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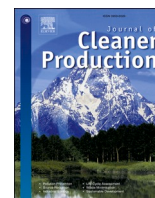
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Towards sustainable growth paths for work integration social enterprises in the circular economy

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ABSTRACT

An important presumed social impact of the circular economy (CE) is job-creation for vulnerable groups. This creates opportunities for Work Integration Social Enterprises (WISEs), which are established to organize economic activities for workers with a distance to the labour market. In this paper, we identify challenges, opportunities, and sustainability aspects for WISEs in the CE. We apply Computable General Equilibrium (CGE) model results and conduct 20 expert interviews, providing an empirical contribution to recent research agendas on the social impact of the CE and the role of WISEs in Circular Societies. Our results show that WISEs should not take job-creating opportunities of the CE for granted, most specifically in the business-to-business (B2B) markets they are active in. While WISEs conceive competitive advantages to perform core CE jobs, they need to develop organisational capabilities to convert this potential into high added value activities within regionally embedded circular value chains. When identifying conditions for sustainable growth paths, we reveal a strong interconnectedness between social, environmental, and economic dimensions. We recommend management professionals and policy makers to measure, validate, and communicate social and circularity outcomes and invest in partnerships along value chains and across policy domains.

1. Introduction

While the concept of a circular economy (CE) and its focus on resources and a future-proof economy became popular among policymakers, scholars, and entrepreneurs, empirical research on measuring the progress towards a CE shows we are far from its implementation (Circle Economy, 2023). Moreover, the CE may be widely acknowledged as an enabler for environmental sustainability, yet as a concept it says little about its social impact (Geissdoerfer et al., 2017; Velenturf and Purnell, 2021). Regions such as the European Union (EU) see the potential of the CE for job creation (OECD and European Commission, 2022) but more studies are needed to understand the social impact of the CE (Padilla-Rivera et al., 2020; Schröder et al., 2020; Valencia et al., 2023).

The most cited social impact of the CE is its potential to generate jobs (Padilla-Rivera et al., 2020). According to the ILO (2022a), a CE is

expected to generate a shift from material-intensive to more labour-intensive activities and requires investing in new skills. The transition to a low-carbon, circular, and resource-efficient economy is estimated to generate 18 million new jobs worldwide and 1.2 million new jobs in the EU by 2030 (ILO, 2022a). While the important role of labour in the CE has been widely acknowledged (Mies and Gold, 2021; Moreau et al., 2017), there is a lack of studies on who would benefit from those jobs, and whether people would be willing to perform these jobs (as pointed out by Clube, 2022) and acquire the necessary skills for a green transition (European Commission, 2020a).

Many CE-related jobs are believed to create training and working opportunities for vulnerable groups at the labour market, such as people with disabilities, psychosocial problems, elderly people, migrants, refugees, and marginalised communities. Conversely, the employment of these vulnerable target groups is increasingly acknowledged as a social CE indicator (Pitkänen et al., 2023; UNEP, 2020; Walker et al., 2021).

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Work Integration Social Enterprises (WISEs), which are specifically established to identify and organize economic activities for workers with a distance to the labour market, are often considered as a strategic partner to accelerate the transition towards a circular and inclusive economy (OECD and European Commission, 2022). This has been recognized in both the Circular Economy Action Plan (CEAP) and the Social Economy Action Plan (SEAP) of the European Commission (European Commission, 2020a, 2021).

WISEs seek to help poorly qualified unemployed people, who are at risk of permanent exclusion from the labour market, return to work and to society in general through a productive activity (Vidal, 2005). WISEs activate a complementary skill set in the labour market by designing process flows and providing support in a way that vulnerable people at the labour market (e.g., because of a disability or psychosocial problems) are enabled to perform easy and repetitive tasks that are adapted to their capabilities (Samoy and Waterplaz, 2012). This design and guidance of these activities is performed by supporting staff that combine the necessary technical, social, and business-development skills (De Cuyper et al., 2015). Therefore, the skill set WISEs may offer could match both 'core' CE jobs requiring a lower educational level and manual skills, and 'enabling' CE jobs that require higher education and technical skills (Burger et al., 2019). Moreover, as WISEs include and empower workers that would have been unemployed or inactive otherwise, they contribute to a just transition (Purvis et al., 2023; Vanhuysse et al., 2022) and a circular society (Jaeger-Erben et al., 2021). However, aside from their potential to contribute to the CE, questions can be raised about the quality of jobs generated within WISEs, the genuine environmental contribution of the tasks WISEs perform, and the economic sustainability of shifting current activities towards circularity. Deepening our knowledge on these aspects is crucial to develop sustainable business model in WISEs, that requires a sound alignment of strong environmental, social, and economic value propositions (Bocken, 2021).

In this paper, we identify challenges and opportunities of a CE shift of WISEs and formulate boundary conditions for sustainable growth paths for WISEs towards a CE. We first apply post-calculations on a Computable General Equilibrium (CGE) model to illustrate the effects on jobs in WISEs of two specific CE supporting and enabling measures in the current linear economy WISEs operate in. Subsequently, we analyse and report the results of semi-structured interviews with 20 experts. This allows us to investigate the following research questions:

- RQ1 – What is the impact of CE supporting and enabling measures on jobs in WISEs?
- RQ2 – What are the challenges and opportunities of a shift of WISEs towards the CE?
- RQ3 – What are boundary conditions for a sustainable growth path for WISEs towards a CE?

This research contributes with deepening knowledge on the potential role of WISEs in a CE, thereby answering a call for further research as formulated by (Ziegler et al., 2023). More broadly, it inquires whether job creation for target groups within a CE can be considered as an authentic, meaningful, and legitimate social benefit of the CE transition, as called for by Clube (2022). As a theoretical lens, we combine insights from comparative advantage theory, capability theory, and sustainable business model innovation. This allows us to formulate recommendations for policymakers, employment services, WISEs, and social partners who want to envision and implement strategies towards a social circular economy or a circular society.

Our results focus on WISEs in Belgium, which is an open industrialised economy largely embedded within globalized value chains of a linear economy. Belgium has a long tradition with WISEs and most particularly WISEs in Belgium are strongly embedded in business-to-business markets, as we will discuss in the next sections. Moreover, Belgium has been identified as a frontrunner towards a circular economy

(D'Adamo et al., 2024). We therefore believe lessons from the Belgian case can be insightful for and inspiring for regions with less complex and more regionally embedded value chains, as well as countries that are less involved in the circular economy. The remainder of this paper is structured as follows. In Section 2, we provide background information on the context WISEs operate in and we discuss relevant literature at the crossroads of WISEs and the CE. In Section 3, we present the methods, including a quantitative estimation of the size and embeddedness of WISEs in the Belgian economy. Section 4 includes the results and Section 5 discusses empirical contributions and practical implications. Finally, we conclude with novel research gaps.

2. Background

2.1. Work integration social enterprises

As social enterprises, WISEs pursue a social mission while sustaining their operations through commercial activities. WISEs are therefore hybrid organisations that balance their social mission with economic productivity (Battilana et al., 2015; Ebrahim et al., 2014). They are part of the social and solidarity economy, which refers to "cooperatives, associations, mutual societies, foundations, social enterprises, self-help groups" and other groups with "social or public purposes, engaged in economic activities based on voluntary cooperation, democratic and participatory governance, autonomy and independence, the rules of which prohibit or limit the distribution of profit" (ILO, 2022b). Being private companies, WISEs are active in business-to-consumer activities, such as reuse shops, but are likewise integrated within business-to-business markets in global value-chains (RREUSE, 2021; Van Opstal and Borms, 2024).

Many WISEs in Europe were created after the Second World War to create employment opportunities for people with disabilities. In the 1970s and 1980s, new social enterprises increasingly focused on environmental issues, but in the last decades, the focus of many WISEs became predominantly the creation of employment and work experience for vulnerable target groups (Clark and Johansson, 2016; Vickers, 2010).

In a comparative report of social enterprises and their ecosystems in Europe, a significant number of EU countries have been identified for having specific statuses recognizing WISEs (European Commission, 2020b). Comparative analyses show clear differences in national contexts, but large similarities in the forms and characteristics of WISEs across Europe (Defourny and Nyssens, 2021a, 2021b; Spear and Bidet, 2005). Outside Europe WISEs have been studied and documented, mostly in Asia (Bidet and Defourny, 2019), Latin America (Gaiger et al., 2019), and Canada (Lysaght et al., 2018).

2.2. WISEs in Belgium

The Belgian landscape of WISEs has been dominated by sheltered workshops and social workshops (the latter only in Flanders). Sheltered workshops aim at the employment of people with work disabilities and have a strong business-to-business (B2B) profile performing a wide array of economic activities including packaging, assembly, green area and park maintenance, wood manufacturing, bookbinding, and printing (Van Opstal et al., 2007). Social workshops, mostly established in the 1980s and 1990s as an answer to rising unemployment figures, put their focus on workers with a distance to the labour market because of physical, social, or psychological problems (De Mey et al., 2008). Most of them performed economic activities similar to sheltered workshops, characterized by manually intensive labour. An exception to this is a group of 22 social workshops that are active as social enterprise reuse shops ('Kringwinkels'), that combine social employment with ecological activities in Flanders (Delanoeije and Bachus, 2020).

Regulation on WISEs in Belgium is mainly a regional competence. In Flanders, the regulatory policy landscape for work integration evolved towards a dual framework for accredited WISEs ('collectief maatwerk',

implemented on January 1st, 2019), and individual work integration support ('individueel maatwerk', implemented on July 1st, 2023). With this reform, sheltered and social workshops in Flanders were renamed to 'accredited WISEs' ('maatwerkbedrijven'). Individual work integration support is a framework that will provide subsidies for individual companies willing to hire people with a distance to the labour market (Vandekerkhove et al., 2021). In Brussels and the Walloon Region, sheltered workshops continue to exist, and except for the activity of social enterprise reuse shops (which is only organized in Flanders by WISEs), they perform activities that are comparable to accredited WISEs in Flanders.

The way WISEs hire, evaluate, and support target groups is regulated. For budgetary reasons, each accredited WISE is granted a quota defining the maximum number of target employees that can be hired. It is noteworthy that, in Flanders, developing activities in the field of CE or climate mitigation recently became a prerequisite for WISEs to apply for extended quota to hire target groups (Dept. WSE, 2022). Citizens with a work disability or psychosocial problems can become eligible to work in WISEs after screening and guidance by the Public Employment Services of their region or their partner organisations. In Flanders, this screening is based on an ICF-based methodology (International Classification of Functioning, Disability, and Health). For the unemployed whose distance to the labour market is considered too large for paid employment, work and care programs have been established, which are often integrated in accredited WISEs (De Norre and Cabus, 2020).

2.3. WISEs and the circular economy

The CE has been identified as a promising pathway for the further development of social enterprises (Kay et al., 2016; OECD/European Commission, 2022; Suchek et al., 2022). For WISEs in particular, the CE creates opportunities, as it is expected to positively affect employment for vulnerable groups (ILO, 2022a; Willeghems and Bachus, 2018), including activities such as sorting, maintenance, repair, manual disassembly (Bachus et al., 2015), remanufacturing, refurbishment, and reuse operations (Delanoeije and Bachus, 2020; Parker et al., 2015; Versluys et al., 2021). Nevertheless, this literature often considers any job created for vulnerable groups as a positive contribution of the CE, while neglecting its economic, environmental, or social sustainability.

Studies based on qualitative company-level data to assess opportunities at the crossroads of WISEs and the CE include the identification of key characteristics of WISEs with an ecological orientation (ECO-WISEs) (Anastasiadis, 2016), opportunities for public-private partnerships (França et al., 2022; Soufani et al., 2018), and the emerging role of WISEs in waste management (Banerjee and Anand, 2021), and reuse and recycling (Costanza, 2023; Lane and Gumley, 2018). Other studies identify and investigate specific challenges and ways to deal with CE opportunities in business innovation processes for WISEs (Gorissen et al., 2016; Schadenberg and Folmer, 2022; Stratan, 2017). Also here, these studies automatically consider a transformation towards a CE as a positive evolution and a means to invest in a future-proof strategy for WISEs. Moreover, these studies mostly focus on the potential role of WISEs to perform public services or provide reuse goods in consumer markets, largely neglecting the role of WISEs in B2B markets.

Studies using quantitative company-level data on this topic remain limited. Survey data has been used to map circular activities and target group employment (RREUSE, 2022, 2021), investigate circular business models (CBM) for social enterprises (Kurlito, 2019), compare key differences between start-ups and established WISEs (Halberstadt et al., 2021) and analyse the mediating role of NGOs in stimulating social entrepreneurship (El Chaarani and Raimi, 2021). Survey data from 87 WISEs in Flanders was used to investigate to what extent they are embedded in the Flemish economy, by obtaining detailed micro-level data on client and supplier transactions. Results show a strong regional and local embeddedness of WISEs: 92% of their clients are situated in Flanders, and over 70% in the same province. The CE,

however, accounts for about 5% of client transactions and less than 10% of all supplier transactions (Termote and Demeyere, 2021). Recently, survey data of start-ups in Flanders showed a strong and positive relationship between circularity ambitions of start-ups and the degree upon which they want to collaborate with WISEs (Van Opstal and Borms, 2024). In that study, circular start-ups that seek a collaboration with WISEs report a higher need for skills on transport, logistics, and production. While these studies show the interlinkages and potential for further collaboration, they do not address the inherent quality of jobs involved, nor the economic viability or environmental contribution of these activities.

2.4. Research gap: Transitioning towards a circular society

Recently a theoretical framework of a social economy-based embedding of circularity was proposed by Ziegler et al. (2023), theorizing its impact on business models, citizen involvement, technology, and the promotion of regional economies. While they acknowledge reality may be far more nuanced than the ideal-typical propositions they formulate, they identify the social economy as an enabler to move from a CE to a circular society (CS). The CS concept has been introduced as an umbrella concept to include crucial social, political, and ecological implications of a circular transition, on top of the technocentric and market-based solutions CE propositions tend to focus on (Calisto Friant et al., 2023). While interest in CS is growing (Calisto Friant et al., 2021; Jaeger-Erben et al., 2021), its application to WISEs remains limited. A notable exception is (Villalba-Eguiluz et al., 2023), who consider how the Social and Solidarity Economy may contribute to a transformational CS, by focusing on its non-distribution constraint (of profits) as a basis for a circularity approach towards sufficiency. Nevertheless, these studies start from benevolent assumptions on the contribution of WISEs towards a circular society. In many studies on WISEs (and on social entrepreneurship in general), there is a risk of confusing good intentions with actual good outcomes.

Therefore, we start from the theoretical lens of comparative advantages to understand the role WISEs may perform in an industrialised economy. As outlined by trade theory and economic geography, countries and regions that are relatively abundant of highly skilled labour can be expected to have comparative advantages in the production of goods that intensively use this production factor (Bergstrand, 1990; Leamer, 1995). A globalisation of our economies, supported by the creation of a unified European market and a multilateral framework for trade liberalisation, resulted in a decline of jobs for low-skilled workers, a downward pressure on their wages and working conditions, and unfavourable labour market conditions for vulnerable groups (Dumont et al., 2012; Trefler, 1995).

The establishment of a circular economy, conversely, favours the creation of locally embedded economic activities, which increases locally embedded labour market opportunities for low-skilled workers. At the macro-level, a well-functioning dual labour market that complements enabling capabilities from highly-skilled workers with core capabilities from vulnerable groups, may constitute a comparative advantage for a circular economy (Burger et al., 2019). At the firm-level, this translates into the opportunity transform these combined skills sets into a competitive advantage (Porter, 2008). Moreover, when considering necessary conditions to build a sustainable business model, this combination could offer possibilities to combine strong economic, environmental, and social value propositions (Bocken, 2021).

These opportunities cannot be expected to result automatically in the development of competitive advantages at the firm level or comparative advantages at the macro-level. However, studies on boundary conditions to shape supporting labour market institutions aimed at combining capabilities of WISEs with their B2B clients towards a CE remain to the best of our knowledge non-existent. Likewise, studies taking a critical stance on the social conditions (including job quality), environmental conditions (including lifecycle assessment considerations and rebound

effects), or even economic conditions (from a business model perspective) when discussing the potential of WISEs in a CE remain scarce to non-existent.

3. Materials and methods

In Fig. 1 we summarize the overall design of our study. First, we performed post-estimation calculations on two scenarios that have been calculated in a CGE model. The background data to perform these calculations is outlined in Section 3.1 and background information on the CGE model and the interlinkage between the scenarios and WISEs is explained in Section 3.2. For technical details, we refer to Appendix A. Next, we conducted semi-structured interviews with experts, as outlined in Section 3.3, which included a discussion of the post-estimation results and involves all three research questions. The analysis and reporting of our results were mainly inspired by theoretical frameworks including comparative advantage theory, capability theory, and sustainable business model innovation, as outlined in Section 2.4.

3.1. Data on WISEs in Belgium

WISEs in Belgium can easily be identified because of a regulatory accreditation system. We focus on accredited sheltered workshops and social workshops, as both accreditations refer to social enterprises whose focus is work integration. Based on the lists of accredited WISEs, we link their company registration numbers to financial statements, and employment figures within the Belgian Crossroads Bank for Enterprises (CBE). Further information on target group employment and government subsidies could be retrieved from federations of WISEs and annual reports from the subsidizing regional departments. In Table 1, we report key figures on WISEs in Belgium and its regions. We deliberately report figures for 2018 because the Computable General Equilibrium (CGE) model we use is calibrated for that year. This choice does not significantly affect the outcomes of our results, as the number of WISEs, their employment, as well as their embeddedness within our economy did not shift significantly since then.

In Belgium, more than 180 accredited WISEs account for a total turnover of 650 million EUR. This is complemented with 525 million EUR of government subsidies, to compensate for the diminished productivity of their workers, to provide support and guidance, and to support WISEs at the organisational level. The size of WISEs in Belgium varies from 40 to over 2000 employees (Van Waeyenberg and De Cuyper, 2016). In total, WISEs employ about 35 000 people, over 80% of them being target groups with a significant distance to the labour market. Other employment includes workplace supervision, social support, technical staff, management, and administrative staff.

WISEs in Belgium operate independently as a business, competing with firms both within and outside the social economy (Van Opstal et al., 2009). To capture their embeddedness within the Belgian economy, we make use of a recent and detailed survey by the Flemish provinces on B2B activities of WISEs in Flanders (Termote and Demeyere, 2021). This

Table 1
Key figures on WISEs in Belgium and its regions (2018).

	Flanders	Brussels	Walloon Region	Total
Number of accredited WISEs	122	14	50	186
Employment in WISEs	25 765	2252	7355	35 372
% Target group employment	83.57%	82.93%	80.58%	83.25%
Government subsidies (in mEUR)	392.90	30.09	101.86	524.85
Turnover (in mEUR)	468.66	33.46	147.92	650.04

Source: own calculations based on the Crossroads Bank of Enterprises (CBE), federations of WISEs, and subsidizing regional departments.

survey shows that WISEs deliver services to over 10 000 Belgian companies, often being an integrated part of globalized value chains with B2B customers in over 28 countries. While this survey refers to data from 2019, we use relative shares of purchases and sales and calibrate them to financial statements data from 2018. Next to B2B activities, WISEs are also active as social enterprise reuse shops, which are mostly oriented at households. Data on their activities was retrieved from their sectoral federation, Herw!n. In Table 2, we report a general overview.

3.2. Scenario analysis through CGE modelling

A CGE model is an economic model that combines actual economic data with a theoretical framework to analyse how an economy might react to changes in policy, technology, or other external factors. CGE models provide a comprehensive view of an economy, capture complex interrelations between sectors, and allow to evaluate broad policy

Table 2
Embeddedness of WISEs within the Belgian economy (2018).

Sector	Purchases		Sales	
	in million euros	in %	in million euros	in %
Business-to-business activities	259.40	93%	601.14	92%
Agriculture	3.37	1%	1.20	0%
Mining	1.06	0%	0.34	0%
Manufacturing	32.43	12%	263.90	41%
Energy	5.69	2%	5.13	1%
Construction	24.38	9%	10.82	2%
Retail	88.46	32%	84.76	13%
Transportation and logistics	69.52	25%	101.59	16%
Market services	12.19	4%	20.44	3%
Non-market services	19.71	7%	90.77	14%
Waste & Recycling	2.58	1%	22.18	3%
Reuse shops	19.45	7%	48.90	8%
Total	278.85	100%	650.04	100%

Source: own calculations based on the Crossroads Bank of Enterprises (CBE), Termote and Demeyere (2021), and Herw!n

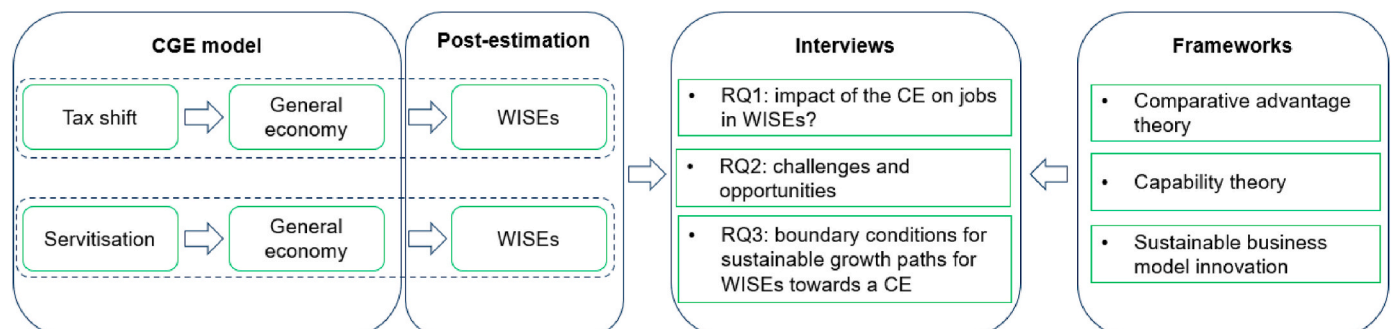


Fig. 1. – Research design.

impacts (Burfisher, 2017). In this study, we apply post-calculations on scenario results that have been performed on a CGE model that has been calibrated to the Belgian economy. This model includes 13 sectors and 13 goods for 2018, one household, a government, and trade (Borms et al., 2023b; Brusselaers et al., 2022). The model builds on National Accounts data, including supply and use tables, and is complemented with labour statistics from the Flemish government.

In our CGE model, each economic sector is represented by a representative company that uses specific mathematical functions to model production decisions. These functions, which account for how easily different inputs can be substituted, are calibrated in line with Van der Mensbrugge and Peters (2016). Firms in the model aim to maximize their profits while considering the availability of labour and capital, the technology they use, and the intermediate goods and services they need. The labour market in the model assumes that wages are influenced by the household's preference for leisure, thus only accounting for voluntary unemployment. Consumers make decisions based on how easily they can substitute one good for another, following established consumption patterns in line with Pollak and Wales (1978). Government spending is determined by its budget, consumption prices, and how it values different types of spending. Investment demand is influenced by investment prices (capital costs) and how investment spending is valued. National income is divided among household consumption, public spending, and savings. The volume of exports is influenced by export prices. As Belgium is a small, open economy, it cannot impact the price levels at international markets. Imports depend on how easily they can be substituted with domestic goods, based on specific elasticities. All these elasticities are derived from the GEM-E3 model (Capros et al., 2013), except for those related to transport modes, which are based on Mayeres (1999).

CGE models have been applied to model the impact of CE scenarios and policy options, such as CE enhancing taxation frameworks and fiscal policies (Brusselaers et al., 2022; Freire-González et al., 2022; Milios, 2018), or regulations that stimulate the use of recycled inputs, reduce waste exports, or enable high-quality recycling (Borms et al., 2023a, 2023b). We focus on two scenarios that support or reflect a transition towards a CE and that may typically impact employment in WISEs: a tax shift from labour to resources, and a shift towards servitisation. For technical details on the CGE model and the underlying scenarios, we refer to Appendix A.

In 2018, the year of calibration of the CGE model, Belgium had the second highest tax-to-GDP ratio of the European Union of 47.2% (Eurostat, 2023). Despite notable labour taxation reforms, Belgium still imposes heavy taxes on labour (the highest across OECD countries) with a tax rate on wages of 52.7% in 2018 for singles without children earning an average wage (OECD, 2023a). In contrast, environmental taxes are still an under-used tool: Belgian environmental revenues only account for 4.1% of total taxation in 2018 and only 0.1% are from resource taxes (OECD, 2023b). A decrease in the tax on labour might therefore lower production costs for firms and increase the incentive for households to work more and consume more. At the same time, we pose that a tax on resources might decrease environmental pressure on primary materials and will decrease the rebound effect of lower production costs (The Ex'tax Project, 2016). Given the perverse effects of high income taxes on labour market participation, contributing to the existence of unemployment traps for low-income workers (Jara et al., 2020), this scenario is particularly relevant when investigating social employment.

Servitisation, or the shift from selling new products towards using products to sell services, has been widely acknowledged as an effective enabler for a resource-efficient and circular economy (Han et al., 2020; Tukker, 2015). Therefore, this scenario models a shift of consumers from buying new product to using services. To the best of our knowledge, no papers have been published that apply CGE-models to capture the effects from servitisation. Given the strong embeddedness of WISEs in the manufacturing industry, as shown in Table 2, the servitisation scenario is particularly relevant to investigate.

We perform post-calculations on the results of these two scenarios, using the embeddedness data of Table 2 to capture the impact of a changing demand from B2B clients. Consequently, we use the following implicit assumptions. First, in their B2B markets, WISEs are sub-contractors for the industries reported in Table 2. Therefore, we assume that a relative change in labour demand within these industries results in an equal relative change in employment of WISEs that is attributed to these industries. Secondly, the attribution of employment within WISEs to specific industries is assumed to be distributed according to the relative share of sales towards these industries. This implicitly assumes a similar ratio of supporting staff and target group employment across activities WISEs perform for different industries, as well as a similar productivity and profitability of the work WISEs perform for different industries. Thirdly, we assume that the two scenarios only affect B2B activities of WISEs while not affecting the demand for goods in reuse shops.

3.3. Expert interviews

To explore and analyse impacts and boundary conditions for a sustainable growth path for WISEs in a CE, we conducted semi-structured interviews with 20 key stakeholders. This list includes management professionals of WISEs, experts from WISEs federations, policymakers, and experts from trade unions. Based on the experience and network of the first author at the crossroads between WISEs and CE in Belgium, interview respondents were selected based on purposive sampling, ensuring that participants had relevant knowledge and expertise. Sampling was concluded upon reaching saturation, the point at which no new themes or insights were emerging from the interviews. This decision was based on the recurrence of themes and the depth of the data collected. An anonymized version of the list of respondents and a translated version of questions is included in Appendix B.

Interviews were conducted via MS Teams in June and July 2023, and lasted between 45 and 60 min. Respondents provided informed consent to process their input in an anonymized way and to record the interview. After transcribing the interviews, we employed a thematic analysis, using both deductive and inductive coding and involving a rigorous process of coding and categorization. Initial codes were derived from the research questions. Furthermore, challenges and opportunities have been coded in line with the reskilling and upskilling purposes as indicated by the SEAP and CEAP, and in line with major issues at stake in labour market policies in which policies for WISEs are embedded. Sustainability aspects were coded in line with social, ecological, and economic aspects. For social aspects in particular, we iteratively aligned our inductive coding results with the OECD framework on job quality (Cazes et al., 2015) and the Flemish Workability Monitor (Stichting Innovatie and Arbeid, 2023).

Furthermore, additional inductive coding emerged from the data. We ensured that themes were data-driven and reflective of the participants' experiences and perspectives. To ensure data triangulation, modelling results have been discussed with interview respondents. Intermediate results were likewise discussed among co-authors and the follow up committee of the research project involving peer researchers experienced with the topic and senior policy experts at the crossroads between social employment policies and the CE. Finally, all interview respondents received a draft version of this paper to refine arguments and prevent misinterpretations and factual errors, which contributed to the reliability and validity of our findings. Interview respondents are referred to between brackets in superscript.

4. Results

In this section, we report results of the CGE model, showing the impact of circularity scenarios on WISEs in Belgium. We display the results from minimal (SC1) and maximum scenarios (SC9). Next, we discuss challenges and opportunities of a shift of WISEs towards a CE and

identify boundary conditions for a sustainable growth path.

4.1. The impact on WISEs of a shift towards circularity

4.1.1. Tax shift from labour to resources

In [Table 3](#) we report CGE model results of a tax shift from labour to resources. As a sensitivity analysis, we reported results from a minimal scenario (SC1) with a 2% tax increase on resources and a 1% decrease in income tax, and an extreme maximum scenario (SC9) entailing a 60% increase of resource taxes and a 16% decrease in income tax rates (see [Appendix A](#) for the details). While the net effect on jobs in these scenarios is positive both for WISEs and the wider economy, it remains very limited.

Interestingly, [Table 3](#) also shows more important shifts between industries, including a decline in employment in retail and in the primary and secondary sectors, and an increase in jobs in other sectors. These results are a direct consequence of the burden shift on labour-intensive industries to resource-intensive sectors which causes a predicted growth of the former and a decline of the latter. We also notice some differential impacts for WISEs and the rest of the economy. Economy-wide, job destruction in terms of net employment figures is the largest in the construction sector and job creation is the largest in market and non-market services. Since WISEs are only marginally active within these industries, the largest net effects on jobs can be found in other industries, being transportation and logistics and waste & recycling regarding job creation, and the energy sector regarding job destruction.

Confronted with these results, some interview respondents take a critical stance on the combination of a decline in manufacturing and the increased importance of transportation and logistics. As pointed out by one respondent: “We should take into account the carbon footprint of production in the Global South”^[2] (respondent number between brackets). An increased importance of the waste and recycling sector is welcomed by most interview respondents.

4.1.2. Servitisation

In [Table 4](#), we report results of the servitisation scenario. This results in job destruction in the manufacturing industry, construction, and retail, and job creation in market and non-market services. Again, these results are a direct consequence of the shift in consumer demand from goods in resource-intensive sectors (e.g., manufacturing) to goods from labour-intensive activities (e.g., services). The relatively large job destruction within the manufacturing industry for WISEs is partially mitigated by the fact that WISEs are not very much involved in the construction industry. On the other hand, under business-as-usual conditions, WISEs cannot benefit from a large job creation in the market services as they are only limited active in this sector. In sum, this scenario results in a negative but rather limited net effect for both the Belgian labour market and WISEs. Note that the effect on WISEs in this

case is relatively bigger, because WISEs stems from the strong dependency of WISEs on activities in the manufacturing industry in their B2B activities (see [Table 2](#)).

When confronted with these results interview respondents refer to the decline of the European manufacturing industry during the last decades. WISEs perform labour-intensive activities that are outsourced by manufacturing companies, over time, many of these activities have been replaced by machines or production in the Global South ([Van Opstal et al., 2007](#)). While WISEs may support reshoring of economic activities to industrialised countries, helping to reconstruct regionally embedded value chains, the global tendency is towards a decline of the manufacturing industry in Europe. Given the current focus of WISEs on manufacturing, a transition towards circularity imposes a significant challenge to most WISEs in Belgium. A shift towards services also provides opportunities for WISEs. Interview respondents refer to the potential of WISEs to play a role in as-a-service models^[2], digitalization^[9], or supporting care activities for the elderly or people with disabilities^[14]. This could also foster the inclusion of women within WISEs, as a majority of the current workforce in Belgian WISEs consists of men ([Van Waeyenberg and De Cuyper, 2016](#)).

In sum, both scenarios show that a transition to a CE is not necessarily favouring WISEs in their B2B activities. This should not come as a surprise, given their current role as an outsourcing partner for many linear activities, including assembly, packaging, handling, and logistics. Circularity scenarios that aim to limit resource use or servitisation will therefore create significant challenges for WISEs.

4.2. Challenges and opportunities

4.2.1. Reskilling and upskilling

A shift from a linear towards a CE induces a shift in required skills sets ([Burger et al., 2019](#); [Straub et al., 2023](#)). While most interview respondents mention that technical skills required for CE activities are very activity specific, they acknowledge that WISEs have a comparative advantage to perform CE-related jobs. WISEs are renowned for their capability to translate complex tasks into easy tasks^[2, 5-6, 9, 11-12, 19-20] and are known to work on processes that are too complex to robotize^[3, 19]. Moreover, WISEs have a competitive advantage over low wage countries because of their flexibility to perform a variety of small-scale tasks^[14], which has been acknowledged earlier by circular start-ups ([Van Opstal and Borms, 2024](#)). Finally, WISEs are sought after because of their ability to perform repetitive work^[11] and the unravelling technical skills of their co-workers^[3, 5-6, 14, 20], confirming earlier results of [Willeghems and Bachus \(2018\)](#).

While the essence of these skills is already available in most WISEs, a shift to CE-related activities sheds light on some specific challenges. Some interview respondents point at the need for skills to deal with safety aspects that are linked to waste management, disassembly, and

Table 3
Impact of a tax shift from labour to resources (number of jobs).

Sector	Minimal scenario (SC1)			Maximum scenario (SC9)		
	Relative effect (%)	Net effect on jobs in Belgium	Net effect on jobs in WISEs	Relative effect (%)	Net effect on jobs in Belgium	Net effect on jobs in WISEs
Agriculture	-1.07%	-620	-1	-13.82%	-8006	-9
Mining	-2.77%	-71	-1	-55.13%	-1412	-10
Manufacturing	-0.06%	-305	-9	-0.41%	-2062	-60
Energy	-2.20%	-495	-6	-45.84%	-10 297	-129
Construction	-0.51%	-1414	-3	-7.71%	-21 515	-46
Retail	-0.11%	-837	-5	-1.36%	-10 011	-63
Transportation and logistics	0.32%	816	18	6.54%	16 601	366
Market services	0.20%	2370	2	4.02%	48 908	45
Non-market services	0.08%	1366	4	1.52%	25 223	76
Waste & Recycling	0.52%	132	6	10.11%	2581	123
Total	0.02%	942	6	0.83%	40 010	292

Note: SC1 and SC9 refer to minimal versus maximum parameter assumptions, as described in [Appendix A](#).

Table 4
Impact of servitisation (number of jobs).

Sector	Minimal scenario (SC1)			Maximum scenario (SC9)		
	Relative effect (%)	Net effect on jobs in Belgium	Net effect on jobs in WISEs	Relative effect (%)	Net effect on jobs in Belgium	Net effect on jobs in WISEs
Agriculture	-0.17%	-101	0	-1.90%	-982	-1
Mining	0.52%	13	0	6.60%	135	1
Manufacturing	-0.50%	-2511	-73	-5.40%	-25 129	-784
Energy	0.04%	8	0	0.20%	88	1
Construction	-1.11%	-3095	-7	-9.20%	-31 279	-55
Retail	-0.49%	-3576	-23	-4.90%	-35 673	-228
Transportation and logistics	-0.03%	-82	-2	-0.50%	-764	-28
Market services	0.62%	7584	7	6.30%	76 599	71
Non-market services	0.05%	806	2	0.40%	8142	20
Waste & Recycling	-0.07%	-17	-1	0.00%	-166	0
Total	-0.27%	-969	-95	-2.84%	-9028	-1004

Note: SC1 and SC9 refer to minimal versus maximum parameter assumptions, as described in [Appendix A](#).

reverse logistics (e.g., hazardous or toxic waste streams, sharp objects, or mould formation) ^[10, 14, 20]. Other interview respondents mention the necessity of strong physical capabilities to deal with dismantling and demolishing activities ^[12, 14-15]. While this may be challenging for many target group workers, this provides an opportunity for those workers who are active in green area management – an activity that attracts target group workers with strong physical competences, but with a lack of work during winter. CE-related activities may therefore bring more variety and less technical unemployment for these target groups. Other activities may be less technically demanding but challenging on soft skills, including attitude development, communication skills, and social skills, the latter most specifically for the further development of reuse shops ^[1-2, 4-5, 9, 12, 16]. As pointed out by one respondent: “*Conflict management, stress management, and aggression training to deal with vulnerable client groups are increasingly important for employees in reuse shops*” ^[16].

Most respondents point at the importance of a well-trained supporting staff with a sufficient technical and technological background ^[2, 4, 8-9, 13, 17] and the ability to translate complex tasks into a feasible work organization for target groups. Specific challenges that follow from a CE shift are acquiring knowledge on organizing repair and refurbishment for different brands or machines, taking into account quality assessments, and technical standards at resource, component, and product levels ^[10]. This requires skills development, both for target groups ^[3-5, 10, 17] and their supporting staff ^[5-6, 8-10, 17]. An important challenge is therefore finding trainers to train supporting staff and target groups for these tasks ^[13]. Interview respondents also mention the need for supporting capital goods, such as *co-bots* to dismantle goods in a safe way, or light guiding systems and augmented reality to perform complex tasks ^[2, 5, 8, 17, 20].

As stated by one respondent: “*Many CE-related tasks for WISEs have been focused on recycling with little added value. Many of these tasks will ultimately be done by machines, so WISEs must innovate and embrace e.g., artificial intelligence to perform smarter tasks with high added value*” ^[19]. Therefore, while WISEs have operational organisational capabilities to innovate with a focus on empowering target groups, WISEs are urged to invest in higher-order organisational capabilities to maintain a sustainable competitive advantage ^[5, 9, 13, 17, 19]. WISEs are therefore challenged to attract and develop skills and capabilities such as intrapreneurship ^[14, 18-20], circular value-chain management ^[13, 20], and matchmaking of resource and material streams ^[18]. A shift towards a CE also requires skills to organize reverse logistics ^[14] and strategic spatial planning capabilities that balances the operational costs and carbon footprint of transportation, the minimal and optimal scale to process resources and materials, and the degree of fluctuations of these streams in CE-related activities ^[14, 20].

4.2.2. Labour market policy

An important challenge is that both target groups and supporting staff are hard to find in a tight labour market ^[1-3, 7, 9-13]. In general, diminishing marginal productivities are expected when activating the lowest segments of the labour market ^[2-3, 12, 19] or those who are sought after by policymakers to activate, such as long-term ill ^[11], which has been partially documented by [Vandekerckhove et al. \(2021\)](#). Expanding the scope of WISEs towards refugees ^[2, 8, 10-11, 14] incurs many specific challenges such as the absence of a contact language at work or a severe mismatch of competences because a poor recognition of foreign diplomas ^[2, 7]. Refugees, however, have a distance to the labour market from a very different nature, which may cause new opportunities and allow WISEs to enter new and CE-related market niches. Likewise, the introduction of individual work integration support in Flanders is seen by many interview respondents as an opportunity to attract a broader range of target groups with a bigger variety in skill sets. Since this employment measure is accessible for regular companies, some WISEs fear that their own set of activities is insufficiently varied for target group employment in a CE ^[8, 12, 14, 17]. For example, WISEs have little to no experience in the service sector, while the CE is expected to create jobs in this area, as confirmed by our results in 4.1.

A shift towards a CE is also challenging for the regional employment agencies, who are responsible for the accreditation and referral of unemployed target groups towards WISEs. No less than 18 out of 20 interview respondents mention this as a major challenge. Half of them even call for a prioritization to resolve the current bottlenecks of the current referral system to enable WISEs to shift to CE activities. Some respondents also urge employment services to invest in specific training possibilities for CE-related jobs ^[4, 11, 19-20].

A specific challenge is the quota system WISEs face when attracting workers. The Flemish government currently links an expansion of these quota to climate jobs and CE activities, but target groups that are currently referred to WISEs are sometimes considered insufficiently able to perform these tasks ^[17]. An important bottleneck for policymakers to increase or abandon quota, is the mere fact that the costs of this measure (such as wage subsidies for target groups) are mainly borne by the regions, while most benefits (such as avoided social security allowances and extra tax income) accrue to the federal level ^[3, 6-7, 13]. This generates a split incentive problem between levels of competence in a federal state, leading to a suboptimal investment rate from a socio-economic cost-benefit perspective ([Cantillon et al., 2019](#); [Crucke and Decramer, 2016](#); [De Smedt et al., 2021](#)).

4.3. Boundary conditions for a sustainable growth path

While the CE is often believed to bring many opportunities for WISEs, previous sections show this cannot be taken for granted. Therefore, we identify boundary conditions for a sustainable growth path.

4.3.1. Social aspects

CE-related jobs do not automatically result in improved social outcomes for those involved. Job quality is the most salient boundary condition to safeguard during a shift towards circularity, according to many interview respondents [4-6, 8-10, 20]. The OECD approaches job quality as multi-dimensional and defines it in terms of earnings quality, labour market security, and quality of the working environment (Cazes et al., 2015). In Flanders, interprofessional social partners publish the Flemish Workability Monitor on a yearly basis, which is based on four dimensions: stress, motivation, learning possibilities, and the work-life balance (Stichting Innovatie and Arbeid, 2023). We use both frameworks to discuss our results.

Earnings quality is an important boundary condition to ensure sufficient labour supply of vulnerable workers and supporting staff [10, 14-15, 19-20]. Wages in WISEs are considered very low, which may cause unemployment traps and inactivity traps for vulnerable workers [11-12], and which makes supporting staff in WISEs a bottleneck profession [1, 12], as documented recently in Lenaerts et al. (2024). Meanwhile, WISEs have the reputation to provide high labour market security for their co-workers. A shift towards CE-related activities, however, may bring more fluctuations in the amount of work throughout the year, (e.g., as a result from irregular waste and reverse logistics streams), which may lead to temporary unemployment or a higher demand for flexibility between jobs within WISEs [1]. New activities also tend to start with short-term projects, lacking contractual certainties [1, 13]. Some interview respondents also underline the importance of social dialogue during a transition, both at the company level as at the sectoral level [1, 4-5, 10]. However, because the CE has impacts over many industries, social dialogue is not always easy to organize [4, 10].

Concerning the quality of the working environment within WISEs, most respondents underline the ability of WISEs to adapt work processes tailored towards target group employment, reducing both physical and mental stress for vulnerable workers. Often, this results in very repetitive work, which is an aspect that is criticized by some interview respondents: "Research shows abundantly that repetitive work is not good for the wellbeing of workers. WISEs tend to say their workers need and even like these jobs, but there is no scientific empirical evidence on how target groups workers perceive this." [8]. Therefore, interview respondents recommend safeguarding flexibility for job rotation [11-13]. As stated before, this requires good supporting staff [1-2, 5, 8, 11] and supporting capital goods [2, 5-6, 9, 12], especially when a shift towards new activities takes place. Additionally, interview respondents point at the importance of ergonomics [1-2, 5, 12, 15], and safeguarding workloads and expectations from new clients [2, 4-5] when entering CE-related market segments. One interview respondent also refers to the risk of moral stress among supporting staff if WISEs would lose their focus on their core mission (the employment of vulnerable groups) because of a transition to new activities [1].

As shown in Section 4.2, a shift towards CE activities will provide plenty of learning possibilities for co-workers at all levels within WISEs. Learning possibilities is the aspect of workable jobs that is most referred to by interview respondents [4-6, 11, 13, 15]. One interview respondent takes a particularly broad perspective when looking at learning: "Participative governance mechanisms are important learning experiences for vulnerable workers. If you have never learned to voice your opinion in a team meeting, it is difficult to vote in elections as a citizen." [13]. The same respondent adds the need for social cohesion and exchange among colleagues to co-develop capabilities of vulnerable groups as workers and citizens. Another respondent adds to this stating that "investing in innovation capabilities does not only enhance the resilience of a company, but also of its co-workers" [15].

Remarkably, not a single interview respondent mentions the aspect of work-life balance when discussing social sustainability and job quality during a CE-shift of WISEs. Nevertheless, WISEs share some features that impact the work-life balance. Firstly, there is overall a good spatial distribution of WISEs within Belgium, allowing vulnerable

workers to find a job at a reasonable distance. CE-related activities will probably enhance this feature since it provides opportunities within locally embedded value chains [1, 2, 10, 19]. Secondly, the concern of unemployment and inactivity traps that has been raised by [11], is often at the core of finding a financially and organisationally feasible work-life balance. Finally, some interview respondents stress the contribution of a shift towards CE-activities to create meaningful jobs for vulnerable workers. This may add to a positive identity of target groups, such as a sense of belonging, while stimulating positive behavioural spillover effects towards workers and their families (e.g., increased attention for sorting, recycling, reuse, repair, etc.) [15, 18], and showcasing the feasibility of an inclusive and circular society [4, 11, 13, 18, 20].

An important overarching boundary condition remains that CE-related jobs are safe and dignifying [5, 14, 19] and that attention is being paid to quality systems and audits on working conditions [2, 5, 14, 19-20]. Interview respondents provide multiple examples of opportunities for collaboration with waste management companies they turned down because of a lack of safety and hygienic standards [14, 19-20]. As quoted by [20]: "Working with waste does not imply our workers should be considered as society's waste bin". Another respondent puts it as follows: "For food products, we take it for granted that quality standards are high. Likewise, we should implement and safeguard job quality standards when we screen the clients we want to collaborate with." [14].

4.3.2. Ecological aspects

The ecological impact of a CE-related shift of WISEs is sometimes cheered on because of their local embeddedness and potential for reshoring economic activities, resulting in a reduction of carbon footprints of value chains [1]. Unfortunately, a shift of WISEs towards CE-related activities does not necessarily imply superior ecological outcomes. Firstly, CE activities may cause rebound effects, for example when products created by WISEs are additional, and not substitutes to the "linear alternative" (Zink and Geyer, 2017). Secondly, as in many other companies, some WISEs perform CE-related activities with good intentions, not knowing that they cause an unintended deterioration of the functionality of material flows and components, or an unintended carbon footprint increase, because of many local transportation movements at a suboptimal scale. The former is sometimes the case in small-scale upcycling projects that involve mixing and shredding plastics waste streams into new products that are not recyclable anymore. While these products may have a nice sustainability narrative, they often do not meet an actual customer need [15, 20]. Therefore, a sustainable growth path of WISEs towards a CE should prevent transforming waste into rubbish.

Quite often, WISEs feel the need to develop their own product, and the shift towards a CE provides a new momentum to stimulate innovation with a focus on new product development [17-18, 20]. However, this requires an investment in innovation capabilities, including an awareness to involve the right expertise on material flows [9, 19-20]. Awareness building here is important, as many interviewees admit they were not aware that not every CE-related intervention would cause positive environmental effects. External expertise is sought after for auditing and impact measurement [11, 14, 18, 20]. Interview respondents expect sector federations of WISEs to validate and share good practices [9] or establish a point of contact to attract expertise on material flows [18, 20].

Apart from connecting to external CE-related skills, interview respondents highlight the importance of developing dynamic organisational capabilities such as learning to build CBMs and sustainable value propositions [14, 18], participating in and co-developing circular value chains [6, 20], and learning how to perform business experiments [13, 19]. Some interview respondents remain sceptical about the relative strategic attention the environmental aspect will receive within WISEs, as they are used to putting social aspects first, followed by profitability to sustain business operations [19-20].

Most interview respondents state that this challenge is not different for other companies [1-2, 5-6, 9, 17, 19-20], as documented earlier by Dong

et al. (2018). This underlines the importance for WISEs to connect to existing innovation policy initiatives that support the shift towards a CE [9, 20]. Interview respondents ask for information sessions and awareness campaigns, organized by the government [6-7, 10, 20], as well as CBM developing toolkits [11, 18] and a knowledge database [14]. Importantly, there is hardly any reference from interview respondents to existing organisations such as Circular Flanders (funded by the Flemish government to stimulate the circular transition), and the social-circularity hubs (funded by the European Social Fund to stimulate the collaboration between WISEs and the manufacturing industry towards circularity). Other policy recommendations from interview respondents include establishing a proper environmental assessment when evaluating public procurement or innovation subsidies [3, 5, 9, 18, 20], monetary valuation of positive environmental impacts in public procurement [2, 13], and other policies that create a demand pull for CE-related activities, such as lower VAT tariffs and mandatory regulations [12].

4.3.3. Economic aspects

As WISEs are often integrated in linear value chains [13-14], they should reconsider their business models to remain future-proof [9, 13-14, 18]. However, this does not necessarily imply that CE-related activities are sufficiently rewarding from a financial perspective. Although the mission of WISEs is primarily driven by societal purposes, financial profitability remains a boundary condition in order to perform CE-related task in a sustainable way. As stated previously, many of these aspects can only happen when there are sufficient financial means to invest in skills and organisational capabilities.

The most important remark of interview responds is the importance of a sound and self-supporting CBM. Many respondents point out the importance of the ability of WISEs to move into circularity without having to ask for more public funding [3, 6, 9, 11, 15, 20]. As quoted by [14]: “*Except for the first steps on the learning curve, we should not expect the government to subsidize CE-related activities in a structural way.*” Therefore, support to build CBM business plans is requested [10]. One respondent stresses the importance to validate the environmental results of a CBM first before looking at (financial) value capturing [8]. Another respondent points at the importance of a sound cost accounting system, to identify and measure the financial viability of CBMs and CE-related activities.

Many interview respondents underline the importance of developing partnerships [2-3, 9, 13, 17, 19-20] and the ability to construct collective value propositions [20]. The latter has been identified earlier as an important value proposition of WISEs by circular start-ups (Van Opstal and Borms, 2024). Some respondents point at the need for an increased and structural collaboration between WISEs [5, 13, 17, 20], and strong partnerships with municipalities [2], social organisations [10-11, 13], and impact investors [9-10, 13]. Moreover, scaling and replication strategies are important to define the minimal and optimal scale of CE-related projects and tasks in the short and long term [1, 14, 20]. Another important aspect is the level of uncertainty with respect to required job modifications [5, 14] and the duration of contracts with clients [5]. Aspects of scale and uncertainty are by no means new for WISEs, but in the context of a CE these are more complex than business as usual since it requires a more intense value chain collaboration and is embedded in a much more immature ecosystem than tasks in a linear value chain.

Another important boundary condition for economic sustainability is the investment in human capital [1, 5, 20]. It includes a broader investment in innovation capabilities [5, 20], investing in knowledge transfers within and beyond organisational limits [18], and a narrative shift: “*from a dependent subsidized sector to a resilient innovative one*” [20]. Building innovation capabilities also requires room for experimentation and learning from practice [9, 13, 17-18, 20], to showcase from practice that new business models are financially viable, as well as supporting an intrapreneurial stance towards developing new solutions for novel and shifting societal needs (as reuse shops once did) [6]. Investing in human capital also accounts for its surrounding entrepreneurial ecosystem,

including banks, accountants [9], but also reversely to teach business developers and financial professionals within WISEs how financiers evaluate their business models [9]. Finally, the need for partnerships, innovation capabilities and human capital investments also invites WISEs to revisit their corporate governance and attract board members with the right networks and skills [11, 17], while safeguarding organisational goals to prevent mission drift [1, 5, 7, 11, 16].

While there is a strong consensus on the need for subsidies as foreseen in the current support mechanisms, opinions on the role of the government in this circular transition differ among interview respondents. For example, some respondents ask for a monetary valuation of the positive environmental externalities CE activities may generate, e. g., within public procurement [2, 8]. Respondents likewise point at the importance of generic policy measures to support a circular transition, such as a lower VAT rate for CE related activities [12], or measures that require producers to incorporate externalities such as the recycling cost into their product prices [14]. CE-related project subsidies may create a momentum to invest in innovation [19], but sometimes project calls are considered too small to be impactful or even viable [2]. As stated by [2]: “*increasingly, we face the ethical dilemma whether we can ask co-workers to face the burden to engage in projects that are financially not viable*”. Project calls should also aim at building collaborations along value chains and between WISEs [9]. Meanwhile, current bottlenecks that prevent WISEs to participate in these project calls should be reconsidered, such as bureaucratic and administrative barriers (which are particularly a deadweight loss in small projects), or the European de minimis regulation that prevents project calls of a larger scale [2, 19]. This does not preclude to maintain a critical stance to evaluate the entirety of public funds directed towards WISEs to prevent over-subsidizing and creating unfair competition with other companies [3, 11].

5. Discussion

5.1. Theoretical contributions

To date, the number of contributions investigating what a “Circular Society” might look like have been limited. This research specifically investigated the role of Work Integration Social Enterprises (WISEs) in the CE, organisations specifically established to organize economic activities for more vulnerable workers, with a distance to the labour market.

Our results provide an empirically based contribution to recent conceptual work on the social impacts of the CE. It provides a nuanced answer to the question of Clube (2022) on who would benefit from CE-related jobs. When comparing our results with a research agenda on the social dimension of the CE (Valencia et al., 2023), we find that WISEs may enhance several social outcomes of a CE. Concerning quality of life, CE-related activities may spur education, training, and skills development opportunities for vulnerable groups, with potential spillover effects to their direct environment. Regarding social cohesion, CE-related activities may create meaningful jobs, increasing the sense of belonging to the broader community and encouraging the contribution of target groups towards the community. With respect to equity, the integration of CE activities within WISEs may showcase the viability of an inclusive CE. Regarding diversity and inclusion, WISEs may contribute strongly to illustrate that diversity within a CE is also about some ‘eclipsed’ dimensions that may put people in vulnerable positions, such as working disabilities or psychosocial problems. On the other hand, social dimensions such as democratic participation of and governance by these target groups should not be overestimated in the day-to-day reality WISEs operate in. From the perspective of a CS, these social impacts mostly refer to ‘CE+’ approaches, supplementing current CE strategies with social policy measures (Jaeger-Erben et al., 2021). Nevertheless, we acknowledge that democratic participation plays a bigger role in other types of WISEs in other regions (Defourny and Nyssens, 2017).

This work also sheds a light on the organisational and

entrepreneurial challenges a shift towards CE-related activities may bring. For social enterprises, this is a poorly explored topic, as pointed out by [Suchek et al. \(2022\)](#). This invites us to revisit the propositions stated by [Ziegler et al. \(2023\)](#) on the role of the social economy to embed circularity. First, [Ziegler et al. \(2023\)](#) state that WISEs are better protected from the value capture exhibited by capital enterprises as well as enabled to cooperate with other actors. While we find a strong support among interview respondents of a (social) mission-oriented focus among WISEs, we do not find evidence they are better at cooperating with other actors. Second, no evidence is found for the proposition that WISEs deliver CE activities through democratic deliberation and decision-making processes that promote CE along with a better recognition of the struggle of various social and cultural groups. A notable exception may be social enterprise reuse shops, that combine social employment with a CE offer that is accessible for vulnerable households ([Pestoff and Hulgård, 2016](#); [RREUSE, 2021](#)). Moreover, no evidence has been found that WISEs contribute to sufficiency-oriented economies and a transformational CS, as predicted by [Villalba-Eguiluz et al. \(2023\)](#) and conceptualized by [Calisto Friant et al. \(2021\)](#).

Thirdly, we find strong evidence on the [Ziegler et al. \(2023\)](#) proposition that WISEs choose their technologies based on the values of their users, being mostly supporting technologies for workers with a distance to the labour market. This partially answers the question of [Clube \(2022\)](#) on the impact of technology on CE employment, but does not liberate us from keeping a critical stance on the potential adverse impacts of technological developments on job opportunities for people with a distance to the labour market, including the risk of a potential commodification of labour in WISEs as such ([Calisto Friant et al., 2023](#)). This critique has been coined likewise by [Siderius and Zink \(2023\)](#) when discussing the role of value and markets in a circular economy and actually holds for the entire labour market.

Finally, the proposition of [Ziegler et al. \(2023\)](#) that WISEs promote CE activities with a focus on the regional economy and regional circular value chains has been widely confirmed in our research. This is also in line with comparative advantage theory, predicting that locally embedded economic activities support factor rewards for less abundant production factors (for Belgium, low-skilled workers) and economic activities that apply these production factors intensively ([Leamer, 1995](#); [Sölvell, 2015](#)). Moreover, many CE activities, such as repair and refurbishment, are only viable if they can be organized at a sufficiently local or regional level ([Arsova et al., 2022](#)). Our results confirm that WISEs may have a competitive advantage to perform this role, confirming earlier results of [Lekan et al. \(2021\)](#). Nevertheless, our results show that [Ziegler et al. \(2023\)](#) correctly have reasons to remain sceptical about the potential of WISEs as a transformative force as their current business models are indeed integrated into an overall linear economy, as shown by our CGE results. Likewise, we find evidence of a growth potential within CE-related activities combined with a risk of mission drift.

5.2. Practical implications

An implication for management is that our research underlines the need to measure, validate, and communicate impacts in order to substantiate the sustainability of their business model. While earlier scholarly attempts have been made to measure several societal impacts of WISEs ([Crucke and Decramer, 2016](#)), the European Commission recently adopted a mandatory regulation for all types of companies to report environmental, social, and governance impacts (ESG) ([European Commission, 2022](#)). As there is no standardized social economy reporting ([Novkovic, 2022](#)), WISEs will be challenged to show that they generate positive impacts on ESG aspects as well. Well-developed standards and measurement techniques may as well guide WISEs to select environmentally impactful CE-activities. Conversely, a sound ESG framework could help WISEs to strengthen their value proposition towards clients, and to audit job quality standards of their clients as well. It will likewise support them to design and communicate compelling

sustainable value propositions, providing strong arguments for the social, environmental, and economic value they create, deliver, and capture ([Bocken, 2021](#)). Given their mixed funding by governments and private sector clients, this is a prerequisite for WISEs to remain future proof. This implication also holds for WISEs in other regions or WISEs that are active other market segments, serving customers or governments.

Our results also suggest that management of WISEs should invest in CE enabling organisational capabilities to strengthen the competitive advantage target group employment may generate to perform core CE jobs. Such an investment is not only relevant for WISEs, but also for their wider entrepreneurial ecosystem, including clients, suppliers, sectoral federations, trade unions, employment agencies, and financial partners. In particular, this includes collaboration capabilities ([Baah et al., 2023](#); [Burger et al., 2019](#); [Johnson, 2022](#)), innovation capabilities ([Straub et al., 2023](#)), and dynamic capabilities ([Bocken and Konietzko, 2022](#); [Khan et al., 2020](#)). Doing so would enable WISEs to reconsider the way they create, deliver, and capture value within the circular supply chains and business models they are embedded in ([Lüdeke-Freund et al., 2019](#); [Velter et al., 2020](#)). Examples include the development of partnerships with intermunicipal organisations and waste management companies (value creation), screening industries that can expect huge challenges with upcoming waste streams or strict regulations on reparability (value delivery) or creating joint facilities to share production means and capture joint positive externalities (value capture). Therefore, we recommend WISEs to connect to innovation policy measures while collaborating with their clients and suppliers on joint value propositions, instead of merely focusing on compartmentalized support and project calls organized by the policy domain under which they fall. Likewise, we recommend them to join activities of entrepreneurial ecosystems aimed at supporting the development circular value propositions and take a proactive stance accordingly, as illustrated by multiple cases that experimented in the social-circularity hubs in Flanders that have been developed recently for this reason (see <https://www.circulairwerkt.be/en/hubs>).

Given the decline of the manufacturing industry and the increase of the service sector in most industrialised countries, policy makers are likewise challenged to invest in skills and organisational capabilities that enhance future-oriented competitive advantages. While current research often focuses on high-level jobs (e.g., [Straub et al. \(2023\)](#) who have built a taxonomy based on LinkedIn profiles), labour market policies should support the joint development of core and enabling CE jobs that are mutually reinforcing. Our quantitative results may show limited net effects of CE supporting strategies for the general labour market, but our qualitative results highlight important shifts in the capabilities required within the industries confronted with this transition. Moreover, our results also show how a CE transition may also lead to net job losses in multiple industries. As pointed out recently, concerns about these job losses can hinder sustainability transformations unless policymakers strengthen their efforts towards implementing job reskilling programs ([Hekkert, 2024](#)). Likewise, we recommend investing in test capacity for new and transition-oriented jobs, to learn how people adapt future-oriented skills, and learn from new types of collaborations while including vulnerable groups on the labour market that may contribute to enhance comparative advantages of the economy. While these comparative advantages are relatively similar for most industrialised countries, the existence of specific factors, such as legacy industrial networks or specific primary resources, may differ and create different opportunities for WISEs in other countries.

Regarding regulations for the social economy, our results suggest that innovation support and subsidies are most appropriate to support switch costs and learning curves towards the development of circular value chains where WISEs play a role in. This may resolve past path dependencies and prevent WISEs to remain locked-in in linear value chains ([Ziegler et al., 2023](#)). Both our quantitative and qualitative research results underline the importance of earmarking this support

towards CE-related activities, as well as earmarking a growth of quota towards CE-related activities. To reach a sustainable and sustained support for increasing of abandoning the quota system, the current split-incentive problem between the regions (that bear the costs of a growth of WISEs) and the federal state (that benefits from a growth of WISEs) should be addressed. Likewise, as WISEs are strongly embedded within industrialised economies, supporting their organisational capabilities towards a circular transition should be envisioned and organized from an integrated approach. Policymakers are therefore recommended to communicate the existence of supportive initiatives, such as Circular Flanders, and the social-circularity hubs, across the departmental borders of their competence. For other regions, we suggest both policymakers and social entrepreneurs to critically assess path dependencies, switch costs, and split incentives when performing an ex-ante analysis on the policy measures to be taken. As this may depend heavily on the embeddedness of WISEs in their economies, as well as in the institutional design of labour market policies and other policies supporting WISEs, specific recommendations to support this transition may differ accordingly.

5.3. Limitations and recommendations for further research

A first limitation of this research is its geographical scope. As Belgium has a long tradition of WISEs and other social economy institutions, many relevant lessons can be drawn from this region. Nevertheless, future research should revisit the consequences, challenges, and opportunities for WISEs in other countries, as their economic, cultural, and regulatory embedding may differ.

A second limitation is that the scope of this paper focuses on accredited WISEs in Belgium, including sheltered and social workshops. The Belgian social economy landscape, however, also includes other, more hybrid structures for the employment of target groups, including the recently implemented framework on individual work integration support in Flanders, and accreditations for “entreprises d’insertion” in the Walloon region. Further research should therefore investigate the crossroads between CE-strategies and more hybrid concepts of work integration, including models with non-monetary exchange (Lekan et al., 2021), informal structures (Clube and Tennant, 2023), and partnerships between WISEs and other business organisations (de Bell et al., 2023).

Thirdly, methodological shortcomings include the use of expert interviews and CGE modelling. Our sample did not include the perspective of the workers themselves (only partially mitigated by including trade union perspectives), which could be addressed by further research. Regarding the CGE modelling, more explicit modelling strategies could have been developed, as discussed at the end of Appendix A. Albeit making use of micro-economic principles to model the agents’ behaviour, CGE models are not able to grasp micro-economic considerations that reflect the large heterogeneity of entrepreneurial preferences that go beyond profit maximization. Likewise, more research is needed to measure and compare environmental, social, and governance (ESG) outcomes of WISEs and other companies. At the micro-level, this would enrich and empirically validate a strand of literature that discusses comparative institutional advantages of legal forms (Persson and Hinton, 2023; Staicu, 2021), enabling a critical evaluation of suitable organisational forms, an evaluation of potential mission drift (Costanza, 2023; Siegner et al., 2018), or even stimulating WISEs to become the best version of themselves. At the macro-level we recommend monitoring social entrepreneurship from a more integrated perspective, capturing the social and redistributive implications of a CE shift (Bouchard and Chaves, 2022) and its contribution to a CS (Calisto Friant et al., 2023; Jaeger-Erben et al., 2021).

6. Conclusion

A shift towards the CE is often believed to create training and

working opportunities for people with a distance to the labour market. Our results show that this cannot be taken for granted. WISEs are shown to be strongly embedded in our current linear economies. While they may develop comparative advantages to perform core CE jobs, WISEs and policymakers are challenged to invest in skills development of target group workers and supporting staff. Our results underline the importance of building organisational capabilities to capture this opportunity. This shift, however, is not a sufficient condition to ensure a sustainable growth path.

Ensuring job quality and other social sustainability conditions of a CE-transition of WISEs includes aspects of stress, work-life balances, safe and dignifying work, learning possibilities, safe labour market conditions, and decent earnings. These conditions can only be met if WISEs are either able to attract more public funding or engage in high value-added activities. The latter is only possible if WISEs can further develop a strong competitive advantage in regionally embedded value chains. Social sustainability thus goes hand in hand with economic sustainability, requiring investments in CE-specific skills and organisational capabilities. Important aspects of the latter are the ability to co-develop joint value propositions and circular value chains that allow for scaling, replicating, and investments under uncertainty. In order to safeguard environmental sustainability, WISEs have to attract specific knowledge and develop innovation and collaboration capabilities.

This work provides an empirical contribution to recent research agenda’s (Valencia et al., 2023) and conceptual work (Ziegler et al., 2023), and provides a partial answer to the critical perspective of Clube (2022) whether job creation by the CE can be seen as an authentic, meaningful, and legitimate social benefit of the CE transition. Nevertheless, more research is needed to assess this from the perspective of vulnerable workers as well. Likewise, more empirical research is needed on the implications of the employment of vulnerable groups in a CS, including aspects of social and environmental justice, such as redistributive effects between workers within and between regions, and care economics, including the position of parents and siblings of vulnerable workers. Finally, we invite other scholars to deepen our knowledge on the development of joint value propositions between WISEs and their B2B clients in the context of a CE and identify further boundary conditions to translate this practice into a comparative advantage at the regional level.

CRediT authorship contribution statement

Wim Van Opstal: Writing – review & editing, Writing – original draft, Validation, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Lize Borms:** Writing – review & editing, Validation, Methodology, Investigation, Formal analysis, Data curation. **Jan Brusselaers:** Writing – review & editing, Validation, Investigation. **Nancy Bocken:** Writing – review & editing, Conceptualization. **Emma Pals:** Writing – review & editing, Validation, Methodology, Formal analysis. **Yoko Dams:** Validation, Resources, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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APPENDIX A

The CGE model applied is calibrated for the Belgian economy, with 13 sectors and 13 goods for 2018, one household, a government, and trade (Borms et al., 2023b; Brusselaers et al., 2022).

The model

The main assumptions of this model, as summarised by Lahcen et al. (2020), include the following:

- Each sector is modelled as a representative company, with constant elasticity of transformation production functions that are embedded in a nested production function. The production functions are calibrated according to Van der Mensbrugge and Peters (2016);
- Firms maximize profits, subject to labour and capital availability, technology, and input of intermediate products and services;
- Labour is traded on the labour market, wages are dependent upon the household's desire for leisure time. Hence, the CGE model only accounts for voluntary unemployment;
- Consumer decisions are functions of constant elasticity of substitution functions and are nested in consumption structures following Pollak and Wales (1978);
- Government spending is subject to the available budget and is determined by consumption prices and distribution parameters of the government's utility function;
- Investment demand depends on investment prices and distribution parameters of investment utility functions;
- National income is used for aggregate household consumption, public consumption, and savings;
- The exported volume depends on export prices while imported volumes depend on Armington elasticities as they are not perfect substitutes;
- All elasticities are retrieved from the GEM-E3 model description by Capros et al. (2013) except for the substitution elasticities for transport modes which are based upon Mayeres (1999).

Furthermore, the model is comparative static by nature and thus does not contain time-dynamics.

The labour market

In terms of the labour market, the model determines that demand for labour in efficiency equivalent hours is equal to the supply of labour in efficiency equivalent hours. Therefore, any unemployment is voluntary unemployment and is included in the consumption of leisure. In the following, we briefly describe the main modelling parameters to capture the effects of a tax shift from labour to resources and servitisation and discuss some future pathways to model social employment in a CGE model.

A tax shift from labour to resources

In the model, the product tax parameter (for Belgium) was increased for agriculture, forestry, and fishing (G1) and mining (G2) in all sectors. The product tax is calculated as the share of product taxes and product subsidies in the total production cost of activities excluding Value Added Taxes (VAT) on inputs. Table A.1 shows the product tax parameter as a percentage of the total production cost of activities excluding VAT in the baseline (SC0) and the stepwise increase between the first scenario (SC1) and the most extreme scenario (SC9). Subsequently, the increased revenue from product taxes is used to decrease labour income tax while keeping government utility levels constant. The income tax rate is set to 100% in the baseline and is compared to this baseline in the other scenarios. That way, we can compare the increase in the product tax rate to the decrease in the income tax rate. We see that the increase in the product tax rate is higher than the decrease in the income tax rate because there are relatively few agricultural and mining activities in Belgium. Therefore, to generate a tax revenue high enough to compensate only a very small decrease of income taxes, product taxes must increase significantly.

Table A.1

Adaptation of the product tax parameter for agricultural and mining goods

	SC0	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9
Agriculture, forestry, and fishing (G1)	0.1%	2%	5%	10%	15%	20%	30%	40%	50%	60%
Mining (G2)	0.0%	2%	5%	10%	15%	20%	30%	40%	50%	60%
Income tax rate	100%	99%	98%	96%	95%	93%	90%	88%	86%	84%

Note: the product tax is the sum of product taxes and product subsidies (negative number) as a share of the total production cost of activities excluding VAT. The income tax rate is compared to the baseline, which is set to 100%.

Servitisation

We model servitisation as a decrease in household consumption of manufacturing goods which includes electronics, furniture, transport equipment, textiles, etc., compensated by an increase in household consumption of market services which includes renting and leasing, advertisements and market research, travel agencies, employment mediation, telecommunication, and software services, among others. The CGE's calibration and

equilibrium conditions apply and rely upon a minimum level of consumption for each good, which is a percentage of the consumption in the base year. In the baseline scenario (SC0), households have a minimum consumption of manufacturing goods (G3) and market services (G11) of 30% of the base year consumption. In other scenarios (SC1-9) we opt for a stepwise decrease of this 30% base year minimum consumption of manufacturing goods. This will simultaneously be compensated by a stepwise increase in the consumption of market services which is set so to be equal to the decreased consumption of manufacturing goods. These parameters are reported in [Table A.2](#).

Table A.2

Adaptation of the minimum consumption of manufacturing goods

Good	SC0	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9
Manufacturing (G3)	30%	27%	24%	18%	15%	12%	9%	6%	3%	0%

We note here that we forced consumers to shift their consumption from manufacturing goods to market services instead of increasing the consumers' perceived substitutability between manufacturing and market services. This choice was made because it allows for a disruptive shock on consumer behaviour with control on consumer actions simulating an actual 'shift in preferences' while the approach of substitutability might still require external incentives to move away from the current equilibrium and stimulate the uptake of market services. Note that the minimum level of consumption controls for heterogeneous price and income elasticities of demand, given constant elasticity of substitution across all goods. Hence, adjustment of these minimum levels results in a structurally different and irreversible consumption pattern in which the consumers cannot return to the original situation. This study, however, does not intend to consider the gradual transition from the baseline scenario into the new situation but instead, for analytical reasons, opts for the comparative analysis of these two considerably distinct situations.

Future pathways to model social employment in a CGE model

Several options were considered to analyse the effect of CE measures on WISEs. One approach to link the CGE model with economic information of WISEs, is to integrate activities and produced goods in an additional sector and good, as conducted earlier on case studies of repair ([Brusselsaers et al., 2022](#)), and of waste and recycling ([Borms et al., 2023b](#)). A second approach is introducing a second type of labour and a second type of household in the calibration of the model. This would allow us to analyse differences in labour productivity, wages, and income elasticities. However, CGE models are typically very aggregated models to stimulate economy-wide policy measures. Introducing a WISE sector or a WISE type of labour would only reflect figures that are way too small to have the CGE model calibrated in a meaningful way. Moreover, indicators that are measured with CGE models are production per sector, GDP, labour supply and demand on sectoral level, household consumption and household utility, import and export to the EU and the Rest of World (RoW). We do not expect any policy measure targeted at WISEs to have significant results on these indicators.

APPENDIX B

In this Appendix, we provide an anonymized list of interview respondents ([Table A.3](#)) and an overview of translated interview questions.

Table A.3

List of interview respondents

ID	Function	Organisation	Date
1	Sector Manager Social Economy	Trade Union	June 19, 2023
2	CEO	WISE	June 19, 2023
3	Division Manager	Regional public administration	June 19, 2023
4	Advisor	Trade Union	June 20, 2023
5	Advisor	Trade Union	June 20, 2023
6	Researcher	Advisory body of the regional government	June 20, 2023
7	Expert	Advisory body of the regional government	June 20, 2023
8	Staff member	Regional Employment Office	June 26, 2023
9	Advisor	Regional public administration	June 27, 2023
10	Advisor	Regional public administration	June 27, 2023
11	Advisor	Federation of WISEs	June 28, 2023
12	Expert	Regional Employment Office	June 28, 2023
13	CEO	Federation of WISEs	June 29, 2023
14	CEO	WISE	June 29, 2023
15	Commercial Director	WISE	June 29, 2023
16	Division Manager	Local or Provincial public administration	July 12, 2023
17	Policy Officer	Local or Provincial public administration	July 12, 2023
18	Coordinator	Local or Provincial public administration	July 12, 2023
19	Advisor	Federation of WISEs	July 13, 2023
20	Circular Economy Expert	WISE	July 19, 2023

The semi-structured interview encompassed the following questions:

1. What would be impact of a CE transition on skills required within WISEs?
2. What would be the challenges of a growth path of WISEs towards circularity?
3. How should social sustainability, including job quality and upskilling opportunities, be safeguarded within a growth path of WISEs towards a CE?
4. How should environmental sustainability be safeguarded within a growth path of WISEs towards a CE?
5. How should economic sustainability be safeguarded within a growth path of WISEs towards a CE?
6. Open comments on early modelling results

7. What costs and benefits are important to take into account when envisioning a sustainable growth path for WISEs towards a CE?

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