CONFERENCE ON
LEGACY WASTE MANAGEMENT
- CHALLENGES & WAY FORWARD

Date : 26th July, 2022

Venue : Suvarna Bhavana conference hall, BWSSB office
Malleshwaram, Bengaluru, Karnataka - 560055

DIRECTORATE OF MUNICIPAL ADMINISTRATION, UDD

Federal Ministry for Economic Cooperation and Development

TIDE 25 @ 2018

BORDA SOUTH ASIA

INTRODUCTION

Unscientifically designed and managed landfills typically referred to as dumpsites or legacy waste sites can lead to irreversible environmental and health hazards, ranging from greenhouse gas emissions, groundwater and surface water pollution, air pollution, to surface fires. To address these, there is an urgent need to remediate these sites. In this process, valuable land resources can be reclaimed.

The Swachh Bharat Mission 2.0 has given a clear mandate to all Urban Local Bodies (ULBs) in India to complete remediation of their existing dumpsites by 2023 (for cities with less than 10 lakh population) and by 2024 (for cities with more than 10 lakh population) in compliance with environmentally sustainable methods. There are 192 identified dumpsites across Karnataka with an estimated 1.15 crore MT of legacy waste, therefore, remediating huge amounts of legacy waste in the next two-three years is a massive challenge. The technical capacity of the ULBs and other stakeholders particularly in small and medium towns would play a pivotal role in dealing with such a problem. Thus, the Conference on Legacy Waste Management (LWM) was envisioned by BORDA-SA, TIDE and DMA with focus on ways of tackling the problem which includes policy, business models, technological solutions, etc. The objective was also to provide a platform for exchange of experience on legacy waste management from across the country and its process from the perspective of urban local bodies, private players and sector experts. The conference was held on 26th of July 2022 at Suvarna Bhavana, Malleshwaram, Bengaluru-560055 and was attended by around 160 participants from within and outside Karnataka.

Key stakeholders involved

- Key decision makers from Karnataka State Government
- ULB officials from Karnataka and other states
- Sectoral experts and practitioners from the field of Legacy Waste Management
- Industry players and other relevant organizations

OPENING SESSION AND VISION

The conference started with a prayer song and the lighting of the lamp by the dignitaries followed by opening remarks, special address by the dignitaries and Keynote speech.

Opening Remarks:

Mr. Manas Rath, Senior Advisor- BORDA-SA

The opening session provided a glimpse into India's major issues and challenges with respect to legacy waste management. The significant points shared by Mr. Manas are as follows:

- The ineffective management of legacy waste leads to issues not only at the neighborhood or city level which includes ground water pollution by leachate or fire incidents but is also reflected at global level due to climate change.
- As per a study, the average life expectancy of a waste picker in Mumbai has reduced by nearly 13 years due to constant exposure to the legacy waste. Further, the average life expectancy of the residents living near the legacy waste sites has also reduced by 4-6 years.
- BORDA-SA has been actively working with local partners (NGOs/Organizations) and the Municipal authorities in Leh, Chintamani, and Chikkaballapur for improving lives of people across all strata through an integrated approach in the WASH sector. In Karnataka, BORDA-SA has partnered with Technology Informatics Design Endeavour (TIDE), an organization with a rich experience of almost 30 years.
- The goal of the conference is to understand the basics and place the first step in the right direction to start a conversation on landfill remediation in Karnataka.

Special Addresses:

Hon'ble. Justice Sri. Subhash B. Adi- Chairman, NGT- SLC, Karnataka

The special address was given by Hon'ble Justice Sri Subhash B. Adi. He focused on the need for more attention to SWM and legacy waste management in the environmental protection acts. He further emphasized that the "Right to Life" is the right to live in good living conditions/ environment.

The main points conveyed by him include:

- The first environmental protection Act was passed in 1986. However, it did not have a definition for solid waste neither detailed its impact nor its management. In 2016, the SWM rules were passed by the central government. However, there has not been much progress even after six years. The single-use plastics has been banned since July 1, 2022, as they form a significant part of the waste composition and create major issues in its management/disposal.
- The "Right to Life" under Article 21 is the right to live in a good environment. Hence it is essential to tackle the issue of SWM and legacy waste to ensure this right.
- There should be simple and cost-effective solutions to ensure that they are sustainable in the long run. There has been huge fund allocation and money spent on legacy waste management. Despite this, we are not obtaining the results we aspire for. It is essential to understand why this gap exists.

Sri. Achim Burkart- Consul General of Germany in Bengaluru

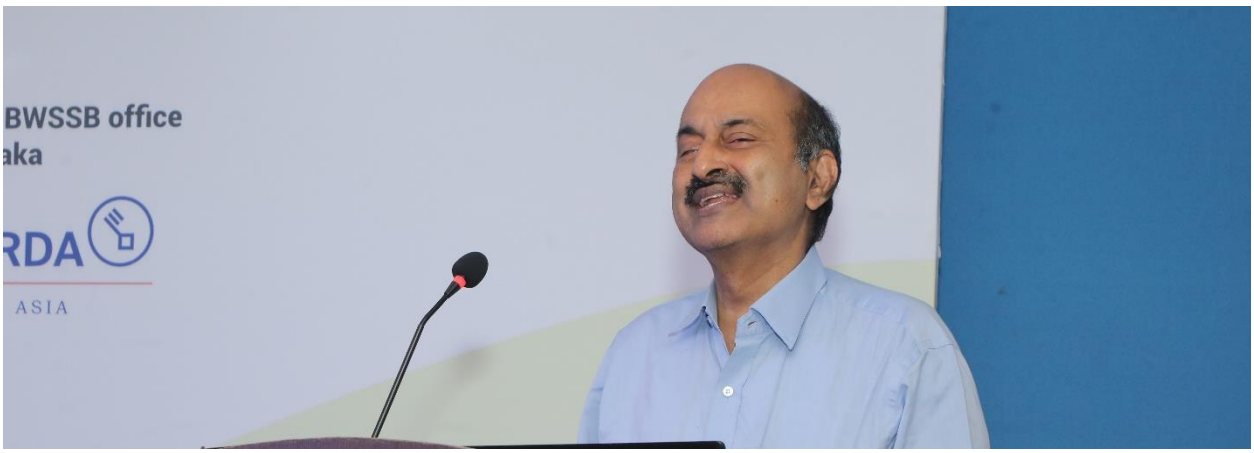
Mr. Achim emphasized the need to adopt the circular economy approach and that legacy waste management should go hand-in-hand with daily solid waste management. He brought attention to the need to adopt local solutions and conveyed that there is no 'one size fits all' approach.

The main points conveyed by him include:

- We would require at least three piles of earth by 2050 to manage our waste if the existing scenario continues. Hence, we should rethink the throw-away culture and align ourselves with the circular economy concept. We have to focus on reducing the waste produced and then on effectively managing the waste being produced.
- In the next 15-20 years, most developing countries won't have sufficient infrastructure or land for the safe disposal of waste.
- The revenue generated from composting, recycling product and gas production, power generation, etc., shall enhance the economy to meet the sustainable economy and circularity goal.

Keynote speech:

Sri. Sampath Kumar, Founder & CEO, TIDE Technocrats Pvt Ltd



Mr. Sampath defined legacy waste as the waste that was not managed in the past and has formed as a heap in our backyard now. Further, the various technical aspects detailed by him are as follows:

- The legacy waste started piling up because of a ban on the burning of waste. The lack of an effective system and improper implementation of SWM solutions also lead to the problem of legacy waste.
- There are various methods for the management of legacy waste which includes:
  - Bio mining/ Bio-remediation- developed over the past five years
  - Scientific Closure: This can be done at 30% cost of that of biomining
- Biomining helps get the precious land back. The market values of the remediated land tend to be high as most of the legacy waste sites lie within the city. Recovery of the valuable material through biomining and its usage requires acceptance from the people, which is a challenge.
- The composition of a legacy waste varies case to case depending on the age of the legacy waste and other factors. However, in an old legacy waste site, the below components are found in general:
  - Materials less than 4 mm- Bio-earth/composts
  - RDF material which can be sent to cement plants/thermal plants, etc.
  - 4-35 mm sized material- inerts, which can be used as sub-base in roads and other filling purposes
- Further, it is essential to document how and where each stream of recovered waste goes. Biomining the waste and sending it elsewhere only shifts or distributes the problem, unless each stream of waste that is segregated is managed/disposed of effectively along with proper documentation.
- The designing of biomining and management of fresh waste should be done simultaneously, else it would result in the formation of a new legacy waste site by the time we remove the old one.

CONTEXT SETTING FOR LEGACY WASTE MANAGEMENT

Topic: Key Facts on Legacy Waste

Dr. Richa Singh - Deputy Programme Manager, Centre for Science and Environment

The main points shared by Dr. Richa Sing on key facts on legacy waste includes:

- The linear economy process is to make-take-dispose. We need to shift to the circular economy process of make-take-reuse-recycle-make
- The legacy waste causes major environmental and health hazards. 3159 dumpsites with 1300 million tons are to be remediated. It is estimated that this would require nearly INR. 1,04,000 Cr (which is equivalent to the total SBM 2 -2021-2026 outlay)
- The composition of legacy waste is different from one case to another and is mostly based on the age of the legacy waste. However, the lower strata of the dumpsite have smaller materials of size less than 4 mm. This comprises nearly 50-60% of the legacy waste.
- The major approaches include, the Biomining of dumpsite wherein the legacy waste is treated, the entire land is reclaimed, and entire waste fractions are used for gainful applications
- The other approach is Bio-capping of dumpsite wherein the waste is capped; leachate and gasses collection and treatment is carried out.
- There is a Hybrid Model (Biomining and Bio-capping) wherein a fraction of the waste is treated and used for gainful applications; a part of the land is reclaimed. The remaining part of the unused waste is bio-capped.

Topic: Policies, Provisions & Statutory Compliance for Legacy Waste Remediation

Dr. Himanshu Chaturvedi SWM Expert, MoHUA

Dr. Himanshu detailed the various policies and guidelines for dumpsite remediation and the brief on the procedure for central assistance. The main points put forward by him includes:

- There are waste dumps ranging from the size of 1000 MT to over 2 Cr MT. The remediation of legacy waste is taken up as a priority under SBM 2.0. It is the duty of the ULB's to identify and remediate the legacy waste dumps and take steps to reduce the pollution and impact on the environment and human health.
- There is only one guideline from CPCB for the remediation process. There is an advisory document as well from MoHUA. Further, there is a SoP that is being formulated for remediation of dumpsites, to ensure the quality of outputs as well.

- MoHUA suggests biomining and complete land recovery, however in certain cases such as Bhopal, where a disposal facility is not available and transportation costs are high,partial land recovery can also be done.
- It is essential to recover land, as this can be used for SWM facilities in the future, as land availability is limited in cities. Hence, first cross check the land requirement for SWM for the future and then only hand over for any other use.
- It is suggested that a tonnage-based contract be given, as the volume might vary post stabilization. Also, there is varying density material, hence volume-based contracts might be costlier for ULBs.'
- The central financial assistance is INR. 550 per Metric ton of waste. Further, the central share of the total project cost is based on the population as follows:
  - for ULB less than 1 lakh population: 50% of total project cost
  - for ULB 1 lakh-10 lakh population: 33% of total project cost
  - for ULB more than 10 lakh population: 25% of total project cost

Topic: Road Map for Legacy Waste Management in Karnataka

Ms. Bhanumati V. AEE, Directorate of Municipal Administration

Ms. Bhanumati provided a glimpse of the legacy waste management projects ongoing in Karnataka state and a brief on the way ahead. The main points include:

- The policy mandates for legacy waste management include:
  - SWM rules 2016- emphasizing on the bioremediation and bio capping of the dumpsite, the procedures of which are given by CPCB already.
  - The SBM guideline and state policy and strategy for SWM management also focuses on dumpsite remediation and biocapping

- In Karnataka among the 312 ULBs 196 cities are identified with the dumpsites.
- Bangalore has committed to clear the dumpsite by Dec 2024 and other cities by Dec 2023.
- At state level, an advisory committee is created for clearing of legacy waste and the state has delegated the power to deputy commissioners to clear the projects upto INR. 5crores. The projects with cost above 5 Crore are approved at the state level. Further, a draft model RfP (individual and cluster models) document was prepared, and engineers were trained on the same along with an exposure visit to Coimbatore.

The legacy waste management projects are at various stages in different towns of Karnataka. Towns such as Mangalore, Tumkur, Shimoga and Bijapur have already started the process on ground. The source of funding is relied upon the central SBM funding.

CASE STUDY LEARNING

Land Reclamation for Productive Economic Use- Case of Bhopal City Corporation

Mr.Saurabh Sood, AE, Bhopal Municipal Corporation

- Bhopal city, the capital of Madhya Pradesh, has a population of 1938251 generating 1000 TPD solid waste. The Bhanpur dumpsite at Bhopal city, the capital of Madhya Pradesh, was an unscientific dumping site of an area of 37 acres with an accumulated mixed waste of 1.1 million cum and a height of approx. 10 m.
- Bhanpur dumping site's potential risks were tapped through the reduction in land footprint and greenhouse gases. Bio-mining, leachate management, landfill gas management, stormwater management, and waste relocation, followed by its capping and scientific closure with a proper post-closure environment plan as well as health and safety plan was adopted for remediation.
- The benefits of the project were zero uncontrolled, untreated fresh waste dumping and reclamation of 21.03 acres of land. The project also extracted utilizable components from the waste through the bio-mining process along with reducing GHGs.
- The capital cost for Bioremediation, Land reclamation, and scientific closure was 42 crores with the O&M cost for 5 years post closure being 10 crores with the estimated value of reclaimed land being 105 crores.

Legacy Waste Remediation in a Small Town - Case of Chikkaballapur, Karnataka

Sri. Lohith D, Environmental Engineer, DMA

- City Municipal Council, Chikkaballapur, has a population of 73709 generating 25 MT of solid waste per day.
- To tackle the problem of the legacy waste CMC, Chikkaballapur prepared the DPR with the support of TIDE and BORDA-SA. The key findings from the DPR where the total quantity of legacy waste was 43881T accumulated over the last 15 years which covers approx. 60% of the 15 acre MSW processing site. A 3-phase plan was developed to clear the accumulated legacy waste over a period of 12 months. Currently, CMC has started remediating the waste, the total quantity of legacy waste remediated is approx. 2000 T (Phase 1), where biosoil of 1300 T and RDF and Inert Material of 700 T.
- Some of the hurdles faced by the CMC were processing fresh waste and legacy waste simultaneously, being a small municipality. Low remediation rate due to interrupted power supply, breakdown of machinery, limited manpower and technical skills, fire breakout in summer, and processing issues in winter.

Financing Legacy Waste Remediation for Large Cities - Case of Mangalore City Corporation

. Akshy Sridhar, IAS, Commissioner, Mangalore City Corporation

- Mangaluru region witnessed heavy rainfall in August 2019, due to which a landfill of 200 TPD quantity started sliding from the cliff into the adjoining plantation properties damaging more than 17.25 acres. Under this matter, the hon'ble High Court of Karnataka directed to make a sustainable plan to immediately start processing the Legacy Waste and reclaim the land.

- For the legacy waste remediation, MCC adopted a hybrid or controlled outsourcing model, where the entire capital cost of the project is borne by the MCC whereas the contractor is responsible for the supply, installation, and operation of the project without any ownership. Payments for machinery are made only 50% at delivery. Payments for operation are made based on progress and the actual quantity of material processed. The complete project is backed by IoT-based automation to check quantities and all other parameters. Stringent targets, methodology, and execution process, third party inspections to check plant and machinery and continuous monitoring by PMC were conducted.
- Certain key challenges while executing the project faced were Pachanady dumpsite's slopy terrain, non-availability of land to set up infrastructure, limited working days due to heavy rainfall, handling of high moisture waste, the requirement of deployment of machinery best suited for site condition, adoption of right approach towards the maintenance of the quality of aggregates, handling RDF – as cement plants located more than 700 km away and leachate management.
- Some of the takeaways are to adopt a model to control project cost escalation due to variance in quantity by procuring the main plant and machinery. Encouraged bidders to dispose of/treat RDF In-situ to reduce costs. Incentives for early completion. Quantified recyclables and other derived materials is accounted for in the Bids to reduce cost.

Zero Landfill Model - Case of Ambikapur, Chhattisgarh

Sri. Ritesh Saini, Nodal Officer SBM(U), Ambikapur Municipal Corporation

- Ambikapur city with a population of 145200, has adopted a zero landfill model emphasizing on decentralized, easy to operate, waste to resource, financially viable, and replicable approach. SWM practices at Ambikapur followS a three-tier segregation system – Primary (HHS level), Secondary (at MRF centers), and Tertiary (156 categories of inorganic).
- 17 Garbage Clinics - Technically, a solid and liquid resource management (SLRM) center, a well-ventilated, work-shed, spaciously designed for waste segregation, One Tertiary Segregation Center for Inorganic Recyclables and Bailing unit at the Garbage Clinic, were set in the city. The methane gas produced from the biodigester is sold to the nearby eateries at the bus stand through a pipeline.

- Plastic Waste management is done by conversion of refuse plastic to granules & gutta which is sold to plastic item manufacturers, thus generating a revenue (6 Rs/Kg) for the corporation. All non-recyclables are being compressed in cubes (Bales) & are sold to vendors (cement plants). The plant runs on a PPP Model.
- The key challenges faced was the non-availability of technical agencies for remediation, for which technical advice was availed from local scientists/consultants. The issue of manpower deployment was resolved by engaging trained SHG women in the process of segregation. Around 400 green jobs were created, 16 acres of land worth Rs. 25 Cr. was reclaimed and the entire process was completed in 4 months at a cost of only1 Cr.

PANEL DISCUSSION 1: OPERATIONALISING LEGACY WASTE MANAGEMENT

The panel discussion focused on the approach to dumpsite remediation and key operational challenges. The major points discussed include:

- Technology - Comparison & Cost
- Financial Sustainability & Business model
- Application of Recycled Material
- Key Operational Challenges

Session Moderator: Mr. Manas Rath: Senior Advisor, BORDA-SA

PRESENTATIONS:

Mr. Shankar Raman CV, Zigma:

- Adoption of a zero residual model for the Legacy waste management comprising of the biomining and bioremediation of the waste by conducting pre-assessment of the legacy waste

site, stabilization of the waste, processing and segregation and responsible disposal of the aggregates.

- Aggregates from the legacy waste site primarily consists of the 18-25% of combustibles which can be converted into RDF, 4%-6% of bio soil used for landscaping and afforestation, 67% - 77% of coarse soil and stones utilized for filling low lying areas and 1%-2% of iron scrap and glass scraps which can be recycled.
- Alternative use of the inert and debris is by upcycling into products like panel walls, aqua blocks and load blocks, which are still R&D stage at Zigma

Mr. Indrabhushan Gokhale, Powerscreen

- There is a huge importance of the trommel in the remediation of the legacy waste sites, an alternate option to which is the machine developed by the TEREX known as warrior 1200, which processes the waste and segregates it into Refuse Derived Fuel (RDF) – plastic and textile; inerts – pebbles, stones and glass; and soil/compost – decomposed organic material, simultaneously.

Mr. Masood Mallick

- For an effective remediation of the legacy waste it is essential to conduct characterization and quantification of the accumulated waste, to make provisions for leachate treatment generated by the waste as well as to plan the treatment of dumpsite contamination.
- Disposal of the RDF and reuse options of the inert materials generated from the waste should also be considered while planning for the remediation.

Ms. Swati Singh Sambhyal

- Introduction to the environmentally sustainable Fukoka method, which is an evidence-based approach emphasizing on the point that composition of the legacy waste decides the technology for remediation.
- The Fukoka method is mainly composed of a gas venting system, a leachate collection, discharge and treatment system, rainwater collection and drainage system as well as groundwater collection and discharge to prevent contamination. The method creates an aerobic condition thus reducing methane collection through microbial activity.
- It is a local cost method that provides the maximum land reclamation and also incorporates the use of local materials in the process.

PANEL DISCUSSION

Q – What are the roadblocks in the remediation process and the solution for the same in a cost-effective manner?

Mr. Shankar Raman

- Appropriate quantification of the legacy waste is a critical point that needs to be addressed
- Fixed rate across the state is a hurdle for the service delivery, especially for the RDF disposal and per tonnage of remediation.
- Integrated contract should be formulated accounting for the disposal of the RDF along with the biomining process.

Q- What is the size of the project Powerscreen has worked on and what are the obstacles faced for the remediation of these sites?

Mr. Pradeep H Jadhav

- Remediation of waste ranging from 5000 cum to 4 lakh MT

- Cost of remediation is to be based on the quantity and size of the legacy waste. Especially for small projects the infrastructure cost should be borne by the ULBs, such as electricity and water cost. Setting up a proper infrastructure for the remediation takes a significant amount of the budgeted amount thus making it difficult to work with a small budget in hand.
- Emphasis on the consulting and DPR preparation as well as fresh waste processing to be planned parallel with remediation

Q – What are the goals achieved and the shortcomings of the remediation of legacy waste site from the CPHEEO perspective? From the long-term perspective of liveable city, the health of the environment and people are properly protected?

Mr. J.B. Ravinder

- Legacy waste leads to the socio-economic degradation of the community hence remediation becomes a primary focus. These sites needs to be converted into green zones
- Environmental effects such as groundwater contamination and leachate management are the key factors that need to be considered while planning for the remediation of the waste.

Q- What should be the cost of a good quality legacy waste remediation?

Mr. Masood Mallick

- The cost of the remediation depends on the risk depending on the location, neighbourhood, and environmental impact such as water contamination.

- DPR preparation of the legacy waste site for old dumpsites are very expensive depending on the characterization of the waste, leachate concentration, site area and the height of the waste.
- Partial controlled redevelopment or rehabilitation of the legacy waste can be a way to reduce the per tonnage cost of remediation

Mr. Sampath Kumar

- Smaller towns should opt for simpler solutions to remediate the legacy waste focusing primarily on the waste characterization and quantification and thereby opting for landfill process. Safe disposal needs to ensure while remediating.

Q- What are the road blocks faced during the implementation of the Fukoka method and what can be the measures taken by the DMA to become your partners /client?

Ms. Swati Singh Sambhayal

- Biggest hurdle is the cooperation coming together to implement the fukoka method on ground. Hence the cooperative approach is must.
- Willing to collaborate with the UDD or DMA in Karnataka to implement fukoka method for the remediation of the legacy waste.
- Important point is to identify the problem, a proper baseline assessment

Questions from Audience:

Q- Dr. Richa Singh, CSE- It was mentioned by Mr. Masood Mallick that a significant fraction of legacy waste is inert in nature. However, when we say inert, we refer to a material that is biologically and chemically stable, hence should we rather call it a fine fraction? Most landfills in India are operational in nature, not abandoned, hence 60-70% of it might not be inert.

- **Mr. Masood Mallick:** The inert mentioned were reportedly inert, the detailed analysis of these materials would show inconvenient results, which makes them difficult to dispose of, since they may become categorized as hazardous waste. The heavier lumps are inert, the fine fraction is typically contaminated with heavy metals as well. They get categorized as landfill material, which shouldn't be the case.

Q- Mr. Sham Sundar: TATA Consulting Engineers: Would the equipment discussed by Mr. Indrabhushan increase the processing capacity of the plant, if it does ,how much percentage does it increase compared to trommels?

- **Mr. Indrabhushan Gokhale:** The solutions should be kept simple, and we abide by that principle. Our machine can increase the capacity up to 10 times as compared to trommel. The total cost would be increased, but if we look at the cost per ton would be reduced for the contractor. However, trommels can't be entirely replaced, but our machines can be used along with the trommel as well. We are further working on the cost side as well.

Q- Anmag Kalathilak, AEE: Question is to Bhopal Corporation representative and panellists, It was stated that more than 11 lakh tons of waste was reclaimed and 21 acre land worth of INR.1.05 Cr was reclaimed. Further, they are planning for the commercial establishment and residential area, however, is it viable? All case studies of land being used for forest or other purposes.

- We treated only 1.8 lakh m^3 waste was treated and the remaining waste that was inactive was capped, and the proposal for the land reclaimed is sent to the principal secretary. We have proposed for commercial purposes and a bus terminal. There is no harm in using it for commercial purposes, we are also obtaining PCB approval and environmental clearances.

PANEL DISCUSSION 2: WAY FORWARD AND STAKEHOLDER ROLE

Panel Discussion focused on Tackling legacy waste in Karnataka. The main focus points included:

- Policy and regulations
- Procurement and financing mechanism
- Models for dumpsite remediation in small and big cities

Session Moderator: Smt. Sheetal N. Singh: Director-ISA, JJM and SBM (G), RDWSD

Q-What are your insights and thought process on the Legacy Waste Management challenges ahead of us?

Hon'ble. Justice Sri. Subhash B. Adi, Chairman, NGT - SLC, Karnataka

- One of solutions could be to tie-up with the cement industries
- Integrated processes can be done locally for smaller quantities. Preparation of DPRs can be avoided. Adopt bioremediation for the small towns as suggested by CPCB. Decentralized methods to be explored for managing the daily waste to avoid formation of legacy waste
- Focus must be on the processing of waste rather than bringing out the value of the land

Sri. Srinivasulu, IFS, Member Secretary, KSPCB

- LWM emerged as an opportunity because of failure SWM and the solutions is to opt for the simpler available solutions for successful LWM

- PCBs will give an approval to LWM if applied with all the required credentials

Q-What do you think, should LWM be policy driven or peoples driven approach?

Sri. Pushkar S. V.Senior Manager, IIHS, Bengaluru

- Karnataka contains all types of geographical situations. LWM to be contextualised based on the given situation
- Quantity and quality of the waste can be estimated by the ULB with their capacities. Simple solutions can be adopted for smaller waste quantity.

Sri. Pravin Bhardwaj, SLWM Expert, NIUA

- Involvement of all the stakeholders for LWM is important.
- State looks up to central govt, NGT or PCB for guidelines. Policy is a broader framework; other smaller things can be done by state themselves.

Q- National policy, state strategies and a localised approach. Does this work, what are the various factor that would affect?

Dr. Richa Singh, Deputy Programme Manager, CSE

- Right kind of policy intervention is the need of the hour for successful LWM
- State should adopt their own strategies for tackling legacy waste based on their conditions. Build the capacity of ULBs at every level for independently taking up LWM

Dr. Sanjay K. Gupta, Director, CARE Northeast Foundation

- ❖ Guidelines and templates should be developed that will help ULBs in preparation and inviting tenders for implementing LWM
- ❖ Enough awareness should be created amongst the community residing around the dumpsite regarding the advantages and opportunities from LWM

Sri. Pankaj Arora, Director, KPMG India

- ➢ It can only be solved if all the stakeholders come together
- ➢ Role of PMUs for providing technical assistance and strategic solutions are important as the ULBs are overburdened especially during pandemic.
- ➢ For example: Indore SWM is successful due to consistent end to end service delivery. For Noida both SWM and LWM was taken up simultaneously.

CONCUSION AND CLOSING

The way forward: Key take away from the conference

Sri Gopal Krishna B, IAS, City Commissioner, Hubli-Dharwad

- ❖ Ther remediation of the legacy waste and the processing method should be derived from an evidence-based approach. All the stakeholders, city corporations, NGOs, private entities as well as the community plays a vital role in the overall process.
- ❖ Various aspects of the legacy waste management along with the successful case studies and challenges were discussed during the sessions. These take-aways will help the municipalities to plan for the LWM in their respective cities.
- ❖ For successful SWM management and to prevent accumulation of the legacy waste, its is primal to implement 100% door to door collection and waste segregation at household level.

Sri K Ravi Chandran Interim Executive director, TIDE

- ❖ Legacy waste is a consequence of mismanagement of waste and it is due to the improper disposal of waste and should not be repeated in coming future.
- ❖ ULBs should be envisaged and capacitated to plan and implement successful SWM plans
- ❖ Focus be given to the smaller cities, villages, and panchayats to improve their municipal service delivery
- ❖ DMA is requested to provide guidance to the NGOs, sector experts, private entities. Consequently, this support will be helpful to the municipalities.
- ❖ A vote of thanks was expressed to all the dignitaries, guests, organizers of the conference.

CULTURAL EVENTS


CONFERENCE ON
LEGACY WASTE
NAGEMENT
ENGES & WAY FORWARD
Date : 26th July, 2022
Venue : Suvarna Bhavana conference hall, BWSSB office
Malleshwaram, Bengaluru, Karnataka
TIDE
BORDA

Working Group:

ANNEXURE

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YouTube link:

https://www.youtube.com/watch?v=1aO6K9Qsbh0