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**Circular Economy and Social Upgrading in Global Value Chains: An Analytical
Perspective on Social Upgrading in the Global South**

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Abstract

This chapter presents a novel analytical framework that explores the potential role of Circular Economy (CE) strategies in promoting social upgrading within global value chains (GVCs), primarily situated in the global South. The framework is grounded in the affordance perspective, which recognizes that the adoption of the CE paradigm does not guarantee improvements in the working environments of participating firms. This is because the CE often prioritizes environmental goals and may overlook social considerations in its strategies focused on industry and products. The framework emphasizes the need to bridge the gap between CE and GVC domains to enhance working conditions in participating firms. The framework integrates the affordances of the CE model, based on the 9R CE strategies, with the five key themes for decent work identified by the International Labour Organization, while considering the influence of institutional enablers and barriers. To support its propositions, the study includes several examples. This research contributes to the literature on CE and GVCs by providing a fresh perspective on the intersection between the CE and social upgrading within GVCs. It highlights the challenges in realizing social improvements when the CE paradigm primarily focuses on environmental goals. Additionally, the study sheds light on the influence of the institutional context on delivering social upgrading in CE implementation.

Keywords: Social Upgrading, Circular Economy, Global Value Chains, Affordance Perspective, Global South, Decent Work Conditions, SDG8

1 Introduction

The circular economy (CE) is an economic model that departs from the traditional linear production model, which follows a "take-make-dispose" approach, and instead, promotes the continuous circulation of materials and resources through recycling, reusing, and remanufacturing (Moreau et al., 2017). Therefore, this paradigm is in harmony with the UN Sustainable Development Goals (SDGs), as it can contribute to achieving SDGs 3 (ensuring health and well-being for all), 9 (fostering industry, innovation, and infrastructure), and 12 (promoting responsible production and consumption).

Accordingly, the potential of the CE to mitigate the negative environmental impacts, particularly those related to various manufacturing processes within global value chains (GVCs), has been widely recognized (de Lima et al., 2022). Importantly, these studies highlight how the CE can play a pivotal role in addressing the environmental challenges associated with resource depletion, waste generation, and pollution across different stages of production and consumption within GVCs and making them sustainable. Although these studies offer valuable evidence regarding the potential impact of implementing the CE and provide insights into the value-added mechanisms in terms of environmental benefits, there are still two critical gaps that need to be addressed.

First, it remains unclear whether and to what extent the adoption of CE model can contribute to social upgrading¹ (Rossi, 2019) within the participating countries and firms involved in the upstream supply chains (Barford and Ahmad, 2021, ILO, 2023a). This raises concerns about the social effect of the CE, especially when applied in the global South, where countries typically suffer from institutional voids² (Amankwah-Amoah et al., 2023, Donbesuur et al., 2023), and lack support from the formal institutions to improve the working conditions within the GVCs that are coordinated and controlled by the lead firms from developed markets (cf., Soundararajan et al., 2018). In this regard, questions arise regarding the effects of CE practices on the achievement of the SDG8³ including, job creation, job quality, workers' rights, and the redistribution of benefits (Luthin et al., 2023), as the transition processes (i.e., from linear to circular) are often prone to social injustices (Vanhuyse et al., 2022). Accordingly, there is a need to explore the broader societal impact of CE adoption, such as community well-being and local economic resilience of participating countries, which all are connected with the fulfillment of the SDG8. *Second*, we know relatively little about the “workers as agents in social upgrading processes” in GVCs (p. 828) (Marslev et al., 2022), especially when practicing business model innovation aiming to deliver environmental gains (Vazquez-Brust and de Souza Campos, 2023). In effect, the literature on GVCs has been criticized due to its predominant emphasis on economic upgrading (i.e., improving the economic conditions of the participating suppliers) (Dindial et al., 2020), which has been deemed to pay less attention to the concerns of labor and neglect to consider the effects on workers’ social wellbeing at work and their overall working conditions.

Recognizing these critical gaps, it becomes evident that we need to pay more attention to the overlapping area between CE and GVCs domains (i.e., the application of the CE paradigm in GVC

¹ Refers to the process of improving working conditions, wages, labor rights, and overall social well-being within a given context. It involves advancements in employment opportunities, skills development, and social protection, leading to a higher standard of living and improved quality of life for individuals and communities.

² Refer to the absence or inadequacy of formal institutions, such as laws, regulations, and organizational structures, that are necessary for the functioning of an efficient and effective economic system. These voids can include gaps in legal frameworks, weak governance structures, lack of regulatory enforcement, and limited access to essential services. Institutional voids often create challenges and opportunities for businesses operating in environments with weak institutional support.

³ SDG 8, or Sustainable Development Goal 8, is one of the 17 global goals established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. The goal of SDG 8 is to "Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all."

in order to make the GVCs sustainable and transparent given the widespread incidents of modern slavery practices within the GVCs reported in the popular media outlets)(Guardian, 2023).

Accordingly, this study investigates the interplay between the application of the CE paradigm, and social upgrading in GVCs, within the context of the global South. We developed a novel analytical framework that systematically discusses the potential role of CE strategies in promoting social upgrading within GVCs primarily situated in the global South, but it has the potential to inform best practices for the global North GVCs. The framework is conceptually grounded in the affordance perspective, offering a fresh lens to understand how the CE paradigm can facilitate social improvements, alongside environmental ones, in GVCs based in the global South where most of the suppliers are based.

More specifically, we propose that firms need to consider the *affordances* of the CE model that need adaptation (i.e., actualization) which can adapt the CE strategies into practices that take into account the social aspects within the GVCs and their extended environment in order to address the grand challenges. To this end, in our analysis, we connect the CE affordances, which are based on the 9R CE framework (Potting et al., 2017) that provides a comprehensive view of CE strategies (Liu et al., 2022), with the recently identified five key themes for the issue of decent work conditions in the global South set by the International Labour Organization (ILO) (ILO, 2023a). In addition, and given the sensitivity of context in the global South (Ciulli and Kolk, 2023), we incorporated the effect of institutional enablers and barriers which typically affect the effectiveness of the adaptation process of the CE process (Vanhuysse et al., 2022). We support our propositions using several illustrative examples.

2 Social upgrading in the CE: towards an analytical framework using the affordance perspective

The primary objective of this chapter is to develop an analytical framework that elucidates the potential contribution of the CE paradigm to social upgrading in GVCs primarily located in the global South. By doing so, our focus lies on the intersection between the CE and GVC, or the utilization of the CE paradigm within the GVC context in order to examine social upgrading.

2.1 The affordance perspective

According to the affordance perspective, individuals do not passively observe their environment but actively engage with it based on the affordances they perceive (Shin, 2017), thus affordances represent the actionable possibilities that objects offer to individuals, guiding their behavior and interactions (Grgecic et al., 2015). These affordances are not inherent properties of the objects themselves but are perceived in relation to the capabilities and intentions of the perceiver. By considering affordances, individuals can quickly assess how objects can be utilized or manipulated to achieve their goals.

The perception of these affordances enables individuals to directly couple their perception with action, without the need for explicit decision-making processes (Kaaronen, 2017). Importantly, the concept of affordance extends beyond the physical realm and applies to the interaction between individuals and technology as well. Within the technology domain, a digital technology like Artificial Intelligence (AI), according to the affordance perspective, possesses a set of fundamental material properties or characteristics (such as the ability to summarize a text or generate a picture). However, these properties should be regarded as necessary prerequisites for affordances rather than the affordances themselves (Markus and Silver, 2008). Instead, affordances are observed to arise from the interaction between the technology and a particular actor to achieve a specific target (Tim et al., 2020), whereby affordances can be regarded as a "relational concept" (Tim et al., 2020) that signifies the potential for goal-oriented actions that an organization can undertake through the utilization of a specific technology (Markus & Silver, 2008).

Due to its relevance, this perspective has been applied effectively in many fields, for example, to explore the possibilities of technologies in helping companies achieve their specific goals (Volkoff and Strong, 2013), to enable policy makers to promote policies that translate sustainable thinking into sustainable behavior (Kaaronen, 2017), and to understand how the new digital technologies, as adopted by international firms, can contribute to sustainable development (Ciulli and Kolk, 2023).

By embracing the affordance perspective, we propose that implementing the CE paradigm (along with its associated principles including waste reduction, product circularity, and nature regeneration), can provide opportunities (i.e., affordances) for companies to integrate the social dimension and contribute to the social upgrading process within their GVCs, in addition to the environmental gains. However, it is crucial to bear in mind that affordances represent potential or opportunities for action (Anderson and Robey, 2017). That is, although the object (e.g., the EC model) may provide multiple affordances, it is up to the actor utilizing the technology to determine whether they will take advantage of all available opportunities or not (Leonardi, 2011). In other words, the presence of affordances does not guarantee their complete utilization by the actor. The actor's choices, capabilities, and intentions play a significant role in determining which affordances are actually realized and acted upon. Hence, the realization of affordances depends not only on the object properties but also on the strategic decisions and actions of the actor involved.

2.2 CE affordances for social upgrading in GVC

The affordance perspective emphasizes the interaction between individuals or entities and their environment, focusing on the potential actions and possibilities that the environment offers. In the context of the CE paradigm, this perspective recognizes that adopting circular practices creates opportunities for firms to engage in social upgrading (i.e., improving the social conditions for workers and communities involved in the production process) within their GVCs. We illustrate the connection between CE affordance for social upgrading in Figure 1.

Our framework suggests that integrating the CE paradigm into GVCs has the potential to improve working conditions for firms in the global South that act as suppliers to lead firms originating from the global North. However, it is important to note that the adoption of the CE does not guarantee an impact on the working environments of participating firms, as the CE often prioritizes environmental goals and tends to focus more on technocratic strategies for industry and products (ILO, 2023a). Additionally, implementing the CE model typically requires substantial financial investment and commitment from lead firms and their associated entities, such as suppliers (Saha et al., 2021). Consequently, these organizations may become overly focused on the environmental aspects of the CE, potentially overlooking the inclusion of social considerations within its scope (Velenturf and Purnell, 2021).

The proposed framework integrates two essential aspects. The first focuses on the key concerns identified in the realm of decent working conditions, derived from an extensive review of hundreds of empirical articles on the CE, environmental factors, and related conditions (ILO, 2023a), as summarized in Table 1. The second aspect relates to the CE principles, including resource efficiency, waste reduction, and product lifecycle management, which the lead firms in GVCs can adapt and leverage to foster social upgrading within their chain, thereby promoting better working conditions for the firms involved in the globalized manufacturing arrangements in the global South. We establish the conceptual integration/connection by adopting the affordance lens.

[Figure 1]

The framework starts by highlighting that the adoption of the CE paradigm in a GVC can offer avenues for addressing the social issues in the value chain. We discuss these avenues (the affordances) as CE strategies, then these strategies with the key aspects of decent work conditions (ILO, 2023a).

The CE, as a concept, aims to promote sustainable resource management by minimizing waste and maximizing the value of resources (Di Vaio et al., 2023). It has evolved overtime through three distinct phases (with specific focus): dealing with waste (emphasizing the need to effectively deal with waste and reduce environmental impact), then developed to connecting input and output in strategies for eco-efficiency and maximizing value retention. These phases have yield different strategies to address the focus of each phase (Blomsma et al., 2023). Implementing effective strategies is crucial for the successful transition to a CE (Blomsma et al., 2019). However, existing research on CE strategies lacks a commonly agreed-upon categorization (Liu et al., 2022). For instance, several studies (e.g., Cagno et al., 2021, Lopes de Sousa Jabbour et al., 2018) have built upon the three principles of the CE proposed by the Ellen MacArthur Foundation (2015). These principles include *preserving and enhancing natural capital* (by managing finite stocks and balancing renewable resource flows), *optimizing resource yields* (by circulating products, components, and materials for maximum utility in both technical and biological cycles), and *fostering system effectiveness* (by identifying and eliminating negative externalities like pollution,

climate change, toxins, congestion, and health impacts associated with resource use) (Foundation, 2015). Others, developed the Circular Strategies Scanner as a tool for evaluating and implementing CE strategies, where it helps to analyze and categorize different approaches to achieve sustainable resource management (Blomsma et al., 2019). Moreover, Barnabè and Nazir (2022) regarded the CE as a circular economic model that builds upon a number of core guiding principles including Reduce, Reuse, Recycle, Reproduce/Remanufacture, Redesign/Repurpose, and Recover (MacArthur, 2013). While these studies adopted different strategies for the CE, it can be realized that these strategies are built upon a number of principles that are summarized by (Potting et al., 2017). Therefore, in this study, we adopt the 9R CE framework developed by Potting et al. (2017) as it provides a comprehensive view of CE strategies, see Figure 2. Together, the application of these strategies (or any combination of them) offers the environmental gains (affordances) that add value to society.

[Figure 2]

Next, we discuss the affordances of these strategies in the domain of social upgrading and decent work conditions in the GVCs of global South.

Decent work, as a concept, refers to work that meets certain criteria to ensure the well-being and dignity of workers (ILO, 2023b, Gereffi, 2019). As such, decent work is characterized by fair income, providing a secure employment relationship with safe working conditions (Montiel et al., 2021). It emphasizes equal opportunities and treatment for all individuals, including social protection for workers and their families. Decent work also promotes personal development and social integration, allowing workers the freedom to express their concerns and engage in collective bargaining or organizing activities (Nasr and Al-Tabbaa, 2023). Recently, the International Labour Organization (ILO) identified five key themes for the issue of decent work in the global South (ILO, 2023a). These five themes capture the work-related opportunities and challenges, as identified and discussed in the empirical literature, for the CE model when applied in the global South. Table 1 analyzes these themes and provides reflections on their focus and key insights.

[Table 1]

As discussed earlier, and presented in Figure 1, the fundamental proposition in this study is that the affordance perspective can be used to understand how the application of the CE model, with necessary adaption (i.e., the actualization), which in turn can yield advancement in the working conditions in global South, and thus promoting the social upgrading dimension in GVCs. By combing the affordance of CE Strategies (as in Figure 2) with the decent work themes (as in Table 1), we discuss our conceptual framework and explicate how the application of the CE strategies can offer advancement for the working environment and contribute towards social upgrading in the GVCs. We present the affordance of the CE to address the work-related issues in Table 2.

First, labor market and sectoral transformation. As the adoption of the CE paradigm entails the devolvement of several CE strategies (Potting et al., 2017), these new strategies are expected to contribute towards job creation across the value chain. For instance, the ‘useful application of materials, as illustrated see Figure 2, will yield significant growth in recycling and reprocessing.

In this regard, the CE is expected to create a new million jobs at all levels that would support resilient growth in the global South. For instance, in recent years, the forestry-cellulose-paper sector has significantly enhanced its circularity, driven by multiple trends. The rising demand for sustainable products and the growing emphasis on resource-intensive sectors complying with stricter intentional requirements and standards serve as strong incentives for adopting circular processes within the industry. This transition opens up diverse employment opportunities, such as jobs in sustainable forest management, efficient waste management, and innovative recycling and repurposing practices within the involved global supply chains in the Latin America and the Caribbean (ECLAC, 2021). However, the job creation resulting from the application of the CE model within the GVC would demand specialized training. The unique requirements of circular jobs call for a skilled workforce equipped with the necessary knowledge and expertise. Consequently, there is a need for institutional support at the national level to establish effective training programs, where governments take an active role in providing the resources, infrastructure, and policies required to facilitate comprehensive training initiatives. Such setting can empower workforce in the global South to meet the demands of the adoption of the CE paradigm (Moreno-Mondejar et al., 2021)

Second, Informality and the CE. The CE offers affordances for addressing informality in two key ways. Integration of informal Suppliers who are mostly operating in the lower tiers, where the shift to a circular business model necessitates changes in the GVC's working paradigm. This provides an opportunity to develop new business models that better incorporate and acknowledge suppliers operating within the informal economy, such as waste collectors (Dewick et al., 2022). By recognizing their contributions, the CE can help integrate informal actors into formal value chains through the transfer of best practices and key know-how related to sustainability. On the other hand, utilizing informal resources and skills, as circular practices like recycling and upcycling enable formal value chains to leverage the skills, knowledge, and resources available in the informal economy. By repurposing these resources, the CE creates opportunities for informal actors to actively participate in the GVC. This integration can enhance their livelihoods and provide them with more sustainable economic prospects. For example, Troschinetz and Miheleic (2009) found that frugal household economics and the presence of local markets for used materials play significant roles in promoting sustainable recycling of municipal waste. These informal markets, along with the expertise of informal actors in waste recovery and their ability to find customers for recycled materials, are crucial components of necessity-driven CE practices in low-income settings. The practices of informal actors offer opportunities of adding value to recyclable materials at every stage of the value chain, leading to the emergence of viable businesses centered around recycling (Jaligot et al., 2016). These findings highlight the potential for leveraging

existing informal systems and local markets to drive circularity and promote sustainable waste management practices in resource-constrained environments (Korsunova et al., 2022).

Third, work reallocation and skills development. Transitioning to circular business models often requires new skills and knowledge. By investing in skill development initiatives, information-sharing platforms, and collaborations companies can empower their workforce and societies, enhancing their employability and promoting social mobility. This can contribute to social upgrading by providing workers with opportunities for personal and professional growth. For example, the collaboration and sharing of knowledge have benefited waste picker cooperative *Reciclando Sueños* in the context of the CE (Gutberlet et al., 2017). Waste pickers possess invaluable knowledge about material composition and recyclability, enabling them to identify materials that may not be accepted by the traditional recycling industry. The expertise and experience of waste pickers can significantly enhance the effectiveness of the CE, saving industries money and reducing the amount of waste destined for landfills. On the other hand, collaborations between waste picker organizations and companies, such as *Limpex* (a global corporate chemistry industry), have resulted in workshops and training sessions for employees, leading to a 50% increase in the efficiency of waste sorting systems in offices and production areas(Gutberlet and Carengo, 2020). In addition, by utilizing digital technologies the CE can make the GVCs more transparent in terms of promoting workers' well-being.

Fourth, Working Conditions and Social Protection. The affordances of the CE model offer promising opportunities to address working conditions and enhance social protection within the GVC. The CE model enables lead firms to collaborate with their suppliers and jointly develop transparent monitoring and tracing systems through the integration of digital technologies focused on improving working conditions. By actively involving suppliers in the design and implementation process, these arrangements can effectively address labor issues. Moreover, The CE practices provide a framework for integrating monitoring arrangements into the supply chain. This integration enhances transparency and accountability, allowing for better tracking and assessment of working conditions throughout the GVC. Through traceability and transparency, lead firms can incentivize their suppliers to adopt responsible labor practices. As an example, in a recent study (García-Muiña et al., 2021), the Social Organizational Life Cycle Assessment (SO-LCA) methodology was applied to a ceramic tile manufacturing industry to monitor the social dimension of firms adopting the CE. In this trial, real-time data collection and analysis were facilitated through a Business Intelligence interface. By involving a panel of experts from the organization, specific social metrics were developed, aggregated into social indices, and correlated to stakeholders and social impact categories. This approach allowed for the identification of essential social metrics and quantifying the organization's contribution to the social dimension of the CE. The results confirmed the feasibility of using monitoring techniques, including Industry 4.0 digital technologies, to assess the social impact of firms and their alignment with CE objectives.

Finally, gender discrimination and social equity can be addressed through the adoption of CE practices in two key ways. Firstly, the CE creates opportunities for targeted skills development and training programs aimed at women, enabling them to access training and qualifications and close the gender gap in employment. This empowers women to participate in new job roles within the circular value chain. Secondly, the CE's emphasis on transparency and traceability in the production process provides a means to tackle gender discrimination. By implementing customized monitoring systems and standards, the CE can identify and mitigate gender biases, discrimination, and unfair labor practices at all stages of the value chain (ILO, 2023a). This commitment ensures that gender equity is upheld and social accountability is promoted. Through these measures, the CE contributes to a more inclusive and equitable society by actively addressing gender discrimination and promoting social justice.

3 Conclusion

This chapter addresses the intersection between the CE and GVCs while focusing on the social dimension (decent work) within the global South. By developing an analytical framework grounded in the affordance perspective, we explore how CE strategies can be adapted to promote social upgrading alongside environmental improvements in GVCs, which contributes to the fulfillment of the SDG8. The framework incorporates the 9R CE framework and the International Labour Organization's key themes for decent work conditions, while considering the influence of institutional enablers and barriers in the global South context. We contribute to the existing literature by offering a fresh perspective on the intersection of the CE and GVCs, highlighting the potential for social gains through CE strategies. It emphasizes the need to consider social aspects alongside environmental goals and identifies the importance of adaptation to address the social dimension effectively. Moreover, the study recognizes the influence of institutional context, particularly in areas with institutional voids, on the outcomes of social upgrading initiatives in the CE. By shedding light on these complexities and nuances, the chapter provides valuable insights for policymakers, businesses, and stakeholders involved in promoting sustainable development and inclusive growth through circular practices. The framework and examples presented in this chapter serve as practical tools for understanding and leveraging the potential of the CE to realize social benefits within GVCs. Overall, this research contributes to advancing knowledge and guiding efforts towards a more holistic and socially responsible implementation of the CE in the global South.

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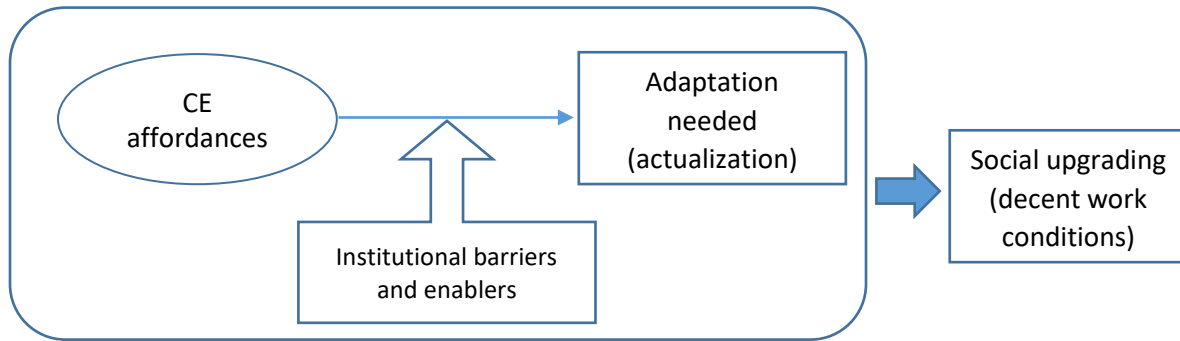


Figure 1: CE affordance for social upgrading in global South GVCs

Circular economy		Strategies	
Smarter product use and manufacture	R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product	
	R1 Rethink	Make product use more intensive (e.g. by sharing product)	
	R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials	
Extend lifespan of product and its parts	R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function	
	R4 Repair	Repair and maintenance of defective product so it can be used with its original function	
	R5 Refurbish	Restore an old product and bring it up to date	
	R6 Remanufacture	Use parts of discarded product in a new product with the same function	
	R7 Repurpose	Use discarded product or its parts in a new product with a different function	
Useful application of materials	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality	
	R9 Recover	Incineration of material with energy recovery	
Linear economy			

Figure 2: A framework for the CE Strategies: from linear to circular

Sources: Potting et al. (2017)

Table 1: Analyzing the work-related key aspects* in the CE model applied in the global South

Work-related issue	Focus	Key insights
Labor market and sectoral transformation	The application of the CE can create jobs, and induce changes in existing employability content and structures.	<ul style="list-style-type: none"> - The CE has the potential to create new jobs at all skill levels and support resilient growth, particularly when combined with policies addressing material consumption and tax reform. For example, in Latin America and the Caribbean (over 10 million jobs) and Europe (around 0.5 million jobs) are expected mainly in the recycling and reprocessing sectors. - Among these regions, the European Union (EU) is anticipated to experience the most substantial employment gains, benefiting from its early adoption of CE principles as a "first mover." Yet, studies on the net employment effects of the circular transition still vary in their estimates due to different methodologies and assumptions.
The informal economy	The informal economy plays a significant role in the CE, especially in low-income countries where informal sectors like reuse, repair, waste collection, and recycling provide employment opportunities. However, the informal economy is often overlooked in the CE agenda.	<ul style="list-style-type: none"> - CE discussions and policy approaches often focus on the formal economy, overlooking the significant presence of circular interventions in the informal economy of the global South. - The informal economy, which comprises a diverse range of economic activities and employs a large portion of the global population, plays a crucial role in the CE transition but is not adequately included in the CE agenda. - CE activities within the informal economy, such as waste picking, provide economic opportunities to individuals with low formal skills and education, but poor working conditions and environmental hazards can be prevalent, particularly in the Global South. - Transboundary movement of waste and second-hand goods from the Global North to countries with inadequate waste management infrastructure exacerbates the challenges associated with informality.
Work reallocation and skills development	Transitioning to circular sectors requires appropriate training and policy support for workers. Acquiring the necessary "deep skills" for circular interventions relies on employers and educational institutions understanding circular business models.	<ul style="list-style-type: none"> - The successful reallocation of workers from linear to circular sectors depends on access to training and related policy measures. Yet, the CE is estimated to disrupt only 2% of existing jobs globally, with the potential to create over 100 million new jobs depending on training and skills interventions. - Reskilling and upskilling will be crucial for workers in current linear sectors, such as construction, transport, and certain areas of energy, to tap into new job opportunities in the EC. This implies that ongoing training across occupations will be more important than acquiring entirely new sets of skills. - Circular jobs require significant work experience and training, especially for specific activities like sorting, repair, and redesign. Educational pathways in the circular economy will require practical and vocational modes of learning, higher education, and lifelong learning across all fields. - Developing the deep skills required for CE interventions can be challenging, particularly in lower-income countries with less investment in tertiary education and limited vocational training offerings.

		<ul style="list-style-type: none"> - The specific digital skills and technological capabilities required for circular economy interventions in the Global South are understudied.
Working conditions and social protection	<p>Occupational health and safety issues are prevalent in circular activities, particularly in the global waste trade and second-hand goods flow from the Global North to the Global South. Workers in these sectors often face exposure to toxic waste, highlighting the need for improved working conditions, health protections, and social safeguards in the CE.</p>	<ul style="list-style-type: none"> - The CE has been proposed as a solution to address poverty. Can alleviate poverty through better wages, working conditions, and economic benefits for vulnerable communities, particularly in the Global South - Occupational health and safety concerns in the CE are associated with global waste trade and second-hand goods flow from Global North to Global South countries. Loopholes in waste and second-hand goods legislation, along with weak regulatory frameworks, contribute to illegal circular activities. The most disadvantaged groups in the Global South, often in the informal sector, face negative health and safety risks. - The growth of new enterprises and sectors within the CE raises concerns about workers' ability to improve their conditions. As circular business models emphasize shared ownership and collaborative consumption, workers in the service sector may face challenges in conducting collective bargaining and receiving support from traditional trade unions or employer associations. Typical workers, including temporary, self-employed, and platform workers, often lack legal protections and face inequality. - Work in waste management, a significant component of the circular economy, often provides a meager livelihood for marginalized groups. Workers in excluded segments of the labor market, such as the elderly, homeless, refugees, migrants, and marginalized groups, engage in informal and sub-standard working conditions without social protection. Poor-quality circular jobs, even if they contribute to sustainability, can reinforce and recreate existing injustices and inequalities.
Gender discrimination and social equity	<p>The transition to a CE is expected to increase female employment globally, offering opportunities for gender equity. However, there is a lack of in-depth research on the social impacts of circular economy interventions among underrepresented groups such as migrant workers and youth. Addressing gender discrimination and social equity issues in the circular economy requires more comprehensive and inclusive studies.</p>	<ul style="list-style-type: none"> - CE interventions have been identified as a potential social equity solution for at-risk youth and as a strategy for entrepreneurship in low-income contexts. - Without strong policies and programs addressing gendered aspects of labor market participation and access, prevailing gender inequalities are unlikely to be offset. - Barriers hindering women's participation in green jobs within the CE include skill mismatches, limited access to financial resources and information technologies, and discriminatory social norms. - The current CE movement shows low social ambition in terms of gender, often perpetuating feminization of poverty and precarious working conditions. - There is a need to address social and climate justice concerns, such as the distribution of benefits and meaningful participation, in CE policies. Current policy instruments and proposals for the CE are considered narrow and fall short of providing a holistic and legal framework for a just transition.

*Complied and adapted from ILO (2023a), OECD (2022), Mies and Gold (2021), Padilla-Rivera et al. (2021)

Table 2: Integrating the social dimension in the CE model in GVCs

Work-related issue*	CE affordances (What to offer?）**	Actualization (how?)	Institutional need
<p>Labor Market and Sectoral Transformation: <i>Improve employability and contribute to job creation</i></p>	<ul style="list-style-type: none"> - Adoption of the CE model <i>offers</i> new tasks and processes, which can create new job opportunities (e.g., eco-design) and the development of new sectors (at various stages of the value chain) such as renewable energy, waste management, repair and maintenance, and recycling in the global South. - Adoption of the CE model <i>offers</i> the opportunity to develop local and decentralized systems within the CE which support the establishment of SMEs and contribute to job creation in regions where traditional industries may have declined. These enterprises will create more ‘layers’ in the GVC supply system. 	<ul style="list-style-type: none"> - This shift requires a skilled workforce to carry out the new activities (e.g., repair and refurbishment tasks). This demands the widespread implementation of skills training programs delivered by both firms and the government. - The leading firms need to rethink the structure of their suppliers' network to involve the smaller emerging suppliers (as a new level of supply). - The leading firms (in the GVCs) can develop specialized training programs along their value chain. 	<ul style="list-style-type: none"> - To establish an effective training scheme, adequate initial support is needed at the national and regional levels. - Individuals losing their current jobs may not necessarily be the same ones benefiting from the new job opportunities. This underscores the need for comprehensive public support and strategies to address the potential impact on workers in specific sectors.
<p>Informality and the CE: <i>Integrate and recognize entities comprising the informal economy</i></p>	<ul style="list-style-type: none"> - Adopting the CE approach demands changes in the business model (i.e., the working paradigm) of the GVC to become more circular. This <i>offers</i> an opportunity to develop new business models that better integrate and recognize the suppliers in the informal economy (e.g., waste collectors) - Adopting circular practices, such as recycling and upcycling, <i>offers</i> formal value chains the potential to tap into the skills, knowledge, and resources present in the informal economy. This repurposing of resources can create opportunities for informal actors to participate more in the GVC. 	<ul style="list-style-type: none"> - Business model co-design (between the lead and suppliers) - Social interactions and collaborations collaboration between formal and informal actors to identify and leverage hidden resources and capabilities in the informal economy. - By recognizing the value and contributions of the informal economy, formal actors can engage in inclusive partnerships, providing support, training, and access to markets for informal actors. 	<ul style="list-style-type: none"> - Government can recognize the informal activities which entail granting legal rights, protections, and access to resources for informal actors participating in GVC. - Government can extend its capacity-building programs for informal workers. In this regard, NGOs and private sectors can play a key role in facilitating the programs. - Institutional support in terms of microfinance schemes, credit facilities, and market linkages can help informal actors to integrate in the CE activities. - Strong labor regulations and enforcement mechanisms can provide a safety net and promote inclusive participation.

			<ul style="list-style-type: none"> - Developing robust information systems can help policymakers and stakeholders understand the contributions and challenges faced by the informal economy.
Work Reallocation and Skills Development	<ul style="list-style-type: none"> - The adoption of CE practices requires a different set of skills compared to conventional linear models (e.g., smart design and production that enable resource recovery and extend products and parts lifecycle). This offers the opportunity for skills development and capacity building in new areas (e.g., resource recovery, product design for circularity, and green technologies). The affordances offered by the CE create avenues for developing a skilled workforce that can contribute to circular value chains and drive innovation. - The CE encourages experimentation, collaboration, and learning among various stakeholders. Thus, it offers affordances for knowledge sharing, best practices, and innovation in sustainable business models and processes. Continuous learning and innovation contribute to skills development by fostering creativity, adaptability, and entrepreneurial mindsets. 	<ul style="list-style-type: none"> - Knowledge exchange platforms, networks, and partnerships can be established to facilitate CE-related learning and information sharing among stakeholders. These platforms provide a space for the dissemination of best practices, case studies, and success stories, enabling individuals and firms to learn from each other and stay updated on the latest advancements in CE practices. 	<ul style="list-style-type: none"> - The state needs to provide an environment where collaboration between educational institutions, industry, and government entities can facilitate the identification of skill gaps and the design of targeted training initiatives. This collaboration ensures that the skills development programs align with the specific needs of the CE, fostering a skilled workforce capable of driving innovation and sustainable practices. - Developing comprehensive skill mapping and reskilling programs for the wide-ranging scope of circular sectors and activities is challenging, and there is a need for national level understanding of the skills required for remanufacturing and related sectors in low-income countries.
Working Conditions and Social Protection	<ul style="list-style-type: none"> - Extending the CE model, lead firms have the opportunity to co-develop with their suppliers and implement transparent monitoring and tracing systems specifically designed to track and ensure better working conditions. - These monitoring arrangements can be integrated into the CE practices, allowing for enhanced transparency and accountability in the supply chain. - By traceability and transparency, lead firms can encourage suppliers to adopt responsible 	<ul style="list-style-type: none"> - The affordance lens emphasizes the role of technology, data sharing, and collaboration in achieving these improvements. Through the use of advanced digital systems and real-time monitoring, the CE can provide the necessary affordances for lead firms to ensure social protection and foster better working conditions within the GVC. 	<ul style="list-style-type: none"> - Collaboration and coordination among various stakeholders, including governments, lead firms, suppliers, and labor unions, are essential to establish and maintain institutional arrangements that support improved working conditions. This can involve the development of industry-wide standards, certification schemes, and codes of conduct. - Strong governance mechanisms are necessary to monitor and enforce compliance with these institutional

	labor practices and improve working conditions throughout the GVC.		conditions. This includes effective inspection and auditing processes, as well as mechanisms for addressing grievances and ensuring accountability for violations.
Gender discrimination and social equity	<ul style="list-style-type: none"> - The transition to a CE model requires a diverse set of skills, <i>offering</i> the potential for skills development and training programs that specifically target women. This can help overcome existing gender disparities in access to training and qualifications, enabling women to participate in new job roles and contribute to the circular value chain. - The CE's emphasis on transparency and traceability <i>offers</i> affordances for addressing gender discrimination. It enables the identification and elimination of gender biases, discrimination, and unfair labor practices throughout the value chain. By implementing monitoring systems and standards, the CE can ensure that gender equity is upheld, and social accountability is promoted. 	<ul style="list-style-type: none"> - Establishing collaboration among diverse stakeholders, including governments, businesses, civil society, and women's rights organizations can leverage their collective expertise and resources to advocate for gender-responsive policies, promote social equity, and ensure that the benefits of the CE are accessible to all. 	<ul style="list-style-type: none"> - There is a need for an institutional environment that supports the development and implementation of gender-responsive policies that promote gender equality and social equity. - This involves establishing laws and regulations that protect women's rights, ensure equal access to resources and opportunities, and address gender-based discrimination in the workplace.

*Informed by Table 1

** Informed by Figure 2.