

## Resource Efficient Cleaner Production (RECP)



Furnace hot face insulation



PP balls on hot process tank solution



Use of natural lighting



Drain boards

## About TERI

The Energy and Resources Institute (TERI) is an independent non-profit organization, with capabilities in research, policy, consultancy, and implementation. TERI has multi-disciplinary expertise in the areas of energy, environment, climate change, resources, and sustainability. With the vision of creating innovative solutions for a sustainable future, TERI's mission is to usher in transitions to a cleaner and more sustainable future through the conservation and efficient use of the earth's resources and develop innovative ways of minimizing waste and reusing resources.

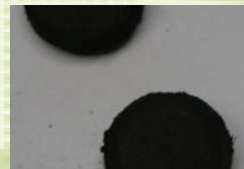
## Research Products



Bagasse ash filter module



Magnetic nano carbon from methane cracking using red mud



Carbon pellets



PAEK based nanocomposites for bone tissue engineering

## Field Demonstration



Anaerobic membrane bioreactor for Barapullah drain water treatment

## Environment, Social Impact Assessment



Dhalao assesment

## Training and Capacity Building



CPCB capacity building



### To know more, contact us:

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# ENVIRONMENT AND WASTE MANAGEMENT DIVISION



ENERGY



AGRICULTURE



ENVIRONMENT



HABITAT



RESOURCE SECURITY



CLIMATE



HEALTH & NUTRITION



**The Environment and Waste Management Division** works towards research on policies, regulation, governance, health, technology, assessment for resource efficient cleaner production (RECP) potential in industries and other solutions for holistic waste management and resource optimization. These activities are carried out in three areas described below.

### Centre for Waste Management (CWM)

The area is creating technologies and solutions to minimize waste generation and convert waste into useful products. Initiatives to promote circular economy through resource efficient and cleaner production in industries, maximize resource recovery, and recycling for landfill-free cities. Waste streams addressed include municipal solid waste, e-waste, industrial waste, construction and demolition, liquid waste streams, plastic waste and its linkages with marine pollution.

The area works on regulatory, policy and governance issues with respect to climate linkages of waste management; waste characterization at landfill; feasibility studies and audits, performance assessment for waste generation and management including effects on vulnerable groups (informal sector); waste to energy issues; modelling greenhouse gas emissions from the waste sector; institutional strengthening; capacity building; material flow; life cycle assessment.

### Resource Efficient Technologies (RET)

Work in this area revolves around the following sub groups: RECP assessment and implementation in small and medium enterprises; municipal and industrial wastewater treatment using membrane based technologies; industrial waste utilization through value added products such as ceramic filters from bagasse ash; catalysts from red mud; carbons from biomass residues /wastes; biopolymers for packaging, cutlery, biomedical, encapsulation, superabsorbents for dye and heavy metal removal. Work is also being done on fire retardant and EMI shielding using nanocomposites and dental restorative resins.

### Environment and Health

Our team as part of the Centre of Excellence initiative under the National Programme on Climate Change and Human Health, GoI is supporting development and implementation of National Health Adaptation Plan by providing guidance to states on vulnerability assessment and building resilience to climate change.

This area works on a broad spectrum of exposure- response relationship studies including air pollution studies in rural/ urban hotspots; assessment of heavy metals; examining occupational risks and health effects in micro- environments. The area also hosts a secretariat on Understanding Climate and Health Associations in India, particularly to bridge the knowledge gap in climate linked health effects. We have developed methodologies to rank districts of India on different health domains and health determinants.



### Major Activities

Policy research, analysis and intervention; social impact assessments; feasibility studies; assist urban local bodies with municipal solid waste management through independent audits and performance assessment of technical, operational, and management issues; capacity building and institutional strengthening; environmental assessment for contaminants; health assessment of environmental exposures; modelling emissions from the waste sector; material flow, life cycle assessment and exploring linkages between circular economy and waste recovery/recycling issues; resource efficiency assessment and implementation; field demonstrations and interventions including waste to energy facility; development of wastewater treatment technologies (wastewater analysis), lab research in industrial waste utilization (powder, porous material characterization); polymers synthesis and characterization including bio-based materials for different applications (nanocomposite development); implementation of RECP in different industries (thermal and power related measuring instruments).

### Areas of Outreach

**South Asia:** India, Bangladesh, Sri Lanka, Nepal, Bhutan.



### Skills and Expertise

Solid waste management; environmental engineer; environmental health; public health; environmental science; nutrition science; waste audits; wastewater treatment; adsorption/catalysis; biopolymers; nanocomposites; RECP; geo spatial and remote sensing.

### Infrastructure and Services

Wastewater treatment labs; waste to energy pilot demonstration; equipment such as thermal and power related measuring Instruments; software including GPS/GIS; Solid Waste Emissions Estimation Tool (SWEET).

### Sponsors and Partners

ABT Associates, USA; All India Institute of Medical Sciences (AIIMS); Central Pollution Control Board; Central Power Research Institute; Council of Scientific & Industrial Research (CSIR); Defence Research and Development Organization; Department of Science & Technology (DST); Department of Biotechnology; Delhi Municipal Corporations (EDMC, SDMC, New DMC); Deutsche Gesellschaft Fur Internationale Zusammenarbeit (GIZ); European Union; Government of Andhra Pradesh; Government of Maharashtra; Government of Delhi; George Institute for Global Health, Australia; Health Effects Institute (HEI), USA; Indian Council of Medical Research (ICMR); Ministry of Environment, Forest and Climate Change (MoEFCC); Ministry of Health and Family Welfare (MOHFW); NITI Aayog; Norwegian Ministry of Foreign Affairs; North Carolina Institute for Climate Studies; National Institute of Environmental Health Sciences (NIEHS); Norwegian Institute of Public Health (NIPH); Shakti Sustainable Energy Foundation; Science and Engineering Research Board; Tetra Pak India Pvt. Ltd.; United Nations Children's Fund (UNICEF); World Health Organization (WHO); World Bank; Wellome Trust, UK.

