

# Residual Accounts and its linkages with Sustainable Development Goals

## Background

1. The rapid urbanization and expansion of economic activity in the country has increased both consumption and imports and as a consequence is placing significant pressure on the management of all forms of residuals in India. These residuals are normally disposed in open dumps creating nuisance and environmental degradation which cause a major risk to public health and the environment. The long-term environmental strategy of the country, based on principles of sustainable development, may not be feasible to achieve without considering the problems of planning and resolving inadequate waste management. The importance of planning in municipal waste management is reflected in the fact that the management plans have to integrate the most appropriate option for the environment, considering economic, technical, social and environmental factors. Analysis of different waste management options allows decision makers to use different instruments to consider more acceptable options and make decisions about the optimal solutions to satisfy their specific needs. The basis for initiating the decision-making process depend upon waste generation and waste composition data (qualitative & quantitative) in a given territory within a certain time.

## Waste and Sustainable Development Goals (SDGs)

2. With the pledge taken by India to eliminate single-use plastic in India, in order to monitor the progress made on the pledge, it is necessary to consolidate the information / statistics related to waste in terms of generation, treatment, recycling and reuse to generate the waste accounts and indicators/statistics. However, such kind of accounts and statistics are often lacking in the official system. Due to this, the National Statistical Office (NSO) of Ministry of Statistics and Programme Implementation (MoSPI), Government of India is yet to initiate reporting data on waste-related indicators proposed for monitoring of various targets of Sustainable Development Goals (SDGs) at the national level as well as global level. Measures of the amount of waste in aggregate or of quantities of specific waste materials can help in assessing the environmental pressure and detecting issues for taking corrective measures.

3. Regular compilation of Waste Accounts and related indicators not only helps in environmentally sound management of all waste through prevention, reduction, recycling and reuse, but also provides information on various SDG indicators. There are certain SDG indicators in National Indicator Framework of SDGs which are based on generation and treatment of waste such as **Indicators 8.4.1 (Proportion of waste recycled vs. waste generated)**,

**11.6.1 (Percentage of waste processed) and 12.4.2 ((a) Hazardous waste generated per capita (in MT/ person); and (b) proportion of hazardous waste treated, by type of treatment).** Components of these indicators involves generation of waste by type and their treatment by type. These can be derived from Physical Supply and Use Table (PSUT) of Solid Waste Account. A list of Global SDG indicators related to waste are given in the table below:

Target	Global SDG Indicators
<p><b>Target 11.6:</b> By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management</p>	<p><b>Indicator 11.6.1:</b> Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities</p>
<p><b>Target 12.4:</b> By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment</p>	<p><b>Indicator 12.4.1:</b> Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement</p> <p><b>Indicator 12.4.2:</b> (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment</p>
<p><b>Target 12.5:</b> By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse</p>	<p><b>Indicator 12.5.1:</b> National recycling rate, tons of material recycled</p>

### Waste and Other Frameworks

4. Natural resources and other inputs from the environment, as well as the capacity of the environment to act as a sink to absorb residuals and unwanted by-products from economic production, are necessary considerations for sustainable development. Measuring the flows of natural inputs into and releases of residuals from the economy in physical terms can therefore support related policy.

5. The economy-wide material flow accounts (EW-MFA) provide a physical measurement of the relationship between the economy and the environment through an aggregate overview of the material inputs and outputs of an economy, including inputs from the environment, flows of materials back to the environment, and the physical amounts of imports and exports. One important component of MFA physical Supply Use Table is

residuals. Compilation of Solid Waste Accounts is a necessary part for compiling economy wide Material Flow Accounts.

6. Framework for Development of Environment Statistics (FDES) 2013 is internationally accepted framework for strengthening environment statistics programmes in countries, and recognized as a useful tool to adequately respond to the increasing demand for environmental information. Component 3 of FDES 2013 is '**Residuals**' and indicators of this component contains statistics on the amount and characteristics of residuals generated by human production and consumption processes, their management, and their final release to the environment. Residuals are flows of solid, liquid and gaseous materials, and energy, that are discarded, discharged or emitted by establishments and households through processes of production, consumption or accumulation. Residuals may be discarded, discharged or emitted directly to the environment or be captured, collected, treated, recycled or reused. The FDES covers the main groups of residuals that are emissions of substances to air, water or soil, wastewater and waste, and the release of residuals from the application of chemical substances.

#### Accounts on Solid Waste in India

7. Social Statistics Division (SSD) of National Statistical Office (NSO), MoSPI is mandated to develop the methodology as well as the compilation of Environment Accounts in India. Environment Accounts provides the linkages between the environment and the economy, both the impacts of the economy on the environment and the contribution of the environment to the economy. MoSPI has been regularly publishing Environment Accounts since 2018 for different environmental assets, goods and services using the System of Environment Economic Accounting (SEEA) Framework, which is the internationally accepted standard for Environmental -Economic Accounting. These accounts are available in the publications titled '**EnviStats India Vol II: Environment Accounts**' on the Ministry's website.

8. MoSPI recently released the "**Strategy for Environmental Economic Accounts in India: 2022-2026**" wherein Material Flow Accounts which includes accounting for the Residuals, has been identified as one of the priority areas. As a first step, NSO, MoSPI started with Solid Waste Accounts leaving apart effluents and air emissions, which are other two components of Residual Accounts. Solid Waste Accounts are useful in organising information on the generation of solid waste and the management of flows of solid waste to recycling facilities, to controlled landfills or directly to the environment. Measures of the amount of waste in aggregate or of quantities of specific waste materials may be important indicators for assessing the environmental pressure. The construction of solid waste accounts allows these indicators to be placed in a broader context with economic data in both physical and monetary terms.

9. In India, Solid Wastes are classified in to 6 components by Law namely (i) Municipal Solid Waste (ii) Hazardous Waste (iii) E-waste (iv) Bio-medical Waste (v) Plastic Waste and (vi)

Construction and Demolition Waste. Towards this, MoSPI, in consultation with the Central Pollution Control Board (CPCB), has developed the framework for solid waste accounts and compiled the said accounts for the Union Territory of Delhi on experimental basis for the year 2020-21. The account was compiled based on the data supplied by the Urban Local Bodies to the Delhi Pollution Control Committee (DPCC) which was published in the above-mentioned publication in 2022.

## Way Forward

10. Swachhata (Cleanliness) is everyone's business and Ministries /Departments of the Union Government play a substantial role in facilitating it. Swachhata Pakhwada started in April 2016 with the objective of bringing a fortnight of intense focus on the issues and practices of Swachhata by engaging GOI Ministries/Departments in their jurisdictions. The fortnight from 1<sup>st</sup> July to 15<sup>th</sup> July, 2023 has been allotted to MoSPI with a focus on the issues and practices of Swachhata and innovative practices.

11. In order to create awareness about the significance of the Pakhwada and to sensitize about generation of waste related statistics and its importance in inducing sustainable consumption and production in the economy, it is proposed to organize one-day seminar during Swachhata Pakhwada on **“Waste related Statistics in India and its linkages with Sustainable Development Goals”**. A draft agenda is at **Annexure I**.

12. Waste management is gaining paramount importance as it is a threat to civil society as well as for the environment. Better data will give better information on waste generation which will lead the policy makers to take decisions on 4 R's Principle (Reduce, Reuse, Recycle and Recover). Due to lack of set of statistics required for preparation of waste accounts for states of India, NSO only compiled Solid Waste Accounts for Delhi Municipality. The accounts can be compiled for other states if required data sets are available. A time series accounts on Solid Waste will be helpful in identifying the trend in 'generation & processing' of waste. This will further help in estimating the generation of solid waste in different types which in-turn will be helpful for the policy makers to take empirical decision on the number and capacity of treatment plants to be set up. Innovative methods and latest technology can be embraced to address the challenges which will ultimately lead to reducing the burden on environment and help in the preparation of Global/National level indicator(s) of SDG. However, complete accounts can be prepared only if disaggregated data is available at the required level. Ministry will continue to make efforts in stabilizing the methodology and reducing the data gaps in consultation with stakeholders.