

Performance Targets planned for 2025-2026

	Objectives	Planned
1.	External Cash Flow (ECF)	30.0 Crores
2.	Industrial ECF (a part of ECF)	18.0 Crores
3.	Customer Satisfaction Index	4.8
4.	SCI Publications	160
5.	Non SCI	30
6.	Patents	12
7.	Copyrights	5
8.	Technologies to be Developed	5
9.	Technologies to be Transferred	5

Major Technological & Scientific Targets Planned for 2025-2026

Applied & Analytical Chemistry
<ul style="list-style-type: none"> • Assessment of coking coal quality concerning the active component present in coking coal. • Chemical & mineralogical analysis of coal and non-coal samples from CMPDI. • Value-added chemicals/materials from coal, industrial waste, low-value precursors, and low-value products (Target: 03 SCI publications). • Metal oxide/sulphide/phosphate for electrochemical application (Target: 02 SCI publications). • Chemical characterization and analysis of coal from various industries and subsidiaries of Coal India Ltd. • Development of alternate reagents for the elimination of mercury effect for reliable analysis of Hg in coal and coal fly ash samples (Target: 01 SCI publication) • Assessment of Refuse Derived Fuel (RDF) characteristics and its impact on the clinker quality at high Thermal Substitution Rate (TSR) (Target: 01 SCI publication) • Evaluation of cement quality by blending of high MgO content limestone (Target: 01 SCI publication)
Materials Evaluation
<ul style="list-style-type: none"> • Hot forging, hot rolling followed by salt bath heat treatments of alloy steels • Development of high Mnwear resistant steel • Process development for making ultra-thin foil from complex alloy steels • Tri-Party agreement between CSIR-NML, RDSO-Lucknow and GSV-Gujrat to bring R&D, end-user and academics under single roof for serving the requirement of Indian railway • Technical audit of product/ metallurgical process – rail manufacturing at Bhilai Steel Plant • Implementation of LTCC based eddy current sensor for real time creep damage monitoring in one of the power plant. • Performance evaluation of Ultrasonic Flowmeter in the space environment. • Transfer of FOBOP: Breakout detection of Billet Mould Technology • Development of AI-based model for welding parameter optimization to achieve defect-free weld joints.

- Development of GUI for 'Automated estimation and reporting of the debonding area in Connecting rods using Ultrasonic testing and image analysis'
- Development of Pulse Eddy Current probe to detect corrosion under insulation
- Evaluation of AM components for aero engine applications
- High temperature fatigue behavior of Ni base super alloys

Metals Extraction & Recycling

- To set up a 100 kg/day magnesium metal production capacity pilot plant under the CSIR-funded CSPS project
- To initiate the research activities on the extraction of high-purity silicon metal by recycling of solar panels
- To complete the project 'holistic utilization of red mud' at 100 kg scale and release the completion report through Niti Aayog

Mineral Processing

- Reduction of silica in dolomite and limestone for utilization in iron & steel making.
- Feasibility study of dry beneficiation of non-coking coal by FGX dry coal separator.
- To carry out a Process audit of the installed fine coal circuit at 5.0 MTPA Patherdih NLW Coal Washery, BCCL.
- Extraction of vanadium from dune sand.
- Process Audit of the Existing Copper Beneficiation Plant at Malanjkhand to study the feasibility of capacity enhancement.
- Dry silica sand beneficiation for utilization in glass making.
- Low-grade iron ore beneficiation.
- Beneficiation of copper ore using column flotation.
- Rare Earth Mapping from coal overburden.
- Selective flotation of iron minerals from Ferruginous Manganese Ores.

Advanced Materials & Corrosion

- Implementation of "MagStrics" sensor for health monitoring of thermal power plant
- Colorized GI wires and their process
- Development of molten salt corrosion-resistant microstructure
- Development of additive manufacturing grade soft magnetic powders

NML Madras Centre

- Feasibility studies on the beneficiation of secondary phosphate ore
- Feasibility study on the beneficiation of tailings from an industrial beneficiation plant
- Metallurgical failure analysis of low-pressure (LP) steam turbine blades

Information Management & Dissemination Centre

- Purchase of books as per the requirements of the library users
- Recruitment of a librarian having a degree in Library Science in consultation with HRG
- To organize eleven Skill Development Training programs with 140 nos. of participants
- To increase the participation of students under the Jigyasa program up to 1100 nos.