## Waste Solutions for a Circular Economy in India

### Facts

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<thead>
<tr>
<th><strong>Sector</strong></th>
<th>Waste</th>
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<td><strong>Nama Support Organisation</strong></td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH</td>
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<td><strong>Project Partners</strong></td>
<td>Ministry of Environment, Forest and Climate Change (MoEFCC)</td>
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<td>Ministry of Housing and Urban Affairs (MoHUA)</td>
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<td></td>
<td>North Delhi Municipal Corporation</td>
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<td>Varanasi Municipal Corporation</td>
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<td>Bruhat Bengaluru Mahanagara Palike</td>
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<td>Goa Waste Management Corporation</td>
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<td><strong>Nama Facility Funding</strong></td>
<td>EUR 17.3 million</td>
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<td><strong>Duration</strong></td>
<td>2020 – 2025</td>
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<td><strong>Status</strong></td>
<td>Implementation</td>
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Waste Solutions for a Circular Economy in India

Toward a New Paradigm

India’s urban population is expected to rise to around 600 million (40% of the total) by 2030 and around 800 million (50% of the total) by 2050. As a by-product of this growth, an estimated 62 million tons of municipal solid waste (MSW) generated annually is forecast to grow to 165 million tons by 2030 and 436 million tons by 2050. The municipal solid waste management (MSWM) system in India is largely limited to dumping mixed waste streams in unmanaged dumpsites, leading to GHG emissions, despite its prohibition under the central government’s solid waste management (SWM) Rules 2016. If no action is taken, business as usual could lead to severe public health and environmental challenges.

According to the Third Biennial Update Report, landfilling of MSW led to around 15.8 million tons of CO2e emissions in 2016. GHG emissions from MSW disposal alone are expected to increase to 41.1 million tons by 2030. India’s Nationally Determined Contribution (NDC) aims to reduce the emissions intensity of its GDP by 33 to 35 percent compared to 2005 levels by 2030. Although India’s NDC does not specify quantitative GHG emission targets for the waste sector, it prioritises reducing waste-related emissions through promoting waste to wealth conversion and the abatement of pollution.

Supporting national missions, state governments and cities by developing low-carbon practices in the Indian MSWM sector thus directly contributes to the NDC. The project ‘Waste Solutions for a Circular Economy’ provides technical and financial support to all the stakeholders at national, state and city level and contributes directly to achieving the goals of the flagship programme “Swachh Bharat Mission” (SBM) of treating the entire MSW generated. The low-carbon focus of the project will contribute to India meeting its NDC commitment.

Change in the Face of Challenges

In addition to the 15.832 million tons of CO2e emitted from the MSW, the Industrial Processes and Product Use (IPPU) category emitted 226 million tons in 2016. Beyond increasing emissions, product use also put rarely recycled plastics on the market. The biggest contributor in IPPU is cement production, accounting for 106.5 million tons of CO2e emissions.

Despite the comprehensive policy framework on MSWM (such as the MSW Rules, 2016, guidelines from MoHUA and the revised Tariff Policy of 2006), the NSP has recognised certain policy, financial, social and technical barriers that limit the achievement of GHG mitigation in the MSWM sector.

On a financial level, there are insufficient resources to operate low-carbon MSWM facilities, mainly due to the absence of user fee collection / payment of tipping fees by urban local bodies (ULBs) to the operators of MSWM plants. Moreover, access to the Government of India’s (GoI’s) compost subsidy and SBM CAPEX grant is prone to delays and bottlenecks. This is because stakeholders such as cities/plant operators may lack the technical capacity to access the compost subsidy and SBM CAPEX grant, leading to further delays in implementation. These challenges have led to an unwillingness of financial institutions to lend to MSWM plant operators, who may have limited technical know-how, MSWM experience and lack collateral. Additionally, the farming sector’s demand for compost is low due to a lack of trust in its quality. Demand for recycled products also remains low.

The transformation of the SWM sector also faces policy and regulatory barriers. SWM Rules that formally prohibit landfilling of organic waste are not enforced. Moreover, bio-methanation plants are unable to access Preferential Power Tariffs from electricity distribution companies (DISCOMS). Cement plants rarely comply with the refuse-derived fuels (RDFs) mandate and those situated more than 100 km from RDF plants are unwilling to cover the necessary transport costs.

Additionally, the SWM sector remains largely informal, with limited awareness of the importance of segregating waste at source and unwilling to pay for MSWM services through user charges. Among private SWM operators, limited technical know-how and a lack of experience running MSWM facilities have been a barrier to initiating sustainable change in the sector thus far. Urban local bodies (ULBs) have faced a similar barrier.

Achieving Transformational Change

There are many technologies which could kickstart low-carbon waste management in India. Reducing GHG emissions by avoiding landfilling in the MSW Management sector and replacing fossil fuel with RDF in the cement sector could be critical to achieving India’s NDC target. Bio-methanation can be used to generate renewable electricity and contribute to the replacement of liquefied petroleum gas (LPG) and compressed natural gas (CNG) for cooking and transportation respectively. Going further, recycling plastic, paper, glass, metals and other materials. sorted from the segregated dry fraction also leads to reduced GHG emissions due to avoided fossil fuel consumption in the production of virgin materials.

Acknowledging the above facts, the NSP aims to support the adoption of low-carbon waste management through two components.
The technical cooperation (TC) covers:

- Support national ministries in the formulation of quality standards for methane retrofitting (MRF), recycling and bio-methanation;
- The development of packaging waste regulation such as extended producer responsibility (EPR) implementation plans at sub-national level;
- The implementation of source segregation programmes and informal sector integration and formalisation models in five lighthouse locations; and
- The introduction of capacity-building programs for urban local bodies (ULBs), households, businesses, informal sector etc. on low-carbon waste management solutions.

 Through these interventions, the TC aims to address technical and financial barriers. It also addresses social barriers by catalysing change in public behaviour for source segregation of waste, motivating people to pay for waste management services provided by ULB and regulating the informal sector, which is the backbone of national waste management. On the policy front, the TC aims to improve national, state and city-level policy instruments to enforce waste management rules, improve quality of recycled products, provide guidelines for waste processing units and deepen linkages of low-carbon technologies to available subsidies.

The financial cooperation (FC) covers:

- The introduction of a Grant Funding Mechanism. The GFM will provide partial grants for composting, bio-methanation, MRFs, RDF and recycling units in 5 NSP locations. It will thus subsidise Capital Expenditure (CAPEX) or Operational Expenditure (OPEX) costs of these technologies.
- The establishment of a Risk Sharing Facility (RSF) within a suitable financial institution. Under the FC, the NSP will look to enhance the linkages of the RSF with waste processing units.

The RSF will provide partial credit guarantees for loans supplied by enlisted commercial banks and Non-Banking Financial Companies (NBFCs) to waste management companies (usually for working capital and medium-term loan requirements). The RSF aims to enhance confidence of private sector investors and entrepreneurs in waste processing units.

Expected Outcomes

The NSP has the following expected Outcomes, Outputs and Results.

Outcomes:

- At least one legal and normative framework defining low-carbon and circular economy waste management solutions as preferred options for municipal waste management; and
- At least 2 implementation support documents for waste processing products (e.g. composting process, MRF, recycling material, RDF and biogas) submitted for approval to the MoHUA.

Outputs:

- National and Sub-national decision-makers given the instruments required to steer the secondary resources market towards low-carbon waste management approaches under the existing legal framework;
- Functional financial mechanisms available for replication;
- Models for source segregation and integration of informal sector are implemented in NSP cities and available for replication and upscaling to cities outside the NSP;
- Capacities are enhanced and performance of SWM facilities in NSP cities are improved, leading to replication of best practices for low-carbon MSWM; and
- Capacities and awareness of key stakeholders for integrated low-carbon waste management are enhanced.

Results:

- 4 million tons of CO2e mitigated over 10 years by projects supported under the NSP;
- 12 million people directly benefitting from the NSP over 5 years;
- EUR 20 million of public finance (domestic and/or international) mobilised for low-carbon investment and development in the waste sector;
- EUR 28 million of private finance mobilised for low carbon investments and development in the waste sector;
- 5 additional projects using RSF outside NSP supported cities;
- 5 additional low-carbon sustainable approaches or instruments including business models, market mechanisms, financing solutions etc. adopted in projects outside NSP cities; and a
- 10% increase in the share of treated waste nationally.

Contact and Legal Notice

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