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Understanding the role of community participation in enhancing circular economy outcomes in developing regions

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Abstract

The notion of the "circular economy" (CE) is rapidly transforming into a novel paradigm for sustainable growth. A circular economy is one in which waste from one industrial process is turned into valuable input into another and in which materials and products are recycled, mended, and reused rather than thrown away. Despite significant innovation and advancements in policy, emerging nations' CE paths have received insufficient attention. Global efforts to guarantee sustainable growth will depend heavily on how well the CE performs in emerging nations. Developing nations are already major worldwide hubs for production and are about to take the lead in global consumption. There may be difficulties in making the switch from a linear to a sustainable circular, but public involvement is essential for long-term success. This study reviews the rapidly expanding body of work on CE that examines its theory, actual applications, and the significance of public involvement in developing nations. The review also functions as an evaluation of the obstacles, tenets, and tactics for raising public engagement in developing nations. Ultimately, the evaluation concludes with suggestions for boosting public involvement in circular economy activities and offers an analysis of public participation in CE's ongoing projects in developing nations.

Keywords: Circular Economy; Developing Countries; Environmental Decision Making; Public Participation

1. Introduction

Global industrialization has led to the generation and accumulation of massive volumes of garbage throughout time. To guarantee that resources like food, water, and money will be sufficient for future generations, it is imperative to transition from a linear to a circular economy. The circular economy is one concept that has grown in acceptance over time as a fruitful means of attaining regional, societal, and worldwide sustainability (Shahzabeen, Ghosh, Pandey, & Shekhar, 2023). Because they have the potential to address the many environmental and development challenges brought on by excessive resource consumption at both local and global levels, the concept and practices of the Circular Economy (CE) have attracted a lot of attention as a means of achieving local, national, and global sustainability (Schroeder, Anggraeni, & Weber, 2018). A circular economy is defined as "an industrial economy that is restorative or regenerative by intention and design" and "regenerative and restorative by aims and design" by the Ellen MacArthur Foundation (Kirchherr, Yang, Schulze-Spüntrup, Heerink, & Hartley, 2023).

After that, the idea of a circular economy subtly suggests a restorative and regenerative economy. Providing full and productive employment, inclusive, sustained, and sustainable economic growth, and decent work for all are the eight Sustainable Development Goals (SDGs). Part of this objective is to increase resource efficiency. Twenty-one of the targets can be achieved directly by the CE practices, and the remaining twenty-eight targets can be achieved indirectly (Kabir & Kabir, 2021) (Schroeder, Anggraeni, & Weber, 2018). The five Sustainable Development Goals (SDGs) that the CE practices would immediately contribute to achieving are SDG 6, SDG 7, SDG 8, SDG 12, and SDG 15. High ratings have

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been given to the CE practices for their direct and indirect contributions. On the other hand, it might unintentionally help achieve SDGs 1 (no poverty), 2 (no hunger), and 14 (life below water).

The three R's of the present circular economy systems—reduce, reuse, and recycle—have been expanded to include the six R's as well: reuse, recycle, redesign, remanufacture, reduce, and recover. Over 20 years have passed since the CE was first put into use globally. Since the CE is thought to change traditional economic development more sustainably, it has gained widespread recognition and support from the global community (Liua, Adams, & Walker, 2018). The CE has been implemented, for instance, in the United States (U.S.), China, Japan, Germany, the United Kingdom (U.K.), and Canada. However, because different cultural, social, and political institutions exist throughout the world, the CE idea has been used differently. For example, in the United Kingdom, the CE is being used as the national development strategy. Portugal, Denmark, and Switzerland are among the other European nations that have implemented the CE for waste management.

According to one perspective, citizens are involved in the management of urban garbage and the associated circular economy. Recycling waste materials is therefore essential to "closing the loop." As garbage producers and consumers, citizens have a connection to waste management and the circular economy (Izdebska & Knieling, 2020). Increased reuse and recycling can emerge from individual awareness when carrying out these two jobs, which can lead to more responsible consumption and compliance with waste separation and collection schemes. To encourage pro-environmental behavior and adherence to waste management plans, public and private organizations in charge of managing waste at the city level engage residents through a variety of initiatives, including informational sessions, communication, consultations, and participation. Nonetheless, it requires time and effort to modify behavior patterns.

Thus, the first goal of this systematic review is to examine the body of research on community involvement and the circular economy. The second goal is to look at how circular economy efforts and the concept itself are implemented in poor nations. Thirdly, to list obstacles to and methods of public participation in the circular economy and offer suggestions for enhancing public participation in the circular economy in developing nations.

2. Concept of Circular Economy

In a linear economy, products are mined, manufactured from raw materials, and then thrown away after their useful life are over. The Ellen MacArthur Foundation (2013) defined the "take-make-dispose" approach as follows. This strategy will inevitably lead to large amounts of rubbish, energy use, resource strain, and environmental harm (Xinan & Yanfu, 2011). The linear economy is unsustainable because it inhibits reuse and recycling. The circular economy is an alternative to the linear economy (Ogunmakinde, Egbelakin, & Sher, 2021). Although it has gained popularity recently (Ogunmakinde, Egbelakin, & Sher, 2021), the concept of the "circular economy" is not new (Patwaa, et al., 2021). One of the main forces supporting the "circular economy" movement in 2010 was the Ellen MacArthur Foundation (EMF). However, the idea's origins are wide-ranging and not particularly connected to any one person or period of history (Patwaa, et al., 2021) (Ogunmakinde, Egbelakin, & Sher, 2021) (Rodríguez, Florido, & Jacob, 2020). According to this arrangement, the following intellectual groups and their writers have improved and developed the general idea: Regenerative design, biomimicry, industrial ecology, natural capitalism, blue economy, cradle-to-cradle, and performance economy (Rodríguez, Florido, & Jacob, 2020). A new economic paradigm known as the "circular economy" is based on environmental economics, which incorporates science into sustainable development and sustainability. Although the notion and advantages of the circular economy are beginning to emerge, the actual execution and shift towards a circular economy are impeding the idea's widespread adoption (Patwaa, et al., 2021). There are many definitions of the circular economy in the literature. In their assessment of the literature, Kirchherr et al. (2018) found 114 definitions. Practitioners, corporate executives, academics, and private foundations all have different interpretations of what constitutes CE. A circular economy is "an economy which balances economic development with environmental and resource protection," according to the United Nations Environment Program (UNEP). It prioritizes environmental preservation and resource efficiency, recycling, and reuse. According to the Ellen MacArthur Foundation(2013), a circular economy is "an industrial system that is restorative or regenerative by intention and design". A circular economy, according to Kirchherr et al. (2017), is an economic system built on business models that replace the notion of "end-of-life" with methods of reducing, reusing, recycling, and recovering resources in the processes of production, distribution, and consumption.

Numerous issues related to urban sustainability are anticipated to be resolved by the CE. According to some, CE is one way to address megatrends like urbanization, climate change, and poor infrastructure that led to issues like flooding, water pollution, shortages of water, negative health consequences, and expensive restoration. Public health, resource efficiency, and trash volume are among the several factors that Ilić and Nikolić (2016) identified as driving forces toward CE in municipal solid waste (MSW). There are very high expectations for the CE as a strategy to address issues related

to sustainable urban development. Implementing CE practices might be difficult due to management resistance, a lack of enough funding, human resources, technology support, and consumer awareness. Government, business, and consumer awareness must work together to achieve this. It's also essential for the value chain to share knowledge on sustainable practices.

Numerous academics have done a variety of recent research that have discovered similar difficulties related to CE. The absence of environmental laws, policies, and regulations; government backing; a lack of technical expertise and competency inside organizations; a lack of funds and qualified labor; technological issues; cultural and societal issues; and more are some of these barriers (Gedam, Raut, Jabbour, Tanksale, & Narkhede, 2021). In addition to the previously mentioned challenges, further barriers preventing organizational change towards CE include the lack of market availability, lack of circular design, lack of top-level management support, and lack of SC integration (Lahane, Kant, & Shankar, 2020). But according to recent research by Jabbour et al. (2020), internal hurdles including unclear departmental roles and inadequate communication are the ones that derail the CE out of all the barriers that have been found (Gedam, Raut, Jabbour, Tanksale, & Narkhede, 2021). Moreover, significant obstacles to CE in the agriculture value chain included a lack of green financial policies and a lack of environmental consciousness (Xia and Ruan, 2020). Another set of obstacles impeding the implementation of CE was discovered by Jaeger and Upadhyay (2020). These included problems with product quality, difficult SC, a lack of coordination, inadequate production and design, high investment costs, and product disassembly. It is imperative to note that the enumerated entire list of barriers and justifications related to the CE transition may not be all-inclusive and may differ throughout organizations (Gedam, Raut, Jabbour, Tanksale, & Narkhede, 2021).

3. Circular economy in Developing countries

In order to guarantee sustainable growth, international initiatives will depend heavily on the CE's performance in emerging nations. Developing nations are already major hubs for manufacturing worldwide and will soon lead the way in global consumption. The requirements of an increasing and urbanizing population can be met while reducing the risk of a sustained increase in the consumption of primary resources, related emissions, and environmental damage if circular principles are successfully incorporated into industrial expansion and infrastructure development plans (Ferronato & Torretta, 2019). For instance, the CE may assist in providing high-quality housing and infrastructure at a minimal cost to the economy and the environment by implementing modular, adaptive, and resilient design concepts.

Almost all sectors of the developing world must transition to CE practices in order for them to become sustainably developed. Waste collection and management is one of the most crucial areas. Thus, in order to streamline the process, sophisticated technologies that are affordable are needed. In addition, the governments of emerging nations face formidable challenges related to appropriate management, policy formulation, policy execution, and technology barriers. However, in order to manufacture things that are affordable, favorable to the environment, and in high demand by the populations of wealthy countries, the industries in poorer nations are shifting toward cleaner manufacturing and CE practices (Reis, Barreto, & Capelari, 2023).

Most developing nations lack data and analysis on circular economy (CE), which hides significant potential for hastening the shift to circular value chains and activities. A number of developing nations are actively working to implement national CE policies. Nigeria, South Africa, and Rwanda formed the African Circular Economy Alliance in 2017.

Meanwhile, India has unveiled a resource efficiency plan that acknowledges the contribution of circular economy practices (Desmond & Asamba, 2019). The thirst for regional cooperation and global trade may also have an impact on the prospects for the CE in developing nations. Only in the event that there are regional centers for material recovery, remanufacturing, and reprocessing that import used goods and fix them so they can be sold to consumer markets would many poor nations be able to participate in CE value chains.

Most of the time, developing nations lack an effective and organized strategy to integrate the goals of the circular economy into their overall development approach and policy decisions. In order to combat poverty and preserve the environment, the nations should adopt policies that will aid in decoupling growth. This would allow the economy to continue growing while maintaining an inclusive development viewpoint. The adoption of CE methods in developing nations can be sparked by advancements in a nation's economic performance as well as a growing public understanding of the value of CE. Implementing CE practices presents a number of issues that call for a diverse, inclusive, and cooperative approach from stakeholders (Langen, Vassillo, Ghisellini, & Restaino, 2021).

To manage solid waste in a CE way, a cooperative approach focused on valuation, interactive and flexible tradeoff, and Shapley value is needed. Global efforts to guarantee sustainable growth will depend heavily on how well the CE performs

in emerging nations. Developing nations are already major worldwide hubs for production and are about to take the lead in global consumption. If circular principles are successfully incorporated into strategies for industrial expansion and infrastructure development, it will be possible to meet the demands of an ever urbanizing and growing population while reducing the use of primary resources, related emissions, and environmental pollution (Sánchez-García, Martínez-Falcó, Marco-Lajara, & Manresa-Marhuenda, 2024). For instance, the CE can contribute to the delivery of high-quality housing and infrastructure at minimal financial and environmental cost by implementing modular, adaptive, and resilient design concepts.

3.1. Public Participation in Circular Economy

International environmental law now generally recognizes and supports public engagement in decision-making as a way to enhance environmental governance. Around the 1970s, the issue started to garner political attention, which ultimately resulted in the 1992 Rio Declaration's Principle 10 affirming public engagement as a fundamental tenet of environmental protection and sustainable development (Bekhoven, 2016). Two Since then, two specific regional treaties—the 1998 Aarhus Convention and the 2021 Escazú Agreement—have established Principle 10 as a legally enforceable human right, defining public engagement in environmental problems as such.

Citizen involvement in the circular economy is defined as the involvement of citizens in direct and supportive actions (processes) for inclusion in the cycle of the circular economy. Residents' participation will make it easier and less difficult to implement different circular economy ideas (Fund, 2020). The processes to trigger resident involvement are mainly education, activism, and influence. Implemented in parallel, they offer a chance for deeper and better change. Education is a longer, planned process that gradually increases knowledge among different groups of stakeholders: children and youth, representatives of NGOs and local leaders, employees of the municipality and its organizational units, and entrepreneurs.

Due to the complexity of the idea and the wide range of possible contributions, public participation is crucial to the implementation of a circular economy. This is because protecting the environment, ensuring fair and equitable resource allocation, and managing natural resources better all call for the full support of all stakeholders. It will be challenging to coordinate the public's efforts toward the circular economy without widespread participation (Velenturf & Purnell, 2021).

Building capacity is typically required to directly address demands and establish the general framework for the circular economy. Such capacity building ought to be seen as a long-term process with definite short-, medium-, and long-term objectives that are subject to regular evaluation. It is important to take into account the capacity requirements at different stages of the circular economy's implementation (Lewandowski, 2016). An effective capacity-building process also needs improved communication, information sharing, and significant interactions across all stakeholders and levels. Furthermore, functional eco-industrial networks are a useful addition to conventional technical support. Government organizations at all levels should be leading this process, but one major obstacle will likely be their predicted reluctance to create creative public engagement initiatives on the circular economy (Geng & Doberstein, 2008).

As stated by Russo-Garrido & Padilla-Rivera (2020) Society can express its opinions through participation and local democracy. In certain situations, these methods might even impact decision-making, such as when it comes to circularity decisions (Padilla-Rivera & Russo-Garrido, 2020). In addition to facilitating information about a bureau's operations and allowing individuals to participate in decision-making, both features can work as local change mechanisms to educate the public. On this topic, society's understanding and results from involvement can be very helpful in addressing enduring social issues in a fair, open, and multifaceted manner, as well as in facilitating innovations for circularity. Therefore, in order to try policy coherence, CE policies should specifically suggest strategic and methodical measures to bring all stakeholders together (Friant, 2022).

There are three recognized levels of involvement in environmental issues: involvement in the information-gathering process, involvement in the planning process, and involvement in financial decision-making. The evaluated literature encompasses a range of objectives and scopes, including decision-making progress, stakeholder interest and views of the economy, and consumer perspectives on circular economy initiatives for waste reduction (Reed, 2008). As a result, when CE is in operation, community users should participate in more democratic decision-making. From the standpoint of a stakeholder, it is also critical to pay attention since this strategy can produce better judgments that are more likely to be put into action, increase legitimacy, and foster a broader awareness of the complexity of social issues. Local actors' involvement is crucial for a community-centered viewpoint that emphasizes local empowerment. Social acceptance, or community acceptance, is another aspect that is associated with the community and decision-

making engagement (Haldane, et al., 2019). Initiatives are said to have obtained community acceptability when local actors, in particular residents and local politicians, accept decisions made inside them (in this case, programs related to CE). This is where the idea of "Not in My Backyard" (NIMBY) gets distributed (Padilla-Rivera & Russo-Garrido, 2020). When locals perceive differing benefits and costs from the development of specific initiatives, NIMBY conflict occurs. This idea is essentially the result of how the community views certain things, especially how they feel about the necessities of such facilities—such as noise, hygienic conditions, safety, etc.—which the majority of residents find objectionable.

Additionally, frameworks for comprehending public perceptions of how CE efforts impact local communities must be developed by scholars and public policymakers. When it comes to putting techniques for decision-making into practice, education and awareness-raising activities have the potential to change this resistance (NIMBY) and improve community harmony.

4. Challenges in Community Engagement in Circular Economy Outcomes

4.1. Insufficient Time

Not many community organizations have the resources—time, money, or manpower—to respond to and attend every engagement request. It's imperative to think carefully about when to become involved and when to pay those who are less fortunate. Participating in in-person engagement events may be a challenge for parents and caregivers, a large proportion of whom are women. Attending during business hours can be difficult for those who are employed.

4.2. Mistrust

It's possible that people who have interacted with the legal system or have had bad experiences with governments won't be open to sharing their ideas with you. That's why it's crucial to maintain openness and inclusivity.

4.3. Privacy Issues

Residents may become fearful that they will become the subject of discrimination or that their livelihood is at jeopardy if a substantial amount of personal information is requested. Because of this, it's critical to be open and truthful about the purposes for why you're requesting particular personal information as well as the intended uses of it.

4.4. Communication medium

Understanding the various languages used in a community and offering multilingual services are essential for enabling people to interact with and understand content in the language of their choice. The linguistic level must also be appropriate for the intended audience. Think about how you could engage with children or teenagers. Steer rid of jargon and speak in an approachable, plain manner.

4.5. Financial Stress

Participating in an engagement program may put some community groups in financial jeopardy. They may discover that it is not feasible to take time off work to attend a face-to-face meeting or that the expense of going will be excessive. It may be imperative to consider equitable compensation for low-income populations and to ensure that people's time and expertise are appropriately appreciated.

4.6. Level of Education

People may not be able to participate effectively in society if they lack the confidence and faith to address their own difficulties. One of the features of South Africa, according to Baijnath (2018), is that the impoverished have little access to communication and educational resources, which are essential for public participation meetings (Matloga, Mahole, & Nekhavhambe, 2024). Therefore, involving the public is viewed as empowering and often aids in the realization of its potential for those who are better qualified. In light of the foregoing, it is appropriate to provide public engagement and access to relevant data for effective planning and development.

4.7. Defiant Members of the Community

Overcoming indifference and resistance to change is one of the main challenges. It's possible that a large portion of the population feels too preoccupied or alienated to take an active part in trash management programs. To address this

issue, specific communication tactics that emphasize the advantages of participation for both the individual and the community are needed to persuade people to invest their time and energy.

4.8. Unfair Involvement

Ensuring fair involvement from a variety of community organizations presents another big obstacle. The inclusivity of participation initiatives may be hampered by elements including socioeconomic position, linguistic obstacles, and cultural disparities. Create outreach initiatives and programs that are interesting and accessible to all villagers to overcome this difficulty.

4.9. Absence of infrastructure

Inadequate infrastructure may make it impossible to fully participate in the CE, for example:

- Finding assistance to sharpen a push lawnmower was challenging.
- Part of the reason university students throw away perfectly good products is that there isn't the infrastructure in place to collect and reuse them. - Organizations (like the University) have so much extra food that they lack the infrastructure to properly handle it.
- Participants proposed that donated goods be picked up by certain groups.
- A participant who is a trustee at a nearby institution stated that the college embraced a student-proposed plan to place recycling bins on campus and built the necessary infrastructure.

4.10. Principles for Better Community Participation

4.10.1. Objectivity

Before, during, and after the mobilization, it is important to make explicit the goals and objectives of the process, as well as the timetables, techniques, and instruments employed.

4.10.2. Combined knowledge

Believing that everyone is capable of making pertinent judgments for the greater good if allowed to learn, and that everyone has unique expertise that should be shared.

4.10.3. Testing

Swapping ideas, recognizing power dynamics, testing, questioning, altering plans and scales, and staying away from red tape

4.10.4. Kindness

Realizing that cooperation is a product of a network of natural and legal individuals who feel sufficiently linked and trusted to be able to express themselves and cooperate despite differences, rather than something that can be forced onto them.

4.10.5. Availability

Ensuring that everyone has access to decision-making locations, times, and vocabulary. This is about listening to individuals without bias toward their class, gender, race, or condition, wherever they may be and whenever they may.

4.11. Strategies for Enhancing Community Participation

4.11.1. Grassroots Movements and Environmental Stewardship

Community-led waste management projects and environmental stewardship have benefited greatly from the efforts of grassroots movements. People and organizations that are devoted to encouraging sustainable practices and have a strong passion for environmental preservation are involved in these initiatives. They have proved effective in changing people's behaviors and increasing knowledge of the value of trash management. The sense of ownership that grassroots initiatives instill in community members is one of their main advantages. People in the community are more inclined to accept accountability for their waste and participate more actively in waste management programs when they feel like they own something. Involvement and engagement of the community is also encouraged, which is crucial for the accomplishment of any waste management program

4.11.2. Instructional plans and Modifications to Behavior

Community-led trash management projects must include educational programs. Through these programs, behavior modification and increased understanding of the value of waste management are encouraged. In addition to encouraging people to adopt sustainable practices, they offer information on trash reduction, recycling, and composting. The effectiveness of waste management programs depends on behavioral change. It entails modifying people's perspectives on and actions related to trash. By educating people about the advantages of sustainable practices and the negative effects that waste has on the environment, educational programs can aid in the promotion of behavioral change. By offering helpful pointers and guidance on recycling and waste reduction, they can also inspire people to take action.

4.12. Techniques for effective engagement

4.12.1. Rewards, Incentive Plans, and Acknowledging Contributions

Encouragement of community people to participate in waste management programs can be achieved through the use of incentives, awards, and recognition for their accomplishments. Composting for free, reduced trash disposal costs, or access to recycling facilities are a few examples of incentive items. Certificates of acknowledgment or public acknowledgement of a community member's contributions are examples of rewards.

4.12.2. Community Meetings

Arrange frequent get-togethers so locals may talk about problems, exchange ideas, and decide as a group. These gatherings promote community involvement and offer a forum for candid conversation.

4.12.3. Focus groups

Assemble a small group of community members with varying viewpoints to get their opinions and views on particular subjects or initiatives. Focus groups facilitate in-depth conversations and the examination of many perspectives.

4.12.4. Surveys and Questionnaires

Use surveys and questionnaires to get community members' thoughts, preferences, and feedback. This method offers a defined format for community input and enables larger-scale data collecting.

4.12.5. Workshops & Training Sessions

To increase community capacity and provide people with information and skills, hold workshops and training sessions on pertinent subjects. These participatory workshops promote learning and active engagement.

4.12.6. Participatory Mapping

Involve community people in mapping activities to pinpoint important assets, obstacles, and openings in the community. Participatory mapping makes it possible to spatially reflect community knowledge and promotes group decision-making. Create committees or groups dedicated to community action that concentrate on particular problems or initiatives. Through these groups, community people can take an active role in organizing, carrying out, and overseeing projects that meet their needs and goals.

4.12.7. Online Platforms & Social Media

Make use of social media and online platforms to exchange information, solicit opinions, and involve community members in conversations. Participation is made easy and accessible with the use of these digital tools, especially for diverse or geographically scattered communities. By giving community members, a voice in the decision-making process, participatory budgeting involves them in the distribution of public funds. Transparency, accountability, and community ownership of resource distribution is promoted via participatory budgeting.

4.12.8. Community-driven projects

Encourage and support projects that are led by people or groups who take the initiative to recognize and solve issues in their communities. This strategy supports sustainable development by giving community members the authority to take charge in finding answers.

5. Conclusion

There are opportunities and challenges associated with implementing the circular economy principles in poor countries. One of the biggest challenges is the existing reliance on traditional linear economic models, which prioritize resource extraction, production, consumption, and disposal. Significant changes must be made to company policies, laws, and infrastructure in order to implement the circularity shift. This transition becomes even more challenging due to limited technological and financial resources.

Developing countries do, however, have an additional opportunity to innovate and adopt circular techniques in addition to traditional economic paths. Embracing circularity can reduce adverse environmental effects, increase productivity, and create new job opportunities. Prioritizing local resource management can help communities become less dependent on costly imports and become more resilient.

Furthermore, circular economy strategies contribute to sustainable development goals by offering a comprehensive framework for environmental preservation, social justice, and economic growth.

Cooperation among governments, businesses, civil society groups, and international partners is necessary to fully realize the circular economy's promise in developing nations.

By fostering fair and sustainable development, capacity building, technology transfer, and targeted investments may unlock the transformative power of circularity.

According to this analysis, involvement has a significant role in predicting the outcomes of the circular economy in developing countries. It also suggests that active participation and contribution increase the possibility of circularity in society by facilitating the achievement of desired objectives. The process of enabling people to identify the issues that are important to them, make decisions that have an impact on their lives, establish and implement policies, plan, develop, and offer services, and take initiative to bring about change is known as participation.

To achieve circular economy outcomes members of community, have the main role in the process of development and they doing things for themselves. In these circular countries member of community as actors are active. The study detailed the concept of circular eco Instructional Plans and Modifications to Behavior, public participation in circular economy and circular economic situation in developing countries. Moreover, this has identified the principles for successful public participation such as objectivity, combined knowledge, availability, Testing, benevolence and availability. Further it identifies the challenges in public participation and strategies that could be used to overcome as a developing nation. It concluded that public participation is an integral part when it comes to circular economy outcomes as a developing nation

5.1. Recommendations

1. Raise awareness and training Inform the public on the value of circular economy practices and how it affects the environment. Create and carry out informational campaigns, workshops, and educational programs to educate the public about circular economic techniques and their effects
2. Make things more convenient and accessible. Make circular economic activities more accessible to all residents. Increase the number of garbage collection locations in the community, provide easy ways to dispose of waste, and make sure the infrastructure for waste management is distributed fairly.
3. Encourage a shift in behavior. Urge locals to start disposing of their rubbish responsibly. Run campaigns to modify behavior, offer rewards for recycling and appropriate disposal of garbage, and provide advice on how to cut down on waste production.
4. Make more stakeholders involved. Encourage cooperation between people, community organizations, and municipal government. To encourage continued discussion and collaboration, schedule frequent public forums, invite leaders of the local community, and set up routes of communication
5. Increase openness and information exchange Make sure that waste management decisions and practices are transparent. Publicly release trash management strategies, budgets, and data; additionally, make contact information readily available for comments and questions.
6. Deal with the gaps in socioeconomic status reduce the differences in waste management services provided to various socioeconomic categories. Implement focused initiatives to guarantee that everyone can afford garbage disposal services and to give support and resources to marginalized areas.

7. Strengthen the legal structures to encourage public involvement, waste management legislation should be strengthened. Involve the public in the policy-making process, review and update current regulations, and enforce adherence to waste management legislation.
8. Calculate and track advancement: Analyze the success of initiatives for public involvement in trash management. To make data-driven decisions, set up performance indicators, carry out frequent evaluations, and get input from stakeholders
9. Encourage technological uptake and innovation: Promote the application of cutting-edge techniques and technology in trash management. Invest in R&D, test-drive new technology, and offer financial incentives to companies and individuals who choose environmentally responsible waste management practices.
10. Encourage communal ownership: Encourage communities to take ownership of and responsibility for garbage management. Encourage community-led projects and include locals in decision-making, such as recycling programs and neighborhood clean-up campaigns.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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