Journal of Environmental Protection, 2025, 16(10), 1051-1065
https://www.scirp.org/journal/jep
ISSN Online: 2152-2219
ISSN Print: 2152-2197

Accelerating SDGs for Sustainable Communities Using C2C Concept

Mohamed Zayed[1*], Ola El-Monayeri[1], Salah El-Haggar[2], Nabil Mahmoud[3]

[1]Faculty of Engineering, Arab Academy for Science, Technology and Maritime Transport AASTMT, Cairo, Egypt
[2]School of Sciences and Engineering AUC, The American University in Cairo, Cairo, Egypt
[3]Faculty of Engineering, Ain Shams University, Cairo, Egypt
Email: *mohzayed.prs@gmail.com, omonayeri@aast.edu, elhaggar@aucegypt.edu, nabil48@gmail.com

How to cite this paper: Zayed, M., El-Monayeri, O., El-Haggar, S. and Mahmoud, N. (2025) Accelerating SDGs for Sustainable Communities Using C2C Concept. *Journal of Environmental Protection*, **16**, 1051-1065.
https://doi.org/10.4236/jep.2025.1610056

Received: September 20, 2025
Accepted: October 21, 2025
Published: October 24, 2025

Abstract

The rapid leap of global urbanisation has strengthened the urgency for approaches that allow cities to balance growth with environmental, social and economic sustainability. Urban communities, as the initial units of urban transformation, provide scale at which sustainable strategies can be both planned and implemented. Transitioning toward resilient and well-organized urban communities is therefore crucial to address resource scarcity, waste generation, environmental degradation and the increased need for social organisation and improved quality of life. Within this framework, the cradle-to-cradle model offers a transformative alternative to linear models, sponsoring regenerative cycles in which resources are continuously reused, ecosystems are restored and human development exists with natural systems. The objective of this paper is to accelerate the implementation of the Sustainable Development Goals (SDGs) using Cradle to Cradle (C2C) concept. It was found that C2C concept will include SDGs # 6 (Clean water and sanitation) and SDG #14 (Life below water) over and above the 9 SDGs incorporated according to Cradle to Grave (C2G) concept.

Keywords

Sustainable Urban Communities, SDGs, Cradle to Grave, Cradle to Cradle

1. Introduction

The swift escalation of global population growth has driven a parallel surge in urbanization with projections suggesting that around 92% of this growth will arise within urban communities in developing countries, regions usually less equipped to manage such rapid expansion [1]. The adopted strategies for community de-

velopment are therefore fundamental, as they determine the ability to achieve sustainable development and to survive the complex environmental, social and economic challenges rising challenges from this matter [1]. Even if accelerated urbanization imposes significant threat to sustainability but still urban communities provide untapped opportunities to address environmental degradation. As confirmed by Kumar [1], urban communities had to be redefined as sustainable development innovation's platform and community governance.

This rethinking shows up in global policy frameworks, which gradually identify the transformative power of urban communities. The 2030 agenda for Sustainable Development Goals positions urban development at the heart of its vision, most explicitly via SDG no.11 (sustainable cities and communities), which highlights the importance of developing resilient, sustainable urban environments. Furthermore, urban considerations are embedded in the comprehensive SDG framework, with 90 indicators out of 169 indicators raising issues relevant to urban communities [2]. In line with SDG 11, the New Urban Agenda issued by [3] positions urban development as a core strategy for addressing societal challenges. Jointly, these policy instruments reflect a paradigm shift describing urbanization not essentially as damaging phenomenon but as a vehicle that guarantee positive transformation and sustainable advancement.

Nevertheless, recent scholarship gradually supports cradle to cradle approach, which goes beyond efficiency to enclose circularity, restorative resources flow, and renewing capacity, presenting a more holistic roadmap to urban sustainability specially in preserving water resources and marine ecosystems [4] [5].

The idea of sustainable development joined the global stage in 1987, when the Brundtland Report defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [6]. Definitely more than a mere slogan, this definition became groundwork for a new way of thinking about the progress that acknowledges the complex balance between environmental protection, social wellbeing and economic growth.

Based on this vision, the United Nations introduced the Sustainable Development Goals (SDGs) in 2015: 17 interconnected objectives designed to guide the world to more fair, healthier and more sustainable future by 2030. The SDGs, which replaced the Millennium Development Goals (MDGs) are "integrated and indivisible, global in nature and universally applicable" yet agile enough to reflect each nation's unique context and priorities [7]. Countries are anticipated to establish their own goals and also to contribute to shared global ambitions [8].

Adopted totally by all UN Member States, the 2030 agenda priorities peace, prosperity and environmental stewardship ensuring the needs of current and future generations are addressed. The SDGs tackle a broad. The SDGs target a wide range of global concerns, including poverty, inequality, climate change, environmental degradation, and the quest of justice, acknowledging the profound interconnections among these issues.

Accomplishing them requires the collaborative efforts of governments, enterprises, communities, and individuals. The sharing economy, for instance has been emphasised as a means to utilise resources more efficiently and provide new possibilities [9]. Likewise, the private sector plays a critical role, aligning business strategies with SDG targets and finding investments that deliver both economic returns and social value [10] [11].

The 2030 agenda for Sustainable Development provides seventeen interrelated Sustainable Development Goals (SDGs), supported by 169 targets and 232 indicators, offering a universal framework for inclusive, equitable, and ecologically sustainable growth [12]. These goals cover a wide array of human and ecological priorities: eliminating poverty (SDG1) and hunger (SDG2) through connected infrastructure, sustainable agriculture, and robust food systems [13] [14]; assuring health and wellbeing(SDG3) through enhanced healthcare access, disease prevention and better environment [15]; and the provision of inclusive quality education(SDG4) in addition to gender equality (SDG5) with engineering design and the incorporation of Science, Technology, Engineering, and Mathematics(STEM) education as vital enablers for improving quality education and gender equality [16].Water and sanitation safety (SDG6) requires engineered treatment technologies and climate resilient systems [17], while affordable clean water (sDG7) depends on the adoption of renewable efficient improvements and decentralized networks [18].

Support sustained, inclusive economic growth, full and productive employment (SDG8) and sustainable industrialization with robust infrastructure (SDG 9) which need innovation, equal market access and advanced technological investment. Minimizing inequalities (SDG10) and constructing sustainable cities (SDG 11) requires planning for affordable houses in addition to resilient urban infrastructure. Responsible production and responsible consumption (SDG12) concentrate basically on reducing waste, recycling and eco innovation, whereas climate action (SDG13) calls for integrated policy equipped with mitigating technologies and robust measures. Conserve and sustainably use oceans, seas, and marine resources for sustainable development (SDG14) and safeguard, conserves terrestrial ecosystems (SDG15), sustainably manages forests, fight desertification and reverse land degradation supported by ecological engineering. Foster inclusive and peaceful societies for sustainable development (SDG16) entail transparent governance, justice and resilient legal and digital systems to establish effective and efficient institutions at all levels. While strengthening universal partnership (SDG17) through technology transfer, removing trade barriers and cooperative financing together, the SDGs form a holistic approach that formulate the international development agendas beside paving the road for engineers to coordinate energy, health, infrastructure and environmental system innovations with the interconnected goals of planet and human wellbeing. The objective of this paper is to accelerate the implementations of the sustainable development goals (SDGs) using cradle to cradle concept.

2. Sustainable Urban Communities Using Cradle to Grave Concept

According to Geneva [19], life cycle assessment (LCA), also named as (Cradle to Grave) (C2G) approach [19], is a method for assessing the environmental impacts of products through their entire life period, starting from the extraction of raw material (cradle) to final disposal (Grave), as shown in **Figure 1**.

Some of the wastes can be used, reused or recycled but the rest of the unrecyclable wastes will be disposed in a landfill. This C2G is considered unsustainable because the wastes were originally natural resources. The unrecyclable wastes require some innovation to develop new products or can be mixed with other material or waste to produce a new green material [20].

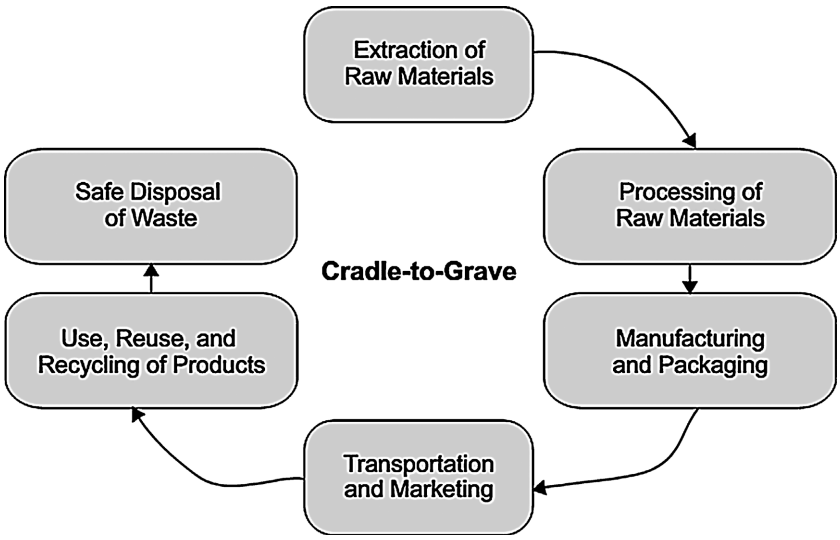

Figure 1. Cradle-to-Grave system.

This linear model has dominated industrial production since the industrial revolution, causing waste accumulation, unsustainable resource extraction, and environmental degradation.

Sustainable Urban Communities denote a critical nexus for progressing the United Nations Sustainable Development Goals (SDGs), gathering regenerative design principles with resource efficient strategies to address the environmental, social, and economic challenges of urbanization [21]. The World Green Building Council (WGBC)detects the built environment as a driver of nine SDGs, namely SDG 3, SDG 7, SDG8, SDG9, SDG11, SDG12, SDG13, SDG15, and SDG17, within a cradle to grave framework that adjusts performance across the life cycle of buildings and infrastructure [22].

2.1. SDG3 (Good Health and Well-Being)

In order to achieve Sustainable Development Goal (SDG 3) which guarantee everyone's health and wellbeing, urban environments must be redesigned, built, run, and maintained throughout their whole lifecycle. The World Green Building

Council's cradle to grave framework provide a detailed lens that evaluate and improve the health impact of urban development. This life cycle approach can help sustainable communities embed health effects of urban development. This life cycle approach can help sustainable urban communities embed health promoting elements at every stage, from design and material selection to occupancy and eventual decommissioning, thereby contributing significantly to public health. Since 90% of urban occupants' time is spent indoors, the standard of these indoor spaces becomes a critical component of overall wellbeing. Sick building syndrome, psychological distress and respiratory complaints are closely associated with poor air quality, insufficient ventilation, and exposure to dangerous pollutants like endotoxins and volatile organic compounds (VOCs) [23]. Therefore, it becomes crucial to integrate preventative design elements and operational plans into sustainable urban communities in order to match the built environment with the SDGs more general goals for health and wellbeing.

2.2. SDG7: Affordable and Clean Energy

The adoption of sustainable urban communities plays a crucial role in advancing SDG7 confirms access to affordable, consistent and sustainable, modern energy for everyone, especially when viewed via cradle to grave approach sponsored by the World Green Building Council. This lifecycles-based perspective highlights that sustainable energy integration must extend across every stage of community development from initial design and construction to long term operation, maintenance and/or redevelopment. In this context, urban communities are becoming centres for decentralized clean energy generation, while using technologies such as rooftop solar photovoltaics, microgrids, in addition to battery storage systems to decrease dependence on centralised, fossil fuel based energy grids and to support energy equity [24].

Finally, sustainable urban communities play a crucial role in advancing SDG 7, proving that affordable, inclusive and renewable energy solutions can be embedded during the whole lifecycle of the built environment. Completing this cradle to grave integration will lead to global energy transition beside and illustrating the systematic change required for long term environmental and social sustainability.

2.3. SDG8: Decent Work and Economic Growth

The adoption of sustainable urban communities plays a crucial role in achieving SDG 8 which concentrate mainly on encouraging inclusive, continued and sustainable economic growth, complete, productive employment enjoying decent work condition as per cradle to grave concept encouraged by the World Green Building Council. This approach is designed in a way that guarantee that every stage of urban development' lifecycle from planning, construction, maintenance and demolition must be optimized to bring long term economic, social and environmental value. In this perspective, urban communities sustainably designed yield massive economic gains by enhancing Indoor Environmental Quality (IEQ),

reducing energy consumption and lowering maintenance costs therefore improve productivity and economic performance [25] [26].

Additionally integrating sustainability principles across the whole cradle to grave lifecycles ensure the achievement of economic benefits by avoiding excess cost and resources depletion. As highlighted in [27], stakeholders favours more SDG8 more than other goals such as SDGs 7, 11, 12 and 13 recognising the economic rational of sustainable urban design.

2.4. SDG9: Industry, Innovation, and Infrastructure

The adoption of sustainable urban communities is a crucial enabler in achieving SDG9, which need resilient infrastructure, supporting inclusive and sustainable industrialization, and encouraging innovation. Adopting cradle to grave concept advanced by the World Green Building Council, sustainable infrastructure is adopted and operated with a full understanding of its full cycle, starting from planning to construction, through dynamic use and adaptation to its eventual end of life transition. within this framework, urban communities arise as strategic step to implement innovation driven infrastructure systems that are robust, energy efficient and technologically adaptive across their full life expectancy.

However for this innovative technology full delivery on their SDG9 potential, they had to be supported by resilient governance framework, tight collaboration between stakeholders and ascendable implementation strategies. When embedded within community driven sustainability agenda, these innovations ensure that the infrastructure are both environmentally and socially responsible. In this context, sustainable urban communities function as dynamic incubators for achieving SDG9 bridging innovation with resilience using cradle to grave integration of digital technologies, sustainable materials, and inclusive design principles.

2.5. SDG 11 Sustainable Cities and Communities

The adoption of sustainable urban communities is vital in achieving the core objectives of SDG 11, which promotes inclusive, resilient and sustainable cities. This approach which has its roots in the World Green Building Council's cradle to grave concept emphasizes that sustainability must be embedded across the urban lifecycle from main early design, construction to ongoing operation, remodelling, renewal or deconstruction. The emphasis is now on community scale interventions that utilise sustainability principles at the neighbourhood level rather than centralised mega infrastructure. Sustainable urban communities foster localised planning, context sensitive design, and interconnected systems that address both social inclusion and environmental imperatives. Public policy serves as an important enabler in this transition, with local governments and urban planning councils acting as catalysts for embedding lifecycle thinking into the governance of urban transformation [28]. Evidence from case studies in like Hong Kong SAR and Vancouver reveals that sustainable community development depends on cross sectoral coordination, long term strategic vision and investment in energy effi-

cient, adaptable infrastructure.

Finally, the cradle to grave application of sustainability within urban communities ensures that SDG 11 is addressed totally and achieved through scalable, inclusive and ongoing urban practices. These strengths the role of sustainable communities as important practices for realizing the full ambition of SDG 11 through lifecycle based planning, technological innovation and equity driven governance.

2.6. SDG12: Responsible Consumption and Production

The SDG 12 highlights the efficient use of natural resources and decrease of waste through reduction, recycling and reuse strategies. In alignment with the cradle to grave concept sponsored by the World Green Building Council, sustainable urban communities has a crucial role in merging these principles across the whole lifecycle of the built environment. this systems oriented approach highlights the need for material accountability from resource extraction, construction to usage, demolition and the integration positioning urban communities as essential driver of circular economy practices and sustainable material flows.

The construction and demolition sector remains one of the largest contributors to global waste, placing urban communities at the centre of both the challenge and the solution by enabling the transformation of waste into secondary resources [29]. Knowing that the building sector consumes about 40% of global natural materials such as stone, gravel, sand and about 25% of the world's timber, reforming material practices within urban communities is critical to mitigate resource depletion and environmental degradation [30]. Within this framework, Sustainable urban communities favours to apply holistic resource management strategies that reduce dependence on virgin materials and integrate renewable, recycled, and low impact alternatives or substitutes through building lifecycle. Those measures boost urban circularity where generated waste is reused and reintegrated into local production systems, supporting environmental and economic sustainability.

Finally, adopting sustainable urban communities allows the actual realization of SDG 12 by encouraging responsible consumption, circular production and enduring ecological resilience steady with the main core of cradle to grave concept.

2.7. SDG13: Climate Change

Sustainable development goal thirteen (SDG13) calls for immediate action to fight climate change and its visible, disastrous impacts which raises the challenge for urban communities specially in developing countries to play a main role. As was viewed through cradle to grave framework supported by the World Green Building Council, the impact of built communities and their environment footprint becomes obvious and reveals the huge opportunity to reduce emissions across the entire lifecycle from extracting material, construction, operation and maintenance to final deconstruction. The existing patterns of urban communities reveals consuming electricity at 70%, using natural resources at 40%, clean water demand of 12%, in addition to generate between 44% and 64% of total solid waste and up to

30%of national greenhouse gas emissions (GHG) as stated in [30]. The cradle to grave concept emphasises the contribution of each phase of urban infrastructure to these impacts, hence the need for systematic transformation.

Building sustainable urban communities based on cradle to grave principles provide a practical roadmap to reduce climate impacts. Procedures like integrating renewable energy technologies, adopting decentralized systems (e.g., rooftop photovoltaics and passive solar design beside using low carbon materials the building process can bring lots of benefits. As an example, retrofitting 25% of urban surface with PV systems can reduce local CO_2 emissions by 40% as mentioned in [31]. Lifecycle based urban planning also helps in tracking emissions, material reuse, energy optimization, providing long term reductions rather short-term solutions. By applying cradle to grave concept, sustainable urban communities can help to achieve SDG 13 acting as resilient, low emissions ecosystems that are aligned with global climate change mitigation targets.

2.8. SDG15: Life on Land

Sustainable Development Goal (SDG 15) highlights the protection, restoration and sustainable use of earth ecosystems as a crucial goal supported by the rise of sustainable urban communities designed under cradle to grave concept backed by the World Green Building Council. This lifecycle-based approach includes source of materials, construction, operation and end of life deconstruction which enables urban systems to mitigate negative impacts on soil, biodiversity and the whole surrounding ecosystems. By coordinating renewable resources, harmless materials, circular waste management, it will allow these communities to significantly to reduce their ecological footprint, aligning with both SDG 15 as well as principles of responsible lifecycle stewardship.

Bianchini and Hewage [32] mentioned that Cradle to Grave lens highlight the ecological costs of construction and Demolition(C&D) waste, strengthening the importance of reaching recycling waste rates more than 90% and in order to prevent land and habitat fragmentation, the adoption of planning sustainable land use is a must. Moreover, Hossain [31] added that decentralised systems such as rooftop solar photovoltaics, organic waste diversion and grey water recycling support smart city operations and reduce the pressure on surrounding ecosystems.

2.9. SDG17 Partnership for the Goals

The seventeenth Sustainable Development Goal (partnership for goals) emphasises the crucial role of the collaboration of all stakeholders in achieving sustainable development objectives. In alignment with the cradle to grave concept sponsored by the World Green Building Council, adopting sustainable urban communities provides a resilient platform across all sectors and governance levels. This lifecycle-based approach, in all its stages of planning, construction, operational and end of life phases of built environment, which requires and reinforces strong cooperation among government, developers, infrastructure builders and provid-

ers, academic institutions and civil society organizations. By aligning urban development strategies with Cradle to Grave sustainability principles, those communities become part of coordinated action, sharing knowledge and transfer, resource sharing essential for advancing SDG agenda.

3. Sustainable Urban Communities Using Cradle to Cradle Concept

The Cradle to Cradle (C2C) approach developed as a response for the need to a new alternative that mirrors nature's closed loop systems in which waste is reused as input for new cycles of production as shown in **Figure 2** [33]. Instead of focusing on end of pipe treatment, C2C seeks to design out waste entirely, turning by-products into co-products and promote systematic innovation. A real and practical framework for this vision is "7R cradle to cradle approach" developed in the American university in Cairo, stresses reduction, reuse, recycling, recovery, regulation, rethinking and re-innovation (7Rs). The 7Rs rule aims at Reducing, Reusing, and Recycling waste. The fourth R of the 7Rs emphasizes the recovering of raw materials from waste through sustainable treatment. The top R is the regulation, without regulation nothing will be implemented. The last 2Rs are Rethinking and Renovation where people should rethink about their waste before taking action for treatment and develop renovation -innovative techniques to solve the problem [33]. This model advances sustainability by shifting from waste disposal toward continuous reuse and reintegration of materials. Although challenges such as energy inputs, contamination, and downcycling persist, recent innovations in upcycling are increasing the potential for higher value resource recovery. C2C represent a radical shift in technical benefits, renewable resource use and climate neutral practices.

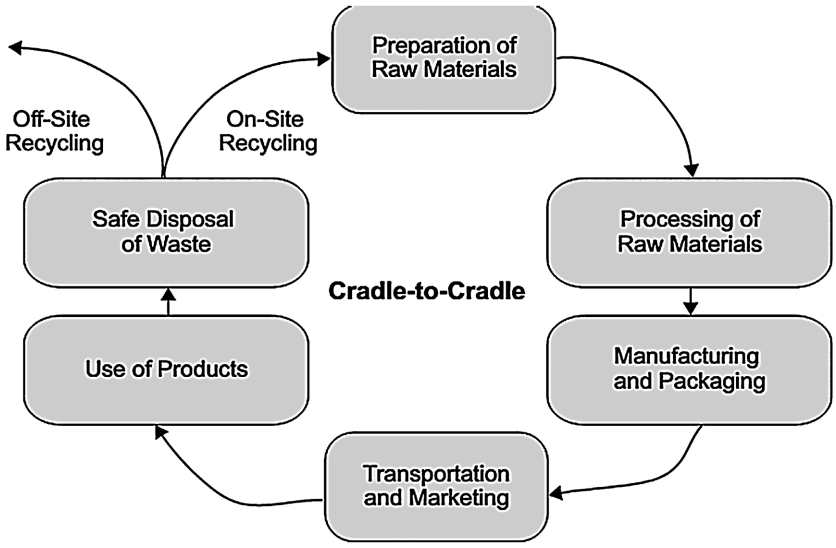

Figure 2. Life cycle analysis according to a cradle-to-cradle system.

Applying C2C approach on the scale of urban communities become more

promising. It will allow cities to close both material and energy loops, embed circular waste and water systems, and integrate renewable energy solutions into urban communities planning. In this manner C2C reduces ecological footprints and supports resilience self sustainable urban environments which align its development with SDGs.

The main drawback of Cradle to Grave(C2G) approach is following the traditional mindset of linear flows of materials that lead to waste, pollution and the depletion of natural capital and resources. Due to the crucial need to deal with those challenges, it requires a fundamental shift toward Cradle-to-Cradle concept, which deals with waste as a resource that can be continuously reused within circular and close loop systems. Based on scientific, economic principles and ethical values, the Cradle-to-Cradle approach encourages sustainability by promoting industrial and engineering systems that are financially, socially beneficial and ecologically intelligent.

Cradle to Cradle approach (C2C) is an approach that is based on efficiency of resources regeneration more than minimizing its usage which lead to preserve both resources and energy, increase social and economic wellbeing. If we apply this approach as long term investment, it will yield exponential benefits: reduce environmental damage, preserving resources, reducing costs, and creating new opportunities in green buildings and designs. C2C reduces ecological footprints, strengthen economic resilience, and boost regenerative development, hence maximizing time, money, and materials efficiency as stated in [34]. They also added that C2C introduce sustainability as regenerative design challenge, by considering the endless cycling of materials through biological and technical treatments without loss of quality, supported by renewable energy. Its three core pillars (waste equals food, use current solar income and support diversity have shaped influential guidelines such as the Hannover Principles [35], the Almere Principles and Floriade Venlo Principles, mostly in sustainable urban communities' design in Netherlands.

Khattab *et al.*, [36] developed a new approach for sustainable wastewater management according to C2C concept for full utilization of wastewater to be part of the water resources. This concept followed the net zero wastewater approach [20] for the decarbonization approach to be able to reach the UN initiative of Net Zero emission by 2050 declared during COP 26. The C2C concept for wastewater was implemented in one of the Egyptian governmental administrative compounds in the New Administrative capital [37]. This Approach will add two more SDGs to the above 9 SDGs by C2G approach. These new added SDGs are SDG 6 (Clean Water and Sanitation) and SDG 14 (Life below Water). Another implementation in the industrial sector was achieved in Saint Gobain-glass industry in Ain Sokhna Egypt [38], they achieved Tarsheed Net Zero Gold Certificate because they implemented both Net Zero solid waste and Net zero wastewater. Also, governorate of Egypt implemented the largest wastewater treatment facility (Bahr El Bakr, Egypt).

3.1. SDG 6: Clean Water and Sanitation

Water constitutes more than 60% of human body and covers more than 70% of earth's surface, is increasingly considered as global concern due to its growing scarcity. This shortage due to improper practices and excess usage patterns that drive communities and societies into water stress characterized as insufficient availability of water to meet daily needs as confirmed by Klobucista and Robinson [39]. This problem became more complicated by the increasing rate of urbanization associated with increasing global population. UNICEF [40] highlighted that by 2025 half of earth population will suffer from water scarcity conditions, while by 2030 around 700 million person will face water scarcity and by 2040 one in every three children will have to live in areas that suffer from severe water scarcity. The integration of C2C concept in wastewater management enhance sustainability by converting both black water and grey water into valuable resource, hence reduce reliance on freshwater supply and tackle directly the global water scarcity issue.

Sustainable Development Goal (SDG 6) includes universal access to clean water, adequate sanitation and hygiene, elimination of open defecation; enhanced water quality, safe wastewater treatment, consistent water supply; integrated water resource management and the protection of marine ecosystems [12] [41]. The main issue with water is expanding its infrastructure and sanitation in developing regions while ensuring equitable and environmentally sustainable.

The cradle to cradle(C2C) approach offers a holistic framework to achieve SDG 6 within urban communities, redefining water as regenerative resource that can circulate endlessly between natural and built environments without compromising quality. This perspective shifts water management systems from linear models towards closed loop systems that reduce both waste and pollution from the hydrological cycle. Practical strategies include clean water conservation, on site treatment and reuse of rainwater and greywater and the utilization of treated wastewater for non-potable uses such as landscape irrigation, industrial cooling and toilet flashes [34] [33].

3.2. SDG 14 Life below Water

Introducing Sustainable Development Goal 14 (SDG 14) within the cradle-to-cradle framework is not only for technical objectives but for broader rethinking of how urban communities interact with aquatic systems. It supports embedding sustainable practices that close material loops, optimize resource utilization and treat design as an ecological tool rather than mechanical process. At the core of this shift develops the move toward bio-based materials and the reuse of non-toxic wastes approaches, aligned with SDG 12 (responsible consumption and production) acting as dual safeguard as from one hand they keep human health in addition to protecting marine and fresh water ecosystems and mitigate the negative impacts of waste discharge.

To achieve zero liquid discharge systems Alegana *et al.*, [42] mentioned that in well-constructed sustainable communities, the toolkit could be enhanced through:

on site wastewater treatment, photovoltaic powered groundwater extraction and biogas recovery from organic wastes. This holistic approach keeps untreated wastewater from entering aquatic systems while reducing reliance on traditional energy and water resources which aggravate climate change and deplete groundwater reserves. Jointly all those closed loop techniques steadily exceed traditional building practices in terms of long-term economic efficiency beside ecological benefits. They contribute directly to SDG 14 by guarding marine biodiversity and reduce pollution coming from waste released in oceans. Parallel measures enhance urban biodiversity via sensitive land use planning or sustain construction or maintain construction and demolition waste recycling rates over 90% are equally important to protect the health of earth and aquatic ecosystems. Henry and Frascaria-Lacoste [43] stated that sustainable urban communities directed under cradle-to-cradle principles, stem as feasible, measurable instruments for enhancing water quality and foster circular urban economy.

4. Conclusions

Sustainable urban communities are not only a development model but a transformative roadmap for accelerating progress toward Sustainable Development Goals (SDGs). They combine social wellbeing, economic resilience and commitment to the environment into an integrated solutions with lasting impact, equipped with comprehensive planning, effective and efficient resource management and low carbon technology and innovation, those communities deliver exponential effects on health advancement, energy efficiency climate resilience. The perspective of Cradle-to-Cradle concept is totally different in its approach of regenerative cycle of reuse, recycling and renewal than the linear concept of Cradle to Grave concept. Applying C2C approach in the development of urban communities preserve water resource, reduce pollution and secure ecosystems for present and future generations. The C2C approach will help the urban planners and the government official to save not only natural resources but also prevent pollution from the source. Also, C2C will help policymakers responsible for Egypt vision 2030 to accelerate the implementation of the 17 SDGs.

Sustainable urban communities using C2C concept will accelerate the implementation of 11 SDGs of the 17 SDGs. These 11 SDGs are SDG no. 3 Good Health and well-being, SDG no.7: Affordable and Clean Energy, SDG no.8: Decent work and economic growth, SDG no.9: industry, innovation and infrastructure, SDG no.11: Sustainable Cities and Communities, SDG no. 12: Responsible consumption and production, SDG no.13: climate change, SDG no.15: life on land, SDG no.17: partnership for the goals, SDG no.6:clean water and sanitation and SDG no.SDG 14 Life below water. The last two SDGs are related directly to C2C for wastewater management using Net Zero wastewater concept.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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