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How to construct in circles? Insights from ecofeminist political economy for circular urban development

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This paper explores the critical-emancipatory potential of circular construction approaches in achieving sustainable and just urban futures. Drawing on ecofeminist political economy perspectives, the study argues that meaningful social-ecological transformations require more than mere resource optimization and waste reduction. By problematizing capitalocentric and technoscientific biases, the analysis based on a German case study highlights the need for systemic change that addresses entrenched inequities and power structures. The empirical focus is on a handbook published by the State Institute for Environment Baden-Württemberg (LUBW), which exemplifies current circular construction practices and their limitations. The study concludes that integrating critical feminist perspectives is essential for envisioning and implementing alternative visions of urban circularity that promote social-ecological justice and community well-being.

Keywords: circular cities, circular construction, social-ecological transformations, ecofeminist political economy

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Introduction

Amidst escalating social-ecological challenges posed by contemporary urbanization patterns, many cities and regions have recognized the need to move away from their current development approaches. Urban actors are increasingly referring to concepts of the circular economy (CE) (Dąbrowski et al., 2024), which envisage regenerative societies where materials and their value are maintained for as long as possible (Wuyts & Marin, 2022). This has led observers to speak of a real hype surrounding urban circularity. For example, Bassens et al. (2020, p. 893) determine that "the CE has come to town". In this context, cities and regions are framed as pivotal players in the far-reaching social, political, and economic changes this transformation entails (Bassens et al., 2020; Dąbrowski et al., 2024; Kębłowski et al., 2020). After all, urban and regional decision makers are responsible for a wide range of policies relevant to promoting CE, including waste management, environmental protection, and spatial planning. Against this backdrop, construction has been identified as an important area for circularity efforts (Dąbrowski et al., 2024) as its intensive consumption of natural resources and energy, coupled with substantial waste generation, currently leads to significant social-ecological consequences (Purchase et al., 2021).

Yet, despite the considerable and largely euphoric attention that the CE has received from policymakers, businesses, and academia, there has been controversy among critical scholars as to whether such models will actually address the root causes of current social-ecological issues and bring about an overall societal system change. On the contrary, it is suggested that CE approaches could reproduce a capitalist, growth-oriented business-as-usual model in a techno-managerial fashion (Bradley & Persson, 2022; Leipold, 2021; Rask, 2022). Building on related debates, this article examines the critical-emancipatory potential of circular construction (CC) approaches in Germany by analyzing a pivotal CC-handbook published by the federal state of Baden-Württemberg (LUBW, 2025a) explicitly addressing practitioners from planning, construction management and public administration.

For this purpose, this paper adopts a feminist-ecological perspective, which enables the problematization and countering of capitalocentric and technoscientific biases (Morrow & Davies, 2022). Specifically, perspectives from ecofeminist political economy (EPE) are utilized, as these approaches provide valuable yet frequently overlooked insights into the foundational logic of the current state of unsustainability (Saave, 2025). An EPE lens also promises to "change […] the line of vision to be taken […] departing from the technical-technocratic focus and adopting a way of life and production that does more justice to human beings and most probably also to nature" (Bauhardt, 2022, p. 92). By rethinking circularity accordingly, the article aims to move the debate on urban circularity and CC beyond mere resource optimization and waste reduction towards emancipatory development models that genuinely address and transform the entrenched inequities and power structures that challenge sustainable urban futures.

The structure of the article is as follows: First, it discusses CE debates in the context of construction and introduces critical perspectives on urban circularity efforts. Secondly, it refers to insights from EPE to establish an emancipatory theoretical reference point, focusing on society-nature relations, the economy, and labor as key dimensions. Building on this, the paper provides insights into the empirical material chosen and the analytical framework used for the qualitative analysis. It then presents the results of this analysis in detail. Finally, the article discusses the empirical findings considering the insights from critical urban CE debates and feminist-ecological theory introduced earlier.

“The CE has come to town”

Cities and urban regions are a key contributor to current social-ecological crises (Kębłowski et al., 2020) as they constitute epicenters of resource consumption, waste production and greenhouse gas emissions (Marjanović et al., 2022). At the same time, the effects of climate change, biodiversity loss, and environmental degradation caused by industrial and real estate activities are clearly being felt in these areas. Many cities are also experiencing severe housing crises, which are exacerbated by financialized property markets and urban population growth. New approaches to urban and regional development are therefore urgently required (Dąbrowski et al., 2024). In this context, one alternative vision of urban social-ecological practices that is gaining popularity among policymakers is the CE (Kębłowski et al., 2020). As there are currently many definitions and interpretations of the CE, it serves as an abstract conceptual vision (Wuyts & Marin, 2022) or a vague horizon (Corvellec et al., 2022) for societal transformation. CE perspectives are based on business models that reject a linear “take-make-waste” approach (Cossu & Williams, 2015, p. 2). Instead, their overall aim is to achieve a regenerative, restorative economy (Bassens et al., 2020) through the creation of slow and closed resource loops (Berry et al., 2022) that keep resources—e.g. materials, energy, water, and land (Williams, 2019)—in use for as long as possible through reducing, reusing, recovering, repairing, and recycling (Bender & Bilotta, 2020; Pansera et al., 2024). CE approaches thus promise to minimize waste generation and resource consumption (Dąbrowski et al., 2024) and to preserve product and material value (Pansera et al., 2024) in order to decouple economic growth from negative environmental impacts (Corvellec et al., 2022).

Why and how to construct in circles?

The construction sector is closely linked to cities (Dąbrowski et al., 2024), and, given current urban development patterns, its impacts are becoming a global issue (Chen et al., 2021; Ross, 2020; Shooshtarian et al., 2022). Hence, the idea of a CE has gained significant traction particularly within the construction sector in recent years (Pomponi & Moncaster, 2017) and has been recognized as an auspicious strategy for achieving sustainability within this industry (Ogunmakinde et al., 2022). For example, German construction utilizes a large portion of natural resources (90 % of mineral raw materials extracted domestically), produces great amounts of greenhouse gas emissions (40 %) and generates considerable quantities of waste (54 %) throughout the lifecycle of buildings (Hillebrandt et al., 2024). This sector currently adheres to the linear logic, that CE approaches promise to overcome, in an almost paradigmatic way. Specifically, in the case of construction, its functioning can be aptly described using the keywords “mine-build-discard” (Purchase et al. 2021, p. 4), which refer to the following sequence of steps:

> [T]he phases […] start with the extraction of raw materials from the environment, that are then processed into becoming construction materials and assembled in the construction site, in ways that cannot be deconstructed, becoming obsolete at the end of life of the building, having to be disposed in landfills or incinerated (Benachio et al., 2020, p. 2).

By contrast, construction projects in a CE model should be designed to minimize waste and pollution, and to encourage the reuse and recycling of construction products as well as materials (Ossio et al., 2023). The aim of CC is thus to implement these practices throughout the entire life cycle of a building in order to keep materials in the resource flow for as long as possible and reduce the influx of new ones (Benachio et al., 2020). Chen et al. (2022, p. 2) identify three strategies that should be pursued regarding these loops: I) “slowing” by extending the service life of buildings, II) “closing” by recycling building components, and III) “narrowing” by increasing design and construction efficiency. Although CC proponents are

optimistic about its potential to contribute to sustainability, levels of circularity remain low in practice at the moment. Purchase et al. (2021) estimate that currently more than 75 % of waste generated by the construction industry is neither reused nor recycled. The barriers identified are legal (policy and governance), technical (technological limitation, quality and performance), social or behavioral (knowledge and information) and economic (costs). However, beyond these practical obstacles, there are also profound theoretical debates ongoing which demonstrate conceptual pitfalls of urban CE-efforts.

Capitalocentric, technoscientific circularities

The criticism of circularity in urban development is growing louder and is joining the lively debate surrounding the transformative potential of the CE in general. Skeptical voices point out that many cities are using the idea of circularity as a new "urban sustainability fix" (Dąbrowski et al., 2024, p. 19) trying to create business opportunities and boost competitiveness and productivity (Kębłowski et al., 2020). In doing so, they render the CE apolitical by situating it in a profit-driven economic model (Bono et al., 2024), and accepting the aforementioned decoupling narrative (Pansera et al., 2021), which promises green growth (Corvellec et al., 2022). This capitalocentric narrative reconciles the idea of endless economic growth with environmental sustainability (Pansera et al., 2021) through, for example, efficiency improvements (Berry et al., 2022). Instead of establishing alternative economic systems, it focuses on reforming the current capitalist growth model (Bradley & Persson, 2022), creating the illusion that urban regions can transition from a linear, extractive economy simply by promoting new business models in specific sectors (Dąbrowski et al., 2024). Furthermore, critical voices emphasize that cities' adoption of CE visions has been technically oriented (Bassens et al., 2020). While the number of corresponding strategies and policies is constantly increasing, these efforts tend to focus on, for example, technological and infrastructural requirements for waste recovery (Dąbrowski et al., 2024; Wildeboer & Savini, 2022). In general, CE discourses have been criticized for being based on a technocentric paradigm (Ashton et al., 2022), which frames the implementation of CE as a purely technical endeavor. This has led to the dominance of techno-managerial perspectives that propagate technology and innovation as vital for CE transformations (Pansera et al., 2021).

While circular city approaches prioritize economic and technological dimensions, they ignore the actual entrenchment of circularity within urban societies (Bassens et al., 2020). They rarely take social aspects into account (Dąbrowski & Wandl, 2024; Kębłowski et al., 2020) and overlook questions about what kind of CE should be pursued, how, where, as well as by and for whom (Dąbrowski et al., 2024). However, it is important to recognize that economies are embedded in society and do not constitute a separate sphere: "The inherent connectedness of market and society means that attempts to circularize economies may also involve the transformation of social relationships and institutions" (Berry et al., 2022, p. 1227). The fact that the social impacts of CE efforts are primarily assessed based on their potential for job creation demonstrates an absence or simplistic understanding of social aspects in urban circularity (Palm et al., 2024). This quantitative approach neglects the quality and distribution of labor, the devaluation of caring activities, the meaningful participation of workers (Pansera et al., 2024), as well as the implications for vulnerable groups (Palm et al., 2024). The same applies to the view of citizens' roles and their involvement. Emphasis is usually placed on major urban stakeholders, as well as on digital and data-driven approaches (Kębłowski et al., 2020). Consequently, citizens are relegated to the position of passively accepting practices formulated by designers, engineers, economists, and policymakers (Corvellec et al., 2022). This goes hand in hand with a fundamental lack of reflection on who gains and who loses if a circular transformation is implemented (Pansera et al., 2024). By contrast, critical scholars advocate putting social justice at the center of urban circularity initiatives and explicitly

addressing the equitable distribution of benefits, costs, and risks (Bono et al., 2024). Without this commitment, circularity practices risk reproducing or exacerbating the same types of inequality inherent in linear systems (Berry et al., 2022) and indispensable to their functioning (Pansera et al., 2024).

Ecofeminist political economy: Let's make circularity emancipatory!

Considering the above-identified capitalocentric and technoscientific biases as well as the gaps concerning societal relations within current urban circularity efforts, critical theoretical concepts are needed to foster more emancipatory understandings, designs, and outcomes. Feminist-ecological approaches offer a promising point of reference for questioning and reframing CE frameworks (Pla-Julián & Guevara, 2019). In particular, ecofeminist political economy (EPE) provides vital insights for promoting just social-ecological transformations (Köhnke et al., 2024; Saave, 2022), as it puts forward a detailed critique of current economic systems and proposes an alternative approach that focuses on meeting human needs in an ecologically and socially sustainable way (Mellor, 2017).

Of particular interest for CE debates is the fact that EPE demonstrates that the economy comprises more than its traditional definition suggests (Saave, 2025). Maria Mies (1986/ 2014), a central figure in the ecofeminist field, illustrates this impressively by developing the *iceberg model of the dominant economy*. Through this model, the sociologist highlights that the term economy usually refers to the formal and monetized "growth economy", in which commodities are produced and traded solely for the sake of generating market profits. Using the iceberg metaphor, she compares production—this means capital and waged labor—to the visible tip above the waterline. Thereby, Mies (2014, p. 225) shows that this represents only a small part of the capitalist economy and heavily relies on the invisible part of the economy "below water"—unwaged reproductive labor: for example, care work in the household or community, ecological processes and resources as well as the informal economy (Saave, 2025). In other words, although underwater represents activities and processes that are often not perceived as economically productive, markets and profit generation fundamentally depend on the exploitation of these unrecognized and undervalued labor and inputs (Collard & Dempsey, 2020): "All costs capital refuses to pay are relegated to this invisible economy or 'externalized'" (Mies, 2014, p. 225). This comprehensive understanding of the economy goes hand in hand with an extensive conceptualization of labor: While the satisfaction of human needs is considered an almost irrelevant by-product of capital accumulation in the growth economy (Mies, 2014), the EPE aims to overcome "the money and profit boundary in economic thinking and the purely economistic notion of wealth" (Mellor, 2017, p. 93). Thus, ecofeminist perspectives seek to take into account all economic activities that are involved in meeting human needs and sustaining the natural environment (Mellor, 2017), regardless of whether they are paid or unpaid, organized in the public or private realm (Bauhardt, 2022). This acknowledges the pivotal contribution that reproductive and care work make to human societies "as they create the conditions for well-being and flourishing" (Mellor, 2018, p. 116).

These alternative definitions of economy and labor constitute the foundation of EPE's elaborated analysis of the intertwined character of societal injustices and destructive society-nature relations. Corresponding approaches demonstrate the analogy between the exploitation of subordinated groups—along the lines of e.g. gender, race or class—and nature (Bauhardt 2018). EPE perspectives reveal that production in racist patriarchal capitalism is not self-sustaining but rather depends materially on appropriating the seemingly non-economic (Bauhardt, 2018; Köhnke et al., 2024; Saave, 2025). Thereby, they disclose naturalization as the underlying logic of this exploitation and oppression of unpaid or underpaid reproductive labor and the natural environment (Dengler & Strunk, 2022; Köhnke et al., 2024). With

reference to the naturalization argument, ecofeminist perspectives highlight the fact that work performed by women and other feminized subjects is deemed non-economic and unproductive, and is thereby considered a part of nature (Köhnke et al., 2024; Mies, 2014). Such activities are then treated as an infinite, freely available natural resource, akin to minerals, water, soil or air (Bauhardt, 2018). That naturalization, as well as the exploitation of nature itself, relies, on the other hand, on:

> binary foundational assumptions which group care and the environment together with femininity and regard both as less valuable and secondary to the masculine-coded realm of paid work, economic growth and monetary exchange (Köhnke et al., 2024, p. 316).

Furthermore, EPE approaches emphasize the vital role that science and technology play in justifying and enabling the appropriation of nature and reproductive labor. Thus, they remain critical of technological fixes—attempts to solve ecological issues by technological means (Foster, 2021). This does not equate to a general "technophobia" or total rejection of everything technological, but rather implies a case-by-case judgement and to "put technology through [a …] critical filter […]: How useful is it? How sustainable? How democratic?" (Feder, 2019, p. 47).

The EPE's comprehensive understandings of the economy, labor and societal relations (to nature) could provide direction for addressing the capitalocentric, technocentric and apolitical tendencies in current urban CE efforts (see previous section). In the following, these concepts will provide the basis for an analytical framework through which to examine current CC efforts and their (implicit) foundational assumptions.

Material and method

To develop a better understanding of current empirical perspectives on CC in Germany and to highlight the critical potential of EPE, an analysis was conducted on a practical manual: The selected material is the 116-page document *Achieving Success in Circular Construction: A Handbook for Decision-Makers, Construction Managers and Planners* published by the *State Institute for Environment Baden-Württemberg* (LUBW) first in German (LUBW, 2024) in October 2024, with an English translation (LUBW, 2025a) published in March 2025. The manual is divided into three sections: Part I provides an introduction to the topic of CC. Part II explains how to implement it in practice and includes checklists. Part III discusses how to integrate CC into public tenders and includes text modules.

The handbook (LUBW 2025a) was chosen for analysis because, by explicitly targeting construction managers, planners, and administrators, it can offer valuable insights into the development and implementation of policies and practices at a regional level. The fact that it was published by the LUBW was another decisive factor. The LUBW is an independent public institution and state agency (LUBW, 2025c), responsible for carrying out and evaluating measurements in the fields of environmental protection and nature conservation. It also advises the state government and environmental authorities in Germany's federal state Baden-Württemberg (LUBW, 2025d). The LUBW is actively pursuing the topic of CC and runs its own *Innovation Center for Circular Construction*. The latter acts as a platform to inform and connect stakeholders in administration, business, and research, as well as interested professionals, in order to foster the generation and dissemination of scientific and practical knowledge in this field. The center also aims to promote interdisciplinary cooperation and raise awareness among planners and construction managers (LUBW, 2025b). Hence, the handbook reflects regulatory and institutional frameworks at a federal-state level. The case study therefore promises insights into how governmental bodies in Germany understand CC and the approaches used to foster it.

As methodological framework the qualitative content analysis (QCA) approach, as outlined by Schreier (2012), was adopted. This interpretive method enables the systematic description and explanation of the latent meanings of selected texts using a coding frame (Schreier, 2014). After selecting the material, a coding frame was developed through a mixed inductive-deductive process. This involved deductively deriving the three dimensions/main categories "economy", "labor" and "society-nature relations" and subcategories such as "formal/informal economy", "paid/unpaid labor" and "understanding of social-ecological crises" from the theoretical debates (see previous section) outlined above. Afterwards, grounded theory-inspired exploratory open coding was applied to all the data in order to inductively assess the relevance of the theory-based dimensions and subcategories, as well as to further differentiate the coding frame by adding subcategories. The material was then divided into relevant units of coding. Following discussions of the frame and selected excerpts from the handbook during two data sessions, the main analysis and interpretation were conducted.

Results: professional pioneers in the service of ecological crisis management and value creation

The presentation of the empirical results is organized as follows: First, the logic of the empirical material is depicted in terms of its structure, components and the tone in which it addresses the reader. Then, the understanding of the ecological crises conveyed by the analyzed handbook is described, illustrating its apolitical, economy-focused conceptualization of current society-nature relations. Next, the market-centered perspective on the economy found within the document is delineated. The final section outlines which forms of (waged) labor are addressed in the handbook and how.

Logic of the handbook: mobilizing individual pioneers

The handbook *Achieving Success in Circular Construction* (LUBW, 2025a)[1] aims to disseminate CC and identifies numerous current obstacles to its wide implementation, including a lack of CC-centered planning processes, practical know-how, clear responsibilities and legal obligations. It also lists issues relating to comprehensive markets and data availability (pp. 24-25). To address and reduce those challenges, the document aims to mobilize "individual pioneers" as problem solvers (pp. 24, 25), who can and should shape the future (p. 6). As a motto the handbook states: "Get started now! Make a contribution to the construction transition" (p. 12).

The manual employs two strategies to this end: First, it aims to inform, convince, and equip readers—particularly decision-makers and construction managers—with the knowledge needed to "create an environment for circular construction" (p. 4). The text provides potential forerunners with the practical insights and pragmatic arguments necessary to overcome, among other things, the time- and energy-consuming "justification work", involved in the promotion of CC (p. 24). It showcases, for example, levers to accelerate CC at the project and municipal levels (pp. 25f, 30) and motivates stakeholders by referencing the professional benefits they could receive while fostering CC such as gaining an eco-pioneer image (p. 19) or staying ahead of future regulations (p. 12).

Second, the handbook intends to provide technical instructions and support for planners, construction managers, and public administration/contracting authorities (pp. 31, 66). To show readers how to successfully implement CC in practice, the manual makes an extensive toolbox available. This includes, for instance, an overview of how circularity is applied throughout all

[1] The following results section references LUBW (2025a) for all page numbers cited.

performance phases of construction projects in written, tabular, and checklist formats (pp. 32-47, 72-85). Additionally, the text provides descriptions of the quantitative measurement and digital documentation of circularity in construction. For example, it offers a step-by-step guide to creating a building resource passport (pp. 27-29, 52-57). The text also presents the potential pioneers with ideas and tips for choosing circular materials and construction methods (pp. 48-51), examples of best practice (pp. 62-65), and details on the current relevant legislation (pp. 12-17, 67f) including text modules for public invitations to tender (pp. 69f, 86-102).

Society-nature relations: solving the (social-)ecological crisis

As part of its informational and persuasive mission, the handbook delineates why the wide dissemination of CC, that it pursues, is vital. Specifically, it outlines the ecologically destructive impact of current construction activities based on what the document calls the "'take-make-waste' principle" of the "disposable economy" (p. 7). This describes a linear model in which resources are "taken from the environment to manufacture products" that are disposed of after use. Thereby, the manual highlights three key environmental challenges (pp. 9-11):

> [T]he construction sector makes a significant contribution to German greenhouse gas (GHG) emissions and is one of the most resource-intensive economic sectors. More waste is produced in this field than in any other economic sector (p. 9).

To address these severe ecological issues, the document proposes adopting CC as a design, planning, and construction method, as it is committed to minimizing resource use, emissions, waste generation, and energy loss (pp. 20, 106). Thus, CC is portrayed as a "guide for sustainable change" (p. 6)—more precisely, as a "part of sustainable construction" that aims for simultaneously addressing the ecological, economic, and sociocultural qualities of buildings (p. 17):

> Although circular construction cannot negotiate the transformation of the construction industry to sustainable and climate-friendly processes on its own, it is a crucial component for this development (p. 11).

Even though the handbook presents CC as an "important approach for achieving subgoals of sustainable construction" (p. 17), its depiction of the tripartite "holistic view" of sustainable construction is abbreviated to ecological topics such as climate protection, climate adaptation, and optimized resource use (p. 17). Consequently, the manual primarily focuses on CC's potential to enable environmentally friendly economic activity (p. 8) that avoids "interventions in the landscape" and promotes biodiversity (p. 11). But while labeling CC a "building block on the path to climate neutrality and the conservation of resources" (p. 25), the document does not use normative arguments to advocate for environmental protection. Rather, it frames CC instrumentally as a means of achieving the federal goal of becoming climate neutral by 2045, as set out in the German Climate Protection Act (p. 12). Furthermore, the social dimensions of CC are severely neglected throughout the document. One of the few sections that touches on these aspects is a subordinate clause on "golden energy" (p. 20), and a subsequent glossary definition as "intangible, cultural assets […] tied up in existing buildings" (p. 104). These attempt to convey that preserving diversity in building culture holds "cultural, social, atmospheric and emotional added value" (p. 20).

The description of the issues that CC needs to counteract, alongside a superficial and reductionist depiction of social aspects, reveals the document's apolitical approach to the proneness of present societal relations to nature. It frames the contemporary social-ecological crisis as an economically solvable problem of environmental degradation.

Economy: adding value

This pragmatic and instrumental understanding of the currently critical society-nature relations and CC's role within them is accompanied by a reference to CE as a significant concept. Examining how this approach is conveyed provides insight into the handbook's market-centered understanding of the economy. The manual considers the formal construction sector (p. 9) an "integral part of the circular economy" (p. 7) and describes the latter as an alternative "model of production and consumption" (p. 103). Unlike the linear economy, the CE considers the entire economic cycle "from design to production and use to waste recovery and disposal" (p. 7). The text emphasizes that the CE aims to extend the life cycle of products and keep resources and materials in circulation for as long as possible (p. 7)—in other words, to use them productively "again and again in order to continue to generate added value" (p. 103). Thus, it focuses more on the formal, monetized part of the economy. Alternative economic concepts that do not focus on surplus value generation or growth are not discussed in depth. For instance, "sufficiency" is treated similarly to golden energy. Although the former term is introduced as an important aspect of CC, it is only marginally addressed (pp. 11, 20, 106) and remains briefly summarized with the slogan "less is more" (p. 20).

In contrast, the handbook thoroughly discusses economic aspects, in terms of financial pros and cons, from the perspective of professional stakeholders or institutions (p. 18). It mentions "additional costs" arising from the CC implementation (p. 18) and explains these with the phrase "time is money" (p. 24). This is, according to the text, because CC currently "represents new territory for many construction projects" resulting in additional planning effort (p. 18). Moreover, the handbook states the cost-intensive use of circular materials, citing expensive prices due to high-quality production, low sales figures, and limited availability (p. 18).

Focusing on financial benefits, the emphasis is put on cost-effectiveness throughout the life cycle of buildings (p. 18). For example, this applies to long-term "cost savings" regarding circular manufacturing, maintenance and deconstruction (p. 18). These savings are considered to make CC economically competitive: "When viewed holistically, the advantages of circular construction are already clear today" (p. 18). Additionally, residual value deduction (p. 18), advantages when applying for state funding, and increased investment attractiveness (p. 19) are stated as financial incentives of CC. Furthermore, the handbook mentions that CC avoids subsequent costs of construction projects, such as the climate impact of corresponding CO_2 emissions and damage to biodiversity. It underlines that these impacts are not usually considered. In this context, however, the reference to negative ecological consequences is primarily instrumental and relies on translation into monetary value. For example, the CO_2 shadow price, which is calculated in Baden-Württemberg when state properties are planned, is brought into play (pp. 18f).

Thus, the document propagates—regarding the macro-level of the economy, the meso-level of regional institutions as well as the micro-level of individual stakeholders—a profit- and monetary value-centered understanding of what CE/CC practices could look like and why they are worthwhile. This also affects which types of labor are addressed in the handbook.

Labor: designing, planning, and constructing

To trace the conveyed understanding of labor, it is useful to look at how CC should be implemented. According to the manual, there are three approaches that must be simultaneously adopted to "exploit the full potential" (p. 20): The first strategy, "preserve and upgrade existing stock" (p. 8), involves slowing down resource flows (p. 22) by "extending the lifetime and period of use of buildings, components and materials" (p. 20). The handbook

concludes that this approach should be prioritized, as it offers the “greatest and most immediate potential for savings in terms of resource and energy consumption” (p. 20). The second approach, “reuse of resources” (p. 8), represents the idea of closing resource loops (p. 22). This strategy directly conserves resources by reusing and recycling materials and components already in circulation (p. 8) “in order to intensively utilize” them (p. 21). The third approach, “resource-conserving design” (p. 8), entails narrowing resource flows (p. 22) and aims to establish “long-term conditions for closed material cycles” (p. 8). This is accomplished by minimizing the materials used, promoting the usage of low-emission components, and encouraging the construction of durable, deconstructable buildings (p. 21). The handbook mentions, however, that the full effect of this strategy will only be seen in the future, for example, when buildings are deconstructed several decades from now (p. 20).

Following the manual, the labor involved in these strategies only includes paid, professional design, planning, and construction activities. The focus here is on technical aspects: Stakeholders involved in these practices should include cross-urban analysis of needs and multiple uses (pp. 20, 30), as well as potential analysis of existing stock (pp. 36f), and adhere to circular principles, that guarantee, for example, savings in material and space, flexible use options, repurposing capabilities, ease of maintenance and repair, and efficient facility management. Circular design, planning, and constructing should also allow for the capacity to disconnect, dismantle, and homogeneously deconstruct (pp. 21-23, 30, 37, 39-41). In this context, the handbook adopts a data-driven approach, emphasizing that digital documentation, including building information modeling (BIM), is “pioneering” (p. 57) and should be a vital part of all these activities (pp. 21, 29f), because a comprehensive record of installed components and materials is seen as prerequisite for future CC (p. 57). Moreover, the collected data should make CC not only feasible, but also quantitatively measurable and comparable, allowing for optimization (p. 27). This should create transparency (p. 27), “reliable communication of success and thus increase the value of circular construction” (p. 27).

By introducing the three strategies and portraying their practical implementation, the handbook also defines a very clear division of labor among professional stakeholders throughout the performance phases of construction. These stakeholders include construction managers (in German “Bauverantwortliche”), architects, and technical planners specializing in structural design, building physics, building technology, and construction supervisors (in German “Bauleitung”), as well as construction companies (p. 32). The text adds two more professional groups—CC consultants and component procurement management—who “support the project team with their expertise” in materials and design methods and coordinate the procurement and storage of circular components (p. 32).

While the roles of on-sight construction management and construction companies remain marginal throughout the text (p. 35), a dedicated information box emphasizes the importance of a cooperative approach, known as “construction in partnership”, in CC (p. 37). The box highlights that “close interdisciplinary cooperation between various parties involved is of great importance to the success of a project” (p. 37)—for example, by integrating construction expertise in the planning process early on (p. 37). However, it remains unclear what this approach might look like in practice. Furthermore, users and operators are subsumed under the role of construction managers (p. 34) and are rarely mentioned in the manual. One exception is when the handbook argues for prioritizing the preservation of existing buildings over avoidable new construction (“renovation before demolition”) (pp. 20, 22, 30). Therefore, planning should commit to sufficiency (p. 36) and “scrutinize needs” (p. 30). This means, users should be involved in the analysis of needs and potentials insofar as it relates to the “actual necessity of the required space” (p. 36).

In doing so, the manual exhibits a narrow approach to labor, only identifying paid activities and professionals/workers as relevant. It furthermore implies a hierarchy when it comes to the work process—concretely making design and development decisions. This is because of the rigid division of labor it introduces between stakeholders, prioritizing design and planning stages of the process without elaborating on how practical construction knowledge can be integrated into them. Thereby, the labor, creative potential and practical knowledge of users and operators are also neglected.

Concluding discussion: from value-generating circulation to emancipatory transformation

Returning to the initial interest of relating existing CC practice approaches to critical EPE perspectives, the results of the qualitative content analysis of the *Achieving Success in Circular Construction* handbook (LUBW, 2025a) will now be discussed in terms of their critical-emancipatory potential. Drawing on insights from the gender planning debate (Huning, 2018; Huning & Mölders, 2025), it can be deduced that the radical transformative potential of feminist theories is easily lost in the pragmatic process of planning practice. Therefore, it should be emphasized that the intention of this article is not to merely incorporate missing dimensions into the existing technocratic, data-driven modus operandi of the analyzed handbook—expressed for example by bullet points, step-by-step guides, checklists and text modules. Rather, a vital part of addressing current biases and realizing critical demands will involve the fundamental reconsideration and transformation of prevailing concepts—such as the economy, labor and society-nature relations, which have been the focus of this article.

Regarding the understanding of society-nature relations, the analyzed material introduces CC as a potential solution to the ongoing environmental crises and thus promotes the latter as a key part of sustainable construction. Despite the reference to sustainability's three dimensions (ecological, economic and social), the primary concern lies with decoupling the economic practices of the construction sector from negative ecological impacts. Thereby, the connections between the exploitation of the natural environment, societal inequalities, and power structures in racist patriarchal capitalism that are identified by ecofeminist perspectives become obscured (cf. Köhnke et al., 2024). The handbook's instrumental perspective on current social-ecological challenges means that the devaluation of and separation from nature perpetuated in the current capitalist system cannot be grasped or counteracted (cf. Saave, 2025). However, "[s]trategies for an environmentally sound and socially just transition to a post-capitalist era must consider the intersectional power relations inherent to current society-nature relations" (Bauhardt, 2022, p. 91).

Moreover, the analysis reveals that the handbook advocates a CE that encompasses the entire economic cycle, from design to disposal. However, it also becomes clear that this conceptualization of the economy only takes into account its formal, monetized part—or, in Mies' (2014) imagery, the visible tip of the iceberg. This correlates with a narrow understanding of labor: The focus of interest is clearly on the supposedly productive activities of designing, planning, and constructing. Yet, the manual does not provide a detailed account of the types of work involved or the conditions in which these activities are carried out. Consequently, it fails to address questions concerning the quality of labor (cf. Pansera et al., 2024) and the re-/production of inequalities through work. However, a transformation towards CC will not automatically solve corresponding issues (cf. Köhnke et al., 2024).

Furthermore, matters of monetary value preservation/generation are prioritized. Even when potentially critical concepts and practices, such as sufficiency or maintenance, are brought into play, they are mobilized in a technocratic, apolitical manner that reinforces the status quo

(cf. Bono et al., 2024). Yet, if circular economy models privilege economic productivity, efficiency, and limitless growth (Morrow & Davies, 2022), they marginalize and devalue areas that bear the (material/immaterial) costs of the prevailing way of life—reproductive/caring labor as well as the natural environment (Mellor, 2015). For example, the text does not specify what it means on a day-to-day basis to repair and care for existing building structures or who is responsible for these tasks outside of formalized facility management. Instead, the relationship between the visible/invisible part of the economy must be taken into account when designing CC policies and projects (cf. Saave, 2022). This entails:

> considering more equitable divisions of paid as well as unpaid labor, but also resisting any romanticization of social reproduction and avoiding uncritically idealizing care at the expense of learning practical strategies for organizing it in a just and sustainable manner (Köhnke et al., 2024, p. 317).

In addition to the critical conceptual work described above, counteracting the identified capitalocentric and technoscientific tendencies requires a (more) procedural approach to CC that considers not only end results or outputs, but also the process itself. This involves addressing current blind spots regarding questions of representation and participation. As the analysis has shown, the handbook aims to encourage individual pioneers to promote and implement CC. Although it explicitly lists the professional stakeholders it envisages in this leading role, it does not address the representation of individuals in these professions. For instance, Palm et al. (2024) highlight that women are disproportionately represented in low-value, informal, end-of-pipe CE activities, such as recycling or reuse. While, high-value, high-tech activities, including industrial design or product development, are male dominated. In view of the masculine, heteronormative, white and ableist culture of the construction sector (Powell & Sang, 2013), it would be urgently necessary to reflect on who these professional stakeholders are, thereby problematizing the current societal divisions of labor along the lines of social categories such as gender and race (Köhnke et al., 2024).

Moreover, a clear hierarchy emerges in the handbook with regard to which stakeholders are permitted to play an active role in shaping the dissemination and implementation of CC projects. Although interdisciplinary cooperation is mentioned, it remains unclear how those relegated to the later performance phases can play a formative role. In this context, Köhnke et al. (2024) emphasize that democratizing work necessarily precedes meaningful socio-economic transformations. Therefore, enabling all workers to contribute to the envisioning of circular futures is pivotal. However, this also raises the general question of citizens' role in CC. While the handbook primarily focuses on technical and data-driven solutions, potential neighborhoods and residents play a minimal role in the text. Citizens are, thus, reduced to passive consumers/users, with decisions made for them by the professional sector (cf. Ashton et al., 2022; Corvellec et al., 2022). Yet, Bono et al. (2024) stress that social justice should be put at the center of circular planning and policy making, ensuring citizen's mobilization and participation.

In conclusion, the empirical analysis presented in this paper highlights the urgent need to counteract deep-seated capitalocentric and technoscientific biases of urban CE strategies that hinder any comprehensive social-ecological transformation. Adopting an EPE perspective, this article demonstrates that achieving sustainable and just futures through urban circularity requires systemic societal change, including the transformation of profit-seeking society-nature relations, abbreviated understandings of the economy and the gendered, racialized division of labor. Integrating, among others, critical feminist perspectives is therefore vital for moving urban CE approaches away from pragmatic, technocratic business-as-usual and towards envisioning and implementing emancipatory, sustainable futures that prioritize social-ecological justice and community well-being.

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