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## Reclaiming the circular economy: informal work and grassroots power

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### Abstract

Circular economy is a global sustainability strategy pursued by national governments and multinational corporations looking to reconcile ecological concerns with economic growth imperatives. It also finds expression in informal work and community-based initiatives in cities across Europe and Asia. As sites that bring together state and corporate-led initiatives with everyday circular practices and arrangements, the city is fertile ground to examine the environmental politics of the circular economy. Drawing on my fieldwork examining informal recycling work in Indian cities, I argue that in an eagerness to realize the “win-win” sustainability solutions that circular economy promises to businesses and the state, the actual socio-spatial work practices such as waste picking, sorting, and repair, which comprise resource circularity are ignored. Attempts at establishing circular cities are undermined by competing urban sustainability agendas, the lack of recognition of informal expertise, and the fundamental contradiction between accumulative and redistributive goals. Reclaiming the circular economy from green growth will require transformational politics and grassroots involvement, and resisting growth in favor of equity and ecological reparation.

### Keywords

Circular economy, informal economy, waste, cities, value, green growth, diverse economies

### Introduction

The growing realization that piecemeal changes to systems of production and consumption will not shrink ecological footprints to fit within planetary boundaries has drawn more attention to the need for structural changes to the economy (Barbier and Burgess 2017; Costanza et al. 2014; Raworth 2017; Van den Bergh and Kallis 2012; Meadows et al. 1972). Simultaneously, fears that resource scarcity will undercut the economy's capacity to grow and generate profits have intensified attempts to reclaim, repurpose and recycle waste back into inputs for production (Kama 2015; O'Neill 2019; Savini 2019). In a world of limits, waste functions as an important “globalized resource”(O'Neill 2019). Accelerating fears of resource shortages, the search for new productive frontiers of economic growth, combined with the heightened awareness of how waste and plastic pollution contribute to climate change and biodiversity loss have coalesced around the discourse of the circular economy. Various described as a new economic and sustainability paradigm (Geissdoerfer et al. 2017), a materials and energy flow model (Millar, McLaughlin, and Börger 2019), and a new business model (Ghisellini, Cialani, and Ulgiati 2016), it has recently gained prominence as a global sustainability strategy attractive to policymakers and multinational corporations (Geissdoerfer et al. 2017).

So what exactly is the circular economy? The term is used to describe diverse grassroots practices, policy initiatives, industrial processes and business models that seek to move the economy beyond an unsustainable, linear “take, make, use, dispose” model (O'Neill 2019).

Environmental economists and industrial ecologists originally defined it as an alternative economic system that recirculates materials and energy by “closing-loops” (Millar, McLaughlin, and Börger 2019, 13). Closing loops requires sweeping changes to how and where things are made, used and thrown away, implicating every domain of the economy and necessitating new circuits of material flows (Gregson et al. 2015). In this sense, the circular economy is a broad paradigm offering both a vision and pathways for a global sustainability transition (O’Neill 2019). Since its inception, it has been applied and expanded across several fields such as environmental economics, industrial ecology, cleaner production, environmental sociology and behavioral economics (Bocken et al. 2017; Geissdoerfer et al. 2017; Korhonen et al. 2018). Academic engagement with the circular economy has lagged behind business and corporate interests meaning that the term has “more often been celebrated than critically interrogated (Gregson et al. 2015, 20),” a fate shared by many other popular sustainability concepts.

What activities occur in a circular economy? A major emphasis is placed on producer-led efforts “design out” waste and pollution through re-engineering and industrial symbiosis. These tech-focused approaches are complemented by new business models that seek to change how people buy and use materials in their everyday lives, with the goal of extending product life and utility. Also folded into the circular economy are initiatives to expand and upgrade preexisting post-consumer waste recycling programs. In its most abstract and idealized form, the circular economy imagines a world without waste (O’Neill 2019); where any product or material that is no longer of use to one actor in the economy can be made useful or valuable to another. In such a world, instead of buying a cell phone that you discard after a year or two (probably to be shipped off to China or India to be dismantled in the informal economy), you could lease it from a service provider. When the camera breaks or the screen cracks, you could take it into a repair café because your phone is easy to take apart and each component can be repaired or replaced. When you want a new phone, you would terminate your lease, return the phone to the service provider, who might either refurbish it or break it down into its component parts for recycling in a local facility. Every bit of that discarded phone would be converted back into a resource for production and consumption. This is the ultimate promise of a circular economy, to regenerate resources and maximize value continually through economic processes.

Some of this is already happening in cities across the world. The past decade has seen a proliferation of social enterprise and community-led efforts that promote sharing, repair and reuse practices in European cities, aimed at reducing resource consumption and waste generation (Hobson 2015; 2019; Savini 2019; Keiller and Charter 2014). Social movements such as the Right to Repair and advocacy networks like the Maintainers push for laws that force companies to make products that can be repaired easily. Fairphone, an Amsterdam-based social enterprise, makes an easily dismantled smartphone that is made from recycled and fairly-sourced materials. At the same time, resource re-use, repair and recycling practices are widespread across Asia, Africa and South America, where they provide income and livelihoods to waste pickers and recyclers engaged in informal work (Wilson, Velis, and Cheeseman 2006; Gutberlet et al. 2017; Dias 2016; Tucker and Anantharaman 2020) . Many of these informal resource circularity practices are long-standing and represent what Miriam Greenberg calls vernacular sustainability,

i.e. “historically sustained, materially based, and culturally shared ways of life” that make the most efficient use of available resources (Greenberg 2013). Circuits of material flows connect global geographies; informal waste workers in Asian and African cities are frequently recycling discards from consumers in Europe and North America (Gregson and Crang 2015; Lepawsky and Mather 2011).

Beyond vernacular practices and community-based efforts, the circular economy is also gaining purchase as a broader “sustainable development” strategy for governments and businesses. The mainstream popularity of the circular economy is cemented by its presumed compatibility with capital accumulation and continued economic growth (Geng and Doberstein 2008; Webster 2015). Consequently, circular economy plans and indicators are included in urban, regional and national “green growth” strategies in the EU and China (Lieder et al. 2017; Zhijun and Nailing 2007; European Commission 2015). Global development practitioners claim that a transition to a circular economy can save lives and create jobs in low and middle-income countries by improving the conditions of informal recycling and by creating new employment opportunities (Gower and Schröder 2016). Multinational corporations looking to demonstrate their environmental credentials deploy circular economy principles, arguing that profit and planet can be reconciled through more efficient resource use (Lacy and Rutqvist 2015). Extended Producer Responsibility laws have compelled corporate take-back schemes to incentivize the recycling of post-consumer waste. Ikea, Adidas, Coca Cola and H&M are some prominent brands who have avowed to increase the use of renewable and recycled materials in their products.

As a contested concept with diverse enactments, the circular economy is a productive area of scholarship and practice to examine the geographic imaginaries and comparative politics of contemporary sustainability. In this chapter, I explore the tensions between dominant state and corporate-led visions of “The Circular Economy” (henceforth TCE), and informal and grassroots forms of resource circularity in cities across Europe and India. As places that bring together corporate-friendly TCE initiatives with everyday, grassroots circular practices and arrangements, the city is fertile ground to examine the environmental politics of a circular economy. While the state, corporations and other capitalist interests pursue TCE because they see it as attractive “win-win” strategy for reconciling ecological concerns with economic growth and profit accumulation, informal and grassroots circular communities are motivated by alternate logics that prioritize meeting livelihood needs, creating networks of solidarity and revitalizing local economies. Drawing on my fieldwork examining informal recycling work in Indian cities, I argue that in an eagerness to realize the “win-win” sustainability solutions that TCE offers to businesses and the state, the actual socio-spatial work practices that comprise resource circularity are ignored and undermined. Addressing this problem would require the circular economy to be disentangled from profit-motives and the growth-imperative, and for communities and citizens to gain more control and agency over material flows.

#### Dominant paradigm: Promising green growth and sustainable development

State and corporate capital-led “The Circular Economy (TCE)” is the latest avatar of ecological modernization, promising resource conservation and ecological health through social and technological innovation (Geng and Doberstein 2008; Webster 2015). Ecological modernization ideologies contend that technological and social innovation, alongside institutional reforms can

achieve the efficiency improvements required for a more ecologically-sustainable world (Mol 2003). Ecological modernization has long infused EU environmental policy and governance (Selin and VanDeveer 2015). Therefore, it comes as no surprise that the geographic origins of the circular economy are primarily in Northern Europe, which remains the epi-center of TCE knowledge production and policy-making.

Prime amongst TCE boosters is the Ellen MacArthur Foundation (EMF), an influential think-tank that defines a circular economy as one that is “regenerative and restorative by design, and which aims to keep products, components and materials at their highest utility and value, at all times (Webster 2015, 16).” The EMF and allied organizations argue that such an economic system can be created by redirecting energy and material flows, transforming waste into productive inputs and designing out pollution and toxics (Stahel 2016). They assert that with the appropriate infrastructure, technology and business models, materials that were once polluting or dangerous can be revitalized as useful and previously overlooked or unavailable sources of value can be unlocked (Geng and Doberstein 2008). In advocating for a world where the discards of one part of the economy can function as inputs for another, i.e. where “waste is resource” (Savini 2019), TCE seeks to collapse the boundaries between waste/value (Kama 2015) and resource/hazard (O’Neill 2019). TCE proponents thus push to create new markets for waste materials, advocate technical retrofitting to improve efficiency, and propose new pricing models to internalize externalized costs (Stahel 2016). Indicators, measurements and targets have proliferated around the circular economy, reflecting the power of technocrats, engineers and environmental economists (Geng et al. 2012; Pauliuk 2018).

The overarching goal of the TCE is to redesign materials and energy flows within a capitalist system, conserving resources while growing the economy. However, not everyone is persuaded by the ecological promises of a growth-oriented TCE. Ecological economists have long argued that fully or even nearly “closing loops” is biophysically impossible due to the laws of entropy. Moreover, resource consumption rates are still increasing in most of the world, as developing countries build much needed capital infrastructure like roads and electricity grids, and consumption rates rise with growing middle classes (Korhonen, Honkasalo, and Seppälä 2018). Therefore, even if some resources are regenerated through technological or social innovation, the overall demand for resources is still increasing. This point is largely ignored in the TCE discourse because most indicators of circularity emphasize efficiency gains over absolute reductions in total consumption or demand (Isenhour 2019).

More fundamentally, political economists and degrowth scholars dispute the assertion that continuous economic growth can coexist with conserving ecological health or advancing social equity. They contend that expansionism, spatial and material, as well social and ecological exploitation is in the very nature of capitalist economies. Capitalism internalizes profits while externalizing waste and pollution (Kallis, Kerschner, and Martinez-Alier 2012; Patel and Moore 2018). These theoretical and ideological critiques are complemented by empirical research that has found scant evidence to support the claim that absolute decoupling from resource use can be achieved on a global scale against a background of continued economic growth (Hickel and Kallis 2019; Victor 2018; Ward et al. 2016).

Nevertheless, the Circular Economy (TCE) retains a seductive promise to governments desperate in their search for a new sustainability paradigm that charts out a path to decoupling resource use and economic growth. Consequently, mainstream global economic and environmental actors like the European Union, the IPCC, the World Economic Forum, and several UN agencies have embraced the idea. On a global level, the UN Environment Program collaborated with industry associations, investors, NGOs and governments to launch the New Plastics Economy Global Commitment in 2018. The World Economic Forum launched the Platform for Accelerating the Circular Economy (PACE) in 2017, co-chaired by the Global Environment Fund with a secretariat located in the World Resources Institute at The Hague. The Circular Economy is also framed as a climate mitigation strategy in IPCC 1.5°C Special Report (European Commission 2018a). Post the Paris Agreement, many side events of the conference of the parties reference TCE principles, suggesting the integration of the concept into global climate politics and the UNFCCC (Isenhour 2019). In the EU, the Circular Economy (TCE) has risen to the top of regions' sustainability agenda because it promises a synergistic solution to the inter-linked crises of waste accumulation, resource scarcity and stagnant growth (Savini 2019). In March 2020, the European Commission unveiled a sweeping circular economy action plan that covers carbon reduction efforts, economic growth opportunities and risk management approaches, building on an influential 2015 action plan which first put forward the value proposition of a circular economic model to stimulate growth, increase competitiveness and create jobs, all while minimizing and eventually eliminating environmental damage (McDowall et al. 2017).

A major emphasis in these policy documents is addressing the over-accumulation of waste. Waste is the fourth largest source sector of greenhouse gas emissions in the EU, with waste generation rates still rising in one-third of EU member states (Eurostat 2020; EPRS STOA 2017). At the same time, the EU has committed to more ambitious climate targets, necessitating a renewed emphasis on reducing waste generation and enhancing efforts to convert waste back into valuable inputs, a process called waste valorization (Gregson et al. 2015). China, another early adopter, had similar motivations in adopting circular economy principles. The long-time destination for scrap from all across the world, China passed a Circular Economy Promotion Law in 2008, implementing resource conservation and reuse strategies to reduce pollution. One manifestation of this strategy has been the development of eco-industrial parks that perform "industrial symbiosis." For example, in the Suzhou New District, manufacturers of printed circuit boards use copper recovered from waste from in the park, rather than using virgin copper produced by mining firms (Mathews and Tan 2016; Su et al. 2013). Electronic waste containing copper is processed by a specialized recycling facility that employs many (usually poorly paid) workers. The copper is sold to neighboring factories that use it as an input. The two businesses are co-located in the same industrial park, thus avoiding costly and environmentally damaging transport of raw materials for manufacturing.

In both the EU and China, resource scarcity concerns also motivate a focus on reclaiming value in waste. TCE offers a way to retain and reuse resource flows within national, regional and even city borders (Ranta et al. 2018). Seeking to reduce its dependence on imports for critical raw materials, a part of the EU's TCE strategy is to create secondary resource-recovery circuits within its territory (McDowall et al. 2017; European Commission 2018b). Re-localizing materials flows within EU territory will also meet an additional goal of revitalizing the transport and logistics infrastructures rendered redundant by the globalization of production and

concomitant de-industrialization of Europe (Savini 2019). Eschewing the “dirty” global waste trade is another key part of the TCE value proposition in the EU, which overlaps with rising protectionist tendencies in Europe and elsewhere (Gregson et al. 2015).

### Idealized visions, inconvenient realities

While TCE proponents emphasize the “win-win” propositions of the circular economy, a closer examination reveals that in reality, the agenda is beset with competing priorities, unfounded assumptions and naiveté about the ways in which businesses and consumers operate, all of which undercut its promises. Barring a few paradigmatic examples repeatedly cited in the literature, there is scant evidence that the EU has been able to close material loops within its territory, or push industries and businesses to change their production practices (Gregson et al. 2015; Savini 2019). Efforts to extend product-life through re-design, take-back schemes, or product-service systems have also faltered (Hobson et al. 2018). As Gregson et al. (2015, 221) note, while “idealized visions of the circular economy” harken towards a designer and producer-led revolution in industrial production practices, most TCE policy and practice in the EU, China and elsewhere has focused on enhancing post-consumer waste management, sometimes bringing these new initiatives into conflict with existing resource conservation and recycling practices.

So why is the TCE floundering in achieving its vision of industrial and consumer transformation despite its growing mainstream popularity? There is a contradiction to be confronted here. The TCE imagines transformation, but refuses to engage in transformational politics. For the TCE to realize its “win-win” visions of localized closed-loops through a producer-led revolution, it would need to push for fundamental changes to the ideologies and social relations underpinning capitalist systems of production and consumption. Industrial symbiosis and extending product life require structural changes to how businesses operate, how they secure proprietary knowledge and how they organize their work. Product-service systems and sharing economies necessitate new political subjectivities beyond the “user-consumer” (Hobson 2020). But by and large, TCE proponents side-step this contradiction and choose not to criticize the core ideologies and social relations of consumer-capitalism (Genovese and Pansera 2020). Instead, TCE assumes win-win solutions can be achieved through technical or social innovation. Through its emphasis on partnerships, standards and indicators, it makes little room for conflict between groups with diverging or even competing interests. TCE represents a form of ‘post-political global ethics’ (Garsten and Jacobsson 2011) that can at worst silence dissenting voices and cloak exploitation with the language of collaboration, or at best achieve piecemeal changes.

Given this unspoken contradiction, it is unsurprising that much of the examples of TCE shared in the policy and practitioner literature focus on enhancing existing post-consumer waste management systems, coalescing around an agenda for “Circular Cities.” Major circular economy proponents like the Ellen MacArthur Foundation see cities as key to a circular transition, because they are major engines for growth, consume a lot of resources, produce a lot of waste and are incubators for sustainability innovation. Several cities in the EU and China have already adopted urban or metropolitan waste valorization plans, such as *Be-Circular* Brussels redevelopment plan; *Copenhagen Model* for circular bio-waste streams; *Paris Circular Economy Plan* for valorizing waste; the Dutch plan *Netherlands Circular 2050*; among others (Predeville, Cherim, and Bocken 2018; Wang et al. 2018). Many of these schemes look to localize waste

reclamation and recycling processes, bringing back activities previously outsourced through the global waste and scrap trade.

Reclaiming the value in post-consumer waste implicates a broader diversity of stakeholders, namely households and consumers (who produce waste), municipal governments (who are responsible for collecting and processing waste), and also informal recyclers (who reclaim and recycle wastes in global cities), all of whom have received little attention in the literature to date. Post-consumer waste also defies the focus on localism, as many waste value chains are global. Thus, what initially emerged as a European program now has more connection and impact on the lives of informal waste pickers and recyclers in global south cities. Despite this, the spatialities of circular practices (Bassens, Kębłowski, and Lambert 2020) and informal work have received limited critical engagement in the scholarly literature. This is a significant omission as existing global waste value chains are labor intensive and subsidized by cheap, informal labor in Asian and African cities, as well as unpaid household labor by women and domestic workers (Luthra 2020; Wheeler and Glucksmann 2015; Welch et al. 2019). In the following sections, I argue that when TCE plans for enhancing post-consumer waste management ignore the spatial and embodied politics of urban recycling and repair, they can disrupt already-existing circular economies.

### Space, work and expertise in informal recycling

Cities in most of the world house everyday circular economies, whose scale and capacity exceeds state or corporate-led TCE efforts in European cities. Millions of people around the world make their living by extracting value from waste (Chaturvedi and Gidwani 2011; Ezeah, Fazakerley, and Roberts 2013; Gill 2009). These circular actors range from waste pickers and gleaners who work in municipal dumps to extract reusable and recyclable materials from trash to family and community micro-enterprises that aggregate, dismantle, repair and refurbish everything from discarded electronics to old jeans. Most of these activities persist in the so-called informal economy, a shorthand term used by policymakers and the state to refer to economic relationships and value chains that either exist in informal settlements, or are not directly regulated by the state (Agarwala 2013; Coletto 2010). In cities across Asia, Africa and South America, grassroots recyclers have built functioning value chains for recyclables, generating income for themselves, materials for other markets and diverting waste from landfills (Dias 2012; Medina 2005). These value chains are labor-intensive rather than capital driven, conserving energy and resources while creating livelihoods.

Development practitioners have long regarded the informal economy in contradictory ways; informal work is both a primary source of livelihood, and thus key to survival, as well as an activity that produces health and environmental risk, and therefore requires either reform or replacement (Schroeder, Anggraeni, and Weber 2019). Informal work is often precarious. The lack of employment protection and social security renders them vulnerable to market-fluctuations and punitive policies by state agencies and elites (Gidwani and Chaturvedi 2013). Further, many people engaged in waste work come from minoritized social groups within their ethno-racial and national contexts, oppressed along lines of race, caste, religion and gender (Dias 2016; Harriss-White 2017). Finally, working with discards, especially in the context of limited



access to technology, protective equipment or workplace protections, comes with a range of health costs, often disproportionately borne by women, scheduled castes, children and religious minorities (Fahmi and Sutton 2006; Ogando, Roever, and Rogan 2017). These are all parts of the reason why wastes are often shipped to countries like India, China and Malaysia where cheap labor can process it.

Sustainable development practitioners claim that a mainstreaming of the Circular Economy (TCE) can save lives and create jobs in low and middle-income countries by improving the conditions of informal recycling (Gower and Schröder 2016). While several recent reviews have explored the links between sustainable development and the Circular Economy conceptually (Schroeder, Anggraeni, and Weber 2019), empirical evidence of jobs created or lives saved remains limited. Rather, most of these reviews rely on descriptions of pre-existing resource reuse and recycling practices. The social welfare benefits of The Circular Economy are presumed but yet to be demonstrated. Nevertheless, TCE actors, looking to put the valorization of waste into overdrive by upgrading existing circular flows, have turned their inquisitive attention to the informal waste economy. The Ellen MacArthur Foundation's report exploring the potential for a Circular Economy transition to deliver green growth in India introduces the informal sector as follows:

Several aspects of a circular economy are deeply ingrained in the habits of India's people – for example, high utilization and repair of vehicles and distributed recovery and recycling of materials post-use. Often handled informally, these activities provide the only source of livelihood for some of the poorest parts of the population. For example, 60% of discarded plastics are recycled in India, compared to 6% in the U.S., and 95% of this activity happens informally. But these practices tend to happen at the very end of the value chains and amount to scarcity management strategies, with little upstream effort to enable effective recovery. As a result, much of the value is lost...Current practices also create significant negative externalities, including health risks for the waste pickers and large volumes of low-value materials remaining in streets and dumpsites and eventually leaking into rivers and oceans. (Ellen MacArthur Foundation 2016, 20–21).

Unpacking this, it is evident that TCE actors see informal waste recovery practices as inefficient, low-capital and hazardous. They build on development common sense to call for the professionalization of informal waste economies. The dominant logic in the sustainable development literature sees informal recycling as labor-intensive, with much potential to increase “productivity” through technological upgrading and innovation (Schroeder, Anggraeni, and Weber 2019). Improvement schemes often make calls for “collaboration” with the informal sector. The EMF, for example, says the state and business should be “tapping activities of the informal economy (e.g. existing repair and recycling activities for vehicles). (Ellen MacArthur Foundation 2016, 63)” The TCE intervention solution here lies in looking to leverage or incorporate informal actors into circular resource flows in partnership with businesses and public sector actors.

The intentions here are often benign, to improve conditions of work, reduce or eliminate toxic exposure, and increase efficiency of resource recovery using technology (Schröder, Lemille, and Desmond 2020). In practice, however, improvement schemes often only see informal workers as

lacking and deficient, reflecting the cultural, racial and class-based prejudices of many sustainable development practitioners (Tucker and Anantharaman 2020). These deficit-based assessments render informal waste workers and recyclers as incapable of systematic work, lacking technical expertise or susceptible to exploitation, rendering them “abject” (Reddy 2015). Else, they are seen as “passive objects of study” as opposed to active agents producing valuable knowledge and subsidizing the formal economy (Samson 2010). In e-waste improvement schemes implemented in Bangalore, informal actors were eventually confined to collecting and processing waste from marginal frontiers, restricted to performing manual dismantling tasks and prevented from maximizing value through artisanal extraction (Knapp 2016; Reddy 2016). Similar dynamics are observed amongst the Zabaleen in Cairo, who despite being relatively well-organized, lost out to incoming foreign firms (Fahmi and Sutton 2006).

The regimes of control implied in TCE-informal collaborations and improvement schemes deserve careful scrutiny, as do their spatial contours. First, the actual spaces where informal waste work occurs are marked as problem places or nuisance land-uses, territorially stigmatized as dirty, dangerous and polluting (Ghertner 2011). In Indian cities, elites and the state have used environmental and public health arguments to push for the violent removal of informal settlements and small industries from within city limits, ignoring the fact that it is middle class and elite consumerism that generates the growing amount of waste that is reclaimed and valorized in these informal economies (Baviskar 2003). Greening and aesthetic remaking of global cities generates waves of dispossession that enable new forms speculative accumulation (Doshi 2019). If cities continue to criminalize and eliminate spaces where informal waste work occurs, this paves the way for private and corporate enterprises to take over the value extraction and maximization functions. Economies that provide livelihoods and social safety nets become avenues for corporate profitmaking. This fundamentally challenges the proposition put forward by TCE proponents that such initiatives can generate sustainable livelihoods for informal workers.

But informal work is resilient. Research in India shows that urban re-cycling work is resistant to capture, due to the unique expertise held in these networks and communities. Informal economies have endured despite persistent efforts to formalize them, due to their “relative opacity, labor intensity and dependence on embodied knowledge (metis).” (Gidwani 2015). Further, my research in Bangalore reveals that informal work effectively subsidizes formal waste management functions (Biyani and Anantharaman 2017), a finding echoed by critical examination of formalization projects in Uruguay (O’Hare 2020). Waste recovery and recycling is a low-margin activity made profitable through the labor and artfulness of waste pickers, and the ability of small-enterprises to avoid direct regulation by the state. Extracting value from post-consumer waste requires sorting through low or no-value waste, manual dismantling, and other irregular tasks that involve toxic and hazardous exposure. Informal actors are able to stay viable without much capital by charging marginal service fees for pick-up services, relying on their embodied expertise, community resilience as well as capacity for self-exploitation enabled by socially-reproductive relationships of care and coercion (Gill 2009)

Thus, when private companies enter recycling work, they find themselves struggling to make their business models work in the context of waste value chains that contain more low/no-value waste than many new entrants to the recycling game suspect. Privately-run materials recovery

facilities are generally more capital-intensive, operate at larger scales, and have greater technological dependencies (Gregson and Crang 2019). Private sector actors lack embodied knowledge of discards and find that aggregating enough high-value waste to sell at a profit requires dedicating space to storing waste. They are also subject to taxation and pollution control, and struggle to recoup profits. In turn, they resort to underpaying workers or rely on state subsidies, development aid, or venture capital to break even. In the absence of extended producer responsibility, substantial waste management user fees, or upstream changes in product design, recycling is not an easy business to formalize and clean up cost-effectively.

### “Clean and green” vs. circular cities

Socio-ethical or institutional issues, including issues of equity, have not received much consideration in the practitioner or academic circular economy literature (Inigo and Blok 2019; Moreau et al. 2017). Looking at the experience of waste pickers and recyclers in Indian cities reveals a fundamental challenge to the value propositions of the circular economy for sustainable development. The aesthetic and speculative concerns that are integral to global “sustainable” city making in the neoliberal moment undercut already existing circular economies. “Clean and green cities,” that is cities that map onto elite aesthetic registers, try to look “world class” and seek to eliminate “nuisance” land-uses. These cities cannot be “circular cities” because they are constantly trying to expel or enclose the very informal workers and their sites that maximize value by recirculating materials in the economy. Those communities and spaces that are territorially stigmatized and marked for removal house people and processes enable existing practices of recycling and repair. Informal work and life arrangements make these examples of the circular economy possible. Even when recycling becomes formalized, it depends on various forms of socially-reproductive labor by children, women and other “low status” workers that go uncompensated or unaccounted for in traditional metrics of calculating value. The fact that 60% of discarded plastics are recycled in India, compared to 6% in the U.S., is due to “dirtiness,” and poverty, not despite it.

A historical look at the processes by which solid waste management was formalized in the 19<sup>th</sup> and 20<sup>th</sup> centuries reveals that waste pickers and waste workers became more stigmatized as waste became more and more regulated (Dias 2016). The technocratic regimes of control imposed upon infrastructures and urban space have devalued workers, while aesthetic visions of civic modernity render dirt as matter always out of place (Chakrabarty 1991). The instances where waste pickers have managed to retain access to livelihoods have been in circumstances where they have organized both horizontally and vertically to defend their rights (Rosaldo 2019). But these considerations of democratic politics and worker power are largely absent from the discourse on the Circular Economy. If visions of modernizing waste management left no room for waste pickers, criminalizing their work and driving them deeper into the shadows, the expansion of new circuits of value capture brought about by the Circular Economy are likely to do the same, in the absence of explicit intervention to do the opposite.

Global cities in the 21<sup>st</sup> century bring together a growth imperative with sustainability aspirations seeking to resolve the growth/sustainability conundrum (Bulkeley et al. 2010). The future clean and green city, as often rendered in futuristic eco-city plans, is one that combines community

gardens and verdant parks, with sleek looking LEED-certified buildings and water filtration plants. (Wachsmuth and Angelo 2018). Cities in Europe, North America and Australia achieve “clean and green” often by outsourcing environmental harms and impact, while retaining the value from production and consumption (Srinivasan et al. 2008; Wiedmann et al. 2020). Waste economies demonstrate this dynamic clearly. Recycling programs in US and European cities came to depend on exporting waste to China and other Asian and African countries to sustain their business models, so much so that when China banned import of 24 types of scrap, that they termed “foreign garbage”, many US cities shut down their recycling programs (Katz 2019). The global waste trade subsidized urban recycling programs by outsourcing the dirty work. As O’Neill explains, the US has not built plastic recycling facilities since 2003 and very few of its existing plants can cost-effectively process dirty and harder-to-recycle post-consumer plastic (O’Neill 2017). In the UK, China’s ban also had significant impacts on municipal waste infrastructure. Incineration and increased use of manual labor have emerged to manage the waste that has accumulated in materials recovery facilities (Gregson and Crang 2019).

The growth logics of cities are no longer primarily industrial, but focused on service, financial and other sectors. To grow, cities look to attract “creative-class” populations, create “world-class” spaces to house them, and hide the poor in the process. However, a city that seeks to reclaim discards and process them in localized circuits is likely to need to accommodate recycling centers, materials recovery facilities, factories and other forms of land-uses often identified as producing public and environmental nuisance by high-income urban residents. Further excluding the poor also means excluding the very populations who are engaged in resource reclamation, refurbishment and reuse practices, in European, North American and Asian cities alike (Wittmer and Parizeau 2016).

Looking from the Indian cities through the experiences of informal workers reveals key fallacies in dominant TCE logics. First, the TCE, driven by growth and accumulative logics, ignores or exploits the expertise and knowledge of already existing informal circular practitioners in manner that undercuts its stated goals of improving societal wellbeing. Second, the desire for “clean and green” cities is in conflict with real circular spaces and economies, which are often territorially stigmatized as dirty due to class, caste and racial prejudices. Circularizing resource flows within cities is incompatible with neoliberal push to hide and criminalize poverty and create world-class cities that serve as engines for growth in a capitalist economy. Realizing circular cities therefore requires a deeper reckoning with dominant neoliberal logics of growth and world-classness that structure urban spaces and legitimize the dispossession of the poor.

#### Reclaiming circularity, redistributing value

In its dominant form, The Circular Economy functions as a signifier or a discursive device used to indicate or perform the possibility of green growth. TCE, as adopted by capitalist interests, privileges market dynamics and corporate control, restricting the agency and involvement of non-market actors or logics. It is highly compatible with modernist and rationalist thinking, and manifests the technocratic and market-based solutions that characterize most global sustainability efforts. However, like “sustainable development” and other green signifiers, the circular economy is characterized by its discursive and practical ambiguity. Circular economy visions

and expressions can range from micro-level household practices, to paradigmatic shifts in the economic system. Its interpretive flexibility also leaves it open to be reclaimed and resignified.

Seeking to protect their livelihoods threatened by new corporate and state-backed recycling schemes, informal sector actors have tried to brand themselves as circular agents and seek inclusion in these value chains. At the same time, in European cities, grassroots activism is anchoring repair, refurbishment and re-use practices within solidarity networks, resisting attempts to enclose and profit from socially-reproductive work. These instances of resisting TCE and reclaiming circularity in urban spaces offer generative examples to explore ways in which resource circularity practices could be embedded in logics outside the dominant growth and profit paradigm. Instead, recognition of labor and expertise, value redistribution and ecological reparation could sustain diverse and equitable circular economies.

In Bangalore, waste pickers appropriate circular language to convene partnerships with multinational corporations like The Body Shop. Environmental groups have criticized consumer goods companies like the Body Shop for exacerbating marine plastic pollution. Seeking to demonstrate environmental responsibility and corporate citizenship The Body Shop has committed to increasing the use of recycled plastic in its products. Waste pickers, represented by a range a range of intermediary actors, which include global charities, transnational NGOs and social enterprises, are partnering with these CSR schemes. Inclusion involves essentializing themselves as environmental entrepreneurs and highlighting their tactile and sensory knowledge of waste (Anantharaman, unpublished). This form of claims making leverages an increasingly important sustainability discourse to rebrand spaces, work and expertise in language that resonates with green growth values. In this partnership, an intermediary for-profit social enterprise called **Plastics 4 Change** (<http://www.plasticsforchange.org>) facilitates corporate-informal relations. Plastics 4 Change has worked with waste pickers in Bangalore to obtain Fair Trade certification for what they term “community-recycled” plastic, which then enables waste pickers to demand higher prices for their recyclable materials.

TCE optimists argue that new supply chains directly connecting informal sector recyclers with product manufacturers can be a potent force for poverty alleviation by enabling waste pickers and recyclers can obtain more stable incomes and better prices for their recyclable materials (Schröder, Lemille, and Desmond 2020). Circular Economy initiatives can also support up-skilling (Gower and Schröder 2016). A case-study of informal-corporate partnerships in plastics recycling in Nairobi identifies “economic incentives, trust building measures, and a general willingness to learn and adapt” as necessary for fruitful supplier-buyer relationships between waste pickers and corporate actors (Gall et al. 2020). But these pre-conditions are surprisingly hard to realize and require intentional engagement.

Critical scholarship on informality suggests that establishing trust in the context of cultural and racial prejudice requires face-to-face interactions, contesting negative narratives about informal actors and recognizing their expertise and specialized knowledge (Dias 2016). This brings the politics of the circular economy into the realm of cultural and epistemic recognition as a key component in environmental justice (Schlosberg 2004). As long as the informal sector is approached through a deficit-based lens that highlights what it supposedly lacks, and elites retain

decision-making power, partnerships are bound to fail or reproduce inequity. Building on recognition, governance processes also need to pay heed to principles of procedural justice. Waste pickers and recyclers should be able to lead governance and decision-making processes that impact their livelihoods, be those spatial planning decisions, changes to the waste management system or new regimes of global governance emerging around plastics and other wastes/resources. This will require more negotiation forums at multiple scales for the member-based organizations that represent waste pickers and other informal sector actors in these arenas (Carré et al, 2018).

Recognition of informal expertise entails the redistribution of value towards waste pickers (Tucker and Anantharaman 2020). Ultimately, if the circular economy is to contribute to the Sustainable Development Goals (SDGs) of poverty alleviation (SDG 1) and decent work (SDG 8), it has to redistribute value towards the informal sector, as opposed to away from it; waste pickers and informal recyclers should be able to retain most, it not all the value maximized through the implementation of circular principles and practices. Pragmatically, partnerships have to substantially increase incomes to retain stable collaborations (Gall et al. 2020). This will require upstream actors, be it multi-national companies or social enterprises, to think beyond profits. Instead, these actors will have to convene collaborations with informal sector actors guided by other principles such as socio-ecological reparations (Patel and Moore 2018) and polluter-pays doctrines. New forms of incorporation and certification for private sector actors, such as certified B corporations, also open up opportunities for firms to collaborate with informal recycling communities in order to meet environmental and social goals. Realizing redistributive circular economies suggests a reinvigorated role for public funding in supporting informal workers and enterprises. For instance, public funding to upgrade recycling facilities in the informal sector could serve to reduce toxic exposure while increasing extraction efficiency. New international cooperation programs and global mechanisms could also play an important role in funding initiatives to improve the occupational health and well-being of informal workers (Schroeder 2020).

In the absence of more focus on redistributing value, confronting corporate and state power, and abolishing prejudice against informal actors, the circular economy as a new sustainability paradigm is fated to reproduce the injustice of its antecedents, such as sustainable development, green economy and the like. Indeed, the circular economy's emphasis on maximizing value and utility holds promise for addressing both ecological harm and social inequity, but only if these value chains are convened in a manner that prioritizes improving the incomes, work conditions and educational opportunities of informal workers. To date, these equity and justice goals have played second-fiddle to the "green growth" agenda which motivates corporations to capture the value being maximized through new business models or technical retrofits. Circular economy programs that are driven by an ethic and practice of reparation would redistribute resources and power towards informal actors, and disentangle value maximization from corporate growth or accumulation goals. Simply put, the circular economy can be an ecological and equity win-win, but only if it abandons its emphasis on growth and profit.

### Diverse circular economies

What lessons for creating reparative and equitable circular economies can be gleaned from European cities? If Indian cities shed light on issues of urban space, informal work and expertise, critical examinations of the circular economy in Europe reveals the importance of thinking about the role of community, grassroots power and political subjectivity in reclaiming the transformative potential of resource circularity principles to reduce environmental harm.

If mainstream TCE efforts are struggling to transform consumption practices due to their narrow conceptions of human agency and political subjectivity (Hobson 2020), everyday and grassroots instances of circularity might offer more promise. In the very European cities where TCE is most dominant, resource re-use, sharing and refurbishing practices exist in informal networks as well, (Holmes 2018). Theorizing everyday circularity as expressions of diverse, more-than-capitalist economies (Gibson-Graham 2008), scholars seeking to reclaim the circular economy's radical and redemptive potential have argued that some of these practices offer examples of the ways in which ordinary people, in their everyday lives resist the commodity, or even growth logic (Hobson 2015).

For example, activist networks in European cities seek to resist corporate control and growth-emphasis in TCE by embedding them within networks of solidarity. A prime example of this is the repair café movement (Keiller and Charter 2014). Repair café and other repair movements have raised the clarion call of “right to repair”, in criticism of both how manufacturers design products for the dump, while also protesting the criminalization of repair practices by companies seeking to protect their proprietary knowledge (Callahan 2019; Graziano and Trogal 2016). Instead of enabling the extension corporate ownership and control over all aspects of the value chain, “right to repair” activists call for the redistribution of technical expertise as well as social value through collective efforts, re-animating democratic practice in systems of provisioning (Hobson and Lynch 2016). Some of these initiatives also seek to combine local resource flows with localized flows of money. Alternative currencies connected to circularity agendas have emerged in Amsterdam, where participants can exchange plastic waste for digital coins that can be used locally for discounts or products through an initiative called **Wasted Plastic** (<https://wastedlab.nl/en/#introduction>). Another example is **United Economy** (<https://www.unitedeconomy.nl/hoer-werkt-het-2/>) a B2B mutual-credit initiative where members adhere to rules that promote the retention and circulation of money in participating sustainable and social enterprises. These examples suggest how everyday spaces of circularity can function as generative spaces to explore alternative economic arrangements more in alignment with degrowth and social equity (Hobson and Lynch 2016).

Exploring the discursive and material expressions of the circular economy in diverse urban contexts, this chapter highlights how a concept or movement whose conceptual origins and community expressions are most often associated with northern Europe, articulates with environmental, urban and labor politics in India. Holding idealized discourses of the Circular Economy in relation to actual expressions of resource circularity that exist in cities enables a critical examination of the politics of the circular economy. This chapter has argued that while the idealized and growth-focused Circular Economy (TCE) constitutes a new kind of hegemonic

expertise that threatens to appropriate or displace what many people already do, everyday circularities and recycling practices are resistant to appropriation.

Fundamentally, the politics of the circular economy come down to struggles around who has a right to the value maximized in secondary resource recovery, a theme that is pertinent in both European and majority world cities. Reclaiming the circular economy from the failed promises of ecological modernization would entail embedding resource sharing, re-use, refurbishment, maintenance and recycling practices in social and solidarity economies, creating new circuits of value that are ecologically and socially reparative, as opposed to accumulative. Public funding and global cooperation will need to play a reinvigorated role in governing the circular economy to democratize its expressions and realize its value for ecological health and equity, as opposed to growth and profit.

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