

CSIR Theme Directorate(s): A Brief

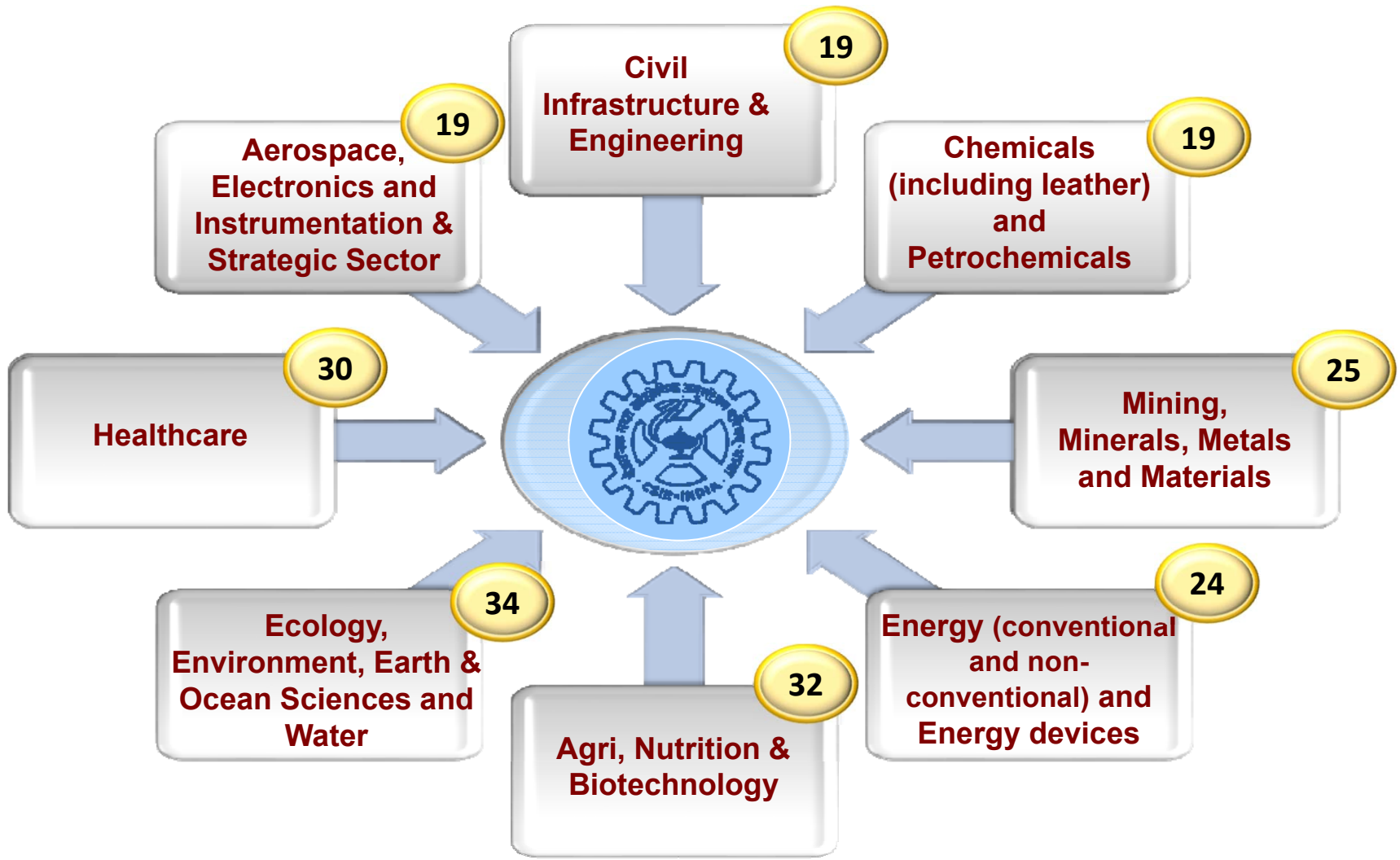
Recently, CSIR has undertaken several initiatives to translate laboratory leads to marketable/value-added technologies/products and thereby enhance interactions and connect to stakeholders for enabling ease of doing technology licensing. One of the initiatives is a “Thematic approach” to harness multidisciplinary talent and infrastructure for solving specific challenges in identified sectors. Theme Directorates have been formed and cover following specific sectors:

- Aerospace, Electronics, and Instrumentation & Strategic Sectors;
- Civil Infrastructure & Engineering;
- Ecology, Environment, Earth & Ocean Sciences and Water;
- Mining, Minerals, Metals and Materials;
- Chemicals (including leather) and Petrochemicals;
- Energy (conventional and non-conventional) and Energy devices;
- Agri, Nutrition & Biotech; and
- Healthcare.

The Theme Directorates are envisaged to provide for greater alignment to and for enhancing industrial/stakeholder focus of CSIR R&D activities. The roadmap and activities of each theme would focus at substantial contributions towards each of the parameters - public good, private good, strategic good and societal good.

CSIR Theme Directorates - Leveraging strengths and opportunities

Bringing complementary skills together for addressing unified goals



CSIR Theme Directorates and Participating Laboratories / Units

19

Aerospace, Electronics and Instrumentation & Strategic Sector

4PI; AMPRI; CECRI; CEERI; CGCRI; CMERI; CSIO; IICT; IIP; IMMT; NAL; NCL; NGRI; NISCAIR; NISTADS; NML; NPL; SERC; URDIP

19

Chemicals (including leather) and Petrochemicals

4PI; AMPRI; CDRI; CECRI; CIMFR; CLRI; CSMCRI; IGIB; IICB; IICT; IIP; IITR; IMTECH; NCL; NEIST; NIIST; NISCAIR; NISTADS; URDIP

Ecology, Environment, Earth & Ocean Sciences and Water

4PI; AMPRI; CBRI; CCMB; CECRI; CEERI; CGCRI; CIMAP; CIMFR; CLRI; CMERI; CSIO; CSMCRI; IGIB; IHBT; IICB; IICT; IIP; IITR; IMMT; IMTECH; NBRI; NCL; NEERI; NEIST; NGRI; NIIST; NIO; NISCAIR; NISTADS; NPL; SERC; TKDL; URDIP

19

Civil Infrastructure & Engineering

4PI; AMPRI; CBRI; CECRI; CEERI; CGCRI; CIMFR; CMERI; CRRI; CSIO; IICT; IMMT; NAL; NCL; NEERI; NISCAIR; NISTADS; SERC; URDIP

25

Mining, Minerals, Metals and Materials

4PI; AMPRI; CBRI; CECRI; CIMFR; CGCRI; CMERI; CRRI; CSIO; CSMCRI; IICB; IICT; IIP; IMMT; NAL; NCL; NEIST; NGRI; NIIST; NML; NISCAIR; NISTADS; NPL; SERC; URDIP

24

Energy (conventional and non-conventional) and Energy devices

4PI; CECRI; CEERI; CIMFR; CGCRI; CLRI; CMERI; CSMCRI; CSIO; IICT; IIP; IMMT; NAL; NBRI; NCL; NEERI; NEIST; NGRI; NIIST; NIO; NISCAIR; NISTADS; NPL; URDIP

30

Healthcare

4PI; AMPRI; CCMB; CDRI; CECRI; CEERI; CFTRI; CGCRI; CIMAP; CLRI; CMERI; CSIO; CSMCRI; IGIB; IHBT; IICB; IICT; IIIM; IITR; IMMT; IMTECH; NBRI; NCL; NEIST; NIIST; NIO; NISCAIR; NISTADS; NPL; URDIP

34

Agri, Nutrition & Biotechnology

4PI; AMPRI; CCMB; CDRI; CECRI; CEERI; CFTRI; CGCRI; CIMAP; CIMFR; CMERI; CSIO; CSMCRI; IGIB; IHBT; ICB; IICT; IIIM; IIP; IITR; IMMT; IMTECH; NAL; NBRI; NCL; NEIST; NIIST; NIO; NISCAIR; NISTADS; NPL; URDIP

32



Bringing complementary skills together for addressing unified goals

Aerospace, Electronics and Instrumentation & Strategic Sector (Thrust Area/s)



**Nodal Theme Director
Sh. J Jadhav, CSIR-NAL**

Aviation

- SARAS 19 Seater Transport Aircraft
- RTA-70 Seater
- New Generation 2 Seater Hansa A/c
- UAV's /MAV's

Defence

- Fiber Bragg Grating Sensors
- Aerospace Biofuel & Lubricants
- Closed Loop Wind Tunnel Facility Creation
- SHM / IVHM

Electronics

- IP Cores
- Travelling Wave Tube
- MEMS Accelerometer
- Development of Gyrotron
- High power CW klystron
- Cyber security & IOT
- Time & Freqmetrology

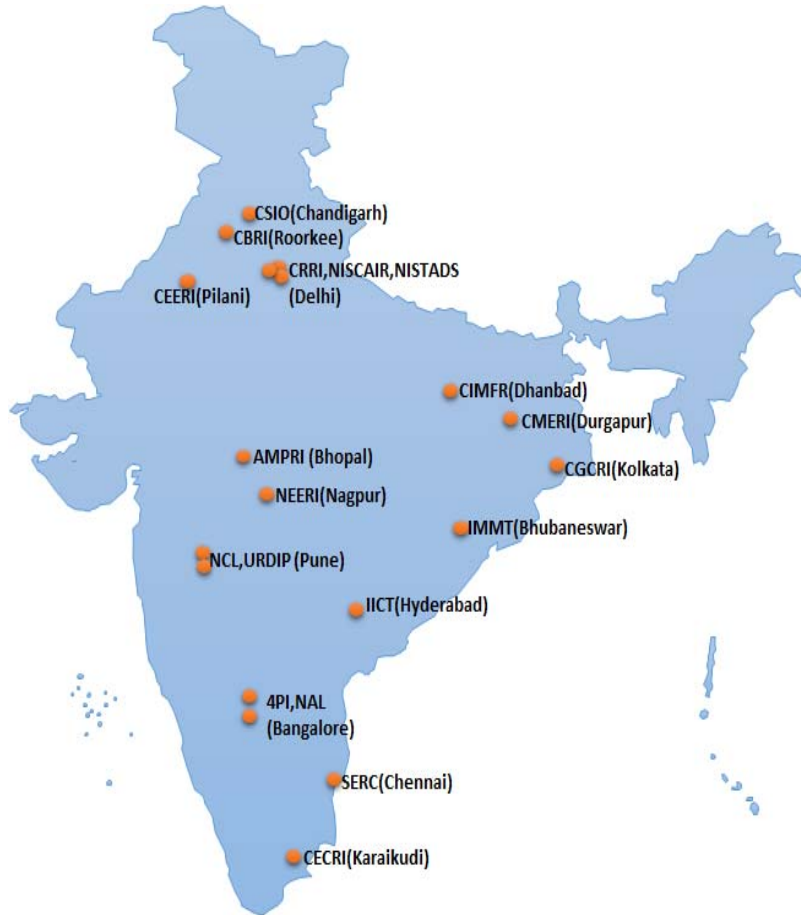
Advanced Materials Coatings and Chemicals

- Thermoplastic Composites
- Aerospace Grade Carbon Fiber & Prepregs
- Environment friendly coatings
- Stealth materials
- Thermal barrier coatings

Mechanical Systems

- A/c Subsystems like ECS, Fuel Control Systems, Cabin Systems
- Actuators
- Valves
- Gear box

Civil Infrastructure & Engineering (Thrust Area/s)



Nodal Theme Director
Dr. N Gopalakrishnan, CSIR-CBRI

Thrust Area 1

- Affordable Mass Housing
- Heritage Structures
- Energy Efficiency
- Disaster Mitigation
- Automation in construction
- IOT in Smart Cities
- Structural Health Monitoring & Life Extension
- Special and Multi functional Structures

Thrust Area 2

- Tunnelling
- New Pavement Materials
- Utilization of waste materials in Road & Bridge construction
- Traffic Planning with focus on Environment and Safety
- Health
- Monitoring of Bridges

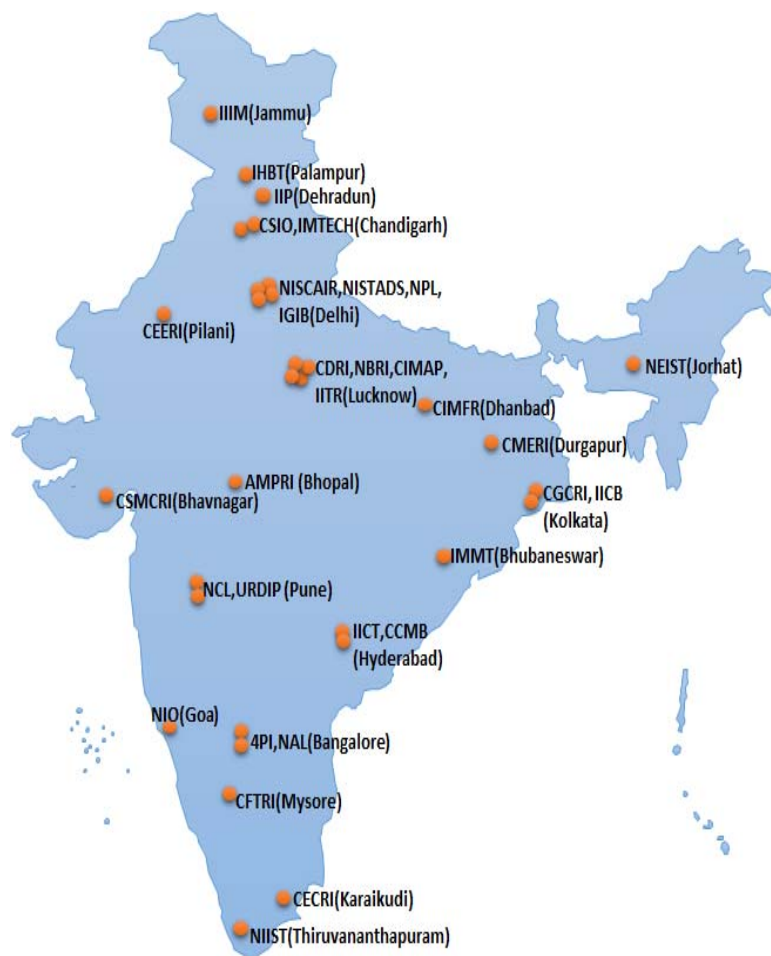
Thrust Area 3

- Robotics
- Farm Machinery
- Industry 4.0

Thrust Area 4

- Green Materials
- Construction Chemicals

Agri, Nutrition & Biotechnology (Thrust Area/s)

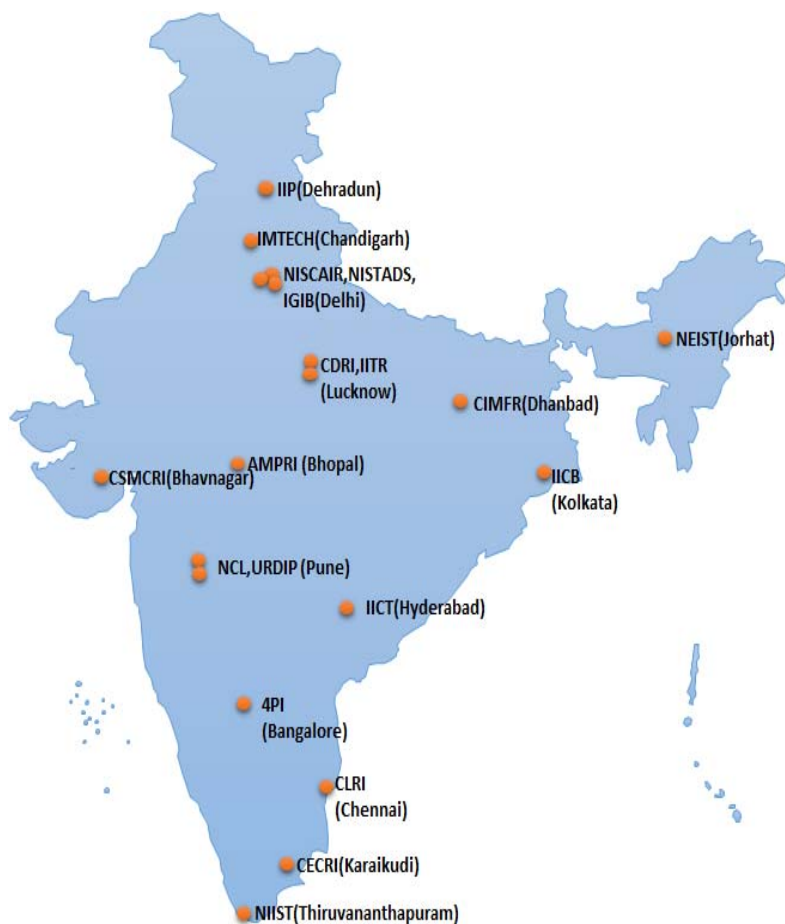


**Nodal Theme Director
Dr. Sanjay Kumar, CSIR-IHBT**

Thrust Area(s)

- Enhancing Farmers Productivity/Area/Time Through Varietal Development, Agro Technology Optimization and Process Development
- Combating Malnutrition
- Conservation of Rare, Endangered & Threatened Plants
- Meeting the Needs of Industrial Enzymes
- Synthetic Biology & Next Generation Gene edited Plants
- 2G Bioethanol
- Development of Alternative Poultry Feeds
- Precision Organic Agriculture
- Preventing Post Harvest Losses

Chemicals (including Leather) & Petrochemicals (Thrust Area/s)



**Nodal Theme Director
Dr. Anjan Ray, CSIR-IIP**

Import Substitution

- APIs (Pharma and Agro)
- Petrochemicals (and Refinery Integration Opportunities)

Specialty and Performance Chemicals

- Leather, Lubricants, Paper, Textiles etc.

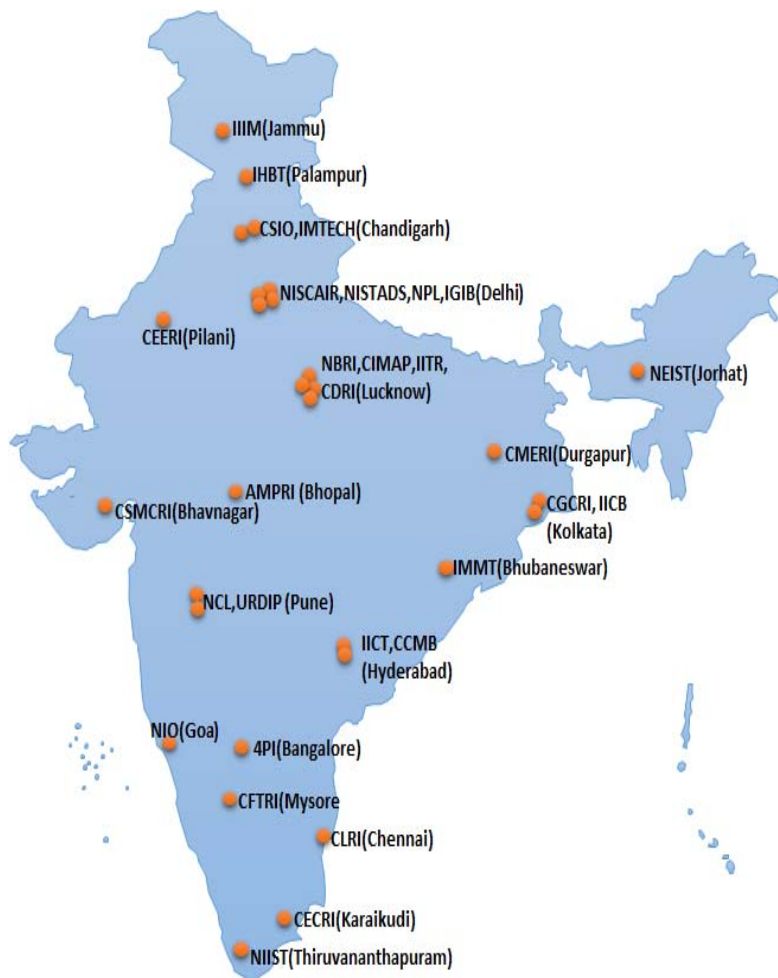
Green Chemistry

- Low-carbon Processes
- Atom Efficiency
- Renewable Feedstock

Disruptive Technologies

- Industrial IOT applications
- Block chain
- Data Analytics

Healthcare (Thrust Area/s)



Nodal Theme Director
Dr. Rakesh K Mishra, CSIR-CCMB

Genomic Route to Preventive Healthcare

- Reduction of Genetic Disease Burden

Medicines of Tomorrow

- Bio-actives, Cell / Stem cell / Immunotherapies, Regenerative / Precision / personalized Medicines

Fighting Infections

- Neglected Diseases (Protozoan and Bacterial Parasites)

Phyto-Pharmaceuticals and Nutrition

- Scientific Validation of Traditional Knowledge & Value Addition

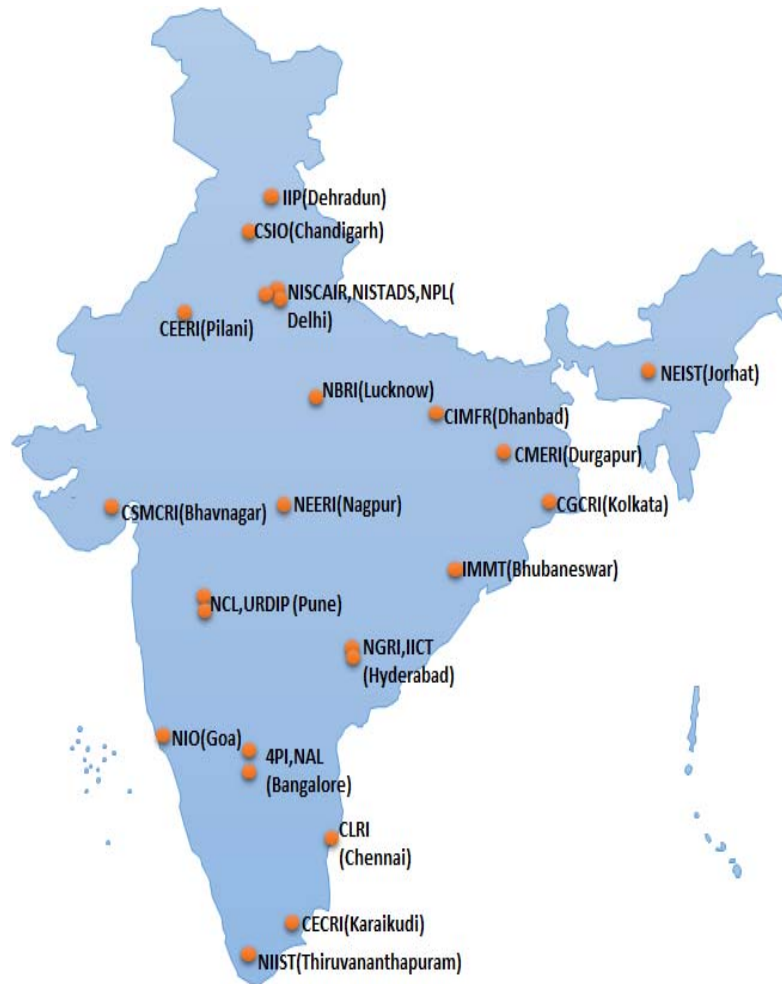
Drug Discovery and Devices

- New Chemicals and Generics Medical Devices and High End Calibrations

Basic biology and future leads

- Knowledge Generation
- Knowledge Integration with Translation / Innovation

Energy (conventional and non- conventional) and Energy devices (Thrust Area/s)

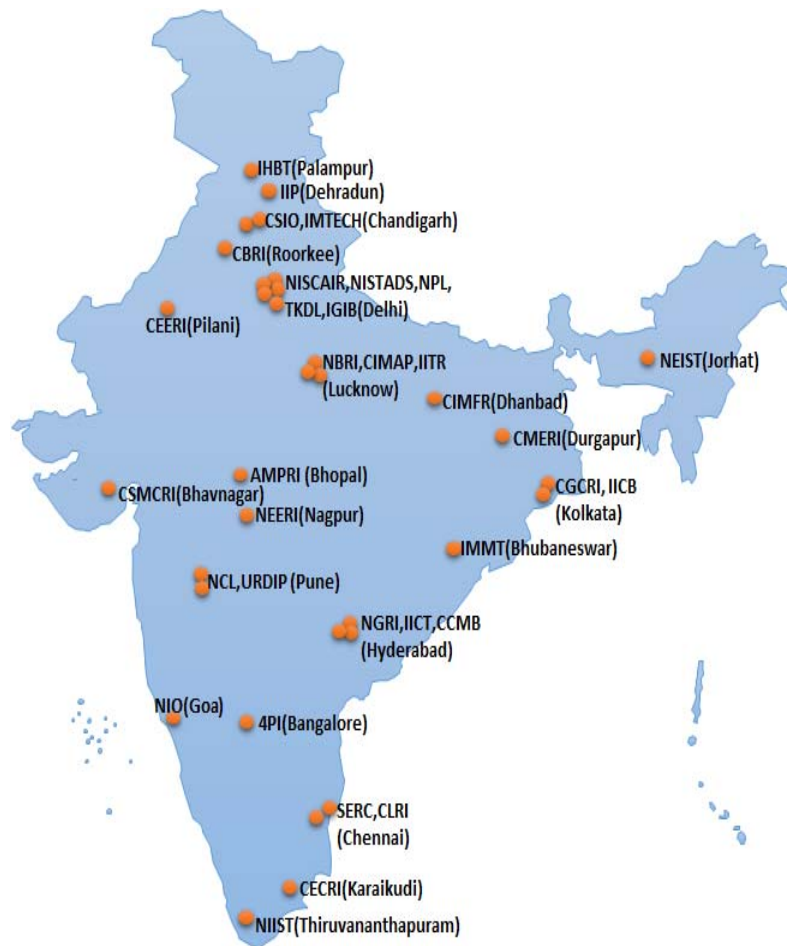


Nodal Theme Director
Dr. Pradeep K Singh, CSIR-CIMFR

Thrust Area (s)

- Conventional Energy Technologies
- Renewable and Non-Conventional Energy/Energy Systems
- Energy Storage and Devices

Ecology, Environment, Earth Sciences, Ocean and Water (Thrust Area/s)

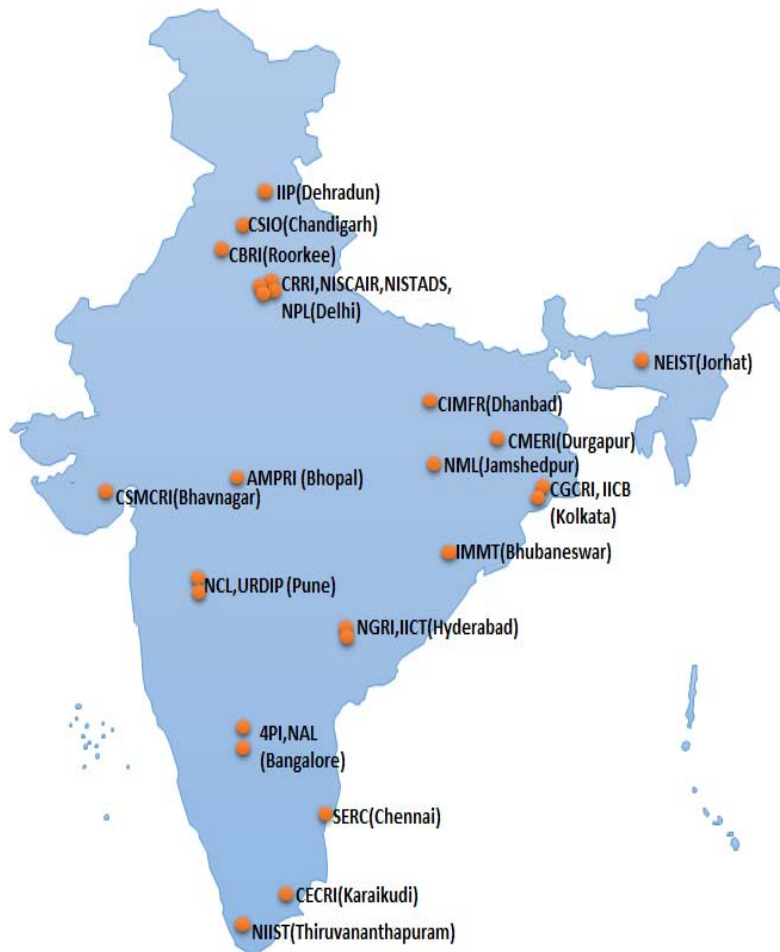


Nodal Theme Director
Dr. Rakesh Kumar, CSIR-NEERI

Thrust Area(s)

- Air Quality and Climate Change
- Waste Management
- Water and Wastewater
- Natural Resources and Biodiversity
- Earth, water and Ocean Sciences
- Environmental Policy and Regulations

4M – Mining, Minerals, Metals and Materials (Thrust Area/s)



Nodal Theme Director
Dr. K Muraleedharan, CSIR-CGCRI

Thrust Area(s)

- Raw Materials
- Minerals & Beneficiation
- Extraction & Refining Technologies
- Materials Processing & Equipment
- Advanced Materials
- Advanced Manufacturing
- Modeling & Simulation
- Surface Engineering
- Waste to Wealth