RUHR VALLEY

A case study on green jobs and skills development for people with low qualifications

The Ruhr Valley is a metropolitan area in North Rhine-Westphalia in Germany. The Ruhr Valley includes 11 cities and four districts, which had a combined 5,112,050 inhabitants in 2019.[1, 2] The cities and districts of the Ruhr Valley do not share an overarching administrative authority and are independent of each other. Yet, due to the proximity of the cities to each other there is a high interconnectivity when it comes to employment. In 2019, 1,780,332 people were in employment subject to social security.[3, 4] The overall unemployment rate of the Ruhr Valley in December 2021 was 8.9 per cent, but it differs substantially between the different cities in the Ruhr Valley. In Gelsenkirchen, the unemployment rate was 13.7 per cent, while in the district of Wesel it was 5.9 per cent.[5] At 55.1 per cent, the employment rate of women is low in the Ruhr Valley compared to 71.8 per cent of women aged between 15 and 65 on the federal level. For women who are not German citizens, the rate is even lower at 27.7 per cent.[6, 7]

Context

The Ruhr Valley is known as the coal mining and steel industry area of Germany.[8] With the decline in these sectors and the last hard coal mine officially closing in 2018, the region had to and continues to undergo a green transformation with the green sector being one of the main growing economic sectors in the region. Since 2010, the green sector has grown by 11,500 jobs. In 2019, there were 127,000 green jobs and this is expected to continue to increase the coming years.[9]

Since 2010, the green sector has grown by 11,500 jobs

Aside from university degrees, the German apprenticeship scheme is a vital part of the qualification system. The apprenticeship scheme was originally aimed at people who have no or low levels of qualifications.[10] Currently, 6.7 per cent of the population in the Ruhr Valley left school without any qualifications.[11] In the Ruhr Valley, about 30,000 young people start an apprenticeship each year. This number, however, is declining and the number of young women

doing apprenticeships is declining faster than the number of young men. At the same time, there is an increase of young people gaining qualifications allowing them to attend universities. These developments further increase the skilled labour gap in the manual trade sector.[12]

The Ruhr Valley is home to a large migrant population in the area, although this varies between cities.[13] In Hagen, 41.9 per cent of the population have a migration background, while this is the case for only 19.5 per cent in the district of Wesel.[14] In North Rhine-Westphalia, a disproportionate amount of people with a migrant background leave school with a low level of qualification.[15]

Green job opportunities

There were about **127,200 green jobs** in the Ruhr Valley in 2019, which is about 5.3 per cent of all jobs in the region. Most can be found in the following three sectors:

Material efficiency (35,300 jobs) for example: waste management, material efficient production processes, renewable resources.

E-mobility (34,000 jobs) for example: automated transport technology, more environmentally friendly public transport, alternative transport.

Water management (18,400 jobs) for example: monitoring and analysis of water quality and quantity, water and sewage treatment.[16]

The top sectors in the green economy are strongly linked to the pre-existing sectors that were in the region due to the coal and heavy industry. Those industries heavily relied on efficient production and use of materials, needed a lot of energy and water for the production of products/ mining, and needed water to be cleaned and filtered after use in the factories.[17]

The Skills-OVATE[18] data gives insights to job opportunities advertised online without distinction to green jobs but allows the filtering of vacancies suitable for people with low qualifications if we exclude occupations such as professionals, managers or researchers, which likely require a university degree. The analysis of 409,842 online job advertisements (OJAs) found in the three governmental districts covering the Ruhr Valley[19] (see **Annex A**) shows that occupations for people without tertiary education were office associate professionals (39,652 OJAs), technical labourers (31,346), science and engineering technicians (21,091), care workers (13,679), customer clerks (13,587), metal and machinery workers (13,486), construction workers (11,649), sales workers (11,438), machine and plant operators (10,582), and drivers and vehicle operators (9,578).[20] For more details, see graphs in **Annex A**.

The specific search for green jobs carried out by RAND Europe (see **Methods**) identified 30 jobs in the Ruhr Valley. All of these jobs were in the private sector and most were offered by green employers (28). No job advert provided salary information. Key sectors included electricity, gas, steam and air conditioning supply (10), waste collection, treatment and disposal activities, materials recovery (6), and other professional, scientific and technical activities (6). Among the main occupations were science and engineering professionals (21), science and engineering associate professionals (6), and production and specialised services managers (5).

About 5.5 per cent of all job adverts in the Ruhr Valley are green jobs, which is above the North Rhine-Westphalian average of 5 per cent.[21] The number of available green jobs varies between cities in the Ruhr Valley region. In Herne, 8.4 per cent of all advertised opportunities are in the green economy, yet in Mülheim an der Ruhr it is 3.1 per cent.[22]

The term 'skilled labour shortage' is frequently used in Germany, especially looking at the manual trade sector.[23] Currently across all economic sectors, it is estimated that in North Rhine-Westphalia about 450,000 skilled workers are missing. By 2030, this number is predicted to rise to 700,000.[24] The Ruhr Valley struggles with matching growing numbers of apprenticeships with growing numbers of people interested in apprenticeships, as many apprenticeship places remain unoccupied. This is often because of a mismatch between people's qualifications and the requirements of available positions near where they live.[25]

By 2038, the Ruhr Valley will receive up to €662m to support the structural move away from the heavy and coal industry and to ensure a transition for those working in industries that are in decline or undergoing complete transformations. The green economy is intended to benefit from this investment in a continuous effort to grow green jobs and sustainable job opportunities in the region.[26]

There are multiple networks to promoting the Ruhr Valley as an attractive location for the green economy. One of these networks, Greentech.ruhr,[27] supports companies who want to transform their companies, new industries and start-ups, and established companies in the green economy.[28] This support is heavily related to supporting companies to find skilled workers and support digitalisation. Other networks, such as the h2-netzwek-ruhr,[29] are specialised in a specific industry and promoting and growing that industry in the Ruhr Valley.[30] These networks play an important role in creating green job opportunities in the Ruhr Valley.[31]

Skills needed for green jobs

### National- and regional-level data on skills needed for green jobs

In Germany, the discourse around skills is mostly tied to the level of qualifications and not directly linked to skills needed to get into the green sector. There are ongoing discussions between employers concerning if and how qualifications need to be adapted to meet the needs of the green sector as jobs and skills requirements change.[32] One of the biggest opportunities to include more people with lower education levels is in the manual trade sector, but data shows that this is not always implemented.[33] In North Rhine-Westphalia, 24 per cent of all jobs in the green economy are part of the manual trades, which is where most apprenticeships can be found.[34] Apprenticeship programmes originally were meant to support

people with no or low qualifications into employment, but in recent years a shift has been identified in the level of qualifications of those doing apprenticeships. In 2018, only 20.1 per cent of apprenticeship contracts signed went to people with the lowest level of school qualification (*Hauptschulabschluss*), while 42.2 per cent went to people with qualifications needed to attend university (*Hoch-* or *Fachhochschulereife*).[35]

Soft skills are gaining more importance in the green sector. The Federal Agency for the Environment (*Umweltbundesamt*) highlights that due to the constant changes and developments in the green sector and with that the changing requirements within jobs in the green sector, transferable soft skills such as communication and teamwork skills grow in importance.[36] It is expected that technical skills will need to be learned on the job and adapted throughout the working life of people, which means transferable skills that help people adapt become more important to employers.[37] Other soft skills mentioned as important are punctuality, reliability and honesty.[38]

Local-level data on green skills

The analysis of green jobs identified by RAND Europe shows that the average work experience required in the Ruhr Valley is one year. In terms of qualifications needed, 17 adverts indicated a completed apprenticeship and 12 listed a university degree as a requirement. This reflects the employment landscape in the Ruhr Valley as many jobs in the green sector require technical expertise gained in an apprenticeship.
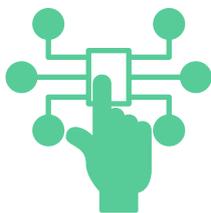
About 12 per cent of all jobs in the green sector in the Ruhr Valley required digital skills, although there is some variation between cities.[39] In Oberhausen, 16.9 per cent of job ads require digital skills compared to 4.2 per cent in Hamm.[40] The shift to digitalisation also effects those occupations traditionally undertaken by people with low qualifications. With the introduction of new technologies, the job profile of, for example, electricians will shift substantially and require more digital skills.[41]

The analysis of skills in the Skills-OVATE[42] data shows that some of the most frequently sought characteristics were soft skills, namely communication, attitudes, languages or generic programmes and qualifications.[43] Employers also often looked for digital skills, business, administration and law skills, information and communication technologies, management skills, engineering, manufacturing and construction skills, as well as information skills (see **Annex A**).[44]

RAND Europe skills analysis showed that few job adverts named specific green skills. The most commonly named skill was knowledge of environmental topics (4). Other skills showed the growing demand of digital skills, as working with computers was the most frequently required skill (22). This was followed by soft skills such as communication skills (15), management skills (15), working independently (10) and languages (10). Working with specialised machinery, including driving of vehicles, was also mentioned frequently (11) (see **Annex A**).

Training and education provision for green skills

In Germany, the formal education system from primary school to higher education is the main training and education provider. For vocational training in green skills, colleges (*Berufschulen*) are one of the key actors. These colleges are mostly part-time and support education while apprentices also learn on the job in companies.[45] The colleges teach general skills, such as German and mathematics, and more specialised training, for example in electrical engineering.[46]

Internship or work experience programmes are common ways for people to learn sector specific skills and get to know specific sectors.[47] The Federal Employment Agency (*Bundesagentur für Arbeit*) states that personal contacts developed through participation in internship programmes might help workers into further employment or apprenticeships, particularly those with low qualifications.[48]

Overall, training and education seem to have become more important in the labour market and the number of employment opportunities for people with low qualifications are predicted to decrease. It has to be noted that while the amount of employment opportunities for workers with medium qualifications are also decreasing, they are still predicted to make up the majority of jobs (see the Cedefop projections in **Annex B**).

Relevant stakeholders and interventions

In the Ruhr Valley, there is a multitude of stakeholders in the green economy. Some stakeholders operate locally on the city level, while others operate across the whole region. Local authorities, employment services and regulatory bodies (e.g. the Chamber of Manual Trade NRW) have independent offices in each of the cities.

Relevant stakeholders identified in the Ruhr Valley

Education and training providers

KWS Energy Knowledge
Public colleges supporting apprenticeship programmes
Hochschule Ruhr-West

Employment services

Jugendberufshilfe Essen
JobCentre/Arbeitsamt in each city

Civil society organisations

Arbeiterwohlfahrt (local offices in each city)
h2-netzwerk-ruhr
Prejob- Dortmund

Local authorities

Gesellschaft für innovative Beschäftigungsförderung

Employer organisations

KUER. NRW
Regionalagentur Mittleres Ruhrgebiet

In the Ruhr Valley, many initiatives such as apprenticeships and internship programmes are individually set up and run by employers, often on a rolling or annual basis. Apprenticeship programmes are connected and tied to federal guidelines and the standards set by the different chambers of manual labour. These initiatives are advertised through job portals or on the websites of the companies.[49] Examples of initiatives outside of these structured programmes can be found below.

Multiple organisations – Girls Day

Girls Day is an initiative to allow girls to get to know industries that are male dominated, in particular STEM fields. It is an annual programme where organisations open their doors for students to spend the day and get to know their jobs. It is open to all participating schools and not specifically targeted at people with low qualifications.

KWS Energy Knowledge – Empower Refugees

This initiative is a collaboration between the wind energy sector and the school KWS to provide refugees with no recognised qualifications in Germany with an apprenticeship programme in the growing wind energy sector. The programme combines technical learning with the learning of German and other basic skills.

Prejob – Dortmund

Initiative to support young people with homelessness experience and no to low qualifications into finishing school and getting qualifications, supporting them through the transition into the job market. Some of the supporters of this initiative work in the green sector and are working on a cooperation to hire people who are going through the project.

Many initiatives available to support people into work are not openly accessible as they are so-called 'measures' by job centres targeted at people who are on unemployment benefits. These 'measures' include skills classes, such as language or ICT classes, and are only accessible via a referral by the job centre.[50] In 2018, 7.8 people per 1,000 inhabitants took part in such courses as a condition for receiving unemployment benefits in this region.[51]

Summary conclusion

- In the Ruhr Valley, the green economy is a fast-growing sector, accelerated by the move away from coal and other traditional industries. There is a high number of people with no or low qualifications in the region and also a high number of people with a migration background facing barriers to employment. As there is a disproportionate amount of people with a migration background with no or low qualifications, additional barriers are often faced when overcoming barriers to employment.

- Jobs in manual labour, such as those taken by electricians or people working with machinery, are the most common entry points for people with low or no qualifications into the green economy.

- There are many open apprenticeship places in the Ruhr Valley in the green economy, but missing qualifications and skills lead to a gap in matching people to programmes.

- Digital skills are gaining in importance for all jobs as Germany undergoes a green and digital transformation. This impacts low-skilled workers as they may need additional support in these areas.

- Many initiatives in the Ruhr Valley are closely tied to the existing structures of the German education and employment system. Apprenticeship programmes and measures supported by the employment agency are the main source of training and education to enable people from vulnerable groups to find work in the green sector.

Methods

1. **Targeted documentation review:** The review followed a protocol that spelled out the search terms, inclusion and exclusion criteria (see details in the final report).[52] The full list of sources consulted is presented in **Notes and References**.

2. **Analysis of EU Skills Panorama data:** The analysis included Cedefop projections of future employment growth across all sectors and occupations, as well as the changes in the level of education expected in Germany by 2030. The dataset uses NACE Rev. 2 (statistical classification of economic activities) and International Standard Classification of Occupations (ISCO-08).

3. **Analysis of Skills-OVATE data:** The database provided by Cedefop collates OJAs from multiple sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. In December 2021, there were 409,842 OJAs in the Skills-OVATE database for the three governmental districts of the Ruhr Valley covering the period from the third quarter of 2020 to the second quarter of 2021. The database does not allow filtering out green job vacancies only. OJAs do not reflect the market demand for jobs across all occupations and sectors equally well: some sectors or professions are overrepresented if they are more likely to advertise online, while others are underrepresented.

4. **Online search for green jobs and data analysis:** The search of Jobverde.de and the Jobbörse of the Arbeitsagentur conducted on 23 September 2021 identified 30 green job advertisements in the Ruhr Valley. Data were extracted, coded and cleaned. Descriptive statistics was used to analyse the results.

Annex
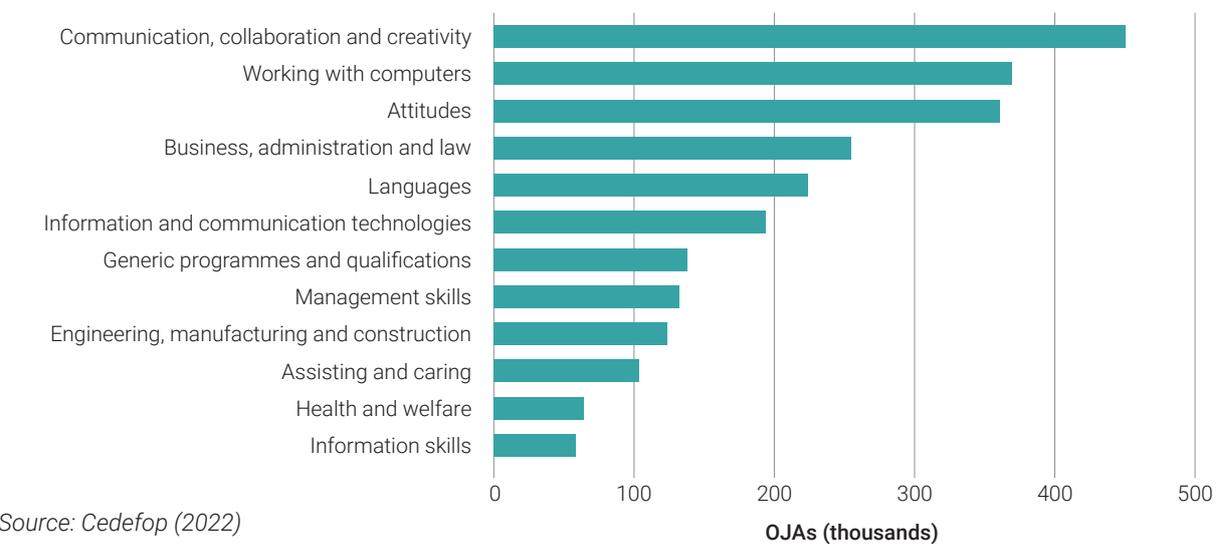
Annex A. Analysis of Skills-OVATE data (Q3 2020–Q2 2021)

Figure 1. Online job advertisements (OJAs) per occupation (Ruhr Valley)
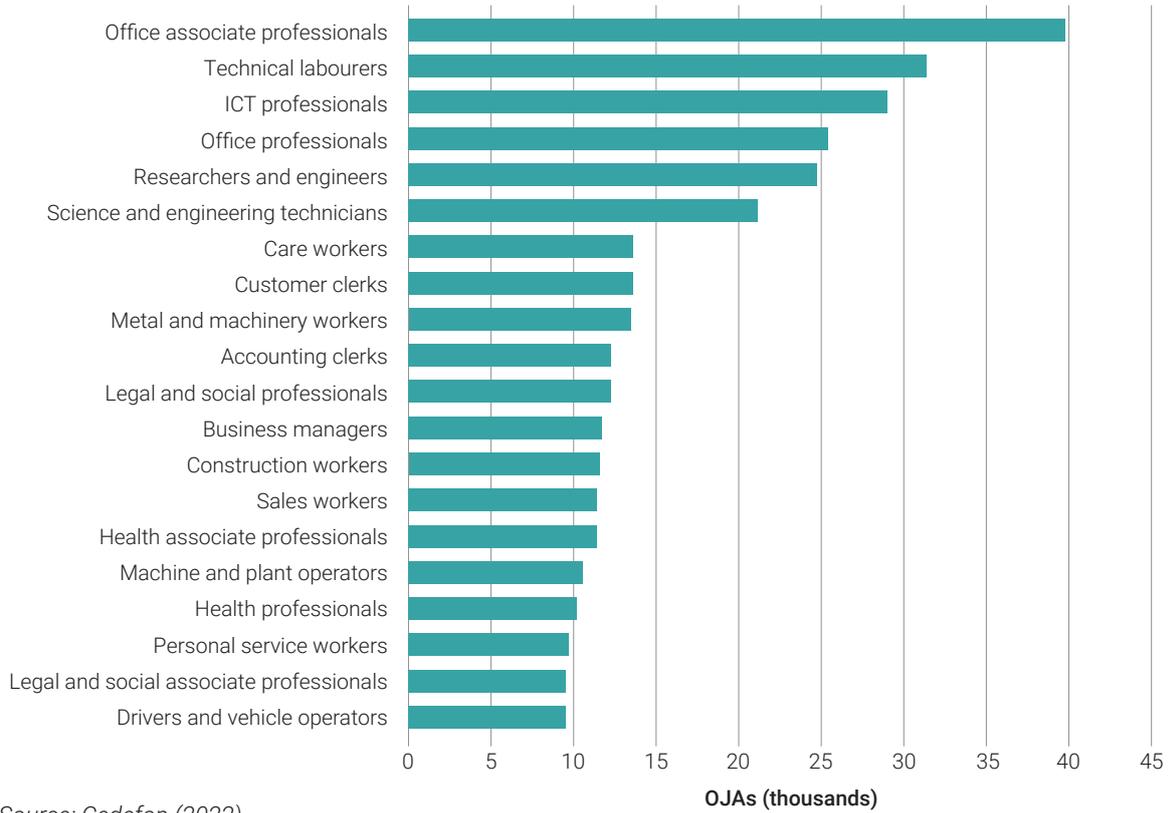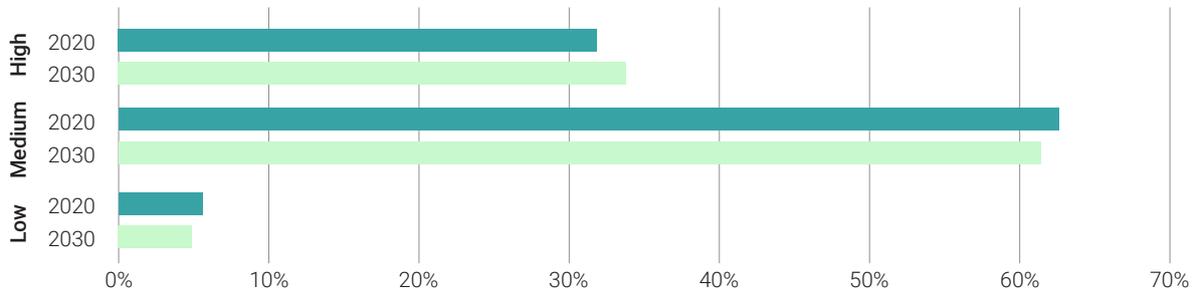

Source: Cedefop (2022)

Figure 2. Most requested skills – level 2 ESCO
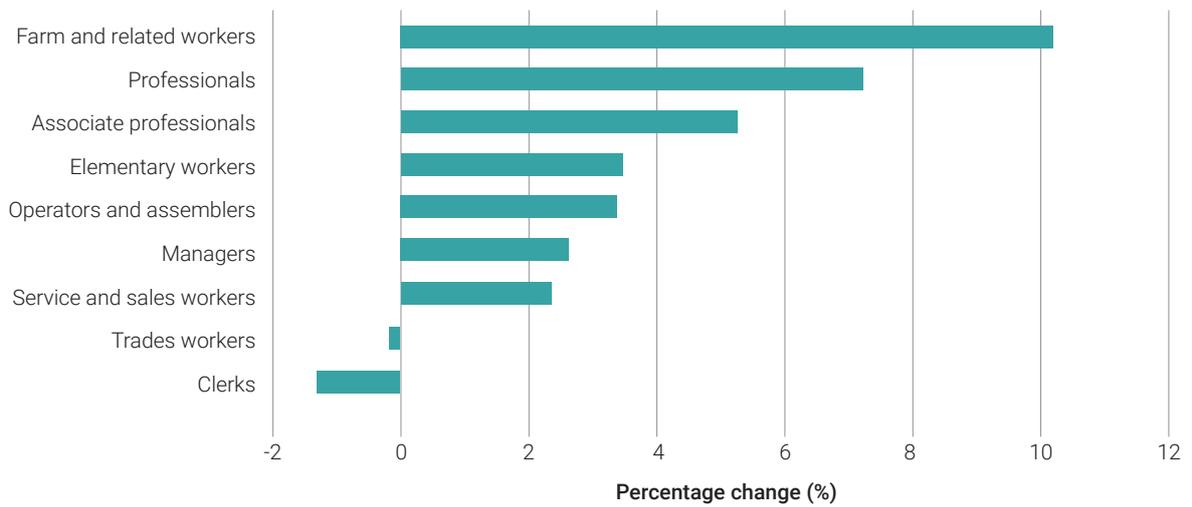

Source: Cedefop (2022)

Annex B. Analysis of EU Skills Panorama data

Figure 3. Current and future employment for educational level possessed in Germany

Source: Cedefop (2021)

Figure 4. Future employment growth (% change) across occupations in Germany in 2020−2030

Source: Cedefop (2021)

Notes and References

1   Cities of the Ruhr Valley by number of inhabitants: Dortmund, Essen, Duisburg, Bochum, Gelsenkirchen, Oberhausen, Hagen, Hamm, Mülheim an der Ruhr, Herne, Bottrop; Districts of the Ruhr Valley by number of inhabitants: Kreis Recklinghausen, Kreis Wesel, Kreis Unna, Ennepe-Ruhr-Kreis.

2   Regionalverband Ruhr. 2022. 'Bevölkerung.' As of 19 June 2022:
        https://www.rvr.ruhr/daten-digitales/regionalstatistik/bevoelkerung/

3   In Germany, 'employment subject to social security' means people working in employment contracts that entitle them to the unemployment benefit 'Arbeitslosengled II'. This includes apprenticeship programmes, internships, working students and all employment that is not civil servants, self-employed, military personnel or people in so-called 'Mini-Jobs' (jobs where you cannot earn more than €450). For more information, please see Statistisches Bundesamt. (2022). 'Sozialversicherungspflichtig Beschäftigte.' As of 21 June 2022:
        https://www.destatis.de/DE/Themen/Arbeit/Arbeitsmarkt/Glossar/sozialversicherungspflichtig-beschaeftigte.html

4   Regionalverband Ruhr. 2022. 'Beschäftigte und Erwerbstätige.' As of 19 June 2022:
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5   Regionalverband Ruhr. 2022. 'Dezember 2021: Arbeitslosenquote in der Metropole Ruhr erneut leicht rückläufig.' As of 19 June 2022:
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6   RuhrFutur & Regionalverband Ruhr. 2022. 'Bildungsbericht 2020 Ruhr: Bildung in der Region Gemeinsam Gestalten.' As of 19 June 2020:
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7   Statistisches Bundesamt. 2022. 'Erwerbsbeteiligung.' As of 19 June 2020:
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9   Lühr, O., J. Lambert, R. Simpson, M. Sandhövel, L. Eiserbeck, J. Liesenfeld, H. Hagedorn, J. Weiß, S. Reuschel & S. Klingl. 2020. 'Umweltwirtschaftsbericht NRW 2020.' Ministerium für Umwelt, Landwirtschaft, Natur- und Verbraucherschutz des Landes Nordrhein-Westfalen.

10   DIPF | Leibniz-Institut für Bildungsforschung und Bildungsinformation. 2020. 'Bildung in Deutschland 2020.' Autorengruppe Bildungsberichterstattung.

11   RuhrFutur. 2020. ‚Bildungsbericht Ruhr 2020'. As of 4 July 2022:
        https://www.ruhrfutur.de/handlungsfelder/daten-analyse

12   RuhrFutur. 2020. ‚Bildungsbericht Ruhr 2020'. As of 4 July 2022:
        https://www.ruhrfutur.de/handlungsfelder/daten-analyse

13   MKFFI. 2018. ‚7. Kommentierte Zuwanderungs- und Integrationsstatistik Nordrhein-Westphalen, Ministerium für Kinder, Familie, Flüchtlinge und Integration des Landes Nordrhein- Westphalens'. As of 4 July 2022: https://www.landtag.nrw.de/portal/WWW/dokumentenarchiv/Dokument/MMV17-2892.pdf

14   Landesbetrieb Information und Technik Nordrhein-Westfalen. 2020. 'Wieviel Vielfalt steckt in Nordrhein-Westfalen? – Migration.' As of 19 June 2022:
        https://www.it.nrw/wieviel-vielfalt-steckt-nordrhein-westfalen-migration-99658

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18   Skills-OVATE database by Cedefop collates OJAs from multiple sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. In December 2021, there were 82,697 OJAs in the Skills-OVATE database for the Ruhr Valley. The database does not allow filtering out green job vacancies only. OJAs do not reflect the market demand for jobs across all occupations and sectors equally well: some sectors or professions are overrepresented if they are more likely to advertise online, while others are underrepresented.

19   The Ruhr Valley falls into three governmental and administrative districts: Regierungsbezirk Arnsberg, Regierungsbezirk Arnsberg and Regierungsbezirk Münster. Because of this, there is no specific data available for the Ruhr Valley.

20   Cedefop. 2022. Skills-OVATE data. Occupations such as professionals, managers or researchers were excluded as these likely required a university degree.

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43   Generic programmes and qualifications are those providing fundamental and personal skills education that
      cover a broad range of subjects and do not emphasise or specialise in a particular broad or narrow field.
      See: ESCO (homepage). 2022. As of 19 June 2022: https://ec.europa.eu/esco/portal/skill

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This study focused on people with low qualifications, meaning those with at most a lower secondary qualification who experience a high risk of poverty and social exclusion, and explored green job opportunities that exist for them, including those that would require reskilling (training to obtain different skills) or upskilling (training to obtain more advanced skills). In this study (unless stated otherwise), green jobs are understood as jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, and green skills denote skills needed to adapt products, services and processes to climate change and the related environmental requirements and regulations. Evidence presented here includes national-level data (where regional and local information was not available) and focuses on data specific to green jobs or people with low qualifications. Full details can be found in the main report.

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