Partnership in the Built Environment for Realizing the 2030 Agenda: A Soft Systems Model Incorporating Systems Theory and the Circular Economy

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Introduction

Human population growth has increased, such that survival needs have surpassed Earth’s resource capacity. Demand is increasing and outpacing the biosphere’s regenerative and absorptive capacity (Borucke et al., 2013). As an artificial system, a city imports nutrients or resources to sustain its metabolism and generates metabolites or waste (Zhang, 2013). Anthropogenic pressures on the Earth’s systems have reached a scale which has destabilized critical biophysical systems, triggering abrupt or irreversible environmental changes that are catastrophic to human well-being (Rockström et al., 2009). Human settlements exploit the planet’s virgin resources through linear processes, and the rapid discarding of non-biodegradable matter interrupts natural circular systems at an alarming speed.

Nature offers effective circular systems. The fundamental cycles of water, materials, energy (embodied), and nutrients are classic examples of the circularity of natural subsystems. However, the linear progression of the built environment for human settlements does not mirror the advantages of these circular systems but interferes with their processes (Borucke et al., 2013; Rockström et al., 2009;
The industrial revolution in the 1900s gave rise to a notable alteration in the Earth’s natural carbon cycle, increasing the amount of carbon in the atmosphere (Nakicenovic, 2004; Riebeek, 2011; Rockström et al., 2009; Sabine et al., 2004). Many factors, such as population increases, economic growth, and energy production, are also projected to contribute to this increase in carbon content (Nakicenovic, 2004).

The consequences of human activities are not limited to alterations in the carbon cycle. Anthropogenic pressures have forced the planet outside the Holocene to the Anthropocene (Rockström et al., 2009). Moreover, modulations of the biology and processes that control carbonate chemistry, such as temperature, alkalinity, or salinity, influence the carbon cycle (Riebeek, 2011). Artificially made surfaces absorb solar radiation and release it at night, allowing temperature differences in cities and their surroundings that nature cannot offset (Nuruzzaman, 2015; Yamamoto, 2006). Furthermore, increasing global average air and ocean temperatures result in the melting of polar ice caps and rising sea levels (Inglezakis et al., 2016). These also affect the hydrological cycle resulting in variations in precipitation and evaporation. The built environment is further responsible for removing vegetation and processing energy, water vapor, and carbon exchange, mainly dominated by a decline in plant growth (Chakravarty & Kumar, 2019). Artificial systems discharge many other non-absorbable substances, making nature’s circular processes feeble and leading to catastrophic effects. Attempts have been made at the macro and micro levels to restore the system for a more sustainable outcome. However, these have proved insufficient.

In 1987, the World Commission on Environment and Development, the Brundtland Commission drafted the Brundtland Report, “Our common future”, which articulates a commonly accepted definition of sustainable development. Following this, several nations convened at the Rio Summit, also known as the Earth Summit, held in Rio de Janeiro (Brazil) in 1992 to agree upon the Climate Change Convention. This convention led to the Kyoto Protocol and, more recently, the Paris Agreement. The Paris Agreement stipulates a consensus to mitigate global temperature increases to no more than 1.5 degrees centigrade. The Rio summit led to the development of several documents on the Declaration on Environment and Development, Agenda 21, and Forest Principles. A compelling question is whether this documentation has succeeded and proven measurable.

The 178 government delegations of the United Nations at the Rio summit proposed Agenda 21, which covered various aspects of achieving sustainable development through 40 chapters (Chiu, 2012; Langeweg, 1998). They expected to execute the Agenda at local, national, and global levels, with every local government drawing its Agenda 21 to achieve sustainable development by 2000.
However, the plan extended to Rio + 5 (1997), Rio + 10 (2002), Rio + 20 (2012) and finally, the Sustainable Development Summit (2015), which proposed the 2030 Agenda and established the SDGs. There is doubt whether developing countries can achieve the targets of the 2030 Agenda for many reasons, such as poor governance, pandemics, poor usage of available data, and population growth (Adebayo, 2021).

There is an abundance of research publications on sustainable development that discuss solutions for sustainability at the individual and group levels, which help reduce human activity’s adverse effects on the biosphere. However, these solutions are fragmented. A systematic solution which considers the entire planet as one system is crucial. Churchman (1968) states that “…problems are interconnected and overlapping. The solution of one has a great deal to do with the solution of another…” (p. 4). According to Churchman (1968), although we have the technological capability to solve these problems, the human world is not organized in a way which promotes the use of these technologies. A systematic change would require partnerships and collaboration between communities, companies, cities, countries, and continents. A partnership that supports human activity without interfering with nature’s circular systems would give rise to systems thinking.

This chapter first presents the connectivity of consequences of human activity and their complementary solutions, mimicking the behavior of nature’s circular systems. We establish that resolutions to global problems need interconnectedness and that a holistic approach is necessary to handle international issues. We argue that a narrow set of variables to measure isolated phenomena (Seibert, 2018) will only intensify sustainability issues, as the solutions they generate will not address the entire situation. Systems thinking allows the connectivity of subsystems to a whole system with their interwoven relationships. Inputs, throughputs, and outputs of subsystems need connectivity through extensive networks to visualize the effects of one subsystem on another and the system. We incorporate systems theory and circular economy principles throughout the chapter to build a soft systems model for partnerships in the built environment to achieve the 2030 Agenda. According to Robertson (2008), new frontiers for growth are social and psychological rather than technical and economic. We establish that living on a “small and crowded planet” (Robertson, 2008, p. 13) will not be practical without systemic change. Since new growth needs are the foundational tenets of the SDGs, the authors use the language expressed by the SDGs to indicate how the built environment may contribute to the 2030 Agenda through a circular system.

This chapter uses secondary literature to present a soft systems model for the preferred systemic change for the biological community to sustain on the planet.
A soft system subsumes and enhances the difficult-to-follow guidelines in simple interpretations with boxes and arrows (Checkland, 2000). Compared to hard systems, the soft systems approach is more appropriate for ill-defined situations (Checkland, 1990). The proposed model simulates the natural circular scenarios for the performance of the built environment to prevent conflict with ecological systems. Literature showing interconnectivity offers fragmented solutions, which can be connected to provide a visual link to the preferred systemic change to the built environment to realize the 2030 Agenda.

### Systemic Change

There will be many variables involved in enacting systemic future change. Discussions on the foreseeable and preferable futures are not uncommon, but there is still no guarantee of what the future holds. Monitoring and evaluation are the only ways to test what has worked. According to Henchey (1978), professionals who have studied the future use esoteric knowledge or learning from current or past trends to predict the future. Henchey (1978) distinguishes four kinds of futures: what may happen as the possible future, what should happen as the preferable future, what could happen as the plausible future, and what will likely be the probable future. Robertson (2008) presents five views for the future, two of which are most detrimental. The first is where things remain as usual, with no concern for consequences, and the second is when a disaster occurs, whereby catastrophic breakdown may happen. He also suggests authoritarian control as the third, with left and right wings of social stability, and the hyper-expansionist view as the fourth, assuming super industrial drives to break out the present problems could depend on technology. The fifth is the sane, humane, ecological (SHE) perspective, which “appeals to optimistic, participative, reflective people, who reject each of the first four views as unrealistic or unacceptable and believe that a better future is feasible” (Robertson, 2008, p. 13).

According to Robertson (2008), feeling for the future is a mixture of prediction, forecasting with different scenarios, deciding on a preference, planning for the desired future, and action. Building a soft systems model that can realize the 2030 Agenda is necessary for mutual understanding and user-friendly application. A holistic rather than individualistic judgment in a particular niche is preferable in achieving SDG targets. Narrow and specialized assessments could complicate a situation, with expertise inclined to a specific aspect and unable to perceive the consequences of human activity on the whole system (Robertson, 2008). Robertson (2008) is of the view that looking at “piecemeal with tunnel vision” (p. b)
could distract attention from the system collapse and limit it to niches such as climate change, global warming, or carbon emissions.

Different stakeholders engage in various methods for predicting future events. Historians study the past to guide the present; physical scientists make predictions based on nature’s regularities; economists and sociologists use lived experiences and human affairs (Henchey, 1978). This chapter supports a comprehensive, systemic, and holistic change to realize the 2030 Agenda based on the SHE future. It highlights the indicators essential for sustainability through nature’s regularities and supports them through system theories.

**Nature’s Circular Systems**

The Earth functions as a whole system with the help of natural subsystems or spheres (National Geographic, 2022). The geosphere comprises the lithosphere, hydrosphere, cryosphere, and atmosphere. These spheres interact to provide a sustainable environment for living beings in a narrow zone on the surface of Earth, known as the ecosphere or the biosphere.

There are four fundamental cycles: water, carbon, nitrogen, and oxygen which support life on Earth. These are continuously operating, balancing the planet’s spheres to functioning ecosystems. The hydrological cycle, commonly known as the water cycle, plays an overarching role in the functioning of geological and biological Earth, operating beyond the cycling of water to the circulation of solar energy, sediments, and chemical elements for the sustainability of the natural community (Inglezakis et al., 2016; Narasimhan, 2009).

The backbone of life on Earth, carbon, is stored mainly as a rock, with a portion residing in the oceans, atmosphere, plants, soil, and fossil fuels, while living organisms are also made of carbon (Riebeek, 2011). The carbon cycle establishes and nourishes the nutrient cycle through photosynthesis and circulates carbon between reservoirs in the carbon cycle exchange (Riebeek, 2011). Although carbon is sequestered in carbon sinks, the deep ocean, and ocean sediments for long periods, any change in the cycle will result in carbon shifts to other reservoirs (Riebeek, 2011).

Photosynthesis—the process by which organisms use sunlight to synthesize nutrients—originates from the nutrient and energy cycles. This process releases oxygen as a byproduct to provide the energy necessary for life on Earth. Microorganisms decompose the accumulated carbon compounds from the dead bodies of the organisms in the biosphere to release carbon dioxide for circulation.
Nutrient and energy cycles in the biosphere shelter a biological community where the ecosystem operates. The organisms interact with their physical environment within the ecosystem. Nutrient and energy cycles nourish the microorganisms in the biosphere by using natural circular flows of matter. These cycles connect biotic and abiotic components in the ecosystem. Likewise, many natural processes maintain human life’s sustainability on Earth. Thus, the biological processes are circular, supporting biotic and abiotic mechanisms on the planet, while reservoirs act as temporary storage facilities for the circulation of stocks.

In a holistic approach, we identify the subsystems’ purpose and their interconnectedness to the whole system, circular flow, and the reservoirs as temporary storage facilities as necessary features for the sustainability of the natural system. Theories on systems behavior could support this narrative.

**Systems Thinking**

Systems thinking is critical in managing complex problems (Arnold & Wade, 2015). Churchman (1968) identifies systems thinking as the management of subsystems that considers the overall issues and brings up solutions to implement thinking for the whole system. The overarching strategy measures the performance and standards of the subsystems in terms of an overall objective. The entire system’s performance depends on the subsystem’s management. According to Churchman (1968, p. 8), in systems thinking, a subsystem does not postpone “its thinking until a crisis is reached”. In other words, the system and subsystems are always adapting. However, many researchers have tested the concept for its definition. Arnold and Wade (2015) identified three features as critical for systems thinking: the system elements, interconnections, and function (Arnold & Wade, 2015). These three features validate the features identified in natural systems: the elements, and their purpose and interconnectedness, as discussed in the previous section. The system’s form has been included with the interconnections and the feedback, whereas the dynamic behavior reflects the stocks, flows, and variables, and identifies non-linear relationships (Arnold & Wade, 2015). The stocks, flow, and variables recognize the temporary storage, sinks, or reservoirs in natural systems (Riebeek, 2011).

A city in the built environment could be a model to represent a subsystem or an element to reach the goals of the 2030 Agenda, as depicted in Fig. 1. However, a city does not function in isolation. Coexisting systems collide and function to produce solutions to the whole system, the built environment, and
the planet. Problems extending beyond geographical limits with their unknown political interference and geopolitical boundaries will necessitate regional and global approaches for the sustainability of the whole system (Langeweg, 1998). A city must focus on its input, throughput, and output for co-existence. The linking of subsystems is vital for achieving the 2030 Agenda for the entire system to survive without compromising the natural systems. This linking presents the interconnectedness of elements and the system’s interference with a city, as illustrated in Fig. 1. A city is an open system linking the Earth’s subsystems for its inputs and outputs. This process must take a circular form whereby the speed of the production process should match nature’s circular flow of material.

“Circular Thinking” with a whole system approach is required for a city to remain sustainable while maintaining an ecological balance, as opposed to the linear thinking that prevails at present. Predominantly, the linear thinking currently seen in cities exploits resources and produces waste without identifying the consequences of these actions on the overall system (i.e., on the biosphere). However, it is necessary to identify and relate its connections to naturally occurring processes. The built environment processes should align with the natural circular processes. For example, vernacular settlements in Sri Lanka practiced
co-existence with nature in traditional farming. Forest reservations for water conservation and providing allowances for wildlife habitats are dominant features in village planning in these settlements. At the same time, activities such as building shelters and transportation have been managed with highly eco-friendly materials and practices (Sylva & Sylva, 2021) with a higher-order circularity (Potting et al., 2017).

The Circular Economy

The concept of the circular economy intends to correspond to natural circular systems and merge rather than conflict with them. The idea helps to reduce the extraction of virgin material and reuse or recycle the waste of linear processes. This can be achieved by tying up the ends of the linear system to create a circular process. The shift from a linear system impacts the design itself and the flow of material, energy, water, and other materials used throughout the product’s life. The 10R Framework proposed by Cramer (2017) suggests that circular systems could prevent waste, and potential value may be retained or enhanced by following the R principles for products: Refuse, Reduce, Renew, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, and Recover. Among the several circularity strategies, the 10R Framework prefers more intelligent product manufacturing and product sharing as higher-order approaches than lower-order plans (Cramer, 2017; Potting et al., 2017). The lower circularity approaches are recycling and incineration to recover energy (Potting et al., 2017). Environmental benefits will be proportional to the order of the circularity.

The pragmatism of circular metabolism depends on how the system’s elements connect to function (Arnold & Wade, 2015). Isolating a subsystem or any individual of a system affects the circular flow. The circular design will be effective once each subsystem is a member of the circular supply chain of the whole system. However, it is necessary to identify a strong sustainability concept which assumes clear limits or stocks of the ecological systems which may not be exceeded for the tradeoff of economic growth or social well-being (Langeweg, 1998; Sylva, 2020a). Partnerships will ensure sharing of resources among the stakeholders. We propose a model of collaborations to reflect elements and their interconnections with their purpose.

A circular economy’s foundation is built on ecology, systems thinking, and environmental economics, describing how the resource supply chain can be closed on a local, national, or global scale. Furthermore, several federal governments have promoted the circular economic concept as an approach to monetary gain.
(Korhonen et al., 2018). However, a distinct methodology to incorporate systems thinking and circular economy globally have yet to be formulated. This chapter focuses on the linkage through partnerships in the built environment using a soft systems model.

**Soft Systems Model for Partnerships Incorporating Systems Theory and the Circular Economy**

To realize the overarching goals of the total system, systems thinking requires the execution of actions at the subsystem level with an understanding of overlapping needs. In applying developmental approaches to a subsystem, such as cities, countries, and continents, physical geographical control may not always be the limit for thinking, planning, and management. Gerten et al. (2013) identify boundaries scaling up to the global domain in the water cycle. They propose a limit for fresh water and combine bottom-up and top-down approaches to maintain the hydrological cycle with its ecosystem’s sustainability. In addition, they also consider cascading impacts from rivers to the coast in decision-making within the physical boundaries of a city. Literature has highlighted prospering attempts in ancient water management methods whereby the thinking has gone beyond a village’s physical limitations (Sylva & Sylva, 2021). The cascading water management system connecting village systems to the whole system is a classic example in Sri Lanka. Ensuring the discharge necessary to prevent pollution of the subsequent systems can be found in the introduction of natural water cleaning ponds at the exit of one subsystem. This depicts connectivity and whole-system thinking. In Sri Lanka, people in vernacular settlements built large reservoirs in the dry zone interconnected with cascading small village tanks to maintain water supply throughout the dry seasons for agriculture (Sylva & Sylva, 2021).

The sustainability of the city as a system could adopt two ideological paradigms for the structure, top-down and bottom-up, whereby expert-led or community-based decisions are applied in decision-making, respectively (Khadka & Vacik, 2012; Kwok et al., 2016; Moon, 2017; Reed et al., 2006). Debates on the top-down and bottom-up approaches to sustainability identify that policymaking and leadership are far more effective in top-down approaches. “Individuals can be quite agile, given the license to be. But without overarching goals, agility is random and unsustainable” (Moon, 2017). Top-down measures are more quantitative and easily comparable, and national or international scales on a macro level are used (Reed et al., 2006). However, top-down approaches seek quick-fix solutions to complex problems without contextual verification at the grassroots level.
Instead, the method of application or implementation has been effective in bottom-up approaches. The community could develop or accommodate gauges to measure their standards to fit the overarching objectives (Kwok et al., 2016). Adult education learning and social activism are apparent in bottom-up approaches, with a maintained understanding of the local context (Reed et al., 2006). A city as a subsystem needs to focus on SDGs as top-down policies and build context-specific bottom-up approaches to realize the 2030 Agenda. The connectivity should then be easily identifiable for implementation.

The 2030 Agenda expects a global partnership for solidarity, with emphasis on the needs of the poorest and most vulnerable through “the participation of all countries, all stakeholders and all people” (United Nations [UN], 2015, p. 2). Everyone should be a member of at least one subsystem connected to the whole system (i.e., the biosphere). We depict the expected or preferred connectivity of the complex relationships in Fig. 2 through a soft systems model. This model follows the approach recommended by Cramer (2017) to “think global, act local” through the 10R Framework. Providing statistical data on SDG indicators is weak and limited to high-income countries (Kitzmueller et al., 2021). A soft systems model will ensure the distinct relationship needed for realizing the 2030 Agenda while allowing opportunities to systematically report the progress of identified indicators through responsible bodies in the entire system.

The 2030 Agenda and the SDGs should act as the Global Policy Guideline and Direction in the circular supply chain as shown in Fig. 2. In applying systems theory, the system’s function is thus clear to all actors or members of the system. The 10R framework is proposed to be used top-down in the decision-making process for the products of the built environment, with a greater focus on more innovative products for society (Potting et al., 2017). Multi-National Corporations (MNCs) and Small and Medium Enterprises (SMEs) act as the circular supply chain partners for built environment materials in the soft system model presented in Fig. 2. The global production processes through MNCs should adhere to the 10R Framework of circular economy, considering the higher-order circularity concepts as their focus but not neglecting the allowance for the lower-order concepts (Potting et al., 2017). MNCs should first adopt concepts such as refusing and rethinking to avoid products that may cause environmental damage and offer alternatives, according to the SHE paradigm. They should also reduce virgin material extraction by improving processes and products efficiency. The MNCs should present a set of indicators to accommodate reusable material to align in the reverse supply chain to allow for lower-order circularity concepts such as recycling the waste
products necessary for systemic change. Reusing, repairing, refurbishing, and repurposing are intermediatory-level circularity concepts (Potting et al., 2017).

SMEs should cater to the intermediatory level by introducing relevant industries, such as repair shops while becoming the MNCs’ sales agents and raw material suppliers. This partnership would ensure the sustainability of SMEs in the market rather than diminishing with market forces created by the MNCs. MNCs should be made dependent on SMEs to collect waste to resources for their supply chain through relevant policies designed under a Corporate Social Responsibility (CSR) guideline. The governing bodies should create the interconnection of these players or the elements of the system through Public–Private-Partnerships (PPPs) while maintaining the appropriate indicators to measure progress. Figure 3 illustrates the proposed arrangement of partnerships.
A radical technological change is not what is expected at this level for the transition to a circular economy in the built environment; a strong PPP which helps the survival of both MNCs and SMEs, is required. If the city administration cannot recycle materials, it is expected to build strong PPPs to attend to this need with local or international links. Moreover, the terms and conditions of the local administration with MNCs who provide materials for the built environment are expected to include agreements to collect all possible materials for recycling under strong CSR policies and guidelines (Somachandra et al., 2021). The circulation of materials within the cities is expected to be through SMEs. This partnership ensures the sustainability of SMEs as employment providers to societies in the SHE model.

Circular economic transitions do not always need a fundamental technological change (Potting et al., 2017). “High-level circularity strategies more often require socio-institutional changes throughout the product chain and innovation in product design and revenue model, whereas low-level strategies rely
more on technological innovation” (Potting et al., 2017, p. 7). Socio-institutional changes may need rules and regulations intact and inclined toward building a fair circulation process.

Rules, regulations, host government interventions, and related infringements have pushed MNCs toward developing countries where no or minimal strict policies are set to prevent detrimental production (Doz & Prahalad, 1980; Sylva, 2020b). Most MNCs were misusing the willingness of the developing nations to acquire their investments by exploiting both skilled and non-skilled workforces (Ferdausy & Sahidur, 2009; Sylva, 2020b). A solid policy incorporating a CSR component is necessary to establish good partnerships with SMEs and prevent such exploitation (Sylva, 2020b). The public sector should encourage non-state partners to build a circular supply chain and contribute to the common benefit through profit-sharing (Sylva, 2020d). The private sector should “support the system through fair taxation policies for the usage of public infrastructure, provide employment opportunities to the community, and share profit among stakeholders for equity while adhering to environmental regulations as a part of their responsibility” (Sylva, 2020d, p. 10) for the anticipated systemic change.

The thinking process requires rectification in order to successfully incorporate systemic change. Product developers play a significant role in deciding on alternative products. However, the responsibility cannot be limited to the developer. The consumer should be ready to accept alternative products with higher circularity. The change in consumer behavior in the built environment is to be achieved through quality education which internalizes values of sustainability (Sylva, 2020c). Waste reduction, reuse, and recycling are to be taught by incorporating emerging concepts such as deconstruction, recyclability, and Design for Disassembly (DfD) (Rios et al., 2015; Soh et al., 2015) at the required levels. The construction of the built environment must focus on the ‘construction in reverse’ or deconstruction to minimize waste dumps using new terminology for a new practice (Rios et al., 2015). Through deconstruction, it is expected to reuse all possible parts or products for new constructions, reducing landfills and virgin material at the level of demolition. Design for Disassembly encourages an easy-to-disassemble mindset and an optimal disassembly sequence based on practical considerations (Soh et al., 2015). Recycling will involve both upcycling and downcycling, minimizing the dumping of waste as much as possible to close the loop of the material cycle in the built environment (Kibert & Chini, 2000; Soh et al., 2015). Aligning the distributor, the vendor, the buyer, and the user in the circular process will lead to realizing the SDGs.
Potential Pitfalls

The effects of the soft systems model on the SDGs and the realization of the 2030 Agenda could be considered for any city in the world. Closing the ends of linear systems requires both local and international connectivity. The inculcation of institutionalized norms through policies (Sylva, 2020b) and internalized values through quality education (Sylva, 2020c) are essential requirements of the expected change. Education through practical exposure to sustainable development will develop the necessary individuals’ psychomotor skills to cater for circularity (Sylva, 2020c). Rejecting harmful materials and materials that are not recyclable (Cramer, 2017; Potting et al., 2017) while encouraging the use of recycled materials (lower order circularity) (Cramer, 2017; Potting et al., 2017) will lead to responsible consumption and production. However, if systems are corrupt, weak institutions with weak paradigms (Sylva, 2020d), the model’s effectiveness is in question.

All other SDGs can be identified as indicators for development at different levels of the circular supply chain. MNCs and SMEs will follow the guidelines at the registration level as business entities. They will be bound to provide statistical and qualitative data on achieving the target through their partnerships. Assigning responsibilities to identified members in the supply chain will reduce the difficulties identified in data gathering (Kitzmueller et al., 2021) and other problems that developing countries may face (Adebayo, 2021) in implementing the 2030 Agenda. Each player in the circular design will focus on the system to meet goals such as clean water, sanitation, and affordable clean energy. Decent work and economic growth should be considered within the throughput of the built environment while supplying adequate employment opportunities for people. The skilled workers employed by MNCs to create alternatives to the harmful and non-skilled people used effectively by SMEs to collect waste for recycling could provide significant employment opportunities. Both sectors should get equal attention so that fair treatment and equitable remuneration will be given to those engaged. However, there may be divisions among employees for the required skill and qualifications, which quality educational practices should eliminate.

The built environment should focus on regenerative practices such as allowance for parks and natural water cleaning ponds and preserving connectivity of the ecosystem resources as their CSR requirements. City planning should provide flexibility for regeneration, considering the higher-level circularity strategies. The output of the built environment could then enrich the priorities for terrestrial and marine life on the planet through regenerative ecosystems. Good health and
well-being could be ensured while supporting wildlife for an ecological balance to combat climate actions. Providing a decent built environment and opportunities for employment for all through production, distribution, sales, construction, operation and maintenance, demolition, and circulation, will reduce inequalities and poverty with equal opportunity for all, thus leading to zero hunger. Nevertheless, affluent societies will prefer private space in comparison to the upliftment of public space. The government’s intervention will be needed in some contexts to ensure its citizens’ equity.

Incorporating men and women in all activities will lead to a gender balance in the work environment and a balance in power relationships in a non-work environment. Collaborating with institutions is key to representing stakeholder relationships at the appropriate stage of the built environment’s life cycle, leading to less confusion and better alignment among the institutions to encourage the adoption of peace, justice, and strong institutions. The concepts of the circular economy should organize the built environmental partnerships with relevant indicators to add value to ecosystem resources to realize the 2030 Agenda with a holistic view. Regular and systematic monitoring of indicators will be essential, which may need additional costs for operations in some cities. The monitoring process will also open new employment opportunities for the citizens.

Conclusion

This chapter has focused on developing the conceptual framework for a soft systems model for the built environment to realize the expected outcomes of the 2030 Agenda. The model is based on understanding the importance of the Earth as a system, the role of systemic change, and recognizing the inherent nature of circular systems that occur in the natural world. The principles of a circular economy underlie the systems thinking approach to create the model and rely on partnerships for implementation in a systematic manner.

The application of the model may require strong policies and the commitment of institutions to the circularity of materials. Weak and corrupt systems may have difficulties in aligning the necessary partnerships for the successful application of the model. However, quality education could overcome these barriers. It is essential to investigate further how cities could adopt and adapt the proposed model for the realization of the 2030 Agenda by focusing on a pilot project. Strong CSR policies for MNCs may lead to the initiation of the process throughout the world to combine the whole world into one circular supply chain to enable reaching targets set by the SDGs for 2030 and beyond.
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