SKILLS 4 JUSTICE

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Synthesis Report WP2

Exploring the patterns of matching the demand and supply of skills and immigration in the destination countries: Lithuania, Poland, Germany, France, Italy, the United Kingdom and Norway

Horizon EUROPE Project

SKILLS 4 JUSTICE: Skill Partnerships for Sustainable and just Migration Patterns

June 2025

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Disclaimer

This Report presents the research findings of the Horizon Europe research project 'Skill partnerships for sustainable and just migration patterns (Skills4Justice) Horizon-CL2-2023-TRANSFORMATIONS-01-03 No. 101132435.
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Ciupijus Z, Forde C, Sha H (Saheira Haliel), Kozhevnikov A, Trappmann V and Winterton J (2025) *UK National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns.*

Dębowski H, Pachocka M and Pankiv O (2025) *Poland National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns.*

Klaus F, Saniter A and Kühn K (2025) *Germany National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns.*

Nicoli DE, Vittori F and Dusi P (2025) *Italy National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns.*

Tikkanen, T, Eslen Ziya H and Normand S (2025) *Norway National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns*.

Tūtlys V, Žydžiūnaitė V, Kaminskienė L, Rutkienė A and Vaitkutė L (2025) *Lithuania National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns*.

Walker J, Tritah A, Délépine S and Launay J (2025) *France National Report for Work Package 2 Skill Partnerships for Sustainable and Just Migration Patterns*.

Content

Executive Summary

This Report presents the findings of the comparative research of the patterns of matching the demand and supply of skills and immigration in the destination countries - Lithuania, Poland, Germany, France, Italy, the United Kingdom and Norway executed in the framework of the Horizon Europe project "SKILLS 4 JUSTICE: Skill Partnerships for Sustainable and just Migration Patterns" in 2024.

The Horizon project Skills4Justice investigates labour and skills shortages in the European area and the extent to which these are being addressed through employing migrant workers from beyond the European area. The destination countries include five EU member states (France, Germany, Italy, Lithuania and Poland) and two non-EU European countries (Norway and the UK). These seven countries differ considerably in terms of labour market regulatory frameworks, skill formation systems and immigration policies, the combinations of which create specific country contexts that are briefly reviewed in this Introduction, drawing on the national reports produced by country teams.

The Analytical framework of research is based on labour market economics and human capital theory and comprises three main perspectives:

1) The perspective of matching labour market demand for skills with labour supply from the education and training system.
2) The perspective of policies addressing skill mismatches by referring to labour market, education and training, and migration policies. These policies affect trends of skills shortages and create the context for sectoral and corporate strategies for skill matching.
3) Sectoral and corporate stakeholders' strategies include reducing demand for skilled workers through automation, adjusting available skills by investing in training, and employing migrant workers, often in combination.

From these perspectives, skill matching defines the potential of a destination country to engage in skills partnerships with countries of origin. This potential can be identified from exploring the systemic institutional preconditions for beneficial cooperation with origin countries, especially with respect to transparency and comparability of national qualifications systems with reference

to EU transparency and comparability instruments and measures (EQF, ESCO, etc.). The readiness of different stakeholders in destination countries is another crucial factor determining the country's potential to engage in skills partnerships.

The seven countries capture the diversity of labour market regulatory frameworks as identified by Amable (2003). Norway exemplifies the social democratic or Nordic model; France and Germany the coordinated continental model; the UK is the stereotypical Western liberal market model; Italy is an example of the Southern or Mediterranean model; Lithuania and Poland are variants of the transition model [also referred to as 'patchwork capitalism' (Gardawski & Rapacki, 2019)]. They also cover all four types of skill formation systems in terms of the focus and regulation of training systems (Winterton, 2007), which are related to labour market regulatory frameworks (Goergen et al., 2012).

In addition to the above broad characteristics, the countries differ significantly in terms of labour market conditions and specific labour and skills shortages, although all are experiencing the demographic of ageing populations.

Most of the destination countries involved in this project have introduced restrictions on labour immigration in recent years with populist politicians increasingly vocalizing the 'need' to reduce immigration. For countries within the EU, the 2004 Free Movement Directive consolidated the distinction between 'mobility' of citizens of EU member states and 'migration' of non-EU citizens into the EU (Boswell & Geddes, 2010). In the following decade, skills and qualifications were increasingly highlighted in labour immigration (Nowicka, 2014). In 2008, shortage occupations list defined occupations where employers could engage third country nationals without having to demonstrate that no European national could fill the vacancy and allowed the regularization of undocumented workers recruited to such jobs.

The findings of the exploration of the institutional, political and socioeconomic factors for matching of demand and supply of skills and development of sustainable migration pathways in the above-mentioned partner countries of the Skills4Justice project help to distinguish seven key factors defining potential of the national systems of qualifications in dealing with the issues of skills mismatches and migration:

1) Stakeholder engagement in the development of the national systems and qualifications defines usability of these systems and their openness for the assessment and recognition of the qualifications and learning outcomes of the migrant workers.
2) Usage of the national systems of qualifications for the control of immigration is noticed in the regulated professions, as well as in some reforms of the systems of qualifications targeted to strengthen their role in the field of migration control and regulation.
3) Reaction of the national systems of qualifications to the skills shortages involves the development of the new types of flexible and modular qualifications, micro-credentials.
4) Fragmentation and incompleteness of the national systems of qualifications compromises comparability and the cross-country transparency of qualifications.
5) Capacity development needs of the national systems of qualifications in dealing with the issues of skills shortages and migration.
6) Design and implementation of the multi-country transparency tools of qualifications. Here one of the key challenges is a lack of systemic and established referencing of the national systems of qualifications to the regional frameworks and other international transparency tools, as well as their fragmented implementation and usage for comparison and recognition of the learning outcomes and qualifications.
7) Development of skills partnerships and their implications for the cross-country transparency of qualifications. The research disclosed some cases of bottom-up skills partnerships with the origin countries dealing with the ad-hoc/momentary skills shortages and labour migration, mostly initiated by the interests of employers. Sustainability and long-term implications of these partnerships depend on the engagement of broader groups of social partners, education and training providers, NGOs and governmental bodies from both destination and origin countries.

Research of skills mismatches and their mitigation measures in the sectors of economy disclosed both common and sector/country-specific problems and solutions. Shortages of nurses in the healthcare sector are exacerbated by the low esteem of this work, difficult working conditions, competition between the public and private healthcare providers for these specialists. The shortage of nurses tends to increase the workload what further deteriorates

working conditions and enhance turnover. Low esteem of nursing profession enhances dropout from the studies in nursing and low quality of skills of the graduates. These problems are addressed by the national and international (EU) initiatives of recruitment from the third countries. However, solution of the shortage crisis by immigration is hampered by the rigid regulation of the profession leading to highly selective and cumbersome processes of recognition of qualifications acquired in the third countries, what leads to the over-qualification of candidates and enrolling in the study programmes of nursing in the destination country. Enrolment of the third country nationals in the nursing profession is also hampered by the requirement and necessity of the proficiency of the native language of the destination country, what creates the most significant obstacles to employ the third country nationals in the countries with the national language not used in the international communication (Lithuania, Norway). In this case the solutions of the shortage of nurses are oriented to the vocational guidance and incentives of the local students.

The sector of construction in the project partner countries also faces difficulties in attracting young people to the medium and low-skilled jobs. Competition on price and widespread low-skill equilibrium in the human resource management practices deteriorate attractiveness of the skilled work in this sector. Current efforts of the enterprises and sectoral organizations in promoting digitalization and greening of the work processes seek to reverse this trend but are not sufficient nor bringing any tangible outputs. The key strategies of companies in coping with labour and skills shortages include recruitment of low-skilled local workforce and expansion of the on-the-job training, as well as recruitment of the migrant workers. Significant share of micro-companies and self-employment in this sector limit the capacities of investment in training and skills development. However, cost-demanding and time-consuming bureaucratical processes of employment of the migrant workers for low-skilled jobs makes immigration onloy temporary solution (United Kingdom). The promotion of dual VET in training of sector employees in Germany shows positive effects to the solution of the labour shortage. Quite often the corporate strategies of dealing with labour and skills shortages combine investment in vocational education and training, especially in dual training and work-based learning, skills enrichment by redesigning of the work processes and qualifications, as well as employment of the third country nationals, especially using regimes of temporary employment.

Agriculture also relies on the migrant workers in solving labour shortages in the low skilled job positions, alongside with increasing automation of work processes. As a rule, employers of this sector are in reluctant to invest in training of both local and migrant workers, whereas increasing selectivity of the immigration policy limits access of farms to the low-skilled seasonal workforce from the third countries, creating new challenges and difficulties in procuring with labour.

Domination of the private sector in the provision of the domestic care services is favourable for the employment of the low-skilled third country nationals, including undocumented migrant workers. This further deteriorates the quality of employment, provided services and skill formation in this sector.

What regards the sector of education, both Norway and the UK face difficulty in attracting candidates into teacher training, and retaining them in the profession, particularly in the UK. Low public esteem of teaching profession and poor working conditions leads to high turnovers of teachers, whereas competition of the public schools for the graduates with the private education providers aggravates the task of recruiting new teachers in the UK. Despite of regulation of teaching profession, recruitment of the teachers from the other countries is already established practice in this country. For overseas trained or migrant teachers, language proficiency constitutes the major requirement for entering the profession in both countries, and there are specific policy mechanisms regulating the qualifications required. There is a drop in EU applicants in both countries which makes non-EU migrants an increasingly important part overseas labour supply. There are more conscious attempts to increase workforce diversity in Norway than in the UK. Labour market intermediaries (private agencies) are more involved in sourcing teachers in the UK than in Norway. Flexibilization of the teacher training studies is one of the key applied measures to attract both local and migrant youth to the teaching profession.

The sector of energy transition faces the shortage of engineers and high-skilled technicians in the context of the global expansion of this sector and global competition for talents. What regards the demand of skilled workers, enterprises of the sector in the UK and Norway rely on temporary employment of the migrant workers and use internal upskilling measures. Temporary employment limits the possibilities of socialization and integration of the migrant workers in this sector.

Engineering sector companies in Germany, Lithuania and Poland face the shortage of both medium skilled workers (VET qualification) and high skilled engineers. In Germany this shortage is dealt by improving accessibility of the training and higher education studies in this field, especially the dual training and studies, as well as by improving accessibility and attractiveness of employment in the sector for the learners and students from the third countries (development of the double degrees, international student recruitment programmes, etc.). In Lithuania one of the key long-term measures in dealing with the future labour shortages is vocational guidance and promotion of engineering careers amongst general education students executed by the sectoral stakeholders. In Poland the employment of the migrant workers, especially the war refugees from Ukraine is applied as temporary measure, whereas development of the on-demand dual VET programmes is considered as long-term solution.

Fastly growing shortages of labour and skills in the ICT sector in Lithuania and Poland are also caused by the global and local expansion of the sector and intensifying global competition for skills and talents in this sector. Despite of that, enterprises of the sector in both countries still strongly rely on the recruitment and training of the local workforce. The key responses of enterprises to skills shortages in this sector include intensive cooperation with the VET and HE providers in the design and development of the curricula, as well as in the organisation of the practical training and studies.

This research for the Horizon project S4J explores labor and skills shortages across countries, noting similarities in challenges such as reliance on migrant labor and limitations imposed by demographic decline and international competition for skilled workers. The study highlights the complex implications for socio-economic development due to issues like geopolitical tensions, educational accessibility, and the demands of digitalization and the green transition. Key findings emphasize commonalities in shortages, such as unattractive job conditions in sectors like care and construction, and a shared understanding among policymakers of the limitations of immigration as a long-term solution. Despite this, responses vary by country, reflecting different labor market regimes. For example, the UK relies more on immigration and private sector solutions, while countries like Germany and Norway use systemic interventions and social dialogue. In contrast, Central and Eastern European nations emphasize local human capital development due to conservative policies. The study suggests that sustainable solutions require coordinated policy

responses, integrating economic, employment, and migration strategies, with a focus on skills' partnerships and proper functioning of national qualification systems to support the integration and recognition of migrant workers.

Introduction

The Horizon project Skills4Justice investigates labour and skills shortages in the European area and the extent to which these are being addressed through employing migrant workers from beyond the European area. The destination countries include five EU member states (France, Germany, Italy, Lithuania and Poland) and two non-EU European countries (Norway and the UK). These seven countries differ considerably in terms of labour market regulatory frameworks, skill formation systems and immigration policies, the combinations of which create specific country contexts that are briefly reviewed in this Introduction, drawing on the national reports produced by country teams for WP2.

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This research study aims to develop systemic analysis of skills shortages in the above listed destination countries in the context of the global workforce migration by providing research-based evidence on the nature and development of skill shortages as well as on the potential of different skills partnerships to tackle these shortages in the countries of origin and destination of migrants.

Skills shortages are explored by referring to the three main contexts/fields:

- Labour market which defines relationships between the supply and demand of skills and their implications, such as skill mismatches.

- The national and sectoral systems of qualifications define the institutional pathways and processes of design, implementation and awarding of qualifications thus linking the skills demand in the labour market and their supply in the system of education.
- Education and training systems which create the supply of skills through vocational education and training (VET), higher education (HE) and lifelong learning (LLL).

Analytical framework of research

Figure 1 is a simplified representation of the Analytical framework employed in this research.

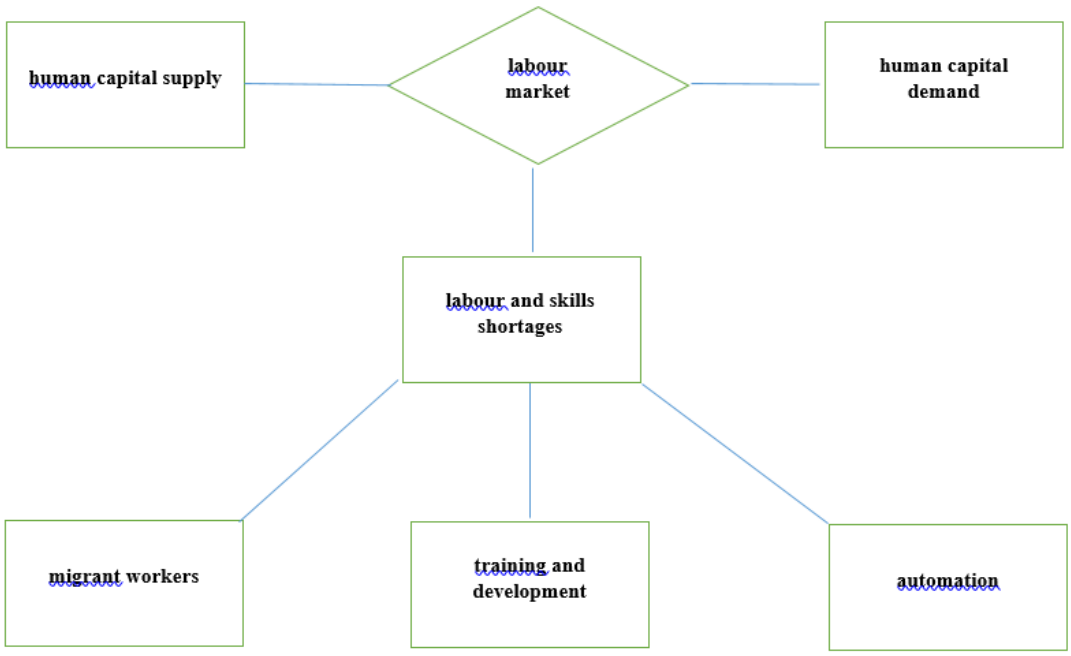

Figure 1 Analytical model of labour and skills shortages

The labour market (for a particular occupation and sector) is the forum where human capital supply is compared with human capital demand, human capital being a shorthand for labour and the skills possessed. Where labour and skills shortages are apparent, employers have three classic options to address shortages: recruit migrant workers; train the existing workforce; or introduce automation to reduce dependence on labour inputs. The choice between recruitment ('buy') or development ('make') is influenced by the availability and accessibility of workers with the requisite skills. In

this framework recruitment is limited to workers trained abroad because if domestic workers are available in the labour market, there should be no shortages. Similarly, the decision to automate is influenced not only by the feasibility of doing so, but fundamentally by the cost of automation relative to the cost of hiring workers from abroad. Automation may be the optimum solution in the medium-to-long term, but the installation and maintenance of automated plant also brings human capital challenges because designing and developing automated solutions inevitably require higher level skills.

The Analytical framework, based on labour market economics and human capital theory, is further elaborated in Figure 1 and comprises three main perspectives:

4) The perspective of matching labour market demand for skills with labour supply from the education and training system.
5) The perspective of policies addressing skill mismatches by referring to labour market, education and training, and migration policies. These policies affect trends of skills shortages and create the context for sectoral and corporate strategies for skill matching.
6) Sectoral and corporate stakeholders' strategies include reducing demand for skilled workers through automation, adjusting available skills by investing in training, and employing migrant workers, often in combination.

From these perspectives, skill matching defines the potential of a destination country to engage in skills partnerships with countries of origin. This potential can be identified from exploring the systemic institutional preconditions for beneficial cooperation with origin countries, especially with respect to transparency and comparability of national qualifications systems with reference to EU transparency and comparability instruments and measures (EQF, ESCO, etc.). The readiness of different stakeholders in destination countries is another crucial factor determining the country's potential to engage in skills partnerships.

This broad analytical framework was amended by some country teams to suit local contexts, expertise and interests. In France, for example, the team deployed the 'border as method' approach (Mezzadara & Neilson, 2013), considering how multilevel bordering processes articulate with more socio-economic stratification to affect migrant skills mismatch. Using perspectives of economics, sociology and geography, different approaches to skills are explored from labour market, policy, sectoral and company stakeholders.

Demand of skills

- *Trends in the structure of the demand in terms of required levels of qualifications and education –*
- *Socio-economic factors influencing the change of demand in skills*

Employment / labour market

Trends of employment in terms of levels of qualifications and education

Skill mismatches

- *Overqualification*
- *Skill underutilization*
- *Skills shortages*

Supply of skills

- *Trends in the structure of supply (graduates) in terms of levels of attained education and qualifications.*
- *Socio-demographic and institutional factors influencing the structure and change of the supply of skills.*

Economic and labour market policy approaches in dealing with skill mismatches	**Migration policy responses in dealing with skill mismatches**	**Education policy responses in dealing with skill mismatches**
Economic development and employment policy reforms and their implications for the demand of skills	Interventions and implications of the migration policy and related policy fields (e.g., national security) in dealing with skill shortages.	Education, training and skill formation reforms and interventions – implications for skill mismatch

Choices of solutions of the skill mismatches in the sectors of economy

Investment in automation and robotization	**Employment of the migrant labour from the third countries**	**Investment in training and human capital development**
Investment targeted to replacement of human labour. Investment targeted to the fostering of productivity of human labour.	Perceived role/potential of employment of the migrant labour in solving shortages of skilled labour. Structure of immigrants by the level of education and qualifications in the selected sectors of economy, employment quality of local and migrant workforce. Issues of justice in employing migrant workers.	Investment of the businesses in the provision of the initial VET and HE, cooperation with education and training providers. Investment in the continuing VET of employees.

Potential of skill partnerships for solution of skill mismatches and sustainable migration

Systemic institutional preconditions for beneficial cooperation: transparency and comparability of the national qualifications system instruments and measures, referencing to the EU transparency and comparability instruments and measures (EQF, ESCO, etc.)

Readiness of the sectoral employers' bodies and enterprises to engage in skill partnerships with origin countries.	Readiness of the governmental bodies and agencies to engage in skill partnerships with origin countries.	Readiness of the social partners bodies, NGOs and civil society institutions to engage in skill partnerships with origin countries.	Readiness of the education and training providers to engage in skill partnerships with origin countries.

Figure 1: Analytical framework: skill matching in the labour market, policies, solutions and skills partnerships

In Italy, the framework was amended to include territorial and regional contexts (North-South divide) as well as national and sectoral perspectives. Significant regional differences in the extent and nature of skill mismatches are influenced by local education systems, labour market structures, and economic contexts (Capsada-Munsech & Valiente, 2020). Regions with more flexible education systems and strong links between education providers and employers tend to experience lower levels of skill mismatch. While the education system is improving in terms of educational performance, it is insufficiently aligned with labour market needs, causing a significant mismatch between the supply and demand of skills, which differs significantly between regions and age groups, favouring work experience over professional training (Naticchioni & Ricci, 2011). Regional differences in skills alignment and migrant integration highlight areas for policy improvements (Fellini & Fullin, 2018). The Jobs Act adopted in December 2014 introduced reform aimed at reducing the dual structure in the labour market (Boeri & Garibaldi, 2019) crucial for improving Mezzogiorno's employment prospects (Destefanis et al., 2015).

In applying this analytical framework, the Lithuanian team considered two specific conditions. Firstly, the transitional character of the institutional settings of skill formation, labour market and employment relations, common to most CEE post-communist countries (Tūtlys et al., 2022b), which significantly defines and influences the shaping of demand and supply of skills. Secondly, the recent transition from net-emigration to net-immigration status. Fast transition to net immigration in 2018-2020 arose from geopolitical tensions in the region and widespread concern over lack of control fostered conservative immigration policy. Employment of immigrant workers is regarded by policy makers as a temporary and secondary solution to skill shortages, only to be undertaken after exhausting other possibilities of active labour market policies to get job seekers and returning emigrated citizens into employment (Žitkienė & Liakaitė, 2010; Žibas 2007).

Research methodology

Research study in the partner countries involved desktop research and qualitative study. Desktop study consisted of the literature review (country related), analysis of the international and national statistical data, content analysis of the policy documents.

Drawing on the literature review, there were conducted interviews and focus groups with the following groups of respondents: enterprises and employers' organizations: at least 20 informants per country, higher education providers (at least 5 informants per country), VET providers (at least 5 informants per country), social partner organizations and labour market intermediaries (up to 5 informants per country), policy making institutions working in the fields of education and training, employment and migration: 5 informants per country.

In each country, partner teams examined sectors/occupations where there was evidence of labour migration being used to address labour and skills shortages. The research involved reviewing the literature and conducting interviews with relevant stakeholders.

The sectors identified as of interest in the seven countries did not entirely align, since these reflect specific labour markets, but there is sufficient commonality to enable some meaningful country comparisons at sectoral level. The sectors by country are shown in Table 1.

Sector	FR	DE	IT	LT	NO	PL	UK
healthcare	√	√		√	√		√
construction		√		√			√
agriculture		√					√
domestic care	√		√				
education					√		√
energy transition		√					√
engineering		√		√			
ICT				√		√	
automotive						√	
beauty						√	
food				√			
hospitality			√				
road transport				√			

Table 1: Sectors covered by country

In total, 269 interviews and 2 focus groups with 22 participants were conducted as shown in Table 2.

Country	Employers	HEI	VET	Policy	LMI	TU	Total
FR	20	3	3	3	1	0	30
DE	12	9	9	4	6	0	40
IT	12 + 3 focus groups with 14 participants	5	4 + focus group with 4 participants	4	1	1	45: 23+3FG (22 participants)
LT	37	6	8	6	1	5	63
NO	7	6	2	7	6	2	30
PL	5	4	4	12	5	5	35
UK	23	8	4	8	3	2	48

Table 2: Interviews conducted by country

Contextual features of matching supply and demand of skills in Lithuania, Germany, Italy, France, Poland, United Kingdom and Norway

Labour market conditions

In addition to the above broad characteristics, the countries differ significantly in terms of labour market conditions and specific labour and skills shortages, although all are experiencing the demographic of ageing populations. Norway's tripartite collaboration is associated with strong trade unions (density of 52%) coordinated wage determination and activation strategies. These fundamental characteristics of the labour market should lead to good alignment between labour supply and demand, yet recent years have been marked by skills shortages, especially in healthcare and technical areas (OECD, 2024). Unsurprisingly, the UK liberal market economy is characterized by low coverage of collective agreements outside the public sector and falling trade union density (26%) and exhibits episodic labour and skills shortages caused by insufficient investment in human capital (Winterton, 2000). The UK labour market is bifurcated between high skills and low skills and labour migration was increasingly used to address shortages in the latter, perpetuating cheap labour and low productivity, and removing incentives to train (Coulter, 2017).

The three coordinated market economies have in common relatively rigid regulated labour markets compared with the other destination countries, but beyond that they exhibit distinct labour market characteristics. Germany has the strongest corporatist relations with trade unions operating in partnership with employers (Rathgeb & Tassinari, 2022), yet union density has fallen to 18%. The most recent data for Germany suggest that over 30% of the more than 1.8 million vacancies cannot be filled from the existing workforce, with skills shortages most apparent in healthcare and decarbonization (energy transition). France is also marked by tripartite relations but has extremely low trade union membership (8%), compensated for by state support for social dialogue. Long-term structural recruitment difficulties due to a combination of lack of available workforce, geographical mismatch between supply and demand and non-sustainability of jobs have been exacerbated by demographic changes creating acute shortages in industry, construction, ICT and nursing (Chartier et al., 2023). Traditionally more resistant to neoliberal change, the majority of the employed population are on open-ended contracts although marketization has destabilized the workforce and reconfigured professional identities (Lallement, 2019). Italy is characterized by high coverage of collective bargaining and relatively high union density (35%) but also high

unemployment rates for youth and women, especially in the *Mezzorgiorno*. Many industries, particularly healthcare and eldercare, face increased service demand but insufficient labour supply to meet that demand. Ghignoni and Verashchagina (2014) attribute skills mismatches to limited collaboration between educational institutions and the labour market.

The two transition economies Lithuania and Poland have much in common and when they joined the EU with other Central and Eastern European (CEE) countries in May 2004 there was substantial emigration to the West, especially to Ireland and the UK. The UK decision to leave the EU in 2016 had the effect of substantially reducing out-migration from both countries before the COVID-19 pandemic brought further restrictions on mobility and both countries changed from emigration states to immigration destinations. Demographic decline coupled with rapid economic growth created labour and skills shortages. In Lithuania, shortages were apparent in ICT, transport and logistics, food processing, textiles, hospitality and education, most vacancies being for skilled occupations and concentrated in the cities. There are serious vertical skills mismatches with more than one fifth of VET graduates with secondary education working in roles that require higher qualifications and more than a quarter of HE graduates working in jobs that require lower-level qualifications. In Poland the shortage of competent workers remains a significant impediment to business growth (Piatkowski et al., 2017). Trade union membership in Lithuania is as low as France (8%) and although it is higher in Poland (12%), in neither country does the state or employers support social dialogue. Both countries changed from being countries of emigration to other EU countries to becoming destination countries especially for labour migrants from CEE (Fihel et al., 2023).

Skill formation systems

The dominant European school-focussed, state-regulated model is found in various forms in France, Lithuania, Poland and Norway (Salas-Velasco, 2024). Germany is the classic work-focussed, state-regulated model, while the UK represents the work-focussed, market led model. Italy was traditionally characterized as school-focussed, market-led but is moving closer to the dominant European model with increasing state regulation of providers.

Skill formation in France is largely school based (Cedefop & CDICT 2023), involving a socially stratified selection process for HE and a VET system run on a tripartite basis (Verdier & Doray,

2021), enhanced with individual training accounts and the opportunity for an individual skills audit (Le Deist & Winterton, 2012).

Lithuania has a school-based VET system that includes elements of work-based learning (Cedefop & KPMPC, 2023). In the transition to a market economy the lack of institutional capacity and weak stakeholder involvement meant government institutions dominated (Juska & Lazutka, 2024; Tūtlys et al., 2022a) and they adopted neoliberal market approaches. Similarly in Poland, VET collapsed in the early years of transition with 'de-vocationalization' (Dębrowski & Stęchly, 2022) marked by substantial growth in uptake of HE even among those who enter VET institutions because VET is not seen as attractive (Cedefop & IBE, 2019). Both countries exhibit institutional characteristics of skill formation common to most post-communist countries of CEE (Tūtlys et al., 2022b).

In Norway, skill formation is part of education policy with VET integrated into secondary schools (Cedefop & NDHES; Skule et al., 2002) and the trade unions strongly involved in Norwegian Competence Reform (Teige & Stuart, 2012). Hilt et al. (2019) describe this as developing 21st-century skills through a blend of global neo-liberal discourses and traditional Norwegian social democratic values. The Competence Policy Council (*Kompetanserådet*) promotes collaboration between stakeholders and the Competence Needs Committee (*Kompetansebehovsutvalget*) is currently developing a national competence strategy.

Germany offers a model for the dual apprenticeship system of VET, with the social partners involved at all levels and the Federal States (*Länder*) responsible for VET schools (Cedefop & BIBB, 2023). Tertiary VET at EQF level 6 qualifies a *Meister* to exercise a trade and to hire and train apprentices. The proportion of the workforce qualifying in upper secondary VET has historically been high in Germany but has fallen with increased enrolments in HE. Educational attainment varies across the *Länder* and with the level of education of parents.

The UK workforce has a higher proportion of tertiary educated than the EU average, a lower proportion of those with low qualifications and a significantly lower proportion of those with middle level qualifications (Cedefop & NARIC, 2019). This shortage of workforce with intermediate skills is an enduring labour market weakness and while the UK exhibited a higher participation rate in lifelong learning, Conservative governments between 2010 and 2024 dismantled much of the lifelong learning infrastructure (Wallis et al., 2022). The 'education export'

model of HE attracts a high volume of overseas students, especially into taught postgraduate programmes and the skilled worker visa enables many to stay in the UK.

Italy's skill formation traditionally focussed more on academic education than VET but up to 16 years of age education balances general, vocational, and technical skills, after which there are different pathways for compulsory education or training until 18 years (Cedefop & INAPP, 2023). Much-needed VET reforms include the introduction of a German-style dual system (*Apprendistato Duale*) and an extended alternance model (*Alternanza Lunga*). A Ministerial decree of 2024 established an innovative six-year pathway including four years in a vocational training centre followed by two years in a higher technical institute.

Immigration policies

Most of the destination countries involved in this project have introduced restrictions on labour immigration in recent years with populist politicians increasingly vocalizing the 'need' to reduce immigration. For countries within the EU, the 2004 Free Movement Directive consolidated the distinction between 'mobility' of citizens of EU member states and 'migration' of non-EU citizens into the EU (Boswell & Geddes, 2010). In the following decade, skills and qualifications were increasingly highlighted in labour immigration (Nowicka, 2014). In 2008, a shortage occupations list defined occupations where employers could engage third country nationals without having to demonstrate that no European national could fill the vacancy and allowed the regularization of undocumented workers recruited to such jobs.

France has a long history of labour immigration, especially from Maghreb countries, although this was seldom acknowledged in official discourse (Schnapper, 1989; Wihtol de Wenden, 2010). French immigration policy is closely aligned with the EU regulatory framework with the addition of a series of bilateral agreements with non-EU countries and since 2016 *Passeport Talent* has enabled highly qualified TCNs to obtain residence permits. A similar scheme enables students from outside the EU to remain and work in France for a limited period provided they have employment and are earning 50% more than the minimum wage. Work-related immigration involves high political tension, as evidenced by the January 2024 *Loi Immigration*, where right-wing politicians blocked regularization measures and the proposal to allow employers to engage asylum seekers to meet labour shortages, despite calls from industry and NGOs.

Germany has a long history of labour migrants from within and beyond the EU but an uncompromising posture with undocumented migrants (Cyrus & Kovacheva, 2010) although in 2022 made improvements enabling family reunification (Graf, 2024). The new Skilled Immigration Act in 2023 was designed to make it easier for skilled workers with vocational qualifications or practical experience to immigrate to Germany, establishing three pillars: skilled worker; experience; and potential. The skilled worker pillar enables skilled workers to take any non-regulated qualified employment and approval of the Federal Employment Agency is now only needed for shortage occupations (Schröder, 2024). The experience pillar enables persons with a state-recognized university or vocational school degree from their country of origin to immigrate if they have at least two years of relevant occupational experience and a job offer with a salary of at least 45 percent of the annual income threshold. The potential pillar enables people to enter the country to find employment after completing measures to recognize international vocational qualifications. The 2012 Recognition Act provides for non-German skilled workers to have their qualifications recognized regardless of nationality, residence status or country of origin. The law covers around 600 training occupations (non-state-regulated occupations), while separate state recognition laws (regulated occupations) apply to occupations that fall under the jurisdiction of the federal states, such as educators or geriatric nurses (Baczak et al., 2020).

Italy's policy framework on immigration is centred on Legislative Decree No. 286/1998, the *Testo Unico sull'Immigrazione*, which addresses two key areas: immigration law, including rules for entry, residence, and control, and integration law, which grants migrants certain rights. A major amendment was made with Law No. 189/2002, which provided amnesty for undocumented migrant domestic and care workers. Italy's immigration policies are designed to balance foreign workers' needs with border control. Integration faces challenges like bureaucratic barriers, difficulties recognizing foreign qualifications, and discrimination. Zincone (2006) noted three paradoxes in the policy: continuity between centre-right and centre-left policies; discrepancy between discontinuity in policy paradigms and the relative continuity of policies; and the more general discrepancy between public rhetoric against illegal immigrants and continual amnesties. These apparent contradictions, showing institutional inadequacy for coping with increased immigration (Fasani, 2010), continue to play out in Italian policy, so despite harsher criminalization measures, two further amnesties were introduced in 2009 and 2012 (Laws No.

78/2009 and 109/2012) relating to undocumented non-EU migrant domestic workers. More recently, Legislative Decree No. 113/2018 (*Decreto Sicurezza*) introduced urgent provisions on international protection and immigration, public safety and on assets confiscated from organized crime, at the same time abolishing humanitarian protection and restricting access to integration programmes. Legislative Decree No. 20/2023 (*Decreto Cutro*) reinforced some security measures, increased deportations, reintroduced humanitarian corridors, and regulated sea rescues. Italy regulates non-EU immigration through a quota system based on labour market needs, with the government issuing a planning document every 3 years, and annually, a decree (*Decreto Flussi*) setting the number of foreign workers allowed entry. The latest three-year plan (Legislative Decree No. 20/2023) deviated from the usual annual system, setting quotas of 136,000 for 2023, 151,000 for 2024, and 165,000 for 2025. This decree also introduced criteria based on labour market analysis.

Lithuania and Poland experienced important transition from the net-emigration to the net-immigration in the recent years. In Lithuania, policy makers have traditionally viewed workforce immigration from third countries as an auxiliary measure for solving skills shortages, preferring to invest in local human capital and encourage return migration (Sipavičienė & Jeršovas, 2010), although companies were more positive about employing migrant workers (Platačiūtė, 2015). Under the 2014 policy, labour migrants from non-EU countries were only permitted to compensate for labour shortages where the shortfall could not be met with local labour, returning Lithuanian emigrants, or nationals of other EU Member States (Žibas & Petrukšauskaitė, 2015). Employers' associations campaigned for simplifying procedures for recruiting foreign workers and the *trūkstamų profesijų sąrašas* [shortage occupations list] first established by the Government in 2007 is updated twice a year by the Minister of Social Security and Labour. Employers' interest-based selection for granting work permits dominates legal regulation of labour migration (Žibas, 2007; Žitkienė & Liakaitė, 2010) but stricter regulations governing employment of non-EU labour migrants were introduced in March 2024.

Poland has a legal system based on EU and national regulations designed to facilitate legalization of residence and safeguard fundamental rights of migrants. The 2013 Law on Foreigners setting conditions for obtaining visas, temporary residence permits, permanent residence permits and long-term residence permits. Historically strict on undocumented immigrants (Iglicka & Gmaj,

2010), there is now a relatively permissive migration regime based on an employer's declaration of intent to employ a foreigner from six former USSR countries. The number of such declarations increased from 180,000 in 2010 to 1.6 million in 2019 (Kubiciel–Lodzińska et al., 2023). Initially for 3 months, then 12 months, in January 2022 the period of employment was extended to 24 months and after Russian aggression against Ukraine in February 2022, further laws were enacted to assist Ukrainian citizens, enabling 2.9 million Ukrainians to live in Poland (Duszczyk & Kaczmarczyk, 2022), 65% of whom are in employment.

Of all the European destination countries in this study, Norway has the highest immigration relative to its population size (Søholt & Tronstad, 2021), with 3.9 immigrants per 1,000 population according to the Migration Policy Institute. Norwegian immigration policies are governed by the Integration Law. While the state controls immigration policy, integration policy is primarily managed at the municipal level and this decentralized approach results in differences between municipalities, particularly in terms of refugee integration. Historically, Norwegian integration policy has heavily emphasized employment as a key component, but there has been a shift towards a more holistic understanding of integration, an approach termed 'everyday life integration', which includes social integration facilitated by the voluntary sector (Stein & Fedreheim, 2022).

The UK has 2.9 immigrants per 1,000 population according to the Migration Policy Institute, lower than Norway and Italy among the destination countries in this study, but higher than France and Germany, which have relatively small proportions of migrants compared with Luxemburg, Switzerland and Ireland. Labour migration played a major role in addressing labour and skills shortages in the 1960s (Castles & Cosack, 1973) and continues today with substantial numbers of nurses from India, Nigeria and the Philippines. Immigration controls are expected to protect both native workers and migrants in the destination country, but they do neither (Castles, 2004) and contribute to the vulnerability of labour migrants (Anderson, 2010). Populist politicians have had a disproportionate effect in distorting rational policy discourse by focussing on irregular immigration and security issues (Vollmer, 2010).

Qualifications systems and international skills partnerships in dealing with skill shortages

The national systems of qualifications are expected to play one of the key intermediation roles in dealing with the skills and labour mismatches in the labour market. Properly functioning national systems of qualifications should ensure: 1) smooth and systemic communication of the skills needs to the skill formation systems (through learning outcomes and competence-based qualifications serving as key reference for the curriculum design in VET and HE), 2) well-informed and rational choices of the learners based on the comprehensive and accessible information about demanded skills and qualifications (through open and accessible databases of qualifications and occupational standards), and, 3) systemic quality assurance of awarded qualifications (through reference to occupational standards and National Qualification Frameworks). Besides, comparability and transparency of the national systems of qualifications with the help of the national and regional qualifications frameworks should enable fair, smooth and cost-effective recognition of the learning outcomes and qualifications of the internationally mobile labourers, thus helping to use immigration for the solution of skills and labour shortages and contributing to the fair and sustainable migration pathways and patterns. How does it work in case of the countries analysed in this report?

When referring to the national systems of qualifications we refer to the definition of the European Training Foundation (ETF) stating that the national system of qualifications is "a set of organisational arrangements in a country that work together to ensure that individuals have access to, and can choose and obtain qualifications that are fit for purpose, meet the needs of society and the labour market, and offer opportunities for employment, recognition, career development, and lifelong learning"(ETF, 2016). This definition indicates that the national system of qualifications plays the role of intermediation between education and training and labour market thus playing the central role in matching supply and demand of skills. These systems are expected to facilitate aligning the supply of skills with the labour market needs in the sectors of economy, thus preventing mismatches and related loss of the human capital (including economic emigration).

The findings of the exploration of the institutional, political and socioeconomic factors for matching of demand and supply of skills and development of sustainable migration pathways in the above-mentioned partner countries of the Skills4Justice project help to distinguish seven key

factors defining potential of the national systems of qualifications in dealing with the issues of skills mismatches and migration:

- Stakeholder engagement in the development of the national systems and qualifications.
- Usage of the national systems of qualifications for the control of immigration.
- Reaction of the national systems of qualifications to the skills shortages.
- Fragmentation and incompleteness of the national systems of qualifications and their implications for the cross-country transparency of qualifications.
- Capacity development needs of the national systems of qualifications in dealing with the issues of skills shortages and migration.
- Design and implementation of the multi-country transparency tools of qualifications.
- Development of skills partnerships and their implications for the cross-country transparency of qualifications.

Research conducted in the project Skills4Justice disclosed limitations in usage of the instruments of the national systems of qualifications for the matching of supply and demand of skills from the one side and recognition of the competencies and qualifications of the migrant labour in enterprises and by the responsible national or sectoral bodies, on the other side. This is related to the extent of ownership of the key instruments of the national systems of qualifications by the corporate, sectoral and national stakeholders. When the companies use national systems of qualifications in developing their own corporate systems and measures, it equips companies with effective and usable measures of better matching supply and demand of skills of their employees (corporate competence or qualifications frameworks serving as background for planning human resource development). Such companies are also better equipped in employment of the migrant workers and recognition of their qualifications. Similarly, active engagement of the social partners and sectoral stakeholders in the development of the national system of qualifications equip these stakeholders with the capacity to assume significant roles and to take initiatives in the areas of recognition of qualifications of the migrant workers. This is evidenced by the example of **German**

Chamber of Commerce and Industry and other social partners of collective skill formation systems. Recognition of qualifications of the migrant workers in Germany before becoming regulated by law[1] was stipulated by the cross-chamber engagement. Looking to the development and usage of the qualifications and their transparency instruments on the sectoral level (sectoral qualifications frameworks and standards), it largely depends on the interest and engagement of the companies in these processes. As shows the example of implementation of the Builders Card in the construction sector in **Lithuania** in implementing the system for independent and voluntary assessment, validation and certification of the competences of construction workers STATREG[2], limited usage of sectoral qualifications can be defined by price-based competition, very limited role for qualifications in the human resource management and development practices of enterprises and in the public procurement competitions.

The requirement of the formal qualifications for employment can be treated very differently – as the formal obstacle to get access to employment, or as employment access opportunity through the recognition of possessed competencies. A proof of qualifications is often regarded by the national policy makers as objectively established, unbiased and just/fair criterion for control of the flows of labour (including immigrants) based on matching the supply and demand of workforce in the labour market. The main objective of this control is to guarantee entrance and worker visas only to the candidates possessing qualifications which guarantee their employment. However, the real practices of such usage of qualifications in the field of migration policy face multiple challenges and limitations. For example, the qualification recognition system in **Norway** does not adequately account for the diversity of international qualifications, leading to disparities in employment outcomes between migrant workers and their native counterparts (Støren & Wiers-Jenssen, 2010). Norway has implemented new recognition procedures for individuals without verifiable documentation, aimed at facilitating the integration of highly educated refugees and migrants (Toker, 2019). Recognition of qualifications of the migrant workers acquired in their home countries can involve the lengthy bureaucratic procedures of validation of possessed foreign credentials or requirements to undergo requalification which includes additional education and

[1] Validierungsverfahren (nach § 1 Absatz 6 BBiG); https://www.gesetze-im-internet.de/bbig_2005/__1.html

[2] https://statreg.lt/

examinations. For example, many refugees arrive with professional experience and education that are not automatically recognized in Norway, forcing them to undergo lengthy requalification processes. A head nurse from Eritrea, for instance, had to complete over a year and a half of additional education before being eligible to work in Norway. In healthcare in **France**, where many medical and paramedical professions are regulated and require a French national diploma (*diplôme d'état*) to practice, analogue qualifications acquired in countries outside of the EEA and Switzerland are generally not recognized without compensatory measures, while a European nationality condition continues to affect professional integration in a small number of cases. This situation exists against a constantly evolving skills backdrop as the state and social partners interact to create new healthcare professions, education benchmarks and qualifications and reform pre-existing ones, generally indexed in national directories by the regulation authority, *France Compétences* and matched to the NQF, the EQF and EuroPass. For non-EU migrants wishing to access healthcare education and work, the processes of evaluating training, qualifications and experiences gained outside of the EU involve complex procedures and multiple stakeholders, which vary according to the profession, creating a certain illegibility. The intermediary role played by designated organizations, like the ENIC-NARIC centre which provides certificates of the comparability of foreign qualifications for non-regulated professions, remains insufficiently well-known. Outside of bilateral agreements with third countries (or provinces like Québec), healthcare professionals who have already trained and/or qualified outside of the EEA and Switzerland must undergo compensatory measures to practice or resume their studies in order to requalify with the French qualification. However, policy efforts have so far been more focused on the highly skilled, such as doctors and other medical professionals. For medical professionals wishing to requalify to full practice, procedures have been simplified to allow them to work while undergoing additional evaluation and compensatory training, though in precarious and underpaid positions that have allowed the health system to save money on patient care (Hounsou, 2014; Sirna, 2020, 2021) and generated ongoing protests by doctors' groups. For paramedical professionals, on the other hand, few compensatory measures have been established, other than the possibility to sign up to a course of study in their chosen profession from the beginning, with some exceptions. Despite the shortages in the skilled workforce indicated by government research bodies, cumbersome and challenging recognition, training and compensation procedures, which translate concern for patient

care but also bureaucratic obstacles, ‘act as a border’ for non-EU migrants in accessing training and jobs in healthcare.

Regarding the instrumentalization of the national systems of qualifications and formal qualifications for the control of immigration, research disclosed several key challenges. Comprehensiveness of the applied qualification assessment instruments and consideration of different dimensions of the skills and competencies of migrant workers are essential to ensure that the qualification system supports matching of demand for skills with the supply of migrant labour, as well as it ensures fair and transparent recognition of skills and qualifications of the migrant labour. The decision regarding the work permits and employment of the migrant workers are often issued only based on the formal referencing of credentials to the national or sectoral qualifications frameworks of the destination country. Such recognition ignores the importance of the skills and competencies acquired by the migrant workers through experiential learning or other informal and non-formal ways and fails to evaluate these aspects due to the absence of relevant instruments in the national system of qualifications. In case of conservative and restrictive immigration policies of Lithuania and Poland, instigated by the geopolitical tensions in the region, the demand of the skills and qualifications quite often is downplayed or ignored in making decisions on the work and living permits for the third country nationals. The control of immigration narrowly focused on the formal qualifications cannot properly ensure the matching of the skills needs of employers in the destination country, lead to over-qualification and other forms of sub-optimal and unsustainable integration of the migrant workers, create obstacles for their human capital development. Besides, it is not effective for coping with and prevention of the usage of fake qualifications by the migrants to get permissions to immigrate.

Increasing shortage of skilled workforce creates pressure for the revision and reduction of the role of formal qualifications, as it is evidenced by different programmes and initiatives of attracting migrant workers from the third countries implemented by the EU countries, such as the Western Balkans regulation initiative implemented by the Federal Government of **Germany**. Enterprises may also have low trust in formal qualifications of the applicants from the third countries. Besides, formal qualifications cannot reflect a full scale and content of human capital possessed by the applicants, especially practical skills and experiential knowledge in the particular occupation.

The openness of the national systems of qualifications to the transparent 'inter-country' comparison of qualifications is compromised by the incompleteness of these systems in terms of availability of the qualifications (e.g., lack or absence of occupational standards and qualification profiles), weakly operating or absent mechanisms of quality assurance and updating of qualifications, lack of established processes and procedures of design of qualifications, assessment of learning outcomes/competencies and awarding of qualifications, low engagement of stakeholders in the usage, maintenance and development of the national systems of qualifications and other problems. This is rather typical in the countries which recently underwent the transition from net emigration to net immigration (Lithuania, Poland).

Our research disclosed different challenges of recognition of skills and qualifications in matching demand and supply of skills in the labour market and facilitating sustainable migration patterns. One of these challenges is underusage of the available instruments of the national systems of qualifications in the VET and HE curriculum design, assessment of competences and recognition of skills and qualifications. This underusage is usually caused by the low awareness of these instruments amongst the employers, trade unions and other stakeholders, reductionist human resource management strategies and practices of enterprises (especially in case of competition on price and cost minimisation). Companies (especially in the countries which recently opened to the global labour market or became net immigration countries like Lithuania and Poland) lack the expertise and know-how in the assessment of competencies of the migrant workers and establishment of their comparability to the qualification requirements of the destination country. Consequently, they subcontract these human resource management functions to consultancy firms and recruitment agencies working locally and in the targeted migration origin countries. These circumstances preclude the development of know-how and expertise of the enterprises in the field of skill matching and employment of the migrant workers, also becoming one of the major reasons of their lack of engagement in the related policy actions and initiatives.

Looking to the interoperability of the national qualifications systems and the international/multi-country transparency tools of qualifications in the fields of matching of demand and supply of skills and sustainable migration, there can be noticed several key challenges. Existing tools of inter-country comparison of qualifications so far are more advanced in enabling transparent vertical comparability of qualifications with the help of the national and regional qualifications

frameworks. At the same time, there is a lack of systemic vision and approach in 'inter-country' comparison of the content of qualifications, especially by referring to the real work processes and related requirements to knowledge, skills and attitudes, despite of availability of some important international and EU reference instruments, such as ESCO, ELM and others.

Recognition of qualifications is an important factor of the sustainability of skill formation and employment of the migrant workers, especially regarding the dignity of the employment pathways and matching of the skills for migrant workers with the skills need in the labour market of the destination countries. For example, the transnational skills partnerships executed in **Germany** according to the Skilled Workers Immigration Act (FEG) involve recognition of the qualifications acquired by the participating migrant workers, independently whether the training and upskilling of these migrant workers took place in Germany according to skill-upgrading programmes (also taking into consideration the work experience of the candidates), or they followed the entire apprenticeship course in Germany, or the apprenticeship has been carried out in the country of origin by following the uniform qualification standards also recognized in Germany. Recognition of formal qualifications is a prerequisite only for regulated professions. For non-regulated professions, recognition is generally no longer required. In this case it is necessary to provide the proof of completed vocational training course. For example, in recognising of the qualifications of immigrant nursing the applying professionals receive a notice regarding any missing qualifications and then have a choice between two compensatory measures: an adaptation course or a knowledge test. To support and "simplify" recognition, there is then the option of entering recognition partnerships. The employer undertakes to compensate for any missing qualifications through further training measures. However, if the training is completed in Germany, recognition of the qualifications is not required, as the training was already conducted according to German standards. Although there are sector-specific restrictions, particularly in the regulated professions, these are still bases for skills partnerships that target sustainable recognition of the migrants' qualifications.

When the skills partnerships are implemented on the initiative of the labour market stakeholders, especially employers, the role of awarding and recognition of qualifications of the migrant workers in these partnerships depends on the requirements of the formal qualification for the entering of

the destination countries and subsequent employment. Awarding of the internationally recognized qualifications to the training participants in such cases can also become the source of risk for the sustainability of the skills partnership. The case of cooperation between the road transport employers' organizations of Lithuania and Uzbekistan in the training of drivers illustrates this case. In order to meet the growing demand of the road cargo drivers from the third-countries, Lithuanian employers' organizations of international cargo transportation are creating professional training partnerships with organizations of Central Asian countries. Big road freight transport companies and employers' organizations of Lithuania have accumulated and developed know-how and expertise in the area of the training of drivers, certification of their competences and qualifications, employment of the third country nationals. It is a very important factor enabling these companies to initiate and implement skill formation partnerships with the enterprises and employers' organizations in origin countries. These partnerships are based on mutual benefit and added value. Linava, the Lithuanian haulage association together with the Uzbekistan's international haulage association AIRCUZ established the training centre for the training of drivers in Tashkent (Uzbekistan) in 2023. This partnership is expanded by involving the national road freight transport organizations from Latvia, Estonia and Poland. Establishment of such training centre in Uzbekistan significantly reduces the costs of training and preparation of the drivers, as well as helps to assess the competencies and award the qualifications to the learners before they leave for work to Lithuania. However, this initiative faces some challenges. First of all, it is conservative immigration policy which strongly limits the access to labour visas for the third country nationals from the ex-Soviet Union countries referring to the state security interests in the conditions of the geopolitical tensions in the region. Secondly, the road freight companies involved face difficulties in sustaining the employed drivers from third countries. A qualification recognized in the EU (CPC driver qualification) makes its holders internationally competitive, mobile, thus creating difficulties in sustaining the newly prepared drivers in the Lithuanian companies.

Skills partnerships can also be focused on the capacity building of the VET provision for the empowerment of the vulnerable youth in the origin countries by aligning VET with the skills needs of the local economies and migration destination country. This is a case of the project of national employers' organization of **Italy** Confindustria executed in collaboration with the "Don Bosco" vocational school in Cairo, Egypt, and targeted to meet the Italian demand for qualified

technicians[3]. Similar projects are also being extended to other vocational training centres in North African countries, always involving large Italian companies in partnerships. These projects are targeted to establish and develop vocational training opportunities in the areas with high volume of socially vulnerable youth becoming the source of irregular emigration to Europe. Enhancement of the VET centres locally, together with the provision of access to VET in the destination country (Italy), equips vulnerable young people with the skills and qualifications making them employable and competitive in their countries and abroad. These projects seek to implement the training "supply chain" involving vocational training organizations, NGOs and social platforms of the Salesians Don Bosco networks in Italy and African countries, engaged for the socio-professional integration of third-country nationals.

Through pre-departure and post-arrival support actions, win-win cooperation schemes (aimed at also having an impact on countries of origin of migrants through employment and business development), according to a well-established methodology, these projects aim to develop synergies between clusters of the VET skill ecosystem in Italy and Northern African countries and are carried out in partnership with companies, intermediary bodies, enterprise associations, and with the support of government authorities of the origin country. In seeking for employment of the young people from the North Africa in Italy the established VET schools and training centres in the North African countries shape a portfolio of skills (which are recognized with formal and non-formal assessment tools, such as competency profiles) suitable to ensure employment in the country of arrival. Skills gaps and shortages of migrant youth involved are dealt with by applying short, modular and individualized training courses carried out directly by partner institutions and companies involved in the programme. The modules of such training are designed by comparing learning outcomes of the identified vocational qualifications, descriptions of the tasks of the professional profiles in the destination country, with formally and informally acquired competencies gained by the beneficiaries in the country of origin. The partnership between VET providers, policy bodies, companies and social partners developed by the Salesians VET centres in Italy and in African countries is the key: companies cooperate with VET centres and actively participate in all stages, starting from comparison of curricula, provision of guidance for

[3] https://ilcairo.aics.gov.it/it/home-ita/paese/educazione/

beneficiaries, training and selecting beneficiaries when they have not yet arrived in Italy. In some of these projects which provide for the young migrants from the North Africa the formal initial VET pathway in Italy, or professionalization pathway in the VET centre, if the beneficiary is already in Italy, the Italian regional and national legislation for the recognition of qualifications applies (with references to Italian NQF and EQF). If the beneficiary has not yet entered Italy (or Europe), several approaches are used: design and implementation of an ad-hoc individualised training course in Italy by the training centre (must be validated by the Region) or of an internship at the training centre. The beneficiaries gain access to the country with a study visa which, after one year, may be converted into a multi-annual residence permit. In this case, there is a requirement for learners to obtain at least a general education certificate and the regional or national legislation for the recognition of qualifications applies. In Italy, the Decree DL 20/2023[4] introduced a new visa process enabling international workers from specific sectors to enter and stay in the country after completing a mandatory skill development program: the programs have to deliver pre-departure training courses which covers language, civic and technical skills presented by Italian companies and VET centres and must be approved by the Ministry of Labour which leads to obtaining a visa for work purposes. This case illustrates the application of the "skills first" principle in the skills partnerships, when the priority is given to the skills training of the migrant youth by applying flexible and modular approaches to the curriculum design, training provision, assessment and recognition of learning. and mutual benefits.

The application of the comparison of qualifications and related training curricula in the above outlined skills partnerships does not play any critical role, because design of the training curricula is oriented mainly to the skills needs and qualifications needed for the employment in the destination countries – the national qualifications standards in case of the transnational skills partnerships executed in Germany according to the Skilled Workers Immigration Act, international CPC driver qualification in case of partnership between the road freight transport organizations of Lithuania and Uzbekistan, portfolios of skills on the basis of skills needs of the Italian companies in case of cooperation between Italian stakeholders and Egypt on establishment of the VET centres. In all these cases, comparison is applied only for the assessment and recognition of the prior

[4] https://www.gazzettaufficiale.it/eli/id/2023/05/05/23A02665/sg

learning of the candidates from the origin countries applying for the training and employment measures. While national qualifications and national systems of qualifications of the destination countries serve as references for the curriculum design in these partnerships, the role and place of the qualifications and curricula of the origin countries remain in the shadow. The same can be stated about the implications of such partnerships for the design and development of qualifications in the origin countries. It can be presumed, that a part of the training participants involved in the above-mentioned initiatives and programmes will remain in their home countries or return to them after some period, what raises the question of recognition of their skills and qualifications acquired in the destination countries, except the cases when the skills partnerships target provision of the international qualifications. This issue can be pertinent object of the further research and policy discussions.

Skills mismatches and shortages - statistical evidence

This review of secondary data collates information/charts/tables and commentary available from existing published sources, drawing on secondary data from the EU Labour Force Survey (EU-LFS) and the Cedefop 2021 European Skills and Jobs Survey (ESJS2) for 6 of the receiving countries in WP2 (France, Germany, Poland, Lithuania, Italy, Norway), and from the UK Labour Force Survey (UK-LFS), the UK Annual Population Survey (APS), the UK Employer Skills Survey, and the 2021 UK Census. Relevant data from national reports for WP2 are also reported in places in this short review too. Accompanying tables, drawn from Cedefop (2022), Eurostat (2023) and Eurostat (2024) can be found in the Appendix at the end of this report.

Migrant labour

In 2022, data from the EU-LFS shows that just over 5 million immigrants came to the EU from outside the EU, whilst 2.7 million people emigrated to either another EU Member State or to a country outside the EU. Of them, 1.0 million people left an EU Member State to migrate to a country outside the EU. Numbers migrating to the EU from outside has increased sharply since 2021, after falling during the pandemic. Of the receiving countries being studied in S4J, Germany had the highest number of migrants and emigrants, whilst Lithuania and Germany had amongst the highest rates of in migration (per 1000 of the population) with Italy, France and Poland having amongst the lowest rates in the EU (Figure 1). Figure 2 shows immigration (not net migration) of EU and non-EU citizens to the UK, drawn from International Passenger Survey (IPS) data and experimental estimates (Sumption et al., 2024). This shows that EU migration fell after 2016, but stabilized in 2018, and then fell again since COVID-19. Non-EU migration remained steady until 2019/20 but increased sharply thereafter.

Turning now to stocks rather than flows of migration, at the end of 2022, 27.3 million citizens of non-EU countries were residing in an EU Member State, representing just over 6.1 % of the EU population. This represents an increase of 3.5 million compared to the previous year. In absolute terms, the largest numbers of non-nationals living in the EU Member States on 1 January 2023 were found in Germany (12.3 million), France (5.6 million) and Italy (5.1 million). In terms of other S4J countries, Norway reported 611,000 migrants, Poland, 436000, and Lithuania 98000 (Figure 3). In the UK (Figure 4) there were 10.7 million foreign born citizens in the UK in 2021, according to the UK Census. That means that 16% of people in the UK, which had a total estimated

population of 66.9 million, had been born abroad. The number of foreign-born residents had increased by 34% since the 2011 Census. Most migrants in the UK were born in non-EU countries – 63%, according to the latest census. Figure 4 shows that the EU-born population in the UK has fallen since 2016 with numbers of non-EU born migrants increasing.

Labour supply

Employment and unemployment

Across the EU in 2023, 80.5% of nationals were part of the labour force (i.e. employed or unemployed). This labour force participation rate was higher than for non-EU migrants (71.8%) but lower than for migrants in EU countries (83.4%). Some 76.2% of nationals in the EU were employed. Again, the employment rate was higher than for non-EU migrants (63.0%) but lower than for migrants in EU countries (77.6%). The unemployment rate among persons aged 20–64 years living in the EU in 2023 was 5.4% for nationals. The rate was higher for EU migrants (6.9%) and approximately twice as high, 12.2%, for non-EU migrants. For the employment rate, increases were observed in the EU between 2013 and 2023 for all three categories of citizenship. Migrants from other EU countries recorded the largest increase (up 8.4 percentage points), while nationals recorded a bigger increase (up 8.2 pp) than non-EU migrants (up 8.0 pp). Looking at employment rates by country, amongst the countries being studied in S4J, the highest employment rate in 2023 for nationals was in Germany (82%) and Norway (80%) reporting high figures also. The lowest rate (66.4%) in Italy. Looking at unemployment, the highest unemployment rates in 2023 for nationals were in Italy, Lithuania and France all reporting unemployment rates around 7%, above the EU average. Rates of unemployment below 3% were recorded in Poland (2.9%) Norway (2.6%), Germany (2.4%).

Looking at employment rates in the UK, the employment rate of working-age migrant men (82%) was higher than that of the UK-born (78%) (Figure 10). In terms of unemployment rates of migrants, as Fernandez-Reino and Brindle (2024) note, these have generally followed similar trends for both migrants and UK-born over the past two decades, increasing during the financial crisis and austerity and falling from 2013-2019. The unemployment rate tended to be lower among EU migrants than the UK-born from 2008 until the beginning of the pandemic, while non-EU

migrants have always had higher unemployment rates than their UK-born counterparts (Figure 11).

Educational attainment

In the EU overall in 2023, more than one-fifth of nationals (21.2%) had completed, at most, lower secondary education, close to half (45.8%) had a medium level of education (upper secondary or post-secondary non-tertiary education) and one-third (33.0%) had tertiary educational attainment (Figure 12). By comparison, citizens of other EU countries and non-EU citizens had higher shares of people with at most, lower secondary education (31.1% for migrants of other EU countries and 43.3% for non-EU migrants). EU migrants and non-EU migrants both had smaller shares with a medium level of education (37.4% for EU migrants, 28.8% for non-EU migrants). The shares for EU migrants with tertiary level qualifications (31.5%) and for non-EU migrants (27.9%) were lower than the share observed for nationals.

Lithuania, Norway and Poland all had high proportions (more than 50%) of non-EU migrants in the country with a tertiary level qualification (nearly two thirds in Lithuania), whilst the smallest proportion was 15.3% in Italy. Data for non-EU migrants show that the highest proportion with a tertiary qualification was Lithuania (80%) and Poland (Figures 13 and 14).

For the UK, Bell and Johnson (2023) pool data from the LFS from 2002-2019 to look at qualifications of migrant workers, and over and under-qualifications of migrant workers compared to UK workers. They find that migrants from A12 countries have broadly similar qualifications (at least similar proportions with a degree) but migrants from the EU14 and outside the EU are generally more highly qualified than UK workers (Figure 15).

Overqualification

Tertiary-educated persons who are EU migrants or non-EU migrants tend to have a less favourable employment situation throughout the period from 2014 to 2023. Compared to native-born individuals or nationals, it is more likely that their formal qualifications are not fully used in the labour market. The highest over-qualification rates observed in 2023 from data in the EU-LFS were in Poland for non-EU migrants, whilst Lithuania, France and Italy had above the EU average rate of over-qualification for EU migrants (Figures 16 and 17). For the UK, Bell and Johnson

(2023) find that those with higher educational levels are overly concentrated in low-skill occupations, which Bell and Johnson term 'immigration downgrading' (Figures 18 and 19).

All six S4J countries covered in the ESJS2 scored relatively low in terms of use of advanced reading, writing, problem solving and interpersonal skills in work (Figure 20). Using a composite measure of all four of these skills in the ESJS2, over half jobs in EU27+ have relatively low skill demands: 16% of jobs are at very low level; 31% of workers are in jobs with moderate job-skill requirements; and only 17% require a high skill level. In terms of S4J countries, 61% of jobs in Lithuania are low or very low skilled, 59% in Italy, 57% Poland, 54% France, 52% Germany, 46% Norway. The lowest proportions of high skill jobs can be found in Italy (12%), France (14%), whilst rates in the other S4J countries are: 15% Lithuania, 15% Poland, 16% Germany, 19% Norway. (Figure 21).

Labour demand

In Cedefop's first European skills and jobs survey in 2014: 33% of adult workers in the EU required a tertiary education degree to perform their job; 40% reported their job could be done with a medium-level, mostly vocational, qualification; and 21% of jobs only needed a lower secondary qualification or below. ESJS2 shows that, in 2021, almost four in ten (38%) EU+ employees are in jobs that require a tertiary education level (ISCED 5-8) to carry out the required tasks. ESJS2 also shows the growing importance of medium-level qualifications (ISCED 3-4): 42% of adult employees need them for their job. For 19% of jobs, less than upper secondary education suffices.

Over half of adult employees in Norway believe that their job needs tertiary-level education. Lowest proportions who believe their job needs a tertiary level qualification are in Italy (23%). About one in three jobs (35%) in the Italian labour market, and one in five in Germany and France, require no or low qualifications. In several countries with a low share of jobs requiring higher education the VET sector is prominent.

Digitalization and socio-economic factors influencing demand for skills

Digitalization and technological change have impacted significantly on demand for skills. In terms of S4J countries, the proportion of workers indicating that they had greater use of digital communication tools in their jobs since COVID-19 was highest in Norway (61%), Lithuania (52%), with the other S4J countries being Germany (46%), France (41%), Italy (41% and Poland

(39%). These proportions were highest amongst the top three occupational groups, and in IT, finance, education and professional services (Figure 22).

Furthermore, the extent of online learning had also increased since COVID-19, with Lithuania and Norway having the highest proportion increasing their use of online learning (48% and 47%), followed by Poland (38%), Germany and Italy both 34%. France was the lowest EU member state at 23% (half the proportion for Lithuania and Norway). Greater proportions of the workforce reported using online learning in managerial and professional occupations. In terms of sectors, the highest proportions are in finance, IT, public sector and professional services, the lowest in hospitality, manufacturing and construction (Figure 23).

Many workers report that they their use of digital technologies to perform work tasks has increased since COVID-19. Norway and Lithuania were the highest out of S4J countries (48% and 47%), Poland (38%), Germany (37%) Italy 36%. France 33%. Increases are more pronounced for managerial and professional occupations but also clerical workers. In terms of sectors, highest proportions are in finance, IT, education, public sector, professional services and defence, lowest in hospitality, health and social care. Higher proportions of highly qualified workers seeing greater use of digital technologies than lower qualified (Figure 24). Digitalization had greatest effect on job tasks in Poland and Lithuania (2/3 of workers in both countries affected by digitalization in last 12 months). Italy, Portugal, Germany all around 50%, Norway lower at 37% (digitalization already had an impact prior to this?). This impact is greatest in agriculture, mining, real estate, manufacturing, energy supply (Figure 25).

Many workers have also experienced digital upskilling since starting their current job, where they had learnt to use new computer programmes or software. The Highest proportion for S4J countries is Norway (51%), followed by Lithuania (43%). Poland, France, Italy and Germany all low percentages (Germany lowest at 32%). IT, finance, education, professional services, public sector most likely sectors. Managers, professionals and associate professionals most likely to have used new software/programmes to do their job in last 12 months, and higher qualified workers more likely than lower qualified (Figure 26).

Skills shortages and employment of the migrant workers in the sectors of economy

This report provides comparative overview of the findings in the sectors covered by most countries, which were healthcare (5 countries), followed by construction (4 countries), agriculture, domestic care, education, energy transition, engineering and ICT (each 2 countries). Sectors are not counted in countries where only one interview was reported or which only one country covered. References in brackets [thus] indicate respondents using the codes in the original country reports.

Healthcare

There was a global shortage of nurses even before the COVID-19 pandemic, which exacerbated the situation where demand for nurses is increasing through population growth and ageing even without a future pandemic, and where supply is affected by a combination of insufficient numbers entering nursing programmes, an ageing nursing workforce, and chronic problems of nurse retention. In 2016, the WHO had forecast a global nursing shortage of 7.6 million by 2030 but revised this downwards to 5.7 million in 2020, of which 3.2 million would be in 31 high-income countries, including Germany (500,000) and the UK (180,000) (WHO, 2020: 64-65). The ILO (2022) offered a more pessimistic forecast of a global shortfall of 13 million nurses by 2030, noting the globalization of healthcare results in nurse shortages being addressed by migration to high-income countries, having previously commented on the international recruitment of nurses through agencies operating in the UK, India and the Philippines (ILO, 2016). In January 2025 the WHO and EU launched the "Nursing Action" project to address nurse shortages in the EU (WHO, 2025).

Healthcare in *France* employed 3.39 million employees for the three main professional «branches» in healthcare - the public hospital system (*la fonction publique hospitalière*); the non-profit private health, social and medico-social branch (*BASS*); and the branch for commercial health, social and medico-social establishments, in December 2022, of which 1.02 million in the public sector (DREES, 2024). Nurses and nursing assistants are most likely to be women, with only around 10% men (Arborio & Divay, 2018), and there is gender parity among doctors (Angius et al., 2021). Healthcare professions are regulated through bodies known as Orders (*Ordres des médecins, Ordre des infirmiers, Ordre des pharmaciens*, for doctors, nurses and pharmacists, respectively) and registration with these is a pre-condition for being allowed to practise. The *Ordres* are also involved in assessing future labour and skills needs and have suggested an

additional 80,000 nurses will be required before 2050 over and above the numbers expected to graduate by then (Parent, 2024). France Travail (2024) reports difficulties in 69% of recruitment projects of nursing assistants, and low job quality limits retention in this occupation (Donne et al., 2023). Greater use of agency workers has added further problems, including marketization and increased precariousness of paramedical work as well as degrading working conditions for both permanent and temporary staff (Divay, 2010). The number of places for nursing at universities has been increased but drop-out rates in 2021 were three times as high as a decade earlier (Simon, 2023). Informants noted how staff shortages have a knock-on effect in discouraging nursing assistants on placements who see the results of under-staffing.

Faced with labour shortages, recruiting workers from outside the EU has obvious potential, yet despite consistently high shortages only 3.1% of nurses and paramedical professionals are from outside Europe compared with 7.7% of nursing assistants and 8% of doctors (INSEE, 2019). In the past, foreign medical professionals were not allowed to work in France but now recognition of skills and qualifications are principal factors in access to healthcare professions (Hazfeld et al., 2009). Third country nationals must undergo highly selective academic processes as well as satisfying immigration criteria (Kabbanji & Toma, 2020) and often they must take low-paid precarious medical work for several years to requalify to practice (Sirna, 2021). The regulation of healthcare professions means that two types of recognition, academic and professional are central to non-Europeans accessing healthcare work in France (Kortese, 2016). For those wishing to access higher education to qualify as a professional in healthcare, the places are limited even for those who have studied abroad and can have some exemptions. For those who are already qualified, some restrictions have been relaxed over the years and since 2023 there is a single route to practise through a skills verification test (EVC) which is a highly selective test where candidates compete for a limited number of positions. Without passing the EVC test foreigners can work as interns, but their salary will be around €16,600 p.a. The number of doctors who can pass the EVC depends on jobs opened in the system for each specialist field. Shortages have led to an increase in the number of posts open to successful candidates from 2737 in 2023 to 4000 in 2024.

With limited recognition for paramedical professionals qualified outside the EU, most are required to study from scratch which explains the higher percentage of non-EU nursing assistants (7.7%) than nurses (2.9%), with informants recognizing that downward mobility and skills

mismatch is inevitable under current system. However, paramedical and social care personnel appear on the list of shortage occupations, renewed in 2021, for which a temporary work permit can be granted by the *Prefecture* without requiring employers to show that no EU citizens are available and qualified for the job. A new category of action for public policy and employers has appeared, the *Praticiens diplômés hors union européenne* (PADHUE) [Practitioners with degrees obtained outside the EU]. Unlike the visibility of PADHUEs within the system, the lack of an official channel for overseas recruitment means nurses or nursing assistants are seen as 'local' hires, which renders invisible their migratory pathways.

Germany is experiencing widespread labour and skills shortages, as well as retention difficulties, throughout healthcare especially with skilled health professions not requiring a university degree such as nurses. Labour migration has become an effective strategy to address shortages, and one third of migrant workers are ethnic Germans or have a history of migration [Emp 65]. Nurses from third countries must pass a knowledge test to practise [VET 14], working as nursing assistants while studying part-time and to increase the attractiveness, nursing assistants are renamed nurses in recognition of passing the knowledge test. Despite the Nursing Professions Act, there are challenges of refinancing to recruit and retain skilled workers because resources are limited unless there is project funding [Emp 197]. In this context, state authorities established a recruitment centre in Manila and reception centres in Germany for nurses trained in the Philippines.

Lithuania has long had high dependence on inpatient healthcare, and, despite rationalization attempts, hospital infrastructure has altered little. Increased demand for healthcare led to a 25% growth in employment between 2010 and 2023, while job vacancies increased almost fivefold in the decade to 2024. Nursing staff shortages have become increasingly apparent and are forecast to exceed 8,000 by 2032 (almost 6,000 nurses and 2,355 nursing assistants). Rural communities are particularly affected, and public hospitals are unable to offer comparable terms to the private sector [ISA5]. The major cause of nurse shortages is the lack of people entering the profession because the work is seen as difficult and poorly paid, to the extent that even graduates of nursing studies often do not work in healthcare. Despite the growing need for nurses, fewer students are admitted to nursing degree programmes than state-funded places offered, so 36% of places were unfilled in the academic year 2022-23. The same year at master level there are 15% fewer enrolments and with a graduation rate of 81%, the number available with higher qualifications was 69% of the

year before. As one HE respondent said of nursing degrees, 'the number we prepare for the market is not enough' [interviewed representative of the higher education institution]. Staff shortages increase nurse workloads, causing a vicious cycle of labour turnover. Public university hospitals are closely involved in healthcare education for medical professionals, but private hospitals do not have state-funded internships and universities are less interested in cooperating with hospitals in the regions or in initiating new programmes to meet their skills needs. Healthcare staff shortages divert the attention of public healthcare providers from quality aspects (skills and competencies) of healthcare professionals to procuring the quantity of professionals needed [inteviewed human resource manager of the public hospital]. Nursing professionals and students stress the need to make nursing more attractive by increasing salaries, reducing workloads and improving working conditions as well as creating conditions for nurses to work more independently, at the same time arguing for more teamworking and management by nurses (Valstybės kontrolė, 2023).

In 2022 a national project was initiated to improve the prestige of the nursing profession, which foresees review and adjustment of all medical norms at least every 5 years, as well as creating a monitoring system for quality indicators of nursing. In 2023 the skills forecasting model for the healthcare sector was updated by STRATA to provide national and regional level forecasts, considering strategic changes and developing a network of health care institutions based on a regional cooperation model. In the same year the Ministry launched the TaShi project to identify functions that could be transferred to nurses from doctors, and in 2024 rolled out a programme whereby nurses can undertake consultations in place of doctors.

The key strategy for solving skills shortages is focussed on supply of healthcare studies training with financial support instruments for students and graduates provided by the regional authorities and public healthcare providers. Employment of third country nationals in public healthcare institutions is still very limited, with the main obstacle being to need to pass the Lithuanian language examination as a precondition for recognition of diplomas and credentials. One of the most significant cases of employment of third country nationals involves war refugees from Ukraine qualified in nursing and medical professions, through simplifying procedures for recognizing their professional qualifications and for language requirements. In many cases, war refugees from Ukraine, were employed initially as nursing assistants, with the to upgrade to nursing after passing the language examination and having their diploma recognized. One

respondent mentioned a project launched in February 2025 to attract third-country nationals by adapting the competencies platform to recognize qualifications and competencies obtained abroad [interviewed representative of the Ministry of Healthcare].

Norway has a large public healthcare sector, representing one third of overall employment (NAV, 2023, 16) within which healthcare is particularly affected by a shortage of doctors and nurses (ibid: 9-10). Skills shortages are particularly pressing for nursing. The teaching hospital, the healthcare faculty, and the interviewed municipalities and counties, all identified nursing as a key area of skills shortages in healthcare. Within the hospital, the situation was further compounded by regularly losing nurses to local municipalities and care homes that could offer better working hours and higher salaries. Participants raised concerns over the double demographic challenge in the future, with an overburden of elderly in the population compared to the active work force. To qualify as a nurse, students must take a 3-year BA degree in nursing. Having obtained an authorisation licence, and worked at least one year in the field, nurses can pursue additional qualifications to become nurse specialists. To encourage more students to apply to nursing degrees and address increased need for nurses, the Norwegian government proposed to remove grade requirements for entry to bachelor-level nursing professional education programmes (KD, 2024a; Meld. St. 20 (2023–2024)).

In the white paper on skills needs in Norway (Meld. St. 14 (2022-2023)), the need for foreign qualification recognition is acknowledged, both as means of capitalizing on their skills and as a way of providing migrant workers with better opportunities for skills development and integrating into working life. The white paper notes that the government will continue to develop various recognition schemes to make it easier to use skills from abroad in the Norwegian labour market and will consider how educational institutions and the recognition authorities in health sciences education can cooperate better in matters concerning the assessment of recognition of foreign-trained health personnel (Meld. St. 14 (2022-2023), p. 12). Insights from stakeholder interviews highlight that recognition of foreign qualifications as well as knowledge of Norwegian language and the Norwegian healthcare system are perceived as barriers for healthcare workers with foreign qualifications. For one employer within the hospital sector, the main challenge remained that:

> we're very strict on the language requirements. They're very particular in Norway that to work at a hospital you have to master either Norwegian, Swedish or Danish … that's really where the challenge

> is in terms of migration … we expect quite a high level of Norwegian to work with patients. And really that goes throughout. I think that those requirements are the same if you're a cleaner or if you're a surgeon. You have to have a certain level of Norwegian.

Efforts to recruit health personnel with foreign qualifications have been limited because of Norway's commitment to the WHO Code for International Recruitment of Health Personnel, which precludes actively recruiting health personnel from countries that themselves have a severe shortage of health personnel (Meld. St.14., (2022-2023), p. 37). The ethical dimension of recruiting health workers from abroad was raised by a team leader working at a Norwegian teaching hospital. When asked about strategies for recruiting migrant workers to meet the increasing skills shortage in the healthcare sector, they responded:

> No, we're not, I mean, in terms of the challenges that we have, in terms of not having enough people in healthcare, there are worse challenges in other countries. So, it would be unethical for us to actively recruit migrant workers.

In *the United Kingdom*, Skills for Health (S4H) is the body responsible for developing the healthcare workforce. Before the COVID-19 pandemic, S4H reported 40,000 nursing vacancies in England and under pandemic conditions the sector reported more than 80,000 vacancies compared with around 3 million people working in health and social care. Several National Health Service (NHS) respondents mentioned widespread labour shortages [HC20, HC26] especially nurses and allied health professionals [HC25] both domestic and international [HC35]. Workforce ageing and relatively high labour turnover is exacerbating the problem of nurse shortages, as noted in several interviews [HC25, HC26].

The *NHS Long Term Workforce Plan* (NHS England, 2023) reported 112,000 current vacancies and projected a shortfall of between 260,000 and 360,000 staff by 2036/37. The strategy proposed focused on: training, particularly through apprenticeships; retaining, through staff support and improved leadership; and reforming, to raise productivity and make deployment more flexible. Training more staff domestically by increasing the number of adult nurse training places by 92% to 28,000 by 2028/29 and 38,000 by 2031/32 was to reduce reliance on international and agency staff. Nonetheless, the *Long Term Workforce Plan* acknowledged:

> To fill service gaps and ensure safe staffing levels, the NHS is firmly reliant on temporary staffing and international recruitment. Of the doctors who joined the UK workforce in 2021, 50% were

international medical graduates. And, in 2022/23, about half of new nursing registrants in England were trained overseas. This leaves the NHS exposed to high marginal labour costs and risks the sustainability of services in the longer term given the growing global demand for skilled healthcare staff.

The Health Foundation (2019) revealed the perennial problem of a low level of nurse graduates relative to the population compared to other OECD countries and highlighted an average student nurse attrition rate of 24%. A respondent from a university nursing programme noted a substantial drop in student enrolment in recent years, both domestic and international [HC15] and as mentioned by one NHS respondent in relation to nurse shortages 'there are not enough people coming through training programmes' [HC26].

The Health Foundation (2019) noted increased reliance on nurses from overseas, with 100,000 foreign trained nurses on the register in 2017. After the Brexit vote the origin of new registrants on the Nursing and Midwifery Council switched rapidly from EU to non-EU countries, notably India and the Philippines. Before Brexit, nurses from Spain and Portugal were working in the NHS alongside those from Commonwealth countries, notably India and Nigeria. Since Brexit, nurses from the EU are less common and the three most important sources of nurse migrant labour are Nigeria, Philippines and India. These changes are reflected in comments in interviews with NHS officials mentioning heavy reliance on international recruitment to fill nurse vacancies [HC25, HC26, HC35], and comments like having recruited over 600 nurses internationally in recent years [HC25] and having success in recruiting from the Philippines [HC35]. The economic driver of the significant growth in Filipino nurses is obvious from the respective average annual salaries for qualified nurses. In metro Manila, where salaries are highest in the Philippines, nurses earn on average PHP 288,000, which equates to £3,840 per annum, whereas NHS nurses earn on average £34,000, so the UK salary is around ten times what nurses earn in the Philippines. International recruitment of nurses brings additional challenges, with NHS officials mentioning foreign trained nurses need 'proper support and integration' [HC20], 'integration, training and retention' [HC26] and initiatives focussed on 'onboarding and retention' [HC25] while others noted 'difficulties with onboarding' [HC35].

All five countries where healthcare was studied are experiencing nurse shortages and facing similar challenges in addressing them, although there are specific differences between countries that can be explained by labour market and training regimes. The situation is less critical in France, but they are also experiencing reduced numbers joining nursing programmes, increasing drop-out rates from training and turnover among qualified nurses. The UK and Germany are both recruiting significant numbers of Filipino nurses but whereas the liberal market economy is leaving recruitment to private labour market intermediaries, in the more coordinated economy, the state established a recruitment centre in Manila and reception centres in Germany to ensure integration.

Construction

The construction sector experienced significant growth in terms of production output and workforce in the last decades in *Lithuania*, and the employment in the construction sector in the period from 2013 to 2023 increased by almost 14% (from 99,300 in 2013 to 113,100 in 2023) (Official Statistics Portal, https//osp.stat.gov.lt). This is due to several factors, including growth of demand in local and export markets for housing, significant increase in the employment of TCNs, and the emergence of new technologically advanced and sustainable areas of construction industry. However, the survey of construction enterprises executed in the 2022-2023 in the framework of Erasmus+ project suggested lack of skilled workers and legal regulation constraints were major obstacles for developing construction business (Construction Blueprint 2022). Skills shortages can become even more severe in middle and high-skilled qualifications, as about 40% of the workforce is expected to retire by 2030. Labour shortages in the sector concern different types and levels of qualifications, especially medium skilled workers with vocational qualifications, as well as highly skilled engineering staff. Interviewed employers explained labour shortages by unattractive, physically difficult work and challenging working conditions for young people, which presents a challenge for education and training providers to enrol students.

From 2014 there have been implemented different initiatives targeted to digitalization of work and technological processes of the construction sector. However, in practice they are hampered by the domination of the cost-effectiveness criterion and public procurement practices oriented to lowest price offers. Concerning skills formation for digitalization, there is a lack of occupational standards and VET

curricula for some key occupations (electricians, building operation and maintenance specialists). Design of qualifications and curricula in the sector lacks inter-professional perspective remaining strongly specialized. There are no significant incentives for the adult population to engage in continuing training in the sector either.

According to interviews, the shortage of skilled labour on the sector currently does not present a particular challenge and fluctuates with the construction market, which is not particularly buoyant now. From long-term perspective, skill matching in the sector is strongly influenced by competition strategies based on price, which fosters a low skills equilibrium, minimizing investment in training and focussing on immediate needs, orientation to low-cost, low-skilled workers in recruitment, and a low proportion of qualified workers.

Employers described the self-reinforcing trend of shrinking formal VET provision and reduced employment, alongside expansion of on-the job training and informal apprenticeships. Employers also expressed concern at young people leaving the company after training when they receive a more attractive job offer within Lithuania or abroad. Implementing dual apprenticeship faces multiple problems and is not viewed as a prospective pathway of skill formation in the sector due to low student enrolment in VET and difficulties of organizing dual apprenticeship on construction sites characterized by fragmentation of work processes. Enterprises attract and maintain skilled workers by offering competitive compensation packages, career opportunities and internal qualifications, and by attracting reimmigration of high skilled specialists and TCNs. Trade union representatives are critical of working conditions in construction and regard employment of TCNs less a solution to skills shortages and more an attempt by employers to retard rising remuneration. Enterprises also noted challenges in employing TCNs, including barriers caused by geopolitical tensions in targeted origin countries and rising salary expectations of migrant workers.

One of the strategic goals of the sector is transforming competence development by focusing on highly skilled workers enabling integration of advanced digital technologies and enhancing sustainable, energy efficient and safe work processes for construction and maintenance. In 2017, the Lithuanian Construction Association introduced a competence assessment and validation system for construction workers needed for buildings of energy consumption class A and higher (STATREG, https://statreg.lt/). STATREG is a system for independent and voluntary assessment, validation and certification of competencies of construction workers, enabling rapid, flexible

adjustment of demand and supply of skills in the sector, and serving as an instrument for recognition of skills and competencies of TCNs. Trade union representatives emphasize the enabling role of qualifications in promoting employee competence development, but criticize the reductionist, bureaucratic and regulatory approach of state institutions to initiatives of sectoral social partners to create transparent, sectoral needs-compliant qualification system instruments.

The construction industry in the *UK* is characterized by an ageing workforce, declining numbers of entrants into the industry, and international competition for skilled workers exacerbated by Brexit. Shortages concern both professional skills (e.g., IT, digital, communication) and technical skills, in particular, bricklayers, joiners, fire engineers and fire risk assessors, electricians, plumbers, site managers, painters, decorators, plasterers, drone workers, quantity surveyors but also new skills demand for greening the industry [CN7, CN12, CN15]. One of the problems the industry faces is its unattractive reputation with young people as being “dirty” and low skilled, with a lack of gender diversity, and low job security (BIS, 2013, YouGov, 2015) [CN1, CN3, CN4, CN7, CN18, CN21, CN25]. Employers consider apprenticeships as a better route into the industry than HE degrees, but lack of provision by companies, particularly SMEs, is exacerbated by financial considerations and bureaucracy around hiring apprentices [CN2, CN4, CN5, CN25]. The apprenticeship levy is considered to have improved things slightly and some employers noted improvements developing new programmes filling skills gaps. Disconnections between industrial, political, and skills policies, lead to mismatch between training supply and labour market needs [CN18]. Too few builders in the UK take responsibility for training and underinvestment in skills development and career guidance is attributed to the dominance of micro firms and self-employment [CN2, CN4, CN5, CN12]. Occupational profiles and qualifications need to be broadened and bridged across occupations with interdisciplinary technical expertise especially necessary for green transition (Clarke & Sahin-Dikmen, 2019). The existing workforce should be upskilled to Level 3 to be able to do high-quality low-embodied carbon work (Clarke et al., 2016: 84). Technical skills risk becoming outdated, there is further mismatch between supply and demand, and educational provision is no longer covering certain domains, while trainers are leaving the sector, educational institutions lack capacity to engage with industry, and collaborative relationships are decaying [CN2, CN7, CN12]. There is a need to incentivize training and

apprenticeships and develop a cross-industry strategy to address gaps with funding for upskilling (RICS, 2023).

Following Brexit, EU nationals returned to their home countries, but sector experts consider migration and retention of foreign students vital for filling labour and skills shortages. Bureaucratic challenges with visas and qualification mean approval takes too long, making it impracticable for short-term projects to rely on migrant workers. Global competition and competition with other sectors for migrant workers the challenge, so respondents see labour migrants as a short-term solution but longer term the UK must develop its domestic workforce [CN1, CN7, CN15, CN18].

There are both labour and skill shortages in construction in *Germany*, particularly in areas of construction planning, architecture, surveying, building construction and civil engineering. According to interviews, there are changes in craft companies: a few years ago, they took everyone, now there is a shortage of skilled workers in some areas. However, skilled crafts are not the first choice for young people. Recruitment from the other EU countries is already exacerbated source of skilled workforce. In addition, there is mismatch between qualifications and acquired skills among migrants. Linguistic barriers are seen as key for mismatch leading to migrants occupying low-skilled jobs. Despite a steady increase in the number of migrant employees from third countries in shortage occupations, the employment of migrant workers in construction is relatively small, with 'construction planning, architecture, surveying occupations' accounting for over 10% in relation of total migrant employees in the main occupational groups.

Concerning skills shortages, VET training providers adapt the new training content to existing teaching, remedial and advanced courses. They offer mentoring programmes to minimize the dropout rate, supporting apprentices and job placement if they do not pass the probationary period, adapting the design of the teaching in the form of simpler language, introducing a picture dictionary for basic technical terms. They have established close cooperation with guilds and training companies. They also adopted a four-pillar support system: support staff from external areas, compulsory additional qualifications for teachers as learning guides, teaching in teams/team teaching, language support provided by teachers after school with language-sensitive additional qualifications. In addition, they create coaching opportunities for migrant youth, such as an option for pretesting of occupations by the learners through internships, in-house language courses, confidants and the creation of trust in vocational schools. Another explored solution is focused on

making the VET teaching and learning simpler by simplification of tasks and tasks in the form of check-the-box questions.

At sector level, several measures have been taken to address labour and skills shortages, including digitalization, e.g. using AI to make work easier and revising apprenticeship regulations. There are also efforts to increase entry-level training to see whether the apprenticeship is the right solution for skills shortages. There is also provided post-qualification continuing training with the disadvantage that this does not give access to higher education.

The construction sector in *Italy* faces challenges of decreasing workforce and potential decrease in the production capacity of companies. This is partly due to stereotypes, socio-cultural conventions and pre-established customs. According to interviews, professions with the most serious shortages include Finishing Operator, Skilled and qualified workers, technical employees (4^{th}–6^{th} level), CAD-CAM designers, project managers. Given difficulties in attracting and retaining qualified employees with professional qualifications and the demographic crisis, construction employers in Italy consider migrant workers as a potential solution to address labour and skills shortages. From September 2024, Italy launched a project to train immigrant workers (from Tunisia) in the construction sector to learn the Italian language and acquire essential skills, but its impact remains limited due to the persistence of irregular employment. Other barriers to employing migrant workers include: recognition of qualifications, preventing skilled migrants from accessing jobs that match their expertise; restrictive work visa policies, limiting migrants' ability to transition from study to work status; inadequate language training, failing to prepare migrants for technical and sector-specific communication; ethnic segmentation of labour markets, reinforcing stereotypes and limiting mobility across job sectors; informality in employment contracts and legislative gaps exacerbating vulnerability and practical challenges of obtaining necessary documentation; challenges associated with the locations of reception centres and poor public transport connections constraining migrants' mobility for work and training opportunities. Most employers interviewed plan to retain migrant workers through increasing job security, improving remuneration and career opportunities, and helping with integration, including learning the local language, and securing housing and good living conditions for families. Some have already partnered with vocational training institutions and universities to facilitate this process. Despite these efforts, respondents from trade union and intermediary

organizations are critical of the lack of effective policies for integrating and training immigrants.

In addition to employing migrant workers, VET training is considered a key element for addressing skills shortages. In Italy, VET is regionally regulated, and VET institutions calibrate their curricula to labour market demand through a multi-level governance system that involves State-Region agreements, sectoral stakeholders, and continuous updating of training offers. The State-Regions Conference plays a central role in this process, serving as the forum for coordinating training policies between local and central institutions, where all stakeholders involved in the VET system, including businesses and professional organizations, actively participate in direct dialogue with the labour market (Ministry of Education, 2019). Data from institutional reports, such as those from *Unioncamere*, are crucial in guiding vocational training policies. There are various forms of collaboration between industry and training providers, for instance, hosting extracurricular internships [COMP_1], stages/curricular internships [COMP_5], "apprenticeships contract" [COMP_1], or establishing "Dual apprenticeships contract [COMP_1, 10; 11, 5]. VET in Italy does not face challenges in specific sectors, but it faces critical challenges related to human and financial resources and the economic gap between the North and the South in Italy.

There are also internal issues of the construction sector which escalate the skills shortages. For instance, the sector is increasingly structured along Fordist lines, with ethnic segmentation defining specific job roles. Also, there are often serious accidents and frequent occupational health and safety violations, with language barriers affecting workers' ability to understand safety protocols. Skill acquisition is often informal and experience-based, with few opportunities for professional certification. Moreover, most companies are unprepared for the possibility of losing qualified labour due to emigration of native workers. Stakeholders emphasized the need for enhanced collaboration between various institutions and stakeholders in the regions to address labour and skills labour shortages in construction. In relation to employing migrant workers, collaborative networks are needed to offer comprehensive support, enhancing both social and labour integration of migrants. More specifically, respondents suggested: expanding sector-specific training programmes for migrants, with pathways to formal certification; increasing language training tailored to workplace needs; streamlining recognition of qualifications to allow skilled migrants to work in their respective professions; facilitating study-

to-work visa conversions to retain foreign talent; expanding Skill Partnerships with a focus on pre-arrival training and certification; developing anti-discrimination policies to promote diversity in hiring and career progression; implementing monitoring mechanisms to ensure fair treatment in training access and promotions; increasing support for migrant workers' rights organizations and giving access to legal assistance; and improving housing and transportation support for seasonal and low-income migrant workers.

Agriculture

The agriculture and horticulture sector is essential for, inter alia, food and drink provision, and its importance has recently been underscored when many nations faced interruptions in the produce supply chains caused, among other factors, by the labour and skill shortages (Nye & Lobley, 2021). The compound effect of recent and ongoing contextual development from the COVID-19 pandemic through climate change to military conflicts in Ukraine and the Middle East further aggravates the challenges that beset the sector.

In the *UK*, many agricultural businesses report difficulties filling vacancies (Nye et al., 2022). The most hard-to-fill positions are certified tractor drivers, seasonal crop harvesters and stock/herdspersons, followed by non-specialized farm workers and qualified spraying operators. Other skill gaps include health and safety, digital and IT, management, basic literacy, and 'soft' skills. Overall, concerns about attracting and retaining employees with the skills required are common within the sector, whereas automatization is not believed to offer an immediate solution to skills shortages. This is partly because humans are still able to perform certain tasks (e.g., identifying and picking up ripe fruit and berries) more quickly and more accurately than machines, but also because employers need both people and machinery to ensure sustainable growth.

One reason behind the skills shortage in the sector is the fact that training provision is still somewhat limited and does not always correspond with the practical needs of the sector. Although more efforts to develop and offer formal higher and further education training programmes have been made, these programmes could benefit from wider promotion, closer collaboration with employers in the industry, and better resourcing. At the same time, many UK employers are deterred from offering training and development opportunities by the costs, as well as difficulties with sparing time and finding suitable training providers (Nye et al., 2022). This creates a vicious

circle, wherein the lack of investments in training stimulates turnover (see DEFRA, 2023). In the UK, the skills shortage in agriculture is further exacerbated by the sector's (partially justifiable) reputation of being low-paid, outdated, and associated by long working hours, poor work-life balanced and inadequate infrastructure.

Migrant labour has been utilized by the sector extensively. A fifth of permanent salaried positions are occupied by non-UK-born workers, whereas mere 14% of seasonal jobs are filled by domestic workers (Nye et al., 2022). However, the sector's ability to maintain this practice is restricted by the post-Brexit immigration policies and growing domestic (against other companies and industries) and international (against other countries) competition for workers. Furthermore, in 2024 the salary threshold for Skilled Workers increased from £26,200 to £38,700, making even fewer jobs in agriculture and horticulture eligible for this visa route.

Among suggestions and recommendations proposed by academics and the industry stakeholders (Nye & Lobley, 2021; Nye et al., 2022; DEFRA, 2023) and, to some extent, supported by the Government (DEFRA, 2024) are more support to the apprenticeship levy, investments in skills development, provision of new training courses, and introducing the sector more firmly into the educational curriculum, whilst extending the Seasonal Workers scheme for at least a few years. Importantly, the future success of such interventions will depend upon establishing a meaningful, coordinated and long-overdue collaboration between the Government, sector, and skills providers (see DEFRA, 2023).

In *Germany*, the sector is characterized by relatively low salaries and relatively – in the context of the regulated labour market - low (or virtually absent) legal requirements regarding prior training, education and experience which makes entering the sector relatively easy. The training is usually performed through a vocational training contract with a company in the business sector. Whilst filling relatively low-skilled positions of 'helpers' is less problematic, agricultural businesses have been experiencing the growing shortage of and intensifying competition for skilled workers, specialists and experts. The use migrant labour is very widespread: whereas the absolute number of third country (non-EU) nationals employed in agriculture is relatively low and stands at just over 50,000, non-EU workers constitute one third of all agricultural workers, according to the Ministry of the Interior and Community. At the same, there are concerns that the language barrier and the overall lack of guidance from employers' associations restrict skilled

migrant workers to low- and semi-skilled jobs and preclude the sector from taking advantage of the migrants' skills, talents and experiences. In this context, agricultural employers utilize a range of measures to identify and recruit the required skills: whereas large businesses rely on their brand power, smaller employers tend to turn to agencies. At the same time, there is evidence of organizations consolidating their efforts within the sector, as well as collaborating with partners from other industries to design suitable HRM strategies.

Domestic care

Domestic care shares some characteristics with healthcare and at the margin there is an overlap between the sectors and the term 'elderly care' extends to residential care homes, some of which offer medical support comparable to hospitals, and domestic care, the focus of this section. In two countries (France and Italy) researchers paid special attention to domestic care and in the UK some information was obtained from interviews in healthcare.

In *France*, 'personal and household services' is a sector experiencing labour shortages and migrant workers represent 22.8% of domestic employees significantly higher than the proportion in the total workforce (7.9%). The sector is interesting because little attention is paid to jobs requiring relational skills, particularly home helps and personal care assistants, the 'labourers' of the caring professions (Avril, 2018; Devetter et al., 2015). Domestic care is more market-focussed than the more regulated healthcare sector and for-profit models appeared from the mid-1990s (Ledoux et al., 2021). The private sector has grown strongly while public organizations have retreated and while this has brought a degree of professionalism and surfaced issues of skills, terms and conditions remain poor in a context of growing labour and skills shortages (Amat et al., 2023). Of almost half a million workers classed as home helps and personal care assistants in 2019 about 13% were non-EU citizens (INSEE, 2019). Non-EU migrant workers are over-represented in jobs like cleaners which have worse terms and conditions than domestic care workers (Avril & Cartier, 2014). France has limited recourse to foreign home helps and domestic workers (Avril & Cartier, 2019) and while families are involved, this is less well-documented than in Italy (Ambrosini, 2013; Artero et al., 2021). In many regions, domestic care work is listed as a shortage occupation so employers are not obliged to demonstrate the post cannot be filled by a French national or EU

citizen and there are paths to residence permits (Van Hooren et al., 2019) and since the Valls administrative circular in 2012, there are routes to regularization for undocumented migrants working for families (Chauvin et al., 2021). Interviews with employers and trade unions show an unusual degree of consensus in wanting to make it easier for private individuals employing a person in their own home who 'no longer had papers' [interview with representative of employers' federation] and in recognizing 'without immigration, France is a country of old people' [interview with trade union official].

Italy is facing labour and skills shortages in domestic care, particularly caring for elderly persons in their own homes. The rapidly ageing population in Italy led to increasing numbers of foreign domestic carers and before EU enlargement these were often undocumented migrants from Romania, but increasingly domestic workers came from the Philippines (Magat, 2004: 351). Despite a striking drop in arrivals of Filipinos in the decade to 2017 (Magante, 2023) they remain the primary source of domestic care workers in Italy and Filipina became synonymous with domestic worker (Sarti, 2016: 45). Scrinzi (2008) noted that by 1999 female migrants constituted 50% of all domestic workers declared to the *Istituto Nazionale di Protezione Sociale* (INPS) [National Institute of Social Welfare]. Including workers that were regularized in 2003, there are nearly 500,000 domestic employees of foreign nationality, most of them women, and with an estimated 77% unregistered, this suggests there are more than 2 million migrant domestic workers in Italy. Van Hooren (2010) noted that undocumented migrant domestic workers have been exempted from many restrictions on migration because labour shortages would otherwise leave many elderly Italians without care. Respondents highlighted the significance of career guidance, particularly in personal service sectors such as caregiving for elderly people, reiterating the necessity for a more systematic identification of skills and labour market needs [interview with the representative of VET provider]. However, these discussions are overshadowed by practical challenges, including the need for regularization, obtaining necessary documentation, securing lawful employment contracts, and addressing the prevalence of undeclared work.

In the *UK*, Skills for Care (S4C) covers the adult care sector, involving 18,500 organizations employing 1.5 million people. With population ageing, S4C suggests another 580,000 care workers will be needed by 2035. Labour turnover, recently estimated at 29% is also an issue in elderly care, which shares with nursing the characteristic of a predominantly female workforce with a

substantial proportion of BAME and migrant workers concentrated in lower grades. S4C (2022) noted a 52% increase in the number of vacant posts in adult social care, translating this into 165,000 vacancies, plus an extra 480,000 people to meet increased demand. Moreover, the sector may lose a further 430,000 people in the next 10-years if those aged 55 and over decide to retire. As with healthcare, elderly and social care respondents mentioned labour and skills shortages [HC19, HC32] being addressed by using international care workers, most sourced through recruitment agencies. In addition to the same challenges of onboarding and integration, in social care there are challenges with migrant workers around 'communication, racism, and tensions with local workers' [HC32].

Education

Bartlett (2014) noted that teaching was traditionally seen as a profession intrinsically linked to the nation state with governments responsible for preparing teaching to ensure continuities of national culture through education. Globalization and teacher shortages brought attention to overseas teachers. Focussing on primary and secondary school teachers, implications are considered for the UK and Norway.

The latest statistics for the *UK* show vacancies for teachers are six times higher than prior to the COVID-19 pandemic, and the shortage negatively impacts quality of education (NFER, 2025). Mathematics, physics and STEM subjects more broadly are affected by UK teacher shortages, although some interviewed experts were critical of the over-focus on mathematics by the Department for Education. The image of the teaching profession (stress and professional pressures) is part of the problem. Teaching unions estimate around 11% of UK teachers leave the profession just after one year of qualifying and a quarter of all UK-based recruits leave within the first three years. In 2024, approximately 40,000 teachers left the profession in the UK, according to union officials. Recruitment into teaching training courses is a major challenge, although there was an improvement for biology and chemistry last year, largely due to bursaries (NFER, 2025). The President of the UK national organization coordinating teacher education explained there are several major reasons for the shortage of teachers. Firstly, the competition for graduates from the private sector, where terms and working conditions are better, especially for graduates in STEM

subjects. There are also cyclical economic issues: when the economy is doing relatively well, there is a shortage of teachers because graduates have more employment choices.

Teacher shortages increased the importance of recruiting from overseas. Historically, UK policy showed preference for overseas trained teachers (OTTs) from the US, Canada, Australia and New Zealand whose qualifications were automatically recognized. This was challenged as a form of racial discrimination (Miller, 2018), and more recent shortages contributed to relaxing rules for migrant teachers from Western and Southern African countries and Asia (NFER, 2025). Private specialized agencies played a key role in recruiting and selecting overseas teachers – one of the biggest agencies in the UK was interviewed for this study. The UK government extended qualified teacher status (QTS, necessary for teaching in UK schools) to teachers from Commonwealth countries such as India, Nigeria and Ghana. Bringing these countries in with the four previously mentioned has slowed processing of all applications, which takes up to nine months (NFER, 2025). All interviewees stressed English language proficiency is the main factor affecting whether an application is accepted, especially in relation to employer sponsorship. Once in the UK, teachers have four years to attain complete QTS, but if schools want to hire OTTs, they may recruit prior to them obtaining QTS so long as they start training for it. Doing teacher training at a UK University is an advantage, enabling QTS through the PG diploma route. From the perspective of the teachers' unions, QTS is a fundamental mechanism to regulate teacher quality, irrespective of country of origin. Some UK schools use a training consortium to meet labour and skills needs, which involves universities co-delivering courses over one year. Students studying education have practical placements in schools and complete coursework/assignments for the university. Bursaries are available, funded by the Department for Education, with amounts varying depending on subject, so for mathematics it is currently £20,000, for design £10,000, the difference explained by the challenge of recruiting for STEM subjects.

Recruitment to both teacher education programmes and the teaching profession in *Norway* has fallen steadily over recent years and available teaching competence is unevenly spread around the country. The Norwegian Ministry of Education and Research notes a current shortage of 5,400 qualified teachers in kindergartens and schools (KD, 2024b), with the annual decrease in applications to teacher education programmes suggesting greater shortages in the future (Gunnes et al., 2023). The teaching qualification requirements to work in primary and secondary education

are set by laws and regulations (Opplæringslova, 2023, § 17), which list qualification requirements for primary, lower secondary and upper secondary education. Interviewees from municipal and country sectors noted that in addition to skilled migrant teachers often having to undertake training to have foreign qualifications approved, Norwegian language proficiency remains the main barrier for hiring migrant labour to mitigate current skill shortages within schools and kindergartens. Existing shortages of qualified teachers in schools is compounded by a drastic decrease in students applying to teacher education programmes, with 2024 showing a record dip in numbers. One head of a teacher education department noted that in the current academic year, less than half the available places for their five-year teacher education programmes had been filled.

Norwegian participants from various teacher education programmes indicated that developing flexible teacher education options had been a priority. New initiatives included a one-year introductory course that could become part of several five-year teacher education programmes, and two shorter integrated primary and secondary teacher education programmes that would allow teachers with three or four years of teacher education to obtain a master qualification while employed in schools.

In Norway, migrants remain underrepresented among student teachers, teachers in schools and teacher educators. Although there has been a positive development in the proportion of teachers with immigrant backgrounds in recent years, in 2022, 8% of teachers in primary and secondary education were of immigrant background, in contrast to 20% of the population at large (KD, 2024b). The lack of diversity within teacher education as well as barriers to recruitment from immigrant populations was addressed by several interviewees in the HE sector.

Interviewees working at educational institutions with teacher education programmes indicated that several measures had been introduced to increase the number of applications, including efforts to recruit men to teacher education, regional and national research projects aimed at understanding the reasons for the decline in teacher education student numbers, targeted campaigns for increasing recruitment to the profession, and lowering the entrance grade requirements.

Both Norway and the UK face difficulty in attracting candidates into teacher training, and retaining them in the profession, particularly in the UK. For overseas trained or migrant teachers, language proficiency constitutes the major requirement for entering the profession in both countries, and there are specific policy mechanisms regulating the qualifications required. There

is a drop of EU applicants in both countries which makes non-EU migrants an increasingly important part overseas labour supply. There are more conscious attempts to increase workforce diversity in Norway than in the UK. Labour market intermediaries (private agencies) are more involved in sourcing teachers in the UK than in Norway.

Energy transition

Decarbonization and energy transition pose skills challenges in all countries. The switch to renewables, as well as decarbonization of existing manufacturing to meet climate targets, will require greening existing professions as well as increasing specific occupations like engineers with substantial demand for skills and qualifications relating to hydrogen technologies like Carbon Capture Storage. Between 2012 and 2016, the number of occupations related to environmental protection in *Germany* increased by 14% (IAB, 2022). These occupations fall under the term "green skills", which includes all jobs that contribute to energy transition and climate protection, such as energy and electrical engineering, mechanical engineering, industrial engineering, construction and the automotive industry, as well as agriculture (Patuzzi, 2023). There is a labour and skills shortage in many professions with green qualifications, and such deficits, especially of experts with higher academic qualifications (Schröder, 2023b), could significantly slow ecological transformation of the economy (Patuzzi & Schröder, 2024).

Norway has shortages of engineers, project managers, and operational roles, particular for offshore wind. Each industry also faces recruitment challenges from global demand for talent, competition in the domestic labour market, and policy constraints related to language requirements and certification costs. The declining value of the Norwegian Krone over the past decade has made the country less attractive for migrant workers, exacerbating labour shortages. Participants suggested that to address these challenges requires investment in digital training, enhanced vocational education pathways, and improved language support programmes, noting that policymakers should explore ways to subsidize essential job-related certifications and monitor economic trends to ensure competitive wages. Skills provision is a key issue because apprenticeship numbers are decreasing, and HE is perceived as not fit for purpose in many energy

projects companies are pursuing. The VET sector lacks investment and offers insufficient career pathways for skilled workers.

Norway is addressing skills shortages with migrant workers, but they work on a rotational basis without settling permanently, which leads to a lack of long-term integration and weakens the collective bargaining power of workers. The unions argue that firms exploit this model by maintaining a segregated workforce, with Norwegian employees having standard contracts while migrant workers operate under different conditions, often earning lower wages and working longer shifts. The unions suggest that strengthening VET in Norway, expanding career opportunities for local workers, and creating incentives for long-term migration could help address recruitment challenges. In the Energy sector, firms rely on international recruitment, internal upskilling programmes, and graduate hiring to meet labour demands. Companies have acknowledged the importance of workforce diversity yet have had varying levels of success in integrating migrant workers. While Energy firms operate in English and have a highly international workforce, VET programmes fail to produce enough skilled professionals, leaving gaps in the labour market. The role of migrant workers in Norway is essential, but their employment conditions remain a contentious issue. Many Eastern European workers do not fully integrate into Norwegian work culture because they live in company-provided accommodation, work in separate teams, and often lack strong ties to local native communities. The unions argue that this is not just a language barrier issue but a structural problem, where migrant workers are treated as temporary labour rather than potential long-term members of the workforce. The lack of permanent contracts and stable working conditions discourages their participation in unions, further limiting their ability to promote for better wages and conditions. They argue that strengthening VET is essential to guarantee a steady supply of skilled workers. Policies should also encourage long-term migration by incentivizing workers to settle with their families rather than treating employment in Norway as a short-term opportunity. Reducing workforce fragmentation by discouraging employers from segregating Norwegian and migrant workers through different contractual conditions can help promote equal pay and better integration.

Subsidizing Norwegian language training is another key step, since language remains a major barrier to employment for many migrants. Providing free or low-cost language courses would facilitate smoother workforce integration and better job mobility. Encouraging employer

investment in training programs is equally important, as many companies prefer hiring employees who already possess the necessary skills rather than investing in upskilling initiatives. Finally, they state that better workforce matching programmes, driven by closer collaboration between educational institutions, career services, and employers, could help ensure that graduates enter the job market with skills that are in high demand.

Engineering industry and metalworking

Both *Germany* and *Lithuania* report labour and skills shortages in engineering. In Germany, the main problem for mechanical engineering is a shortage of skilled workers coming from vocational schools and labour migration is not solving this.

> There was … hope that the migration movement … from 2015 onwards, would solve the shortage of skilled workers. In my view … it is still an illusion to get skilled workers to Germany. It is simply an unattractive location. [I26 HE, 37]

The need for skilled workers is no longer being met by migration from Eastern Europe, so 'in our context of labour migration, we are only talking about migration from third countries. That is why the European context is actually irrelevant for us now.' [I27 VET, 57]. Enterprise strategies include meeting labour demand through projects:

> a company comes and says, "We have the following problem, solve it." And that's what we do. So, I alone do about ten projects a year, a colleague does exactly the same in just one degree programme. So, we are very closely interlinked [I26 HE, 11]

In the interests of internationalization, HE institutions are introducing double degrees [I26 HE, 205], that is degrees awarded jointly by two universities on the basis of degree programmes that share all or at least several of the features listed by the German Rectors' Conference (HRK, 2005). VET institutions emphasized demand-oriented qualifications and orientation towards the needs of industry:

> we always align our training programmes with actual demand … This means that we are really focusing on the needs of industry. The first step was, of course, to look specifically at the metalworking sector, because there we were able to present and illustrate the requirements for the individual apprenticeships as well as possible, in order to then really provide a tailored placement so that applicants from

> Uzbekistan also know exactly what they are getting into. But as I said, demand is also very high in other sectors, which is why we have expanded our programme to include other sectors. [I27 VET, 13]

Development of new topics in higher education to provide relevant qualifications, particularly with the use of technology (e.g. AI): 'we sometimes lag behind, but not really, because we can of course change the content of the modules to include current topics. So, we do take the topic of AI into account everywhere we work' [I26_HE, 11]. Support services for TCNs include job placement and language tests upon arrival in Germany.

Respondents felt that political migration agreements tend to be disadvantageous:

> There has been a migration agreement since September this year. [...] At the moment it has not yet benefited us. In fact, the opposite of what was intended has occurred. The intention was to [...] facilitate labour migration. But the opposite has really occurred. That is to say, there is an incredible flood of applications at the German Embassy … Many private service providers are now emerging who think they can make a quick buck here by providing labour services, who are basically taking over our business with the focus on fair migration without cost sharing for international applicants, who are now ruining our business a bit, who are undermining it a bit. Because their candidates then also turn up at the embassy and then something is wrong. Then sometimes they send fake employment contracts, which are then submitted, and this of course delays the processes. [I27 VET, 23]

Other projects have been initiated with placement agencies or in the form of *Hand in Hand for International Talents*, a project in which *Industrie und Handelskammer* [Chamber of Commerce and Industry] organizations and the German Federal Employment Agency are working together internationally to test an ideal process for the successful immigration of skilled workers from third countries in IHK occupations (DIHK Service GmbH, 2025):

> *Hand in Hand for International Talents* is recruiting new talent. I don't know if the fourth country has already been approved by the BMWK, so there are three for sure. The fourth is in the works, the fourth would be the Philippines. And the three existing locations are India, Vietnam and Brazil. And it is now running, which started with Corona, so three or four years, with a BMWK grant. And it is actively focused on recruiting various groups of skilled workers. However, the groups differ from country to country. [I38 Emp, 33]

In addition, another employer mentioned: ‘we also have a trainee project with BMWK funding. It’s a smaller project, so it doesn't even have a name, as far as I know. The aim is to attract trainees to Germany.’ [I38 Emp, 35].

Lithuania is experiencing fast growth in sub-sectors of engineering including semi-conductors (Savickas, 2024), as well as modernizing equipment throughout engineering and metalworking through automation. Shortages of skilled and especially highly skilled workers is a major strategic challenge for engineering and metalworking despite LINPRA [Association of the Engineering Industry] reporting it attracts foreign investment. Insufficient availability of high skilled employees is compounded by young people showing less interest in studying STEM subjects. Electronic and CNC machine programmers and operators are most in demand and future demand is expected to be high for people skilled in electronics, automation and robotics. Employers noted the biggest shortages were of medium skilled metalworking operatives and engineers, which hinders implementation of technological innovation including automation [interview with a representative of a sectoral employers’ organization]. Public VET institutions are updating their programmes to deal with gaps in specialist training, but students are not attracted to training in for example programming CNC machines [interview with human resource manager of metalworking enterprise]. Some success is reported in cooperation between employers’ organizations and Vocational Training Centres, especially in the field of continuing training of the workers and operators [interview with the representative of the VET school]. Enrolments of students in engineering and manufacturing professional university programmes fell by one third between 2010 and 2018 and the rate of employment in appropriate level jobs of graduates of industrial engineering study programmes is very low, between 10% and 28% (Investuok Lietuvoje, 2019). Underqualification is also widespread among graduates of industrial engineering at 42% and for those from universities it was 61%.

Sector strategies to tackle skills shortages have included improving remuneration levels, so the engineering professions are now in the top 10% of highest remunerated professions, especially for electrical and mechanical engineers and technicians. LINPRA is also working to improve the public image of the engineering profession and providing vocational and career guidance, including encouraging more girls to study STEM subjects and especially engineering. There are concerns over the learning outcomes from STEM subjects which reflects the shortage of qualified

teachers in these areas (Prūsas, 2022). Companies are addressing skill shortages by investing in robotization and automation, training and retraining employees, and employing third country nationals, with priority given to technological transformation [interview with a representative of sectoral employers' organization].

Engineering industry, especially automotive industry in Poland faces similar issues and challenges with skills shortages, especially in low and middle level of vocational qualifications. The responses of the car manufacturers to this challenge include both investments in automation, employment of the migrant workers and investments in the improvement of the education and training provision. Companies in Poland produce cars and their components: transmissions, tires, brake discs, seats, lithium-ion batteries, accumulators, as well as trucks, trailers and bodies. The production of cars in Poland reached as much as 300 000 cars in the record 2023, decreasing to 215 000 in 2024. The drastic decrease in production was followed by falling employment and accompanied by increased automation in the industry. The employment of the migrant workers is concentrated in the area of low-and middle level vocational qualifications, where the companies use the services of different employment agencies and labour market intermediators. The Russo-Ukrainian war created conditions for the employment of the female migrant workers in the industrial worker positions. Many such job positions have been filled by the Ukrainian refugees, mostly women, because of the cultural proximity. "*We can easily train them, if they want to learn. We now [a reference to the full-scale Russian invasion on Ukraine and the call-to-arms for men] have many Ukrainian women doing fitters jobs on the [production] line*" (PLWS2). What regards long-term approaches in dealing with skills shortages in the automotive industry, the promotion of dual VET and apprenticeship is one of the key preferences of the big companies. most companies provide work-place training for schools or universities, including dual training. These companies remain more attractive workplaces offering growth opportunities and more training positions. The popularity of various offered occupations (and availability of large employers in close proximity) remains a key factor in skills formation, since vocational schools open classes "on demand" of the industry (PLWS1). Besides, big companies retain their training centres and career development pathways in the organization. SME's often consider skills supply as an external condition, consequently delineating company operations from cooperation with education or, in some cases, any workforce development activity and relying more on recruiting of the migrant workers.

ICT

Both *Lithuania* and *Poland* report high demand for labour and skills in the ICT sector, and acute skills shortages. The share of migrants in employment in the ICT sector in Poland is high, relative to migrants' employment in other sectors, but is relatively low in Lithuania.

ICT specialists are employed in just 12% of *Polish* companies, compared to the European average of 19%. Self-employment in the ICT sector is extensive in Poland and almost one third of sole proprietorships established in 2023 were in the ICT sector. Migrants are over-represented in self-employment/sole proprietorships in Poland, with 10% of all companies registered in Poland in 2023 being established by migrants. The vast majority were set up by Ukrainians (72%), and almost one in five (19%) by Belarusians. Yet with growing demand for ICT skills in Poland, there remains acute shortages for appropriately skilled ICT workers across most sectors.

In *Lithuania* big increase in demand over the coming decade is forecast in the ICT sector, particularly for software designers, developers and analytics. The ICT sector has been identified as a strategic priority sector by government, yet employer surveys highlight that 2 in every 3 employers have ongoing difficulties in recruiting and retaining ICT workers. Interviews with stakeholders highlighted how employers make extensive use of the vocational education system to recruit ICT students during and after graduation [IVIT2, IVIT4]. The availability of workers with ICT skills is something which stakeholders felt has attracted overseas investment from companies [IVIT4]. Nevertheless, and despite a push to increase enrolments in ICT in vocational education institutions, there are still extensive shortages of ICT skills in the labour market:

> Sometimes partners from abroad want to come or "Invest Lithuania" advertises Lithuania, but the reality in the IT sector is like this - the market is absolutely exhausted. If you need a person, none of them (programmers, testers, data analytics, engineers) can be found so easily, you have to "steal" from someone [IVIT1].

The dynamic changes of skills needs in the ICT sector is thought to be a key factor contributing to this situation. Close cooperation between enterprises and HE institutions in ICT aims to match evolving skills needs with those delivered by educational courses, yet mismatches remain.

Currently, the ICT sector employs only 1-3 % of the total migrant workforce in Lithuania. Recent increases in immigration from Belarus and Ukraine have not particularly helped to solve skill

shortages because very often this has involved relocation of whole companies, or workers working online from Ukraine. A lack of skilled workforce and talent in the ICT sector is one explanation for the recent noticeable trend of multinational ICT companies that had established their subsidiaries in Lithuania, withdrawing their activities (Aukštakalnytė, 2022). Strategies and measures to address skills shortages in ICT have focused on: increasing numbers enrolled in ICT-related vocational education courses and degrees; improving the match between skills needs of enterprises and those provided by the education system; improving dialogue between employers, the state and educational institutions; increasing and improving ongoing training of ICT workers to ensure skills remain up to date; and attracting more foreign talent (Infobalt/Invest in Lithuania 2017). There are several specific sectoral, multi-stakeholder (including government, employers, unions and educational institutions) initiatives, such as Women Go Tech, and Digital Explorers.

Conclusions

This research undertaken for Horizon project S4J confirms there are sector similarities between countries in terms of labour shortages, use of migrant labour and the challenges involved. There are also some common features between sectors and between countries, despite the obvious importance of context. In this concluding section, we highlight the most significant findings and assess their implications for theory, policy and practice.

Skills and labour shortages present a complex and strategic challenge for the socio-economic development of the all countries analysed in this report, which are contextualised and ramified by the different other challenges and problems, including geopolitical tensions and instability, populist trends in the national policy, climate crisis, struggling with the quality and accessibility of educational provision, difficulties in adjusting to the skills demands posed by digitalization and green transition, and others. Despite of relative uniformity of the challenge of skills and labour shortage in the countries the responses of the key actors - enterprises, employers' organizations, governments, skill formation institutions to this challenge entail both common characteristics and specific features, which are largely consistent with the established institutional settings and regimes of labour market and skill formation.

The commonalities of solutions of skills and labour shortages foremost concern the shared nature and reasons of these shortages in the countries, such as negative demographic trends and ageing of societies, digitalization of the work processes and implementation of the green agenda in the sectors of economy, unattractiveness of the physically and psychologically challenging jobs for young people, etc. There is also a common understanding amongst the policy makers and key economic stakeholders on the existing limitations in seeking for solution of the labour and skills shortages imposed by the declining demography, brain drain and international competition for skilled workforce. Another important similarity concerns the challenges of filling in the labour shortages in the jobs of poor image and esteem due to the difficult working conditions, unattractive pay and other aspects, especially in the sectors of care, construction, agriculture, international road freight transport and others. Although immigration traditionally has been the key measure to tackle such labour shortages, there can be noticed increasing awareness of employers, policy makers, education and training providers that immigration alone does not provide sustainable solution of the problem. Attention is paid to the improvement of attractiveness of the training programmes,

underinvestment in the skills development of the local workforce, improvement of the working conditions and salaries, redesign of the work organisation. The scenario of prevailing temporary employment and steadily high labour turnover (even of migrant workers) in such jobs is also considered as highly realistic.

Recognition and regulation of the skills and qualifications in dealing with the labour and skills shortages is another area containing rather common issues and challenges, especially in case of regulated professions like teaching and nursing. Here one of the biggest issues remains the lack of trust in the skills and qualifications brough by the migrant workers from the third countries, what leads to the significant overqualification and skills mismatches in employment of the migrant workforce. The instruments of the national systems of qualifications (National Qualifications Frameworks, occupational and qualifications standards) and existing international transparency tools (regional qualifications frameworks like the European Qualifications Frameworks for Lifelong Learning, international databases and portals of skills and qualifications like ESCO, ELM) are still in the stage of implementation, experimentation, or early and very fragmented usage (post-implementation), especially in the countries of origin, what limits their functionality in dealing with the challenges of recognition of skills and qualifications of the migrant workers.

At the same time there can be significant differences in the choices of solutions of the labour and skills shortages. In case of the liberal skill formation and labour market regime of the UK, there is more reliance on the immigration and attracting of the migrant workers from the third countries by using private labour market intermediation structures, flexibilization of the employment regimes and corporate investments in the skill formation of the local workers. In case of collective skill formation regime (Germany, Norway) and to some extent, the solutions of skills and labour shortages are based on more systemic interventions based on the social dialogue between the sectoral stakeholders, state and civil society organizations, which integrate coordinated initiatives in the field of recruitment and training of the migrant workers from the third countries. In case of the coordinated corporate economies (Italy, France), as well as in the transitional economies of the Central and Eastern Europe the improvement of the skill formation in the public VET and HE systems are considered as a background for the solution of labour shortages, including the provision of training of the migrant youth and workers as a key measure for their integration in the labour market. The choices between investment in the training of available workforce, using

migrant workers and investing in automation are also shaped by the specific geo-political context of a given country. For example, the conservative and restrictive immigration policy enhanced by the geopolitical threats and conservative political agendas in the countries of the Central and Eastern Europe (Lithuania, Poland) creates obstacles for the enterprises to rely on immigration and forces them to choose investments in developing of local human capital and automation.

What the regards the implications of research findings for theory there can be indicated the identified increasing awareness and understanding of the labour market stakeholders and policy makers of the limitations of immigration a long-term sustainable solution of the labour and skills shortages. Using of migrant workers, training of the local workforce and automating of work processes as solutions differ depending on the timeframe for action, the rates of investment and return, as well as complexity of the concerned professional activities and work processes. For example, immigration in some sectors can be regarded as ad-hoc and short-term solution of emerging skills shortages in the relatively simple, low-and-medium skilled occupations and work processes (nursing, agriculture work, truck driving, construction work), vocational guidance and investment in the skill formation treated as strategic solutions in the medium and high skilled sectors and occupations with higher returns of investment in the development of human capital (engineering industry and metalworking, manufacturing, healthcare, ICT). What regards the role and place of the skill formation of the migrant workers in the solution of labour and skills shortages, the sustainability of this solution largely depends on the potential of the applied skills formation systems and measures to empower the integration of the migrant learners and workers not only by adjusting and developing their job-related skills but also fostering socio-cultural education.

Implications for policy and practice. Sustainable solutions of the labour and skills shortages require coordinated policy response, especially what regards the agendas of the economic, employment and migration policies. Emerging tensions between the ambitious strategies of the business strategies of sectors of economy requiring access to skilled workforce and restrictive immigration policies can be solved by fostering of the sectoral and national social dialogue on skill formation and migration, as well as by deeper integration of these topics in the existing forums and platforms of the social dialogue. Development of the skills partnerships with the origin countries on the level of enterprises and sectors of economy could favour and strengthen such social dialogue.

Implementation and expansion of such skills partnerships lead to the elaboration of sustainable pathways of the procurement, training and employment of the migrant workers, as well as develop the capacities of engaged parties – enterprises, education and training providers, employment agencies and other stakeholders on how to create transparent, resilient and fair pathways for training and integration of the migrant workers.

Sustainability of the integration of the migrant workers also depends on the proper functioning of the national systems of qualifications, especially in recognition of skills and qualifications. Here the main policy priorities should concern fostering of the ownership of the instruments of the national system of qualifications by the labour market stakeholders, development of the sectoral qualifications frameworks, ensuring proper links of national system of qualifications with the skills needs forecasting in the sectors, facilitating diversity of qualifications by integrating partial, micro-qualifications and credentials in the national system of qualifications, as well as by facilitating the linking of the sectoral and corporate qualifications systems and frameworks to the national systems of qualifications.

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Appendix: Secondary data figures

Figure 2: Immigrants from outside EU

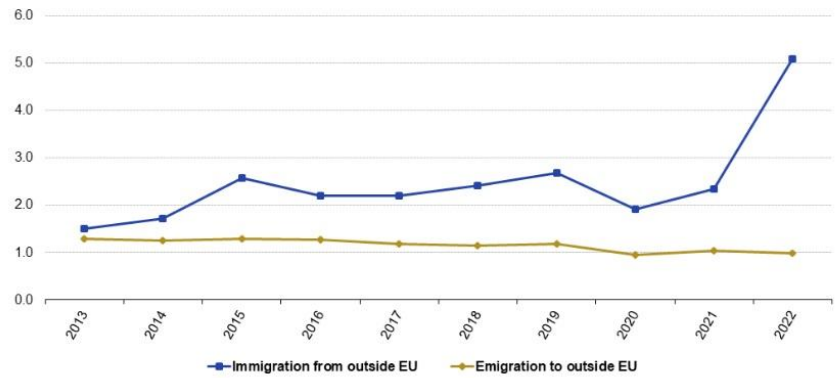
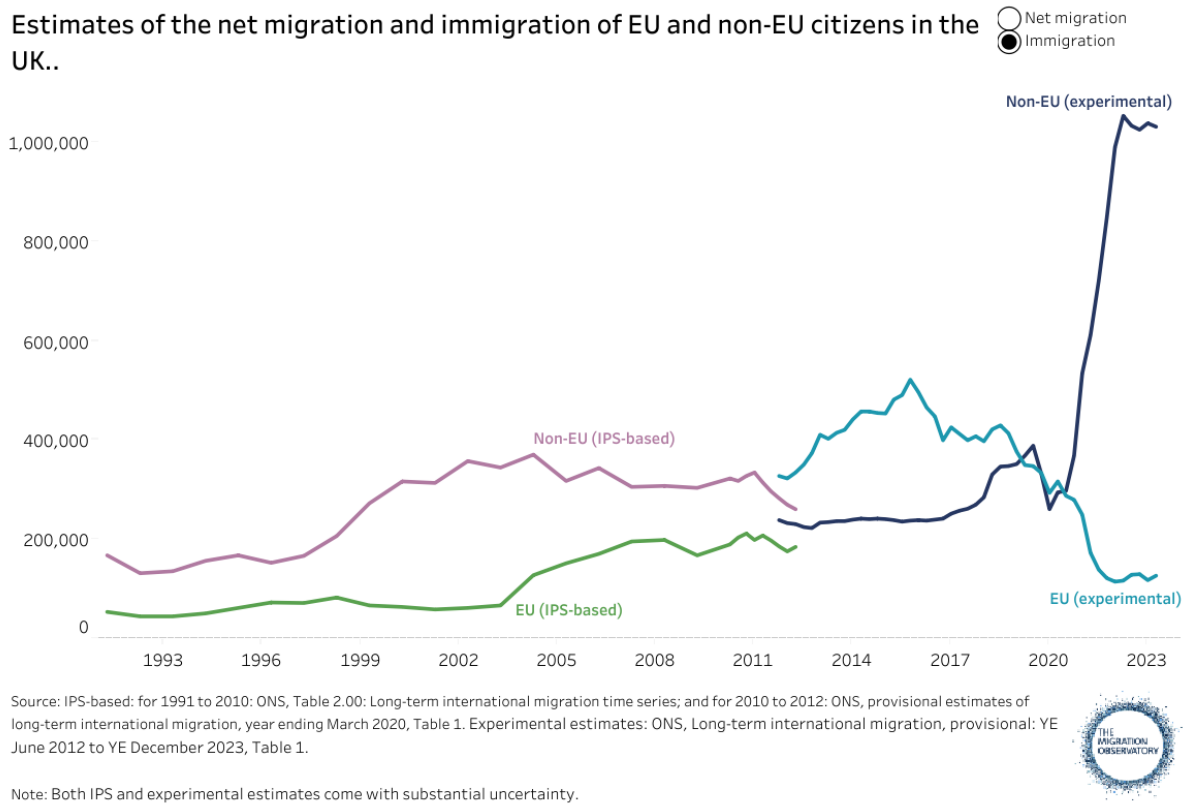


Figure 1: Immigrants from outside EU and emigrants to outside EU, EU, 2013–2022 (million)

Source: Eurostat (migr_imm12prv) and (migr_emi5nxt)

Source: Eurostat (2023)

Figure 3: Immigration to the UK



Source: Sumption et al (2024).

Figure 4: Non EU nationals and EU national migrants EU-LFS)

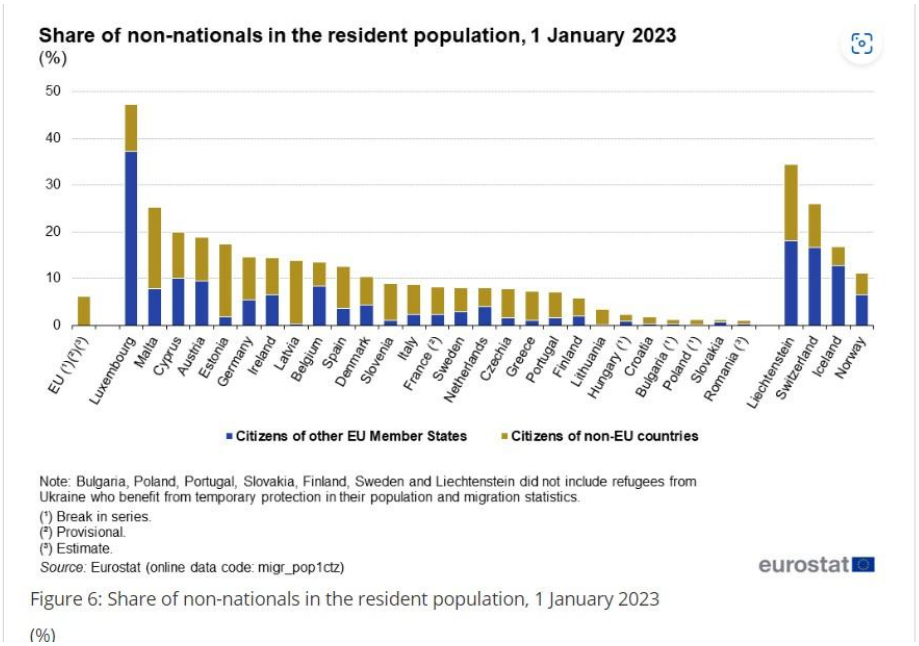
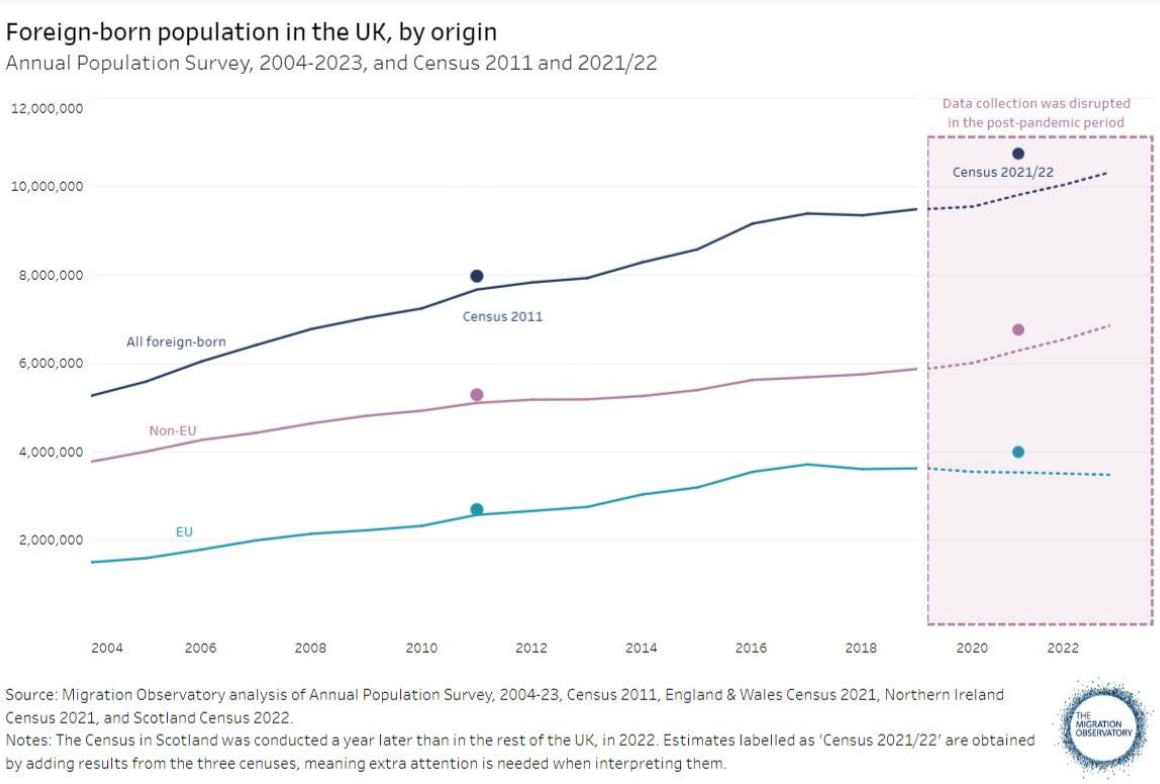


Figure 6: Share of non-nationals in the resident population, 1 January 2023

(%)

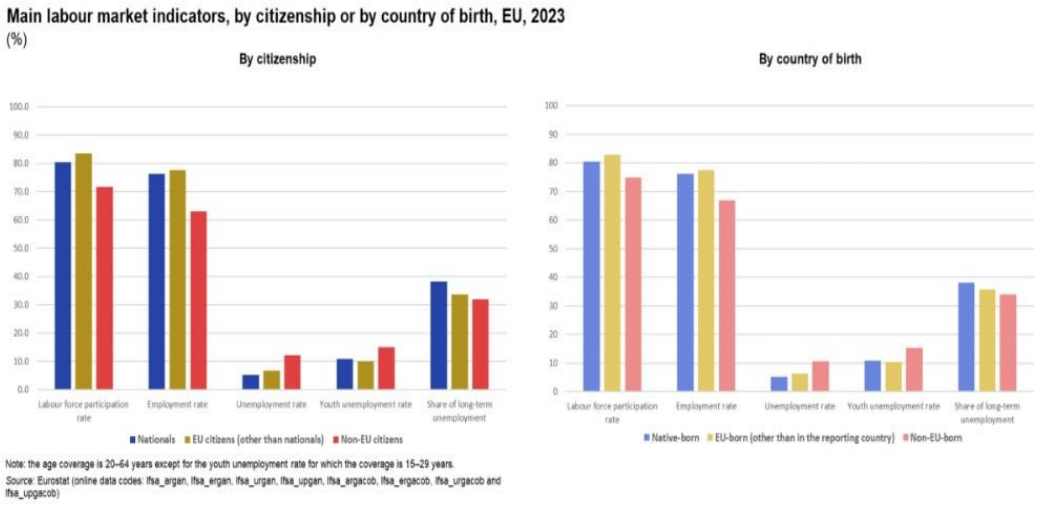
Source: Eurostat (2023)

Figure 5: Migrants in the UK



Source: Ciubus (2024)

Figure 6: Employment, Unemployment and Inactivity Rates (EU-LFS)

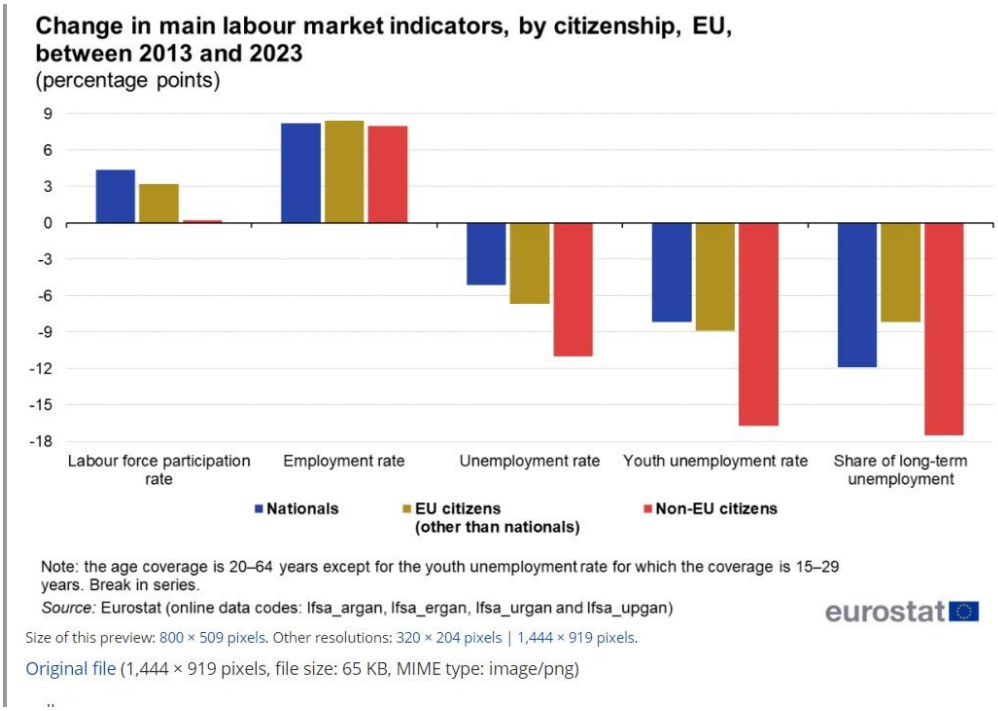


Size of this preview: 800 × 360 pixels. Other resolutions: 320 × 144 pixels | 2,241 × 1,008 pixels.

Original file (2,241 × 1,008 pixels, file size: 252 KB, MIME type: image/png)

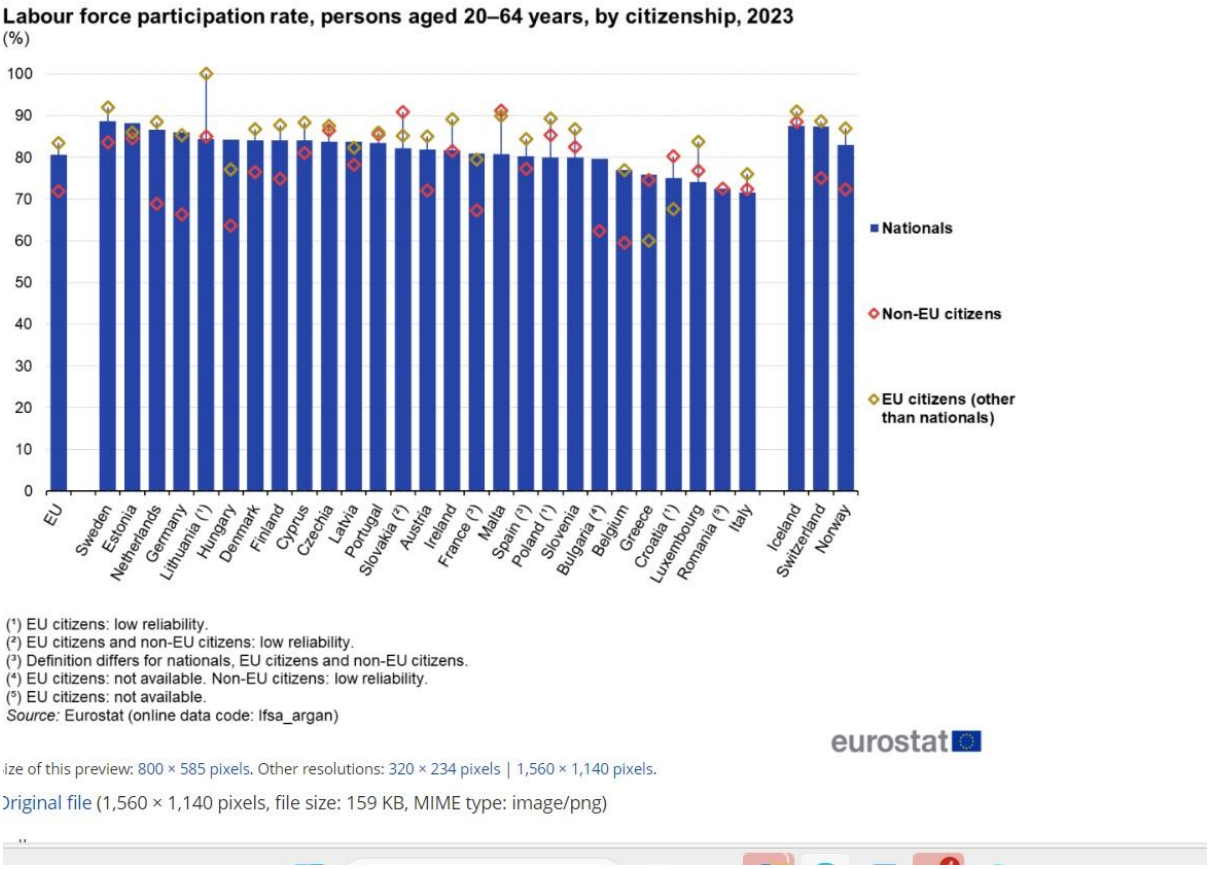
Source: Eurostat (2024)

Figure 7: Main Changes in employment, unemployment, participation 2013-2023



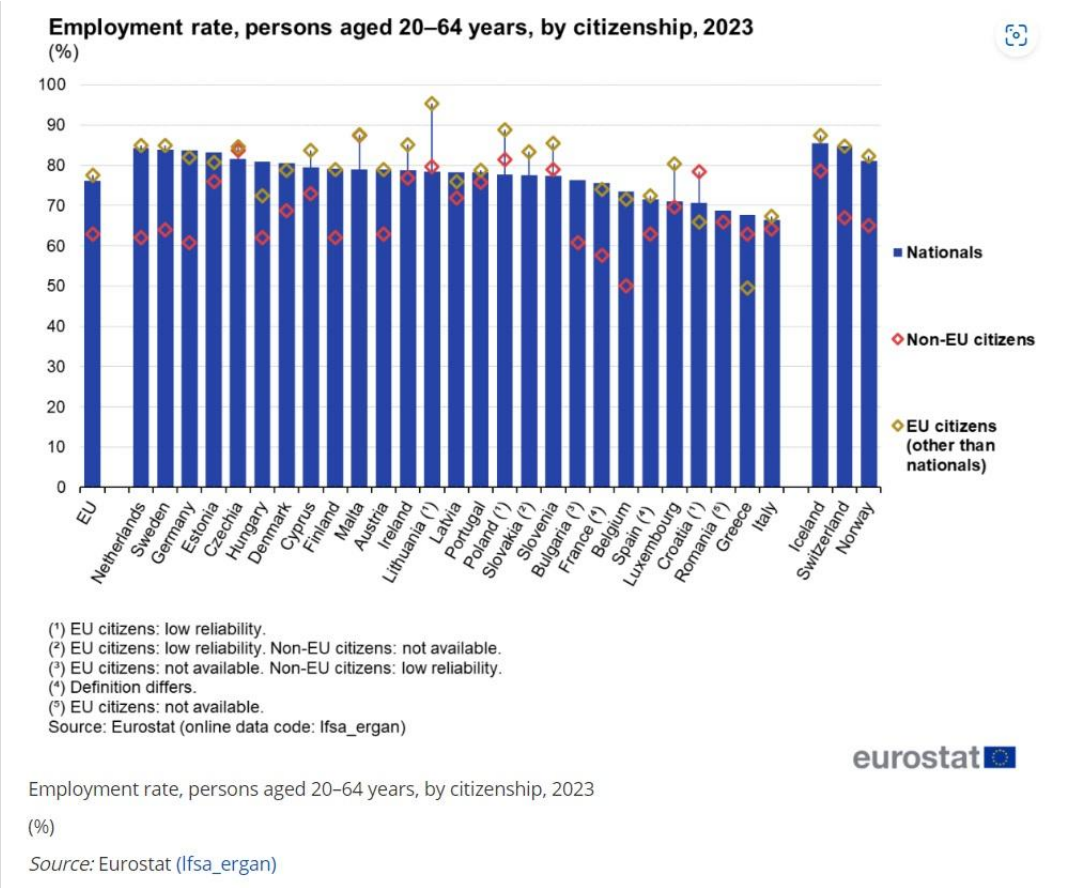
Source: Eurostat (2024)

Figure 8: Labour force participation rate, 2023 by member state (EU-LFS)



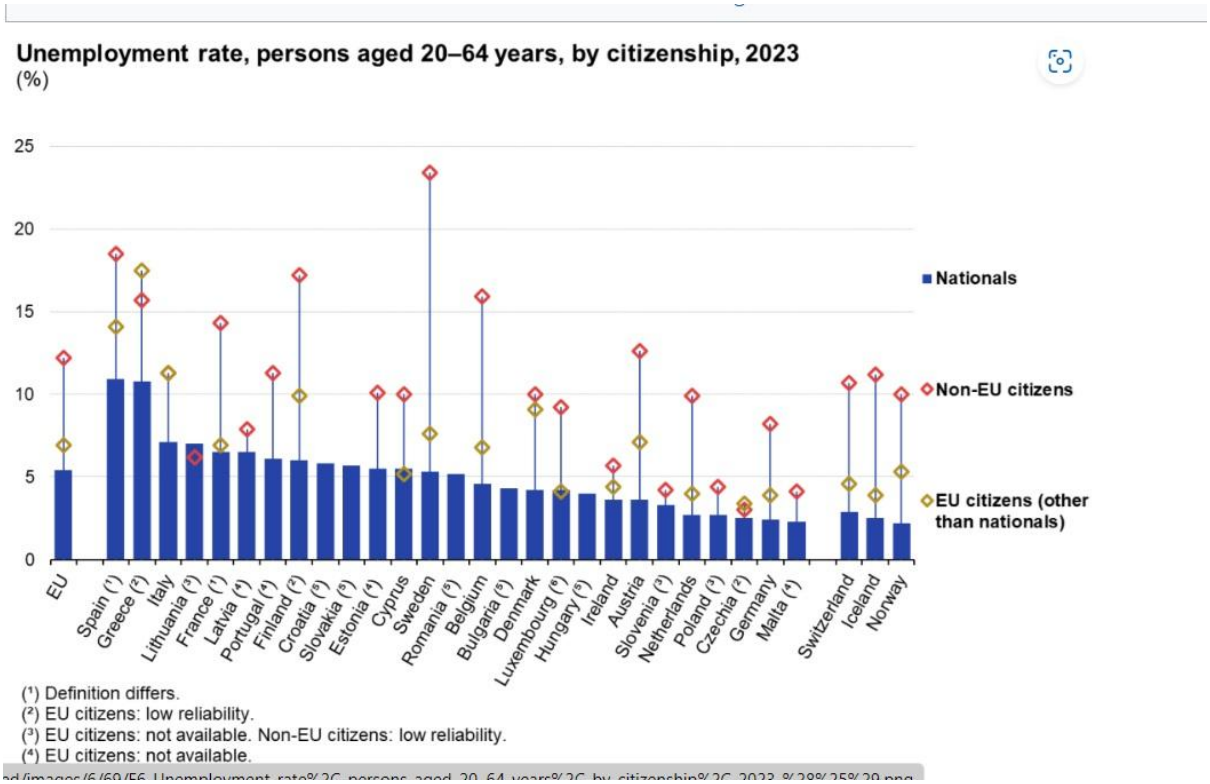
Source: Eurostat (2023)

Figure 9: Employment rate: migrants and non-migrants, 2023 by member state (EU-LFS)



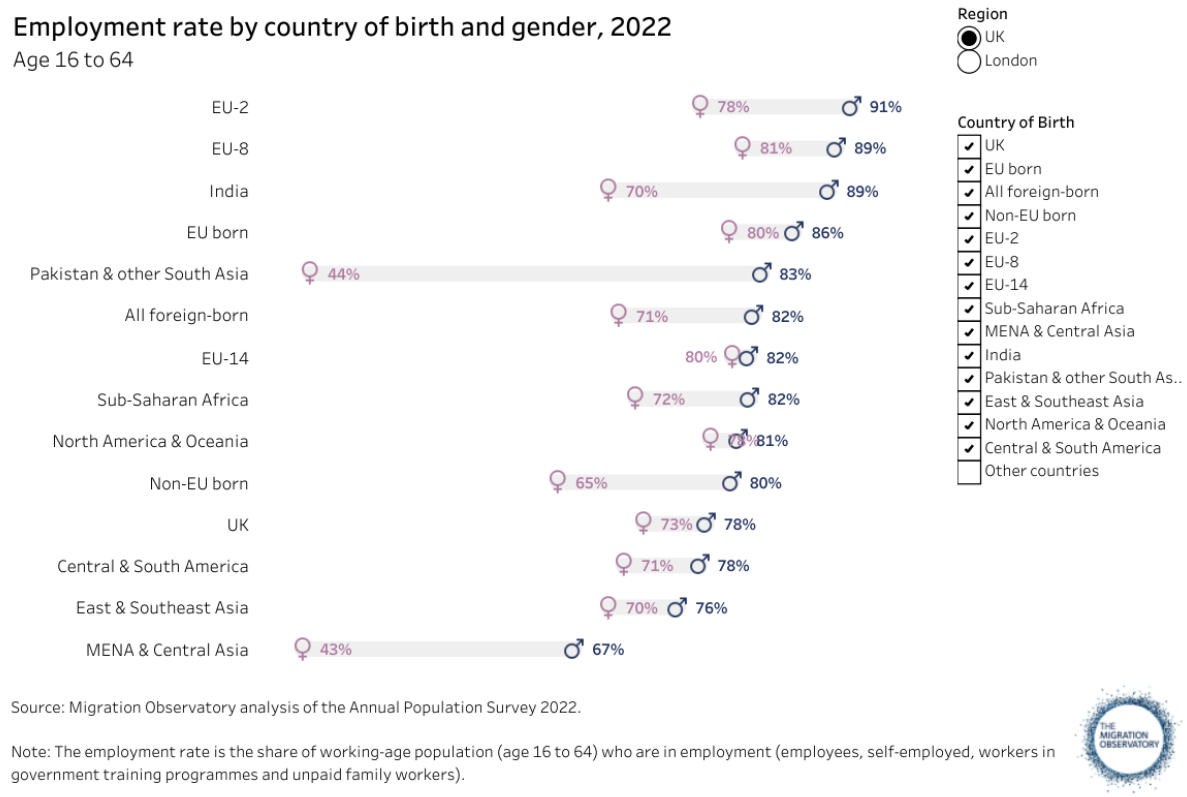
Source: Eurostat (2023)

Figure 10: Unemployment rate by country (EU-LFS)



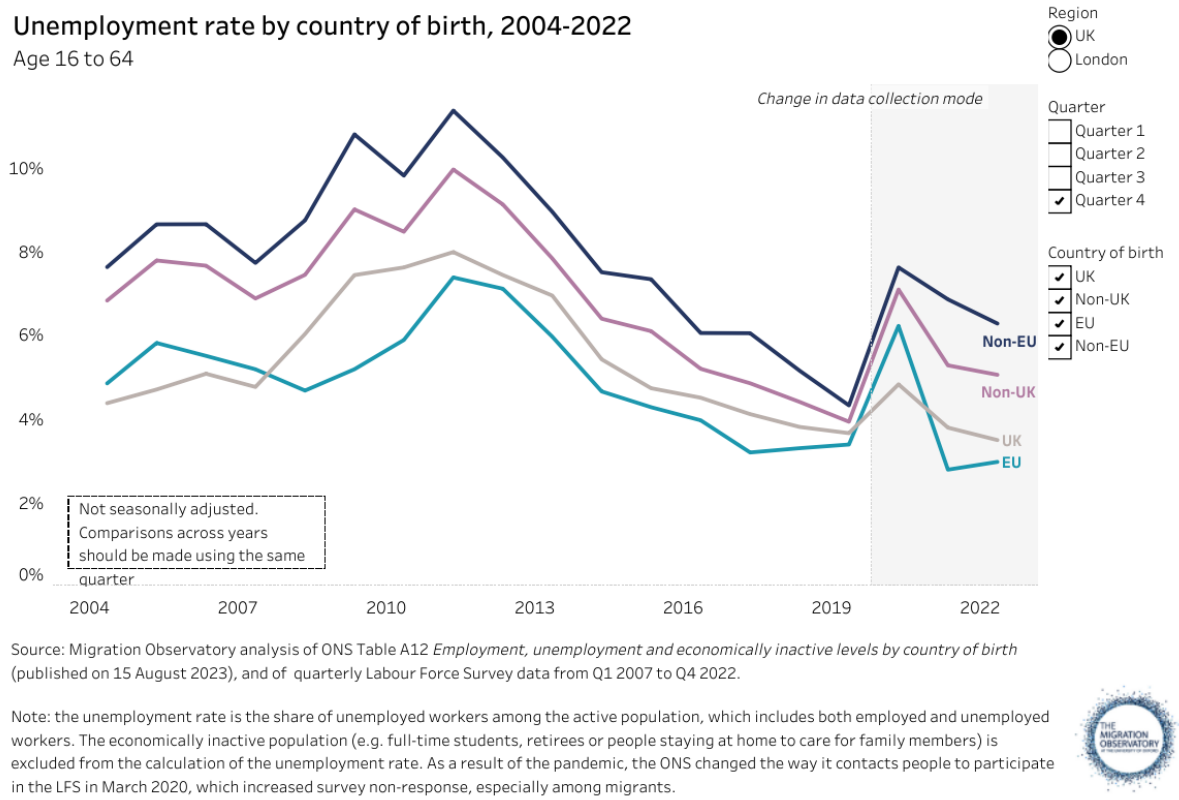
Source: Eurostat (2023)

Figure 11: Employment rates of migrants by country, UK



Source: (Fernandez-Reino and Brindle, 2024)

Figure 12: Unemployment rates by country of birth

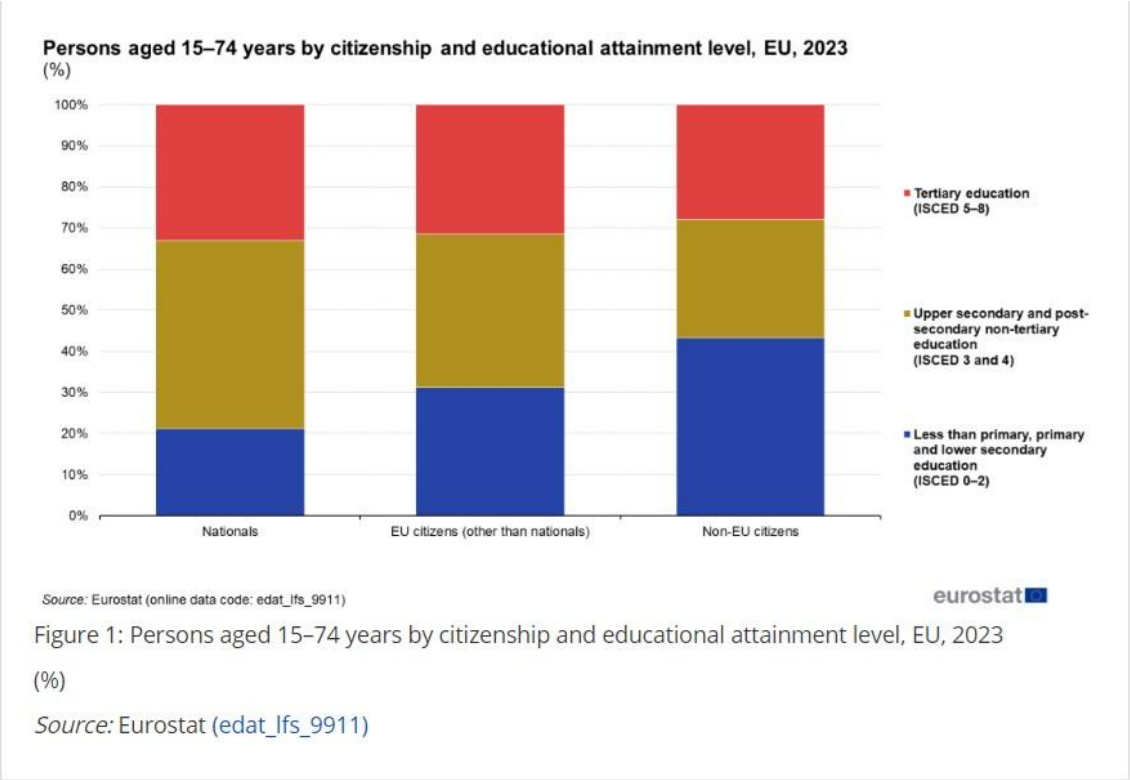


Source: Migration Observatory analysis of ONS Table A12 *Employment, unemployment and economically inactive levels by country of birth* (published on 15 August 2023), and of quarterly Labour Force Survey data from Q1 2007 to Q4 2022.

Note: the unemployment rate is the share of unemployed workers among the active population, which includes both employed and unemployed workers. The economically inactive population (e.g. full-time students, retirees or people staying at home to care for family members) is excluded from the calculation of the unemployment rate. As a result of the pandemic, the ONS changed the way it contacts people to participate in the LFS in March 2020, which increased survey non-response, especially among migrants.

Source: Fernandez-Reino and Brindle (2024)

Figure 13: Citizenship and educational attainment



Source: Eurostat (2023)

Figure 14: Educational Attainment by country

Persons aged 15–74 years by citizenship and educational attainment level, 2023
(%)

	Nationals			EU citizens (other than nationals)			Non-EU citizens		
	Less than primary, primary and lower secondary education (ISCED 0–2)	Upper secondary and post-secondary non-tertiary education (ISCED 3 and 4)	Tertiary education (ISCED 5–8)	Less than primary, primary and lower secondary education (ISCED 0–2)	Upper secondary and post-secondary non-tertiary education (ISCED 3 and 4)	Tertiary education (ISCED 5–8)	Less than primary, primary and lower secondary education (ISCED 0–2)	Upper secondary and post-secondary non-tertiary education (ISCED 3 and 4)	Tertiary education (ISCED 5–8)
EU	21.2	45.8	33.0	31.1	37.4	31.5	43.3	28.8	27.9
Belgium	19.2	38.5	42.3	27.0	30.1	42.9	40.8	25.9	33.3
Bulgaria (*)	16.4	55.3	28.3	:	:	:	:	44.6	48.6
Czechia	6.9	69.1	24.0	8.2	47.6	44.2	15.2	52.4	32.4
Denmark	19.3	40.4	40.4	12.0	34.7	53.3	35.6	27.7	36.7
Germany	12.2	54.4	33.4	37.0	37.9	25.1	44.8	26.6	28.6
Estonia (²)	11.6	46.4	42.0	:	33.4	57.7	9.7	55.6	34.7
Ireland	17.6	34.6	47.8	5.1	42.4	52.6	6.6	19.2	74.1
Greece	23.5	43.9	32.6	28.3	53.1	18.7	48.1	41.8	10.1
Spain	38.8	20.9	40.3	35.4	33.0	31.7	51.5	25.1	23.4
France	17.9	42.5	39.5	38.0	29.2	32.8	43.8	24.4	31.8
Croatia (²)	14.9	58.5	26.6	:	40.5	45.0	8.2	60.9	30.9
Italy	38.3	41.3	20.4	30.1	56.1	13.9	54.2	33.8	12.0
Cyprus	16.7	34.2	49.1	18.1	43.3	38.6	22.8	32.4	44.8
Latvia (*)	9.0	51.8	39.2	:	45.5	49.0	8.0	68.3	23.7
Lithuania	5.4	51.1	43.5	:	:	:	:	33.4	63.4
Luxembourg	18.4	40.6	41.0	24.0	20.8	55.2	19.6	17.2	63.3
Hungary	14.0	57.9	28.1	18.8	40.5	40.7	:	39.6	56.9
Malta	45.5	30.4	24.0	15.2	37.4	47.4	24.7	36.7	38.6
Netherlands	22.2	36.9	40.8	32.5	22.1	45.5	39.6	14.6	45.8
Austria	13.4	52.6	34.0	13.0	45.0	41.9	36.7	32.4	30.8
Poland	7.5	58.8	33.7	:	:	:	:	42.3	54.6
Portugal (²)	48.3	25.1	26.6	17.6	30.5	51.9	21.2	45.2	33.6
Romania (*)	22.8	60.8	16.5	:	:	:	:	57	:
Slovenia (²)	13.7	54.0	32.3	15.6	59.9	24.5	28.0	60.5	11.5
Slovakia	7.8	65.6	26.6	:	:	:	:	:	:
Finland	12.7	45.7	41.6	26.9	45.8	27.3	35.5	40.6	23.9
Sweden	11.8	41.8	46.4	18.4	19.4	62.3	36.4	15.1	48.5
Iceland	18.2	39.2	42.6	23.0	44.7	32.3	19.9	26.0	54.1
Norway	16.6	37.5	45.9	12.5	42.7	44.8	30.0	19.9	50.1
Switzerland	8.5	47.5	44.0	22.3	29.6	48.1	43.1	23.2	33.7

: data not available.
(*) Non-EU citizens; ISCED 3 and 4 and ISCED 5-8: low reliability.
(²) EU citizens, ISCED 3 and 4: low reliability.

Figure 15: Tertiary qualifications by EU country (EU LFS)

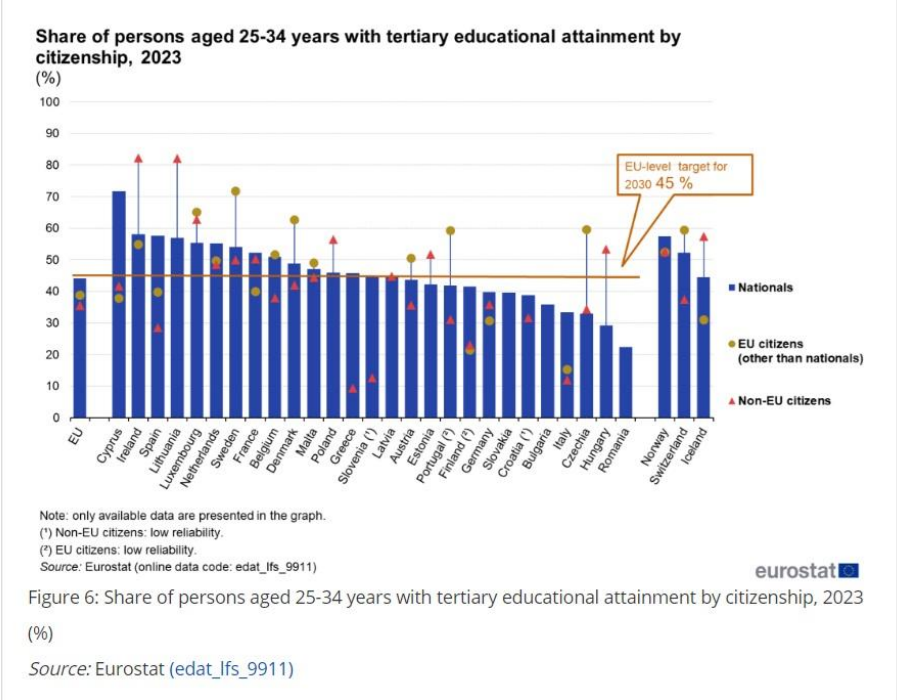


Figure 6: Share of persons aged 25-34 years with tertiary educational attainment by citizenship, 2023 (%)

Source: Eurostat (edat_lfs_9911)

Source: Eurostat (2023)

Figure 16: Characteristics of migrants and UK workers, Bell and Johnson pooled LFS data 2002-2019

Migrant Group	UK	A12	EU14	ROW
Median Age	40	31	33	33
% Under 30	0.251	0.434	0.345	0.342
% Male	0.507	0.505	0.535	0.571
% London	0.11	0.21	0.467	0.399
Years of Schooling	13	13	15.3	14.8
% Less than 12 YoS	0.44	0.369	0.157	0.172
% Degree	0.324	0.271	0.578	0.553

Source: Bell and Johnson (2023)

Figure 17: Overqualification by citizenship (EU-LFS)

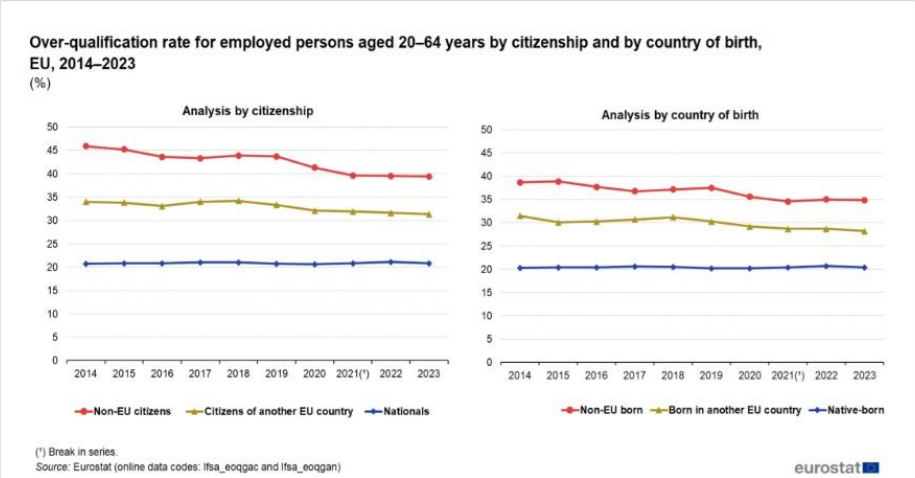


Figure 1: Over-qualification rate for employed persons aged 20–64 years by citizenship and by country of birth, EU, 2014–2023

(%)

Source: Eurostat (lfsa_eoqgan) and (lfsa_eoqgac)

Source: Eurostat (2023)

Figure 18: Overqualification by EU country (EU-LFS)

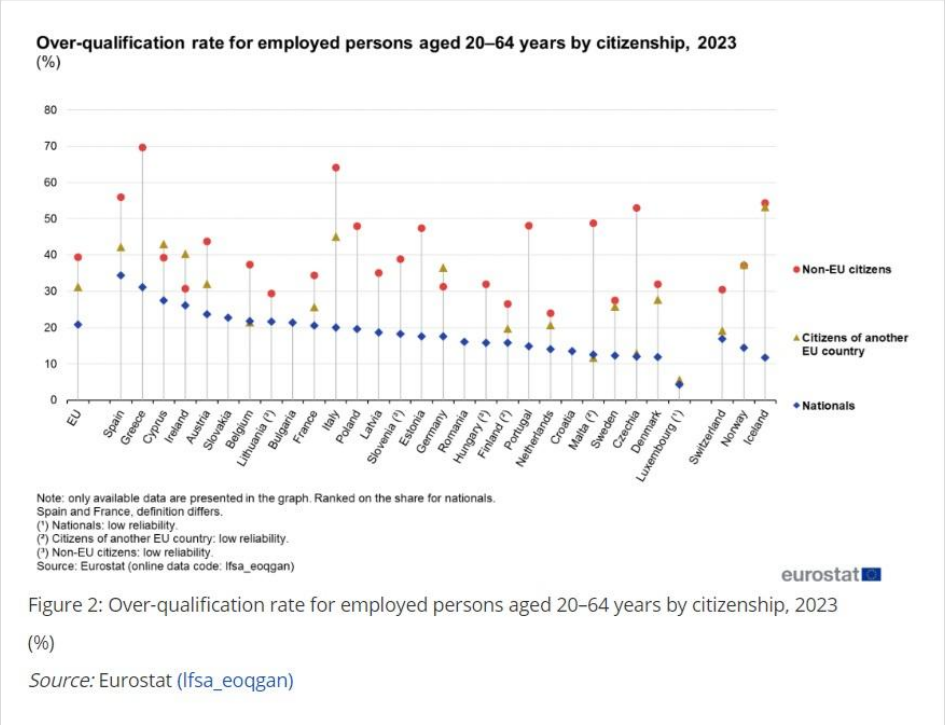


Figure 2: Over-qualification rate for employed persons aged 20–64 years by citizenship, 2023 (%)

Source: Eurostat (lfsa_eoqgan)

Source: Eurostat (2023)

Figure 19: Broad Occupational employment distribution, migrant workers and UK workers

All

	UK	A12 Earlier	A12 Recent	EU14 & ROW Earlier	EU14 & ROW Recent	Average wage
Manager	12.6	4.9	1.7	10.6	8.9	19.55
Professional	31.8	14.1	8.1	37.6	38.6	17.83
Skilled & Semi-Skilled	38.6	32.8	25.4	32.3	28	9.8
Routine	17.1	48.3	64.8	19.6	24.5	8.68

Source: Bell and Johnson (2023)

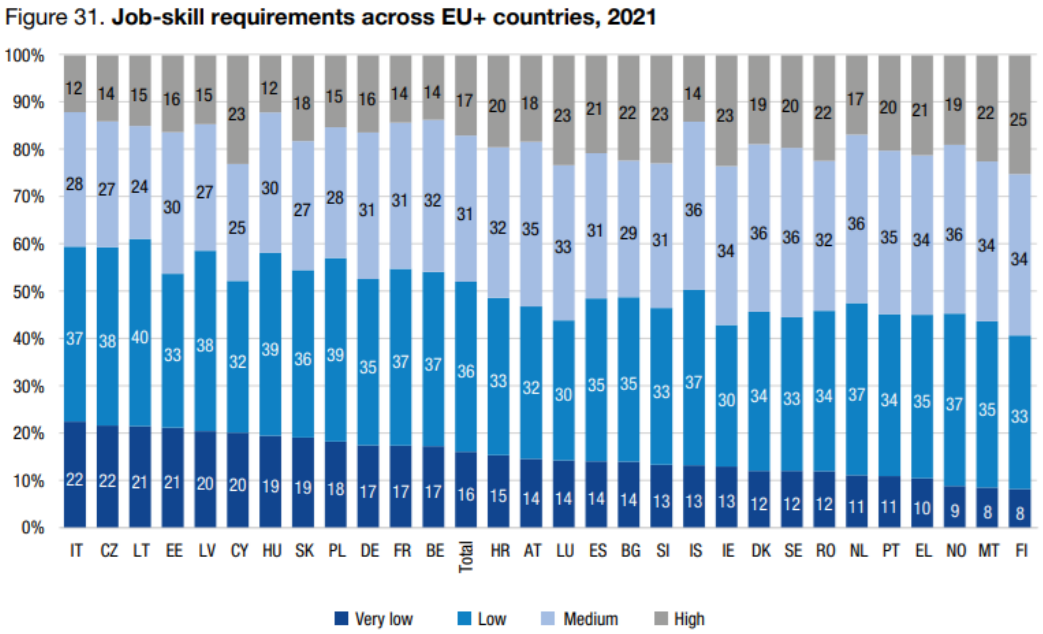
Figure 20: 'Immigration downgrading' in the UK

High Education

	UK	A12 Earlier	A12 Recent	EU14 & ROW Earlier	EU14 & ROW Recent	Average wage
Manager	16.1	7.6	3.6	12.8	11.9	
Professional	62.7	31.3	26.8	55.3	54.5	
Skilled & Semi-Skilled	17.9	31.9	29	20.5	21.4	
Routine	3.3	29.2	40.5	11.4	12.3	

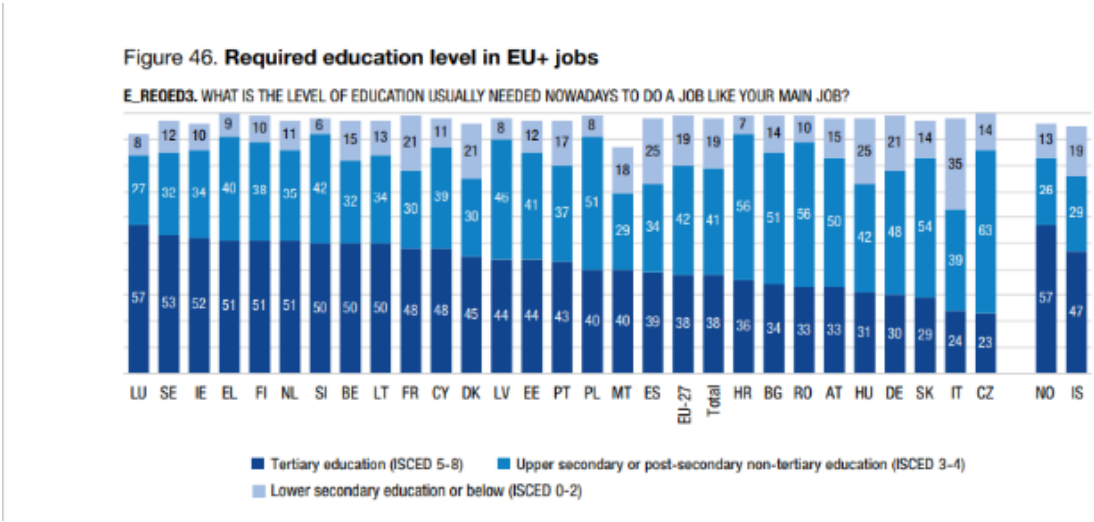
Source: Bell and Johnson (2023)

Figure 21: Composite Measure of skills requirements of jobs



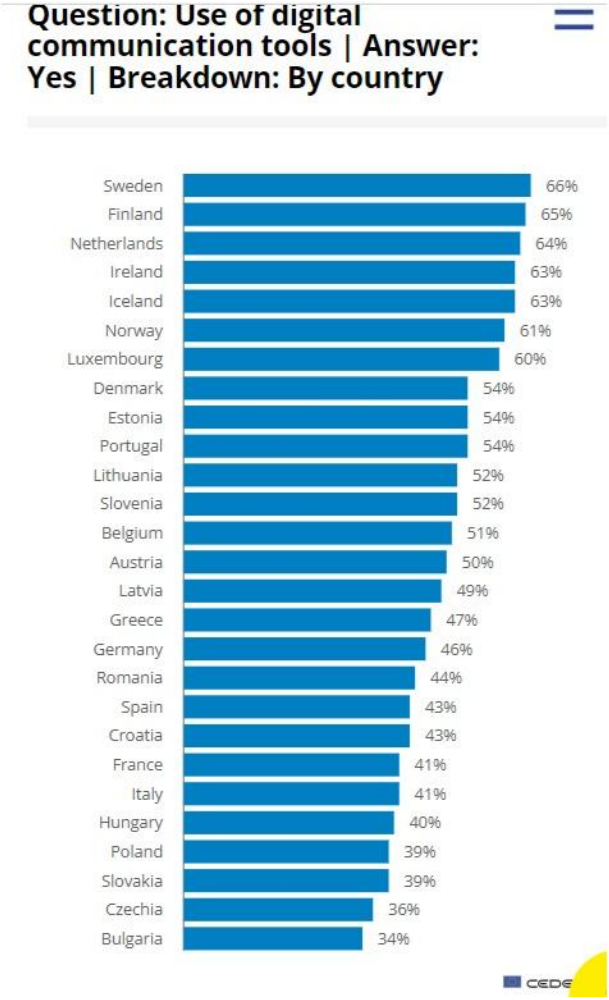
Source: CEDEFOP (2022)

Figure 22: Perceptions of required qualifications to do your job (employees) (ESJS2)



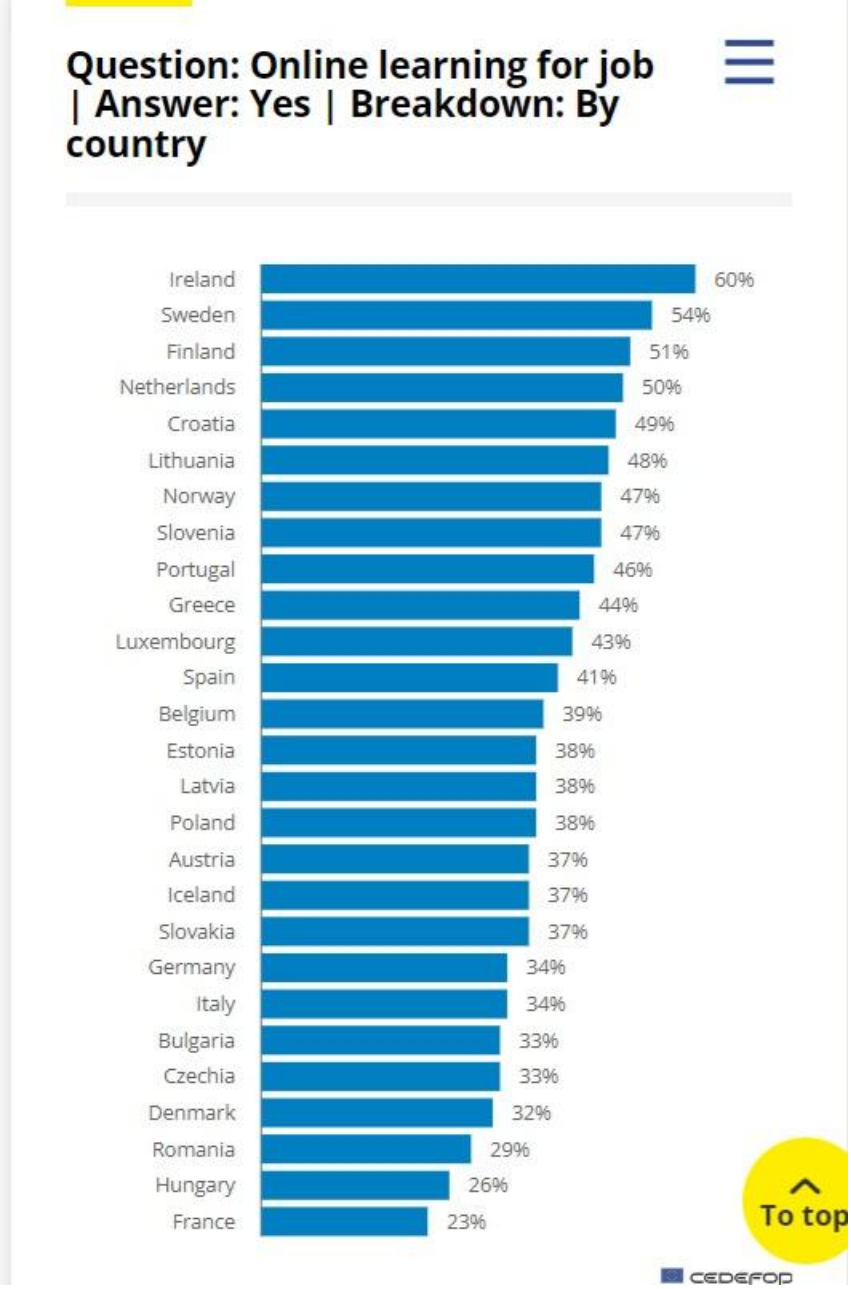
Source: CEDEFOP (2022)

Figure 23: Greater use of Digital Communication skills since COVID (ESJS2)



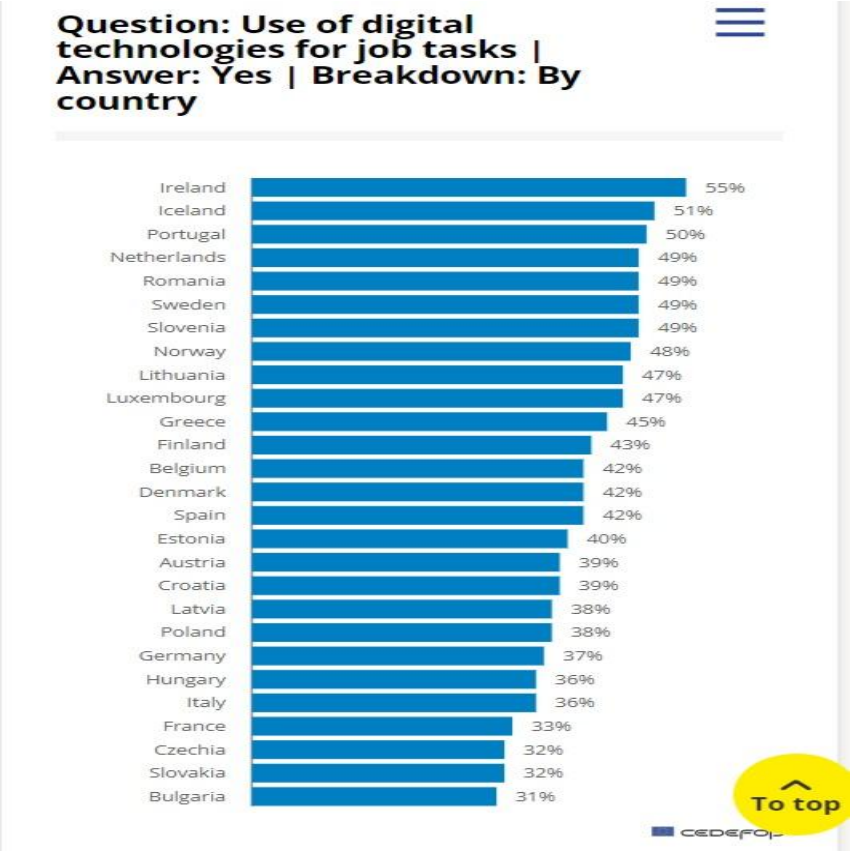
Source: ESJS2

Figure 24: Greater online learning for job since COVID-19



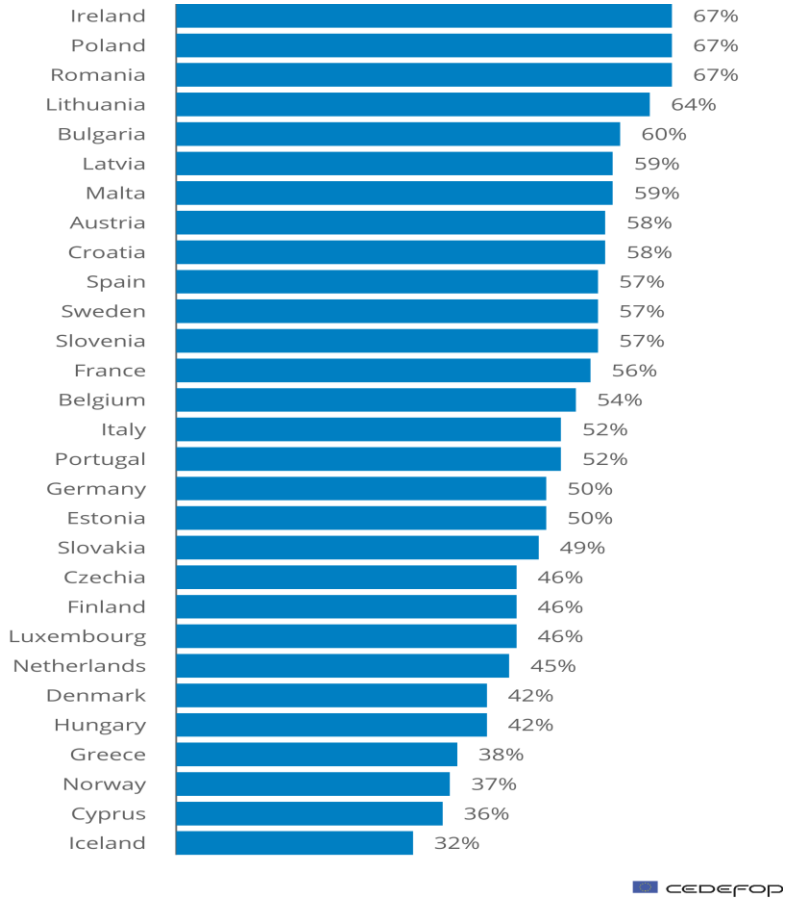
Source: ESJS2

Figure 25: Greater use of digital technologies for job tasks



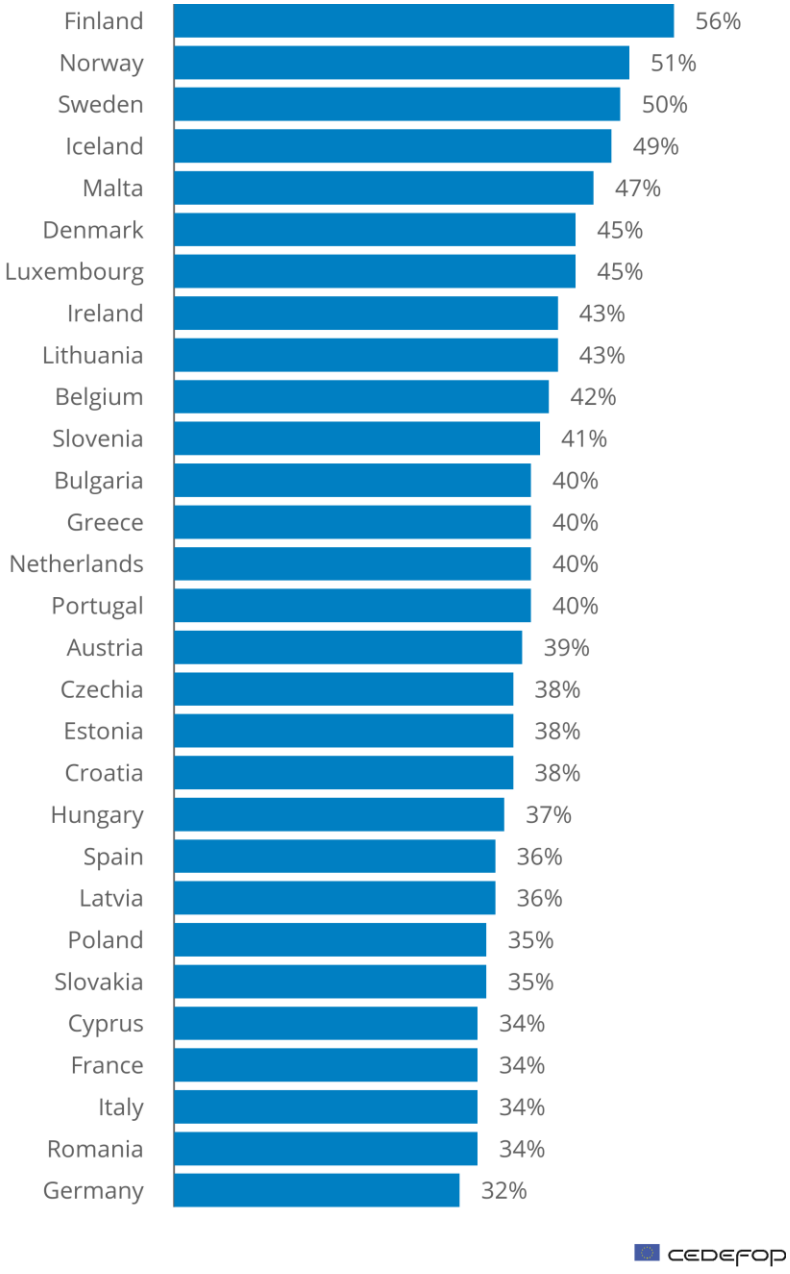
Source: ESJS2

Figure 26: Impact of digitalisation on job tasks



Source: ESJS2

Figure 27: Use of new computer programmes by country (ESJS2)



Source: ESJS