

# RESEARCH ON THE KEY DEVELOPMENT MARKET NEEDS OF ENTERPRISES AND MATCHING WITH THE LABOUR OFFER (Education and Labor Market Mismatch)

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## ABSTRACT

*This paper examines key labor market indicators in North Macedonia, with a focus on the mismatch between education and employment. Despite high levels of educational attainment, young people in North Macedonia face significant challenges in finding employment that matches their skills and qualifications. This mismatch has implications not only for individual job seekers but also for the wider economy. The paper emphasizes the importance of addressing youth unemployment and promoting skills development to ensure that young people can contribute to the country's economic growth. Additionally, the paper explores ways to improve labor market outcomes, including through education and training programs, as well as policies that support job creation and entrepreneurship. Overall, the paper underscores the critical importance of addressing the issue of youth unemployment and skill mismatch in North Macedonia's labor market to promote economic development and sustainable growth.*

*Key words: labor market, education, employment, employment rate, economic growth, development indicators*

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# Introduction

Education and employment are two of the most important factors in an individual's life. Education is the process of acquiring knowledge, skills, values, beliefs, and habits, while employment refers to the state of having a paid job. Both education and employment play a crucial role in shaping a person's future and overall well-being. Education provides individuals with the skills and knowledge necessary to succeed in the workforce, while employment provides individuals with financial stability and a sense of purpose. The two are closely linked as a good education often leads to better employment opportunities and vice versa. A good education system and strong job market is essential for a healthy economy and society.

Education and employment mismatch refers to the situation where an individual's education and training do not align with the skills and qualifications required for the jobs that are available. This can happen when the job market changes rapidly, leaving certain skills in high demand while others become obsolete. It can also occur when the education system is not effectively preparing students for the jobs of the future, or when individuals are not making informed decisions about their education and career paths.

Education and employment mismatch can have a number of negative consequences for individuals and society as a whole. For individuals, it can lead to underemployment, where they are working in jobs that do not utilize their full potential or pay them a wage commensurate with their qualifications. This can lead to lower job satisfaction and a sense of frustration. For society, it can lead to a lack of productivity, skills shortages, and an increase in poverty and social inequality.

Governments, educational institutions, and employers can take steps to address education and employment mismatch by aligning the education system with the needs of the labor market and by providing more opportunities for job training, career counseling, and lifelong learning.

The overall economic situation in North Macedonia has a significant impact on the education and labor market in the country. A well-functioning economy can create opportunities for education and employment, while a struggling economy can lead to challenges in both areas.

North Macedonia's economy is considered to be a lower-middle-income economy, with a gross domestic product (GDP) per capita of around \$6695 in 2021 (World Bank, 2023). The country has undergone significant economic reforms in recent years, which have helped to improve its business environment and attract foreign investment. However, the COVID-19 pandemic has had a negative impact on the economy, with a contraction of 6.1% in 2020, according to the World Bank (2023). This has led to challenges in the education and labor market, including high levels of youth unemployment and underemployment, and a mismatch between the skills taught in the education system and the skills demanded in the labor market.

The labor market in North Macedonia is characterized by relatively high levels of informality and unemployment. The unemployment rate was 18.4% in 2020 (ILO, 2023), with youth unemployment being particularly high at around 37% (ILO, 2023). The COVID-19 pandemic has exacerbated these challenges, with many businesses forced to close or reduce their workforce. However, the government has implemented various measures to support businesses and workers during the pandemic, such as wage subsidies and social assistance programs.

North Macedonia's education system is divided into pre-school, primary, secondary, and tertiary education. Primary and secondary education are compulsory and free of charge, while tertiary education is provided by universities and other higher education institutions. The country has made significant progress in improving access to education, with a net enrollment rate of around 94% in primary education in 2018 (UNESCO, 2023). However, there are still challenges in terms of the quality of education, particularly in rural areas and for marginalized groups.

To address labor market mismatch challenges, the North Macedonian government has implemented various measures aimed at supporting the education and labor market sectors. For example, the government has launched initiatives to improve vocational education and training, to strengthen links between education providers and employers, and to promote entrepreneurship and innovation. Additionally, the government has implemented measures such as wage subsidies and social assistance programs to support businesses and workers during the pandemic.

Overall, the economic situation in North Macedonia has significant implications for the education and labor market sectors in the country. While there are ongoing challenges, the government's efforts to improve the alignment between education and the labor market, and to support businesses and workers, are positive steps towards addressing these challenges and creating opportunities for growth and development.

# Country contextual indicators

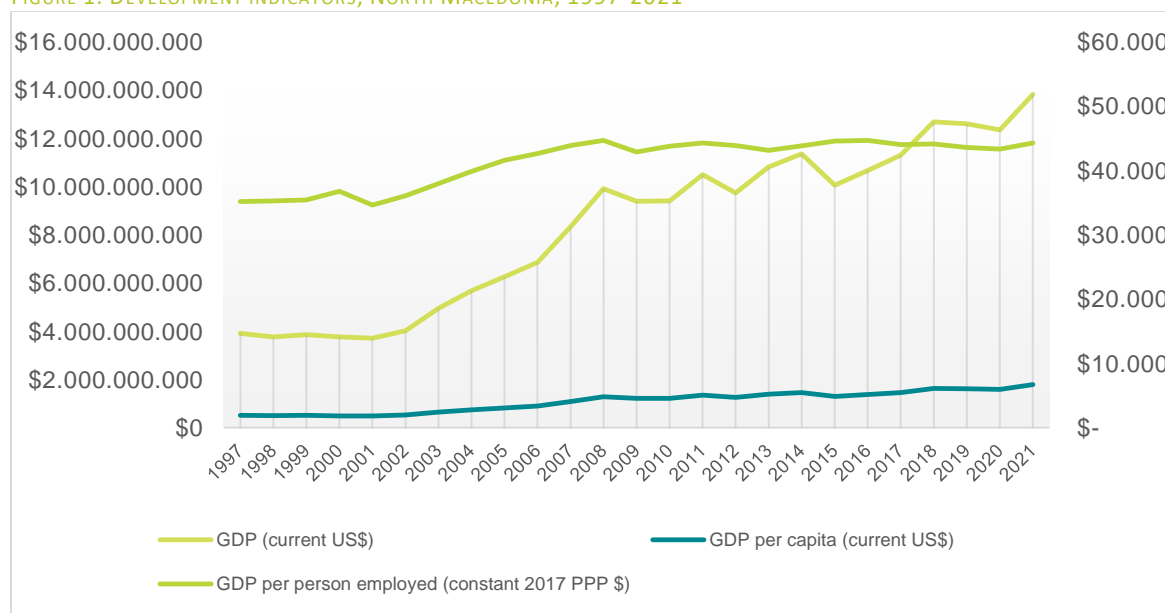
The following content provides an overview of various aspects related to the country's context, government programs and measures for employment, and key labor market indicators. It covers population and economy, labor market supply (working age and active population, employment indicators, and unemployment indicators), and labor market demand (occupied posts and job vacancies by sectors of activity, and job vacancies by occupation). This information aims to provide a comprehensive understanding of the country's demographic and economic landscape, as well as the employment-related programs and indicators in place.

## Population and economy

Data from the graph indicate that from 1997 to 2007, North Macedonia's GDP grew steadily, with a notable increase in 2007. However, like many countries around the world, North Macedonia was affected by the global financial crisis, and its GDP decreased in 2009. After that, North Macedonia's GDP continued to grow, albeit more slowly than in the pre-crisis period.

The highest GDP was recorded in 2021 at \$13,825,049,832, which is a positive sign for the economy of North Macedonia. However, it is important to note that the effects of the COVID-19 pandemic on the global economy and individual countries, including North Macedonia, may have impacted these figures.

FIGURE 1. DEVELOPMENT INDICATORS, NORTH MACEDONIA, 1997-2021



Source: own interpretation of World Bank data, <https://databank.worldbank.org/source/world-development-indicators>, last accessed 18.02.2023

According to World Bank data, it can be noticed that the GDP per capita of North Macedonia has generally increased over the years, with some fluctuations. The GDP per capita at constant prices (adjusted for inflation) increased from 2954.52 in 1997 to 5287.07 in 2021. The GDP per capita at current prices (not adjusted for inflation) increased from 1959.56 in 1997 to 6694.64 in 2021.

In terms of economic growth, it can be seen that North Macedonia experienced a significant increase in GDP per capita from 2003 to 2008, with a slight slowdown during the global financial crisis of 2008-2009. Since then, the GDP per capita has been growing steadily but at a slower pace. In terms of the difference between GDP per capita at constant and current prices, we can see that the GDP per capita at current prices is higher than at constant prices, indicating that inflation has affected the purchasing power of the currency. WB data suggests that the economy of North Macedonia has been growing, albeit at a slower pace in recent years.

From the figure, we can also see that the GDP per person employed in North Macedonia has generally increased over time, with some fluctuations. In 1997, the GDP per person employed was \$35,204, and it increased to \$44,287 in 2021. It is important to note that this data only provides information on the productivity of each employed person, not the overall level of employment or unemployment. Therefore, while increasing GDP per person employed is a positive sign for economic growth, it does not necessarily reflect the state of the labor market or the overall standard of living for people in North Macedonia.

Based on the calculations of the growth rate, it can be seen that North Macedonia experienced relatively consistent economic growth from 1997 to 2008, with annual GDP growth rates ranging from 1.44% to 5.47%. The country then experienced a downturn during the global financial crisis in 2009, with GDP growth contracting by -0.36%. The country then experienced a downturn during the global financial crisis in 2009, with GDP growth contracting by -0.36%.

FIGURE 2. ECONOMY GROWTH, NORTH MACEDONIA, (1997-2021)



Source: own interpretation of Data from database: World Development Indicators

<https://databank.worldbank.org/>, Last Updated: 03/30/2023

After the crisis, North Macedonia's economy slowly recovered, with GDP growth rates ranging from 2.34% to 4.63% from 2010 to 2019. However, the country experienced a significant decline in GDP in 2020, likely



due to the impact of the COVID-19 pandemic, with a contraction of -6.11%. In 2021, the country's GDP growth rate rebounded to 3.96%, although this is still slightly lower than pre-pandemic levels.

It can be concluded that North Macedonia's economy has experienced some periods of growth and some periods of contraction over the past few decades, but there is still room for improvement to increase the standard of living for its citizens. The country has been able to recover from economic downturns in the past, although the COVID-19 pandemic has had a significant impact on the economy in recent years.

It is worth noting that while GDP growth can be an important indicator of economic performance, it does not necessarily capture other aspects of economic well-being, such as income inequality or the distribution of wealth. Therefore, it is important to consider a range of indicators when assessing the economic situation in a country.

## Government programs and measures for employment

The employment policies in the Republic of North Macedonia are defined by the Government Program of the Republic of North Macedonia, the Revised Program for Employment and Social Policy 2023, and in accordance with obligations arising from the Global Jobs Pact of the International Labor Organization (ILO), the Youth Guarantee Plan 2023-2026, the IPA Budget Financing Program, and the Social Protection Law (activation of Guaranteed Minimum Income recipients). The Operational Plan for Active Employment Programs and Measures and Labor Market Services for 2023 establishes the employment programs, measures, and services aimed at creating new jobs and increasing the employability of unemployed individuals, especially young people, long-term unemployed individuals, and Guaranteed Minimum Income recipients.

According to the data from the Agency of employment of Republic of North Macedonia, Government Programs and Measures for Employment in North Macedonia can be segregated as follows (AVRSM, 2023):

Support for Self-Employment (Entrepreneurship):

- Total budget 672.332.118 MKD. Involves 2000 people.
- The government provides assistance and guidance to individuals interested in starting their own businesses.
- Support includes training on entrepreneurship, business planning, market research, financial management, and legal requirements.
- Financial incentives such as grants or low-interest loans may be offered to help entrepreneurs cover startup costs.

Support for Creating New Jobs:

“The project is co-funded by the European Union and by national funds of the participating countries”

- Total budget 715.769.453 MKD. Involves 2139 people.
- Subsidies for Employment: Financial subsidies are provided to incentivize employers to create new job opportunities.
- Employment and Growth of Legal Entities: Measures are implemented to create a favorable business environment, encouraging business growth and job creation.
- Support for Employment of Persons with Disabilities: Incentives and support services are offered to employers to promote the inclusion of individuals with disabilities in the workforce.

#### Training:

- Total budget 68.171.373 MKD. Involves 1330 people.
- On-the-Job Training with Specific Employers: Participants receive practical training while working with specific employers, gaining industry-specific skills and real-work experience.
- On-the-Job Training with Subsidized Employment (pilot measure): Participants receive on-the-job training while being employed under subsidized conditions, enhancing their employability.
- Training for Vocational Qualifications as Per Employer Demand: Vocational training programs are designed to meet the specific demands and requirements of employers, equipping individuals with in-demand skills.

#### Training for Digital Skills Development:

- Total budget 50.026.965 MKD. Involves 424 people.
- Advanced IT Skills Training: Programs and courses focus on developing advanced information technology skills to meet the demands of the digital age.
- Training for Human Resources Specialist (Recruiter) (pilot measure): Specialized training is provided for individuals interested in pursuing careers as HR Specialists in recruitment.

#### Internships:

- Total budget 48.907.529 MKD. Involves 1620 people.
- Opportunities are available for individuals to gain practical work experience through internships, facilitating the transition from education to the workforce.

#### Employment Program:

- Total budget 13.200.000 MKD. Involves 1000 people.
- Public Works: Employment opportunities are provided through public works projects, contributing to infrastructure development and job creation.

#### Economy of Care:

- Total budget 111.854.873 MKD. Involves 750 people.
- Opportunities are available for individuals to engage in municipally beneficial work.

“The project is co-funded by the European Union and by national funds of the participating countries”

- Training and employment of individuals for providing care services in local communities.

These programs and measures aim to foster entrepreneurship, stimulate job creation, enhance skills, and promote inclusive employment practices in North Macedonia.

The employment policies align with the Government Program, Revised Program for Employment and Social Policy 2023, and international obligations. All programs put an emphasis on diversity and inclusiveness, ensuring fair representation of ethnic, gender, religious, racial, and other vulnerable categories of citizens. The measures should provide an encouragement of balanced regional development based on the development level of planning regions and the number of registered unemployed individuals in each region. The access to employment programs, measures, and services is granted to all registered unemployed individuals and employers. Participation criteria include equal representation of men and women, as per the Law on Equal Opportunities for Women and Men, and at least 40% participation of young people aged 29 and below in each program, measure, and employment service. Transparent application processes are ensured in all measures and agreements govern the participation of unemployed individuals. The government put an effort to increase Roma participation in employment measures with the introduction of a 5% quota. Participants enter into agreements specifying their rights and obligations. The Operational Plan for 2023 focuses on young unemployed individuals, long-term unemployed individuals, and Guaranteed Minimum Income recipients. The Ministry of Labor and Social Policy leads the implementation of the Operational Plan, in partnership with responsible institutions and organizations.

The government programs and measures with services for employment include 14685 people with total budget of 181.856.923.390,00 MKD.

## Key labor market indicators

Following section provides an overview of key labor market indicators, focusing on labor market supply, employment indicators, unemployment indicators, and labor market demand in North Macedonia. It begins by discussing the working age and active population, highlighting their significance in understanding labor market dynamics. The section on labor market supply explores factors such as the size of the working-age population and the proportion of the population that is economically active.

Moving on, the section delves into employment indicators, which shed light on the number of people currently employed. These indicators can include metrics such as employment rates, the distribution of employment across sectors of activity, and job vacancies by occupation.

The subsequent section focuses on unemployment indicators, which provide insights into the number of individuals who are actively seeking employment but unable to find work. Various unemployment

indicators are examined, giving an understanding of the unemployment rate, duration of unemployment, and demographic breakdown of the unemployed population.

Finally, this section covers labor market demand, specifically occupied posts and job vacancies. It examines the distribution of occupied posts across different sectors of activity, indicating where employment opportunities are concentrated. Additionally, it highlights job vacancies by occupation, providing insight into the types of jobs that are in demand.

## Labor market supply

The labor market supply refers to the availability and characteristics of individuals who are able and willing to work within an economy. This section will provide an overview of the working-age and active population, employment indicators, and unemployment indicators, shedding light on the dynamics of the labor market supply in a given context.

### **Working age and active population**

The working age population represents the number of people between the ages of 15 and 64 who are capable of working. The active population, on the other hand, represents the number of people who are employed or actively seeking employment.

Looking at the data from the State statistical office, we can see that the working age population has steadily increased over the years, from 1,554,420 in 2001 to 1,682,800 in 2021 (SSO, 2023). This trend is expected to continue in the future. In terms of the active population, we can see that there has been some variation over the years. The highest number of active workers was in 2019 with 964,014, while the lowest was in 2002 with 824,824. In general, the active population has increased over the years, except for a slight decrease from 2020 to 2021 (SSO, 2023).

The data suggests that while the working age population has been increasing steadily, there have been some fluctuations in the number of people who are actively employed or seeking employment. It will be interesting to see if this trend continues in the future and what factors might be contributing to it.

To compare the data for the total population and the young population we have calculated the activity rate as a ratio between the working age population and active population for both categories. The data are shown in the Figure 3.

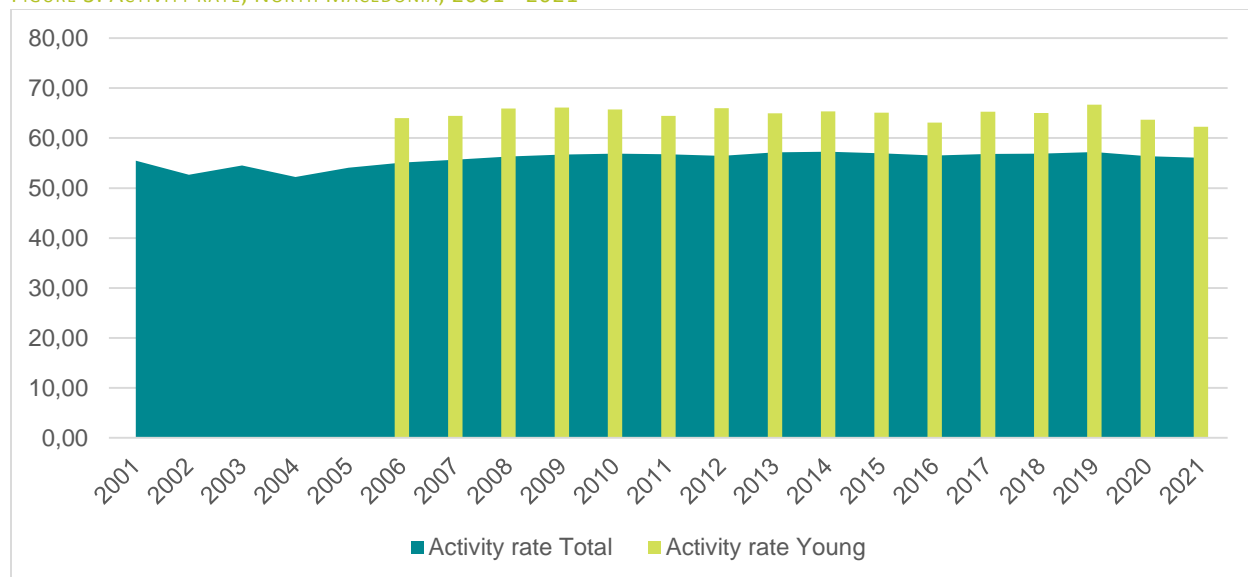
The figure shows the activity rate for the total population and young population in the years 2001-2021. Based on the data provided, we can make the following observations and comparisons:

**Overall Activity Rate:** From 2001-2014, the activity rate in North Macedonia remained relatively stable, fluctuating between 52.20% and 57.31%. However, from 2015-2021, the activity rate has been slightly decreasing, reaching a low of 56.04% in 2021. From 2006-2019, the activity rate of young people (age 21-

29) in North Macedonia showed an overall increasing trend, peaking at 66.73% in 2019. However, in the last two years, the activity rate has been decreasing, reaching 62.29% in 2021. As seen from the Figure 4 the young population has a consistently higher activity rate than the total population.

While the overall activity rate has been relatively stable, the young population has shown a clear upward trend in activity rate over time.

FIGURE 3. ACTIVITY RATE, NORTH MACEDONIA, 2001 - 2021



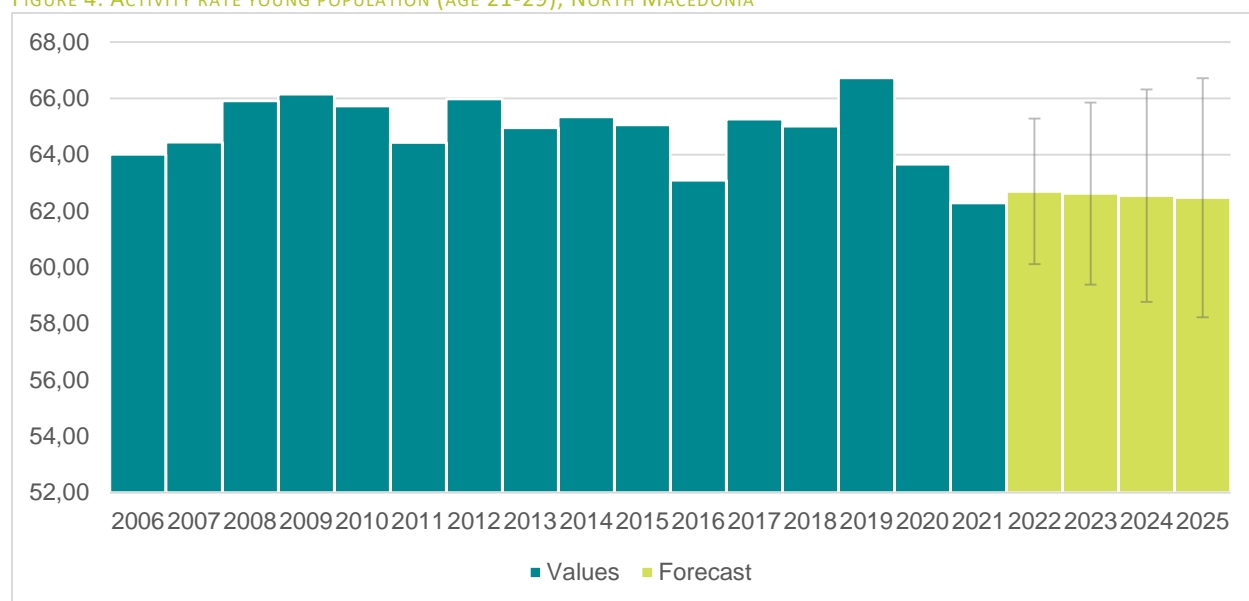
Source: author's calculation and interpretation based on SSO data, Population activity rates by sex and education attainment, by year,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugilIndikator\\_i/089\\_StapkiAkt\\_Pol\\_SkolPodg\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugilIndikator_i/089_StapkiAkt_Pol_SkolPodg_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last updated 04.03.2023

Using triple exponential smoothing model, we can calculate and forecast activity rate for the following years as well as confidence intervals based on the historical data data calculated from the State statistical office. Some key observations and analyses based on the calculated data indicate that the activity rate is expected to increase slightly each year, from 56.20% in 2022 to 56.7% in 2025. The confidence interval represents the range of values that the actual activity rate is likely to fall within, given a certain level of confidence. For example, the forecast for 2022 has a confidence interval of 2.30, which means that there is a 95% chance that the actual activity rate in 2022 will fall within the range of 53.90% to 58.50%. Confidence interval increases up to 3% in 2025.

In conclusion, the data suggests that the total activity rate in North Macedonia has been relatively stable, with a slight upward trend in recent years, and is expected to continue increasing slightly in the coming years.

FIGURE 4. ACTIVITY RATE YOUNG POPULATION (AGE 21-29), NORTH MACEDONIA



Source: author's calculation and interpretation based on SSO data, Activity rates of the population aged 15 years and over by gender and age, annual,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugIndikator\\_i/006\\_PazTrud\\_Mk\\_aktivnost\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugIndikator_i/006_PazTrud_Mk_aktivnost_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 04.03.2023

the figure shows data on the activity rate of the young population (age 21-25) in North Macedonia from 2006-2025, including forecasts and confidence intervals. According to the forecast, the activity rate is expected to remain relatively stable, ranging from 62.48% in 2025 to 62.70% in 2022. The figure also provides a confidence interval for each forecasted value. The forecast for 2022 has a confidence interval of 2.59, which means that there is a 95% chance that the actual activity rate of young people in North Macedonia in 2022 will fall within the range of 59.11% to 66.29%. As expected, the highest confidence interval is in 2025 valued 4.25%

To conclude, the data suggests that the activity rate of young people in North Macedonia has shown an overall increasing trend in recent years but has decreased in the last two years and is expected to remain relatively stable in the coming years.

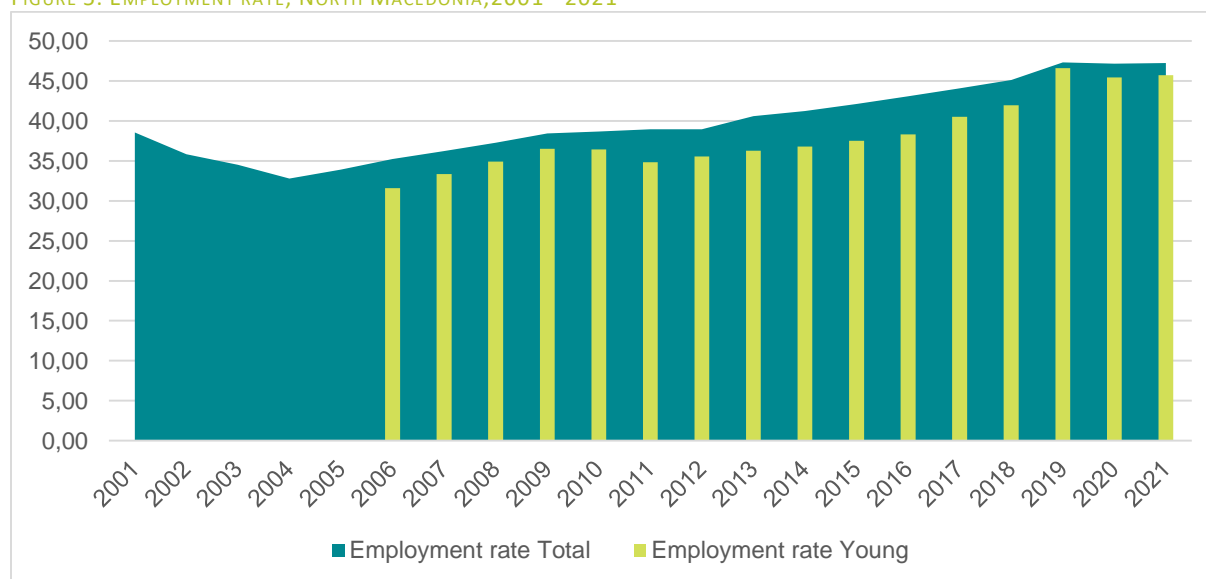
## Employment indicators

The employment rate is a commonly used economic indicator that measures the percentage of the population that is employed, either full-time or part-time, in relation to the total working-age population. It is often used as a gauge of the health of a country's economy and its labor market. A high employment rate generally indicates that a large proportion of the working-age population is gainfully employed, which can lead to increased consumer spending, economic growth, and reduced poverty rates. On the other

hand, a low employment rate may indicate a weak labor market, with fewer opportunities for workers and potentially negative impacts on the overall economy.

The employment rate does not account for factors such as underemployment (when workers are employed but not in jobs that fully utilize their skills or provide sufficient income), the quality of jobs available, or the distribution of employment across different sectors of the economy. Therefore, while it can provide a useful snapshot of the overall health of a country's labor market, it is important to consider other factors when analyzing employment trends and their impacts on the economy and society.

FIGURE 5. EMPLOYMENT RATE, NORTH MACEDONIA, 2001 - 2021



Source: SSO, Activity rates of the population aged 15 years and over by gender and age, annual, [https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugilndikator/i/006\\_PazTrud\\_Mk\\_aktivnost\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugilndikator/i/006_PazTrud_Mk_aktivnost_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 04.03.2023

Looking at the figure 5, we can see that the employment rate for the total population has generally increased from 2001 to 2021, with some fluctuations from year to year. In 2001, the employment rate was 38.56%, which decreased to a low of 32.80% in 2004 before starting to increase again. In 2021, the employment rate was 47.25%, which is a significant improvement compared to the early 2000s.

Examining the historical trend of the employment rate for the young population in North Macedonia, we can see that the rate has fluctuated over the years. It has increased from a low of 31.59% in 2006 to a high of 46.62% in 2019, with a slight dip in 2020 due to the COVID-19 pandemic.

From the data, we can identify two distinct phases in the trend of the employment rate for the young population in North Macedonia. The first phase, from 2006 to 2011, shows a declining trend in the employment rate, with a low point of 34.85% in 2011. The second phase, from 2012 to 2019, shows a positive trend in the employment rate, with a high point of 46.62% in 2019.

Overall, it's encouraging to see that the employment rate has been increasing in North Macedonia, particularly for the young population. However, there is still room for improvement, as the employment rate for both the total and young populations is still below 50%. Data suggests that North Macedonia has made some progress in increasing employment opportunities over the years, but there is still work to be done to ensure that more people, especially young people, can find jobs and contribute to the country's economic growth.

FIGURE 6. EXPECTED EMPLOYMENT RATE YOUNG POPULATION (21-29), NORTH MACEDONIA, (2023-2025)



Source: author's calculation and interpretation based on SSO data, Activity rates of the population aged 15 years and over by gender and age, annual,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugiIndikator\\_i/006\\_PazTrud\\_Mk\\_aktivnost\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugiIndikator_i/006_PazTrud_Mk_aktivnost_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 04.03.2023

From 2022 to 2025, the employment rate for the young population is forecasted to increase steadily, with a projected rate of 48.35% in 2025. Still, the lower and upper confidence bounds indicate the range within which the actual employment rate for the young population is likely to fall. In 2023, the employment rate for the young population in North Macedonia is expected to be 46.59%, with a lower bound of 43.33% and an upper bound of 49.84%. This means that we can be 95% confident that the true employment rate in 2023 falls between these two values. Moving to 2024, the forecasted employment rate increases to 47.47%, but the confidence interval widens further with a lower bound of 44.22% and an upper bound of 50.72%. Similarly, in 2025, the forecasted employment rate is 48.35%, with a lower bound of 45.10% and an upper bound of 51.60%.

It's worth noting that the forecast is based on historical data and assumes that the factors that have influenced the employment rate in the past will continue to do so in the future. However, unforeseen



events, such as economic downturns or policy changes, could significantly impact the employment rate, making the forecast less accurate.

Therefore, while the forecast provides some insight into the expected trend in the employment rate for the young population in North Macedonia, it's important to take into account potential changes in the economic, social, and political landscape that could affect the forecast.

The labor dependency ratio (LDR) is a useful indicator for understanding the potential support burden on the working-age population and can provide insights into issues such as social welfare planning, healthcare services, and pension system sustainability.

LDR is a demographic indicator that measures the ratio between the working-age population and the dependent population. It provides insights into the potential burden on the working-age population in supporting dependents, such as children and the elderly, who are typically not part of the labor force.

The formula to calculate the labor dependency ratio is as follows:

$$\text{Labor Dependency Ratio} = (\text{Number of Dependents} / \text{Working-Age Population}) * 100$$

TABLE 1. EMPLOYMENT TO POPULATION AND LABOR DEPENDENCY RATIO, NORTH MACEDONIA

Country	Time	Employment-to-population ratio (in percent)	Labor dependency ratio (Dependents / Employment)
MKD	2022	46.193	1.58

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

Based on the given data, which includes the employment-to-population ratio and the labor dependency ratio for North Macedonia in 2022, we can draw the following general conclusions:

1. **Employment-to-Population Ratio:** The employment-to-population ratio of 46.193% indicates that less than half of the working-age population in North Macedonia was employed in 2022. This suggests that there is room for improvement in terms of increasing employment opportunities and reducing unemployment rates in the country.
2. **Labor Dependency Ratio:** The labor dependency ratio of 1.58 indicates that, on average, each employed person in North Macedonia is supporting approximately 1.58 dependents. This highlights the potential burden on the employed population to provide for the needs of dependents, such as children, elderly family members, or individuals who are unable to work. It suggests the importance of social support systems and policies to ensure the well-being of dependents and to maintain a balanced labor market.

Following recommendations can be made based on the previous analyze:

**Promote Employment Opportunities:** Focus on initiatives that aim to increase the employment-to-population ratio. This can be achieved through job creation programs, attracting investments that lead to employment growth, and supporting industries with high potential for job creation.

**Improve Labor Market Participation:** Implement measures to encourage greater labor market participation, especially among those who are currently not part of the workforce. This can involve providing training and skills development programs, addressing barriers to employment, and promoting inclusivity in the labor market.

**Enhance Workforce Productivity:** Invest in initiatives that improve the productivity of the workforce. This can include providing access to quality education and training programs, promoting lifelong learning, and fostering innovation and technological advancements that lead to higher productivity levels.

**Address Labor Dependency:** Develop strategies to address the labor dependency ratio, which indicates the ratio of dependents to the employed population. This can involve implementing family-friendly policies such as affordable childcare options, flexible work arrangements, and support for eldercare. It can also include measures to encourage financial independence and self-sufficiency among dependents.

**Foster Economic Growth and Diversification:** Promote economic growth and diversification to create a broader range of employment opportunities. This can be achieved by supporting entrepreneurship, attracting investments in different sectors, and encouraging the development of innovative industries.

**Strengthen Social Safety Nets:** Improve social safety nets to provide support for individuals who are unemployed or underemployed. This can include expanding social welfare programs, enhancing unemployment benefits, and offering targeted assistance to vulnerable groups.

**Monitor and Evaluate Labor Market Policies:** Continuously monitor and evaluate the effectiveness of labor market policies and programs. Regularly assess their impact on employment rates, labor market dynamics, and the overall well-being of the population. Use data and feedback to make informed decisions and adjust policies as needed.

## **Unemployment indicators**

The unemployment rate is a key labor market indicator that measures the proportion of the labor force that is unemployed and actively seeking employment. It is typically expressed as a percentage and serves as an important gauge of economic health and labor market conditions. To calculate the unemployment rate, the number of unemployed individuals is divided by the total labor force and multiplied by 100. The labor force includes both employed and unemployed individuals who are actively seeking employment. A higher unemployment rate generally indicates a weaker labor market, as it suggests a larger proportion of the population is without work. Conversely, a lower unemployment rate implies a healthier labor market, with a smaller share of the labor force unemployed.

The unemployment rate is influenced by various factors, including economic growth, business cycles, technological advancements, government policies, and demographic changes. It can vary across regions,

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industries, and demographic groups. Policymakers, economists, and analysts closely monitor the unemployment rate to assess the overall health of the economy, make informed policy decisions, and identify trends or issues within specific sectors or population groups.

Figure 7 contains data for the unemployment rate of North Macedonia since 2011 with predicted values for the following three years.

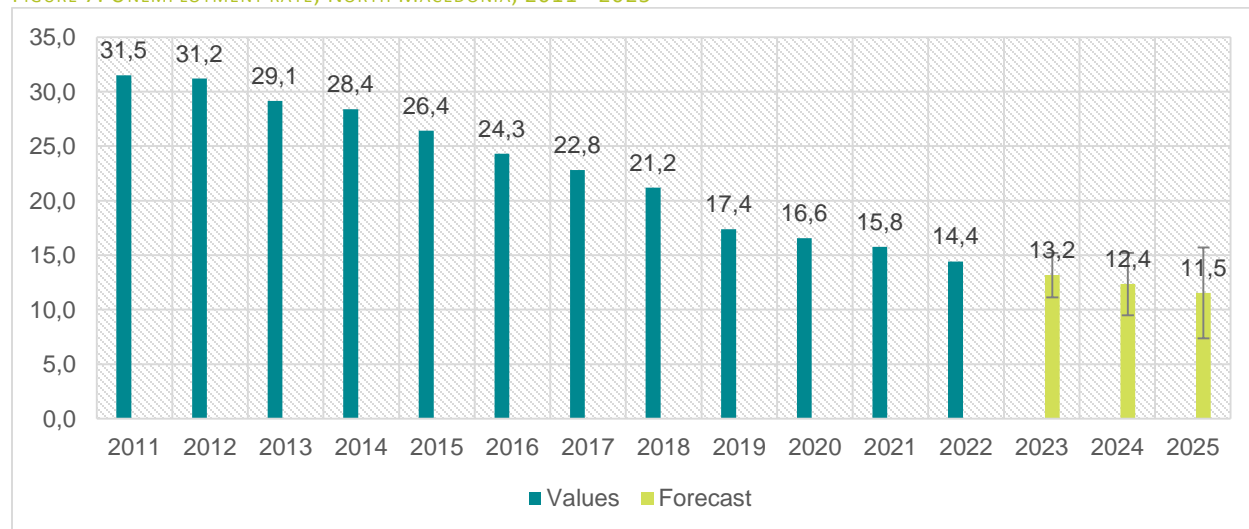
Trend Analysis: From 2011 to 2021, the unemployment rate in North Macedonia has shown a decreasing trend. The rate decreased from 31.5% in 2011 to 15.8% in 2021.

Forecast Analysis: The figure provides forecasted values for the unemployment rate in North Macedonia from 2022 to 2025. The forecast suggests a continued decrease in the unemployment rate over the forecasted period up to 11.5% in 2025.

Confidence Intervals: The confidence intervals provided in the table indicate the range within which the actual unemployment rate may fall based on the forecasted values. For example, in 2023, the forecasted unemployment rate is 13.2% with a confidence interval of 2.0. This means the actual rate may fall between 11.2% and 15.2% with a 95% level of confidence.

Overall, the unemployment rate in North Macedonia has been decreasing over the years, and the forecast suggests this trend will continue. However, it's important to note that forecasted values are subject to change and may be influenced by various factors.

FIGURE 7. UNEMPLOYMENT RATE, NORTH MACEDONIA, 2011 - 2025



Source: author's calculation and interpretation based on SSO data, Activity rates of the population aged 15 years and over by gender and age, annual,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugiIndikator/i/006\\_PazTrud\\_Mk\\_aktivnost\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugiIndikator/i/006_PazTrud_Mk_aktivnost_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 04.03.2023

Labor underutilization provides a more comprehensive view of the labor market beyond just the unemployment rate. It captures the various ways in which individuals may be unable to fully participate in the workforce, whether due to lack of job opportunities, inadequate skills matching, or other barriers. It is a broader concept than just measuring unemployment and includes various forms of underutilization such as unemployment, underemployment, and discouraged workers.

1. **Unemployment:** This refers to individuals who are actively seeking employment but are unable to find a job. It typically measures the number of people without jobs as a percentage of the total labor force.
2. **Underemployment:** Underemployment occurs when individuals are employed in jobs that are below their skill level or part-time jobs when they desire full-time employment. These individuals may be working, but they are not fully utilizing their skills and qualifications.
3. **Discouraged Workers:** Discouraged workers are individuals who have given up searching for employment because they believe no suitable job opportunities are available. They are not included in the official unemployment rate but are considered part of labor underutilization.

TABLE 2. RATES OF LABOR UNDERUTILIZATION, NORTH MACEDONIA, 2021

Country	MKD
Unemployment rate (LU1)	15.78
Combined rate of time-related underemployment and unemployment (LU2)	17.36
Combined rate of unemployment and potential labour force (LU3)	22.32
Composite rate of labour underutilization (LU4)	23.77

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

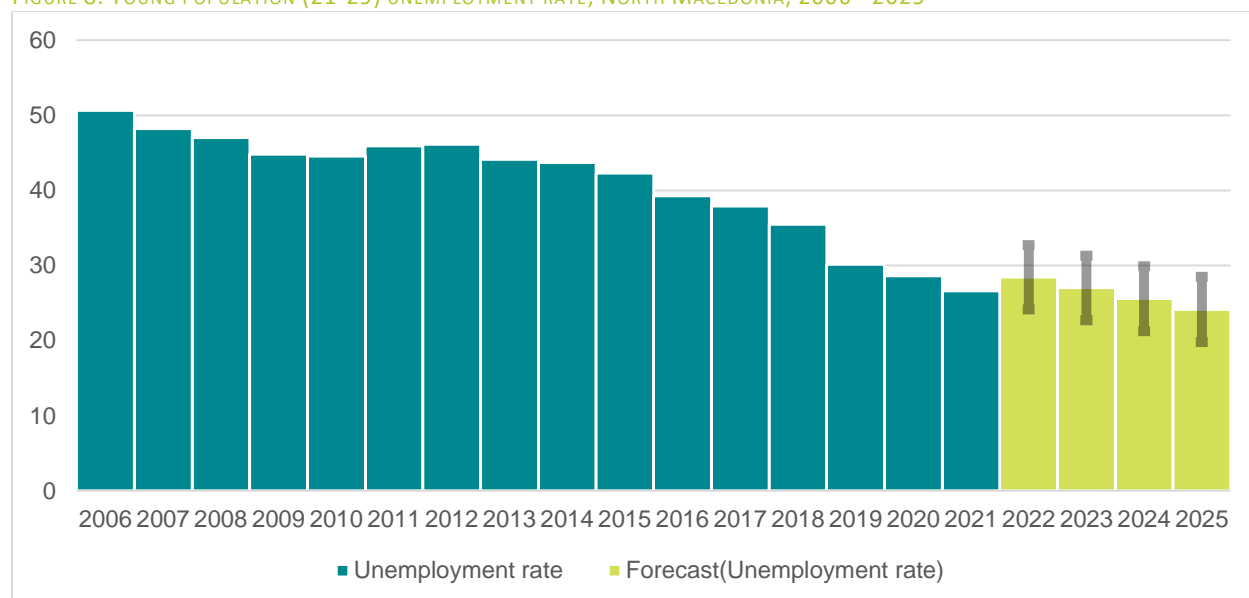
1. **Unemployment rate (LU1):** The unemployment rate in North Macedonia for 2021 is 15.78%. This indicates that approximately 15.78% of the labor force in the country is unemployed and actively seeking employment. The unemployment rate is an essential indicator as it reflects the joblessness within the economy and can be used to assess the overall health of the labor market.
2. **Combined rate of time-related underemployment and unemployment (LU2):** The combined rate of time-related underemployment and unemployment in North Macedonia for 2021 is 17.36%. This indicator considers not only the officially unemployed individuals but also those who are employed but working fewer hours than desired or are underutilized in terms of their skills and qualifications. It provides a broader perspective on labor market underutilization.
3. **Combined rate of unemployment and potential labor force (LU3):** The combined rate of unemployment and potential labor force in North Macedonia for 2021 is 22.32%. This indicator considers not only the unemployed but also individuals who are willing and available to work but are not actively seeking employment. It provides a broader measure of labor market slack and

includes discouraged workers or those who have temporarily withdrawn from the labor force due to various reasons.

4. Composite rate of labor underutilization (LU4): The composite rate of labor underutilization in North Macedonia for 2021 is 23.77%. This indicator combines various dimensions of labor market underutilization, including unemployment, underemployment, and potential labor force. It offers a comprehensive view of the overall labor market conditions and the extent to which the available workforce is being utilized effectively.

These indicators collectively provide insights into the state of the labor market in North Macedonia in 2021. They highlight the level of unemployment, the extent of underemployment, and the broader measure of labor market underutilization. Monitoring these indicators over time can help policymakers and analysts identify trends, assess the effectiveness of labor market policies, and develop strategies to address labor market challenges.

FIGURE 8. YOUNG POPULATION (21-29) UNEMPLOYMENT RATE, NORTH MACEDONIA, 2006 - 2025



Source: author's calculation and interpretation based on SSO data, Activity rates of the population aged 15 years and over by gender and age, annual,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_StapkiDrugiIndikator\\_i/006\\_PazTrud\\_Mk\\_aktivnost\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_StapkiDrugiIndikator_i/006_PazTrud_Mk_aktivnost_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 04.03.2023

The unemployment rate for young people in North Macedonia has fluctuated over the years, with a peak of 50.65% in 2006 and a low of 26.6% for 2021. The figure shows that the unemployment rate has generally decreased over time, with some fluctuations. For example, there was a notable drop in the unemployment rate from 2006 to 2009, followed by a slight increase in 2010, and then a relatively stable period from 2011 to 2015. From 2016 to 2019, there was a significant decline in the unemployment rate, dropping from 39.24% to 30.13%.

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Looking at the forecasted unemployment rates generated with triple exponential smoothing model for the years 2022-2025, the trend of decreasing unemployment rates for young people in North Macedonia is expected to continue. The forecasted unemployment rates for these years range from 24.15% to 28.44%, with associated confidence intervals of 4.27% to 4.34%. These confidence intervals suggest that there is some uncertainty surrounding the forecasted values, with a range of possible values around the central estimate.

## Labor Market Demand

The labor market demand represents the employment needs and opportunities provided by various sectors and occupations within an economy. This section will examine the distribution of occupied posts and job vacancies across different sectors of activity, as well as the job vacancies categorized by specific occupations. By analyzing these aspects, we can gain insights into the demand for labor and the specific areas where employment opportunities exist.

### **Occupied posts and job vacancies by sectors of activity**

The data used for the analysis are taken from the SSO, for the period of 10 years (2012 – 2022). The total number of occupied posts in North Macedonia has shown a slight fluctuation over the years. In 2012Q4, the total number of occupied posts was 380,408, which reached its peak at 502,657 in 2019Q4 and slightly declined to 489,486 in 2022Q4. Despite some fluctuations, the overall trend indicates a gradual increase in employment opportunities in North Macedonia.

The analyze by sectors shows the following:

**Mining and quarrying:** In 2012Q4, there were 3,685 occupied posts in the mining and quarrying sector. The number of occupied posts remained relatively stable over the years, with a slight increase to 4,907 in 2022Q4. Overall, the mining and quarrying sector has maintained a consistent level of employment throughout the period.

**Manufacturing:** The manufacturing sector has shown steady growth in terms of occupied posts. In 2012Q4, there were 88,449 occupied posts, which increased to 112,748 in 2022Q4. This sector has experienced a positive trend, indicating the expansion and development of manufacturing activities in North Macedonia.

**Electricity, gas, steam and air conditioning supply:** The electricity, gas, steam, and air conditioning supply sector has shown stability in terms of occupied posts. In 2012Q4, there were 8,012 occupied posts, which slightly decreased to 7,521 in 2022Q4. The sector has maintained a consistent level of employment, indicating a steady demand for these services.

**Water supply; sewerage, waste management, and remediation activities:** The water supply, sewerage, waste management, and remediation activities sector has shown stability in terms of occupied posts. In

2012Q4, there were 8,650 occupied posts, which slightly decreased to 10,053 in 2022Q4. The sector has maintained a relatively consistent level of employment throughout the period.

**Construction:** The construction sector has shown a stable level of occupied posts over the years. In 2012Q4, there were 23,270 occupied posts, which increased to 26,963 in 2022Q4. While there have been fluctuations, the overall trend suggests a consistent demand for construction activities in North Macedonia.

**Wholesale and retail trade; repair of motor vehicles and motorcycles:** The wholesale and retail trade sector has experienced significant growth in terms of occupied posts. In 2012Q4, there were 59,176 occupied posts, which increased to 86,948 in 2022Q4. This sector has shown substantial expansion, indicating a growing market and demand for trade and retail services.

**Transportation and storage:** The transportation and storage sector has shown a positive trend in terms of occupied posts. In 2012Q4, there were 20,046 occupied posts, which increased to 27,230 in 2022Q4. This sector has experienced growth, reflecting increased transportation and storage activities in North Macedonia.

**Accommodation and food service activities:** The accommodation and food service activities sector has shown stability in terms of occupied posts. In 2012Q4, there were 11,504 occupied posts, which increased to 18,779 in 2022Q4. The sector has demonstrated consistent employment levels, indicating a sustained demand for accommodation and food services.

**Information and communication:** The information and communication sector has shown stability in terms of occupied posts. In 2012Q4, there were 8,586 occupied posts, which increased to 17,093 in 2022Q4. While there have been fluctuations, the overall trend suggests a consistent level of employment in this sector.

The financial and insurance activities sector has shown stability with a slight increase in occupied posts. In 2012Q4, there were 8,586 occupied posts, which increased to 10,901 in 2022Q4. The sector has maintained a relatively consistent level of employment, indicating a stable demand for financial and insurance services.

**Real estate activities:** The real estate activities sector has experienced growth in terms of occupied posts. In 2012Q4, there were 1,234 occupied posts, which increased to 2,174 in 2022Q4. This sector has shown positive expansion, indicating increased activity in real estate and property management.

**Professional scientific and technical activities:** The professional scientific and technical activities sector has shown consistent employment levels. In 2012Q4, there were 9,227 occupied posts, which increased to 16,057 in 2022Q4. The sector has demonstrated stability, indicating a sustained demand for professional and technical services.

**Administrative and support service activities:** The administrative and support service activities sector has shown stability in terms of occupied posts. In 2012Q4, there were 13,131 occupied posts, which increased

to 23,809 in 2022Q4. The sector has maintained a consistent level of employment, reflecting the ongoing need for administrative and support services.

Public administration and defense; compulsory social security: The public administration and defense sector has shown stability in terms of occupied posts. In 2012Q4, there were 43,757 occupied posts, which increased to 38,292 in 2022Q4. While there have been fluctuations, the overall trend suggests a relatively consistent level of employment in this sector.

Education: The education sector has shown stability in terms of occupied posts. In 2012Q4, there were 34,158 occupied posts, which increased to 37,767 in 2022Q4. The sector has maintained a relatively consistent level of employment, reflecting the ongoing demand for education services.

Human health and social work activities: The human health and social work activities sector has experienced growth in terms of occupied posts. In 2012Q4, there were 28,527 occupied posts, which increased to 32,493 in 2022Q4. This sector has shown positive expansion, indicating increased demand for health and social work services.

TABLE 3. NUMBER OF OCCUPIED POSTS BY SECTOR OF ACTIVITY, NORTH MACEDONIA (2012 – 2022)

	2012Q4	2014Q4	2016Q4	2018Q4	2020Q4	2022Q4
TOTAL	380408	439035	483029	497443	496599	489486
B Mining and quarrying	3685	3947	4297	3838	4481	4907
C Manufacturing	88449	108307	114977	122590	116232	112748
D Electricity, gas, steam and air conditioning supply	8012	7625	8264	8146	8208	7521
E Water supply; sewerage, waste management and remediation activities	8650	9962	10125	7996	10587	10053
F Construction	23270	24906	29509	27978	29214	26963
G Wholesale and retail trade; repair of motor vehicles and motorcycles	59176	73127	81438	85181	84857	86948
H Transportation and storage	20046	25999	28733	31202	29658	27230
I Accommodation and food service activities	11504	16681	18390	21533	19064	18779
J Information and communication	8446	8744	12284	14371	13635	17093
K Financial and insurance activities	8586	9703	10074	9646	9840	10901
L Real estate activities	1234	1551	1707	2279	2308	2174
M Professional scientific and technical activities	9227	12114	14310	15101	16939	16057
N Administrative and support service activities	13131	15544	17513	20063	23083	23809
O Public administration and defence; compulsory social security	43757	43429	46377	39108	38316	38292
P Education	34158	33319	35182	36986	36529	37767



Q Human health and social work activities	28527	30554	35704	34870	36199	32493
R Arts, entertainment and recreation	6966	9753	10433	11643	11747	11588
S Other service activities	3585	3769	3714	4912	5703	4161

Source: SSO, Occupied posts and job vacancies by sectors of activities, NKD Rev.2, quarterly, [https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_SlobodniRabotniMesta/125\\_PazTrud\\_Mk\\_asrm1\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_SlobodniRabotniMesta/125_PazTrud_Mk_asrm1_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 18.03.2023

**Arts, entertainment, and recreation:** The arts, entertainment, and recreation sector has shown stability in terms of occupied posts. In 2012Q4, there were 6,966 occupied posts, which increased to 11,588 in 2022Q4. The sector has maintained a consistent level of employment, reflecting the ongoing demand for arts and recreational activities.

**Other service activities:** The other service activities sector has shown stability in terms of occupied posts. In 2012Q4, there were 3,585 occupied posts, which slightly increased to 4,161 in 2022Q4. The sector has maintained a relatively consistent level of employment throughout the period.

The analysis reveals a mix of sectors experiencing growth, stability, and fluctuations in terms of occupied posts. Sectors such as manufacturing, wholesale and retail trade, construction, and accommodation and food service activities have shown positive trends and expansion, indicating increased economic activity in those areas. It is important for policymakers and stakeholders to monitor the trends in these sectors and take appropriate actions to support their growth.

In general, it can be concluded that the total number of occupied posts in North Macedonia has fluctuated over the years, reaching its peak in 2022Q4 with 489,486 posts. The sector with the highest number of occupied posts in most quarters is the wholesale and retail trade; repair of motor vehicles and motorcycles (G), indicating the significance of the retail industry in the country's economy. Other sectors that consistently have a substantial number of occupied posts include manufacturing (C), construction (F), and public administration and defense; compulsory social security (O).

Sectors such as mining and quarrying (B), electricity, gas, steam, and air conditioning supply (D), and water supply; sewerage, waste management, and remediation activities (E) have relatively fewer occupied posts compared to other sectors.

The sectors of professional, scientific, and technical activities (M), administrative and support service activities (N), and information and communication (J) also contribute a notable number of occupied posts.

Based on this analysis, following insights and recommendations can be given as a contribution:

**Growth opportunities:** The wholesale and retail trade sector (G) has consistently shown a high number of occupied posts. This suggests potential growth opportunities in the retail industry. Encouraging investment and providing support for small and medium-sized enterprises in this sector could further boost job creation and economic development.

**Diversification:** While certain sectors like manufacturing and construction have a significant number of occupied posts, it is essential to focus on diversifying the economy. Encouraging innovation and development in sectors such as professional, scientific, and technical activities (M), and information and communication (J) can contribute to higher-value job creation and foster a more balanced economy.

**Skill development:** Identifying sectors with a relatively lower share of occupied posts, such as mining and quarrying (B) and electricity, gas, steam, and air conditioning supply (D), could be an opportunity to invest in skill development programs and initiatives. This can help match the skills of the workforce with the needs of these sectors, leading to increased employment opportunities and sector growth.

**Public administration and defense:** The public administration and defense sector (O) consistently have a significant number of occupied posts. It is crucial to ensure the efficiency and effectiveness of these sectors by implementing streamlined processes, improving governance, and investing in training and capacity building.

**Monitoring and adjustment:** Continuously monitoring the trends and changes in the job market is essential for policymakers and stakeholders. This will enable them to make informed decisions, adapt strategies, and allocate resources effectively to address the evolving needs of the labor market.

The analysis of the job vacancies is also made on quarterly data from the period 2012 – 2022. Data show that the total number of job vacancies has shown some fluctuations over the years. The highest number of job vacancies was recorded in 2022Q4 with 9,699 vacancies. There has been an overall increasing trend in job vacancies, indicating potential growth and demand for labor in North Macedonia.

Analyzing by sectors, the number of job vacancies in the mining and quarrying sector has shown some variations over the years. The highest number of vacancies was recorded in 2020Q4 with 193 vacancies, indicating a potential increase in employment opportunities in this sector. The manufacturing sector has consistently shown a significant number of job vacancies. The highest number of vacancies was recorded in 2018Q4 with 2,941 vacancies, indicating a strong demand for labor in the manufacturing industry. The number of job vacancies in Electricity, gas, steam and air conditioning supply sector has remained relatively low throughout the years. The highest number of vacancies was recorded in 2012Q4 with 218 vacancies, while the lowest was in 2020Q4 with only 5 vacancies. The number of job vacancies in the Water supply; sewerage, waste management and remediation activities sector has shown some fluctuations. The highest number of vacancies was recorded in 2020Q4 with 171 vacancies, indicating potential opportunities for employment in this field. The construction sector has consistently shown a significant number of job vacancies. The highest number of vacancies was recorded in 2022Q4 with 826 vacancies, indicating a strong demand for labor in the construction industry. The wholesale and retail trade sector has consistently shown a significant number of job vacancies. The highest number of vacancies was recorded in 2014Q1 with 1,261 vacancies, indicating a strong demand for labor in this sector. The number of job vacancies in the transportation and storage sector has shown some fluctuations. The highest number of vacancies was recorded in 2022Q4 with 742 vacancies, indicating potential opportunities for employment in this field. The number of job vacancies in the Accommodation and food service activities sector has shown some variations over the years. The highest number of

vacancies was recorded in 2016Q4 with 563 vacancies, indicating a potential increase in employment opportunities in the accommodation and food service industry.

The number of job vacancies in the information and communication sector has shown some fluctuations. The highest number of vacancies was recorded in 2020Q4 with 415 vacancies, indicating potential opportunities for employment in this field. The number of job vacancies in the Financial and insurance activities sector has remained relatively low throughout the years. The highest number of vacancies was recorded in 2018Q4 with 103 vacancies. The number of job vacancies in the real estate activities sector has remained relatively low throughout the years. The number of job vacancies in the Professional scientific and technical activities sector has shown some variations over the years. The highest number of vacancies was recorded in 2016Q4 with 238 vacancies. The number of job vacancies in the administrative and support service activities sector has shown some fluctuations. The highest number of vacancies was recorded in 2022Q4 with 839 vacancies, indicating potential opportunities for employment in this field.

TABLE 4. NUMBER OF JOB VACANCIES, NORTH MACEDONIA (2012 – 2022)

	2012Q4	2014Q1	2016Q4	2018Q4	2020Q4	2022Q4
<b>TOTAL</b>	4729	6503	6470	8156	7916	9699
<b>B Mining and quarrying</b>	19	36	26	16	193	60
<b>C Manufacturing</b>	1217	2266	2108	2941	2210	2636
<b>D Electricity, gas, steam and air conditioning supply</b>	218	25	12	27	5	28
<b>E Water supply; sewerage, waste management and remediation activities</b>	205	20	22	52	171	51
<b>F Construction</b>	268	641	381	396	609	826
<b>G Wholesale and retail trade; repair of motor vehicles and motorcycles</b>	565	1261	1379	1512	1283	1687
<b>H Transportation and storage</b>	234	472	375	553	442	742
<b>I Accommodation and food service activities</b>	149	341	563	414	213	737
<b>J Information and communication</b>	53	132	316	310	415	569
<b>K Financial and insurance activities</b>	53	88	66	103	64	108
<b>L Real estate activities</b>	2	3	2	13	15	14
<b>M Professional scientific and technical activities</b>	58	149	238	208	176	190
<b>N Administrative and support service activities</b>	210	266	331	424	713	839
<b>O Public administration and defence; compulsory social security</b>	317	157	100	267	343	232

<b>P Education</b>	405	248	210	254	325	316
<b>Q Human health and social work activities</b>	598	219	203	422	548	343
<b>R Arts, entertainment and recreation</b>	129	145	125	213	124	311
<b>S Other service activities</b>	29	34	14	30	68	10

Source: SSO, Occupied posts and job vacancies by sectors of activities, NKD Rev.2, quarterly,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_SlobodniRabotniMesta/125\\_PazTrud\\_Mk\\_asrm1\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_SlobodniRabotniMesta/125_PazTrud_Mk_asrm1_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 18.03.2023

The number of job vacancies in Public administration sector has shown some variations over the years. The highest number of vacancies was recorded in 2019Q4 with 343 vacancies. There may be opportunities for employment in public administration and defense, as well as in roles related to compulsory social security. The number of job vacancies in the education sector has shown some fluctuations. The highest number of vacancies was recorded in 2012Q4 with 405 vacancies, indicating potential opportunities for employment in the education field. The number of job vacancies in the human health and social work activities sector has shown some variations over the years. The highest number of vacancies was recorded in 2020Q4 with 548 vacancies, indicating potential opportunities for employment in healthcare and social work. The number of job vacancies in the arts, entertainment, and recreation sector has shown some variations over the years. The highest number of vacancies was recorded in 2022Q4 with 311 vacancies, indicating potential opportunities for employment in this sector. The number of job vacancies in other service activities has shown some fluctuations. The highest number of vacancies was recorded in 2020Q4 with 68 vacancies.

Overall, the analysis of job vacancies in different sectors of North Macedonia indicates varying employment opportunities. Sectors such as manufacturing, construction, wholesale and retail trade, transportation and storage, and administrative and support service activities have consistently shown a significant number of vacancies. This suggests potential areas of growth and employment in the country. It is important for job seekers to explore opportunities in sectors that have consistently shown a high number of job vacancies, while also considering emerging sectors that have experienced recent growth.

Following general conclusions can be made based on the analyzed data:

**Sector Analysis:** The analysis of job vacancies across different sectors in North Macedonia reveals insights into the state of employment opportunities. The manufacturing sector consistently shows a significant number of job vacancies, indicating the presence of a strong industrial base. The construction sector also demonstrates consistent demand for labor, which aligns with infrastructure development and construction projects in the country. Sectors such as wholesale and retail trade, transportation and storage, and administrative and support service activities also exhibit steady job vacancy numbers, highlighting their importance in the economy.

**Sector Variations:** Some sectors experience fluctuations in job vacancies over the years, suggesting changing dynamics and market demands. Sectors like mining and quarrying, electricity and gas supply,

water supply and waste management, and information and communication show varying vacancy numbers. It is important to monitor these sectors closely to understand the factors influencing job availability and adapt to changing trends.

**Emerging Opportunities:** Certain sectors, such as financial and insurance activities, professional scientific and technical activities, and healthcare and social work activities, show potential for growth and employment opportunities. These sectors have witnessed moderate vacancy numbers and have the potential for further development in the future.

Job seekers should consider acquiring skills and qualifications that are in high demand in sectors with consistent job vacancies. This could include technical skills related to manufacturing, construction, information and communication technology, and healthcare. Upskilling or obtaining additional certifications can enhance employability in these sectors. It is crucial for job seekers to stay updated on the current labor market trends and demands. Researching emerging industries and sectors can help individuals identify potential opportunities and align their skill set accordingly. This includes keeping track of investments, government initiatives, and market developments that can influence job vacancies.

Building professional networks and establishing connections within industries of interest can increase the likelihood of accessing job opportunities. Attending industry events, job fairs, and engaging with professional associations can provide valuable insights and potential leads for employment. Considering the entrepreneurial landscape in North Macedonia can be an alternative to traditional employment. Identifying gaps in the market and developing innovative solutions can create self-employment opportunities and contribute to economic growth.

Job seekers should explore government programs, incentives, and support systems that promote employment and entrepreneurship. These can include subsidies for starting a business, training programs, and grants for specific industries. Emphasize the importance of lifelong learning and adaptability. The job market is continuously evolving, and individuals should be prepared to learn new skills, adapt to technological advancements, and embrace changing work environments.

### **Job Vacancies by occupation**

Analyzing data from the State statistical office it can be concluded that the total number of job vacancies fluctuated over the years, with some periods showing an increase and others a decrease. The highest number of job vacancies in the last ten years was observed in 2014Q3 (6,973), while the lowest number was recorded in 2012Q4 (4,729) (SSO, MAKSTAT, 2023). There was a general upward trend in job vacancies from 2012 to 2014, followed by some fluctuations in the subsequent years.

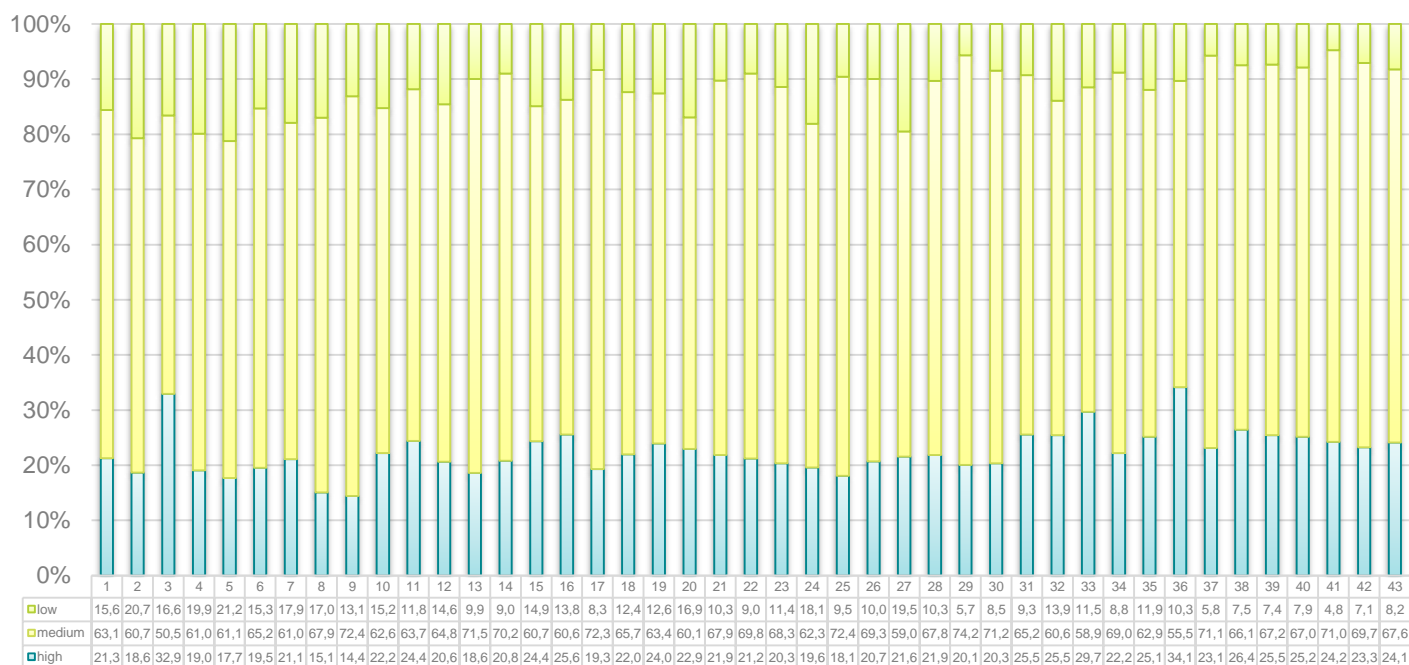
The SSO data indicate the distribution of Job Vacancies by Occupational Categories. The highest number of job vacancies was consistently observed in the "Service and sales workers" category, indicating a demand for workers in the service industry. Other significant occupational categories with a notable number of job vacancies were "Professionals," "Technicians and associate professionals," and "Clerical support workers." There were variations in job vacancies across different quarters within each year. It is

important to consider seasonal factors, economic conditions, and specific industry demands when interpreting the quarterly changes in job vacancies.

A long-term analysis spanning the entire dataset can provide insights into the overall trends and patterns in job vacancies. Examining the changes in job vacancies over a longer period can help identify growth trends or potential challenges in specific occupational categories.

Given the consistently high number of job vacancies in the "Service and sales workers" category, there may be opportunities to develop and support training programs or initiatives that enhance the skills of individuals interested in these roles. Skill development in specific Occupations can be considered after identifying the occupational categories with a relatively high number of job vacancies and targeted skill development programs can be designed to address the specific needs of those occupations. This can help match job seekers with the required skills to available vacancies. Continuously monitoring of the job vacancy data will help to stay updated on the changing demand for different occupations. This can help policymakers, educators, and job seekers align their efforts and resources to meet the evolving job market needs. Engage in partnerships and collaborations with industry stakeholders, such as employers, industry associations, and training institutions is also needed to identify emerging skills gaps and develop strategies to address them effectively.

FIGURE 9. SHARE OF SKILL LEVEL IN TOTAL JOB VACANCY IN NORTH MACEDONIA (QUARTERLY, 2012 – 2022)



Source: authors calculation based on SSO data, Job vacancies by occupations, quarterly,

[https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat\\_PazarNaTrud\\_SlobodniRabotniMesta/225\\_PazTrud\\_Mk\\_asrm4\\_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef](https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_PazarNaTrud_SlobodniRabotniMesta/225_PazTrud_Mk_asrm4_ml.px/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef), last accessed on 18.03.2023

Calculations of the share of skill levels in total job vacancies in North Macedonia (Figure 9), indicate the following:

**High-Skill Level:** The share of high-skill level job vacancies fluctuated over the observed period, ranging from 14.4% to 34.1%. The highest share of high-skill level job vacancies was observed in 2021Q1, with 34.1% of total job vacancies falling into this category. Generally, there is an increasing trend in the share of high-skill level job vacancies over time, indicating a potential demand for highly skilled workers in the labor market. This trend suggests the importance of education and training programs that focus on developing high-level skills to meet the demand for specialized positions.

**Medium-Skill Level:** The share of medium-skill level job vacancies varied between 55.5% and 74.2% throughout the observed period. The highest share of medium-skill level job vacancies was recorded in 2019Q2, with 74.2% of total job vacancies falling into this category. The share of medium-skill level job vacancies generally showed a decreasing trend over time, suggesting a potential shift towards higher or lower skill requirements in the labor market. It is essential to monitor this trend to identify changes in the demand for medium-skilled workers and adapt educational and training programs accordingly.

**Low-Skill Level:** The share of low-skill level job vacancies ranged from 4.8% to 21.2% during the observed period. The highest share of low-skill level job vacancies was observed in 2013Q3, with 21.2% of total job vacancies falling into this category. The share of low-skill level job vacancies generally showed fluctuations over time, with no clear upward or downward trend. It's important to note that a lower share of low-skill level job vacancies may indicate an increasing demand for workers with higher skill levels or the automation and streamlining of low-skill tasks.

Calculated data suggests a gradual shift in the distribution of skill levels in job vacancies in North Macedonia. There is an increasing demand for high-skill level workers and a decreasing trend in medium-skill level job vacancies. This highlights the importance of promoting and developing high-level skills through education and training programs to meet the evolving needs of the labor market. Additionally, the relatively stable or declining share of low-skill level job vacancies may indicate a need for upskilling and reskilling initiatives to ensure employability in a changing job market.

So, the data suggest increasing demand for high-skill workers. A growing share of high-skill level job vacancies over time indicates a demand for workers with specialized skills and expertise. It is crucial to align educational programs and training initiatives with these high-skill job requirements to ensure a skilled workforce that can meet industry needs.

Data also indicates shift towards medium-skill jobs. While the share of medium-skill level job vacancies has shown a decreasing trend, it still represents a significant portion of the job market. This suggests a potential shift in the labor market towards either higher or lower skill requirements. It is important to monitor this trend closely to understand the specific skills in demand and tailor educational programs accordingly.

The share of low-skill level job vacancies has remained relatively stable or slightly declined over time. This could be attributed to automation, technological advancements, or a changing labor market landscape.

Workers in low-skill positions may benefit from upskilling or reskilling programs to enhance their employability and transition into higher-skill roles.

As from the data and calculations, the following recommendations can be suggested:

1. **Enhance High-Skill Education and Training:** Invest in educational programs, vocational training, and skill development initiatives that focus on cultivating high-level skills required by industries experiencing increasing demand. Collaborate with businesses and industry leaders to identify emerging skill needs and ensure that educational institutions are producing graduates with the relevant expertise.
2. **Promote Flexible Learning Pathways:** Offer flexible learning opportunities such as online courses, certifications, and short-term training programs to accommodate the changing skill demands of the job market. This can enable individuals to upskill or reskill while working, enhancing their employability and adaptability in a dynamic labor market.
3. **Strengthen Vocational and Technical Education:** Recognize the importance of vocational and technical education in developing a skilled workforce. Enhance the quality and accessibility of vocational training programs that align with industry needs, providing individuals with practical skills and qualifications that are in demand.
4. **Foster Collaboration Between Education and Industry:** Establish partnerships and collaboration between educational institutions and businesses to bridge the gap between academia and industry. This can include internships, apprenticeships, and industry-led curriculum development to ensure graduates are equipped with the skills and knowledge that align with industry requirements.
5. **Promote Lifelong Learning:** Encourage a culture of lifelong learning to support individuals in adapting to the changing skill demands of the job market. Provide opportunities for continuous professional development, upskilling, and reskilling throughout individuals' careers to ensure their ongoing employability and ability to meet evolving job requirements.

By implementing these recommendations, North Macedonia can develop a skilled and adaptable workforce that meets the demands of a changing job market, fosters economic growth, and enhances the competitiveness of its industries.



# Education and Labor Mismatch Indicators

This section focuses on the relationship between education and employment by examining various indicators related to education and labor market mismatch. It explores the education levels of the working-age population and their distribution among the employed and unemployed individuals. Additionally, it analyzes the extent of educational mismatch in terms of the status in employment and identifies the prevalence of informal employment among different educational groups. Furthermore, this section sheds light on the skills needed on the labor market, highlighting the demand for specific skill sets. By examining these indicators, we can assess the alignment between education and employment opportunities and identify potential areas of concern or improvement.

## Working age population and education

Working age by level of education provides insight into the education levels of the working-age population, which can be an important determinant of labor market outcomes such as employment rates, income levels, and productivity. For the purposes of the analyze we took data of population age 25 and over as it is considered as an appropriate age to complete the formal education.

TABLE 5. WORKING-AGE POPULATION (THOUSANDS), NORTH MACEDONIA, 2011 - 2022

Country	Age	Time	Total	Level of education				
				Less than basic	Basic	Intermediate	Advanced	Level not stated
MKD	25+	2011	1379.486	149.874	409.385	559.523	222.579	38.126
MKD	25+	2012	1405.84	138.153	413.227	581.806	233.142	39.513
MKD	25+	2013	1415.772	127.77	413.876	609.844	224.879	39.403
MKD	25+	2014	1422.313	112.724	419.458	614.105	234.705	41.322
MKD	25+	2015	1442.643	107.742	418.494	615.632	253.164	47.612
MKD	25+	2016	1453.861	101.492	407.746	620.638	274.571	49.413
MKD	25+	2017	1462.149	93.054	395.82	647.224	277.504	48.547
MKD	25+	2018	1475.885	89.287	394.988	664.994	274.31	52.306
MKD	25+	2019	1485.673	92.316	380.942	673.194	286.043	53.178
MKD	25+	2020	1494.397	84	372.405	671.379	312.106	54.507
MKD	25+	2021	1497.28	75.368	364.285	687.246	316.144	54.236
MKD	25+	2022	1311.741	64.885	305.206	604.708	280.397	56.546

Source: ILO, Indicator catalogue, <https://ilostat ilo.org/data/#>, accessed on 12.03.2023

The data for this indicator can be collected through household surveys, censuses, or administrative records. It can be used to identify potential skill shortages or surpluses in the labor market, as well as to target policies and programs aimed at improving education and training opportunities for the working-age population.

Governments, international organizations, and researchers use this indicator to track changes in the education levels of the working-age population over time and across countries. It is also used to assess the effectiveness of education policies and programs aimed at improving the education levels of the population. The working-age population and education indicator is a useful tool for policymakers, analysts, and researchers in understanding the educational attainment of the working-age population and how it may affect labor market outcomes.

Analyzing the data in-depth for the population age 25+ and with emphasis on the level of education leads to following conclusions:

1. **Less than Basic Education Level:** The number of individuals in the "Less than basic" education category has consistently decreased over the years, indicating progress in educational attainment. In 2011, there were 149.874 individuals in this category, which decreased to 75.368 in 2021. This suggests that efforts to improve access to basic education and reduce illiteracy have been successful. However, there is still a significant portion of the working-age population with limited educational qualifications, which may pose challenges for employment and economic opportunities. Targeted interventions such as adult literacy programs and vocational training can help uplift individuals in this category.
2. **Basic Education Level:** The "Basic" education level category represents the largest segment of the working-age population throughout the years. In 2011, there were 409.385 individuals with basic education, which increased to 687.246 in 2021. This indicates that a substantial number of individuals have acquired at least a basic level of education, reflecting improvements in primary and secondary education access. It suggests that the majority of the working-age population possesses fundamental literacy and numeracy skills. However, efforts should be made to ensure the quality of education and address any regional disparities in access to education.
3. **Intermediate and Advanced Education Levels:** The numbers of individuals with intermediate and advanced education levels have shown fluctuations over the years. In 2011, there were 222.579 individuals with intermediate education and 38.126 individuals with advanced education. These numbers increased to 316.144 and 54.236, respectively, in 2021. This indicates progress in higher education enrollment and the development of a skilled workforce. Individuals with intermediate and advanced education levels are more likely to have specialized skills and knowledge, making them valuable contributors to economic growth and innovation. Continued investment in tertiary education and professional development opportunities can further strengthen the pool of skilled workers.

4. **Unspecified Education Level:** The presence of the "Level not stated" category indicates that there is a portion of the working-age population for which education information is not available or unspecified. It is crucial to improve data collection methods and ensure comprehensive reporting to capture the full picture of educational attainment. Understanding the characteristics and needs of this segment is essential for designing inclusive and targeted policies.

In-depth analysis of the data reveals both positive trends and areas that require attention. The increase in individuals with basic, intermediate, and advanced education levels demonstrates progress in education. However, there is still a need to address the population with limited educational qualifications and ensure equitable access to quality education across regions. Policies should focus on reducing illiteracy, improving the quality of basic education, expanding access to higher education, and promoting lifelong learning opportunities. Additionally, enhancing data collection methods will provide a more accurate understanding of educational indicators and support evidence-based decision-making.

Based on the analysis, following recommendations can be considered as suitable:

1. **Strengthen Basic Education:** While progress has been made in increasing the number of individuals with basic education, efforts should continue to ensure universal access to quality primary and secondary education. This can be achieved by investing in infrastructure, teacher training, curriculum development, and reducing barriers to enrollment, particularly in marginalized areas.
2. **Improve Skills Development:** Enhance vocational training programs and adult education initiatives to address the needs of individuals with limited education qualifications. These programs can provide practical skills and knowledge to enhance employability and income-generating opportunities. Collaborations between educational institutions, industry, and government can help align training with labor market demands.
3. **Enhance Higher Education Opportunities:** Focus on expanding access to and improving the quality of higher education. This can be done through the establishment of new universities, scholarships, and financial assistance programs. Encourage partnerships between universities and industries to promote research and innovation, fostering a skilled workforce to drive economic growth.
4. **Address Disparities in Education:** Pay attention to regional disparities in educational access and quality. Develop targeted interventions and policies to ensure equal opportunities for education, especially in disadvantaged regions. This may involve improving school infrastructure, transportation, and providing incentives for qualified teachers to work in remote areas.
5. **Strengthen Data Collection:** Enhance data collection methods to capture comprehensive information on education indicators. This will provide accurate insights into educational trends, gaps, and areas for improvement. Strengthening data systems and coordination among relevant stakeholders will support evidence-based decision-making and policy formulation.
6. **Promote Lifelong Learning:** Encourage a culture of lifelong learning by promoting adult education programs, vocational training, and continuous professional development opportunities. This will

enable individuals to upgrade their skills and adapt to changing labor market demands, leading to increased productivity and career advancement.

By implementing these recommendations, North Macedonia can further enhance its education system, ensure inclusive access to quality education, and develop a skilled and competitive workforce that contributes to sustainable economic growth and social development.

## Employed by education

The Employment-to-Population Ratio by education is a measure that indicates the proportion of a specific population group, categorized by their level of education, who are employed. It provides insights into the employment outcomes of different educational groups within a population.

Employment-to-Population Ratio by education (%) = (Number of Employed Individuals in the Education Group / Total Population in the Education Group) \* 100

By calculating the Employment-to-Population Ratio for different educational groups, we can compare the employment outcomes and understand how employment is distributed across various education levels in a population.

TABLE 6. EMPLOYMENT-TO-POPULATION RATIO (%) BY LEVEL OF EDUCATION, NORTH MACEDONIA, 2011 - 2022

Reference area	Age	Time	Total	Level of education			
				Less than basic	Basic	Intermediate	Advanced
MKD	25+	2011	43.18	15.6	30.25	54.13	65.41
MKD	25+	2012	42.73	14.69	28.64	53.57	64.53
MKD	25+	2013	44.37	14.75	30.96	55.43	63.66
MKD	25+	2014	45.06	13.1	32.26	55.61	63.63
MKD	25+	2015	45.32	13.92	31.47	55.66	64.97
MKD	25+	2016	46.6	13.87	29.68	57.76	66.99
MKD	25+	2017	47.24	14.1	29.93	57.47	67.43
MKD	25+	2018	47.83	15.19	30.56	57.99	67.82
MKD	25+	2019	49.93	17.8	31.33	60.14	70.29
MKD	25+	2020	49.65	15.14	30.37	58.97	70.56
MKD	25+	2021	50.02	12.48	28.59	59.68	71.23
MKD	25+	2022	49.53	16.52	27.58	57.84	73.13

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

The table provides data on the Employment-to-Population Ratio (%) for different levels of education in North Macedonia, categorized by age and time. Here is a detailed analysis of the table:

Overall Trend: The Employment-to-Population Ratio has generally shown an upward trend from 2011 to 2022. The ratio increased from 43.18% in 2011 to 49.53% in 2022.

Comparison by Education Level:

1. Less than basic education: The Employment-to-Population Ratio for individuals with less than basic education has varied throughout the years, ranging from 12.48% in 2021 to 17.8% in 2019. It is the lowest among all education levels, indicating lower employment opportunities for this group.
2. Basic education: The Employment-to-Population Ratio for individuals with basic education has remained relatively stable, with a range of 27.58% in 2022 to 32.26% in 2014. This group generally has a higher employment rate compared to those with less than basic education but lower than those with intermediate and advanced education.
3. Intermediate education: The Employment-to-Population Ratio for individuals with intermediate education has shown a consistent increase over the years, ranging from 55.43% in 2013 to 57.99% in 2018. This group has a moderate employment rate compared to other education levels.
4. Advanced education: The Employment-to-Population Ratio for individuals with advanced education has consistently been the highest among all education levels, with a range of 63.63% in 2014 to 73.13% in 2022. This group demonstrates the highest employment rate, indicating better employment opportunities for individuals with higher educational qualifications.

Based on the analysis, it can be concluded that higher levels of education generally correspond to higher employment rates. It highlights the importance of education in improving employment opportunities and emphasizes the value of advanced education in securing higher levels of employment. Policymakers and individuals can use this information to understand the relationship between education and employment and make informed decisions regarding educational attainment and workforce development initiatives. The following general recommendations can be made:

1. Promote Education: Encourage individuals to pursue higher levels of education, as the Employment-to-Population Ratio tends to increase with higher educational qualifications. This can be done through awareness campaigns, scholarships, and access to quality education.
2. Skill Development: Emphasize the importance of skill development and vocational training programs, especially for individuals with less than basic education. This can enhance their employability and provide them with opportunities for better employment.
3. Support for Basic Education: While the Employment-to-Population Ratio for individuals with basic education has remained relatively stable, efforts should be made to provide support and resources to improve their employment prospects. This can include programs that bridge the gap between basic and intermediate education or targeted vocational training.

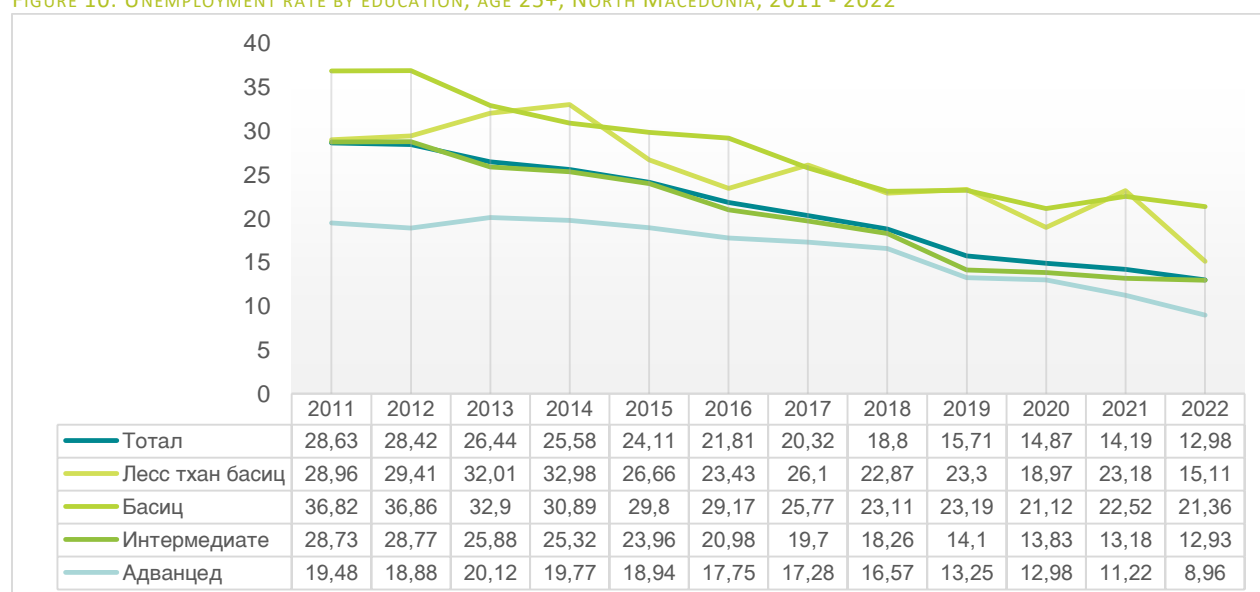
4. Strengthen Intermediate Education: Focus on enhancing the employment opportunities for individuals with intermediate education. This can involve partnerships between educational institutions and industries to align curriculum with job market demands, providing practical training and internships.
5. Value Advanced Education: Recognize and support the importance of advanced education in securing higher employment rates. Encourage individuals to pursue higher degrees and create an environment that rewards advanced skills and knowledge in the job market.
6. Monitor and Evaluate: Continuously monitor and evaluate the effectiveness of educational and employment policies and programs. Regularly assess the Employment-to-Population Ratio and its relationship with education levels to identify areas for improvement and make informed policy decisions.

These recommendations aim to address the disparities in employment rates based on education levels and promote inclusive economic growth by ensuring that individuals have access to quality education and opportunities for meaningful employment.

## Unemployed by education

Several indicators will be used to analyze unemployment by education. For more insight and more real analysis of the impact of skills and education on unemployment data for age 25+ population will be used. By that age it is real to consider that most of the population have completed formal education and data can be more comparable by level of education. Analyze will be done using several indicators as Unemployment rate by education, Combined rate of time-related underemployment and unemployment by education, Combined rate of unemployment and potential labor force by education and Composite rate of labor underutilization by education.

FIGURE 10. UNEMPLOYMENT RATE BY EDUCATION, AGE 25+, NORTH MACEDONIA, 2011 - 2022



Source: Authors calculation and interpretation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

Detailed analysis of the data on the unemployment rate for the population aged 25 and above with different levels of education in North Macedonia (Figure 10) introduces to us following conclusions:

#### 1. Unemployment Rate by Education Level:

**Less than basic:** The unemployment rate for individuals with less than basic education is generally higher than other education levels. It ranged from 28.96% in 2011 to 23.18% in 2021, with a low of 15.11% in 2022. This suggests that individuals with lower educational qualifications face higher unemployment challenges.

**Basic:** The unemployment rate for individuals with a basic level of education ranged from 36.82% in 2011 to 21.36% in 2022. While it has decreased over the years, it remains relatively higher compared to intermediate and advanced education levels.

**Intermediate:** Individuals with an intermediate level of education experienced lower unemployment rates compared to those with less than basic and basic education. The unemployment rate ranged from 20.98% in 2016 to 12.93% in 2022.

**Advanced:** Those with advanced education consistently had the lowest unemployment rates. The rate ranged from 19.48% in 2011 to 8.96% in 2022, indicating that individuals with higher educational qualifications have better employment prospects.

#### 2. Overall Trend:

The unemployment rate for the population aged 25 and above in North Macedonia has shown a declining trend from 2011 to 2022, reflecting improving labor market conditions. The overall unemployment rate decreased from 28.63% in 2011 to 12.98% in 2022.

#### 3. Differences among Education Levels:

The disparities in unemployment rates among education levels highlight the importance of acquiring higher levels of education for better employment opportunities.

Individuals with less than basic and basic education face higher unemployment rates, indicating the need for educational and skill development programs to enhance their employability.

#### 4. Policy Implications:

The data suggests that efforts should be made to improve access to education and training programs, particularly for individuals with lower education levels.

Promoting vocational training and skill development can help reduce unemployment rates, especially for those with less than basic and basic education.

Encouraging higher education attainment and promoting advanced skills development can contribute to lower unemployment rates and better labor market outcomes.

#### 5. Limitations:

It's important to consider that the unemployment rate is influenced by various factors such as economic conditions, industry-specific dynamics, and structural factors.

*The combined rate of time-related underemployment and unemployment (LU2)* is a measure that combines the rates of underemployment and unemployment to provide a comprehensive view of labor market challenges. It includes individuals who are unemployed and actively seeking work, as well as those who are employed but working part-time or in jobs that don't fully utilize their skills and qualifications. The combined rate of time-related underemployment and unemployment (LU2) is calculated by summing the percentages of time-related underemployment and unemployment for a specific reference area, age group, and time period. Calculating the LU2 rate helps us understand the extent of both unemployment and underemployment, giving policymakers and researchers a more holistic understanding of labor market conditions and the need for policies that address job creation and quality of employment.

TABLE 7. COMBINED RATE OF TIME-RELATED UNDEREMPLOYMENT AND UNEMPLOYMENT (LU2) (%), NORTH MACEDONIA, 2014 - 2022

Reference area	Age	Time	Level of education				
			Total	Less than basic	Basic	Intermediate	Advanced
MKD	25+	2014	27.5	35.5	33.8	27.1	21.1
MKD	25+	2015	25.6	29	32.3	25.2	19.9
MKD	25+	2016	23.6	30.9	32	22.3	19.1
MKD	25+	2017	22	33.8	29.2	20.8	18.4
MKD	25+	2018	20.2	29	26	19.2	17.7
MKD	25+	2019	17.3	27.9	26.2	15.3	14.5
MKD	25+	2020	16.7	22.8	24.4	15.5	14.3
MKD	25+	2021	15.9	29	26.2	14.5	12.4
MKD	25+	2022	14.7	22.5	26.3	14.2	9.8

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

The table presents the combined rate of time-related underemployment and unemployment (LU2) for the population aged 25 and above in North Macedonia, categorized by different levels of education.

#### 1. Overall Trend:

The overall LU2 rate in North Macedonia for the population aged 25 and above has shown a general declining trend from 2014 to 2022. It decreased from 27.5% in 2014 to 14.7% in 2022, indicating an improvement in labor market conditions.



## 2. Differences among Education Levels:

Less than basic education: Individuals with less than basic education consistently experienced the highest combined rate of time-related underemployment and unemployment throughout the years. The LU2 rate for this group ranged from 35.5% in 2014 to 22.5% in 2022, demonstrating that individuals with lower levels of education face higher challenges in terms of securing adequate employment.

Basic education: The LU2 rate for individuals with a basic level of education ranged from 33.8% in 2014 to 26.3% in 2022. While individuals with basic education faced relatively lower rates compared to those with less than basic education, the rates were still considerable, indicating the need for further improvements in their employment situations.

Intermediate education: Individuals with intermediate education experienced lower LU2 rates compared to the previous two education groups. The rates ranged from 27.1% in 2014 to 14.2% in 2022, suggesting better employment prospects for individuals with intermediate educational qualifications.

Advanced education: Those with advanced education consistently had the lowest LU2 rates among the different education levels. The rates ranged from 21.1% in 2014 to 9.8% in 2022, indicating that individuals with higher levels of education generally have better employment outcomes.

## 3. Policy Implications:

The data highlights the importance of education in reducing the combined rate of underemployment and unemployment. Efforts should be made to provide educational opportunities and support for individuals with lower levels of education to enhance their employability.

Policies aimed at improving the quality and relevance of education, promoting skill development, and reducing educational disparities can contribute to better labor market outcomes.

The Combined rate of unemployment and potential labor force (LU3) is a measure that combines the unemployment rate with the potential labor force. It provides a broader perspective on the labor market by considering not only the unemployed individuals but also those who are available and actively seeking work. The LU3 rate is calculated by dividing the sum of the unemployed individuals and those in the potential labor force by the total population and multiplying by 100 to express it as a percentage. The potential labor force includes individuals who are not employed but are actively seeking work and available for work.

By including the potential labor force, the LU3 rate offers a more comprehensive view of the labor market, capturing individuals who may be discouraged from actively seeking work or facing other barriers to employment. It helps policymakers and analysts understand the overall labor market dynamics and the extent of labor underutilization in an economy. A higher LU3 rate indicates a higher proportion of individuals facing labor market challenges, including unemployment and underemployment. Conversely, a lower LU3 rate suggests a more favorable labor market situation with a smaller proportion of individuals experiencing difficulties in finding suitable employment opportunities.

It's important to note that the LU3 rate should be interpreted in conjunction with other labor market indicators and factors influencing employment and labor force dynamics to gain a comprehensive understanding of the labor market conditions in a particular reference area.

TABLE 8. COMBINED RATE OF UNEMPLOYMENT AND POTENTIAL LABOR FORCE (LU3) (%), NORTH MACEDONIA, 2011 - 2022

Reference area	Age	Time	Level of education				
			Total	Less than basic	Basic	Intermediate	Advanced
MKD	25+	2011	32.5	37.4	40.8	32.7	21.5
MKD	25+	2012	32.8	35.2	42.4	33.1	21.2
MKD	25+	2013	30.1	39.6	37.5	29.4	22
MKD	25+	2014	28.9	42.2	34.8	28.4	21.9
MKD	25+	2015	27.4	33.8	34	27.2	20.7
MKD	25+	2016	25.4	32.8	34.3	24.4	19.7
MKD	25+	2017	23.8	33.5	31.1	23.1	19.1
MKD	25+	2018	23	32.4	29.9	22.1	18.8
MKD	25+	2019	20.7	32.5	29.8	19.3	15.9
MKD	25+	2020	20.8	30.7	29.6	20.2	16.1
MKD	25+	2021	20.2	34	32	19.2	14.6
MKD	25+	2022	17.3	21.2	29.1	17.4	10.9

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat ilo.org/data/#>, accessed on 12.03.2023

The table presents the combined rate of unemployment and potential labor force (LU3) for the population aged 25 and above in North Macedonia, categorized by different levels of education.

#### 1. Overall Trend:

The LU3 rate in North Macedonia for the population aged 25 and above has shown a general declining trend from 2011 to 2022. It decreased from 32.5% in 2011 to 17.3% in 2022, indicating an improvement in the labor market situation.

#### 2. Differences among Education Levels:

**Less than basic education:** Individuals with less than basic education consistently experienced the highest combined rate of unemployment and potential labor force throughout the years. The LU3 rate for this group ranged from 37.4% in 2011 to 21.2% in 2022, indicating a relatively high level of labor market challenges.

**Basic education:** The LU3 rate for individuals with a basic level of education also remained high, although relatively lower than those with less than basic education. The rates ranged from 40.8% in 2011 to 29.1%

in 2022, suggesting ongoing difficulties in finding suitable employment opportunities for individuals with basic education.

Intermediate education: Individuals with intermediate education had lower LU3 rates compared to the previous two education groups. The rates ranged from 32.7% in 2011 to 17.4% in 2022, indicating a relatively better labor market situation for individuals with intermediate educational qualifications.

Advanced education: Those with advanced education consistently had the lowest LU3 rates among the different education levels. The rates ranged from 21.5% in 2011 to 10.9% in 2022, suggesting that individuals with higher levels of education generally faced fewer challenges in terms of unemployment and potential labor force.

### 3. Policy Implications:

The data emphasizes the importance of education in reducing the combined rate of unemployment and potential labor force. Policies should focus on improving educational opportunities, providing vocational training, and enhancing skill development to address the challenges faced by individuals with lower levels of education. Efforts should be made to align education and training programs with the needs of the labor market to enhance employability.

The Composite rate of labor underutilization (LU4) is a measure that combines various forms of labor underutilization, including unemployment, time-related underemployment, and potential labor force. It provides a comprehensive assessment of the overall extent of labor market slack or inefficiency. The formula to calculate the Composite rate of labor underutilization (LU4) takes the average of Unemployment Rate, Time-Related Underemployment Rate and Potential Labor Force Rate. This allows for a comprehensive assessment of the overall extent of labor market underutilization by considering multiple dimensions of labor market slack.

TABLE 9. COMPOSITE RATE OF LABOR UNDERUTILIZATION (LU4) (%), NORTH MACEDONIA, 2014 - 2022

Country	Time	Level of education				
		Total	Less than basic	Basic	Intermediate	Advanced
MKD	2014	34	47.4	39.8	33.8	26.3
MKD	2015	31.5	41	37.4	31.8	23.9
MKD	2016	30.1	41.8	38.6	29.6	23
MKD	2017	28.4	44.8	36.4	27.8	22.1
MKD	2018	27.1	40.6	34.5	26.6	21.5
MKD	2019	24.3	38.6	33.2	23.5	18.4
MKD	2020	24.8	36.4	33.7	24.9	18.3
MKD	2021	23.9	41.3	36.1	23.6	16.3
MKD	2022	21.3	31.2	34.9	21.8	12.3

Source: calculation based on ILO data, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

### 1. Overall Labor Underutilization Trend:

The LU4 rate in North Macedonia shows a gradual decline from 34% in 2014 to 21.3% in 2022. This indicates a general improvement in labor market conditions and a reduction in overall labor underutilization during this period.

### 2. Differences Among Educational Levels:

Less than basic education: Individuals with less than basic education consistently have the highest LU4 rates, ranging from 47.4% in 2014 to 31.2% in 2022. This suggests that individuals with lower levels of education face higher levels of labor underutilization.

Basic education: Individuals with basic education also experience relatively high LU4 rates, ranging from 39.8% in 2014 to 34.9% in 2022. Although the rates are lower compared to those with less than basic education, they still indicate significant labor underutilization among this group.

Intermediate and advanced education: As the educational level increases, the LU4 rates decline. Individuals with intermediate and advanced education exhibit lower rates of labor underutilization, ranging from 33.8% to 12.3% in 2022.

### 3. Year-to-Year Changes:

The LU4 rates fluctuate annually, indicating variations in labor market conditions and underutilization over time. In some years, such as 2016 and 2021, there are notable decreases in the LU4 rates, signifying improvements in labor market conditions and reduced labor underutilization.

However, there are also years, like 2017 and 2020, where the rates show smaller declines or even slight increases, suggesting some challenges in reducing labor underutilization during those periods.

### 4. Recent Trends:

In the most recent years (2020-2022), there is a consistent downward trend in the LU4 rates, indicating positive developments in the labor market and a decreasing level of labor underutilization. Notably, the LU4 rate for individuals with advanced education shows a substantial decline from 18.4% in 2019 to 12.3% in 2022, reflecting a significant improvement in labor market outcomes for this group.

Overall, the table demonstrates the varying levels of labor underutilization among different levels of education in North Macedonia. It highlights the importance of educational attainment in reducing labor underutilization and suggests a positive trend of improving labor market conditions over the years, with more significant progress observed for individuals with higher levels of education.

Based on the conclusions drawn from the analysis of the Composite rate of labor underutilization (LU4) table for North Macedonia, the following recommendations can be made:

**Promote Education and Skill Development:** Since individuals with higher levels of education experience lower rates of labor underutilization, there should be a focus on promoting education and skill development programs. Enhancing access to quality education and vocational training can help individuals acquire the necessary skills and qualifications to meet the demands of the labor market, reducing underutilization.

**Targeted Support for Lower Educational Levels:** Given that individuals with less than basic and basic education face higher levels of labor underutilization, targeted support programs should be designed to address their specific needs. This may include providing educational opportunities, vocational training, and support for transitioning into suitable employment.

**Continuous Labor Market Monitoring:** Given the fluctuations in labor underutilization rates over time, it is crucial to continuously monitor the labor market and track changes in underutilization patterns. This can help policymakers and stakeholders identify emerging trends, assess the effectiveness of interventions, and make informed decisions to address labor market challenges.

**Foster Collaboration between Education and Industry:** To align education and training programs with the needs of the labor market, close collaboration between educational institutions, industry stakeholders, and policymakers is essential. Establishing partnerships and mechanisms for regular dialogue can help ensure that educational programs are relevant, responsive, and equipped to meet the demands of the evolving job market.

**Strengthen Support for Advanced Education:** Although individuals with advanced education exhibit lower rates of labor underutilization, continued support for their professional development is important. This can include opportunities for lifelong learning, upskilling, and reskilling programs to help them stay competitive in the labor market and adapt to changing job requirements.

By implementing these recommendations, North Macedonia can work towards reducing labor underutilization, improving employment outcomes, and fostering a more inclusive and productive labor market for individuals across all levels of education.

## Status in employment and educational mismatch

Time-related underemployment refers to a situation where a person who is employed is not able to work the desired or full hours they would like to work. In other words, they have a job but are not working as many hours as they would like or need to work to earn the income they need or to fully utilize their skills and abilities.

This can happen for a variety of reasons, such as a reduction in available work hours, a change in work schedule, or a decrease in demand for their services. Time-related underemployment can also occur when

an employee is not given enough hours by their employer, or when they are unable to find additional work to supplement their income.

Time-related underemployment can have negative impacts on individuals and their families, including reduced income, financial stress, and difficulties in meeting basic needs. It can also have broader economic consequences, such as reduced productivity and decreased consumer spending.

TABLE 10. TIME-RELATED UNDEREMPLOYMENT (THOUSANDS), NORTH MACEDONIA, 2014 - 2022

Reference area	Age	Time	Total	Level of education			
				Less than basic	Basic	Intermediate	Advanced
MKD	25+	2014	16.905	0.559	5.65	8.187	2.51
MKD	25+	2015	12.817	0.481	4.604	5.753	1.979
MKD	25+	2016	15.141	1.381	4.848	5.937	2.975
MKD	25+	2017	14.26	1.368	5.468	4.952	2.473
MKD	25+	2018	12.229	1.084	4.498	4.225	2.421
MKD	25+	2019	14.085	0.985	4.729	5.445	2.925
MKD	25+	2020	16.326	0.607	4.682	7.642	3.395
MKD	25+	2021	15.191	0.715	4.885	6.477	3.115
MKD	25+	2022	13.078	0.936	5.326	4.997	1.819

Source: ILO, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

Detailed analysis of the table on time-related underemployment in North Macedonia, broken down by the level of education, along with recommendations is as follows:

1. Less than basic education:

The number of underemployed individuals in this category ranged from 0.559 thousand to 1.084 thousand throughout the years.

It is important to focus on providing skill development and training programs targeted at individuals with less than basic education. These programs can help improve their employability and provide them with opportunities for better employment prospects.

2. Basic education:

The number of underemployed individuals in this category ranged from 4.225 thousand to 7.642 thousand throughout the years.

Encouraging vocational training programs and promoting entrepreneurship among individuals with basic education can help them acquire specialized skills and explore self-employment opportunities. Additionally, initiatives to enhance their access to job opportunities and promote job matching can be beneficial.

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### 3. Intermediate education:

The number of underemployed individuals in this category ranged from 4.952 thousand to 8.187 thousand throughout the years.

Enhancing the relevance of intermediate education programs by aligning them with the needs of the labor market can improve the employability of individuals in this category. Additionally, fostering partnerships between educational institutions and industries can facilitate work-integrated learning opportunities and internships.

### 4. Advanced education:

The number of underemployed individuals in this category ranged from 1.819 thousand to 3.395 thousand throughout the years.

Promoting research and innovation-driven industries can create more opportunities for individuals with advanced education. Encouraging entrepreneurship and supporting the establishment of startups can also provide avenues for individuals to utilize their advanced skills and knowledge.

It is important to address the underlying factors contributing to time-related underemployment across all education levels. This includes strengthening the linkages between education and the labor market, promoting skill development programs, and fostering an enabling environment for entrepreneurship and job creation. Additionally, improving the quality and relevance of education programs can help individuals acquire the necessary skills to meet the demands of the labor market.

## Informal employment and education

The International Labor Organization defines informal employment as employment that is not regulated, protected or taxed by the government. In other words, informal employment refers to jobs that are not covered by labor laws, social protection schemes, or other forms of employment regulation.

To measure informal employment, the ILO uses a set of criteria that includes the following:

- The nature of the job: Informal jobs are usually characterized by low productivity, low wages, and poor working conditions. They may be temporary, part-time, or seasonal, and may offer limited or no job security.
- The type of employer: Informal jobs are often provided by small, unregistered, or informal enterprises, which are not subject to labor laws, social security regulations, or taxation.

- The absence of social protection: Informal workers typically do not have access to social security benefits such as health insurance, unemployment insurance, or pension schemes.
- The lack of legal and regulatory protection: Informal workers are often not covered by labor laws and regulations, which means they have little recourse to legal protection in cases of exploitation or abuse.

To calculate the informal employment rate, the ILO uses household surveys to collect data on the employment status of individuals and their working conditions. The survey questions are designed to identify workers who are not covered by labor laws or social protection schemes, and who work in informal jobs. The informal employment rate is then calculated as the percentage of the working population that is engaged in informal employment.

TABLE 11. INFORMAL EMPLOYMENT RATE (%), NORTH MACEDONIA, 2011 - 2022  
Level of education

Reference area	Time	Total	Less than basic	Basic	Intermediate	Advanced
MKD	2011	14.8	50.3	33.3	9.9	3.6
MKD	2012	12.4	44.8	25.7	9.7	3.4
MKD	2013	22.2	85.1	49.9	15.8	5.1
MKD	2014	28.1	86.2	59	21.5	9.6
MKD	2015	19.2	73.3	48.4	13.3	3.3
MKD	2016	17.3	75	46	12.8	2.9
MKD	2017	16.9	75.3	46.3	12.5	3.6
MKD	2018	16.2	72.5	43.4	11.9	3.8
MKD	2019	13.8	58.6	35.2	11	3.5
MKD	2020	11.5	60.3	32.9	8.9	2.5
MKD	2021	9.9	60.4	32.7	7.4	2
MKD	2022	10.1	63.2	33.1	7.9	2

Source: ILO, Indicator catalogue, <https://ilostat.ilo.org/data/#>, accessed on 12.03.2023

Analyzing the data from the table on the informal employment rate (%), we can gain more detailed insights:

1. Overall Informal Employment Rate: The table shows the percentage of individuals engaged in informal employment in MKD over the years. The rates range from 9.9% in 2021 to 28.1% in 2014. This indicates that a significant proportion of the workforce is involved in informal jobs.
2. Education Level and Informal Employment: The data is segmented by education level, allowing us to examine the relationship between education and informal employment. Across all years, individuals with less than basic education consistently have the highest informal employment rates, ranging from 33.1% in 2022 to 85.1% in 2013. As education level increases, the informal



employment rate decreases, with individuals with advanced education consistently having the lowest rates.

3. **Yearly Variations:** There are fluctuations in the informal employment rate from year to year. For example, there is a notable increase in the rate from 2012 (12.4%) to 2013 (22.2%), followed by a gradual decline in subsequent years. These variations may be influenced by economic factors, policy changes, or other factors affecting the labor market dynamics in each specific year.
4. **Education Gap and Informal Employment:** There is a significant gap in the informal employment rates between different education levels. For instance, in 2022, individuals with less than basic education have an informal employment rate of 33.1%, while those with advanced education have a rate of only 2%. This highlights the importance of education in reducing the likelihood of engaging in informal employment.
5. **Potential Implications:** The high rates of informal employment, particularly among individuals with lower education levels, may indicate challenges such as limited access to formal job opportunities, insufficient labor market regulations, and a lack of social protection measures. Informal employment often entails lower wages, limited benefits, and precarious working conditions, which can contribute to income inequality and hinder overall economic development.
6. **Policy Considerations:** The data underscores the need for targeted policies and interventions to address informal employment. Efforts should focus on improving access to quality education, promoting skill development programs, and creating an enabling environment for formal job creation. Additionally, policies should aim to enhance labor market regulations, provide social protection measures for informal workers, and support the formalization of small enterprises.

## Need for skills on the labor market

From the provided table, the importance of a workforce with a high level of education can be inferred in the several ways. The data suggests that industries and sectors such as processing industry, information and communications, financial activities, professional and technical activities, and health and social care activities have a significant demand for workers with intermediate and higher education and high-level education. These sectors require specialized skills, advanced knowledge, and expertise, making a highly educated workforce crucial for their success and development. Detailed analyze for the need for skills on the labor market in different sectors can be made based on the data given in table ....

**Processing industry:** The processing industry has the highest expected employment of 4,534, and it requires a significant number of workers with intermediate and higher education (350) and high-level education (334). This indicates that industries involving complex manufacturing processes and technology-intensive operations demand a skilled and educated workforce.

**Information and Communications:** The information and communications sector, with an expected employment of 564, heavily relies on workers with intermediate and higher education (518) and high-

level education (31). This sector encompasses technology, telecommunications, and software development, emphasizing the need for a highly educated and specialized workforce.

Financial activity and insurance activities: With an expected employment of 298, this sector requires workers with intermediate and higher education (120) and high-level education (137). The financial industry deals with complex financial transactions, risk assessment, and analysis, highlighting the importance of a well-educated workforce capable of handling intricate financial operations.

Professional, scientific, and technical activities: This sector, which includes professional services such as legal, engineering, and scientific research, requires workers with intermediate and higher education (44) and high-level education (52). The nature of these professions demands specialized knowledge and skills acquired through higher education.

TABLE 12. EXPECTED EMPLOYMENT BY OCCUPATION AND LEVEL OF EDUCATION, NORTH MACEDONIA

Occupation	Expected employment 2022	Basic	Intermediate	Higher	High
Total	11476	3511	5273	1285	1407
Agriculture, hunting and forestry and fishing	268	123	135	3	7
Mining and quarrying	70	21	33	10	6
Processing industry	4534	2038	1812	350	334
Supply of electricity, gas, steam and air conditioning	4				4
Water supply, waste water disposal, waste management and environmental remediation activities	14	3	8		3
Construction	792	164	467	64	97
Wholesale and retail trade, repair of motor vehicles and motorcycles	2371	883	1226	151	111
Transport and storage	451	22	397	25	7
Accommodation facilities and food service activities	461	48	395	17	1
Information and Communications	564		15	31	518
Financial activity and insurance activities	298		41	120	137
Activities related to real estate	30	27	3		
Professional, scientific and technical activities	115	10	44	9	52
Administrative and auxiliary service activities	572	117	240	210	5
Education	62	3	6	15	38
Health and social care activities	182	22	28	66	66
Arts, entertainment and recreation	529	27	287	214	1
Other service activities	159	3	136		20

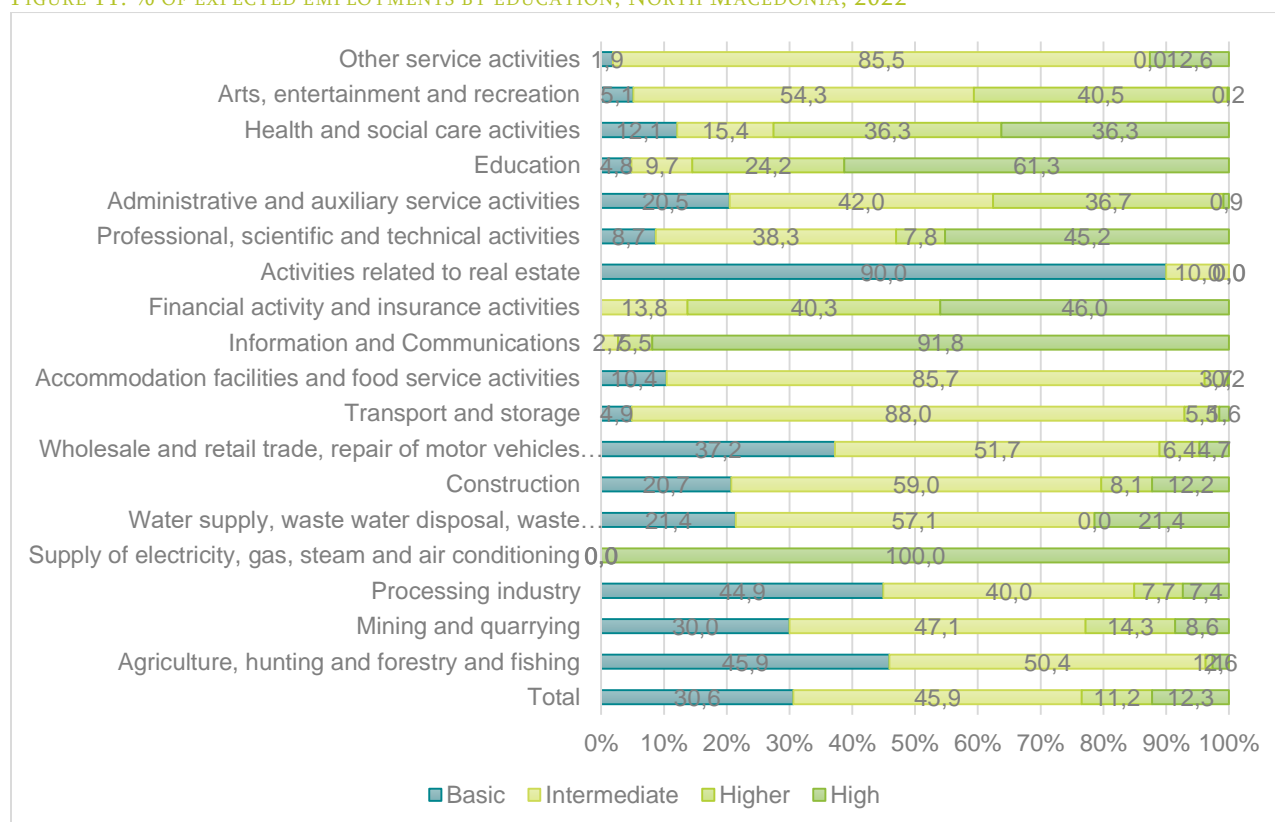
Source: Employment Service Agency of The Republic of North Macedonia, Yearly report 2021, Skopje, 2022

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(<https://av.gov.mk/content/%D0%94%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D0%B8/%D0%98%D0%B7%D0%B2%D0%B5%D1%88%D1%82%D0%B0%D1%98%20%D0%BD%D0%B0%20%D0%90%D0%92%D0%A0%D0%A1%D0%9C%202021.pdf>)

**Health and social care activities:** The health and social care sector, with an expected employment of 182, places importance on workers with intermediate and higher education (66) and high-level education (66). This sector includes healthcare professionals, nurses, and social workers who require extensive education and training to provide quality care and support.

FIGURE 11. % OF EXPECTED EMPLOYMENTS BY EDUCATION, NORTH MACEDONIA, 2022



Source: authors calculation based on data retrieved from the Employment Service Agency of The Republic of North Macedonia, Yearly report 2021, Skopje, 2022

As seen from the figure, Importance of a highly educated workforce can be highlighted for certain sectors in North Macedonia:

1. **Information and Communications:** This sector heavily relies on workers with a high level of education, as 91.8% of expected employment falls in the high education category. This indicates the need for specialized knowledge and skills in this field.
2. **Financial activity and insurance activities:** Similarly, this sector places a significant emphasis on workers with a high level of education, with 46.0% of expected employment in this category. This highlights the importance of a strong educational background in finance and related fields.

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3. Professional, scientific, and technical activities: In this sector, 45.2% of expected employment requires a high level of education. This indicates the need for specialized expertise and knowledge in professional and technical fields.
4. Health and social care activities: In this sector, 36.3% of expected employment falls in the high education category. This underscores the importance of highly educated healthcare professionals to provide quality healthcare services.
5. Water supply, waste water disposal, waste management, and environmental remediation activities: This sector also has a significant demand for workers with a high level of education, with 21.4% of expected employment falling in this category. This suggests the need for expertise in environmental sciences and waste management.
6. Activities related to real estate: While not explicitly mentioned in the table, the sector shows a high percentage (90.0%) of expected employment in the basic education category, indicating a potential lack of emphasis on high education. However, it's worth noting that the real estate sector can benefit from professionals with high-level knowledge in areas such as property valuation, urban planning, and real estate finance.

These findings emphasize the importance of a highly educated workforce in sectors such as Information and Communications, Financial activities, Professional and scientific activities, Health and social care, and Water supply and waste management. Investing in education and fostering a skilled workforce can contribute to the growth and development of these sectors in North Macedonia.

# Conclusions

Education and employment are crucial factors in an individual's life, with a strong interdependence between the two. Education equips individuals with the necessary skills for the workforce, while employment provides financial stability and purpose. Education and employment mismatch can have negative consequences for individuals and society, leading to underemployment, skills shortages, and social inequality. Addressing this mismatch requires aligning the education system with labor market needs and providing opportunities for training and lifelong learning. The economic situation in North Macedonia has an impact on the education and labor market, with the COVID-19 pandemic exacerbating challenges such as high unemployment and a skills gap. While the GDP has generally increased over time, there is still room for improvement to enhance the standard of living for its citizens.

The government of North Macedonia has implemented various programs and measures aimed at promoting employment and improving the employability of different groups, including young people, long-term unemployed individuals, and Guaranteed Minimum Income recipients. These initiatives focus on supporting self-employment, creating new jobs, providing training opportunities, developing digital skills, offering internships, and promoting employment through public works projects and the economy of care. The employment policies align with national programs, international obligations, and emphasize diversity, inclusiveness, and equal representation of various groups. The government's efforts to ensure transparency, equal opportunities, and the participation of underrepresented categories.

Labor market supply in North Macedonia is discussed through focusing on the working age and active population, employment indicators, and unemployment indicators. The working age population has steadily increased over the years, while the active population, representing those employed or seeking employment, has shown some variation with an overall increase. The activity rate, which is the ratio of the working age population to the active population, has remained relatively stable but has slightly decreased in recent years. However, the activity rate of the young population (age 21-29) has shown an overall increasing trend but decreased in the last two years. The employment rate for both the total population and the young population has generally increased over time but remains below 50%. The forecast suggests a steady increase in the employment rate for the young population in the coming years. The labor dependency ratio indicates that each employed person in North Macedonia supports approximately 1.58 dependents. Recommendations include promoting employment opportunities, improving labor market participation, enhancing workforce productivity, addressing labor dependency, fostering economic growth and diversification, and strengthening social safety nets.

An overview of the labor market demand in North Macedonia is made with focusing on occupied posts and job vacancies across different sectors from 2012 to 2022. Sectors like manufacturing, wholesale and retail trade, construction, and accommodation and food service activities have shown positive growth, indicating a thriving economy. However, sectors such as mining, electricity, gas, and water supply exhibit relatively fewer occupied posts.

Recommendations based on the analysis include capitalizing on growth opportunities in the retail industry, fostering innovation in sectors like professional, scientific, and technical activities and information and communication, investing in skill development programs for sectors with lower job occupancy, enhancing efficiency in public administration and defense sectors, and closely monitoring job market trends for informed decision-making.

Examining job vacancies, the analysis identifies fluctuations over the years but an overall increasing trend. Sectors like manufacturing, construction, wholesale and retail trade, transportation and storage, and accommodation and food service activities consistently display significant job vacancies, indicating high labor demand. Other sectors, such as mining, electricity, gas, and water supply, exhibit some variations in job vacancies.

The analysis underscores the potential for labor market growth in North Macedonia, emphasizing the importance of sector-specific strategies to address employment opportunities. It also highlights the significance of monitoring job market trends to make informed decisions and allocate resources effectively.

Education and labor market indicators highlights the connection between education and the labor market in North Macedonia. Data suggests a correlation between education and employment opportunities. The numbers of individuals with intermediate and advanced education levels have shown fluctuations over the years. This indicates progress in higher education enrollment and the development of a skilled workforce. Continued investment in tertiary education and professional development opportunities can further strengthen the pool of skilled workers. However, there is still a need to address the population with limited educational qualifications and ensure equitable access to quality education. The employment-to-population ratio by education indicates that individuals with higher levels of education tend to have higher employment rates, emphasizing the importance of education in securing employment.

To strengthen the connection between education and the labor market, the research offers several recommendations. These include enhancing basic education, improving skills development programs, and expanding higher education opportunities. Addressing disparities in education and ensuring equitable access to quality education are also crucial steps. Additionally, promoting lifelong learning and supporting individuals with limited educational qualifications can help bridge the education-employment gap. By focusing on these areas, North Macedonia can improve employment outcomes and create a workforce that is better equipped for the demands of the labor market. Regarding the status in employment and educational mismatch, time-related underemployment is highlighted as a situation where employed individuals are unable to work desired or full hours, leading to reduced income and economic consequences. Recommendations include skill development and training programs for individuals with less than basic education, vocational training and entrepreneurship promotion for those with basic education, relevance enhancement of intermediate education programs, and promotion of research and innovation-driven industries for individuals with advanced education.

In terms of informal employment and education, the concept of informal employment is defined as unregulated, unprotected, and untaxed employment. The analysis of data from North Macedonia reveals fluctuating informal employment rates, with individuals with less than basic education consistently having the highest rates. Recommendations include policies to improve access to quality education, skill development programs, labor market regulations, social protection measures, and the formalization of small enterprises.

Lastly, the need for skills in the labor market is discussed based on the expected employment data for different sectors in North Macedonia. Sectors such as processing industry, information and communications, financial activities, professional and technical activities, and health and social care activities have a high demand for workers with intermediate and higher education and high-level education. The importance of a highly educated workforce in these sectors is emphasized, along with the need for specialized skills, knowledge, and expertise.

*“The views expressed in this document do not necessarily reflect the views of the European Union, the participating countries and the Managing Authority.”*

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