

RESEARCH REPORT

**SKILL MATCHING AND MIGRATION LINKS IN THE NORTH MACEDONIA, TÜRKIYE,
UKRAINE AND ETHIOPIA**

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‘SKILL PARTNERSHIPS FOR SUSTAINABLE AND JUST MIGRATION PATTERNS’

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ABSTRACT

Through this working paper we explore labour market challenges, skill mismatches, and migration dynamics across four diverse national contexts: North Macedonia, Türkiye, Ukraine, and Ethiopia, which are considered countries of origin for migrants. This is instrumental to map potential determinants for emigration of the labour force in these countries and to design better policies and instruments targeted at mitigating the evident skill shortages, mismatches, labour market disparities and significant migration. We apply a twofold approach in understanding such concepts by drawing on official national and international statistics and quantifying the present context, and through qualitative interviews with companies, higher education and training providers, policy creators, labour market intermediaries, and social partners. The findings for North Macedonia highlight persistent gaps between educational outputs and employers' needs, with key industries such as ICT and manufacturing struggling to attract qualified personnel. Similar context seems to emerge in Türkiye, where high-skill workers leave the country and businesses encounter shortages of adequately trained intermediate labour, pointing to systemic misalignment between vocational and technical education programmes and employers' evolving demands. On the other hand, in Ukraine the economic and demographic challenges spurred by the military aggression exacerbate longstanding concerns around employment and the adaptation of qualifications frameworks, creating an urgent need for flexible adult learning pathways and modernised recognition of non-formal skills. Ethiopia's labour market is also characterized by skill shortage and mismatch, mostly due to the lack of technical skills demanded by the labour market and the limitations of the economy in creating decent jobs. Even despite these varied national contexts, several parallels are evident: 1) the mismatch of educational curricula with the contemporaneous industry requirements, often further hindered by limited practical training opportunities; 2) the lasting emigration or internal displacement in certain cases, causing brain drain and deepening shortages; and 3) the continuous challenge of formulating adequate policy responses that simultaneously address youth unemployment, vocational education reform, and the need to attract migrant or retain skilled domestic workers. This synthesis report indicates that targeted reforms ranging from curriculum modernisation and quality assurance mechanisms to inclusive policy interventions could collectively improve overall labour market outcomes, increase resilience against unfavourable demographic shifts, reduce brain drain and foster long-term economic competitiveness across all four economies.

Key words: *labour market dynamics, skill mismatch and shortages, migration and brain drain, vocational education and policy reform, economic competitiveness, workforce resilience*

1. INTRODUCTION

Global labour markets are largely affected by rapid technological change, demographic shifts, and evolving patterns of migration. In this context, skill mismatches and shortages have become a rising concern. These persistent imbalances impede economic growth, hinder businesses' competitiveness, and push individuals to seek employment opportunities elsewhere, often resulting in brain drain and diminished workforce capacities at home. The rising imperative to systematically address these skill gaps, modernise education as well as craft policies that retain or attract foreign talent is particularly acute in contexts where geopolitical uncertainties and demographic pressures are detrimental.

The SKILLS4JUSTICE project has undertaken extensive research in four countries which are countries of origin for migrants i.e., North Macedonia, Türkiye, Ukraine, and Ethiopia, to examine the interplay of labour market developments, the national education and training systems, and the migration trends with special focus on emigration. Each of these countries encounters specific circumstances that relate to various labour market context. North Macedonia's persistent youth unemployment and high emigration rates, Türkiye's quest for better-qualified intermediate labour and mounting external migration flows, Ukraine's pressing need to reconfigure its qualifications systems and address labour gaps amid wartime challenges, and Ethiopia's broad development ambitions under resource constraints all reveal a shared priority. It is more than clear that without targeted reforms, these diverse contexts risk undermining both economic stability and the potential for further sustainable social progress.

Although challenges are distinct, the project's goals and activities converge around three core objectives under the work package 3. First, the research aims to document and critically assess the state of each national labour market by identifying key industries, pinpointing workforce gaps, developments, and highlighting systemic challenges. Second, we examine how education and training systems, including higher education (HE) and vocational education and training (VET), respond to the changing skill requirements and what policy actions might better equip students with usable competencies. Finally, we consider migration flows within and beyond each country, along with their repercussions for the availability of skilled labour and the shortages that may occur.

While increased unemployment levels might even suggest a surplus of available workers, a closer examination reveals that employers struggle to fill crucial vacancies that require both technical and soft skills. Interviews conducted with companies in North Macedonia, for instance, consistently underscore the difficulty in recruiting for specialised roles such as welders in manufacturing, IT specialists in software development as well as chefs and waiters in hospitality. In Türkiye, a similar challenge is being reported, there is a notable mismatch between the acquired qualifications and the demanded skills. On the other hand, Ukraine's qualification frameworks, although substantially reformed in line with European standards, still lack fully developed mechanisms for recognition of non-formal learning. Ethiopia's experience shows that skill shortages are observed in the areas of advanced technical skills, digital skills, and machine operators. The severe occurrence of unemployed and underemployed graduates relates to lack of practical skills gained upon education and the limited economic capacity in creating new job positions. Moreover, the tendency of having a younger population with a migration mind-set, successive experiences of displacement due to natural disasters and conflict, and the inherent nature of people migrating from peripheral, rural, or resource-scarce settings to urban areas promote high unemployment or underemployment among skilled populations in cities and big towns, as well as the emigration of skilled workers.

By focusing on four heterogeneous national settings, the conducted research uncovers the existing problems and best practices that seemingly transcend regional boundaries. Although North Macedonia, Türkiye, Ukraine, and Ethiopia differ in terms of economic structure, the level of industrial development, and the dramatically differing political contexts, each faces the challenge of adequately preparing its workforce for the present and the future. Moreover, all four countries are grappling with emigration in varying levels, impaired by both regional and global socio-economic forces. From the continuous outflow of young and skilled workers from North Macedonia seeking higher wages in the European Union, to the Ukraine's large-scale displacement because of military aggression, we observe that such processes magnify the problems on the domestic labour markets. Examining how governments, businesses, and even educational institutions respond to these pressures should in turn reveal strategies that hold relevance for a broader international audience.

A key strength of this working paper that synthesizes national reports on findings is the mixed-method approach. We observed official national and international statistical data that allowed to track employment trends, unemployment, labour market structure, and the ongoing challenges. Moreover, we focus on identifying at least three sectors of high importance where skill shortages and mismatches may occur. A significant limitation in conducting this research is the still ongoing military aggression in Ukraine, which made current data scarce, yet prior institutional records and targeted official releases proved to be essential when drafting the labour market conditions.

To complement the quantitative dimension, a necessary qualitative insight was obtained through open-end structured interviews with at least 40 participants per country. This segment included various national stakeholders, including public and private sector companies, higher education institutions and vocational education and training institutions, policy creators in the field of labour market and education, as well as labour market intermediaries and other social partners. In turn, this provided a unique insight into the core challenges and problems that all concerned face. For instance, in North Macedonia this research highlighted the immense challenge that continuous emigration spurred, where beside the skill shortages and mismatches, other contextual drivers were identified (e.g., weak and inadequate education system, corruption, and weak public-private partnerships). Similarly, interviews with participants in Türkiye spotlighted differing views between company managers and educational administrators regarding the efficacy of vocational and technical education. Despite the limitations in Ukraine during wartime, in-depth interviews with enterprises, regional authorities, and educational providers helped to clarify urgent priorities, such as adult retraining, support for internally displaced persons, and the recognition of informal competencies.

Given the labour market challenges worldwide, lessons derived from the experiences of North Macedonia, Türkiye, Ukraine, and Ethiopia carry broader significance for both academic work and practice. By highlighting how different institutional arrangements and socio-economic structures shape workforce development, this research contributes to more targeted responses. Governments struggling with demographic decline, brain drain, or talent shortages can draw upon examples of how industry–university collaborations seek to modernise curricula and provide practical rather than theoretical knowledge. Employers striving to retain skilled personnel can consult strategies adopted by firms elsewhere, from salary adjustments and improved working conditions to structured career trajectories that discourage emigration and support continuous learning.

Moreover, as migration remains a defining feature of the studied countries of origin, understanding the root causes behind outflows of skilled individuals as well as the success or failure of policies designed

reverse such adversary trends could inform transnational debates between policy makers on how best to manage talent mobility. Whether it is through forging bilateral agreements, simplifying recognition of qualifications through a joint framework, or strengthening the efforts to return emigrated citizens, comprehensive approaches rooted in local realities are more likely to succeed than those that overlook the complex interplay of economic, social, and political factors.

This working paper is structured as follows. After the introduction on the design and goals of the study, Section 2 provides a literature review on skill shortages, mismatches, and migration, referring to both global academic work and domestic policy documents. In Section 3, we elaborate the methodological approach defined for the research activities undertaken in work package 3 of the SKILLS4JUSTICE project, as well as the rationale for the qualitative design of the study. Section 4 provides insights into the results of the conducted quantitative and qualitative analysis. Specific subsections highlight employer perspectives on hiring challenges, the experiences of vocational and higher education institutions in updating their curricula, and policymakers' strategies for managing emigration or leveraging immigration flows. Finally, Section 5 is reserved for a comprehensive conclusion to the topic alongside policy recommendations and guidance for future work. Through a synthesis of the reported findings, the given recommendations can guide policy creators, educators, and industry partners in their adaptation to the continuously changing economic contexts. Rather than offering a one-size-fits-all solution, the recommendations point out flexible approaches that account for local conditions by supporting industries that face severe shortages, incentivising return migration, and creating robust pathways for lifelong learning and upskilling.

2. LITERATURE REVIEW

The evolving dynamics of global labour market trends, skill shortages, and workforce mismatches in countries of origin, destination, and transition present a multi-faceted challenge for policymakers, employers, and educational institutions. In the context of Ethiopia, North Macedonia, Türkiye, and Ukraine, these challenges are particularly pronounced due to a combination of socio-economic factors, migration dynamics, and ongoing structural transformations. It is evident that persistent skill mismatches and the evolving labour market demands highlight the common need for systemic reforms and stronger coordination among institutions. Reviewing how each of these countries approaches the alignment of labour market demands with available skills provides valuable insights into how countries navigate their workforce challenges and opportunities in a rapidly changing global economy.

In Ethiopia, a country tackling with the repercussions of conflict, labour market disruptions, and high levels of displacement, the need to adapt to skill shortages is critical. Notably, the country is characterised by a rapid population growth, outdated curricula, and low collaboration between academia and the industry which in turn motivates the unemployed or overqualified to seek better opportunities abroad (AfDB, 2020). Its labour market has experienced severe disruptions, especially in sectors like agriculture, services, and industry, which have traditionally employed a large portion of the population. The loss of jobs in these sectors, combined with the rise of migration due to conflict, has created a demand for skilled workers in emerging sectors such as healthcare, education, and technology (Nielsen, 2023).

North Macedonia's National Employment Strategy (2021) aims to achieve key benchmarks by 2027, such as reducing the NEET (Not in Education, Employment, or Training) rate (ages 15–29) to below 20%, lowering vertical skill mismatches to under 25%, expanding digital training, and reducing high-education unemployment to below 10%. The strategy also targets increasing the education budget to 4.2%, improving the World Competitiveness Index, raising employee participation to 60%, and reducing youth unemployment (ages 15–24) to 27%. However, Ethiopia's policy response including harmonizing its National Qualifications Framework (NQF), which is still pending, is preceded by university-educated professionals' migration- as 25-30% emigrate due to low salaries, political instability, and limited opportunities, leading to wasted public investment in education and stunted national development. The government of Ethiopia's focus on expanding vocational trainings aims to fill skill gaps and address the immediate labour market shortages caused by conflict and displacement. Integrating refugees and displaced individuals into the labour market is a key component of Ethiopia's strategy, underscoring the importance of inclusivity in economic recovery. The emphasis on aligning qualifications with labour market demands is crucial in Ethiopia's efforts to stabilize its workforce and foster sustainable economic growth (Giacomo *et al.*, 2023). On the other hand, Türkiye's 12th Development Plan emphasizes strengthening vocational education and forging the necessary closer ties between the private sector and higher education (Presidency of Turkey, Presidency of Strategy and Budget, 2023, Türkiye).

By contrast, North Macedonia, also grappling with labour market mismatches, faces challenges related to the aging population and emigration of its skilled workers. While Ethiopia's focus on expanding vocational training and aligning qualifications with regional frameworks mirrors the efforts of many countries in transition, North Macedonia's experience illustrates how emigration can deplete critical skills. North Macedonia's policy measures address the loss of skilled labour through initiatives aimed at retaining educated youth and attracting the diaspora, highlighting the difference in responses between countries facing migration as a challenge.

Moreover, Ethiopia's growing of technology sector holds promise as a regional hub for skilled talent. Despite challenges in collecting reliable labour market data due to instability, the government's ongoing reforms in education and qualification recognition lay the groundwork for improving workforce development and addressing skill shortages in the future (Schnitzer, 2023).

North Macedonia's labour market is characterized by significant skill mismatches, particularly between the qualifications provided by the educational system and the rapidly evolving demands of the labour market. With structural shifts toward automation, persistent mismatches between employer demands and available skills, particularly in sectors like ICT, manufacturing, and hospitality, are driven by gaps in education, outdated curricula, and insufficient practical training. The accelerated emigration of young, skilled workers, accompanied by ineffective migration policies, exacerbates talent shortages, prompting calls for systemic reforms to better align education with labour market needs and retain talent (European Training Foundation, 2017). The policy response in North Macedonia has focused on improving the inclusiveness of education, reducing NEET rates, and enhancing digital skills, particularly for youth and women (Ministry of Labour and Social Policy, 2021).

However, unlike Ethiopia, where a large portion of the workforce is directly affected by conflict and displacement, North Macedonia is experiencing a distinct challenge of the brain drain. The emigration of highly educated individuals, contributing to a significant loss of talent, exacerbates the skill shortages in the country. As much as 0.8% of the country's GDP is lost annually due to the migration

of skilled workers (State Audit Office, 2024). In comparison, while Ethiopia faces internal displacements due to conflict, North Macedonia's outmigration is fuelled by the pursuit of better opportunities abroad, particularly in EU countries. This demographic shift poses unique challenges for North Macedonia's efforts to develop a resilient workforce.

These factors highlight the need for better labour market data and stronger retention strategies to prevent the outflow of skilled workers and effectively address the skills mismatch. North Macedonia's efforts to integrate youth into the labour market and promote gender equality are crucial in tackling these issues, but the country's continued focus on improving vocational education and aligning qualifications with labour market needs remains essential to addressing its workforce challenges.

Türkiye's labour market is shaped by its unique position as a destination, transition, and origin country for migration. With a young and growing population, Türkiye faces challenges related to skill mismatches, particularly in the context of high unemployment rates among youth and women. Despite efforts to strengthen vocational and technical education, the country's labour market continues to experience disparities between the qualifications of the workforce and the available job opportunities (OECD, 2023). Moreover, Türkiye's economic challenges, including recessions and currency instability, further complicate efforts to align labour market demands with the available workforce. Dealing with economic volatility and strict regulations, the Turkish economy continuously faces challenges with high youth and female unemployment even despite the efforts for better skill matching with the market's demands (OECD, 2023).

Türkiye's labour market struggles are intertwined with the complexities of migration. With millions of refugees, especially from Syria, Türkiye faces the challenge of integrating displaced populations into the labour market. In contrast, Ethiopia addresses skill shortages through the integration of displaced populations. Refugees in Türkiye often find themselves in informal labour markets, which not only limits their skill development opportunities but also perpetuates economic inequality. This presents a stark contrast to Ethiopia, where internal displacement is viewed through the lens of creating opportunities for reintegration into formal sectors, particularly through vocational training (Ege and Erdil, 2023).

Türkiye's role as a host country for millions of refugees highlights the differences in policy responses to migration when compared with Ethiopia's efforts. The refugee challenge in Türkiye is a major factor contributing to the labour market's fragmentation, whereas Ethiopia is focused on internally displaced persons (IDPs) and refugees who are primarily integrated within the local economy. Both countries, however, share the common goal of creating inclusive labour markets that respond to both the supply of and demand for labour in the wake of displacement.

Ukraine's labour market has been severely impacted by the ongoing war, which has led to widespread job losses and a significant reduction in the country's workforce. Despite the devastating effects of the conflict, Ukraine has pursued reforms to rebuild its labour market, focusing on the alignment of its National Qualifications Framework with EU standards and the development of transparent qualification recognition systems (Nielsen, 2023). The country's efforts to retrain displaced workers, promote youth and women's participation, and protect vulnerable groups such as veterans and disabled persons reflect a broader strategy to address skill shortages and workforce mismatches in the aftermath of war. However, the ongoing conflict severely disrupted on-the-job training and diminished the institutional capacities (ILO, 2022, Ukraine). Similarly to Ukraine, Ethiopia has also focused on

developing a competence-based education and development of own NQF to facilitate higher domestic employment and recognition abroad (UNESCO, 2021, Ethiopia).

Like Ukraine, Ethiopia has also experienced significant emigration of qualified labour (with more pronounced emigration in recent period to Sweden, Italy, and Germany (Ayanie *et al.*, 2020), driven by economic instability, low wages, and political challenges. While Ukraine's outflow accelerated after 2014, particularly following the hybrid war with Russia, and became more pronounced with the large-scale military operations in 2022, Ethiopia's migration trends have been ongoing since the 1990s, exacerbated by factors like political instability and economic challenges (EuroStat, 2024).

Ukraine's IT sector, despite the challenges posed by the war, continues to show remarkable resilience. The country's strong mathematics and IT education systems have produced a significant number of skilled professionals, and the sector remains a key driver of the country's recovery (Schnitzer, 2023). However, the war has created significant barriers to labour market data collection, making it difficult to accurately assess skill needs and align education with market demands (Nielsen, 2023).

Migration has also played a critical role in Ukraine's labour market, with millions of Ukrainians displaced by the war seeking employment in neighbouring countries such as Poland and Germany. These refugees, many of whom possess valuable skills, are often integrated into European labour markets, highlighting the importance of supporting the mobility and integration of skilled workers (Gromadzki and Lewandowski, 2023).

3. METHODOLOGY

The researchers from North Macedonia, Türkiye, Ethiopia, and Ukraine completed the four tasks of Work Package No. 3: 1) preparation of methodology and research tools; 2) analysis of official data and specialized publications; 3) conducting interviews and focus groups with stakeholders on changes in the demand and supply of skilled labour; and 4) analysis of data and preparation of a comparative study. A dual methodology was used, combining descriptive and trend analysis of secondary data from international and national statistical databases with open-ended interviews involving companies, educational institutions, policymakers, and labour market intermediaries.

Clear criteria were defined for selecting materials to analyze, prioritizing published journal articles, books, and reports by organizations like the World Bank and ILO. Documents in English were preferred, but national language sources were also included when no English version was available. Relevant documents were sourced from databases like Web of Science, SCOPUS, and Google Scholar. Key information such as document type, author, year, research purpose, methodology, and conclusions were recorded for systematization.

Methodological guidelines were established for conducting interviews and surveys, including a one-hour limit for face-to-face interviews and focus groups, with online questionnaires in either English or the national language. Ethical standards were strictly followed, with emphasis on survey permissions and data protection. Respondents' identities were anonymized, and country-specific questions could not exceed 25% of the total questionnaire content.

3.1. Questions for companies

A standard questionnaire was used, consisting of 21 questions grouped into 5 thematic blocks (Introductory information; Demand and supply of skills and qualifications; Relationship with the education and training system; Attracting and supporting a skilled workforce in the context of migration; Strategies for combating skills shortages caused by migration). It was planned to survey at least 20 companies in the country. Methodologically, the respondents were supposed to represent 3-5 sectors of the economy. For example, they might include information and communication technologies, healthcare and biotechnology, energy, financial services and financial technologies, etc. The criteria for selecting companies also included: the size of the company (small, medium and large companies, freelance or digital enterprises, etc.); their position in the production market and the labour market (leaders, new players, large consumers of labour, etc.); regional location/representation and/or the presence of separate structural divisions/branches.

3.2. Questions for providers of educational services in vocational education and training (VET) and higher education (HE)

A standard questionnaire was used, consisting of 25 questions grouped into 8 thematic blocks (Introductory information; Relevance and fit of provided skills and qualifications to the labour market needs; Vulnerability of learners; Migration of graduates; Perceived role in dealing with the challenges and problems caused by migration; Use of comparability tools and transferability of skills and qualifications; Internationalisation of provided education; Needed support and potential of skills partnership with the EU). It was planned to survey at least 5 HEIs and 5 VET institutions. The following criteria for selecting respondents were used. For HEIs it was different types of universities (classical, national, state, municipal or private, etc.); regional location/representation and/or the presence of separate structural units; the availability of many areas of training, particularly, specialties that are significant for the entire country; the respondent's affiliation to positions not higher than the faculty. For vocational education and training institutions it was training in multidisciplinary and consolidated qualifications; training of workers for the service sector and types of economic activity in the region of location; absence of reputational risks and recognition among users and consumers of specialized educational services.

3.3. Questions to policy providers (national and regional levels) in the field of employment and labour market policy and in the field of education and training

This questionnaire consisted of two parts. A series of rather similar questions were asked separately for policy providers (national and regional levels) in the field of employment and labour market policy and for policy providers (national and regional levels) in the field of education and training. For policy providers (national and regional levels) in the field of employment and labour market policy, a standard questionnaire was used, consisting of 13 questions grouped into 6 thematic blocks (Employment and labour market policy context; Labour market policy and migration; Labour market policy interventions; Role and place of the national qualifications system in solving labour market problems; Migration policies; Policy cooperation with the EU).

For policy providers (national and regional levels) in the field of education and training, a standard questionnaire was used, consisting of 15 questions grouped into 5 thematic blocks (Policy priorities for

matching demand and supply of skills and qualifications; Skills policies and migration; National system of qualifications and migration; Migration and investment in human capital development; Skill partnerships with the EU).

In general, no less than 5 experts were expected to be interviewed for the survey of representatives involved in the formulation of relevant policies. The criteria for their selection were the following: active participation in the implementation of the relevant policy, for example, the Ministry of Education, the Ministry of Economy, the Chamber of Commerce and Industry, etc.; close and fruitful cooperation with providers of educational services and consumers of specialists.

3.4. Questions to social partners organizations and labour market intermediaries

The final set of standardized questionnaires focused on labour market intermediaries and social partners. This section consisted of 15 questions, divided into six key areas: 1) Employment and labour market policy context; 2) Migration and labour market policy; 3) Policy interventions; 4) The role of the national qualifications system in addressing labour market challenges; 5) Migration policies; and 6) Policy cooperation with the EU. The partnering countries agreed to conduct at least five interviews in this segment, with the flexibility to add up to 25% country-specific questions.

A significant methodological approach involved comparing the research findings on the matching of demand and supply for skilled labour in Türkiye, Ukraine, North Macedonia, and Ethiopia with those from destination and transition countries. The aim was to expand opportunities for effective and mutually beneficial partnerships between countries of origin, destination, and transition.

In Ethiopia, the researchers adhered to the typical methodology outlined in the project. The analysis of available statistical data focused on demographics, employment and unemployment rates, educational attainment among the workforce, and migration trends, including notable internal migration patterns. The researchers conducted 31 interviews and 2 focus group discussions (FGDs), totalling 40 participants. Of these, 20 interviewees were from companies in the manufacturing, construction, and service sectors (including health, education, and hospitality); 5 were from higher education institutions; 6 were from vocational education and training colleges; 7 were policy providers; and 2 were social intermediaries. The qualitative data collected was analyzed thematically, following the core themes outlined in the WP3 questionnaire guide, and categorized by the type of participant (companies, HEIs and VET providers, policy providers, and social intermediaries). The results were presented under three main categories, with direct quotations from participants illustrating the findings.

In Türkiye, a comprehensive statistical analysis was combined with graphical methods and mapping as part of the qualitative research design. Data collection involved 37 interviews with representatives from companies, education institutions, and policy-making bodies. All participants voluntarily contributed to the research. The data was analyzed through content analysis. The selection of sectors for interviews was based on labour shortages over the past five years, as identified by İŞKUR, although certain sectors, such as mining and quarrying, were excluded due to difficulties in securing interviewees. Interviews were conducted with managers or HR officers from 18 companies across sectors like furniture, welding, textiles, footwear, administrative services, accommodation, food services, education, and software. Additionally, 15 educational institution administrators were interviewed, and 3 policy makers contributed to the research. The research encountered challenges, such as difficulties scheduling interviews due to participants' work overload and issues with the complexity of interview questions.

For North Macedonia, the research was based entirely on secondary data obtained from the State Statistical Office, specifically using the MAKSTAT database for the descriptive presentation of labour market trends, educational attainment, vocational education and training data, and migration patterns. The data spanned from 2017 to 2023, with the analysis focusing on key variables such as labour market participation, educational attainment, and migration patterns. The methodology included descriptive statistics to summarize data trends, trend analysis to identify long-term patterns in labour market participation, educational attainment, and unemployment, and cross-tabulation to explore the relationships between variables such as gender, age, and educational background. Qualitative research followed the standard methodology for Work Package 3, with open-ended questions across four questionnaire types tailored to different target groups. The research primarily focused on sectors such as ICT, electricity, gas, accommodation, manufacturing, finance, healthcare, and education, with an emphasis on those sectors most relevant to the study in terms of skill shortages, mismatches, and migration. The study covered over 30 occupations across these sectors, including technicians, software engineers, doctors, teachers, and waitstaff.

In Ukraine, the researchers faced significant challenges due to the ongoing war, which drastically affected the socio-economic landscape. The war divided the country's conditions into two periods pre-2022 and wartime which meant that indicators and trends before the war were no longer relevant. The war caused a sharp decline in GDP, employment, and the standard of living, with some industries becoming obsolete or requiring complete technological reconstruction. The official statistics relevant to the research were either unavailable or classified. In response, Ukrainian researchers developed a specialized method for assessing labour market discrepancies during the war, focusing on the period from early 2022 to mid-2024. They used data from the State Employment Service and adapted standard surveys to account for new wartime realities, such as forced displacement, the changing role of women in the workforce, the relocation of enterprises, and the growing importance of digitalization. The method involved calculating a balance coefficient (K_{zb}), which compared the number of unemployed individuals in specific professions to the number of job vacancies. This innovative approach provided insights into how the war had reshaped labour market demands, enabling better workforce planning, policymaking, and educational program development. Key sectors identified as having the highest labour demand included manufacturing (clothing production), construction, transport, warehousing, electricity supply, and education. At the same time, sectors with labour surpluses were identified, including professional, scientific, and technical activities, information and telecommunications, financial and insurance activities, and administrative services. More than 30 professions were analyzed for both labour demand and surplus, including electricians, power engineers, seamstresses, truck drivers, professors, and insurance agents.

To consolidate findings from the four countries, researchers first selected key international publications on labour markets, educational services, qualifications, and migration, prioritizing those in English and indexed in bibliometric databases. Comprehensive studies on migration processes and regulations affecting both origin and destination countries were analyzed. The next step involved examining statistical data on qualifications, identifying labour shortages or surpluses, and analyzing skilled labour outflows by comparing relevant national trends and extreme cases. Notable differences, especially those specific to Ukraine and Ethiopia, were highlighted. Finally, interviews with key stakeholders were analyzed to identify commonalities and country-specific examples, shaping the conclusions drawn in the final report.

4. RESULTS AND ANALYSIS

4.1. Statistical findings

4.1.1. North Macedonia

Since 2017, North Macedonia's labour market has seen minor changes, with a sharp decline in the working-age population growth in 2022 (see Figure 1). Despite modest growth, the inactive population increased to 47.8% by 2023, pushing the labour force participation rate down from 56.8% in 2017 to 52.3% in 2023. Unemployment dropped from 22.4% to 13.1%, and the employed share of the labour force grew, indicating improved employment conditions. Rising education levels, with more individuals holding secondary or higher qualifications, suggest a shift to a more skilled workforce, which could lead to higher productivity and wages but also create shortages of low-skilled labour. Gender disparities remain, with uneducated men more likely to become unemployed or inactive, potentially turning to informal or foreign labour markets.

Wage data show significant sectoral disparities. High-paying sectors such as ICT, Financial and Insurance Activities, and Electricity and Gas Supply offer above-average wages, reflecting a demand for specialized skills. In contrast, sectors like Accommodation, Manufacturing, and Construction have lower wages, possibly due to reliance on less specialized labour. Job vacancy data highlights these demand patterns, with manufacturing and retail trade having substantial vacancy shares. The ICT sector is seeing a rise in vacancies, indicating growing demand for advanced digital skills. Sectors like Construction, Accommodation, and Transportation also have high vacancy rates, likely due to turnover, seasonality, and ongoing skill gaps. Larger companies typically have higher vacancy numbers, while small and micro firms show higher vacancy rates, reflecting their agility but challenges in finding specialized talent. Occupation-level data shows strong demand growth for service and sales workers, technicians, and associate professionals, with moderate qualifications, while managerial and armed forces positions remain stable.

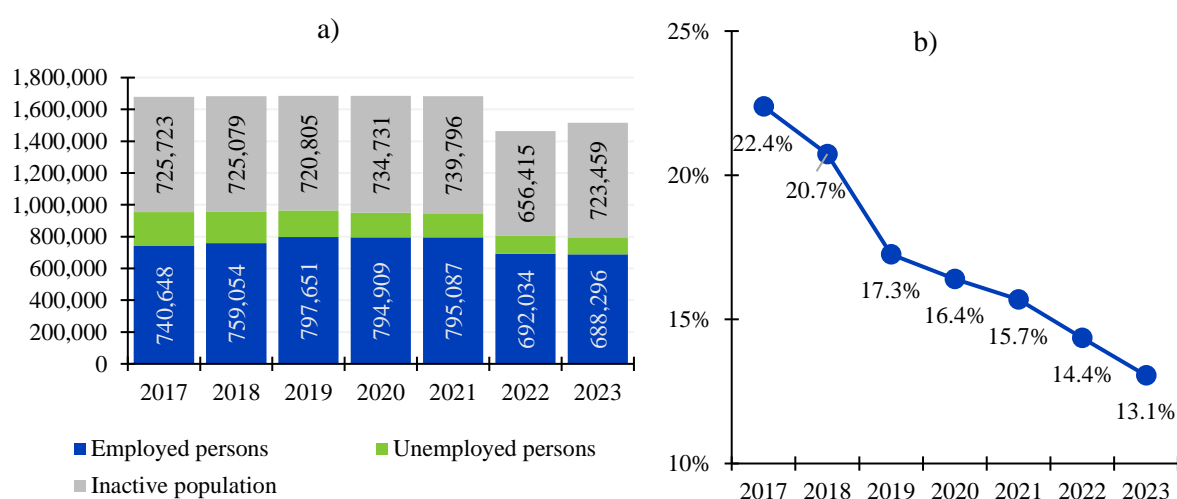


Figure 1. Working age population structure (a) and unemployment rate (b) in North Macedonia, 2017-2023.

Source: State Statistical Office – Labour market statistics – Working age population.

Trends of employment in terms of levels of qualifications and education

Statistical data reveals a decline in the number of graduates from first-cycle studies since the 2008 peak, raising concerns about the future supply of highly educated workers. Women consistently make up around 60% of graduates, indicating a female-dominated pool of higher-educated labor. While most graduates are full-time students, a significant portion of part-time students, often already employed, also earn higher education credentials. Social sciences remain the dominant field in North Macedonia, although declines are observed across most disciplines, except for medical and religious sciences.

Unemployment in North Macedonia has decreased across all age groups and education levels, with higher qualifications offering better job prospects. Youth unemployment has dropped at all educational levels, though the least educated remain the most vulnerable. This trend continues in older age groups, where university degrees correspond with lower unemployment rates, although challenges persist for those at both educational extremes. EQF level 4 workers have seen the largest decrease in unemployment, but they still represent the majority of the long-term unemployed, suggesting ongoing skills mismatches. Long-term unemployment affects those with secondary education, though 17.7% of those unemployed for extended periods hold university degrees. Despite minor reductions in long-term unemployment, individuals with minimal education continue to face significant challenges. Men, particularly those with lower education, experience higher long-term unemployment rates, though university education significantly reduces this risk for women.

Trends of over-qualification, skill under-utilisation, and skill shortages

A significant share of discouraged individuals, particularly younger men, not seeking work due to perceived unavailability of jobs suggests underutilized skills in the North Macedonian labour market. Long periods of unemployment which are often four years or more also point to skill mismatches, especially among those with EQF level 4 education who struggle to find roles that match their qualifications. Although higher education does not entirely prevent long-term unemployment, it is less common for the least educated to remain jobless for extended periods, indicating that underutilization stems more from a lack of alignment between available skills and employer needs than from insufficient credentials alone. Job vacancy and wage data from North Macedonia reveal significant sectoral differences. The ICT sector, especially computer programming and related activities, stands out with notably high and rapidly growing wages, reflecting strong skill demand and a tight labour market for specialized digital expertise. The financial sector also maintains high average wages, signalling a consistent need for qualified professionals, albeit with less wage variability compared to ICT. In contrast, accommodation and food services remain among the lowest-paid sectors, continuously struggling to retain workers as many seek better-paying opportunities abroad. Manufacturing, while offering lower wages, consistently accounts for a significant share of job vacancies, underscoring a persistent imbalance between the available workforce and the skill requirements.

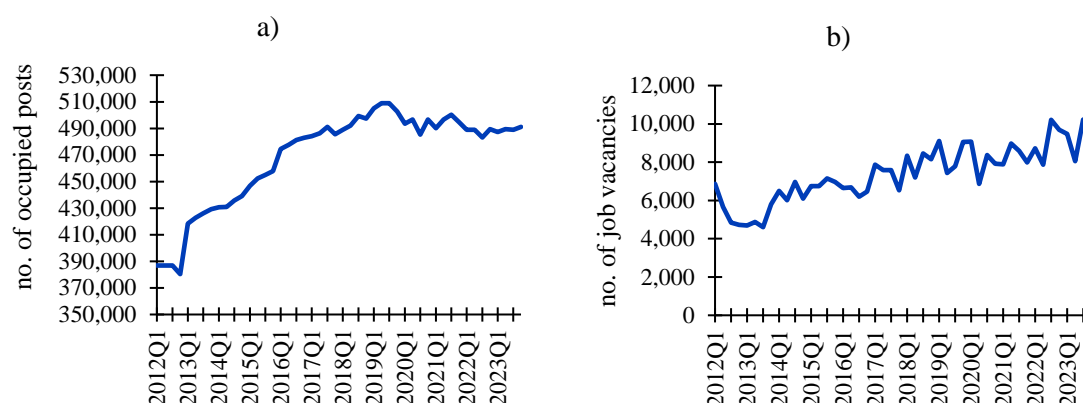


Figure 2. Number of occupied posts (a) and job vacancies (b) in North Macedonia, 2012Q1 – 2023Q4.

Source: State Statistical Office – Labour market statistics – Job vacancies; Authors’ depiction.

Beyond sectoral wage patterns, vacancy data suggest ongoing labour shortages and mismatches. Manufacturing and wholesale/retail trade consistently show high vacancies, while the ICT sector’s demand surged post-pandemic, hinting at a growing need for advanced technical competencies. Across enterprise sizes, larger firms show stronger overall demand, but small and micro-sized businesses exhibit higher vacancy rates, implying more pronounced difficulties in filling positions. In terms of occupation, service and sales workers, as well as technicians and associate professionals, show increasing demand indicating that mid-level skills remain valuable. Meanwhile, professionals and clerical staff maintain steady vacancies, reflecting a stable call for higher-level qualifications.

Migration trends in North Macedonia

Emigration from North Macedonia has been unfavourable and has accelerated significantly since 2018, affecting nearly all levels of educational attainment. While initially, citizens with no or incomplete primary education and those with secondary education formed the largest group of emigrants (see Table 2), recent trends show a growing outflow of both lower and higher educated individuals. For example, citizens with a bachelor’s degree have emigrated at an average annual rate of 58.4% since 2015. Overall, men tend to emigrate more frequently than women, though female emigration rates have risen sharply since 2019. Geographically, the Southwest and Polog regions record particularly high numbers of emigrants, while the Skopje region, as the economic hub, also witnesses substantial outflows. Due to data gaps, actual emigration numbers may be even higher than official statistics suggest.

Age patterns in emigration have also shifted over time. Initially, older non-working individuals (65+) represented a notable share of emigrants, but more recently, middle-aged and younger groups have come to dominate. By 2022, men aged 40-44 and 20-24, as well as women aged 45-49 and 20-24, comprised a significant portion of emigrants. These changes highlight the complexity of North Macedonian emigration, indicating that low wages, quality of life and the complex socio-economic situation in the country stimulates emigration even of higher educated individuals.



Table 1. Emigrated citizens of the Republic of North Macedonia by educational attainment.

Year	Without school	Incomplete primary education (1-4 grade and 5-7 grade primary school)	Primary school	Secondary school	Higher school	University	Master's degree	Doctorate	Unknown
2015	17	14	84	245	25	83	11	1	287
2016	8	5	27	110	11	30	2	1	246
2017	6	3	19	35	1	8	-	1	68
2018	9	6	25	72	3	12	1	-	16
2019	39	9	47	151	10	53	6	-	297
2020	58	19	83	265	11	50	9	3	439
2021	100	40	200	402	13	83	14	2	376
2022	140	96	221	605	52	161	49	13	568

Source: State Statistical Office – Population – External migration.

4.1.2. Türkiye

Türkiye's economy and labour market demonstrate the characteristics of a developing country. In an analysis by Ayhan, Lehmann, and Pelek (2023) on the dynamics of Türkiye's labour market covering non-financial companies and employees registered from 2006 to 2021, it was revealed that Türkiye's labour market is highly dynamic, with job reallocation rates ranging from 34% to 44%, like developing countries. Micro companies (up to 10 employees) dominate job creation and destruction. The number of employed labour force between 2012–2021 is presented in Table 2. Over this decade, the labour force increased from approximately 27,000 to around 32,800.

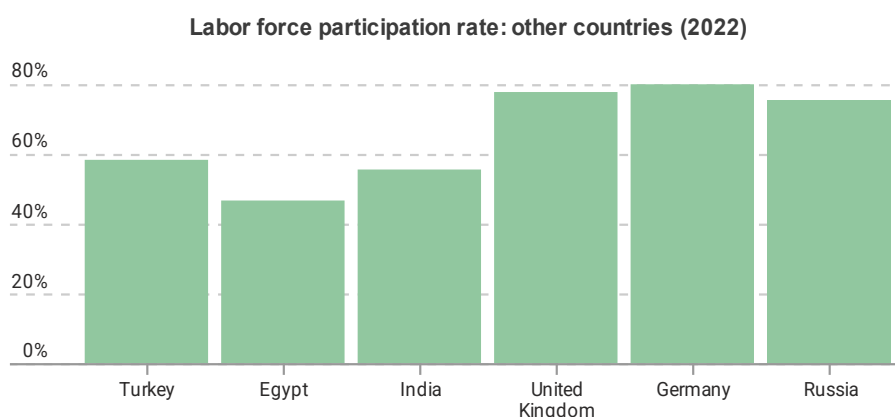
Table 2. Employment and unemployment rates between 2012–2021 (OECD Labour Force Statistics-2022, 2023b)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Labour force, thousands										
All persons	27 021	27 960	28 772	29 652	30 523	31 617	32 245	32 524	30 849	32 743
Males	18 957	19 418	20 050	20 454	20 893	21 476	21 787	21 855	21 097	22 170
Females	8 064	8 543	8 722	9 199	9 630	10 141	10 458	10 669	9 752	10 573
Unemployed, thousands										
All persons	2 202	2 442	2 843	3 035	3 308	3 421	3 512	4 445	4 045	3 916
Males	1 446	1 540	1 811	1 877	1 996	2 012	2 072	2 694	2 597	2 366
Females	756	902	1 032	1 158	1 313	1 409	1 440	1 750	1 448	1 550
Employment, thousands										
All persons	24 819	25 519	25 929	26 617	27 215	28 196	28 733	28 079	26 804	28 827
Males	17 511	17 878	18 240	18 577	18 898	19 464	19 715	19 161	18 500	19 804
Females	7 308	7 641	7 690	8 040	8 317	8 732	9 018	8 918	8 304	9 023
Employment (%)										
Males	70.6	70.1	70.3	69.8	69.4	69.0	68.6	68.2	69.0	68.7
Females	29.4	29.9	29.7	30.2	30.6	31.0	31.4	31.8	31.0	31.3
Unemployment rate (% of labour force)										
All persons	8.2	8.7	9.9	10.2	10.8	10.8	10.9	13.7	13.1	12.0
Males	7.6	7.9	9.0	9.2	9.6	9.4	9.5	12.3	12.3	10.7
Females	9.4	10.6	11.8	12.6	13.6	13.9	13.8	16.4	14.8	14.7
EMPLOYMENT - PROFESSIONAL STATUS, thousands										
All activities	24 819	25 519	25 929	26 617	27 215	28 196	28 733	28 079	26 804	28 827
Employees	15 613	16 345	17 122	17 860	18 374	18 958	19 523	19 209	18 705	20 152
Employers and persons working on own account	5 934	5 952	5 650	5 643	5 775	6 096	6 189	5 965	5 616	...
Unpaid family workers	3 266	3 216	3 150	3 105	3 055	3 134	3 008	2 891	2 470	...
Employees as % of employment	62.9	64.1	66.0	67.1	67.5	67.2	67.9	68.4	69.8	69.9
Part-time employment (%)										
Part-time as % of employment	11.8	12.3	10.6	9.9	9.4	9.6	9.9	9.5	11.4	9.0
Male share of part time employment	40.0	40.1	42.3	41.8	42.6	42.4	44.4	45.9	50.8	47.0
Female share of part time employment	60.0	59.9	57.7	58.2	57.4	57.6	55.6	54.1	49.2	53.0
Male part-time as % of male employment	6.7	7.0	6.4	5.9	5.8	5.9	6.4	6.4	8.4	6.2
Female part-time as % of female employment	24.2	24.5	20.6	19.0	17.6	17.9	17.6	16.2	18.2	15.3

The rate of employment in males decreased slightly in ten years, while it increased negligibly in women and is still low. Unpaid family workers decreased probably due to a slight increase in women's



involvement in the workforce. As seen in Figure 3, the labour force participation rate in Türkiye is lower than European countries, and ranks 148th among 186 countries (datacommons.org, 2024).



Data from datacatalog.worldbank.org via Data Commons

Figure 3. Labour force participation rate in Türkiye, 2022 (datacommons.org, 2024).

Trends in the structure of the demand for skills

According to the OECD (2023a:102), over 80% of employers in Türkiye struggle to fill vacant positions, particularly in middle-level skills and blue-collar jobs. Shortages are most acute in manufacturing, operations, and logistics. Many vacancies remain unfilled due to a lack of professional skills or insufficient work experience. Most sectors facing labour shortages require skills below university level, which can be obtained through vocational education and training courses. Sectors currently experiencing labour shortages, such as the garment industry, construction, and service staff, are shown in Table 3. The main reasons for these shortages include a lack of applications, dissatisfaction with work conditions, insufficient professional skills, and inexperience.

Table 3. The top five professions with labour shortage in Türkiye in the last five years (İŞKUR, 2023a)

	2019	2020	2021	2022	2023
1	Sewing machine operator (Textile)	Sewing machine operator (Textile)	Sewing machine operator (Textile)	Sewing machine operator (Textile)	Sewing machine operator (Textile)
2	Waiter/Waitress	Waiter/Waitress	Housekeeper	Waiter/Waitress	Waiter/Waitress
3	Sales consultant/expert	Manufacturing worker	Model machine operator (Weaving, clothing, and home textile)	Weaving and apparel machine operator	Wooden furniture carpenter
4	Chef	Garment worker	Waiter/waitress (service staff)	Sales Consultant/Expert	Gas welder
5	Salesman	Straight stitcher (Textile)	MIG MAG Welder	Construction worker	Construction worker

Skill shortages and mismatches

The data analysis reveals that as education levels rise, individuals' job expectations and job search methods diverge. High-skill jobs with shortages, particularly in the information and communication technology sector, often require programming and foreign language skills. For professional groups facing shortages, the most in-demand skills are work experience, teamwork, and physical competence, while higher-level skills such as computer and foreign language proficiency are less emphasized. Approximately 40% of young people do not complete upper secondary education (OECD, 2023a:11). Due to high unemployment, many university graduates are forced to accept jobs requiring medium or low-level skills, resulting in over-skilling and over-education.

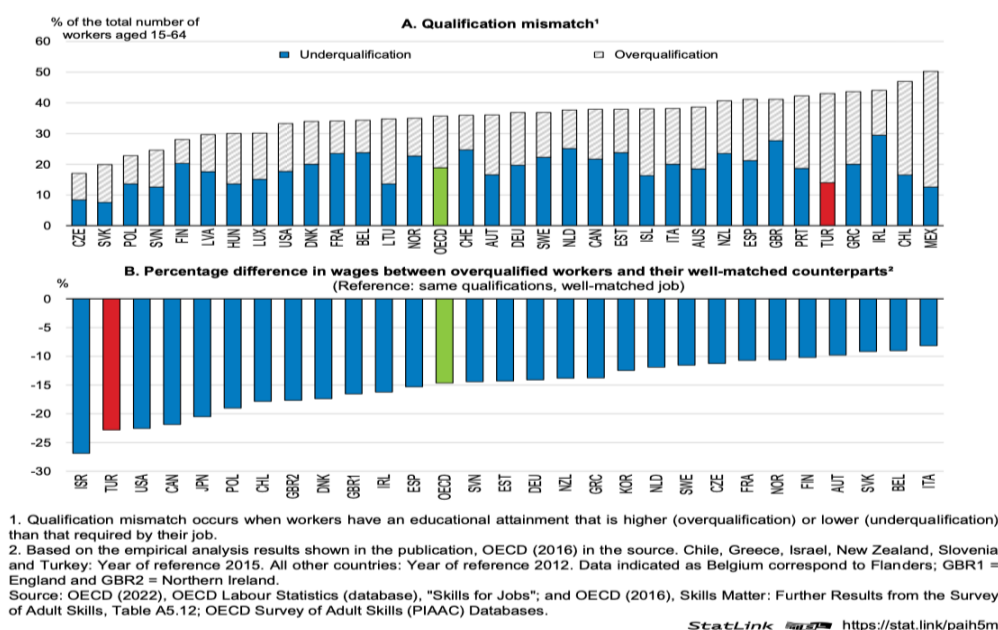


Figure 4. Qualification mismatch and percentage difference in wages between overqualified workers and their well-matched counterparts (OECD, 2023a).

As shown in Figure 4, study field mismatches in Türkiye are about 45%, compared to the OECD average of 32%, with low representation of IT and STEM graduates. Türkiye's national education system comprises both formal and non-formal education. The Ministry of National Education reported that in the 2023-2024 academic year, 18,710,265 students (9,600,891 male, 9,109,374 female) are enrolled in formal education from pre-school to upper-secondary schools. In higher education institutions, vocational and undergraduate education is offered through formal, secondary, distance, and open education programs. Around 40% of students are in vocational schools, while 53% are pursuing undergraduate education, and 8% are in graduate programs. Of the 7,081,289 HEI students, 52% are women, and 48% are men.

The OECD "Education Policy Outlook in Turkey" (2020) reports a 6% decrease in employment rates for university graduates over the past decade, with women being more affected, while employment for those with below upper-secondary education has increased. Skill gaps are notably higher for workers with below or upper-secondary education compared to the OECD average, and there is an oversupply of tertiary graduates, with declining earnings among 25–64-year-olds.

Immigration and emigration

Türkiye hosts 3.9 million migrants and refugees, 90% of them Syrians (IOM Türkiye, 2024). Other large groups include those from Afghanistan, Iraq, Iran, and, in 2022, around 400,000 Ukrainians (3RP, 20023:5). Immigration has exceeded emigration, though the two approached similar levels in 2022, with a 53% rise in outflows in 2023, particularly among those aged 20–39. The training fields with most brain drain were information and communication technologies (6.8%), engineering, manufacture and construction (4.4%), and natural sciences, mathematics and statistics (2.6%). “Brain drain” is most pronounced in ICT (6.8%), engineering (4.4%), and natural sciences (2.6%), with top destinations including the United States (21.4%) and Germany (17.5%) (TURKSAT, 2024a). Foreign nationals leaving Türkiye in 2023 mainly comprised Russian (17%), Iraqi (15.7%), Afghan (8.3%), Iranian (6.5%), and Turkmen (4.9%) citizens (TURKSTAT, 2024b).

About 40% of Syrian refugees aim to move elsewhere due to Türkiye’s “temporary protection” restrictions, which limit legal rights and social services (Imrie-Kuzu & Özerdem, 2023). In 2023, the top formal employment sectors for immigrants were accommodation, domestic work, wholesale trade, non-building construction, and clothing/textile manufacturing (Ministry of Labour and Social Security, 2023). The top five sectors in which immigrants work with permits in 2023 are accommodation, domestic personnel, wholesale trade, construction of non-building structures, and clothing and textile manufacture (Ministry of Labour and Social Security, 2023). Syrians work mostly in informal work conditions and in sectors such as trade, construction, and manufacturing, which account for 79.1% of their work, and these are followed by the informality-based textile, clothing, leather and footwear industries where 30% of working Syrians are employed (Pinedo-Caro, 2020).

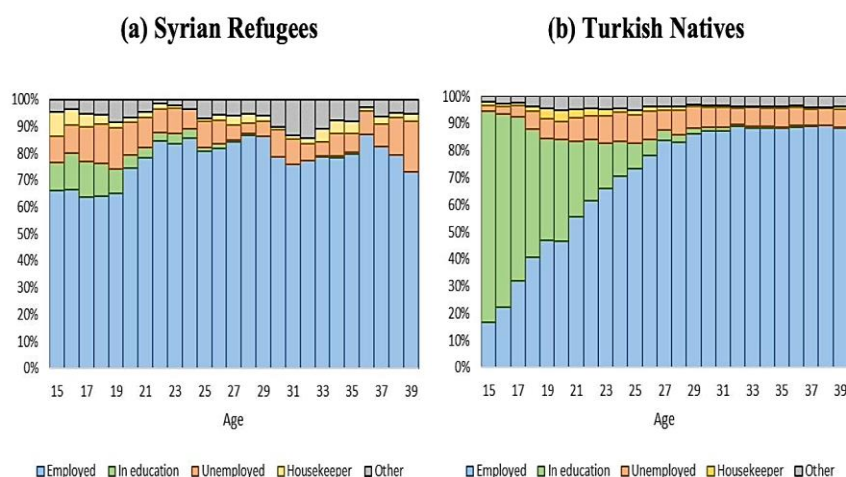


Figure 5. Labour force status by age, men (Pinedo-Caro, 2020:58).

4.1.3. Ukraine

Various foreign sources estimate Ukraine’s population at around 30 million, with 12 million economically active citizens. Of these, 9.5 million hold official jobs, leaving only 6-7 million in the real economy after excluding “budget workers.” Employment has significantly decreased: halving compared to 2010, declining 1.7 times since 2015, and dropping by 40% since the pre-war year 2021. As of January 1, 2024, 96,100 people were registered as unemployed with the State Employment Service (SES), over 40% of whom held higher education, while there were 40,200 vacancies. In 2023, 483,200 people were



unemployed (compared to 867,600 in 2022), with 160,100 finding employment and 32,900 receiving vocational training. SES data highlights regional mismatches, with the highest unemployment in Zaporizhia, Dnipropetrovsk, and Sumy, while Lviv, Dnipropetrovsk, and Kyiv had the most vacancies. Large cities have job oversaturation, causing shortages in rural areas and smaller towns.

Ukraine’s labour market has undergone major transformations due to globalization, technological progress, and socio-economic changes. There is increased demand for highly qualified personnel, particularly in IT, engineering, medicine, and biotechnology, where advanced skills and adaptability are crucial. At the same time, economic instability has raised demand for workers with medium-level qualifications (NQF levels 3–4) in sectors such as construction, agriculture, services, and telecommunications.

Between 2020 and 2023, the number of vacancies registered with the SES decreased by 60.29%, from 829,600 in 2020 to 329,400 in 2023. The largest reductions were seen in agriculture, construction, and IT, with vacancies in these sectors dropping by more than 130,000. Forced migration and business relocation during the war have caused significant disruptions in regional labour markets, leading to an uneven distribution of jobs and changing demand for qualifications. For example, the share of vacancies in the group "Workers for maintenance, operation, and monitoring of process equipment" decreased from 24.9% in 2022 to 18.4% in 2023.

Despite the overall employment decline, the highest demand for professionals in 2023 was seen in sectors such as: "Legislators, senior civil servants, administrators, managers" (e.g., sales managers, chief accountants); "Specialists" (e.g., accountants, medical nurses); "Trade and services employees" (e.g., food sellers, cooks); "Qualified workers in agriculture, forestry, and fishing"; "Qualified workers with tools" (e.g., seamstresses, electricians); and "Workers in maintenance and operation of technological equipment" (e.g., drivers, tractor operators, boiler plant operators).

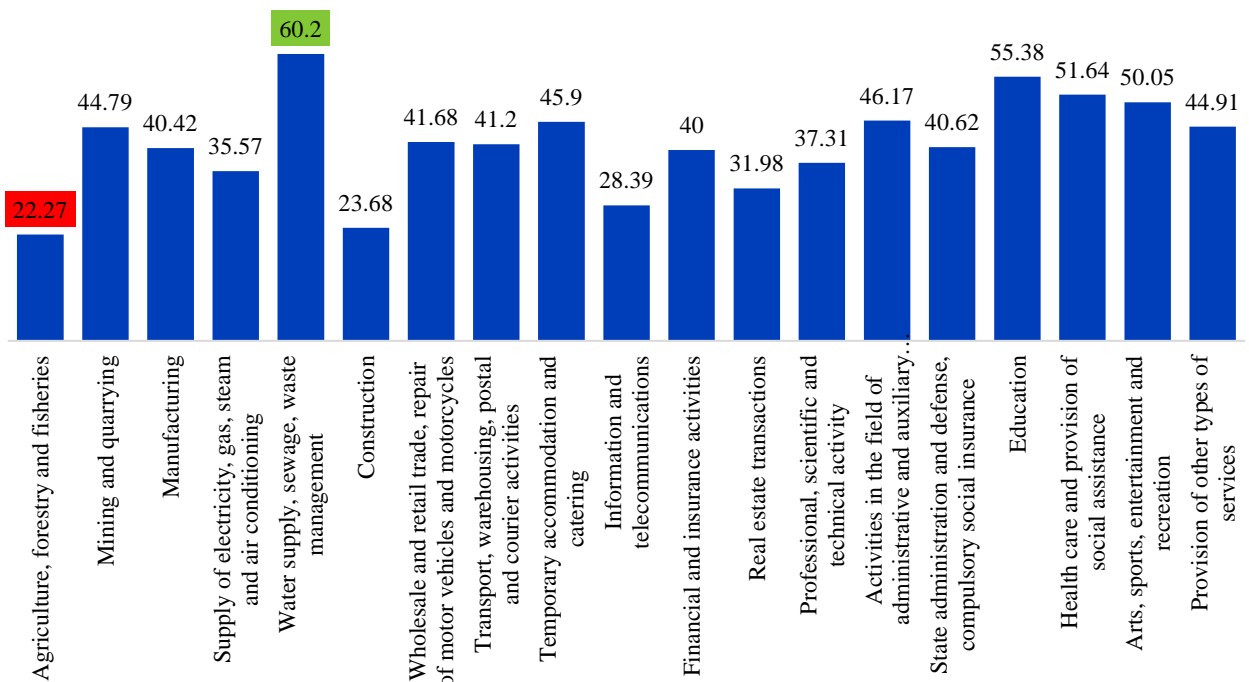


Figure 6. The ratio of the number of vacancies registered in the State Employment Service in 2023 to the indicators of 2020, in %.

Source: Calculated according to the data of the State Employment Service: <https://old.dcz.gov.ua/analytics/68>

Analysis of supply and demand for labour force by industry and profession

To objectively assess the state and prospects of national and regional labor markets under martial law, the author's methodical approaches were applied to determine the short-term labor demand in various regions. These calculations identified five sectors with the highest demand for labor, considering factors such as personnel turnover, new job creation, and outflow of workers. In Ukraine, these sectors include: 1) Manufacturing (Clothing production); 2) Construction; 3) Transport, warehousing, postal, and courier activities; 4) Supply of electricity, gas, steam, and air conditioning; and 5) Education. Among these, the most critical sectors for qualified personnel during the war period are clothing production, specialized construction, land and pipeline transport, scientific research and development, and education.

The current labor shortage is driven by several factors: many qualified workers have left Ukraine due to the war, mobilization, or the search for better wages and working conditions; new technologies and automation demand skills that workers often lack; there is a significant mismatch between the supply of trained graduates and actual employer needs; certain sectors like education and research face tough working conditions and lower-than-expected pay; and skilled trades remain unpopular with younger workers, despite relatively favorable pay and employment conditions. The professions with the highest demand in these sectors include for clothing production, cutters, and seamstresses; for specialized construction, and ground and pipeline transport, tram drivers and vehicle mechanics; for scientific research and development, university professors and research associates; and for education, speech therapist teachers and preschool assistant teachers.

Trends in overqualification and underutilization of the skills of the domestic labour force

In today's Ukraine, along with an excess supply of labour force, there is also an unsatisfied demand for vacant jobs, one of the reasons for which is the inconsistency of the proposed requirements with the professions and qualifications possessed by employees. In this context, internal and external factors formed by military aggression and its consequences are particularly relevant for the country, which is reflected in socio-economic instability, increasing social tension in society against the background of a decrease in the standard of living, worsening employment conditions, territorial and professional qualification disparities between demand and supply on the labour market, worsening of the situation on local labour markets, overproduction of personnel by educational institutions, low quality of educational services, in particular, due to their remoteness, etc. (see Table 4).

**Table 4.** The highest number of vacancies and the corresponding number of unemployed people in Ukraine by profession in 2023 (the table is formed according to the principle of decreasing numbers).

Name of profession (position)	Number of vacancies, units	The number of unemployed, persons	Remaining vacancies at the end of the year, units
Seller of food products	14 354	25 838	960
Motor vehicle driver	12 455	11 595	1 365
Cook	8 441	11 771	905
Accountant	7 515	11 068	641
Seamstress	6 282	3 686	1 115
Teacher of general secondary education institution	5 038	3 811	216
Security guard	4 346	7 947	330
Nurse	4 297	4 672	413
Civil service (local government) specialist	3 068	4 796	325
tractor-machinist of agricultural (forestry) production	2 615	3 592	93
a worker in complex maintenance and repair of buildings	1 950	1 982	196

Source: Calculated according to the data of the State Employment Service. <https://old.dcz.gov.ua/analitics>, 2023.

4.1.4. Ethiopia

The working-age population of Ethiopia consistently increased as seen in Table 6 over the years from 48.6% in 2013 to 54.3% in 2018/2019. This suggests a growing potential workforce. The urban population has a higher percentage of people within the working-age range compared to the rural population. This could be attributed to various factors, including migration, education levels, and employment.

Table 5. Working-age population of Ethiopia.

Year	Working age population % (15-65)		
	Rural	Urban	Total
2019	50.4	62.5	53.6%
2018/2019	51.6	62.5	54.3%
2016	49.3	67.2	52.7%
2014	48.6	68.8	51.1%
2013	48.6	57.3	48.6%

Source: authors compilation from Ethiopian Statistical Service, 2024.

Coming to the population by age structure, a significant portion of the population is under the age of 15, suggesting a high birth rate and a young population structure though the percentage of the population in these age groups shows a slight decline. For instance, the 0-5 age group decreased from 18.2% in 2013 to 15.6% in 2018/2019, the 0-9 age group decreased from 32.4% in 2013 to 28.1% in

2018/2019 and the 0-14 age group decreased from 47.7% in 2013 to 42.3% in 2018/2019. The percentage of the population within the working-age demographic (15-64) has increased slightly from 48.6% in 2013 to 54.3% in 2018/2019. This indicates a growing proportion of the population that falls into the working age, which is generally positive for economic productivity.

There is a noticeable decline in the overall employment to population ratio from 59.5% in 2021 to 48.7% in 2022. This indicates a decrease in the proportion of the working-age population that is employed. The male employment ratio decreased from 69% in 2021 to 61.1% in 2022. While still significantly higher than the female ratio, this decrease indicates that fewer men are employed in 2022 compared to the previous year. The female employment ratio saw a more dramatic drop from 50.2% in 2021 to 37.8% in 2022. This decline highlights a decrease in female employment, emphasizing existing issues related to gender disparities in the labour market or structural factors that hinder women's employment opportunities.

Table 6. Employment-to-population ratio.

Year	Employment to Population Ratio		
	Total	Male	Female
2022	48.7	61.1	37.8
2021	59.5	69	50.2

Source: Authors compilation from Ethiopian Statistical Service, 2024.

On the other hand, a substantial increase in Ethiopia's overall unemployment rate increases from 8% in 2021 to 19.2% in 2022. The rate surged from 8% to 19.2%, indicating a significant deterioration in the labour market. In 2022, the unemployment rate for females (28.6%) is more than double that of males (10.8%), indicating that women are disproportionately affected by unemployment.

Educational attainment

From 2013 to 2022, literacy rates improved for both males and females. The male literacy rate increased from 52.5% in 2013 to 61% in 2022, while the female literacy rate rose from 35.9% to 47%. This demonstrates progress toward closing the gap in literacy. Urban areas consistently show higher literacy rates than rural areas. In 2022, the male urban literacy rate was 83%, significantly higher than the rural rate of 55%, while female urban literacy was 71%, compared to 40% in rural areas. These figures highlight ongoing challenges in rural education, access, and quality. Despite the improvements, males still have a higher literacy rate than females across all years analyzed, with a 14-percentage-point difference in 2022 (61% for males vs. 47% for females).

Enrollment rates for Ethiopia's school-age population (7–18 years) increased between 2013 (56.6% for males, 59% for females) and 2016 (64.3% for males, 64.2% for females), before slightly declining by 2019 (59% for males, 58% for females). Throughout this period, female enrollment was consistently higher, though the gap fluctuated. Secondary education enrollment rates remain low, with only 6% of males and 7% of females enrolled in 2022, an improvement from 2.5% and 2.7% in 2013. However, a significant portion of youth is still out of school: 34% of females and 37% of males in 2022. While this marks a slight decrease compared to earlier years, it underscores the continued challenge of ensuring education access for all school-age children.



Migrations trends and type

Four categories of migration have been recognized in Ethiopia: internal migration, transit, inward migration, and outward migration (Zekarias, 2023). However, the authors only had access to internal migration data from the data centre. Even for internal migration, we tried to demonstrate the rate using data collected by the Ethiopian Statistical Services for the year 2021.

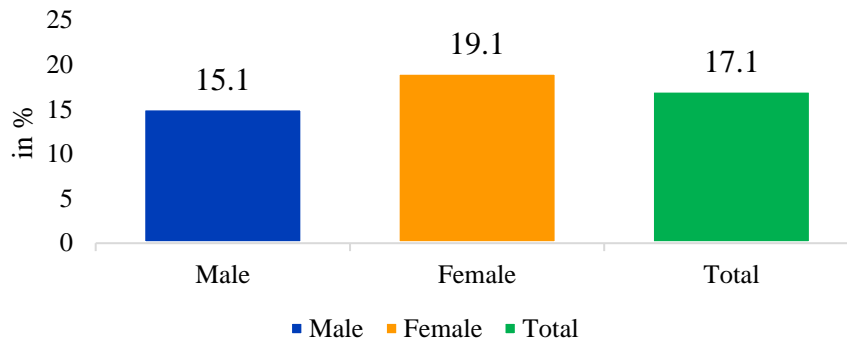


Figure 7. Percentage of internal migration by gender in Ethiopia (2021).

The data in the Figure 8 indicates that there is high percentage (17.1%) of internal migration in Ethiopia. The percentage of internal migration is slightly higher for females (19.1%) compared to males (15.1%). This indicates that women are more likely to migrate within the country. The chart displays the forms of internal migration, categorized by the origin and destination areas: urban-urban, urban-rural, rural-urban, and rural-rural. The data shows a significant proportion of both males (26%) and females (25.5%) engaging in urban-urban migration (25.9%), with males having a slightly higher percentage. While the overall percentage is lower compared to other forms of migration, there's a notable gender difference, with males (17%) having a higher proportion in Urban-Rural migration (13.7%). Rural-Urban Migration is the most common form of internal migration accounting for (32.2%), with both males (29.2%) and females (34.6%) participating in significant numbers. While less prominent than other forms, rural-rural migration still accounts for a considerable proportion of internal migration in Ethiopia.

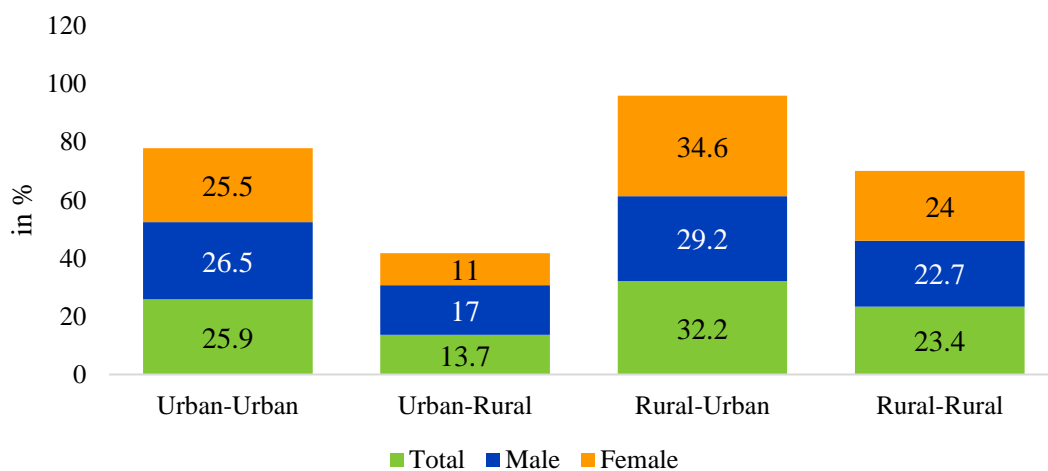


Figure 8. Forms of internal migration in Ethiopia.

4.2. Insights from interviews with companies, education providers, policy creators, and labour market intermediaries

4.2.1. Some views of companies' representatives across the four countries

Republic of North Macedonia:

Interviews with 49 respondents covered 29 companies across manufacturing, electricity supply, financial services, ICT, and accommodation and food services, alongside 6 HEIs, 4 VETs, and 5 representatives from policy and labor market organizations. About 71% of companies struggle to find qualified staff, while 29% manage well. Employer branding plays a role, with one respondent stating, *"the workforce is attracted to our company since most of them like to work for a recognizable brand."* To address skill shortages, firms invest in training, internships, and collaborations with educational institutions. Another respondent noted, *"We solve the problems with lack of qualifications and skills by... training workshops internally and in cooperation with external experts."* However, outdated programs and low student interest remain challenges.

Around 75% of companies collaborate with educational institutions, especially in manufacturing and financial sectors. Retention remains difficult, with 68% struggling to attract skilled employees. A respondent emphasized, *"attracting and retaining the workforce in Macedonia is an absolute challenge... Especially highly qualified and professional staff."* Companies also invest in employee training, sometimes with high budgets. Only 14% have hired migrant workers, citing bureaucratic barriers.

Türkiye:

Interviews with three policymakers and 19 company managers from key sectors reveal that 89.5% of companies struggle to source skilled labor. Factors include high worker expectations, reluctance to commit long-term, and qualification mismatches. Policymakers note that young workers expect high wages while preferring minimal work, stating, *"Even among vocational high school graduates, there is a significant lack of knowledge about basic concepts."*

To address gaps, firms engage in on-the-job training, collaborate with universities, and work with industry partners. Unskilled labor is abundant, but intermediate-skilled positions remain difficult to fill. Migration is both a solution and a challenge, with one respondent noting, *"These people need jobs and money... If they stay after 10 or 11 days, it means they need the job and will work."* However, most migrants lack relevant skills. Education remains highly theoretical and disconnected from industry needs, with business-school collaboration seen as superficial.

Additionally, there are reported shortages of skilled labor in both white-collar roles and technical professions requiring specialized expertise, such as machine operators, engineers, and chefs. Some companies attempt to overcome these issues by partnering with training centers and chambers of commerce, but the effectiveness of these initiatives varies. Firms stress the need for more targeted government policies and industry-driven training programs to build a sustainable workforce.

Ukraine:

Interviews with 22 employers across Kyiv, Donetsk, Dnipropetrovsk, Kirovohrad, and Sumy highlight workforce shortages due to war-driven displacement. Nearly half of employers lead large enterprises (1,000+ employees), covering manufacturing, construction, transport, electricity supply, and education. Primary challenges include relocation of skilled workers (38.5%), poor employment conditions (20.5%), and war-related disruptions (12.8%). A respondent noted, *"Due to ongoing conflict,*

many skilled workers have either left the country or moved to safer regions, making hiring increasingly difficult."

Education and training remain inconsistent. Some institutions adapted well before the war, but disruptions have weakened their effectiveness. Employers advocate for curriculum modernization and industry collaboration. To address shortages, companies focus on wage increases (26.9%), internal training (25.0%), and educational partnerships. One employer stated, *"We need closer ties between training institutions and industry to ensure graduates meet workplace demands."* However, migration and skill mismatches persist, necessitating long-term workforce policies and incentives for skilled workers to remain. Some companies have begun investing in short-term certification programs to quickly train displaced workers for in-demand roles. Employers emphasize the need for government-backed incentives to encourage companies to hire and train local talent. There is also growing interest in integrating digital learning solutions to upskill employees remotely amid ongoing instability.

Ethiopia:

Interviews with 31 employers and two focus groups covered manufacturing, construction, service sectors, HEIs, VETs, and policy organizations. Nearly all employers struggle to find skilled applicants, though office administration and generic engineering roles remain accessible. Shortages persist for advanced technical skills, machine operators, and digital skills. One employer stated, *"We are currently in need of teachers for the new subjects included in school: Art, vocational courses, Math, science subjects, and teaching of additional languages."*

To mitigate shortages, companies hire and train fresh graduates, leverage alumni networks, and recruit skilled migrants. Workforce migration, displacement, and poor working conditions exacerbate talent gaps. Migration remains a concern, though only 3 out of 20 employers consider it a major threat. Internal displacement and job market fluctuations further destabilize workforce retention.

Some firms have started offering financial incentives, such as housing and relocation support, to retain skilled workers in key industries. Companies are also exploring partnerships with international organizations to establish vocational training programs. However, persistent economic challenges continue to hinder large-scale workforce development efforts.

Across all four countries, companies emphasize training, education-industry collaboration, and wage improvements to address skill shortages. However, systemic barriers such as outdated curricula, migration trends, and economic instability continue to pose challenges.

4.2.2. Observations from HEIs and VETs

Republic of North Macedonia:

Approximately 70% of HEIs and VETs believe their qualifications align with labor market demands domestically and internationally. One respondent highlighted, *"our study programs are in line with the best universities, ensuring students acquire skills needed at home and abroad."* However, 20% of institutions express concerns over mismatches between qualifications and industry needs. While HEIs collaborate with businesses, VETs emphasize adaptability to market shifts.

Student dropout is influenced by economic and personal factors, including seasonal work abroad. Some HEIs report dropout rates of 5–10%, while VETs note minimal dropouts due to shorter programs and strong student motivation. The general consensus is that their qualifications are well-recognized internationally, facilitating employment and further education abroad.

To address skill shortages, institutions update curricula to meet global standards and strengthen ties with local employers. One respondent stated, *"inadequate study programs create a gap between graduates' expectations and market needs."* Institutions advocate for long-term government strategies to counter brain drain, emphasizing that systemic changes are essential for lasting solutions.

Türkiye:

Most educational administrators (12 institutions) report that their programs align with labor market demands, particularly vocational training programs sought after abroad. However, two institutions identify gaps in programs related to healthcare and specific industries. Institutions update programs based on government directives and stakeholder feedback, ensuring alignment with business needs.

Gender-specific skill gaps remain largely unaddressed, though four institutions have introduced positive discrimination to enhance female employment. Migrant student enrollment varies significantly, with one institution reporting 75% migrant students, while most have fewer than 5%. Addressing brain drain remains a challenge, with six institutions acknowledging a lack of strategic efforts, while others stress the need for quality education and employment reforms.

An analysis of institutional data reveals that 40% of institutions observed rising dropout rates over the past decade. Meanwhile, 53% report no graduates employed abroad, while others cite very low proportions. Institutions emphasize the need for closer collaboration with industries and targeted policies to enhance employment prospects and mitigate skill mismatches.

Ukraine:

Interviews with 12 educational providers across eight regions show that 57.1% rate their qualifications as moderately aligned with labor market needs, while 42.9% rate them as highly aligned. Some VETs report that 70–90% of graduates find employment in their field. Institutions regularly update curricula to reflect market demands, particularly in response to technological, environmental, and wartime changes.

Collaboration with businesses is widespread, including internships, joint events, and employer participation in curriculum development. One respondent noted, *"we work closely with employers to ensure graduates possess the skills needed in the labor market."* Despite this, 71.4% of respondents report moderate skill mismatches due to war-related disruptions and outdated training facilities.

Dropout rates remain low (4–6%), with primary causes being military conscription, migration, and mismatched career choices. Institutions rely on the National Qualifications Framework (NQF), though only 42.9% use it for qualification recognition. Most institutions lack engagement with EU tools like Europass, limiting international visibility of their qualifications.

Ethiopia:

All five higher education institutions interviewed demonstrate some level of program relevance to local and international markets. However, there is limited evidence of graduate employability, as many gain jobs through social networks rather than acquired competencies. A respondent noted, *"skills gaps persist because employers rely more on networks than actual qualifications."*

HEIs and VETs highlight that curriculum updates occur either through government directives or periodic internal reviews. Challenges include limited access to modern content, theory-heavy teaching approaches, and insufficient integration of technology in education. Both HEIs and VETs acknowledge that graduates lack essential technical and soft skills required by employers.

Tracking graduates' career progress is nearly nonexistent, making it difficult to assess program effectiveness. Institutions propose increasing student intake and engaging emigrant graduates in teaching and research roles. However, economic and systemic constraints hinder large-scale reforms, leaving many skill shortages unresolved.

HEIs and VETs across the four countries recognize the need for curriculum modernization and closer industry collaboration to address skill mismatches. While some institutions successfully align programs with labor demands, others struggle with outdated methods and external disruptions. Brain drain remains a common concern, requiring long-term policy interventions and enhanced career support structures to retain skilled graduates within their home economies.

4.2.3. Perceptions of policy creators, social partners, and labour market intermediaries

Republic of North Macedonia:

Policy makers in North Macedonia highlight key challenges in the labor market, with one respondent stating, *"the most challenging and urgent current problems on the labour market are the lack of manpower and adequate staff."* They stress that emigration is driven by both economic factors and systemic inefficiencies such as *"lack of rule of law, lack of order in the system, lack of certainty, and lack of perspective."* The mismatch between education programs and market demands remains a central issue.

Emigration is seen as a major threat, leading to *"brain-drain and depletion of human capital,"* with job vacancies either unfilled or occupied by underqualified staff. Some policy makers call for *"comprehensive reforms"* to address these gaps. While circular migration could potentially bring expertise back to North Macedonia, return migration remains low, limiting the benefits of such movements.

Labour market intermediaries recognize emigration as a severe issue, causing *"labour and skill shortages as well as economic instability."* They note that *"companies are considering hiring migrant workers,"* yet policy limitations and low return migration hinder this solution. Strengthening the National Qualifications Framework and aligning it with international systems is viewed as crucial for improving mobility and addressing labour market imbalances.

Türkiye:

Turkish policy makers emphasize the challenge of high worker expectations, as many young employees prefer *"to work less while earning more."* They highlight that 6.5 million people are neither in education nor employment, exacerbating unemployment and labour shortages. One policy maker noted, *"The failure to integrate this group into the labour market is a major issue."* Large firms primarily seek skilled labor, worsening structural employment issues.

Emigration is acknowledged as a concern, but no significant steps have been taken to encourage return migration. Policy makers argue that efforts should prioritize retaining skilled workers and ensuring knowledge transfer from those who do leave. They also caution that while migration can help fill labour gaps, most incoming migrants lack necessary qualifications, limiting their economic impact.

The education system is criticized for falling behind global standards, failing to produce skilled workers at the required pace. Policy makers advocate for vocational training expansion and revising school admission criteria. Some propose supporting second vocational training programs for university graduates to diversify their skills and enhance employment opportunities.

Ukraine:

Anonymous interviews with policy experts from Ukraine reveal that wartime conditions have led to *"a shortage of qualified and highly qualified workers"* due to displacement and military conscription. One respondent described the situation as *"a catastrophic and significant problem for the labour market and employment in Ukraine."* Sectors such as mechanical engineering, electronics, and healthcare face the most significant skill mismatches.

Policy makers stress that the education system must adapt quickly to employer needs, incorporating real-time labor market data. However, three out of four experts give a low assessment of the impact of the National Qualifications Framework in addressing workforce imbalances and mitigating migration. Improving data collection on labor trends is seen as a priority to inform future policy.

Cooperation with the EU is highlighted as a key strategy for workforce development. Proposed initiatives include aligning the NQF with the European Qualifications Framework, expanding National Europass centers, and introducing modern learning technologies. Policy makers stress that post-war economic recovery will require attracting skilled labor from third countries, necessitating targeted training and integration policies.

Ethiopia:

All nine policy makers and social partners interviewed agree that Ethiopia faces a severe imbalance in skilled labor supply and demand. Some sectors have an oversupply of graduates, leading to unemployment, while others lack qualified candidates, forcing companies to hire foreign experts. One respondent noted, *"industries struggle to find skilled workers, yet some graduates remain unemployed due to an oversaturation in certain fields."*

Gaps between industry needs and higher education training exacerbate skill mismatches. A uniform education system leads to *"homogeneous skill sets among graduates, regardless of market demand,"* contributing to underemployment and migration. Policy makers also criticize the 70:30 enrollment policy favoring STEM fields, arguing that it creates an artificial oversupply of engineers without guaranteeing competence.

To address these challenges, policy reforms focus on enhancing international market readiness, improving quality assurance in education, differentiating higher education programs, and strengthening accreditation systems. Efforts are also being made to develop Ethiopia's National Qualifications Framework and implement a skilled worker migration policy that balances local workforce needs with international opportunities.

Across all four countries, policy makers recognize emigration and skill mismatches as pressing concerns, calling for reforms in education, workforce training, and migration policies. While some progress has been made in aligning educational qualifications with market needs, challenges persist due to outdated training programs, weak policy enforcement, and low return migration. Strengthening vocational education, improving international cooperation, and enhancing labour market data collection are key recommendations to ensure a balanced workforce development strategy.

5. CONCLUSION AND RECOMMENDATIONS

The findings from North Macedonia, Türkiye, Ukraine, and Ethiopia collectively reveal significant labour market inefficiencies, skill mismatches, and migration-related challenges that hinder workforce sustainability and economic growth. Each country presents unique structural problems; however, commonalities such as skill gaps, brain drain, outdated educational frameworks, and low labour force participation rates underscore the need for comprehensive policy interventions.

North Macedonia continues to grapple with high unemployment, particularly among youth and low-skilled workers, while simultaneously experiencing a shortage of skilled labour in critical sectors such as ICT and healthcare. The sluggish economic growth and outdated education system further exacerbate the skills mismatch, limiting opportunities for workforce adaptability. Additionally, emigration trends indicate a loss of highly educated individuals, leading to a deficit in human capital.

Despite having a young population, Türkiye faces structural labour market issues including high informality, low female labour force participation, and an outflow of skilled workers seeking better opportunities abroad. The education system struggles to keep pace with industry needs, resulting in persistent skill mismatches. Migration, both inflows and outflows, remains a defining factor, with refugees constituting a significant portion of the labour market yet lacking full integration due to policy limitations.

Amidst ongoing geopolitical turmoil, Ukraine has witnessed drastic shifts in employment dynamics. Forced migration and war-related disruptions have led to regional labour imbalances, increasing the demand for skilled professionals in key industries such as construction, manufacturing, and healthcare. Despite these challenges, positive trends such as the rapid adaptation of vocational and technical education to new labour market needs demonstrate resilience and the potential for recovery.

Ethiopia's labour market is characterized by a surplus of university graduates facing underemployment and a shortage of skilled technical workers in manufacturing and construction. The education system remains heavily theoretical, with limited industry collaboration, leading to misalignment with labour market needs. Migration trends, both internal and external, further complicate workforce development, as a significant portion of skilled workers seek opportunities abroad.

Before delving into specific policy recommendations, it is crucial to recognize that addressing labour market inefficiencies requires a holistic and cross-sectoral approach. Governments must implement proactive policies that not only mitigate current workforce challenges but also foster long-term economic resilience. Collaboration between educational institutions, industries, and policymakers is essential in designing adaptive strategies that ensure skills development aligns with labour market demands.

Governments and stakeholders must take decisive actions to address labour market inefficiencies and workforce challenges. The following recommendations outline targeted strategies aimed at strengthening education systems, labour market policies, and migration management to create a more resilient and adaptable workforce.

Education System Reforms

1. **Align Curricula with Industry Needs:** Governments must work closely with employers to ensure that education programs produce graduates with skills that match labour market demands. Increased emphasis on STEM education, digital competencies, and vocational training is necessary.

2. **Expand Vocational Education and Training (VET):** Each country should enhance its VET offerings to address skill shortages, ensuring that programs are industry-relevant and provide hands-on experience.
3. **Micro-Credentialing and Lifelong Learning:** Introducing modular learning systems and micro-credentials would allow workers to upskill and reskill as labour market needs evolve.
4. **Employer-Education Partnerships:** Strengthening collaboration between businesses and educational institutions through apprenticeships, internships, and dual education systems will facilitate smoother school-to-work transitions.

Labor Market Policies and Workforce Development

1. **Incentivize Workforce Retention:** Governments should introduce tax incentives, competitive salaries, and career development opportunities to retain skilled workers and prevent brain drain.
2. **Encourage Female Labor Participation:** Policies that support parental leave, flexible work arrangements, and gender-inclusive hiring can help increase female workforce participation, particularly in Türkiye and Ethiopia.
3. **Tackle Informality and Improve Job Quality:** Addressing informal employment through stricter enforcement of labour laws and social security provisions will help stabilize the workforce.
4. **Targeted Employment Strategies for Youth and NEETs:** Countries should develop structured programs to integrate youth not in education, employment, or training (NEET) into the labour market through mentorship, training, and job placement schemes.

Migration Management and Talent Mobility

1. **Improve Integration Policies for Migrant Workers:** Countries like Türkiye and North Macedonia should streamline work permit processes, recognize foreign qualifications, and establish pathways for legal employment to better utilize migrant labour.
2. **Reverse Brain Drain Through Diaspora Engagement:** Offering incentives for skilled emigrants to return home, such as business grants, remote work opportunities, and networking programs, can mitigate talent loss.
3. **Skill Partnerships with Destination Countries:** Ethiopia and Ukraine could benefit from structured labour mobility agreements with EU nations, ensuring that emigrants gain skills that could be repatriated through return migration policies.
4. **Harmonization of Qualification Standards:** Aligning national qualification frameworks with European standards would improve international mobility and recognition of credentials, facilitating both inbound and outbound labour flows.

Economic and Institutional Strengthening

1. **Promote Job Creation in Emerging Sectors:** Governments must identify high-growth industries such as ICT, renewable energy, and automation and direct investments into these sectors to create sustainable employment opportunities.
2. **Enhance Labor Market Data and Forecasting:** Establishing national labour observatories to track employment trends and predict future skill needs will allow for proactive policymaking.
3. **Strengthen Social Protection Measures:** Expanding unemployment benefits, retraining programs, and worker transition support can improve resilience against labour market shocks.



4. **Encourage Regional and EU Cooperation:** North Macedonia, Türkiye, and Ukraine should deepen ties with EU labour market initiatives to improve workforce integration and economic collaboration.

While each country faces distinct labour market challenges, they can leverage insights from one another to enhance mutual progress. Türkiye's experience in integrating vocational training within its educational framework provides a model for Ethiopia and North Macedonia, where VET remains underdeveloped. Similarly, North Macedonia's efforts to align qualifications with European standards can serve as a roadmap for Ukraine and Ethiopia in strengthening their national qualification frameworks to improve workforce mobility.

Migration policies also present areas for learning. Türkiye and North Macedonia should study Ethiopia's early initiatives in structured labour mobility programs, allowing for controlled migration that benefits both source and destination countries. Meanwhile, Ukraine's rapid adaptation of vocational education in response to labour shortages could inspire similar flexibility in Ethiopia's skills training programs, particularly in the face of workforce displacement due to economic and environmental factors.

A collaborative approach to education, labour market policies, and migration strategies such as shared skill partnerships, joint vocational initiatives, and international cooperation on workforce mobility—could drive sustainable labour market solutions. By learning from each other's best practices, these nations can build resilient, adaptive, and future-ready labour markets.



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