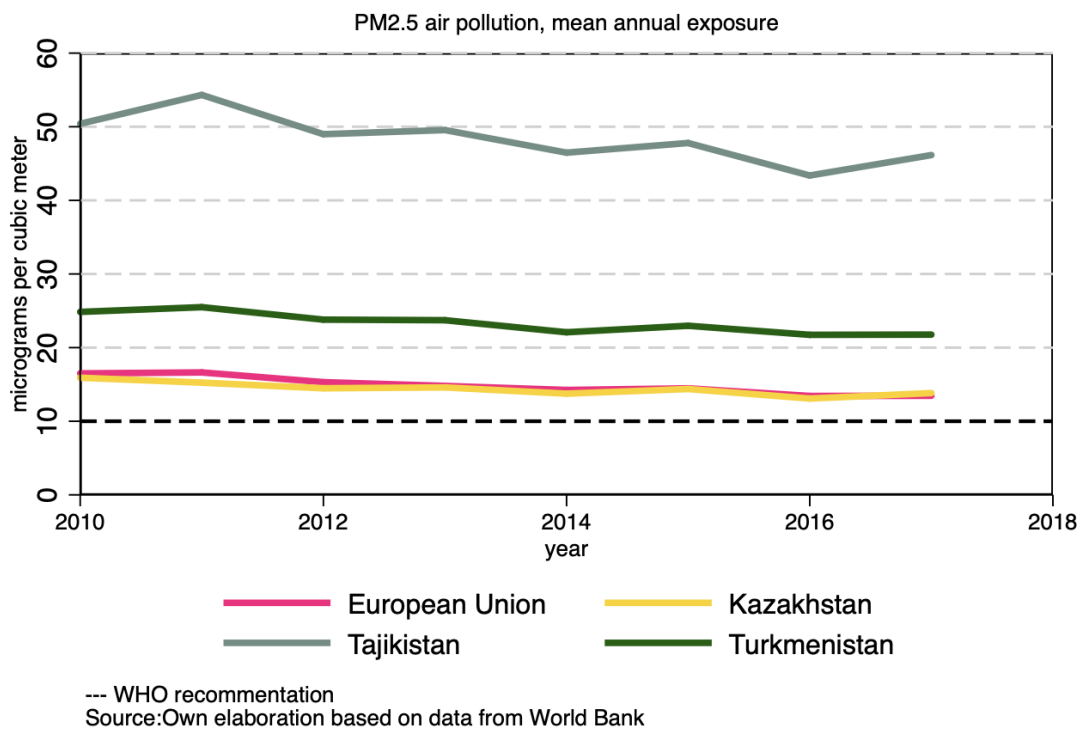
*Figure 36: Share of urban population, 2019*



In Figure 36 there is a percentage of the population living in urban areas in the largest cities. According to the figure, the number of the population living in urban areas in the European Union and in Turkmenistan has remained almost unchanged since 2010, which is 15.5% and 27% respectively. While in Kazakhstan the percentage of the population in large cities has been growing and increased from 16% in 2010 to 18% in 2019. In Tajikistan, the opposite trend was observed - there was a noticeable decrease in the population living in urban areas, which in 2010 was 36% and reached 35% by 2019.

Air pollution occupies an important position on the global agenda and is widely recognised as a threat not only to public health, but economic progress as well. Moreover, it can undoubtedly be taken as a key indicator in monitoring progress toward implementing the sustainable, equitable and healthy future in which we all want to live. According to WHO, the death of 4.2 million people annually can be attributed to ambient air pollution in both cities and rural areas. Advances in this area have made it possible to quantify indicators related to air pollution to track progress towards the Sustainable Development Goals and to expand the evidence base of the effects of air pollution on health. Despite the fact that measures to reduce air pollution have been taken in many countries the region, population of Central Asia, that we consider in this study, continues to be exposed to increasing levels of air pollution. The levels of air pollution in Kazakhstan, Tajikistan and Turkmenistan are substantially above WHO Air Quality Guidelines and, as such, air pollution constitutes a major, and in many areas, an increasing threat to public health.

*Figure 37: Air pollution, 2010-2018*



In the figure above, we will examine the PM2.5 indicator for each country. According to the data gained from the World Bank it can be seen that all of the countries are above the WHO Air Quality recommendations, which is 10 µg/m<sup>3</sup> annual mean. The indicators of the European Union and Kazakhstan are practically equal and are approximately 18 micrograms per cubic meter. Considering the data for Turkmenistan, it can be seen that the indicators of this country exceed the PM2.5 air pollution by almost two times compared with the EU and Kazakhstan and amount to about 26 micrograms per cubic meter. Although Tajikistan showed a slight decrease, in general it is the worst in terms of indicators of all the countries presented and exceeds EU, Kazakhstan and Turkmenistan PM2.5 emissions by about 5 times.

## Conclusions

This significant change in demand has produced a growing supply imbalance for numerous countries in recent years, creating *skills shortages*<sup>14</sup> on the market. The consequences of skills shortages are varied, such as a slower adoption of new technologies, reduction of productivity, increasing unemployment rate and etc.

<sup>14</sup> As described by OECD: skill shortages are situations when adequate skills are hard to find in the current labour market. On the other hand, there is a skill surplus when certain skills are in excess in the labour market relative to the demand



Market needs show critical skills shortage in observed countries (Kazakhstan, Tajikistan and Turkmenistan) caused by external and internal reasons.

Analysis of macroeconomic indicators of Central Asian countries reveals a high employment rate. However, there is considerable gender gap in employment in comparison with EU countries. Labour market indicators such as poverty rate and productivity per worker have improved during the last decade. Output per worker still remains much lower than EU average. Based on the data, in all the countries the share of unskilled workers prevails in relation to highly qualified workers.

Regional data demonstrates big regional differences by share of skilled workers, average wage, unemployment and employment rates within the countries which signal of limited labour mobility decreasing matching efficiency and productivity.

Sectoral data shows that Turkmenistan has the highest share of industrial employment for females and males. Tajikistan has the lowest share of females working in industry and the highest share of women working in agriculture.

Skills analysis based on Delphi methodology revealed that Entrepreneurial skills is the rarest difficult skill to find on the market of Kazakhstan that mainly caused by the low quality of educational institutions. And in Tajikistan, skills such as multitasking and open-mindedness are the most scarce in the labour market. Experts agreed that improving educational program is one of the effective measures to tackle with skills gap. On the other hand, experts from Turkmenistan argue that the knowledge of international market is the rarest skill to find on the market and improving recruitment as well as relocating work opportunities would solve the skills gap problem.

Technological change, globalisation and migration have considerably changed the skills demand imposing significant economic costs for employers, employees and society as a whole. Based on conducted Survey, experts from Kazakhstan argue that Feminist movement and online working will affect skills demand considerably in future. Experts from Tajikistan and Turkmenistan believe that Migration movement and online working are trends that will change future skills demand.

Policy recommendations:

According to the results of the analysis, the modernization of curriculum and improvement of teaching quality will increase the connection between educational attainment and market needs. Higher education institutions should prioritize the development of economically dictated competencies and skills. Employers should take an active part in the activities of universities and the creation of educational programs.

It is important to develop the skills that employers are looking for, to increase employment opportunities and encourage female labour participation as well as to encourage companies to provide training.





Co-funded by the  
Erasmus+ Programme  
of the European Union



Entrepreneurship and innovation have to be supported by driving the expansion of higher education, with a focus on quality assurance, selection and delivery of information, ensuring that graduates have marketable skills and that investment in higher education can be paid off.

For labor markets to become more efficient by alleviating current job search constraints and skills signals, it is necessary to harmonize the skill offerings that employers search for through improved labor market information systems. To ensure that the supply of skills meets the needs of employers, labor market information systems are essential to facilitate the transition from school to work.



## Main definitions and data sources

---

**Unemployment rate:** the number of persons who are unemployed as a percent of the labour force (i.e., the employed plus the unemployed). The unemployed comprise all persons of working age who were: a) without work during the reference period, i.e. were not in paid employment or self-employment; b) currently available for work, i.e. were available for paid employment or self-employment during the reference period; and c) seeking work, i.e. had taken specific steps in a specified recent period to seek paid employment or self-employment.

**Employment to population rate:** the number of persons who are employed as a percent of the total working age population.

**Working poverty rate:** the percentage of employed persons living in poverty in spite of being employed. Poverty is defined using the international poverty line of US\$1.90 per day in purchasing power parity (PPP).

**Annual growth rate of output per worker:** the annual growth rates of labour productivity. Labour productivity represents the total volume of output (measured in terms of GDP) produced per unit of labour (measured in terms of the number of employed persons) during a given time reference period.

**Employment:** The employed comprise all persons of working age who, during a specified brief period, were in one of the following categories: a) paid employment (whether at work or with a job but not at work); or b) self-employment (whether at work or with an enterprise but not at work).

**Time-related underemployment:** Persons in time-related underemployment are defined as all persons in employment who, during a short reference period, wanted to work additional hours, whose working time in all jobs was less than a specified hours threshold, and who were available to work additional hours given an opportunity for more work. The time-related underemployment rate expresses the number of employed persons in time-related underemployment as a percent of total employment.

**Combined rate of time-related underemployment and unemployment (LU2):** the share of the labour force that is either in unemployment or time-related underemployment.

This rate is calculated as follows:

$$LU2 = \frac{\text{persons in time-related underemployment} + \text{unemployment}}{\text{labour force}} \times 100$$



**Composite measure of labour underutilization (LU4):** the share of the extended labour force that is in unemployment, time-related underemployment or the potential labour force.

**Working poverty rate:** the number of working poor as a percentage of the employed population.

**Annual growth rate of output per worker:** the annual growth rates of labour productivity. Labour productivity represents the total volume of output (measured in terms of GDP) produced per unit of labour (measured in terms of the number of employed persons) during a given time reference period.

**Manufacturing employment as a proportion of total employment:** the share of employment in manufacturing. Employment in manufacturing is defined based on the International Standard Industrial Classification of All Economic Activities (ISIC).

**Minimum wage:** statutory nominal gross monthly minimum wage (2011 PPP \$)

**Monthly wage:** average monthly earnings of employees (constant 2011 PPP \$)

#### Sources: Kazakhstan

**Data for minimum wage for the years 2013-2020** has been obtained from the Laws of the Republic of Kazakhstan on the Republican Budget No. 54-V, 259-V, 426-V, No. 25-VI, 113-VI, 197-VI, 276-VI.

**Data for monthly wages** has been collected from the analysis and information system of the Ministry of National Economy of the Republic of Kazakhstan Statistics Committee (<https://taldau.stat.gov.kz/ru/NewIndex/GetIndex/19073114>)

#### Sources: Turkmenistan

Statistical Yearbook of Turkmenistan 2017 year. State committee of statistics of Turkmenistan. Ashgabad, 2017

Statistical Yearbook of Turkmenistan 2018 year. State committee of statistics of Turkmenistan. Ashgabad, 2019

Рынок труда и заработная плата в Туркменистане за 2014-2015 годы (Статистический сборник). Государственный комитет Туркменистана по статистике, 2016. Ашхабад

#### Enterprise Surveys [www.enterprisesurveys.org](http://www.enterprisesurveys.org), The World Bank.

The World Bank's Enterprise Survey is a firm-level survey of a representative sample of an economy's private sector. The surveys cover a broad range of business environment topics including access to finance, corruption, infrastructure, crime, competition, and performance measures.

In Tajikistan, owners and top managers in 352 firms in 2019, 359 firms in 2013, 360 firms in 2008 were interviewed. In Kazakhstan, owners and top managers in 1446 firms in 2019, 600 firms in 2013 and 544 firms in 2009 were interviewed.

Regional (Europe & Central Asia<sup>15</sup>) and "all countries" averages of indicators are computed by taking a simple average of country-level point estimates. For each economy, only the latest available year of survey data is used in this computation.

---

<sup>15</sup> Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Georgia, Greece, Hungary, Italy, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Lithuania,



Co-funded by the  
Erasmus+ Programme  
of the European Union



---

Moldova, Montenegro, North Macedonia, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Sweden, Tajikistan, Turkey, Ukraine, Uzbekistan Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Georgia, Greece, Hungary, Italy, Kazakhstan, Kosovo, Kyrgyz Republic, Latvia, Lithuania, Moldova, Montenegro, North Macedonia, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Sweden, Tajikistan, Turkey, Ukraine, Uzbekistan.



## References

---

### References:

- Ajwad, M. I. H. (2014). *The Skills Road: Skills for Employability in Tajikistan*.
- Alfers, L., & Moussie, R. (2019, December 3). The ILO World Social Protection Report 2017–19: An Assessment. *Development and Change*. Wiley. <https://doi.org/10.1111/DECH.12563>
- Corradini, M., & Dergunova, I. (2012). Turkmenistan: overview of vocational education and training and the labour market)
- Gammarano, R. (2019). The working poor or how a job is no guarantee of decent living conditions. *Spotlight Work Stat., no.*
- (ILO (2015) Jobs and skills for youth: Review of policies for youth employment of Kazakhstan. Geneva: ILO ).
- ILO. (2017). Towards Policies Tackling the Current Youth Employment Challenges in Eastern Europe and Central Asia. Moscow: ILO Decent Work Technical Support Team and Country Office for Eastern Europe and Central Asia.
- Jonbekova, D. (2020, June 2). The diploma disease in Central Asia: students' views about purpose of university education in Kazakhstan and Tajikistan. *Studies in Higher Education*. Taylor & Francis Group (Informa). <https://doi.org/10.1080/03075079.2019.1628199>
- Kuhn, S., Milasi, S., Horne, R., & Yoon, S. (2017, January 1). Global employment and social trends. *World Employment and Social Outlook*. Wiley. <https://doi.org/10.1002/WOW3.93>
- OECD. (2016). *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*. OECD Publishing. <https://doi.org/10.1787/9789264252073-EN>
- OECD. (2018). Business environment in Central Asia: Skills. <https://doi.org/10.1787/9789264288133-7-EN>



OECD (2018), Productivity and Jobs in a Globalised World: (How) Can All Regions Benefit?,

OECD Publishing, Paris, <https://doi.org/10.1787/9789264293137-en>.

[Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. \(2003\). Common method biases in behavioral research: a critical review of the literature and recommended remedies. \*Journal of applied psychology\*, 88\(5\), 879.](#)

Rantanen, J., Muchiri, F., & Lehtinen, S. (2020, May 12). Decent Work, ILO's Response to the Globalization of Working Life: Basic Concepts and Global Implementation with Special Reference to Occupational Health. *International Journal of Environmental Research and Public Health*. Multidisciplinary Digital Institute (MDPI).

<https://doi.org/10.3390/IJERPH17103351>

[Rowe G., Wright G. \(2001\) Expert Opinions in Forecasting: The Role of the Delphi Technique. In: Armstrong J.S. \(eds\) Principles of Forecasting. International Series in Operations Research & Management Science, vol 30. Springer, Boston, MA.](#)

[https://doi.org/10.1007/978-0-306-47630-3\\_7](https://doi.org/10.1007/978-0-306-47630-3_7)

Tomas Berglund, Promoting Labour Market Mobility in the Republic of Kazakhstan and the Russian Federation /; ILO Decent Work Technical Support Team and Country Office for Eastern Europe and Central Asia. – Moscow: ILO, 2017).

[Tourangeau, R., Rips, L. J., & Rasinski, K. \(2000\). The psychology of survey response.](#)