



EMPLOYMENT-RELATED INDICATORS FOR THE CIRCULAR ECONOMY

Circular Economy Indicators Coalition (CEIC)

SUMMARY DOCUMENT
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This document provides a high-level summary and synthesis of the CEIC track on employment-related indicators for a circular economy, which ran from mid-2022 to mid-2023. The project aimed to create enhanced insights into, as well as an understanding of the state of play in the use and usability of circular economy indicators to measure the social dimensions of employment, to help inform and guide a just and equitable circular economy transition.

1. Background

WHY WE NEED TO LOOK BEYOND JOB CREATION

The environmental and financial benefits that a circular economy can bring are increasingly better understood and accepted. Yet, a key component of any functioning economy is often overlooked—people and their skills. They are critical enablers of the circular economy transition but are often ignored or under-represented in research, policy and corporate discourse.

On the one hand there is the promise of a circular economy that could, if addressed with a system's approach, reverse lasting economic trends such as labour market polarisation, employment distribution and income inequality and create 'decent work' and inclusive jobs as cornerstones of sustainable development. On the other hand, we must acknowledge that circular business models, policies or initiatives will not inherently have positive social impacts.

Many current jobs, for instance, that could be classified as circular are not necessarily decent jobs, such as informal or semi-formal waste collection and recycling activities. In transitioning sectors from linear to circular, there may be adverse effects if workers and quality of work are not sufficiently taken into account during the design of policies and other interventions. These negative impacts may include unemployment, unequal distribution of new circular jobs, and workers being left behind in cases where industry actors and employers do not think ahead about mitigating job losses through periods of change. Further clarity is needed about how the implementation of circular strategies will impact current working conditions—both in the linear and circular economy—and how they can also alleviate issues we currently see in the labour market. A better understanding of how to plan for and manage the transition of sectors and businesses in such a way that safeguards workers and minimises unemployment is essential.

WHAT WE CAN OR WANT TO MEASURE

This means there is an evident and urgent need to clarify how to measure the employment effects and associated social impacts of the transition to a circular economy and consolidate available indicators to increase their use. Developing additional relevant measurement frameworks for policymakers supported by high-quality, reliable data is, therefore, a continued priority. For this purpose, a variety of stakeholders, such as public research institutes, statistical offices, NGOs, and policy agencies in the circular economy and employment sectors, may need to come together.

To help advance the field, the [Circular Economy Indicators Coalition](#) (CEIC), a collaboration between the Platform for Accelerating Circular Economy (PACE) and the Circle Economy Foundation, launched a project track around employment-related indicators for measuring the circular economy in mid-2022. The effort aimed to first landscape and consolidate existing employment-related indicators for the circular economy to provide oversight and transparency, followed by assembling key stakeholders to identify gaps in current indicator coverage and set forth an action agenda.

2. The project

With support from the Goldschmeding Foundation, the CEIC delivered a project between mid-2022 and mid-2023 revolving around the central question of how circular economy indicators linking to employment can help to inform and guide a just and equitable circular economy transition. The problem statement, therefore, read: 'How can employment-related metrics be more widely used to support the needs of decision-makers engaging in the circular economy?'

For this purpose, first, a series of interviews as well as background research was conducted to refine and prioritise user needs (work package 1). In parallel, an online library of relevant indicators was compiled (work package 2), followed by a series of roundtables bringing together experts in the circular economy and employment sectors to exchange on key needs, challenges, gaps and potential solutions (work package 3).

3. Insights from interviews

LIMITED COHERENCE IN THE FIELD

The CEIC conducted 20 interviews with a wide range of stakeholders, spanning the spectrum from those working specifically on circular indicators to those working in the field of circular or green employment. The aim was to better understand their experience and needs regarding circular indicators linked to the various dimensions of employment.

Based on the interviews conducted and further validated by the subsequent series of roundtable sessions, we have noticed that stakeholders, in general, have limited experience with circular employment indicators. The majority of current circular indicator efforts focus on the resource and environmental dimensions (such as material flow indicators). In addition, relatively little overlap was found between those working on circular indicators and those focused on the social dimensions of a circular economy or green transition. The latter group don't always necessarily apply (quantitative) indicators to their work beyond the use of certain sustainability-related standards, as well as by leveraging insights in aspects such as the number of jobs and the minimum living wage in a sector.

Amongst those working on applying quantitative indicators and models, there is a lack of alignment, resulting in variable estimations of employment gains and losses that could result from a circular transition. This can be seen in the variation in net employment estimates found between the OECD's 2020 study¹ and the ILO's 2019 study.²

SHIFT FROM NARROW TO BROADER FOCUS

At the same time, the project revealed a shift from an initial, narrow focus within the circular economy field on employment as an engine for job creation to a more recent, growing consideration of the labour conditions associated with the creation of circular jobs, both in sectors and economies locally in the Global North, as well as through a growing albeit still relatively nascent focus on export and import-dependent sectors that are a major source of employment in the Global South.

¹[The jobs potential of a transition towards a resource efficient and circular economy](#)

²[Skills for a greener future: a global view](#)

DISTINCTION BETWEEN GREEN VERSUS CIRCULAR

Nonetheless, when employment in the circular economy is discussed, there is often a degree of overlap and sometimes blurred lines with green jobs. This is in part due to the fact that green jobs are linked to multiple Sustainable Development Goals (SDGs) with relevance to the circular economy, including SDG12 on material consumption and production—the overlap between green and circular activities, and the green economy agenda generally being more mature than the circular agenda. It will be important to continue to support stakeholders to understand the distinction between green and circular jobs through alignment of their definitions and corresponding measurement frameworks in a way that enables the two agendas to reinforce one another, rather than cause complications for stakeholders working across these agendas.

LACK OF ALIGNMENT ON CIRCULAR JOBS DEFINITIONS

There is no widespread agreement on a definition of what constitutes a circular job, nor the circular economy itself. For example, countries have different views on what should be considered a repair or reuse-related job. The most commonly used framework that was mentioned by interviewees to use or align themselves with when it comes to circular employment was the European Union's [Circular Economy monitoring framework](#) and accompanying methodologies as developed by Eurostat. The current version of this monitoring framework includes only one indicator relevant to circular employment: the number of jobs indicator, which measures the number of persons employed in the recycling, repair and reuse, and rental and leasing sectors.³ In comparison, the Circle Economy Foundation's definition—the foundation for Circle Economy Foundation's circular jobs methodology—which was co-developed with the UN Environment Programme, takes a broader scope. It includes and thereby encourages the stimulation of circular activities in other sectors that can help upscale and accelerate the core of the circular economy and facilitate the use of circular products and services by businesses and consumers.⁴

BREADTH VERSUS DEPTH OF INDICATORS

Some stakeholders interviewed also noted that while there appears to be a considerable focus on (expanding) the breadth of circular indicators, enough attention is not always given to improving the depth and quality of the existing, more limited set of indicators commonly in use today, including, for instance, improving standardisation across datasets.

PRIORITIES QUANTITY OF JOBS

Finally, the majority of stakeholders we interviewed prioritised the ability to quantify circular jobs over the inclusion of social dimensions of employment in circular economy indicator sets. This also led to the question of whether indicators are always the best means of creating insight into the social dimensions of circular employment and what the role is of quantitative indicators versus more qualitative means of data collection like surveys, polls, stakeholder discussions and case studies. It also begs the question of how such qualitative approaches could be better leveraged for a more holistic understanding of the employment-related opportunities and challenges of the circular economy.

³ As part of this CEIC project track, Eurostat has presented experimental data that would be able to generate various additional insights in certain dimensions of CE employment.

⁴ A circular job is any occupation that directly involves or indirectly supports one of the strategies of the circular economy. We differentiate between three types of circular jobs: core, enabling and indirectly circular jobs. [Circular Jobs Methodology](#).

In a previous landscape study of [Circular Indicators for Governments](#) published in 2021, the CEIC concluded that measuring the actual environmental and social impacts of a transition to a circular economy can be considered the least explored and developed territory of the circular indicator field. The employment track of the CEIC further validates this finding, as this conclusion certainly appears to hold true for circular indicators related to employment impacts.

4. The indicator library

The [indicator library](#) developed under the CEIC provides prospective users with an overview of available indicators relevant for measuring different aspects of employment in the circular economy. The indicators have been collected from existing frameworks, publications and academic literature from experts. Indicators have been clustered by theme, which users can apply to filter the longlist of available indicators. Other ways to filter include by measuring unit and by the scale (micro, meso, or macro) that the indicator can be applied to. The current published set consists of approximately 80 indicators covering the following topics: circular activities, trainings and education, socio-economic indicators (related to employment, income, productivity, job satisfaction and other social benefits), health and safety, as well as inclusion and equality. See the published set for employment [here](#).

5. Roundtable sessions

A series of three roundtables for experts in both the circular economy and (green) employment sectors was organised to support stakeholders with aligning and exchanging on needs, challenges, and solutions when it comes to circular indicators linked to employment.. This was preceded by an in-person session ‘zero’ held during a Circular Jobs Initiative (CJI) event (*“Putting people at the heart of Circular Economy”*, The Hague, March 7th, 2023), which provided an introduction to the project and gathered initial feedback from the audience. The subsequent series of three roundtable sessions was held online, attracting 15-20 participants with each session.

Session	Roundtable 1 – March 28	Roundtable 2 – April 25	Roundtable 3 – June 8
PART 1			
Topic(s)	Importance of measuring circular employment ('Why')	Number of jobs ('How')	Measuring job distribution and global /local employment impact in circular economy ('How')
	Dimensions of measuring circular employment ('What')		
Presentations	Eurostat—Employment in the circular economy sector, Eurostat experience	Circle Economy Foundation—Circular Jobs Methodology	OECD— Job Creation and Local Economic Development 2023: Bridging the Great Green Divide

		Eurostat—Employment in the circular economy sector, methodology	Rreuse—measuring job creation in re-use: challenges and opportunities
			Circle Economy Foundation—Data Collaboratives to close the gap
PART 2			
Topic(s)	Indicators role in decision-making	Social dimensions ('How')	Closing the Gap in Measuring Job Quality & Skills ('How')
	Employment focus in available circular indicators		
Presentatio n(s)	Circle Economy Foundation—Employment Indicators Repository	CEDEFOP—Skills for the green transition—challenges in turning concepts into measurable observations	DG Employment—Measuring skills and job quality in the circular economy
	Circle Economy Foundation—Future Research and Recommendations	Circle Economy Foundation—Measuring green skills	Circle Economy Foundation—Assessing skills and quality jobs in circular economy
		ILO—An introduction to the ILO just transition framework	Circle Economy Foundation / ILO—Jobs in the circular economy. A joint Circle Economy Foundation, ILO & S4YE initiative

FIRST ROUNDTABLE SESSION

The first roundtable covered presentations and discussions regarding the importance of measuring employment in the circular economy ('why'); the different dimensions of measuring employment in the circular economy ('what') as well as the indicators currently available to measure these dimensions ('how'). The dimensions refer to the number of circular jobs, as well as to skills, quality and inclusion aspects of employment in the circular economy.

Eurostat, as an external stakeholder, presented their current employment indicator (number of jobs) in the EU's [Circular Economy monitoring framework](#), which measures the number of jobs in the recycling, repair and reuse sectors. It has a relatively narrow focus by considering only the employment effect resulting from prominent circular economy activities in a limited subset of sectors. In addition, Eurostat indicated what additional information on employment in the circular economy they might be able to derive from current data.

SECOND ROUNDTABLE SESSION

The second roundtable focused on specific indicator, methodological and data-related challenges ('how') of measuring the different dimensions of employment in the circular economy.

Circle Economy Foundation presented the [Circular Jobs Methodology](#) developed by the Circle Economy Foundation and the UN Environment Programme to measure the number and range of circular jobs. The methodology supports policymakers in grasping the current circular activity as it relates to national, regional or local labour markets and can be used to monitor progress in the adoption of circular strategies over time. The indicator provides data on the number of circular jobs per sector and activity. The presentation was complemented by a review of some of the gaps in NACE⁵ classifications that can lead to over or under-representation of circular jobs in certain sectors. NACE codes are often used in Europe to help estimate the number of jobs in a certain field by adding up all relevant sectors, each associated with a specific NACE code.

The second part of the session focused on the social dimensions. The European Centre for the Development of Vocational Training ([CEDEFOP](#)) presented skills for the green transition and the challenges of turning concepts built around technical and transversal skills into measurable observations. This was complemented by a short intermezzo by the Circle Economy Foundation on the potential to combine NACE codes and the ESCO skills⁶ classification to gain more insight into the skills level within a sector.

The final presentation was provided by the International Labour Organisation (ILO) on the [ILO just transition guidelines](#) and the potential to build on the framework's categories of decent work indicators to expand the set of relevant circular indicators that measure dimensions such as job quality and inclusion.

THIRD ROUNDTABLE SESSION

The third and final roundtable aimed at sketching the state of play today based on what we had learned in the previous sessions and to point in promising directions to start closing the gaps. The session commenced with a brief overview of what we can and cannot measure today when it comes to employment in the circle economy, and what we ideally would like to be able to measure.

Within this, the roundtable focused on specific aspects of closing the gap: the measurement of job distribution and global/local employment impact in the circular economy for the first block and the measurement of job quality and skills for its second block.

The first block kicked off with a presentation by the OECD on how they measure [green job creation](#) in light of local economic development, including regional and gender employment shares across member countries. [Reuse](#) subsequently provided insights on the challenges and opportunities of measuring jobs in the re-use sector. The block closed off with a short presentation by Circle Economy Foundation on the role of data collaboratives as a novel form of

⁵ The Statistical Classification of Economic Activities in the European Community, commonly referred to as NACE, is the standard system used in the European Union for classifying industries. Each industry is associated with a code. NACE code 3832, for example, refers to the sector involved in the recycling of waste

⁶ ESCO (ISCO-08) is the classification of European Skills, Competences, Qualifications and Occupations. ESCO is among the most commonly used methods to describe the availability and distribution of skills within specific European countries and regions

private-public partnerships to structure and utilise private sector data, sometimes from multiple parties, for public sector decision-making.

The second block on job quality and skills commenced with the European Commission's Directorate General (DG) of Employment presenting on measuring skills and job quality in the circle economy at the European Union level including the policy context and relevant effort. Circle Economy Foundation briefly discussed the use of big data and AI for assessing skills and job quality. The final presentation showcased the launch of a joint Circle Economy Foundation, ILO and World Bank (S4YE) [Jobs in the Circular Economy initiative](#) on decent work in the circle economy. The initiative will develop compelling and globally relevant evidence on current work in the circular economy using authoritative data to increase awareness, political support and understanding about opportunities and challenges, and support pathways towards environmental and economic policies and interventions that enable a fair transition for all. The first output from this initiative, [Decent Work in the Circular Economy: An Overview of the Existing Evidence Base](#), was published in May 2023.

6. SUMMARISING THE STATE OF PLAY

MEASURING CIRCULAR JOBS

Measuring the number of jobs

The indicator 'number of jobs' is usually measured by the number of people or full-time equivalent (FTE) working in a relevant profession as an employee or entrepreneur. Commonly used data sources for collecting information include the data that are collected through countries' National Accounts, which in Europe tends to be done based on the NACE classification. The NACE codes provide a common language for describing and analysing economic activities in the European Union, ensuring data comparability and harmonisation.

NACE codes

Limitations

As discussed in the second roundtable, although the NACE codes are often used as a proxy to the number of circular jobs in relevant sectors, the use of the codes comes with various limitations. As entire sectors are counted in or out, using the NACE codes does not provide a very granular view of circular jobs and can create a bias towards sectors traditionally seen as circular (such as recycling). Meanwhile, jobs provided through the pursuit of circular business models in 'regular' sectors tend to be excluded from view as it's very difficult to distinguish circular companies or activities in NACE that operate in a sector not explicitly categorised as circular.

This can easily lead to overcounting of circular jobs in some and undercounting in other sectors. Equally, this bias may also cause us to capture more low- and medium-skilled jobs due to the sectors captured as circular by NACE. This means that although NACE codes can be useful for understanding broad circular economy-related sectoral trends, they're not very suitable for giving a clear picture of the number of circular jobs in an economy.

Alternative approaches to working with NACE

A few parties have utilised bottom-up methods such as web-crawls—collecting circular job advertisements from the web—to get a better idea of jobs within a given company or sector and to understand the extent to which non-circle economy classified companies conduct circular activities. The Dutch Statistics Office, for example, has creatively explored the extent to which companies are conducting circular activity beyond their industry classification using web-crawls.

Others have also used voluntary surveys to collect data on the number of companies involved or engaged with circularity, sometimes using intermediaries such as employment agencies or NGOs to collect the data for them. An example is the [Rreuse](#) network,⁷ which has developed a number of reuse indicators—such as the number of jobs created per 1000 tonnes of waste collected to be reused or repaired—and uses its member network to collect data. Obviously, this approach may lead to incomplete samples, which although able to provide indications, aren't necessarily entirely suitable for monitoring progress at a national level, for example.

Another approach is the use of the ORBIS database⁸ to derive a firm-level headcount by industry to infer circular activity. Finally, it has also been suggested to come to an agreed percentage to use for sectors not classified in NACE as circular.

Job distribution

Another challenge with measuring the number of jobs is the limited insight we have into the geographical distribution of circular jobs within a country, including in regions with higher levels of unemployment and under-employment, as well as the lack of insight into the potential for job-to-job transfer in linear sectors where jobs may disappear and circular sectors where new jobs may emerge. With this in mind, the OECD is measuring [green job creation](#) across its member countries in light of local economic development, including regional shares. The effort uses bottom-up approaches across regions, cities and countries to capture more granular information than NACE or ISIC would provide.

CIRCULAR SKILLS

Measuring skills

Circular skills are usually measured by the number of people enrolled or the number of relevant courses, trainings or degrees provided. Common indicators include the number of people enrolled in professional trainings or university courses covering circular activities, as well as the number of such trainings or courses being provided.

Common challenges

Common challenges with measuring circular skills are limited insight into what types of skills people actually gain from relevant training and courses and if these are sufficient to satisfy the needs of the circular transition. One reason for this is the lack of a taxonomy for general or sectoral circular skills. Skills classification efforts tend to commonly focus on more general green or sustainability competencies and skills.

⁷ Rreuse is an international network representing social enterprises active in the circular economy, notably in re-use, repair and recycling with more than 30 members across 28 European countries and the USA

⁸ The ORBIS database has information on close to 450 million companies and entities across the globe

The ESCO skills⁹ classification available in the European Union provides a useful basis for gaining insight into skills levels within a sector. Some gaps do exist in terms of completeness and accuracy due to the dynamic nature of the labour market and consistency in some of the terms and definitions. Standardisation is also a challenge given the complexity of harmonising the classification of skills across industries, countries and languages. Beyond type of skills, we have little insight with current data on whether acquired skills and degrees translate into people being able to acquire circular employment.

Alternative approaches to measuring skills shifts

CEDEFOP provides research and analysis on vocational education and training (VET) systems, policies, and practices in the EU. As part of its objective and within the context of the European Green Deal and Green Transition, it measures green skills and provides green skills foresight. It does so via the [Skills-OVATE](#) project; the development of [Online Tools](#), such as a European Database on apprenticeships scheme, a European Skills Index, a European VET policy dashboard, key indicators on VET, a National Qualifications Framework online tool and more.

In recent years, CEDEFOP published its first [circular skills forecast](#). The Centre is also developing the European Database on apprenticeship schemes and mapping out specific skills for core circular economy sectors, such as waste management skills, in its [Too Good to Waste](#) report.

QUALITY OF JOBS

Measuring job quality

The quality of jobs is usually measured as the number of workers, frequency of undesirable events or financial value. Examples of commonly used indicators include the number of workers in informal, precarious or casual employment; the frequency of occupational injury, illness or mortality; and the average gross or net income, minimum wage and wage index, aligned with the ILO's [Decent Work agenda](#).

Alternative approaches to measuring job quality

The University of Amsterdam has conducted several '[value of work surveys](#)' with an accompanying monitoring dashboard, in order to better understand how work is organised and people's perceptions of the world of work. The use of the Eurobarometer Opinion Survey is also seen as being instrumental to understanding societal trends regarding sustainability topics and concerns, such as [work-life balance](#).

INCLUSION

Measuring job inclusion

Job inclusion is usually measured as the number of workers or percentage share of a certain group that is participating in the job market. Common indicators include the number or percentage share of women, minority groups or vulnerable groups in a circular occupation, or the number of workers in social enterprises with circular activities, for example.

⁹ ESCO (ISCO-08) is the classification of European Skills, Competences, Qualifications and Occupations. ESCO is among the most commonly used methods to describe the availability and distribution of skills within specific European countries and regions

More accurate insights needed

More granularity on the ability of certain social groups who are distanced from the labour market or who may face equity and inclusion issues to engage in circular employment is required, together with the attractiveness and quality of these jobs. This includes obtaining data that enables a disaggregation of job numbers by gender and socio-economic group. There is not yet a specific framework for assessing inclusion and just transition in the circular economy. The same holds true for the EU's 'leave nobody behind' theme. To the extent that indicators are available for interventions such as work integration schemes, there is no harmonised definition as to what constitutes a circular job for those with a distance to the labour market.

Alternative approaches to quantifying inclusion

The [ILO's Just Transition Guidelines](#) may provide a sound baseline for a just transition in combination with commonly used employment metrics, such as minimum and average sectoral wage, average working hours and so forth. The ILO's Decent Work framework, which provides ten categories of indicators to measure the quality of jobs, holds promise for measuring the social dimensions of work for circular jobs as compared to jobs in the rest of the economy. Reuse.org has developed an indicator for the number of reuse jobs for people at a distance from the labour market, using its member network to collect data. Some actors are also experimenting with combining NACE or ISIC¹⁰ codes, which classify sectoral activity, with ESCO/ISCO¹¹ codes on skills to create greater understanding in, for instance, the representation of women in certain occupations.

¹⁰ The International Standard Industrial Classification of All Economic Activities (ISIC) is an international classification system comparable to NACE

¹¹ The International Standard Classification of Occupations (ISCO) is comparable to ESCO