MADRID

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

Madrid is the capital city of Spain. It is also the most-populous city of the country, with about 3.3 million inhabitants in 2021.[1] In the same year, the metropolitan area of Madrid (*Comunidad de Madrid*) had a population of about 6.7 million.[2] While prior to the Covid-19 pandemic the employment rate had been growing, there are some indications that the public health issues have had an impact on the job market in Madrid.[3] In 2020, the unemployment rate for the metropolitan area of Madrid was 12.5 per cent.[4]

12.5%
unemployment rate in metropolitan Madrid in 2020
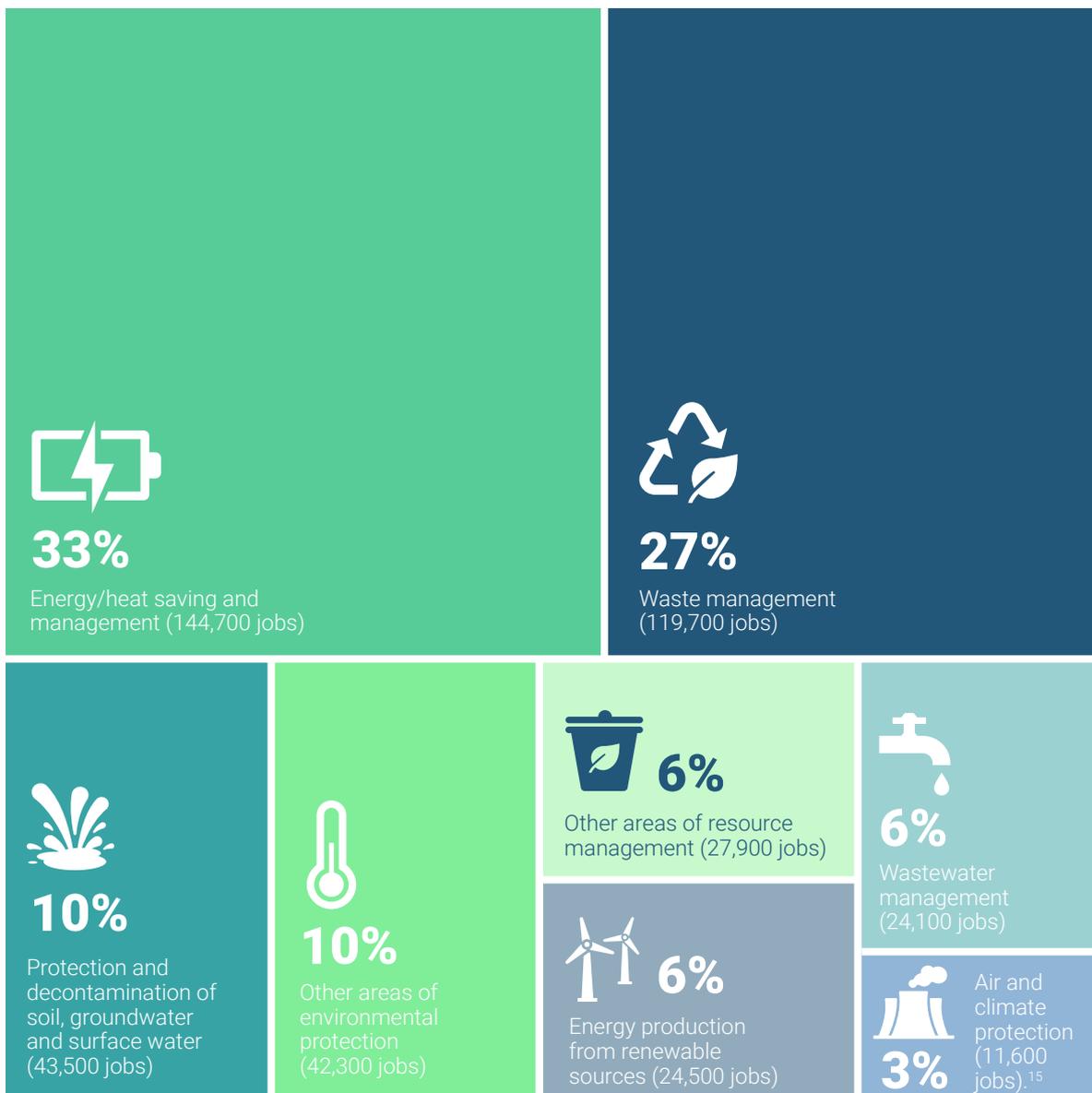
Context

The national 'Recovery, Transformation and Resilience Plan' (*Plan de Recuperación, Transformación y Resiliencia*), which draws on EU funding (through the EU recovery plan[5]), was presented in October 2020 and seeks to accelerate the 'ecological transition' estimating the creation of about 250,000 to 350,000 additional jobs between 2021 and 2030.[6] The Spanish Circular Economy Strategy (*España Circular 2030: Estrategia Española de Economía Circular*) aims to contribute to achieving a sustainable, decarbonised, resource-efficient and competitive economy and defines key sectors as construction, farming, fishing and forestry, industry, consumer goods, tourism, and textile and garment.[7]

In Madrid, the 'Employment Strategy 2021–2023' (*Estrategia Madrid por el Empleo 2021–2023*)[8] focuses particularly on facilitating the employment of long-term unemployed people, young people, women, people with disabilities and people at risk of exclusion (women victim of gender violence, women victim of terrorism, returning workers, recipients of minimum income, and lesbian, gay, bisexual, transgender and intersex (LGBTI) people). The measures put forward in the three-year strategy represent an investment of about €345m per year.[9]

Green job opportunities

In Spain, the green economy corresponds to about 2.5 per cent of the total employment.[10] In 2020, the green economy totalled about 438,000 full-time equivalent jobs, which represents an increase of 0.4 per cent from the previous year.[11] In 2020, the key sectors in terms of Gross Value Added for the environmental economy were the production of renewable energies (26 per cent) and the management and treatment of waste (23 per cent).[12] An increase of about 23 per cent in exports from the green economy was also noted, particularly in the areas of air and climate protection and energy production through renewable sources.[13] Exports in these areas mainly included electric vehicles, energy products (e.g. biofuels) and other goods related to the production of renewable energy (e.g. wind power generators).[14]

In terms of employment, in 2020 most green jobs in Spain were concentrated in the following areas:

33%
Energy/heat saving and management (144,700 jobs)

27%
Waste management (119,700 jobs)

10%
Protection and decontamination of soil, groundwater and surface water (43,500 jobs)

10%
Other areas of environmental protection (42,300 jobs)

6%
Other areas of resource management (27,900 jobs)

6%
Energy production from renewable sources (24,500 jobs)

6%
Wastewater management (24,100 jobs)

3%
Air and climate protection (11,600 jobs).[15]

Data specifically for Madrid was available from 2010 and estimated 62,494 green jobs in Madrid concentrated in the following sectors:

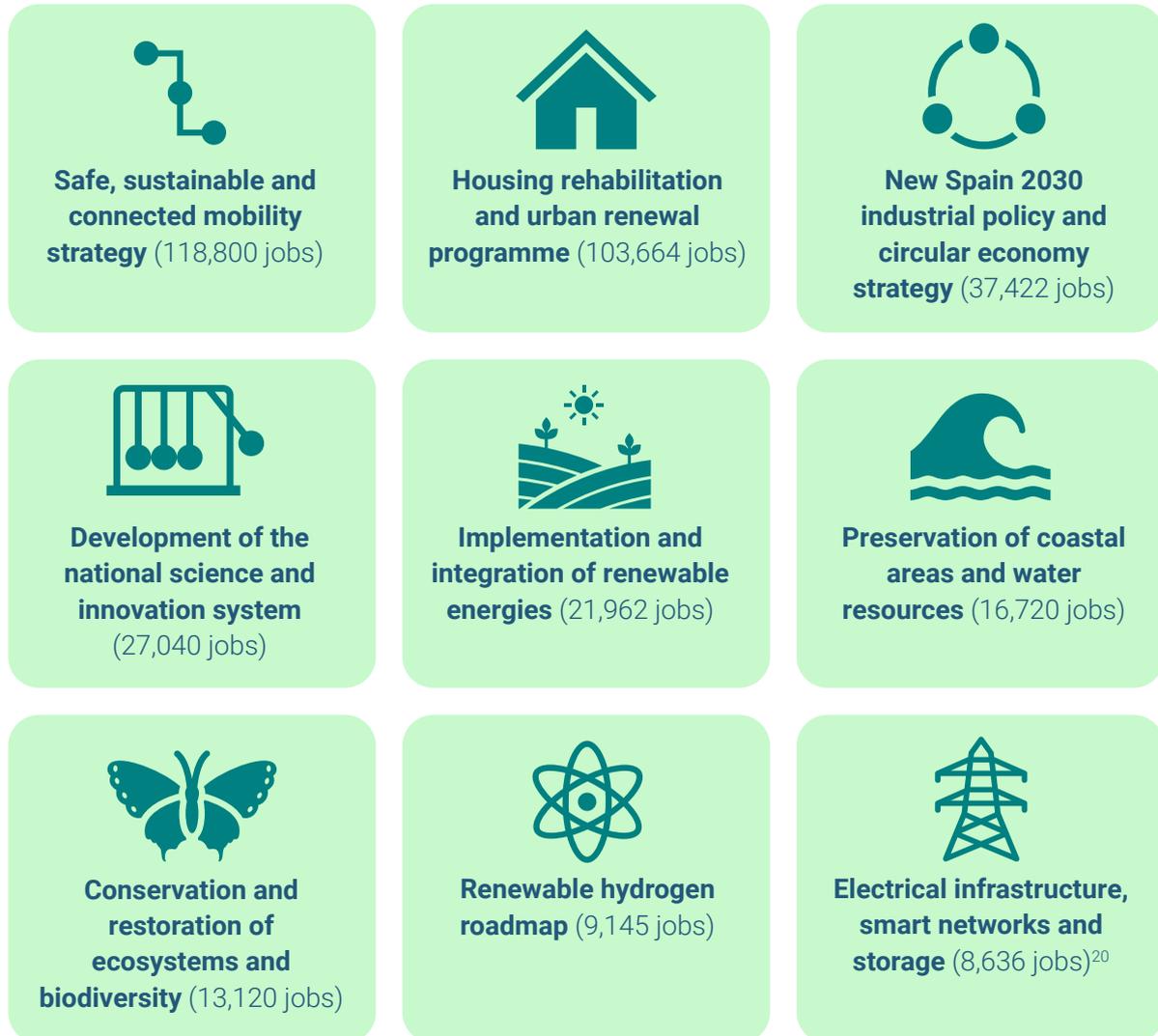| Renewable energy (20,604)	Waste management and treatment (15,803)	Wastewater treatment and purification (7,531)	Environmental R&D and innovation (5,449)
Environmental employment in industry and services (4,204)	Public sector (2,843)	Environmental services to companies (2,837)	Management of forest areas (1,804)[16]

The Skills-OVATE[17] 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 184,917 online job advertisements (OJAs) found in Madrid (see **Annex A**) shows that the most common occupations in OJAs that would be suitable for people with low qualifications were electro-engineering workers (11,294 OJAs), science and engineering technicians (8,391), sales workers (7,755), ICT technicians (5,269), personal service workers (5,239), metal and machinery workers (3,948), machine and plant operators (3,880), construction workers (3,672), office clerks (3,511), accounting clerks (3,111) and customer clerks (2,731).[18]

The specific search for green jobs carried out by RAND Europe (see **Methods**) identified 22 green jobs in Madrid. Most of these jobs were in the private sector (17) and were offered either by green employers (meaning those from green industries, such as waste management) (9) or other employers (13). While only the minority of adverts (8) provided salary indications, the average annual salary in Madrid amounted to €25,916. Key sectors included scientific research and development (7), electricity, gas, steam and air conditioning supply (6), and other professional, scientific and technical activities (3). Among the main occupation were science and engineering professionals (8) and science and engineering associate professionals (5). Most of these opportunities would not be suitable for people with low qualifications as they required a university degree (see **Skills needed for green jobs**).

It is estimated that 356,000 new green jobs could be created in Spain between 2021 and 2023 because of the investments made in the Spanish Recovery Plan.[19] The main programmes driving the creation of these jobs (and estimates) include:

Safe, sustainable and connected mobility strategy (118,800 jobs)

Housing rehabilitation and urban renewal programme (103,664 jobs)

New Spain 2030 industrial policy and circular economy strategy (37,422 jobs)

Development of the national science and innovation system (27,040 jobs)

Implementation and integration of renewable energies (21,962 jobs)

Preservation of coastal areas and water resources (16,720 jobs)

Conservation and restoration of ecosystems and biodiversity (13,120 jobs)

Renewable hydrogen roadmap (9,145 jobs)

Electrical infrastructure, smart networks and storage (8,636 jobs)[20]

The ten future green occupations are:

1. Analyst of sustainable technology solutions and projects.
2. Sustainable logistics consultant.
3. Eco designer.
4. Circular economy specialist.
5. Environmental education specialist.
6. Renewable energy expert.
7. Environmental sustainability expert.
8. Cultural manager specialized in sustainability.
9. Environmental engineer.
10. Technician for quality and environment (developing norms or standards concerning risk prevention, implementing quality systems, the reduction of environmental impact and corporate social responsibility).[21]

Anticipating that green jobs will be more present across all sectors of economy and across all occupations in future, Cedefop's EU Skills Panorama forecasts for employment growth are used to identify where more or fewer jobs are expected in general. These projections are available at the country level for the 2020–2030 period. The growth in Spain is expected to be highest in wholesale and retail trade (473,200), education (273,900), administrative services (238,400), construction (228,400), accommodation and food (161,800), and public sector and defence (151,400).[22] Occupations suitable for people without tertiary education (i.e. excluding managers, professionals, etc.) with the highest employment growth by 2030 are expected to be associate professionals, clerks, and service and sales workers (see **Annex B**).[23]

Skills needed for green jobs

The levels of education of employees vary per sector: for instance, while employment in the waste management and treatment sector is characterised by a low level of professional qualification, the tasks and activities performed in the sector of renewable energies mainly requires workers with university degrees (50 per cent of current employees have this level of qualification) or other vocational training.[24]

In 2017, the following gaps have been identified across green occupations in Spain:

- Forest and environment agents: Prevention of forest fires, topography, use of compass, driving of vehicles.

- Qualified workers in hunting activities: Veterinary first aid, environmental protection, plants, wildlife, fire prevention and management.

- Forest fire workers: Use of specific radio networks (Tetrapol).

- Qualified workers in forestry and natural environment activities: Occupational risk prevention, pruning, fabrication of biomass, natural environment, use of chainsaw.

- Prevention of labour and environment risks agents: Law, new chemical substances, nanotechnology.

- Waste classification workers: Differentiation of types of waste and treatment for each type of waste (in the future, training on new regulations, new materials and new waste management systems can be needed).

- Environmental and forest technicians: Cost and process analysis of forest exploitation, forest certification, forestry related legislation, management and planning methodologies.

- Vehicle cleaners: Environmental background.

- Sweepers: Waste classification according to environmentally friendly criteria.

- Power plant technicians: Electric cogeneration in small power plants, wind turbines.

- Electricity technicians: Renewable energy, energy efficiency, electric and hybrid vehicles, LED lighting.[25]

The analysis of skills in the Skills-OVATE[26] data for Madrid shows that the most frequently sought characteristics were soft skills, namely communication, collaboration and creativity, attitudes, assisting and caring, and generic programmes and qualifications.[27] This is not surprising as these

skills are applicable across sectors and occupations that would require different technical or sector-specific skills. Employers also often looked for ability to work with computers, knowledge of business, administration and law, management skills, ICT skills, information skills, language skills, skills needed in engineering, manufacturing and construction, and knowledge of natural sciences, mathematics and statistics (see **Annex A**).[28]

The analysis of green jobs identified by RAND Europe shows that many green job adverts in Madrid (7 of 22) did not indicate the minimum years of required experience. Only a few jobs required minimum five years (3) and the average was about two years of expected experience. In terms of qualifications needed, the majority of adverts (18) indicated at least a bachelor's degree. This reflects both the employment structure in Madrid and the overrepresentation of some sectors in OJAs. In relation to skills, only some advertisements explicitly required green skills and those asked for knowledge of environmental topics and issues (7), knowledge of renewable energy and resources (3) or knowledge of aspects of sustainable building (2). Other skills sought after by employers included knowledge of languages (17), engineering, manufacturing and construction (11), natural science, mathematics and statistics (11), communication, collaboration and creativity (7) and working with computers (7).

Overall, the number of all jobs requiring a high-level qualification in Spain as a whole is expected to grow and the number of workers with low qualifications will fall by 2030 (see the Cedefop projections in **Annex B**).[29]

Training and education provision for green skills

Since 2010, technical and vocational education and training has increasingly focused on including content relevant for green jobs.[30] This has meant both the creation of new training specifically targeting skills needed for green jobs, as well as integrating 'green content' across the other non-specific training offer.[31] University or technical vocational education and training programmes specifically focused on green occupations are in place across Spain (see Table 1).[32]

Table 1. Diplomas in technical vocational education and training related to green jobs

Type of diploma	Number of diplomas
Green jobs diplomas (offer training specifically for a green occupation)	21
Diplomas that train for several occupations, some of which can be considered to be green jobs	26
Diplomas that include relevant training content, such as the application of environmental regulations	78
Diplomas that include transversal green content	35
Total	**166**

Source: Based on Ministry of Education, Culture and Sports (2017) cited in: Cedefop (2018)

A large sectoral initiative, Construye 2020+, aims to boost green employment in construction by offering training and accreditation in energy efficiency, renewable energy systems and near zero energy buildings.[33]

A key programme targeting the development of green skills has been the Green Employment Programme (*Empleaverde*),[34] which is co-financed by the European Social Fund (ESF).[35] The programme seeks to improve workers' skills, including developing awareness of a sustainability culture, several environmental skills and meeting the new demands of the labour market. It also includes support for green entrepreneurs through the Green Entrepreneurship programme (*Emprende Verde*) and a network (*Red Emprendeverde*) to promote the creation and consolidation of green start-ups and green businesses. Since 2007, the *Empleaverde* programme delivered 1,900 courses in green skills for around 60,000 employed workers. According to Cedefop (2018), *Empleaverde* contributed to the creation of 3,500 jobs and 2,600 green start-ups and businesses.[36] ESF funding for the *Empleaverde* programme continues in the 2017–2023 period.

One example of the training funded through *Empleaverde* was the School of Water (*Escuela del Agua*).[37] This was a free online training for technical staff active in the water and environmental sector; women, migrants and disabled people were named among the priority groups. The course focused on building knowledge around how agents involved in water management can contribute to sustainable development, as well as the social and environmental context of water management in Spain.

Relevant stakeholders and interventions

There were 43 stakeholders identified in relation to green jobs and green skills. These can be grouped into employers (e.g. Ecovidrio,[38] Mares Madrid,)[39] education and training providers (such as higher education institutions or training organisations like Training Center for Women, *Centro de Formacion para la Mujer*),[40] civil society organisations (e.g. *"La Caixa"* Foundation[41] *Fundación Tomillo*[42]) and local authorities (e.g. *Fundación Biodiversidad*,[43] Madrid Employment Agency (*Agencia para el Empleo de Madrid*)).[44] The roles of these stakeholders in relation to vulnerable groups were wide-ranging, from providing workshops and employment training/support to professional development, including skills and competencies, and providing jobs and/or access to the growing green sectors.

| Education and training providers | Employment services | Civil society organisations | Local authorities | Employers' organisations |

When it comes to green interventions, few were specifically dedicated to people with low qualifications and most were tailored to young people. The most relevant interventions are outlined overleaf.

Biodiversity Foundation

Biodiversity Foundation of the Ministry for the Ecological Transition and the Demographic Challenge (MITECO) implemented a programme Destination Green Job (*Destino Empleaverde*).

It offered training and support for vulnerable groups (especially the unemployed) with a specific focus on green employment. This included 200 hours of training.

The programme was open to 20 unemployed people and priority was given to candidates in so-called 'priority groups': young people (up to 35 years old), unemployed people older than 45 years, migrants, women, disabled people and residents in protected and/or rural areas.

The programme focuses on competency development, including practice-based learning, digitisation of job searching and networking. In addition, technical training tailored to improving green jobs skills and a visit to a company linked to the green economy are also part of this intervention.[45, 46]

Patrimonio Nacional

Patrimonio Nacional (an agency that administers the sites owned by the state and used by the Royal Family) in partnership with Public Employment Service (Servicio Publico de Empleo Estatal) implements workshops and training opportunities in green employment. This is an established programme with over 5,000 people trained.

The Workshop Schools *(Escuelas Taller)* is a project running since 1986 that has integrated 184 projects. Its target group are unemployed young people under 25 years of age. The programme combines training and professional practice in occupations that relate primarily to the recovery or promotion of artistic, historical, cultural or natural heritage. The full programme lasts between one and two years, during which participants receive a grant and a remuneration corresponding the functions they perform. The training includes a computer literacy module (30 hours at least), business training and technical skills in a range of jobs, including gardening.[47]

Another programme in a similar format, i.e. combining training and professional experience, is the Employment Workshops (*Talleres de Empleo*). Unemployed people aged 25 or older are eligible to participate in this programme. As in the Workshop Schools initiative, participants receive an official certification concerning the skills learned as part of the programme. The programme lasts between six months and one year.

Canal de Isabel II

Canal de Isabel II (a public company that manages the water supplies for Madrid) implemented the Young Talent Programme (*Programa de Talento Joven*).

It offered scholarships and training for young professionals at the start of their career to support their studies (€900 per month) and the development of green skills and competencies.[48]

Summary conclusion

- In Madrid, green jobs for people with low qualifications are present primarily in the renewable energy, waste management and treatment, and wastewater treatment and purification sectors. However, future employment opportunities for workers with low qualifications are expected to fall, while demand for high- and medium-level qualifications is expected to grow.

- The main occupations for future green employment in Span include sustainability analysts, specialists, experts and engineers, all likely to require a university degree. Among occupations more suitable for people with lower qualifications are forestry and natural environment workers and technicians, waste classification workers, cleaners, and power plant and electricity technicians.

- Green skills needed in Madrid include environmental protection, fire prevention and management, horticulture skills, waste classification and treatment, use of specialised machinery and equipment, knowledge of renewable energy, and electric and hybrid vehicles. Knowledge of environmental topics and issues and aspects of sustainable building was also sought by employers. Among other skills in demand were soft skills (communication, collaboration and creativity, attitudes, assisting and caring), digital skills (ability to work with computers and ICT skills), knowledge of business, administration and law, and management and language skills.

- A wide range of technical vocational education and training related to green jobs is available in Spain. In addition, the *Empleaverde* programme provides an extensive training offer for developing green skills for workers in Madrid.

- Some interventions were specifically dedicated to helping people with low qualifications into green jobs and most were tailored to young people.

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).[49] 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 Spain 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. The dataset uses NACE Rev. 2 (statistical classification of economic activities) and classification of European Skills, Competences, Qualifications and Occupations (ESCO). In December 2021, there were 184,917 OJAs in the Skills-OVATE database for Madrid 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 or opportunities only for people with low qualifications. 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 www.trabajaenmedioambiente.com and es.indeed.com conducted on 23 September 2021 identified 22 green job advertisements in Madrid. Data were extracted, coded and cleaned. Descriptive statistics was used to analyse the results.

Annex

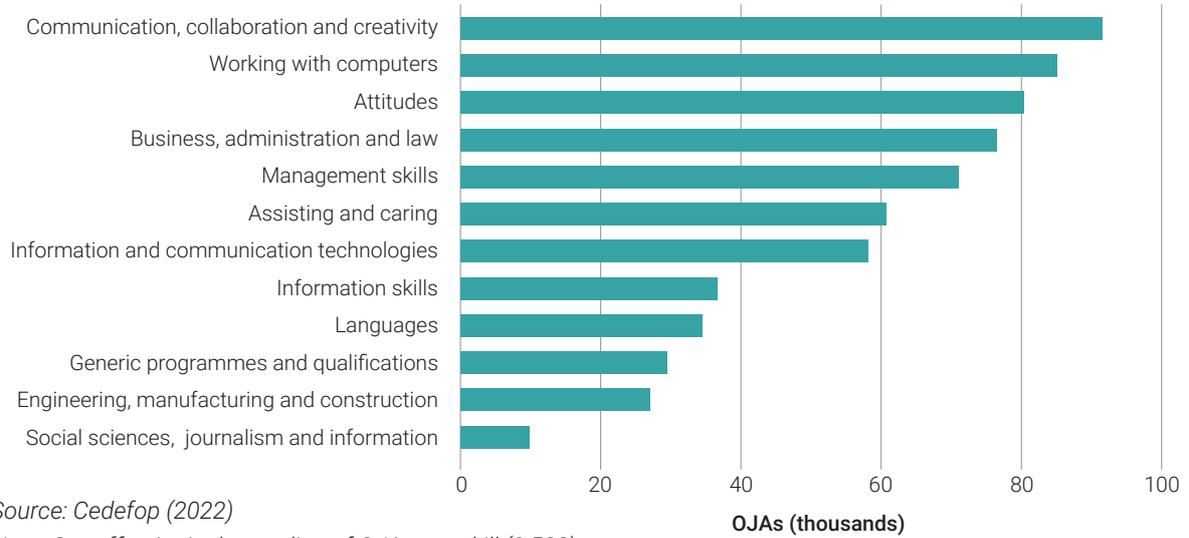### Annex A. Analysis of Skills-OVATE data (Q3 2020–Q2 2021)

Figure 1. Online job advertisements (OJAs) per occupation (Madrid)
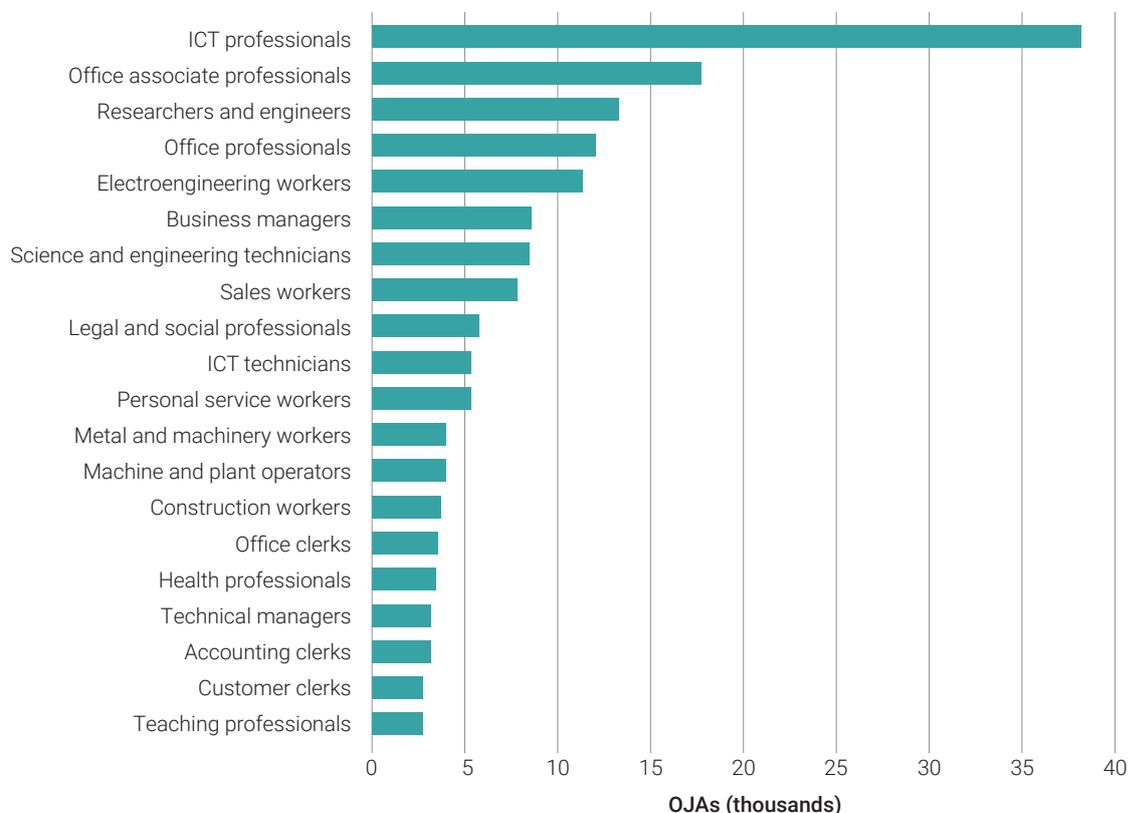
Source: Cedefop (2022)
Note: Cut-off point is the median of OJAs per occupation (2,728).

Figure 2. Most requested skills – level 2 ESCO (Madrid)

Source: Cedefop (2022)
Note: Cut-off point is the median of OJAs per skill (9,583).

Annex B. Analysis of EU Skills Panorama data

Figure 3. Future employment growth (% change) across occupations in Spain in 2020−2030

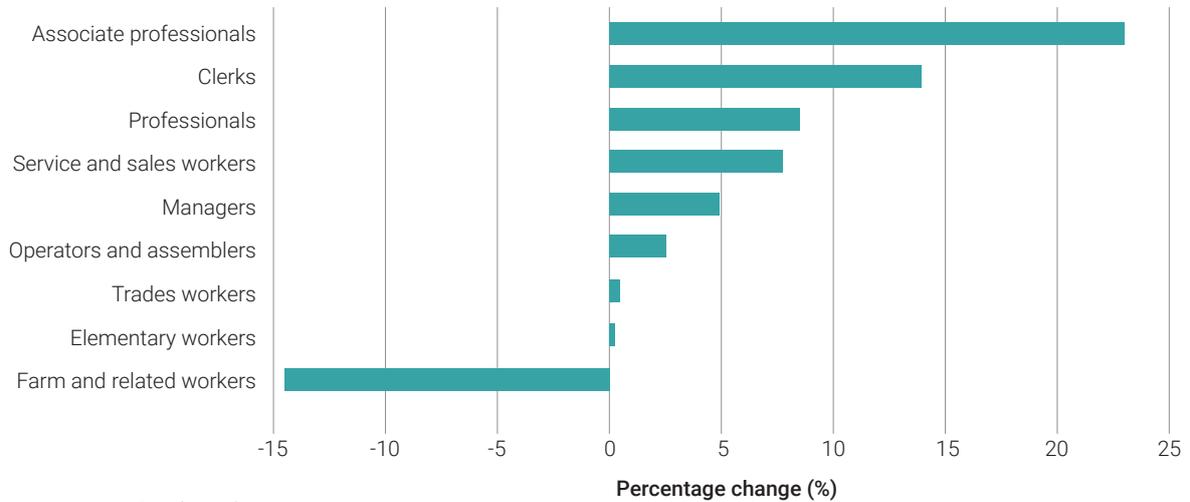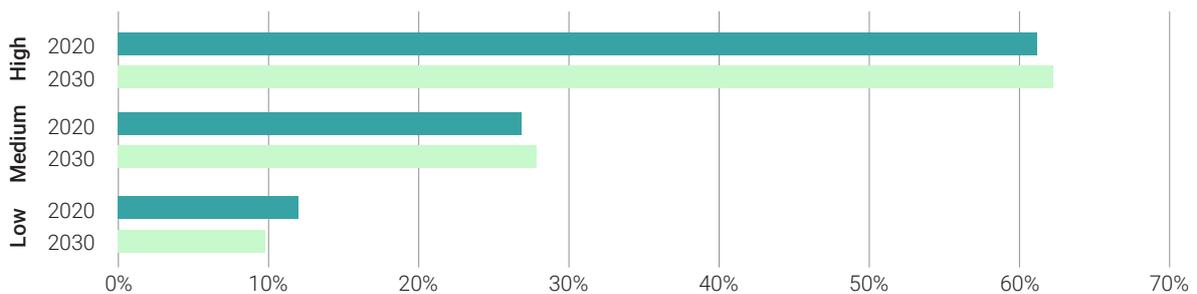*Source: Cedefop (2021)*

Figure 4. Current and future employment for educational level possessed in Spain

Source: Cedefop (2021)

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17   Skills-OVATE database by Cedefop collates online job advertisements (OJAs) from multiple sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites. In December 2021, there were 184,917 OJAs in the Skills-OVATE database for Madrid. 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.

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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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