

Sustainable Workforce Development: Lessons from EU Industrial Policies for Postwar Ukraine

By Olena Khandii¹, Olena Zelenko², Iaroslav Burko³, Yana Bilous⁴

ABSTRACT:

This article provides a comprehensive analysis of European Union (EU) policies aimed at addressing workforce shortages in the industrial sector, with particular relevance to Ukraine's postwar recovery challenges. The study investigates how demographic shifts, technological advancements, and labor market transformations have shaped workforce development strategies across key EU nations, including Germany, Poland, Italy, France, the Czech Republic, and Hungary. The research highlights successful EU approaches such as dual education systems, vocational training reforms, and lifelong learning initiatives that have effectively bridged skills gaps while promoting social inclusion. Germany's comprehensive strategy combining skilled immigration programs with digital transformation serves as a particularly instructive model, whereas Poland's experience with diaspora reintegration offers valuable insights for Ukraine's displaced populations. The study also examines innovative solutions such as Italy's visa lottery system and France's emphasis on technological upskilling. For Ukraine, which faces acute labor shortages exacerbated by wartime displacement and economic disruption, the article emphasizes the critical need to adapt these European best practices. Key recommendations include establishing sector-specific training programs, developing flexible certification systems for displaced workers, and creating public-private partnerships to align education with industry needs. The analysis particularly stresses the importance of digital skills development and gender-inclusive workforce policies to meet the demands of modern industrial sectors. Methodologically, this study employs comparative policy analysis to identify transferable solutions that could strengthen Ukraine's industrial workforce while supporting broader economic reconstruction efforts. The findings suggest that a strategic combination of EU-inspired vocational education reforms, targeted immigration policies, and technology-driven productivity enhancements could help Ukraine overcome its postwar labor challenges while fostering sustainable economic growth.

Keywords: labor shortage, workforce development, industrial sector, EU labor policies, postwar recovery

1. Introduction

Modern challenges associated with the economic and social consequences of the war have created new realities for the industrial sector of Ukraine. Owing to its full-scale invasion and military operations, the country is losing a significant part of its labor potential and human capital. Securing and retaining a qualified workforce has become critical for the sustainable functioning of the national economy. In the postwar period, Ukraine faced numerous tasks in the field of industrial reconstruction.

¹Volodymyr Dahl East Ukrainian National University; Institute of Industrial Economics of the National Academy of Sciences of Ukraine, Ukraine

²Institute of Industrial Economics of the National Academy of Sciences of Ukraine, Volodymyr Dahl East Ukrainian National University; Ukraine

³Volodymyr Dahl East Ukrainian National University, Ukraine

⁴Volodymyr Dahl East Ukrainian National University, Ukraine

International experience, particularly the European Union (EU) policy on providing industry with a skilled workforce, offers effective tools that can be adapted to Ukrainian conditions. Successful EU cases in creating mechanisms for training and retraining the workforce can serve as a basis for developing effective strategies adapted to Ukrainian needs.

Over the past two decades, the EU has developed systematic approaches to the formation of relevant skills and competences among different social categories of the population, implementing lifelong learning programs, expanding access to vocational education and developing social partnerships to achieve sustainable development goals (SDGs), particularly decent work for every worker and economic growth of countries. EU member states have successful cases of creating a balanced system of industrial development and training that takes into account innovative technologies, environmental requirements and changing labor market structures.

Given the challenges facing Ukraine, the study and adaptation of the acquired European experience is an extremely urgent task. The generalization and implementation of European practices in the fields of vocational education, advanced training and attracting foreign workers will help minimize personnel shortages in key sectors of the Ukrainian industry. The use of these approaches will contribute not only to reconstruction but also to the long-term sustainable development of industry in the future. Particular attention should be given to the issues of eliminating imbalances in the labor market, involving young people in professional development, as well as increasing the level of digital skills and social integration of all who need it.

The workforce shortage in Europe is the result of a combination of demographic, economic and social factors. An aging population and low birth rates are leading to a decline in the share of the working-age population in Europe; according to Eurostat, the share of people aged 65+ in the EU has increased from 16% in 2003 to 21% in 2023, and the median age has increased from 39.0 years in 2003 to 44.5 years in 2023 (Eurostat, Demography, 2024). EU citizens have the right to move freely within the EU and the right to reside in any EU country. In 2022, 1.5 million people moved from one EU country to another. This figure is 7% greater than that in 2021 (Eurostat, Migration, 2024). Recent studies have shown that the quality of working life is a key factor in determining labor migration flows, and countries with better social guarantees, financial support and working conditions have become attractive for labor migrants, as confirmed by comparative studies (Zelenko et al., 2024). Each European country has developed its own approaches to attracting and retaining labor from other countries, on the one hand, and on the other hand, European Union countries have been implementing systemic approaches to developing labor force competencies over the past decades, particularly through the concept of lifelong learning and social partnerships (Crespo et al., 2017; Stefana et al., 2021).

Considerable attention in modern research has been given to the digitalization of the labor market. For example, studies (Karakuts, 2023; Cedefop, 2018) have demonstrated that automation and digital platforms can become effective tools for improving working conditions and reducing personnel shortages.

Ukraine countries are significantly inferior to EU countries in terms of income, social protection and working conditions (Zelenko et al., 2024), and long-term war contributes

to the growth of the migration outflow of the population. Ukraine needs an additional 4.5 million workers for postwar recovery (Chernyshov, 2025), which necessitates the search for the best European practices in the formation and development of the workforce.

A key factor in adapting the European experience for Ukraine is the creation of conditions for continuous training and retraining of personnel. The introduction of European practices in the field of vocational education can significantly contribute to economic recovery and increase the competitiveness of the nation.

Therefore, the EU experience in sustainable development and achieving the SDGs, particularly SDG No. 8, can become an important basis for reforming employment policy in Ukraine, especially in the context of postwar recovery and integration into the European labor market.

The purpose of this article is to study the features of the development of EU policy in the field of providing industry with qualified labor and to substantiate the possibilities of adapting its experience to the conditions of postwar restoration of the Ukrainian industry.

2. Methods

The research methodology is based on general scientific methods: methods of analysis and synthesis, induction and deduction. Analysis and synthesis are used to generalize approaches to minimize the shortage of qualified labor, which are used in the practices of European countries to achieve the SDGs. With the help of induction and deduction methods, directions for adapting the acquired European experience for the development of the labor market in Ukraine under martial law and postwar restoration are determined.

3. Results

Workforce shortages are a pressing problem for many European countries, especially in the context of an aging population, low birth rates and emigration, on the one hand, and high rates of technological changes, on the other hand. Germany, Poland, Italy, France, the Czech Republic, and Hungary have extensive experience in countering these challenges, both in meeting labor needs in the technical industry, logistics, and IT, and in agriculture and construction. Each country develops its own programs to overcome the shortage of personnel and determines priority areas of action. The countries were selected because of their unique approaches to solving the problem of labor shortages, which allows comparing different strategies. The experience of these countries (especially Poland and Germany) is useful for Ukraine due to the similarity of demographic problems (aging population, migration) and the availability of effective programs for the integration of refugees and internally displaced persons. The study will include countries from different parts of the EU (Western, Eastern, Southern Europe), which will allow us to demonstrate the diversity of policies. For example, Germany and the Czech Republic are leaders in attracting skilled migrants, while France and Italy have unique programs to support women and the older generation in the labor market.

3.1 Germany

In 2024, Germany implemented the following main strategies to address the labor shortage: labor migration, retraining, upskilling and expanding dual education programs, refugee integration, increasing the participation of women and older generations in the labor market, digitalization and automation.

1. Labor migration. Germany, like other EU countries, benefits from unrestricted freedom of movement for workers who are citizens of EU member states, who are not subject to any restrictions on work permits. The same applies to citizens of the European Economic Area (EEA): Iceland, Norway and Liechtenstein (Swiss citizens are equated with EEA citizens) (Federal Employment Agency, 2025). Germany also actively attracts qualified workers from abroad (from third countries that are not members of the EU or EEA) by facilitating work permits and visa procedures. Thus, the official information portal of the Federal Ministry of Economics and the Federal Ministry of Labor of Germany "Make it in Germany" (The Federal Government, 2024) was created to promote the attraction of foreign specialists to Germany by informing them about employment opportunities, documenting procedures and life in the country. This portal provides information about the "Blue Card" program (the EU Blue Card is a program for attracting highly qualified workers from third countries, which is aimed at those who already have a confirmed job offer and meet educational and salary requirements) and the "Chancenkarte" initiative, which allows qualified specialists to come to Germany to find work without a prior offer from an employer. The "Chancenkarte" works on the basis of a point assessment that takes into account education, experience, language skills and connections to Germany.

In November 2023, the new skilled immigration act (*Fachkräftenwanderungsgesetz*) came into force, making it easier for skilled workers with vocational training and people with practical knowledge to immigrate to Germany. This law provides for:

1. Fast-track procedure for skilled workers: accelerated visa application processes and recognition of professional qualifications.
2. Expansion of immigration categories: including not only academically educated workers but also those with vocational training.
3. Integration support: providing assistance in finding housing and resolving bureaucratic issues for workers and their families.
4. Involving young people in training: providing the opportunity to come to undergo vocational training or find a place to study.

The adoption of the new skilled immigration act was the government's response to the negative expectations of companies regarding the 50% shortage of qualified personnel (The Federal Government, 2020).

2. Retraining and education. Germany supports upskilling programmes for workers, particularly by funding apprenticeships and traineeships in shortage sectors (OECD, 2024). This applies to both young people and older people who want to return to the labor market, those who are returning to the labor market from a hidden reserve, and workers who work part-time and would like to increase their working hours. For example, the national online vocational development portal "mein NOW" from the Federal Employment Agency allows you to develop digital skills and undergo advanced training in various subject areas in many regional and national courses.

In the education system, dual education increasingly receives state support, which involves cooperation between employers and educational institutions that ensures the training of young professionals who gain practical experience and theoretical knowledge at the same time.

In Germany, there has been an increase in investment in vocational education and reskilling programmes for German citizens. The focus is on educational programs for the IT sector, the medical industry and engineering, where the greatest shortage of workers is felt.

3. Integration of refugees and migrants. In Germany, refugees can work after a three-month stay in the country, provided that they have a permit. This helps increase the available labor force in certain sectors (Federal Employment Agency, 2025). Germany attracts refugees to work through integration programs that include language courses and the adaptation of qualifications to the standards of the country. For example, on the Germany4Ukraine assistance portal, the Federal Office for Migration and Refugees (BAMF) offers refugees from Ukraine quick and comprehensive information on many topics: entry, stay and return, accommodation, emergency assistance, everyday life in Germany, healthcare, work, language support and integration, mobility, education and research, family and children, and leisure (Bundesamt, 2025).

The "Integration Guides" program helps migrants with employment, social integration and adaptation through local advisors and volunteers and includes advice on the recognition of foreign diplomas and job search.

Training programs and internships are aimed at attracting young migrants to vocational education and training, for example, training programs in the field of elderly care or in production.

The German budget allocated more than 1.2 billion euros for integration courses and counseling for migrants in 2024. Particular emphasis is placed on accelerating the recognition of foreign qualifications and their integration into the labor market. The authorities are working to expand housing options for refugees, including providing access to state-owned property for temporary accommodation.

4. Digitalization and innovation in employment include the use of digital platforms to simplify job search and increase worker mobility. This applies in particular to platforms for the training and employment of young people. Platforms such as Make it in Germany or the Federal Employment Agency's Jobbörse make it easier to find jobs, especially for foreigners, and ensure transparency in the labor market. Artificial intelligence is used to match candidates' resumes with vacancies, optimize the hiring process, and reduce the job search time.

By automating simple and repetitive tasks in industry, retail, logistics, and other sectors, the dependence on low-skilled labor is reduced. This allows people to be reassigned to more complex tasks that require skills that are harder to automate.

Online platforms such as Coursera, LinkedIn Learning, or German vocational retraining projects help migrants and locals acquire new skills. This is especially important for the IT industry and other sectors that require qualified specialists.

Digital solutions such as eVisa or simplified online systems for processing work visa applications accelerate the process of legalizing the stay of foreigners.

Through the introduction of robots and intelligent automation systems, Germany has reduced the need for unskilled labor in many sectors while stimulating job creation in high-tech industries.

Digital platforms, such as the Ankommen app, help refugees and migrants integrate into society by providing access to information on vacancies, language courses and social support.

Germany actively supports innovative start-ups aimed at creating technologies for human resource management and increasing productivity (Eurofound, 2025).

Investing in digital technologies to reduce dependence on manual labor can reduce the demand for some categories of workers.

5. Expanding the participation of women and older generations in the labor market. The German government is encouraging women and older workers to work more by offering flexible working hours, childcare and social protection.

Maintaining a work–life balance is essential for attracting women to the labor market. In Germany, there are programmes to improve access to childcare and schools, which provide quality services for children, enabling women to better combine family and professional responsibilities. German labor law also encourages companies to offer flexible working arrangements that allow women to return to work after maternity leave.

According to the law, since 2013, all children in Germany aged 12 months and over have the right to a place in a childcare facility, such as a kindergarten or daycare center. Children aged 3–6 years have a guaranteed place in a preschool. This is ensured by programmes such as Kindertagesstätte (Kita), which cover various forms of care and early childhood education (Iamexpat, 2024; Deutsches Jugendinstitut, 2025). As part of the laws on the development of the childcare system (e.g., Tagesbetreuungsausbaugesetz and Kinderförderungsgesetz), the number of childcare facilities has significantly increased since 2005, and new places have been created for children under three years of age, with financial support from the state and municipalities for the expansion of full-time facilities. Particular attention is given in Germany to ensuring equal access to early childhood care for children from families with a low socioeconomic status, migrant backgrounds or refugees. There are special initiatives to ensure the participation of these groups in early childhood education and care systems.

The "Perspektive Wiedereinstieg" programme helps women who have temporarily stopped working (e.g., to care for children) return to the labor market through training and career guidance.

To increase the participation of older people in the labor market, strategies are being implemented to support long-term employment and vocational training for older people. Today, every second person in Germany is over 45 years old, and every fifth person is over 66 years old. Germany is losing too many people to retire early, and if it is possible to keep people in work for another year or two, the effect will be noticeable for the country's economy. The employment rate of people in their mid-to-late 50 s is decreasing. The concept of "active retirement" in Germany is partly implemented through existing pension system mechanisms that allow pensioners to continue working or earning after reaching retirement age. The main elements of this concept are already integrated into pension legislation, namely, the permission to earn without limiting pension benefits for those who have reached a certain age (65–67 years old depending on the year of birth); for those who

do not reach the official retirement age, there is an income limit, after which the amount of benefits is reduced. Pensioners who continue to work after retirement can expect their future pension benefits to increase (0.5% increase for each month of continued employment). Initiatives are planned to exempt income up to a certain level (e.g., €2,000) from taxation (Iamexpat, 2024). The Silver Economy program encourages employers to create jobs adapted to the needs of older workers. In Germany, there are various vocational training and training programs for older people, covering both basic skills and advanced training in modern industries. Adult education centers (Volkshochschulen) offer a wide range of courses, including vocational training, language courses, digital skills and other self-development programs. Many of these courses are free or low-cost. For example, the Umschulung program allows you to learn a new profession or improve your skills through training. This form of training is supported by the Federal Employment Agency, which can provide funding through education vouchers (Bildungsgutschein). Such programmes aim to adapt to new technologies and market requirements, including digital skills. The German federal government provides funding through special funds such as the "Förderprogramm Weiterbildung" (Support Programme for Further Education), which cover the costs of courses, equipment or counseling.

The state-run "Familienpflegezeit" programme allows employees to take partial leave to care for elderly relatives without risking losing their job.

These programmes and measures demonstrate how Germany is encouraging women and older generations to return to the labor market to reduce labor shortages.

Disability integration programmes include encouraging employers to adapt workplaces for people with disabilities through measures such as tax breaks and financial incentives (EPR, 2023). In particular, the "Integrationsamt" programme aims to support the employment of people with disabilities. This program provides financial benefits to employers who employ people with disabilities, as well as support for adapting workplaces. The "Integrationsamt" provides subsidies to cover the costs of adapting workplaces and provides information and advice to employers and employees on rights and opportunities. The support programme through the "Schwerbehindertengesetz" guarantees certain rights for people with disabilities, including the right to special working conditions and access to workplaces, and provides mandatory quotas for employers, who must employ a certain percentage of people with disabilities. There are specialized programs for people with disabilities that provide them with the opportunity to undergo training or retraining while taking into account their abilities. These programs help prepare for work in certain industries by adapting the training process to the physical or mental limitations of the participants.

The "Teilhabe am Arbeitsleben" (Participation in Working Life) programme aims to help people with disabilities find employment, finance special support and training, and enable partial or full integration into the workplace with necessary adaptations (BIBB, 2024; Disability: IN, 2025).

These measures are part of a comprehensive strategy aimed at meeting labor market needs and ensuring economic sustainability. Similar initiatives are also being implemented in other EU countries, such as Italy, Spain and Poland, which are also implementing programmes to attract workers from third countries and improve vocational education.

3.2 Poland

Poland is addressing the labor shortage through several main strategies:

- attracting foreign workers from abroad, particularly from Ukraine, Belarus and other European countries, to compensate for labor shortages in sectors such as construction, manufacturing, logistics and agriculture; attracting new groups of immigrants; attracting international students;
- attracting women and older people to work, particularly by providing advanced training courses for women after maternity leave, as well as for pensioners so that they can remain in the workforce or join new professions;
- stimulating the return of Polish emigrants;
- Digitalizing the labor market.

The attraction of foreign workers is carried out by simplifying immigration and exit rules for citizens from countries that are key sources of labor (Ukraine, Georgia, India, Vietnam). This includes long-term work visas, access to social insurance and residence rights for their families. According to the website bezviz.info, in 2023, more than 275 thousand work permits were issued to citizens of Asia and Latin America. This figure is five times greater than that in 2019. The largest increase in employment was recorded among Colombians, Nepalese and Argentines, who are actively filling gaps in sectors such as industrial production, agriculture and construction. Previously, these industries were mainly served by Ukrainians. Ukrainians still play an important role in the Polish labor market, but now, they are increasingly being replaced by workers from other countries. The main reason is that many Ukrainians are looking for better jobs in other European countries, such as Germany and the Czech Republic. This has led to many vacancies, especially for seasonal and manual jobs. Over the past ten years, the number of foreigners registered with the social security system (ZUS) has increased significantly. In 2024, over 1 million foreign workers were registered in Poland ([Bezviz.info](https://bezviz.info), 2024). At the same time, over 2.5 million foreigners currently reside in Poland.

In October 2024, the Polish government adopted a migration strategy. The document, entitled “Regaining Control. Ensuring Security. The Comprehensive and Responsible Migration Strategy of Poland for 2025--2030” defines “ways to regain control over migration processes” (Ukrinform, 2024).

Poland plans to tighten the conditions for admission to Polish universities and introduce limits on the admission of students or pupils from abroad to certain specialties and introduces an accelerated check of immigrant students to see if they have actually started their studies and to cancel visas for those who are not studying.

To meet the needs of the employment market, Poland is preparing a list of shortage professions, and work permits are issued primarily to these specialists. It is planned to introduce a points system, similar to those in force in Australia, Canada and the United Kingdom, which provides for the awarding of points for the immigrant's competencies that are in demand in Poland. To obtain a permit to enter the country, a certain number of points need to be scored (RBK-Ukraine, 2024).

The digitalization of the labor market will include the introduction of deep digitalization of the processes of processing applications for the legalization of the stay of foreigners to

reduce bureaucratic procedures and ensure the automatic verification of information collected during all procedures.

Valuable for Ukraine is the experience of Poland in stimulating the return of its emigrants, the main tools of which are as follows:

1. Support for the Polish diaspora. The Polish government offers Polish emigrants special programs, which include online courses in learning the Polish language and preferential conditions for obtaining education in Poland, which support the return of Polish students and young specialists.
2. The repatriation program includes compensation for moving expenses to the country, payments for equipment (for furniture, appliances, repairs, etc.), provision of temporary housing in a special center for displaced persons, financial assistance to meet housing needs (may be provided for a period of no more than 10 years from the date of the repatriate's arrival in Poland or departure from the adaptation center), the possibility of taking free language and professional courses, assistance in finding a job, and the right to medical care within 90 days after crossing the border of the Republic of Poland.
3. Issuance of a Pole's Card, which allows you to obtain a national type D visa free of charge, which gives the right to stay in the country until the end of its validity period, to submit documents for a permanent residence permit (karta stałego pobytu) free of charge; to use the assistance of a consul in case of a threat to life or security; to work in Poland without a work permit, to conduct business on the same terms as Poles; to study at school and higher education institutions for free, to receive a scholarship; to receive free medical care; to receive a 37% discount when purchasing train tickets (within Poland); and to visit state museums for free (Wise, 2022).
4. Information campaigns abroad highlight positive changes in the economy and society, as well as opportunities for career growth. For example, the “Powrót do domu” (“Return Home”) program promotes return opportunities through social networks, consulates and Polish communities abroad.
5. Grants and tax holidays to promote the development of one’s own business are offered to individuals who open a business after returning.
6. The Polish government offers significant tax benefits to returnees. The “Tax-Free Return” program in Poland is aimed at Polish citizens who have worked or lived abroad for a long time and have decided to return to their permanent place of residence. The main goal of the program is to stimulate the return of qualified specialists to the country by providing them with favorable economic conditions.

Ukraine and Poland have large diasporas with great potential for repatriation. Poland has a centralized institutional support system, while Ukraine relies on local initiatives. Economic incentives in Poland are more diverse and systemic. An assessment of cultural, economic and institutional differences is presented in Table 1.

Table 1: Comparison of cultural, economic and institutional conditions for diaspora reintegration: Poland and Ukraine

Criterion	Poland	Ukraine	Recommendations for Ukraine
Cultural identity of the diaspora	High: the diaspora preserves language, traditions through	Medium: the Ukrainian diaspora is diverse in terms of the level of	Ukraine should develop institutions to support identity.

	cultural programs and cultural centers abroad	integration in host countries, but the war has intensified consolidation	
Economic incentives for return	Benefits: tax holidays, business subsidies, relocation compensation (Ukrinform, 2024)	Limited: no systemic programs, there are individual initiatives (e.g., grants for startups)	Ukraine needs a comprehensive program for the return of compatriots with financial support
Institutional support	Centralized: the Comprehensive and Responsible Migration Strategy of Poland for 2025-2030 is being implemented, consular programs, online platforms (RBK-Ukraine, 2024)	Fragmented: separate programs are in place (for example, Action.City for IT specialists), but there is no unified policy	Ukraine needs to create a coordinating body responsible for stimulating the return of its emigrants, develop a Strategy for the State Migration Policy of Ukraine until 2030, taking into account modern needs and demands of the economy
Labor market	High demand for skilled workers in industry and IT. Flexible conditions for foreigners (Bezviz.info, 2024)	Shortage of personnel due to war, but low wages and weak social infrastructure (Chernyshov, 2025)	Ukraine's conditions are less attractive, so additional incentives are needed (e.g., soft loans)
Social integration	Housing support programs, free Polish language courses (Wise, 2022)	Limited access to housing for returnees	Ukraine should introduce social programs modeled after Poland, especially for IDPs

To maintain ties with its diaspora, it is valuable for Ukraine to create an analogue of the "Poles' Card", introduce tax benefits for those returning to their Homeland, and develop a state reintegration strategy that would include housing support.

3.3 Italy

Italy is addressing its labor shortage through a variety of measures, focusing on both domestic and international strategies. The main ones are 1) attracting foreign workers, 2) supporting female participation in the workforce, 3) investing in automation and digitalization, 4) encouraging older workers to stay in the workforce, and 5) upskilling and youth recruitment programs.

Attracting Foreign Workers

Italy has introduced work visa programs, such as the “visa lottery system,” to help foreign workers more easily enter the country and fill important positions in sectors such as industry, agriculture, and construction. The annual lottery for work visas in Italy for non-European Union (EU) citizens, which opened on 2 December 2023, flooded with over 600,000 preapplications from local employers looking to hire foreign workers in 2024. The demand for labor far exceeds the government’s recently increased quota of 136,000 jobs for 2024, indicating a serious labor shortage in the country across all sectors of the economy. The government of Prime Minister Giorgia Meloni has been slowly increasing the annual quota for work visas, aiming to reach 165,000 by 2026 (Etias, 2023). The Italian government has streamlined the procedures for hiring non-EU citizens in sectors experiencing acute labor shortages. Companies operating in Italy are increasingly looking

for qualified workers. This includes those with degrees in economics, statistics and law, as well as technical specializations with degrees in medicine, biochemistry and engineering. There is a high demand in the labor market for professionals specializing in robotics, machine learning and energy.

The main programs that contribute to solving the problem of labor shortages in industry through foreign workers are as follows:

- “Decreto Flussi” (Decree on Flows): the program aims to issue seasonal and nonseasonal work visas. It determines the number of foreign workers who can legally enter Italy to work. The program allocates quotas for various sectors, such as industry (mechanical engineering and textiles), agriculture, tourism and construction, as well as for workers with specific countries of origin.
- Sanatoria Program: During the COVID-19 pandemic, Italy launched a large-scale campaign to legalize the work of illegal migrants already in the country, allowing them to work officially and receive social guarantees. This practice continued after the pandemic in sectors with acute shortages of personnel, particularly in the agricultural sector and in the fields of nursing and care for elderly individuals.
- Blue Card EU: Italy participates in a European program to attract highly qualified specialists, such as engineers, technicians, doctors, and IT specialists. It offers a simplified process for obtaining work and residence permits.
- Italian language courses and professional training: To facilitate the integration of foreign workers, the government and local authorities offer free language courses and advanced training programs.

Immigration and integration programs in Italy include accelerated recognition of qualifications and are aimed at supporting cultural integration. These programs include:

- Programma "Integrazione Migranti", aimed at facilitating the social and economic integration of immigrants through Italian language courses, social services, and assistance in finding housing and jobs. The program offers immigrants support so that they can adapt to Italian society and the labor market, thus reducing the shortage of qualified personnel in the country.
- The National Program for the Integration of Migrant Workers (Programma Nazionale di Integrazione Lavorativa) focuses on providing migrants with jobs and facilitating their integration into the labor market. It provides advisory and legal support, as well as assistance in identifying and developing professional skills, allowing migrants to obtain jobs that match their qualifications.
- Incentivi per l'assunzione di lavoratori stranieri (incentives for the recruitment of foreign workers) - a support programme for employers who hire workers from abroad. The program offers financial incentives, such as reduced tax rates or wage subsidies, to companies that hire foreigners. The incentives help attract qualified workers and help eliminate labor shortages in key sectors.
- Programma "Ricollocazione" - This program is part of the reemployment initiative (recollocazione) for those who have lost their jobs. It provides assistance in finding a new job, including through advanced training courses and support in adapting to new economic realities, allowing increased employment among those already in Italy and helping to close labor shortages in several sectors.

- The "Accoglienza e Integrazione" (Integration Program) aims to integrate refugees and migrants by providing information and resources for acquiring new skills and language skills and adapting to Italian culture (Ministero dell'Interno, n.d.; ANPAL, n.d.).

Policies to support female participation in the workforce

The government offers tax incentives and subsidies to employers who provide flexible working hours and childcare facilities or who hire women returning to work after maternity leave. These include:

"Impresa Donna", a program to support female entrepreneurship aimed at supporting female entrepreneurs, provides financial and advisory assistance to women who wish to start their own businesses. The program supports start-ups and small businesses, promoting gender equality in the business environment;

"Congedo parentale" (parental leave) provides women and men with financial support during parental leave, allowing them to return to work after having children while maintaining a balance between career and family;

"Women in Tech" encourages women to work in scientific and technical fields through specific educational initiatives and scholarships for women studying in these fields;

"Work-life balance" is designed to facilitate the combination of career and family life. The program involves encouraging employers to create working conditions that allow women to effectively manage their time, particularly through flexible working hours and the possibility of working from home.

Italy is also actively implementing legislative initiatives that provide protection against discrimination in the workplace, particularly by monitoring cases of sexual harassment, as well as supporting equal opportunities for women and men at all stages of employment.

These programs not only help increase women's participation in the workforce but also contribute to improving their social security, reducing gender inequality and maintaining economic stability (Ministero del Lavoro e delle Politiche Sociali, n.d.; ISTAT, n.d.; European Commission, n.d.).

Digital transition and remote work initiatives

Italy is investing in digital transformation projects that promote remote work, particularly to address the labor shortage. The "Piano Nazionale Impresa 4.0" (National Plan for Enterprise 4.0) program supports Italian companies in the process of digital transformation in industry and manufacturing. Companies are provided with financial and technical tools to implement new technologies and digital tools, which reduces the shortage of skilled labor, particularly in the areas of automation and robotization. The program also includes training for workers in sectors related to new technologies, ensuring their adaptation to changes in the labor market.

Italian companies receive loans to innovate and create new jobs in industrial sectors, such as the "Credito d'imposta per ricerca e sviluppo" program.

Italy is actively promoting the concept of remote work through the "Lavoro Agile" program, which includes support for flexible working hours and the possibility of working from home, which allows more workers, particularly women and people with disabilities, to be recruited. Companies are incentivized to implement such practices, which allows them to attract talent from different regions and reduce workload in the workplace.

The "Digital Skills for All" program focuses on improving the digital skills of workers, especially for older people or those looking to change careers. The program offers digital

courses, allowing workers to acquire the necessary skills to work in technologically complex industries or in remote workplaces. This helps to address the shortage of qualified personnel in sectors such as IT, marketing and administration.

The "Fondo per l'Innovazione" (Fund for Innovation) program is designed to support SMEs in their digital transition. The program provides financial grants to businesses that want to modernize their processes, which often includes the implementation of new digital technologies, remote work and other innovations. This allows businesses to increase their opportunities to attract new employees, especially from remote regions.

Italy has several initiatives that support the development of start-ups, especially in the digital sector. Programs such as the "Startup Visa" and "Smart&Start" encourage young entrepreneurs and start-ups working in high-tech sectors, including software development, automation and other innovations. This creates new jobs and opportunities, especially for skilled personnel in technological sectors (Ministero dello Sviluppo Economico, n.d.; Italia Lavoro n.d.).

Encouraging older workers to stay in the workforce

Italy supports flexible retirement options and partial pension schemes to allow older professionals to stay at work while receiving part of their pension. The main programmes aimed at keeping older workers in the workplace are as follows:

- "Ape Sociale" (Social Bridge to Retirement) - the programme allows older workers to gradually reduce their employment while remaining in the labor market at a fraction of their salary without losing their pension rights.

For preretirement age workers who continue to work, reduced income tax rates may be granted, which is relevant for workers in key positions in the industry or technology sectors. The Italian government and employers encourage older workers to work flexibly or remotely, which reduces their workload and allows them to remain productive. Older workers are involved in mentoring younger workers to pass on their experience.

- "Formazione Continua" (Continuous Training) - This programme provides older workers with the opportunity to update their skills, particularly in digital technologies, to adapt to changes in the labor market. Employers who retain older workers in their jobs or retrain them may receive government subsidies or tax breaks.

- "Benessere al Lavoro" (well-being at work) - initiatives aimed at improving the physical and mental health of older workers, including preventive health checks, stress reduction programmes and improved workplace ergonomics.

Upskilling and youth engagement programmes

Italy has a National Upskilling Plan (Piano Nazionale Formazione). Together with businesses and regional administrations, the state finances courses to retrain workers to work on modern equipment. The country has Industry 4.0 programmes, which offer technical training to workers, including in the management of automated processes, robotics and digital technologies.

The Garanzia di Occupabilità dei Lavoratori (GOL) program aims to retrain unemployed individuals, including young people and people of preretirement age, for jobs in industrial sectors, with a particular emphasis on training in digital technologies. For example, in Lombardy, the "Formazione e Lavoro" program is in place to train workers in sectors such as metalworking, machinery manufacturing and electronics. In Emilia-Romagna, programs are being implemented to support workers in the food industry and agricultural machinery

manufacturing. The Emilia-Romagna Industry 4.0 Program actively supports the introduction of innovation into industry by training personnel in robotics and digitalization.

Through partnerships with vocational schools and technical universities, industrial companies gain access to graduates with relevant technical skills; in particular, the dual training system (Sistema Duale) provides training for young people in practical skills in industry.

The "Italia Green" plan, the Fund for Sustainable Innovation and Ecological Transformation (Fondo per l'Innovazione Sostenibile e la Trasformazione Ecologica), the National Energy Strategy Plan 2030 (Piano Nazionale Energia e Clima 2030), the Energy Transformation of Industry (Transizione Energetica dell'Industria), the Green New Deal, and the Support for Research and Innovation for Energy provide opportunities for the creation of new jobs in the field of renewable energy, stimulating innovation, training and the development of qualifications among young professionals and international specialists.

3.4 France

France's strategies to address the shortage of skilled workers in industry differ in several ways from those of other European countries. These strategies combine several unique aspects, including an emphasis on dual training, tax incentives for companies that provide jobs for young professionals, and support for innovative technologies.

France actively supports the dual training model, where students combine theoretical training with practical work experience in companies. This allows for the direct inclusion of young people in the workforce and prepares them for the needs of industry. While other European countries, such as Germany and Austria, also actively use the dual system, in France, this approach is more integrated at the school and university levels and is actively supported by government subsidies and grants for companies that provide jobs for young professionals (RM, 2019). In France, various forms of training, including internships and training in real production conditions, are used to ensure better integration of young people into the labor market, but the lack of the same strong government support for private companies as in Germany may reduce its effectiveness.

France provides subsidies and other financial instruments to support innovation in industry, particularly for the development of renewable energy and digital technologies. These programs are aimed at attracting new workers to high-tech sectors and can be targeted at foreign specialists, which distinguishes France's approach from that of other European countries, where the main focus is only on domestic personnel.

France offers a simplified procedure for obtaining work permits for specialists from abroad, which in particular helps to cover the shortage of skilled labor in industry. Unlike countries such as Poland or Italy, where much attention is given to the integration of workers from Eastern Europe, France actively cooperates with various European countries, as well as some African states such as Algeria, Morocco, and Tunisia.

3.5 Czech Republic

The Czech Republic actively attracts labor from abroad, particularly from EU countries and third countries (especially from Ukraine and Vietnam). It significantly simplifies the procedures for granting work visas for highly qualified specialists and workers from shortage industries. This is not as large-scale a practice as in Poland or Germany, where the integration of migrants into the labor market is more regulated and centralized. The Czech Republic focuses on the short- and medium-term involvement of workers rather than long-term integration programs, as in some other countries.

The Czech Republic actively supports retraining and vocational training programs for young people and unemployed individuals. Retraining and dual education programs are not as universal as they are in Germany or Austria, but the state and business actively support such initiatives in conditions of high competition in the labor market. This allows reducing the shortage of personnel in specific industries, particularly in engineering and technical fields. Cooperation between state authorities and private companies to adapt educational programs to market needs is very important.

The Czech Republic actively encourages workforce mobility, not only within the country but also abroad. This differs from the approach of countries such as Germany, where social programs are more focused on creating a stable environment for local workers. Instead, the Czech Republic focuses on the flexibility of workers, encouraging them to move to other regions or to work abroad so that they can acquire the necessary skills to close future shortages in certain jobs.

The Czech Republic is also investing in the automation of production processes, which helps reduce the dependence on human labor in low-skilled sectors. However, unlike other countries such as France, where investment in new technologies and automation is supported at a broader level, the Czech Republic is focused more on specific industries, such as the automotive industry and electronics manufacturing.

These approaches make the Czech Republic's strategies for addressing labor shortages more specific and focused on short-term labor market needs, with an emphasis on labor mobility and migrant recruitment, which distinguishes them from the more long-term and socially oriented approaches of other European countries.

3.6 Hungary

Hungary also faces a shortage of skilled workers, particularly in industry, as a result of various economic and political factors, such as high emigration rates and insufficient competition in the labor market. To address this problem, Hungary has adopted several strategies that differ significantly from the approaches of other European countries.

One of Hungary's main approaches is to attract "guest workers." This is a specific policy aimed at covering the shortage of skilled workers through immigrants from third countries. In 2023, the government adopted a law regulating labor migration from third-world countries to support the country's reindustrialization and the expansion of production capacity, particularly in sectors such as the automotive industry and battery production. However, owing to political and social factors, the integration policy for "guest workers" remains limited, and the issue of the social integration of these workers remains under discussion (Vigh, 2024).

On the other hand, Hungary also relies on attracting foreign workers, with an emphasis on tax cuts for businesses and a liberalization of labor laws that make it easier for

companies to hire foreigners. This includes lowering tax rates on labor and applying special tax regimes for foreign companies investing in the country (Hera, 2019).

These strategies differ from the approaches of Western European countries such as Germany or France, which are more focused on integrating immigrants through social adaptation programs and long-term recruitment of specialists in different sectors of the economy. Hungary, on the other hand, focuses on attracting workers for specific production sectors with limited influence on general integration policies.

4. Conclusion

A study of approaches to solving the problem of staff shortages in other European countries reveals the similarity of the strategies they implement. These are such dominant strategies as investments in education, training, retraining and advanced training; attracting foreign workers; encouraging older workers to remain in the labor market; supporting the participation of women and youth in the workforce; and reducing barriers to labor mobility, digitalization and the automation of jobs. A significant role in this process is played by partnerships between the state, business and educational institutions in creating platforms for forecasting labor market needs; ensuring timely adjustment of educational programs; and involving businesses in training through internships, dual education and financing of educational initiatives.

The main difference in strategies to overcome the shortage of personnel in industry between different European countries lies in the priorities, approaches to migration policy and its orientation toward short-term or long-term programs, the level of automation and the pace of digitalization, and the level of investment in training and retraining of the workforce. In general, the European approach to overcoming the shortage of personnel is based on a long-term training strategy, balanced involvement of foreign labor and the integration of modern technologies in accordance with the main principles of Council Decision 2022/2296 of 21 November 2022 on guidelines for the employment policies of the Member States (European Union, 2022).

A key factor in borrowing foreign experience is the adaptation of European approaches to the specific needs of the economy. This experience can be useful for Ukraine, which faces similar challenges in the postwar period.

The Ukrainian labor market is characterized by a shortage of qualified labor in a number of industries, which significantly complicates their development. The experience of the European Union, especially countries such as Germany, Poland and Italy, demonstrates that addressing this issue requires a systemic approach, including the implementation of vocational education and retraining programs; support for dual education, which combines training and practice; and the development of continuous education and advanced training programs for all age groups.

Internally displaced persons and Ukrainian refugees who intend to return to their homeland require special attention. European experience demonstrates the effectiveness of special programs aimed at social and economic adaptation. These programs include the following: the creation of specialized training courses; support for microentrepreneurship; and the development of measures to integrate these groups into local communities and the labor market to meet the regional needs of the industrial sector.

In the context of global digital transformation, increasing the level of digital skills among workers is of particular importance. The European Union is implementing programs aimed at developing digital competencies that can be adapted to Ukrainian realities. These initiatives will help prepare workers for the requirements of the modern labor market and attract them to innovative industries.

The EU offers a wide range of solutions to address employment problems, including professional mobility programs that promote the exchange of experience between countries, the creation of training platforms for personnel training, the support of gender equality and the encouragement of the participation of women in the industrial sector.

In 2023, the ILO presented the The ILO strategy on skills and lifelong learning 2030 (ILO, 2023), which has 5 main components:

Pillar 1: Improved policies, governance and financing for effective skills development and lifelong learning

Pillar 2: Strengthened skills needs intelligence

Pillar 3: Innovative and flexible learning programmes and pathways delivered

Pillar 4: Inclusive skills programmes for diverse needs of labour markets ensured

Pillar 5: Quality apprenticeships and work-based learning promoted for employability, productivity and sustainable enterprises

Also in 2020, a framework document “The role of employers in skills development systems” (ILO, 2020) was presented, which sets out how employers and employers’ and business membership organisations can strengthen their participation in skills systems.

Both documents present the best answer for the question of how to provide Ukrainian industry with a skilled workforce. The first steps in this direction have already been taken. In particular, the country supports the strategy of lifelong learning (Eurydice, 2025), and the draft law "On Adult Education" (VRU, 2022) has already been developed and is awaiting final acceptance by the Verkhovna Rada. The draft law defines the objectives of state policy in the field of adult education, the structure and principles of the functioning of the education system in this area, forms of organizing the educational process in non-formal education for a given contingent, the rights of participants in the educational process, types of providers of educational services, economic relations in the field of adult education, and the principles of international cooperation.

On the basis of European experience, to provide the Ukrainian industry with a qualified workforce, equal rights and opportunities for adaptation to new labor market conditions and employment for all socially vulnerable categories of the population are proposed, especially for the following:

- elderly people (through individual support and counseling on employment issues, career development, and the implementation of age-neutral employment programs);
- veterans and people with disabilities (through systematic individual consultative and psychological support, adapted training programs, internships with the subsequent possibility of guaranteed employment or opening their own business);
- young people who, for certain reasons, have been left outside the educational process or cannot find employment during or after graduation (through the implementation of systematic regional career guidance programs, dual education programs, internships with subsequent employment);

- women who seek to retrain for a male profession or who find themselves in difficult life circumstances and cannot find employment for a long time (ensuring the appropriate level of required qualifications through the implementation of short-term retraining or advanced training programs);
- IDPs (through systemic reintegration: psychological support programs; retraining in short-term courses in accordance with the needs of the industry of the region; provision of social housing).

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