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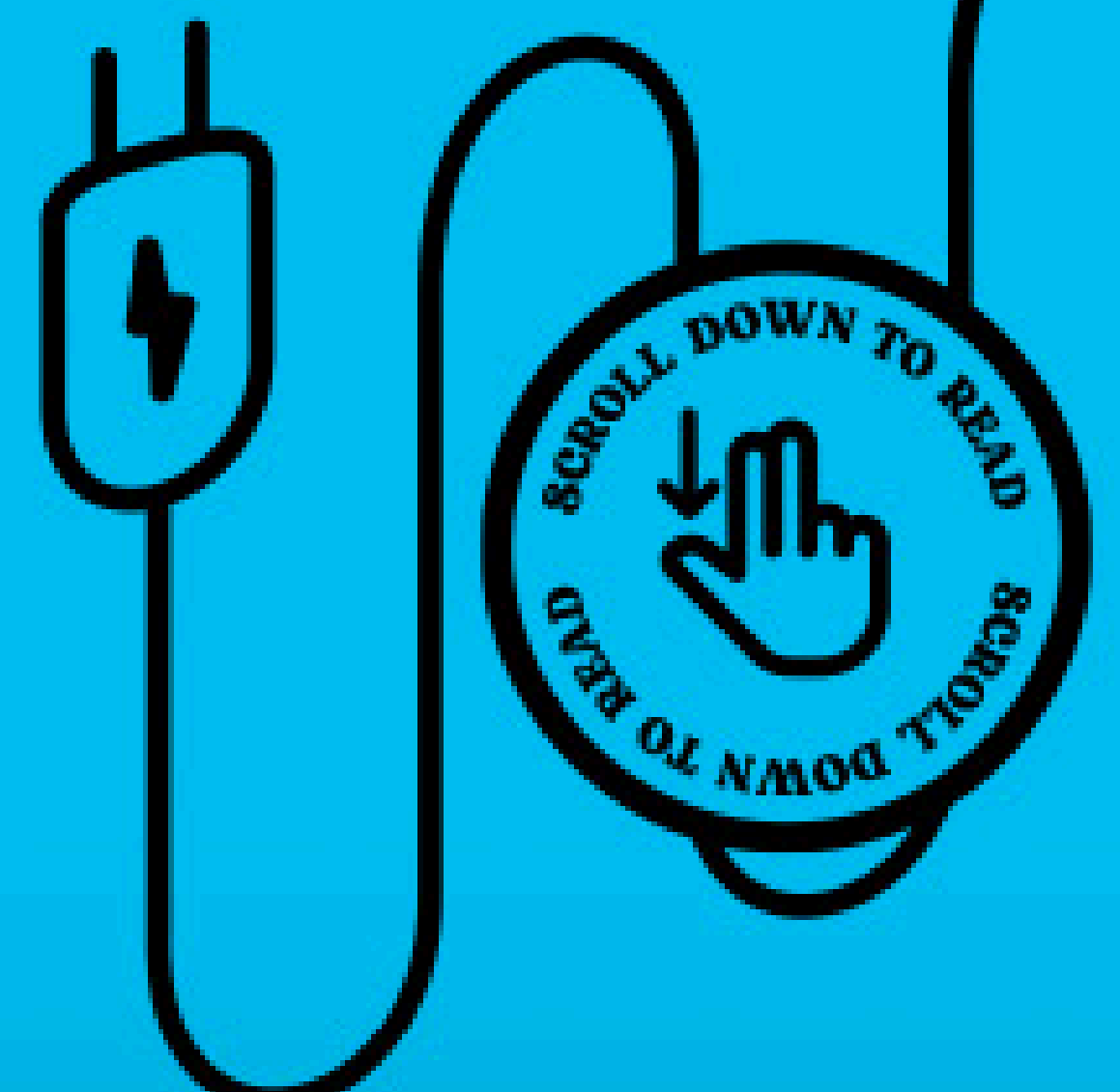
KEY FINDINGS / METHODOLOGY / TRENDS

GOOD

GREEN JOBS

in

EUROPEAN CITIES



Introduction

In October 2022 at the C40 World's Mayor Summit, C40 mayors pledged to stand together to drive the creation of **50 million green jobs by 2030**¹ working together with national governments, businesses, and other organisations. Since then, cities have continued to **implement actions that drive green job creation** and equitable workforce development across sectors, towards a future where everyone can thrive.

C40 Cities and Circle Economy Foundation have developed a methodology to measure green jobs globally across C40 cities. This briefing focuses on the first baseline results and findings for the European cities in the C40 network.²



Key findings

- **Within C40 European cities today, around 8% of the jobs can be considered green, or 2.3 million. This is out of the approximate 30.5 million jobs³ that exist within the 18 cities.** About 1.3 million (4.4%) are considered direct green jobs, meaning they operate in a green sector such as renewable energy, waste collection, or repair, while 968,800 (3.2%) are considered indirectly green, providing the goods and services required for green sectors to operate.
- Green employment varies across C40 cities in Europe, ranging from **3.2 to 13.5% total green employment**. There is still great potential to further green all urban sectors and services despite each city having a unique sector, labour profile and capacity for public action in the field of labour policy.
- **Sectors with the highest green employment share** (above 20% of total employment in the sector) are **electricity; steam and air conditioning supply; and water supply, sewerage, waste management and remediation activities**, followed closely by **construction** (with 18% green jobs in the sector), which are all strongly influenced by local climate public policy measures.
- **With around 4 million jobs, the wholesale and retail trade sector is one of the top employers in C40 European cities.** However, only 6.5% of these jobs are currently green, showing great potential for green job creation through more energy-efficient practices, procurement from green sources, and engagement with municipal governments to support green policy and labour-force development.

Distribution of Green Jobs in European C40 Member Cities

Total Number of Jobs 30.5 million	Total Number of Green Jobs 2.3 million (8% of all jobs)	Direct Green Jobs: 1.3 million
		Indirect Green Jobs: 968,800

- **Investments in skills training will be critical** to ensure workers are equipped with the transferrable skills needed to achieve a just transition and to achieve decarbonisation across sectors at the rapid pace needed.
- **More disaggregated demographic data (gender, race, age, etc.) throughout all cities is critical for cities to address equity and make good, green jobs available for all.** For example, in countries like Greece or France, where data was available, between 4-13% of the jobs in the construction sector and between 16-26% of the jobs in the transportation sector, both with a large green job potential, are occupied by women. Similarly, youth employment in these countries averages around 3-10% in the construction sector and 2-7% in the transportation sector. Cities should ensure that, within the sectors where they have influence over employment policies, workforce development is diverse and conducted in a way that ensures equitable access and addresses pay and leadership disparities for vulnerable and historically marginalised groups, such as women, youth, people with disabilities, BIPOC (Black, Indigenous and People of Colour) individuals, etc. Disaggregated data at national and local urban levels can support this.

These results showcase how cities are becoming hubs for green jobs, with significant potential that can be leveraged for further sector growth. Climate investments not only create more jobs,⁴ but they can also drive transformative change way beyond city limits across the city's supply chains, both creating green jobs and accelerating the transition away from fossil fuels. For example, globally, building efficiency can create 2.8 times as many jobs as fossil fuels per US\$1 million invested.⁵


While jobs can and will be created as a result of greening key sectors and moving away from fossil fuels, it is imperative that cities also ensure a just transition for those affected by the phase out.⁶ [Ensuring a just transition](#)⁷ that is fair to workers is an opportunity to achieve decarbonisation at the rapid pace needed. It must be deliberate and well planned through policies and participatory governance to ensure that those most impacted – workers, unions, and communities – have access to good, green jobs and skills, and can actively shape the decision-making process. Investments in training will be critical to prevent job displacement and ensure workers are equipped with the transferrable skills needed for green jobs. These actions must also be complemented with social protection measures to safeguard people from adverse impacts of the transition. Cities should also support communities and individuals in navigating their changing careers and cultures, acknowledging the importance of industrial heritage.⁸


You can find easily accessible guidance on the key components of urban just transition pathways, showcasing the actions many cities are already taking to prepare for and deliver a just transition for workers and communities in current and upcoming C40 resources [here](#).



Methodology & key definitions

This analysis assessed the number of direct and indirect green jobs across C40 member cities.⁹ The [methodology](#)¹⁰ was adapted from a methodology previously developed by Circle Economy using International Labour Organization (ILO) definitions and in partnership with the United Nations Environment Programme (UNEP) to measure circular jobs.

 **Direct green jobs, which produce the goods and services needed for the green economy: for example, in renewable energy or building retrofits.**

 **Indirect green jobs, which produce all other goods and services needed by workers with direct green jobs, and therefore are required for the proper functioning of the green economy: for example in supply chains or through education.**

It is important for cities to increase both direct jobs (e.g., waste collection, renewable energy), and indirect jobs, which have an equally important role in the green economy.

Aside from London and Oslo, where city-level data was available, the data sourced for this analysis comes from the **ILO's national employment** data available at the sub-sectoral level at the time of analysis. The sectoral classifications used are based on **ISIC**.¹² The scale of data available per city can differ across countries. In general, this analysis aimed to cover the metropolitan areas of cities, a common data scale to capture the economic hub that exists in and around the cities, but in some instances only city data is covered due to data availability.

This analysis mostly covers formal employment as data is sourced from official employment data sources. It is often difficult to gather disaggregated data on informal workers, but for countries where ILO data was used, part of the informal employment is covered.¹³ Informal green jobs can be particularly high in sectors like agriculture, wholesale, retail trade, and manufacturing. According to the ILO,

WHAT ARE good green jobs?¹¹

Drawing from the definitions from the UNEP and ILO, C40 Cities defines green jobs as:

- New green jobs or existing jobs transformed into green ones, **sustained by transformative climate action**;
- Jobs that **enhance health and well-being, preserve or restore the environment, and help to limit greenhouse gas (GHG) emissions**;
- Jobs that occur across a **range of urban sectors**, including construction, transport, energy, resilience, health care and more;
- Good quality jobs for sustainable economies, aiming to **provide living wages and safe and stable working conditions**.

No universally accepted definition of green jobs exists, with descriptions varying widely in scope, industry focus, skill sets included and/or based on local and regional context. While it is not the aim of our analysis, this analysis can help to build consensus on how to define green jobs.

approximately 16.8% of Europe's employment is informal,¹⁴ suggesting a higher actual number of jobs than reported. As such, it is essential for policymakers to **include both formal and informal workers into the green transition** to ensure it is environmentally sustainable and socially equitable.

Please note that this methodology is first-of-its-kind and may evolve overtime. The analysis will continue to be refined in future iterations of this exercise.

Regional trends snapshot

The European Union (EU) is at the forefront of the green transition regionally and globally, with the mission to become the first carbon-neutral continent by 2050,¹⁵ which is **helping to drive market transformation in the region.**

The 2019 European Green Deal¹⁶ sets a clear trajectory towards climate neutrality by 2050 in alignment with the 2015 Paris Agreement.¹⁷ By implementing a range of legally binding targets and regulatory actions, it is pivotal in driving green investments across crucial sectors such as renewable energy (solar and wind), energy-efficient buildings, and sustainable transportation. This transition is not only a result of EU-level policies but is also shaped by various national initiatives and private sector efforts, ensuring a comprehensive approach to meet Europe's climate objectives. For instance, the EU's goal to mobilise at least €1 trillion in sustainable investments over the next decade through mechanisms like InvestEU¹⁸ and the European Regional Development Fund¹⁹ will significantly benefit urban areas by financing sustainable urban projects. These efforts collectively underscore the critical role of cities in Europe's journey towards environmental sustainability and climate resilience.

European cities as catalysts for the green transition.

European cities have a crucial role to play in driving the green transition as it reshapes local economies, jobs, and skills. European cities are becoming **good, green jobs hubs** as hotspots of innovation and experimentation, taking on essential leadership roles in delivering green initiatives and policies while promoting local good green jobs. Currently, all C40 member cities in the region have published a Climate Action Plan that is aligned with the Paris Agreement.²⁰ Through initiatives like the Cities Forum 2023²¹ and the EU's Climate Neutral and Smart Cities Mission,²² significant synergies between the EU and European city-level policies are being fostered, thereby enhancing city collaborations, innovation, and urban green and digital transitions. To ensure local workforces can adapt to changes in the labour market, targeted green upskilling programmes and supporting workforce integration programmes are needed to maximise opportunities for workers, especially those in disadvantaged groups.²³ This is already underway, with the





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additional emphasis given in 2022 by the European Year of Skills and the further push to the EU budget provided by the Next Generation EU funds, the specific sets of funds created for the post-COVID-19 recovery, whereby vocational training programmes are being promoted to equip local workforces for the green sector economy. The [Pact for Skills](#) launched in 2020 is a Large Scale Partnerships committed to upskilling and reskilling over 25 million people by 2030. It aims to bring together organisations to maximise the impact of their upskilling and reskilling activities, particularly at the regional level.

Europe's path to green job development amid sectoral shifts. At city-level, the sectors and occupations offering green job opportunities vary. For instance, sustainable fashion is growing around Milan, while green finance is a critical sector in London.²⁴ The intertwining of job creation, skills development, and mitigation of job losses in carbon-intensive sectors is central to the EU's green transition which promotes these objectives also through several EU funds, such as the European Social Funds+, REACT-EU and the EIB public sector loan facility. In parallel, other funds such as the €17.5 billion Just Transition Fund, have been developed to support transition in selected carbon-intensive regions and on occasion can also support cities. While a variety of funds are available to support green job creation, these funds are not directly available to cities and require collaboration with the regional and national governments for access and implementation.

The renewable energy landscape: resilience and growth. In 2020, 1.3 million people were directly or indirectly employed in the EU's renewable energy sector.²⁵ In 2021, this sector saw a notable employment surge, underpinned by the ambitious REPowerEU plan to reduce reliance on Russian fossil fuels by 2027.²⁶ Amid the previous year's hurdles like high energy costs and supply chain issues, energy technologies thrived, with a 50% hike in wind and solar energy deployment.²⁷ This growth is complemented by the agricultural sector's transition to green practices, contributing to renewable energy through biomass for bioenergy. The EU Parliament recently bolstered this momentum by upping the renewable energy target to 42.5% by 2030 (previously 32%), showcasing the sector's resilience.²⁸ Since 2021, European cities have accelerated renewable energy deployment, replacing 230 terawatt-hours of fossil fuel generation over 2021-2023, lowering wholesale electricity prices.²⁹ In order to reach the EU's proposed 2030 renewable targets, the energy demand covered by solar heat and geothermal will need to at least triple, requiring additional advancements in renewable capacity.³⁰

Growing demand for local energy efficiency and green jobs, going beyond national targets. Economic sectors focused on enhancing energy efficiency and reducing energy consumption are rapidly expanding across European cities. For instance, there are ample employment opportunities in the built environment's energy efficiency system through building renovations and technologies such as gas pump installations and pipe insulation.³¹ Many European cities, such as Amsterdam, Milan,³² or Oslo,³³ have energy efficiency programs that aim to go beyond national targets, often serving as implementation hubs for innovators in green urban planning and design for EU directives. They are also active in fostering public and private sector stakeholder engagement, as exemplified by the [Copenhagen Capacity](#), an organisation aimed at attracting investments and talent to support the development of green R&D and business ecosystem development in the Greater Copenhagen Region.

Investments in skills training will be critical. According to the European Commission, more than three-quarters of companies across the EU report having difficulties finding workers with the necessary skills.³⁴ Areas of expertise that are increasingly in demand include deep building renovators and installers of advanced technological solutions. As SMEs comprise more than 90% of operators in the construction sector in Europe, coordinated municipal efforts to overcome labour and skills shortages and to support the local construction workforce can create a big impact.³⁵ Cities can stipulate the need for public authorities and the private sector to provide training and employment for vulnerable groups in green sectors related to retrofit and renewables, and use socially responsible public procurement as a strategic tool to support the upskilling and reskilling of the workforce. For example, London's Skills Centre has designed a Rainscreen Cladding Skills Bootcamp³⁶ in consultation with several large construction employers, improving energy efficiency and building safety. Funding is being prioritised for bootcamps which deliver green skills to support London's progress towards being net carbon zero by 2030. For more examples of initiatives from European C40 cities, please see the call to action section or visit [C40's good green jobs database here](#).

The Circular Economy is a driver for local green initiatives. In the EU, the circular economy could potentially create over 700,000 new jobs by 2030, contributing significantly to sustainable growth and employment.³⁷ The Circular Economy Action Plan (CEAP) is one of the main building blocks of the European Green Deal, Europe's agenda for sustainable growth, underlining the EU's commitment to a



circular economy that reduces pressure on natural resources and creates sustainable growth and jobs, essential for achieving the EU's 2050 climate neutrality target and halting biodiversity loss.³⁸ Cities, being the nexus of consumption and waste generation, are pivotal in delivering on these goals and driving change towards a regenerative, inclusive circular economy. In Paris, the city has developed a circular economy regulatory framework³⁹ that has resulted in 3% of Parisian jobs being circular as of 2019, and has generated an added value of €7 billion per year. European cities are also supported through initiatives such as the [Circular Cities and Regions Initiative \(CCRI\)](#), a multistakeholder collaboration and support scheme that empowers cities to increase synergies among urban initiatives with circular solutions and business models. The initiative also provides technical and financial support to stakeholders across Europe's cities and regions, giving greater visibility to best practices and fostering local green jobs. Beyond the EU, plans like ReLondon have also been established to transform the city into a leading low-carbon circular economy.

Overview of green jobs distribution and leading green sectors

This analysis captured approximately 30.5 million jobs overall in the European regional analysis across 18 cities.

Of the total jobs analysed, 2.3 million can be considered green jobs. This accounts for 7.6% of overall employment analysed.

Of these, 1.3 million (4.4%) are considered directly green, meaning they operate directly in a green sector such as recycling, and 968,800 (3.2%) are considered indirectly green, providing the goods and services required for green sectors to operate.

In C40 European cities, the **service sector (which includes food, transportation, accommodation or retail, among others)** employs approximately 23.6 million individuals, being the largest sector in the region. However, green jobs account for around 6% of total employment in the service sector, a stark contrast to sectors that produce finished goods (such as manufacturing and construction), where 13.5% of activities are green. Most of these green jobs are in sectors such as 'Water supply, sewerage, waste management,' 'Electricity, steam, and air conditioning supply,' and 'Construction.' Sectors that produce raw materials and cover extractive practices as well as agriculture and forestry,⁴⁰ which are typically low in cities, have 14.3% of green jobs, most of which are classified as direct green jobs.

This highlights the **service sector's untapped potential in adopting green practices and contributing more significantly to green employment.** Wider energy-efficient practices across the industry, adopting more sustainable business models, and sourcing more local and green products and services can all contribute to greening in these key urban employment sectors. A green service sector job could include preparing locally-sourced vegan or vegetarian meals or selling items that have been sourced from recycled textiles, for example.



European C40 Member Cities Job Distribution

7.6%
Green
Jobs

4.4%

Directly
Green Jobs

3.2%

Indirectly
Green Jobs

Total Green Jobs =
2.3 million

Sectors driving green jobs in the region

Six sectors with the highest total number of green jobs (direct and indirect)

Sectors	Total employment	Total green jobs	%	Direct green jobs	%	Indirect green jobs	%
Construction	1,701,608	303,205	17.8%	239,706	14.1%	63,495	3.7%
Manufacturing	3,315,082	274,951	8.3%	171,043	5.2%	103,903	3.1%
Wholesale and retail trade; repair of motor vehicles and motorcycles	4,021,352	265,664	6.6%	134,243	3.3%	131,419	3.3%
Agriculture, forestry, and fishing	1,447,026	208,593	14.4%	156,757	10.8%	51,835	3.6%
Professional, scientific and technical activities	2,439,010	203,570	8.3%	86,247	3.5%	117,324	4.8%
Transportation and storage	1,472,560	159,526	10.8%	103,662	7%	55,863	3.8%

The **Construction** sector, employing around 1.7 million people, is the top green employer in the region in absolute numbers, providing over 300,000 urban green jobs, and is also one of the sectors with the highest share of green jobs (17.8%). More than three fourths (nearly 240,000) of total green jobs in the construction sector are directly green. Less than 4% of the total green construction jobs are indirect— revealing significant potential to strengthen the existing local supply chain by provisioning green materials or services to directly green sectors. This will be essential to further scale up the current leading green-built environment activities in many European C40 cities. Oslo, for example, is achieving this by adopting a proactive approach to greening the construction sector. This includes utilising public procurement and purchasing power, engaging stakeholders early, and effectively communicating the public benefits of such initiatives.⁴²

Overall, as one of the largest employers in cities, construction has significant potential for creating green jobs as the sector transitions further to green practices. This offers an opportunity to scale further green activities in the region's urban centres, such as by retrofitting and renovating for





climate adaptation, while also promoting energy-efficient building designs and using sustainable, locally sourced materials. As growing legislative environmental requirements are implemented across the EU, they will impact sustainable urban development and require upgrading or retrofitting existing buildings to enhance energy efficiency.⁴³ Moreover, providing green and future-proof public infrastructure will be critical as European cities face more extreme weather conditions.⁴⁴

The **‘Water supply, sewerage, waste management, and remediation’** sector boasts over 50% direct green employment.⁴⁵ Within this sector, there are 108,000 direct green jobs, and around half of these (nearly 50,000 jobs) are concentrated in waste collection, management and recovery activities alone. These jobs cover various functions including waste collection, material recovery, and treatment and disposal of waste. The critical importance of these activities lies not only in the green transition but also in the potential for local green employment creation as cities continue to expand waste management and materials recovery capabilities.

Similarly, the repair services sector, spanning various industries and products, has established a strong foothold with over 140,000 green jobs, with pre-dominantly direct green employment contributing significantly to green employment. The sector has a crucial role in fostering sustainable consumption, prolonging product life cycles and demonstrating growth potential. This upward trend in sustainability, driven by city-level and EU legislative commitments, is set to continue, reinforcing the repair sector’s vital role in the green economy.

It is also worth highlighting other sectors with higher rates of green jobs (over 20% of total employment), which are not always the largest sectors of the economy, such as: Electricity, steam and air conditioning supply, where over 20% of employment are green jobs workers and their representatives must be at the heart of policy action.

Potential growth areas for green jobs

Some of the sectors with the largest green employment numbers, such as ‘Manufacturing’ (275,000 jobs) and **‘Wholesale and retail trade’** (265,700 jobs), do not have a high proportion of green jobs compared to total employment in the sector. For instance, only 8.3% of Manufacturing sector’s jobs are green, and 6.5% of the Wholesale and Retail jobs. By focusing initiatives on greening these top-emplying sectors, cities can create a substantive ripple effect, further expanding the scope and number of green jobs in urban economies. For instance, cities could support these sectors to move faster towards renewable energy in their operations or emphasise recycling and repair. Additionally, they could produce or provide services to sectors directly involved in green activities, such as renewable energy production or sustainable building materials.

A closer look at the data shows that sectors that align with region-wide policy objectives for driving green growth in the circular economy action plan and the renewable energy transition have already created thousands of green jobs, but have the potential to grow much further. For example, the **Renewable energy sector** accounts for 33,000 green jobs in C40’s European cities, comprising various roles in electricity power generation, transmission and distribution.⁴⁶ However, this represents only 26% of the jobs in the sector. If the whole sector was moving towards renewable and away from fossil fuels, it could green an additional 90,000 jobs across cities, approximately. With the EU making more concerted efforts to foster domestic sustainable manufacturing practices for resilient renewable energy systems, these findings represent promising steps toward that goal. For C40 mayors, understanding this dynamic is crucial as it highlights the potential for fostering growth and transformation in these local manufacturing sectors, which are integral for supporting a self-sustained green economy and can be influenced by municipal policies.

The **'Transportation and storage' sector** also has a significant potential for green job creation. The sector employs over 1.4 million people, yet only around 11% of the jobs (160,000) are considered green. This reflects a strong foundation for expanding green public transit options (mass transit or passenger transportation), a sector that accounts for over 68,000 green jobs in the cities analysed. Investing in better infrastructure and ensuring affordability will be crucial for utilising these systems⁴⁷ that bring key air pollution and health benefits. As electric and renewable-powered vehicles increasingly become the norm in urban areas,⁴⁸ **the shift towards more environmentally friendly and people-focused transportation practices** has the potential to drive the creation of green jobs, showcasing a need to examine greening options for these important employment sectors. Practices such as electrifying trucks, freight, or postal couriers; expanding urban cycling infrastructure; implementing low emission zones; and/or increasing the number of public transit routes available could reduce the reliance on private transportation, decrease emissions, and result in the transformation and/or creation of green jobs in the sector.

Manufacturing, Wholesale and retail trade, Renewable energy, and Transportation and storage have significant opportunities for improvement to adopt greener practices. This could be achieved by sourcing green materials and services for their activities, integrating green skills and knowledge into educational curricula, and adopting more sustainable business models, particularly in the food service industry.

Just transition principles⁴⁹ are at the heart of green policies, initiatives, and legislation. Achieving this requires developing a workforce with the right green skills and stimulating demand for these skills. Allocating resources to support negatively affected workers and advancing climate action investment can create good green jobs and mitigate job losses in carbon-intensive sectors. Social dialogue and the engagement of key stakeholders,⁵⁰ including unions and affected populations, are needed to minimise the income inequalities resulting from the transition to net-zero economies.

Other sectors

While representing an overall small percentage of jobs in cities, **organic agricultural practices** in Europe are above the C40 global average, providing over 200,000 green jobs overall. This is important because, although a majority of these jobs are located outside cities, urban demand is very important to boost greener agricultural practices. Various supporting roles within cities are key to support the sector, such as jobs in the accommodation and food sector, research and innovation, and education. City officials can support local, organic agricultural farming in manifold ways to ensure that urban residents are [accessing healthy, sustainable and affordable food](#) while boosting green jobs in agriculture. They can develop education and outreach programmes for



urban residents to improve their awareness of sustainable agriculture, support farmers' markets and food hubs that prioritise local organic food, embrace sustainable practices in their supply chain by operating on renewable energy, or help the establishment of community gardens and allotment programmes to grow their own organic produce and create local green jobs.⁵¹

Job distribution and equity

Some of the sectors with the highest number of green jobs show existing inequalities in the demographic distribution of jobs. For example, in countries like Greece or France, where data was available, between 4-13% of the jobs in the construction sector and between 16-26% of the jobs in the transportation sector, both with a large green job potential, are occupied by women. Similarly, youth employment in these countries averages around 3-10% in the construction sector and 2-7% in the transportation sector.

Deliberate efforts to engage both youth and women could supply the workforce with capacity for significant growth in clean construction, electric vehicles, and other growing sustainable fields. For example, in Oslo, the [Vegetarian Express Programme](#) supports immigrant women living at home by providing them with local jobs for cooking vegetarian meals at schools. Initiatives like this are crucial for improving underrepresented groups' access to jobs and training, and ensuring better livelihoods for all.

Call to action and investment

Cities are crucial in leading the transition to a green economy. To realise C40 mayors' ambition to drive the creation of 50 million jobs this decade, **European cities need to continue investing in the green workforce and supporting local investment from the private sector and other levels of government.** To boost green jobs and ensure a sustainable future, cities, businesses and investors can:

- **Engage in workforce development and ensure these jobs are accessible to a wider population.** Invest in education and reskilling programmes to equip the workforce with green skills, particularly in sectors with a low green job presence or with a large potential for green job creation (such as construction or transportation). Tailor mechanisms for transitioning the workforce in non-green sectors, making green jobs accessible and appealing to all, including young entrants to the labour market.
- **Incentivise green job creation.** Encourage employers to create well-paid green jobs (especially in large employment sectors), and improve access for underserved communities to help bridge the skills gaps. Incentives such as tax deductions can also be utilised for skills training or wage subsidies.

Spotlight:



In 2022, the Mayor of **London** launched their **Green Skills Academy**, providing training in green areas, including retrofits, green spaces, renewable energy, electric vehicles, and low-carbon transport. As of March 2024, the Green Academy has supported over 3,350 learners in good jobs and more than 6,500 Londoners into new training and learning opportunities.

Spotlight:



In partnership with not-for-profit organisation **Boss Ladies**, the **City of Copenhagen** champions the inclusion of women in the building sector and focuses on attracting, recruiting, and retaining women in the construction sector, where they are typically underrepresented. The Boss Ladies project aims to break down prejudices and motivate more young women and non-binary students to enter and develop their talent within the building and construction industry. The project offers an ambassador programme, capacity-building activities, and an apprenticeship scheme. It is implemented in collaboration with a broad array of building sector stakeholders, including businesses, vocational schools, trade unions, employers' organisations and non-governmental organisations.

- **Foster innovation in key sectors.** Support innovation in industries that contribute directly to the green economy, focusing on leveraging the large service sector (entertainment, food, retail, etc.) in cities towards strengthening and expanding local manufacturing activities.
- **Collaborate for an enabling environment.** Work with stakeholders at all levels to embed existing direct green sectors, such as waste management and renewable energy, into the broader local economy. This could include integrating both formal and informal workers in policy design, for instance.

Spotlight:

Tel-Aviv Yafo is assisting and supporting startups by offering a variety of services and benefits through their [City-Business Climate Alliance](#). For example, Hackathons are offered to promote the development of creative and innovative applications and solutions for issues that the city faces. Workspaces are also available for startups at a subsidised, accessible price, giving entrepreneurs opportunities to: develop their initiatives in a pleasant, productive environment; meet and network with other entrepreneurs; connect with advisors and municipal officials; and access other support services such as open-source access to the municipality's databases on population, environment, transportation, events, education and more. This ecosystem is pivotal in promoting the green job sector, particularly high-tech industries. By fostering partnerships with international entities, encouraging research collaborations, and investing in cutting-edge technologies, the municipality actively contributes to the growth and sustainability of green jobs in Tel Aviv.

Spotlight:

Heidelberg is participating in the [Bioeconomy Cluster Rhine-Neckar Metropolitan Region initiative](#), which aims to optimise processes so that products can be produced, sold and recycled as sustainably as possible, primarily through renewable resources and bio-based raw materials. The city is already supporting these efforts, such as through its [“Circular City Heidelberg”](#) pilot project. This project led to Heidelberg being the first municipality in Europe to use the principle of urban mining to reuse construction and demolition waste for future building projects via a building materials register in the spirit of the circular economy.

- **Update public procurement standards and use public procurement to drive green market transformation.** This could be achieved by cities actively leveraging their procurement power to include renewable energy and green standards in public investments, thereby encouraging suppliers and manufacturers to innovate and adopt sustainable practices. These efforts would entail developing and updating standards to support green public purchasing decisions, stimulating the scaling up of green practices in manufacturing, and providing incentives to adopt competitive green practices in their operations. Furthermore, ongoing training for public procurers at the city level is critical to ensure they are well-equipped with the latest knowledge and tools to assess and effectively implement these green procurement policies. Procurement standards also present an opportunity to increase job quality and create more entry points for small, minority- and women-owned firms so that they gain access to contract opportunities.

Spotlight:

The city of [Rotterdam's Labour Market Perspective Fund](#) developed a digital platform called Rikx, which advances both the good green jobs labour market and contributes to broader social good. Companies that are spending part of their revenue on employing vulnerable residents can now log onto the platform to invest that money in social entrepreneurs who provide training for these residents in growing green job opportunities, such as installing solar panels. Rikx has a similar structure to a crowdfunding platform, except that the projects available for funding have been vetted by experts and scored for how much social impact they can create. The city is committed to giving a direct chance at work to as many Rotterdammers as possible under a vulnerable labour market position (low-skilled flex workers, self-employed workers, motivated job seekers on benefits). Together with involved employers and educational institutions, the city invests - by participating collectively in the Rotterdam Labour Market Perspective Fund - in the development of this human capital.

Examples of cities snapshots⁵²

For the below city employment breakdowns, we have **classified the sectors of the economy** as either:

Green:

Includes sub-sectors that are considered 100% green, (e.g., repair or waste collection and recycling sectors⁵³), and sub-sectors that are partially green (e.g., energy generation, manufacturing, construction, etc.), where the share of green activity has been estimated through various methods, which can be found in detail in the methodology [here](#).

Non-green:

Includes sub-sectors that are not contributing to the green transition (such as jobs in fossil fuel industries), and sub-sectors whose green activity has not been calculated in this analysis to date (e.g. fishing) until a sector-specific method for them can be developed - see [methodology](#) for more details.

Other:

Refers to sub-sectors that are neither explicitly green nor non-green by definition. These sectors may have the potential to transform into majority green jobs.



LONDON

Total employment	5,320,100
Total green jobs	470,190 (8.8% ⁵⁴)
Total direct green jobs ⁵⁵	268,550 (5% ⁵⁶)
Total indirect green jobs	201,640 (3.8% ⁵⁷)
Other jobs	4,586,620 (86.2% ⁵⁸)
Total non-green jobs	263,280 (4.9% ⁵⁹)
Top 3 green job sectors in overall numbers	Transportation and storage (88,420 green jobs, 38.2% ⁶⁰), Professional, scientific and technical activities (74,200 green jobs, 9.8%), Administrative and support service activities (51,220 green jobs, 9.9%)

MILAN

Total employment	1,986,200
Total green jobs	178,660 (9%)
Total direct green jobs	97,900 (4.9%)
Total indirect green jobs	80,760 (4.1%)
Other jobs	1,729,520 (87.1%)
Total non-green jobs	78,030 (3.9%)
Top 3 green job sectors in overall numbers	Manufacturing (33,220 green jobs, 9.1%), Construction (21,450 green jobs, 16.1%), Wholesale and retail trade; repair of motor vehicles and motorcycles (17,550 green jobs, 6.5%)

Note: these results are based on the methodology developed for this research, and can differ from other green jobs analysis carried out by Greater London Authority (such as the research on ['London Low Carbon Market Snapshot'](#) (GLA, 2024) update or by other organisations or cities. Whilst they all aim to measure existing green jobs in cities across sectors of the economy, the definition used for green jobs, the employment classifications, scope and methods often vary leading to differences in the results. The estimation of green jobs is still a novel area of research and different methods and definitions are valid.



BARCELONA

Total employment	772,200
Total green jobs	56,810 (7.4%)
Total direct green jobs	33,520 (4.3%)
Total indirect green jobs	23,290 (3%)
Other jobs	682,280 (88.4%)
Total non-green jobs	33,110 (4.3%)

Top 3 green job sectors in overall numbers

Construction (11,120 green jobs, 22.2%), Manufacturing (8,380 green jobs, 8.8%), Wholesale and retail trade; repair of motor vehicles and motorcycles (7,890 green jobs, 7%).



Endnotes

- ¹ C40 Cities. (2022). [C40 cities to drive the creation of 50 million good, green jobs by 2030](#). As of 2023, C40 cities have reached nearly 16 million green jobs towards the 50 million target. Find the latest information and data on [C40's Good Green Jobs webpage](#).
- ² The 18 C40 European cities include: Amsterdam, Athens, Barcelona, Berlin, Copenhagen, Heidelberg, Istanbul, Lisbon, London, Madrid, Milan, Oslo, Paris, Rome, Rotterdam, Stockholm, Tel-Aviv Yafo, and Warsaw.
- ³ These total jobs cover the employment that is registered in the datasets used for this analysis. See note on methodology section.
- ^{4,5} World Resources Institute. (2021). [The Green Jobs Advantage: How Climate-friendly Investments Are Better Job Creators](#).
- ⁶ C40 Cities. (2022). [The Cost Of Fossil Gas: The Health, Economic And Environmental Implications For Cities](#).
- ⁷ C40 Cities. (2023). [Achieving the just transition: A toolkit for city leaders across the globe](#).
- ⁸ Industrial heritage, in this context, could include historical, technological, social, architectural or scientific remains of traditionally non-green jobs.
- ⁹ 74 cities across five continents were analysed in this first analysis. Overall, green jobs are high in sectors that are strongly influenced by local public policy measures, including transport, energy, construction, and waste management. See [here](#) for global results.
- ¹⁰ Note: these results are based on the methodology developed for this research, and can differ from other green jobs analyses carried out by cities or other organisations. The estimation of green jobs is still a novel area of research and different methods and definitions are valid. Whilst they all aim to measure existing green jobs in cities across sectors of the economy, the definition used for green jobs, the employment classifications, scope and methods often vary leading to differences in the results. For example, in the present classification, C40 considers gas activities as non-green, since they contribute directly to create GHG emissions, but the [EU taxonomy](#) does consider gas as a sustainable investment [in certain conditions](#).
- ¹¹ C40 Cities. (n.d.). [Good Green Jobs](#).
- ¹² [The International Standard Industrial Classification of All Economic Activities \(ISIC\)](#) is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can be utilised for the collection and reporting of statistics according to such activities. We have left the sector names as they appear in the employment classification we are using, without altering them.
- ¹³ ILO's federal employment data collects data from national household labour force surveys (LFS). This means that some informal employment may be captured to the extent that it is reported in this collection.
- ¹⁴ International Labour Organisation. (2020). [Overview of the informal economy in the European Union](#).
- ¹⁵ European Council of the European Union. (2023). [5 facts about the EU's goal of climate neutrality](#).
- ¹⁶ European Council of the European Union. (2019). [European Green Deal](#).
- ¹⁷ European Union. (2019). [Communications from the Commission: The European Green Deal](#). Eur-lex.com.
- ¹⁸ European Union. (n.d.). [The InvestEU Programme supports sustainable investment, innovation and job creation in Europe](#).
- ¹⁹ European Commission. (n.d.). [European Regional Development Fund](#).
- ²⁰ C40 Cities. (n.d.). [Why all cities need a Paris Agreement-compatible climate action plan](#).
- ²¹ European Commission. (2023). [Cities Forum 2023: Together for green and just cities](#).
- ²² European Commission. (n.d.). [EU Mission: Climate-Neutral and Smart Cities](#).
- ²³ European Commission. (2022). [The Possible Implications of the Green Transition for the EU Labour Market](#).
- ²⁴ Hofman, J., Feyerabend, K, et. al. (2022). [Green Jobs and Skills Development for Disadvantaged Groups](#). RAND.
- ²⁵ European Commission. (2022). [In focus: Employment in EU's renewable energy sector](#).
- ²⁶ European Commission. (2022). [REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition](#).
- ²⁷ Council of the European Union. (2023). [Report: Progress on competitiveness of clean energy technologies](#).
- ²⁸ Abnett, K. (2023). [EU Parliament passes bill hiking renewable energy targets](#). Reuters.
- ²⁹ IEA. (2023). [Executive summary – Renewable Energy Market Update](#).
- ³⁰ European Commission. (2022). [Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions](#).
- ³¹ Odyssee-Mure.(2021). [European Union Profile: Energy efficiency & Trends policies](#).
- ³² Durieux, E. and Hidson, M. (2023). [Local Green Deals: A Blueprint for Action](#). European Commission Innovation Council and SMEs Executive Agency.
- ³³ European Commission. (2021). [Europe's cities achieve success using green approaches](#).
- ³⁴ European Commission. (2022). [Commission kick-starts work on the European Year of Skills](#).
- ³⁵ European Commission. (2019). [Supporting digitalisation of the construction sector and SMEs](#).
- ³⁶ The Skills Centre. (n.d.). [Introduction to Cladding Occupations](#).
- ³⁷ European Parliament. (2020). [REPORT on the New Circular Economy Action Plan](#).
- ³⁸ European Commission. (n.d.). [Circular economy action plan](#).
- ³⁹ City of Paris. (2017). [Paris Circular Economy Plan](#).
- ⁴⁰ Fishing, alongside certain other agricultural practices and extractive industries have been set as non-green in our methodology (see full methodology for a more comprehensive explanation).

⁴² C40 Cities. (2020). [How Oslo is driving a transition to clean construction](#).

⁴³ European Commission. (n.d.). [Green transition](#).

⁴⁴ Ylä-Mononen, L. (2023). [Editorial – Preparing Europe for a changing climate](#). European Environment Agency.

^{45, 53} This methodology considered waste collection, remediation, materials recovery, wastewater treatment and management as 100% green. In addition, within the waste treatment and disposal activities, the activities considered green are recycling, composting and anaerobic digestion. This is, for waste treatment and disposal, we estimated the activity that is not related to incineration or landfill, and considered that non-green. See methodology [here](#) for full details.

⁴⁶ This broader category includes 'steam and air conditioning supply, electricity, 'steam and air conditioning supply', and 'electric power generation, transmission and distribution' ISIC digit 4 activities.

⁴⁷ Lambert, J. (2015). [REPORT on the Green Employment Initiative: Tapping into the job creation potential of the green economy](#). European Parliament.

⁴⁸ European Environment Agency. (2024). [Transport and mobility](#).

⁴⁹ C40 Cities. (2021). [Exploring the just transition - Europe](#).

⁵⁰ For example, [London's Good Work Standard](#) encourages employers to pay their staff the London Living Wage.

⁵¹ As part of its sustainable food policy, the City of Paris launched the [Paris Fertile programme](#) to promote actions that support Parisians wishing to work in the agriculture and sustainable food sectors. The programme makes it possible to discover the scope of trades, to train and to become an employee or to create an enterprise in the field of agriculture or sustainable food.

⁵² The cities highlighted here were selected because of their engagement and leadership in green jobs work.

^{54, 56, 57, 58, 59} This percentage is calculated over total employment.

⁵⁵ Jobs refer to Full-Time Equivalent (FTE) for all cities and categories.

⁶⁰ This percentage is calculated over total employment in the sector.

About



C40 is a network of nearly 100 mayors of the world's leading cities, who are working to deliver the urgent action needed to address the climate crisis and create a future where everyone, everywhere can thrive. For more information, visit www.C40.org and <https://www.c40.org/campaigns/good-green-jobs/>



Circle Economy Foundation empowers industries, cities and nations with practical and scalable solutions to put the circular economy into action. Its vision is an economic system that ensures the planet and all people can thrive. To avoid climate breakdown, Circle Economy Foundation's goal is to double global circularity by 2032.

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