



ZERO WASTE, CIRCULAR CITIES AND STATES

Formulating Pathway For The Circular (Economy) Development Of Telangana, India

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BACKRGROUND

India, with its vast population and growing urbanization, faces significant challenges in managing waste and promoting sustainable practices. The principles of Reduce, Reuse, and Recycle (RRR) AND Circular Economy, offer a holistic approach to waste management, resource conservation, and environmental protection. To effectively implement the Reduce-Reuse-Recycle (RRR) mission in Telangana, it is crucial to develop comprehensive strategies that encompass public awareness, infrastructure development, policy frameworks, and active community participation.

We explore key strategies to drive the RRR mission in Telangana, forward and create a sustainable future. The State can design and implement the RRR SYSTEM at following levels:

1. **Industry and Industry Clusters:** This includes corporates, MNC, industrialised areas and SEZ and SME clusters etc. Organised setups like large buildings/ offices, airports etc., those depending on 3rd party service providers/Facility management companies, for their waste management.
2. **Municipalities:** This includes urban waste management system, offices, and associated operations.
3. **Residential Societies & Communities:** This includes independent homes, societies & residential apartments, community of villas etc
4. **Public (Open) Spaces:** This includes Railway and Bus Stations, Roads, Water bodies (river, lakes..) etc. dedicated to public.

As different spaces generate different type of waste, the way its collected and channelized is different, and recyclability varies, different RRR and circularity models for these different space need to be designed.

Broad strategies for implementation of RRR models in mission mode in Telangana are provided below:



1. **Public Awareness and Education:**

One of the fundamental steps in implementing the Reduce-Reuse-Recycle mission is to foster public awareness and educate citizens about the importance of waste reduction and recycling. This can be achieved through:

- a) Mass Media Campaigns:** Launching extensive media campaigns that use television, radio, print, and online platforms to disseminate information, share success stories, and promote the benefits of waste reduction and recycling.
- b) School Programs:** Introducing waste management and recycling education in schools to instill eco-consciousness in students from a young age. This can include workshops, competitions, and practical demonstrations.
- c) Community Engagement:** Organizing public events, seminars, and workshops in collaboration with local communities, non-profit organizations, and citizen groups to raise awareness, provide guidance on waste segregation, and promote community participation.

2. **Waste Segregation At Household & Community Level and Collection & Monitoring:**

Effective waste segregation at the source is a crucial aspect of the Reduce-Reuse-Recycle (RRR) mission. The following steps can be taken to encourage proper waste segregation:

- a) Segregation at the Source:** Encouraging citizens to segregate waste into separate categories such as organic waste, recyclable materials (paper, plastic, glass, metal), and non-recyclable waste. Providing households with color-coded bins or bags for easy segregation can simplify the process.
- b) Door-to-Door Collection:** Implementing an efficient door-to-door waste collection system to ensure the segregated waste reaches the appropriate facilities for recycling, composting, or safe disposal.
- c) Integration of Informal Sector:** Engaging and integrating the informal waste sector, including waste pickers and scrap dealers, into the formal waste management system. Providing them with training, protective gear, and fair wages can enhance the efficiency of waste collection and recycling.



3. Infrastructure Development- Circular Industry Clusters:

Investing in appropriate infrastructure is vital for the success of the RRR mission and to make Telangana a “Circular State”, i.e. the first of its kind in the country. In year 2021-22 Krystahl (a jv of Sanshodhan and GICE&SDGs) has designed “Circular Industry Cluster Model’ and submitted to States like Chattisgarh and Odisha. The state shall focus on the following:

- a) **Material Recovery Facilities (MRFs):** Establishing MRFs equipped with modern machinery to sort and process recyclable materials effectively. These facilities can help recover valuable resources from waste streams and minimize landfilling.
- b) **Composting and Biogas Plants:** Setting up composting facilities and anaerobic digestion plants to process organic waste into compost and biogas, respectively. These initiatives not only reduce landfill burden but also provide valuable organic fertilizers and renewable energy.
- c) **Recycling Industries Within Suitable Industry Cluster:** Encouraging and supporting the establishment of recycling industries to promote the processing of recyclable materials locally. This can create employment opportunities and contribute to the circular economy. Every industry cluster should have at least one recycler, to recycle the waste generated in that particular industry cluster. For eg. E-City shall have e-waste recycling unit within. Kakatiya Mega Textile park should have textile recyclers within. This will help prevent waste and related pollution.
- d) **Circular Industry Clusters:** A small country like **Singapore** is having 6 or more circular industry clusters, but India has none. Krystahl (www.krystahl.in) proposed this to the State of Chattisgarh, State of Odisha and more. The proposal was highly appreciated by the senior leaders and development authority officials; but the investment from the governments is requirement to implement such high impact project. The model has potential to create unique system for precious metals & material resource recovery, >one lakh jobs in each cluster and create pollution free cities across the state.



4. **Incentives and Policies & E-Credit System by Krystahl:**

To drive behaviour change and encourage active participation, the state can implement supportive policies and provide incentives, including:

a) Incentives for Recycling: Few platforms in India are striving to sustain the incentive-based mechanisms such as points/rewards, relating it to small purchases/daily use goods/ utility bills, for citizens who actively participate in waste segregation and recycling programs.

b) Extended Producer Responsibility (EPR) & Credit System: Enforcing EPR policies that hold manufacturers responsible for the end-of-life management of their products. This clubbed with 'Credit System' incentives manufacturers for EPR compliance, design eco-friendly products and establish take-back systems for recycling. A unique "Digital E-Credit System" designed and patented by 'Krystahl' provides a green-wash proof mechanism to incentivise EEE producers for EPR Compliance.

c) Plastic Waste Management: Implementing bans or levies on single-use plastics and promoting alternatives; encouraging the use of eco-friendly packaging materials can significantly reduce plastic waste generation. Currently, street vendors etc are heavily using SUPs and there is hardly any impact of 'ban on plastic' in the market. This also means that plastic pollution continues despite various rules and regulations across India.

5. **Digital Technologies & Platforms**

Digital technology platforms can play significant role for implementation of RRR mission. Pilot version of 'e-waste exchange' (Pilot Year 2018-2020, before covid19) experienced the transaction of >500Tonnes of e-waste within 20 months. The e-waste exchange, the digital circular economy model was awarded with Global SDG Award from RFI, UK and DDCap Abu Dhabi, and recognised as Highly Commended- The Circulars 2019 by World Economic Forum, Davos. Now it is being implemented in corporates /MNCs to enabling implementation of circular economy in businesses and organisations.

6. **Eco-Bank**

Setting up an Eco-Bank , in every community in mega-cities and towns, to valorise recyclable waste involves a combination of government policies, financial incentives, and



digital-infrastructure development. Ministry of Urban Development (MAUD) and City administration can monetise this model; while reducing waste, enabling the ecosystem for resource recycling and recovery.

7. Invest in Research & Development Of Recycling Technologies

Government shall invest into the research on zero waste, circular economy and recycling technologies. Investing in research for zero waste and a circular economy, as well as leveraging AI (Artificial Intelligence) for circular economy initiatives, requires a strategic approach. Such step will enable sustainability while fostering economic growth and environmental stewardship.

CONCLUSION

Implementing the Reduce-Reuse-Recycle mission in an Indian states requires a multi-faceted approach involving public awareness, infrastructure development, policy frameworks, and community engagement. By fostering public participation, investing in appropriate waste management infrastructure, and implementing supportive policies, the state can successfully transition towards sustainable waste management practices. Together, we can create a cleaner, greener future for India, preserving our natural resources and ensuring a healthier environment for generations to come.