



Celebrating Five Years of Excellence

ANNUAL REPORT
2021-22



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Words of Wisdom....



From the Chief Executive Officer's Desk

Carbon Neutral Buildings Creating Value through Architecture

L. PADMANABAN

(Major General [Retired]) CEO

Surprisingly today modern day buildings account for nearly 30% of economy-wide carbon emissions through energy consumption needed to warm up and cool down the structure, especially because the building has not been designed to be efficient in terms of insulation and ventilation.

Electrifying and de-carbonizing buildings will make them not just efficient but also carbon neutral buildings. Carbon-neutral architecture refers to the design and construction of buildings that have a net-zero carbon footprint over their entire life cycle, including their operation and maintenance. The emissions that occur are balanced by climate-positive initiatives so that the net carbon footprint over time is zero.

It looks daunting, but there are practical things like wise design and material choices to create carbon neutral buildings. In order to achieve carbon-neutral architecture, a clear target at an early stage can reduce a building's energy consumption. The idea is to create strategies and designs that involve the control of the flow of energy between indoors and outdoors to improve the performance of a building.

Incorporating passive design features optimizing the orientation and layout of the building to maximize natural lighting and ventilation can do wonders. Secondly, using energy-efficient lighting, heating, and cooling systems can drastically reduce the embodied carbon of a building. Other key considerations in carbon-neutral architecture include the use of sustainable materials and the incorporation of green spaces and green roofs to improve air quality and provide insulation. Additionally, using locally sourced materials and minimizing waste certainly help. Overall, the goal of carbon-neutral architecture is to create buildings that are not only environmentally friendly but also healthy and comfortable for their occupants.

Carbon neutral architecture is an important step towards achieving global sustainability and combating climate change. At CUBE, we establish carbon budgets, conduct carbon footprint assessment and ensure that carbon neutrality is a guiding principle in all our projects. We use appropriate technology to measure, analyze emission profiles and have had a remarkable journey in creating inclusive, resilient architecture that inspires sustainable ways of life.

L. PADMANABAN

MAJOR GENERAL (RETIRED)

From the Secretary 's Desk

Driving the Transition to a Circular Economy

Today, carbon neutrality and net zero carbon are arguably the greatest buzz words in the construction industry. Research has it around 40% of the carbon footprint is generated by construction and buildings together. To change this requires much more than tinkering at the edges. Cities need to be developed from a broader, holistic value perspective so that challenges are turned into opportunities, and they become attractive and sustainable over the long term.

The measures which we would have to put in place to accelerate our carbon neutrality would require a sound strategy and a roadmap through the adoption of various initiatives like energy-efficient appliances; conservation measures to curtail electricity and water consumption in buildings; and solar energy to name a few.

Undeniably, as an industry we aren't just entering a period of exciting opportunity, but also one that will require new ways of approaching and moving towards Net Zero Carbon buildings. Staying in line with the Honorable Prime Minister Narendra Modi's vision of becoming net-zero by 2070, it's vital that as a progressive industry, we work towards the same objectives, and transition from a linear to a circular economy. Every department has a role to play in carbon mitigation efforts. From the type of building material to equipment, or planning and designing projects, every aspect needs to be paid attention with the intent of achieving carbon neutrality.



Prof. Robinson R G

Secretary

By making smart design choices, evaluating materials more carefully, and relying on proven methodologies and metrics, we can find out which choices can result in buildings with a lower carbon footprint and use that information to continue improving future projects.

The road is long but not impossible. With a comprehensive approach, we can make progress towards a more sustainable future. AT CUBE, our strength lies in having a holistic view of the entire construction process, and then combine our expertise to pursue carbon neutrality from the vision, planning, project design and all the way to the in-use phases. We have been instrumental in ensuring not just carbon neutrality and climate positive design, but also contribute to shaping the world of tomorrow.

Prof. Robinson R G

(Secretary)

From the Board Member's Desk

Net Zero Rising to the Challenge

If we are looking to drastically slow down climate crisis, the entire construction sector would require an enormous shift. It is a huge challenge, yet if we are to avoid the adverse effects, achieving net zero will be vital. Having said that, the future of carbon neutrality in construction looks promising as there is a growing awareness.

However, the most prominent challenge lies in the fact there is no single solution for building something in a net zero carbon way, and this makes it difficult for most people to know exactly how to proceed. Different buildings have different features depending on their purpose. A residential building might achieve efficiency by being extremely well insulated, whereas a big office park might achieve net zero by packing the roofs with solar panels to generate energy onsite.

Secondly, calculating embodied carbon emissions is extremely complex due to the global nature of supply chains. This refers to all emissions associated with extraction, manufacturing, and shipping of materials to a building site. However, a lot of conceptual work has been going on for several years to try and make 'net zero' construction more tangible, feasible and practical.

Despite these barriers, momentum does seem to be with those pushing for net zero buildings. With the development of new technologies and practices, the scope of carbon neutrality in construction is constantly expanding, providing new opportunities for reducing carbon emissions and promoting sustainable development.



Prof. Ashwin Mahalingam

Board Member & Faculty In-Charge

For instance, Building Information Modelling is a digital modelling process that helps reduce waste and inefficiencies during the building process, ultimately reducing the carbon footprint. Another feasible option is Smart building systems, such as automated systems that use sensors and algorithms to optimize building performance and reduce energy waste.

Much of carbon neutrality in buildings involves regulating how much and where energy goes, and when, to ensure better efficiency throughout built environments. At CUBE, our analytics-led smart technologies harness building data and enable efficiency-focused automation, ensuring buildings and their systems operate at peak efficiency throughout their lifetimes.

A handwritten signature in blue ink that reads "M. Ashwin Mahalingam".

PROF. ASHWIN MAHALINGAM
(PROFESSOR, IIT MADRAS)



About CUBE



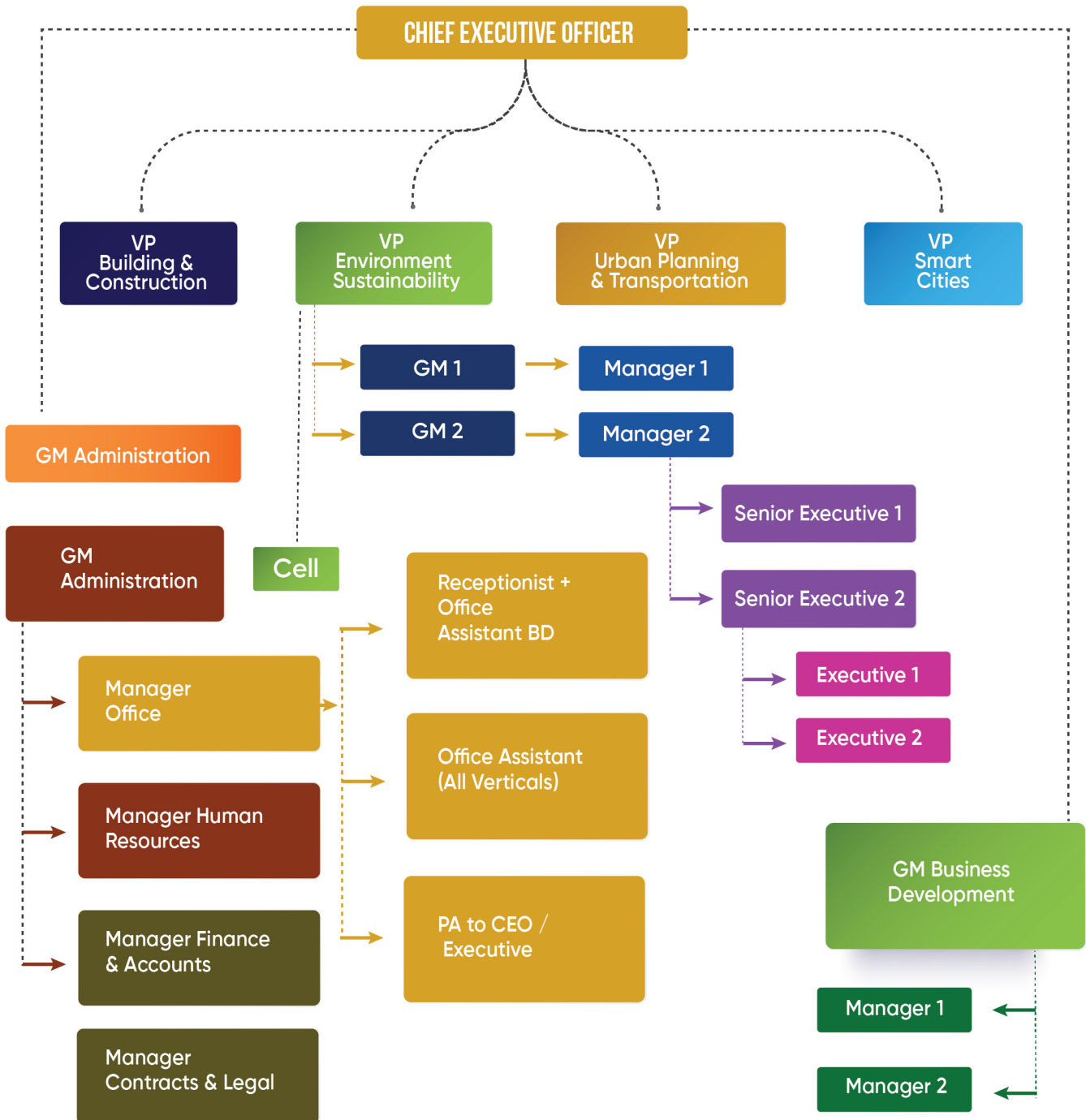
Centre for Urbanization,
Buildings & Environment (CUBE)



Organizational Structure



GOVERNING BOARD



Governing Board



CUBE is steered and monitored by an aspiring governing body that provides the needed oversight to take strategic decisions, and ensures that the organization performs in accordance with its mission and values.

Comprising of members drawn from IIT Madras, Allied Government Departments like Finance, Housing & Urban Development, Municipal Administration & Water Supply, Pollution Control Board and Heads of four Private Industries each of them brings diverse perspectives for long-term success and sustainability of CUBE

Governing Board Members

Prof. V Kamakoti

Chairman, IIT Madras

Prof. Robinson R G

Secretary, IIT Madras

Prof. Ashwin Mahalingam

Member, IIT Madras

Prof. Indhumathi M. Nambi

Member, IIT Madras

Mr. Hitesh Kumar S Makwana, IAS

Principal Secretary to Government Housing and Urban Development Department

Mr. N Muruganandam, IAS

Additional Chief Secretary to Government Finance Department

Mr. Shiv Das Meena IAS

Additional Chief Secretary to Government, Municipal Administration and Water Supply Department

Mr. R Kannan

Member Secretary (i/c) Tamil Nadu Pollution Control Board

Mr. K V Rangasami

Retired Former President, L & T

Mr. B. Santhanam

Managing Director, Saint-Gobain Glass India

Mr. Krishnamurthy Sivaraman

Advisor, Projects, Industrial Waste Management Association

Mr. S. Venkatachari Raghavan

Principal Consultant, Tata Consultancy Services



11th Annual General Meeting, November 2019



13th Annual General Meeting, January 2021 [Through VC]



1st Annual General Meeting, August 2018



About CEL



A Commitment to Accuracy & Quality

CEL is a full-service environmental testing laboratory fostered by Tamil Nadu Pollution Control Board and IIT Madras. Equipped with state-of-the-art equipment, we offer a wide range of analytical, testing and consultancy services across water, waste water and solid waste to municipal, industrial, household and private concerns.

At CEL, compliance is a way of life. As your partner in problem-solving, we adopt stringent quality control and safety measures to provide scientifically sound results that are compliant with national regulations.

We are the environmental testing lab that has - and does - it all. Our diversified testing services span across all components of environmental concerns - from pH and turbidity to advanced parameters like COD & trace heavy metals, all under one roof. Our unmatched capacity coupled with a deep focus on quality standards, we offer clients specialized services that accomplish objectives and also lead to new possibilities.

About Us

Delivering Excellence Every Step of the Way



Centre for Urbanization, Buildings & Environment (CUBE) has been raised by IIT Madras and Government of Tamil Nadu as an Applied Research, Technology and Consultancy Centre. Started in May 2017 as a Centre of Excellence of Government of Tamil Nadu, we coalesce academia-quality research and enhanced support from the government, while delivering ingenious industry solutions that make a tangible difference in our communities.

We are curious and tenacious risk takers who are passionate about solving the toughest challenges and pushing the boundaries of engineering, design, research and development. To advance our capabilities, we've brought together teams of engineers, experts and consultants, who all share in our vision.

At CUBE, we hold our work to the highest standards and understand our actions can shape, influence and inspire others. Opportunities include planning, designing and enabling complex projects and major programs across Building & Construction, Environment & Sustainability, and Urban Planning & Transportation.

Leveraging our combined talent, we dare to see things differently, diagnose and correct issues, and provide customized solutions across urban development and built environment domains. Approaching every project as an opportunity to go beyond expectations, we help every client see the bigger picture to achieve sustainable reliability.



IIT Madras Advisory Panel

CUBE work in close association with IIT Madras Faculties who provide valuable insights, advice, and support. Each Member offers specialized knowledge across a myriad of issues and overall operations. Parallely, CUBE acts as implementation partner and complements the panel with industry specific and practical experiences for an overall successful ecosystem.

Department of Civil Engineering

Prof. R.G. Robinson

Building Construction & Technology

Prof. Ashwin Mahalingam
Prof. Manu Santhanam
Prof. Radhakrishna. G. Pillai
Prof. Ramamurthy K
Prof. Sivakumar Palaniappan

Geotechnical Engineering

Prof. Dali Naidu Arnepalli
Prof. K. Rajagopal
Prof. Subhadeep Banerjee
Pro. Vidya Bhushan Maji

Transportation Engineering

Prof. Atul Narayan S.P
Prof Gitakrishnan Ramadurai
Prof. Lelitha Devi. V
Prof. Murali Krishnan. J

Department of Aerospace Engineering

Prof. S.R. Chakravarthy

Department of Mechanical Engineering

Prof. A. Mani

Structural Engineering

Prof. A. Meher Prasad
Prof. Alagusundaramoorthy P
Prof. Amlan Kumar Sengupta
Prof. Arun Menon
Prof. Devdas Menon
Prof. Rupen Goswami
Prof. Saravanan U

Environmental & Water Resources

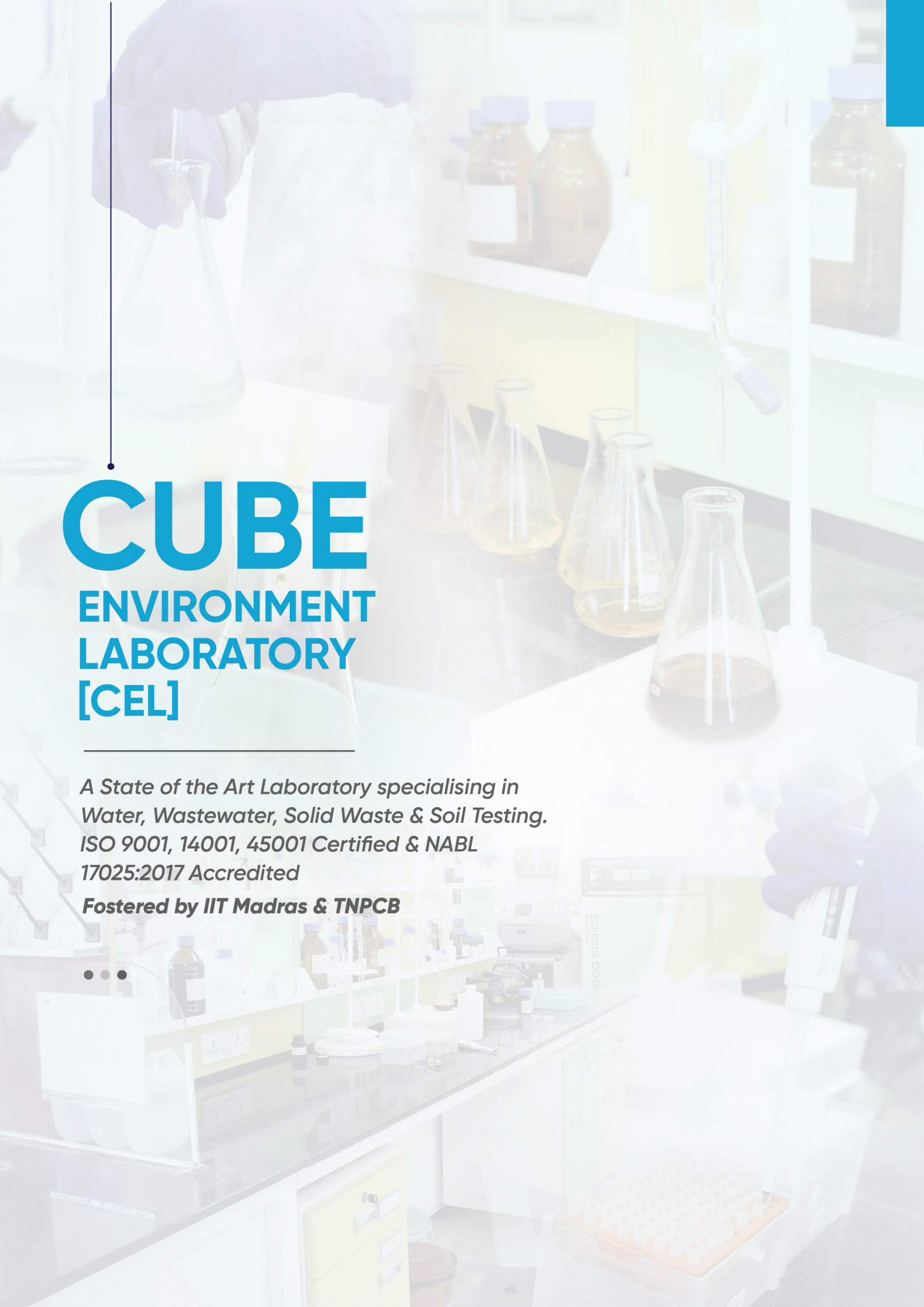
Prof. Balaji Narasimhan
Prof. Indumathi M. Nambi
Prof. Ligy Philip
Prof. Madhava Kumar S
Prof. Murty B.S
Prof. S. Mohan
Prof. S.M. Shiva Nagendra
Prof. Soumendra Nath Kuiry

Transportation Engineering

Prof. Atul Narayan S.P
Prof Gitakrishnan Ramadurai
Prof. Lelitha Devi. V
Prof. Murali Krishnan. J

Department of Chemical Engineering

Prof. R. Raghunathan
Prof. Ravi Krishna



CUBE

ENVIRONMENT LABORATORY [CEL]

*A State of the Art Laboratory specialising in
Water, Wastewater, Solid Waste & Soil Testing.
ISO 9001, 14001, 45001 Certified & NABL
17025:2017 Accredited*

Fostered by IIT Madras & TNPCB



Objectives

Uphold integrity & professionalism
in everything we do.

Maintain competence
across the entire organization.

Create an environment that
fosters team collaboration
and productivity.

Build trust & loyalty
with superior service.

Maintain firm compliance
with State and National regulations.

Inspire, innovate &
excel in all that we do.

Vision

To be the pioneers and leaders in comprehensive environmental testing services and provide customers with accurate and reliable test results.

Core Values

Our core values are the fundamental beliefs and guiding principles that shape CUBE's identity. These values act as a unifying force and provide a sense of direction.

- 01 Integrity** "Integrity is essential and irreplaceable. It is the most valuable asset for a person, a company, or a society seeking to build and progress"
– Rex Tillerson
- 02 Exceptional Quality** "Quality is not an act; it is a habit".
– Aristotle
- 03 Rigorous Accuracy** "Watch every detail that affects the accuracy of your work"
– Arthur C. Neilson
- 04 Focused Diligence** "What we hope ever to do with ease, we must first learn to do with diligence."
– Samuel Johnson
- 05 Competent Service** "Whatever you are, be a good one"
– Abraham Lincoln
- 06 Strategic Decisions** "You can't solve a problem on the same level that it was created. You have to rise above it to the next level".
– Albert Einstein



Vision

To be the most authentic, responsible, ethical and trustworthy partner for our clients, and become the leading service provider that clients turn to for apt solutions aiming towards safer, healthier and sustainable communities.



Mission

To ensure that our industry knowledge and technical capabilities remain relevant, and continually improve the efficiency of our project execution, methodologies and internal systems.



Verticals



Building & Construction



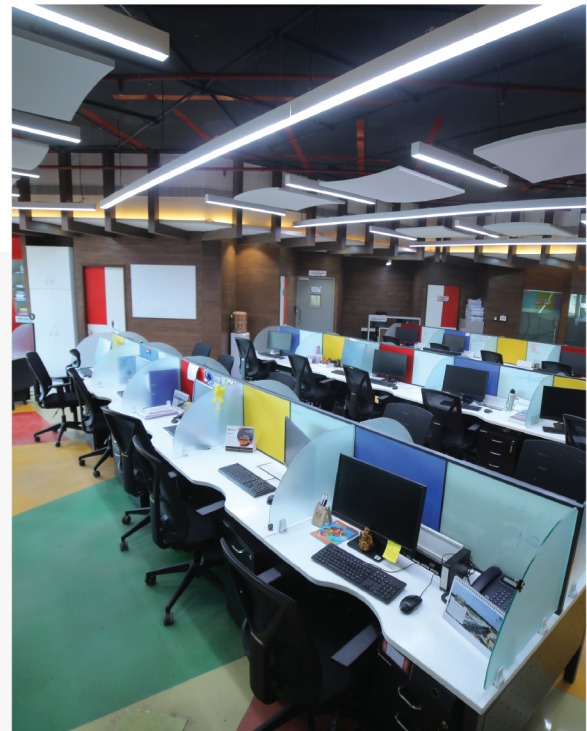
Environment & Sustainability



Urban Planning & Transportation



Smart Cities



Seed Funding

CUBE was raised with seeding fund contributions from various Tamil Nadu Government Ministries and departments like CMDA, TNHB, TNPCB and MAWS. This seed funding has helped us grow from the ground up across various operations & initiatives, building a strong competent team, set up office infrastructure for CUBE and CUBE Environment laboratory (CEL) - providing us with the needed financial support to succeed and establish credibility.

Core Expertise at CUBE

At CUBE, each team member is a critical component of the organizational success sharing resilience, innovation, motivation and engagement. We have a strong core team of experts from various domains ranging from Project Management, Civil & Structural Engineering, Environment Sciences, Architecture and Urban & Regional Planning, who are flexible and respond quickly to changing circumstances and challenges.

We are also supported and strengthened by a vastly experienced IITM Panel and external consultants with expertise and advanced capabilities, who help us achieve our goals effectively and efficiently.

L. Padmanaban
Chief Executive Officer
Major General (Retired)

A Gothandaraman	Office Assistant	Arun Karthick	Executive - Projects
Aashish Kumar Jain	Executive - Projects	B John Joseph	Senior Executive - Projects
Abdullah Ishtiaque	Executive - Projects	B V Chidvilas Reddy	Executive - Projects
Ambalavanan	General Manager	Bhanu Sai Prasanna	Executive - Projects
Amirtharaj	Senior Executive - Projects	Bharat Lal Prasad	Executive - Projects
Amita Gupta	Senior Consultant - UPT & CEL	Dhanalakshmi R	Executive - Projects
Amrita Bhattacharjee	Executive - Projects	Durga Prasad	Executive - Projects
Aravind Mani S	Office Assistant	E Lavanya	Junior Analyst
Aravindh S	Executive - Projects	Elakkiya Sakthivel	Executive - Administration
Fazulur Rahman P	Executive - Projects	Eunice Jayashree	Executive - Projects
Imran Ali Khan	Executive - Projects	Rajkumar P	Executive - Projects
Imran Khan	Executive - Projects	Rekha D	Technical Manager
Janani Priya	Executive - Projects	Rohit Sharma	Executive - Projects
K. Mohammed Jeelan	Executive - Projects	S Hemalatha	Junior Analyst
Kanwal Jeet Singh	Executive - Projects	S Ilakkiya	Executive - Projects
Karthikeyan M	Executive - Projects	S Prabakaran	Senior Executive - Projects
Madhulika	Executive - Projects	Srinivas Boopathy	Executive - Projects
Monika Elango	Executive - Projects	Sruthi Rao	Executive - Projects
P T Santhanakrishnan	Executive - Projects	Sudharsanan T	UPT Assistant
Patel Dinesh Kumar	Executive - Projects	Tharun Avinash	Executive - Projects
Pranshu Verma	Executive - Projects	Unmesh Dhanushkodi	Senior Executive - Projects
Purushothaman	Executive - Projects	Vignesh Rathinam	Executive - Projects
Pushparaj	Executive - Projects	Vigneshwar Suresh	Executive - Projects
		Vinodh M	Executive - Projects



Domains

Water

Distilled /Demineralized Water
Drinking Water
Ground Water/ Surface Water
Packaged Water
Source Water
Water for Construction
Purpose
Process Water
Boiler Water
Cooling Water
Water for Swimming Pool and Spas
Marine Water
Aquarium Water
Water Purifying Systems

Wastewater

Effluents (Inlet and out-let)
Wastewater (Inlet & outlet)
Sewage & Septage (Inlet and outlet)

Solid Waste

Classification
Testing of Solid Waste from various sources

Soil

All Parameters, Physical,
Chemical and Heavy Metals

Has state of the art equipment and is furnished with good quality op-erational infrastructure with adequate safety and security measures in place. The laboratory is furnished with SEFA certified laboratory furniture.

Having a set of core values, provides a guide, a North Star, to help us navigate and stay on the right path as our business grows.

While most organizations have a vision statement & a set of core values in CEL our core values aren't just a nice poster on a wall, but, are strategically integrated into every-thing we do.

“Our core values define who we are & how we act as employees & as a team.”



Core Values



Visionary Leadership



Unsurpassed Excellence



Unified Harmony



Resolute Intrepidity



Pioneering Innovation



Analytical Decision Making

