

Introduction

Indian Railways (IR) is a vast network that generates huge quantities of waste from diverse sources such as passengers, vendors, catering units, hawkers, Railway Hospitals, Workshops, Sheds, Production units, etc. The main sources of waste are the waste from core activities i.e. passenger and freight movements, packaging, plastic and paper waste, food waste & human excreta¹ and the waste from non-core activities i.e. institutional waste arising out of repair and maintenance activities (in workshops and sheds). In addition, Bio-medical waste generated by hospitals, E-Waste consisting of end life products comprising of electrical and electronic goods are the other categories of waste that require handling and disposal by the IR.

Considering the magnitude² and type of waste generated, a large number of contracts for cleaning, collection, segregation (including Plastic waste) and disposal of waste are awarded by Railway Administration. Following the Government of India's cleanliness and sanitation drive under 'Swachh Bharat Abhiyan', Railway Board had launched 'Swachh Rail, Swachh Bharat Abhiyan'. The National Green Tribunal (NGT), in their various orders³, had also directed Railway Administration for adherence to Acts and Rules framed for Environment Protection. In this backdrop, the efficacy and effectiveness of IR's efforts for the management of waste has been reviewed in audit.

Review on the aspect of management of waste in Indian Railways was previously done and commented upon in the Audit Reports⁴. The Public Accounts Committee (PAC) had also deliberated upon and given their recommendations on three of these Audit

¹ *The aspect of human excreta (organic waste) at stations, tracks and in trains has been covered in the Audit Report Number 36 of 2017 on 'Induction of bio-toilets in Passenger Coaches in Indian Railways'*

² *No centralized data on quantum of waste generated (solid or waste water) is maintained by Indian Railways. This was highlighted in the 3rd Report of the Public Accounts Committee (PAC) in 2014. This was also pointed out in the Report on 'Cleanliness in Indian Railways' brought out by National Academy of Indian Railways (NAIR) in 2015. However, as per analysis done in June, 2016 by an independent agency viz Council on Energy, Environment and Water (CEEW) approximately 670 tonnes per day (TPD) of solid waste is generated at major railway stations over Indian Railways. Similarly, this analysis also states that about 22.11 million litres of water per day each is consumed on Western Railway's Mumbai suburban section alone.*

³ *NGT's Orders dated 18.03.2015, 01.10.2018, 22.01.2019, 26.03.2019, 04.12.2019 & 18.08.2020 in O.A. Number 141 of 2014*

⁴ *Performance Audit on 'Cleanliness and Sanitation in Indian Railways' (Report Number 06/2007); Performance Audit on 'Environment Management in Indian Railways; Coverage on Stations, Trains & Tracks' (Report Number 21/2012); Covering Workshops, Shed & Production Units' (Report Number 23/2014); Performance Audit on 'Hospital Management in Indian Railways' was issued in 2014 (Report Number 28/2014) and another Report on 'Induction of bio-toilets in Passenger Coaches in Indian Railways' was issued in 2017 (Report Number 36 of 2017).*

Reports from time to time, more particularly as appearing in the PAC's Report Number 83 of 2008-09, 21 of 2009-10, 3 of 2014-15 & 38 of 2015-16.

1.1 Organizational Structure

The Ministry of Railways set up (April 2015) Environment and Housekeeping Management (EnHM) Directorate in Railway Board to deal with the issues related to Environment as well as Housekeeping Management of Indian Railways. The environment related works included works like water conservation, Sewage and effluent treatment plants, solid waste management infrastructure, water efficient fixtures and measures for mitigation of Air and Water pollution during construction and maintenance etc.

EnHM wing in Railway Board (RB) functioning under the control of Member, Traction & Rolling Stock is headed by Principal Executive Director (PED)/EnHM who in turn is assisted by Executive Director (ED)/EnHM/ME & ED/EnHM/CE. EnHM wings are also established in Zonal Railway level under the control of General Manager (GM) and the same is headed by Principal Chief Mechanical Engineer (PCME) and at Divisional Railway level under the control of Divisional Railway Manager (DRM) & Divisional Environment and Housekeeping Manager (DEnHM), under the control of Sr.DME of the Division. In respect of Production Units, Workshops and Hospitals, their units heads are responsible for handling the waste management related activities.

An organisational chart depicting the hierarchy at Railway Board, Zonal and Divisional level is given in *Annexure-1.1*.

1.2 Audit Objectives

This Performance Audit was conducted with an aim to assess whether the waste generated at different activity centres was properly assessed, managed and disposed off as per applicable Laws and Rules⁵. The Audit Objective *inter-alia* covered the following: -

1. Assessment, management and disposal of waste generated at railway stations, catering units and coaching depots.
2. Assessment, management and disposal of waste generated at railway workshops, maintenance sheds and production units.
3. Management of waste water through effluent/sewage treatment, water recycling and automatic coach washing.
4. Assessment, management and disposal of waste generated at railway hospitals (Bio-Medical Waste).
5. Assessment, management and disposal of E-Waste generated in railway establishments.

⁵ *Applicable Laws and Rules including various orders of the National Green Tribunal (NGT).*

1.3 Audit criteria

The Performance Audit was conducted with reference to the provisions prescribed under various Acts, Rules and Orders/Circulars/Notifications (**Annexure 1.2**), policies related to environment protection, air & water pollution, hazardous waste, bio medical and the E-Waste management. Further, important instructions issued by Central Pollution Control Board (CPCB), State Pollution Control Boards (SPCBs) and the Railway Board were also taken into consideration for this Audit.

1.4 Audit Scope and Methodology

The scope of the Performance Audit includes an assessment of the adequacy and efficacy of the policies and systems, procedures, processes & activities related to management of waste. This included entire cycle commencing from prevention/maintenance, reuse/recycle up to recovery /treatment and disposal during the period of last five years i.e. 2015-16 to 2019-20. Further, the aspects related to the compliance with directives of National Green Tribunal (NGT), vide its order dated 18.08.2020 was assessed for the period up to 31 March 2021; specifically, on the aspect of CTEs (Consent to Establish) & CFOs (Consent for Operation) which was further updated up to 31 July 2021.

The audit methodology included review of records available in Railway Board, Zonal/Divisional headquarters, production units and field offices including coaching depots, workshops, loco sheds, MEMU/DEMU/Car sheds, hospitals, Electronic Data Processing (EDP) and Passenger Reservation System (PRS) Centres etc. Besides this, joint inspections with Railway authorities were conducted and structured questionnaires were used to collect the required information on the aspect of waste management.

1.5 Sample selection

The sample selected amongst various activity centres is shown in Table 1.1 below. The basis of sample selection is detailed in **Annexure 1.3**.

Table 1.1 - Details of the sample selected for performance audit (Details in Annexure 1.4 to 1.7)

S. No.	Activity Centre	Units (in numbers)
1	A1 category stations	45
1(a)	A & B category stations	59
1(b)	C category stations (RPU & Metro Rail)	5
2	Major coaching Depots	30
3	Mechanical Workshops	23
4	Signalling & Telecommunication workshop	08
5	Civil Engineering workshop	10

6	Diesel/electric loco Sheds	33
7	EMU/MEMU/DEMU/Car Sheds	19
8	Production Units	08
9	Central Hospitals & Super speciality Hospitals	23
10	Divisional Hospitals/Sub-divisional/ Workshop Hospitals	49
11	EDP/PRS/UTS/GSDs	86

1.6 Response of the Ministry

Provisional Report was issued to the Ministry of Railways on 16 November 2021; reply received (May 2022) has been incorporated in the report as appropriate. Exit Conference was held with the representatives of Ministry of Railways on 17 December 2021.

1.7 Acknowledgement

Audit acknowledges the cooperation extended by various directorates concerned in Ministry of Railways as well as in Zonal Railways in conducting the Performance Audit.