

**colt**

Data Centre Services

Designing the Future:

# Sustainable Data Centres for India's Digital Economy

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Global Decarbonisation Strategy



# Executive Summary

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## India's Sustainability Imperative

In an increasingly digital economy, sustainability is no longer optional. Every organisation that uses or provides digital services relies on robust IT infrastructure that can scale with its needs. This infrastructure underpins growth, and the way these foundations are laid will shape the sustainability of the digital economy itself. It is therefore imperative that we champion best practices in data centre design and construction in India.

## Market Growth

The scale of the Indian data centre market is only going to increase. Data from DC Byte finds that, as of Q1 2026, there is 840MW of live capacity, with an additional 321MW under construction. The total committed capacity from operators is more than 3GW. Meanwhile [MarkNtel Advisors](#) suggest that the market will have a compound annual growth rate (CAGR) of 14.60% in the period of 2026 to 2032.

This growth is the result of ongoing demand for AI, hyperscale expansion, and broader investment in digital infrastructure. Cloud adoption is increasing rapidly, as is growth in digital-first sectors such as fintech. Demand from large, ambitious enterprises is driving change.

## The New ESG Landscape

Meeting this growing demand sustainably is a business-critical priority for the Indian data centre industry. Corporates have made ambitious Environmental, Social, and Governance (ESG) commitments and, increasingly, they are obliged to report sustainability metrics, either as a customer or regulatory requirement.

For example, listed banks, insurers, and financial services firms must comply with the SEBI's [Business Responsibility and Sustainability Reporting \(BRSR\)](#) framework, which includes 98 obligatory data points. Many firms also align with international frameworks such as [Ecovadis](#).

In parallel, India's broader national sustainability mandates include an Indian Carbon Market that's beginning to introduce binding emission-intensity targets for heavy industry, the [Indian Green Building Council \(IGBC\)](#)'s rating systems, and a Net Zero target of 2070. Moving forward, the future of the data centre ecosystem will be defined by the development and enforcement of such sustainability frameworks.

In what follows, we break down the Indian data centre landscape and share best practices for designing, building, and operating sustainable data centres in the region. These insights are intended to support India's long term digital and environmental goals.



# Challenges Facing India's Data Centre Ecosystem

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The data centre ecosystem in India has a number of significant challenges to overcome, from growing demand and power constraints to aging infrastructure and regulatory change. This presents a complex landscape for operators to navigate effectively, especially while meeting the highest possible standards in sustainability.

## Increased Demand

The need for never-before-seen scale without increasing the carbon footprint of data centre infrastructure is the single greatest challenge facing the Indian market.

Restrictions to how data is stored and processed, brought in by India's [Digital Personal Data Protection Act](#), have created new incentives to operate with home-grown data centres.

In parallel, India has announced a [20-year tax holiday](#) for global firms investing in data centre projects. This is expected to drive considerable investment from overseas, including [\\$15 billion from Google](#) alone.

## Legacy Infrastructure

Like any legacy infrastructure, older data centres are plagued by inefficiencies. From high Power Usage Efficiency (PUE) ratings and water-cooled chillers that fail to meet IGBC standards, to outdated systems and design limitations that drive unnecessary waste, higher operating costs, and even regulatory risk, legacy data centres frequently face significant challenges.

Retrofits can help address some of these limitations, improving operational efficiency and reducing environmental impact. If legacy infrastructure is to meet rising sustainability standards, this work must be undertaken. However, successful retrofitting depends on access to the right underlying resources such as the ability to support higher power densities or accommodate sufficient floor space. In practice, these constraints mean that retrofitting is often neither feasible nor cost-effective, making the design and construction of new facilities the preferred option in many cases.

## Resource Scarcity

Growth in regions such as Mumbai and Chennai, where major infrastructure build-out is underway, must not place unsustainable pressure on local power grids or the availability of green energy. With an ambitious pipeline of projects planned, proactive measures are essential to ensure demand growth in these regions remains aligned with grid capacity and renewable supply.

At the same time, water scarcity is an unavoidable reality in India's hot, humid climate. This is reflected in IGBC and LEED guidelines, which place increasing emphasis on water efficiency and responsible resource use. Operators must factor these constraints into the way they design, build, and operate digital infrastructure.

## Regulatory Complexity

While the number of businesses impacted by sustainability regulations and the level of enforcement are both relatively limited as it stands, complexity is on the rise. For example, [SEBI's BRSR framework](#) is increasingly being applied to firms, covering a broad range of ESG indicators from greenhouse gas emissions to community impact.

Regulatory change is needed to ensure that infrastructure is built responsibly and reflects the needs of local communities. But this does not have to come at the expense of an ambitious, fast-growing ecosystem. Specific recommendations for sustainability governance can be found on page 8 of this whitepaper.

## Mumbai at a Glance

53%

Mumbai accounts for more than half the country's data centre capacity ([CBRE](#)).

5%

The current proportion of the city's peak electricity demand drawn by data centres ([GRI](#)).

# Building the Sustainable Data Centre of the Future



There are several approaches to making data centres in India more sustainable. Here we outline key pillars that underpin this effort. Together, they are central to developing future-proof compute capacity that sets new standards in operational excellence, efficiency, and decarbonisation.



## Sustainability by Design

Design should be tailored to meet sustainability goals, from rack density to the materials used in construction.



## Future-proofed Capacity

Data centres need the flexibility to support a range of power and cooling requirements, while meeting the scale demands of tomorrow's workloads.



## Operational Excellence and Efficiency

Operators should adopt the latest technologies and expertise to optimise operations for sustainable performance and longevity.



## Decarbonisation

Integrating renewable energy into data centres is fundamental to any decarbonisation efforts, whether operators are generating their own or accessing it through the grid.

# Engineering the Next-Generation Data Centre

The next generation of data centres is sustainable by design. But what does that mean in practice? There are a number of concrete steps to take in achieving sustainability goals.

## Site Selection

A range of factors dictate data centre site selection:

- Renewable energy corridors
- Low-risk climate and seismic profiles
- Proximity to metro-hubs
- Network provisioning
- Water availability
- Recycling capabilities

The best locations for data centre projects are the ones that perform well across the majority of these categories. Mumbai and Chennai are popular options for this reason, although rapid building in these areas is likely to put pressure on local infrastructure.

## Green Construction

Green building architecture is guided by a range of interrelated factors, from the materials and circular design principles used to the way that systems are implemented. This is true across residential, industrial, and commercial buildings, but takes on a particular significance for data centres given the environmental scrutiny they face.

This is also defined by specific environmental certifications, for example [IGBC Platinum](#), which is the defining local standard. To meet this standard, operators must use certified materials, sustainable architecture practices, water conservation, best-in-class standards for indoor environmental quality including fresh-air ventilation, and daylighting in occupied areas.



## Power and Sustainability Engineering

Fortunately, the climate in India lends itself to affordable renewable energy, for example solar generated from plentiful sunshine. This enables utility scalar solar projects, as well as hybrid approaches that use wind power.

However, practical limitations relating to onsite generation and direct wires from generation plants make them less common than buying green energy from the market. Procuring 100% green energy this way is a valid, sustainable operating model.

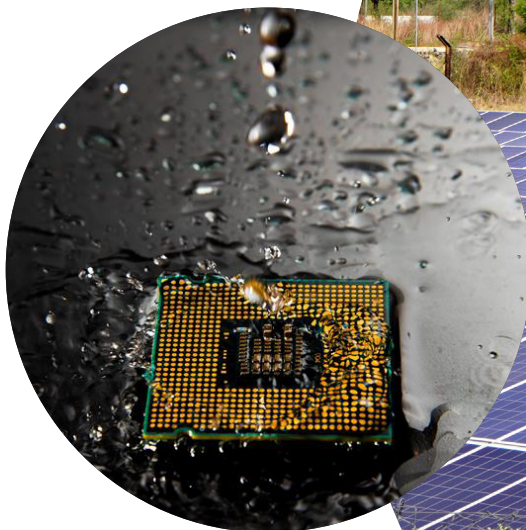
Equally, Battery Energy Storage Systems (BESS) are driving change in green energy globally by enabling the storage and discharge of renewable power, as well as a range of grid arbitrage services. In doing so, data centres need not drain the grid. Instead, they could actively support grid stability by flexing consumption in line with regional demand or, where appropriate, by operating at a flat load to provide predictable, reliable demand.

## Water Efficiency and Eco-friendly Operations

Water scarcity means that Indian data centres often favour air-cooled chillers, as opposed to more efficient water-cooled systems, despite the latter typically offering higher thermodynamic benefits.

Alongside air cooling, direct-to-chip liquid cooling has an important role to play in supporting higher power densities and improved efficiency. This approach delivers coolant directly to heat-generating components, using a closed-loop cooling system to almost eliminate water discharge and ensure near-zero wastewater during cooling.

In India, 1.3-1.4 PUE is generally a good benchmark for efficiency, although this will vary based on customer needs. Similarly, cooling targets could fluctuate between  $-20$  and  $-32^{\circ}\text{C}$  depending on specific operational needs.



# Sustainability Governance

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Climate change is a global issue that requires a global response. As such, Indian data centre operators should not only ensure compliance with local regulations, but also draw from global frameworks to ensure operational excellence.

## ESG Reporting Frameworks

While government on a national and state level are relatively lenient on ESG reporting relative to other regions globally, there are a number of global frameworks that are useful reference points.

Alignment with Net Neutrality carbon targets and broader norms should be a non-negotiable for data centre operators. Likewise, the UN's Science Based Targets initiative is the gold standard for sustainable practices.

Waste and landfill certifications are also vital. Ideally, as little waste should be incinerated as possible and none of it should end up in landfill.

## Third-party Accreditations

In parallel, third-party accreditations are useful ESG benchmarks that signal to customers that your data centre meets the highest possible environmental standards.

Locally, IGBC certifications are a key touchpoint. [LEED](#) is a global equivalent. Certifications from platforms such as [Ecovadis](#) are also well respected globally. Lacking them can be a barrier for entry for commercial relationships with large-scale listed companies.



# Partnering with Enterprises on their Sustainability Journey

While all corporates and large enterprises have compute needs, there are specific requirements associated with specific sectors and operating models. Here are the key considerations for two vital categories operating within India.

## Banking, Financial Services, and Insurance (BFSI) Companies

Regulatory compliance is a key focus for BFSI firms. Along with meeting BRSR requirements, they must closely monitor local and global changes to environmental standards. They must continually strive to reduce their operational carbon footprint while adopting innovative new technologies that help them meet customer needs.

In practice, this means driving change via green IT and cloud-first initiatives, underpinned by sustainable, future-ready infrastructure. At the same time, the sensitivity of financial data means that enhancing digital resilience is vital. A connected approach to cyber-physical security is needed to prevent infrastructure from opening up new attack surfaces.

## Hyperscale and Cloud Companies

Hyperscalers and cloud providers are under considerable pressure to produce and deliver upon roadmaps to net-zero workloads. Such is the scale of their operations, and the range of businesses using their services, that their approach to sustainability efforts have a major impact on the sustainability of economies.

The name of the game is delivering scalability with 100% renewable energy. Operations must be cost-efficient, without compromising on sustainability. It is incumbent on this sector to champion best practices, not only integrating with global sustainability frameworks but helping shape them moving forward.

# Innovations Shaping the Next Decade of Sustainable Data Centres

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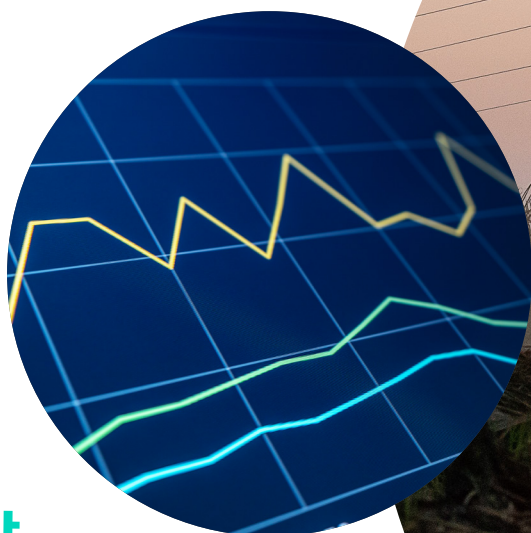
Looking forward, data centres in India will not only enable data-driven processes, they will be defined by them. We will see a shift towards predictive and even autonomous operations, bringing with it considerable gains in operational efficiency.

This will be coupled with a range of new innovations that enable advances in waste reduction, improving outcomes for data centre operators and local communities alike.

## Telemetry and Autonomous Operations

Modern data centres must contend with increasing operational complexity across infrastructure systems. Telemetry provides real-time insight into these environments, enabling platform users to monitor performance, identify inefficiencies, and respond quickly to emerging issues.

As facilities scale in size and density, this level of operational intelligence becomes essential. With robust, data-driven systems in place, telemetry supports outcomes such as predictive maintenance, temperature or humidity optimisation, and improved energy efficiency helping data centre customers maintain performance, resilience, and sustainability at scale.



## Grid Services and Heat Reuse

There is scope for data centres with enhanced BESS capacity and flexible operations to play an active role in supporting local grids. They can potentially reduce or reroute the IT load during periods of high demand and increase it during periods with less demand, or indeed generate renewables onsite. This approach to demand response is something [Google has put into practice](#) across its data centres.

Similarly, sharing the heat produced by data centres with local communities is a proven strategy that has been successfully deployed in Europe. While India's climate places less demands on heating for most of the year, this principle can still be carried over into local data centre operations. Rather than residential heating, this is likely better used to support industrial uses and process heating.

## New Regulatory Frameworks

When it comes to sustainability, stringent directives are yet to be introduced. As it stands, BRSR requires the top 1,000 listed companies to disclose ESG data, but there is currently little in the way of enforcement. More stringent requirements for compliance, coupled with meaningful penalties would help introduce checks and balances into the system.

India's Digital Personal Data Protection Act is a good example of the kind of forward-thinking regulation already being brought in. It is expected to drive investment by keeping data in region. Global norms shaped that regulation, and the same will be true of new sustainability regulations. Studying global frameworks and regionalising those principles to match India's specific circumstances is the best way forward.





## Conclusion

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There has never been a more exciting time for the Indian data centre market. As multiple sectors undergo digitalisation, growth is skyrocketing, and there is considerable investment potential moving forward.

However, it is essential that we set new standards in sustainable operations, influenced by established global ESG frameworks and the latest technological advances. Future-ready data centres are not only powering innovation; their operations are defined by it.

As part of that change, Colt Data Centre Services is working towards delivering an IT load of 148MW for its campus in the Mumbai area and a 96MW campus in Chennai. That's local operations at a global scale. And, crucially, it is being shaped by sustainable design principles and standards.

Our EcoVadis Platinum scored approach and commitment to source 100% renewable energy for our data centres aligns with our approach internationally. We will continue to work with our customers to support best practices and Net Zero targets.

# Our Carrier Neutral Data Centre Locations

## France

Colt Paris South West Data Centre  
Colt Paris 2 Data Centre\*  
Colt Paris 3 Data Centre\*  
Colt Paris 4 Data Centre\*  
Colt Paris 5 Data Centre\*  
Colt Paris 6 Data Centre\*

## Germany

Colt Berlin 1 Data Centre\*  
Colt Berlin 2 Data Centre\*  
Colt Frankfurt City Data Centre  
Colt Frankfurt West Data Centre  
Colt Frankfurt 3 Data Centre\*  
Colt Frankfurt 4 Data Centre\*  
Colt Frankfurt 5 Data Centre\*

## India

Colt Mumbai Data Centre 1  
Colt Mumbai Data Centre 2  
Colt Mumbai Data Centre 3  
Colt Mumbai Data Centre 4  
Colt Chennai Data Centre\*

## Japan

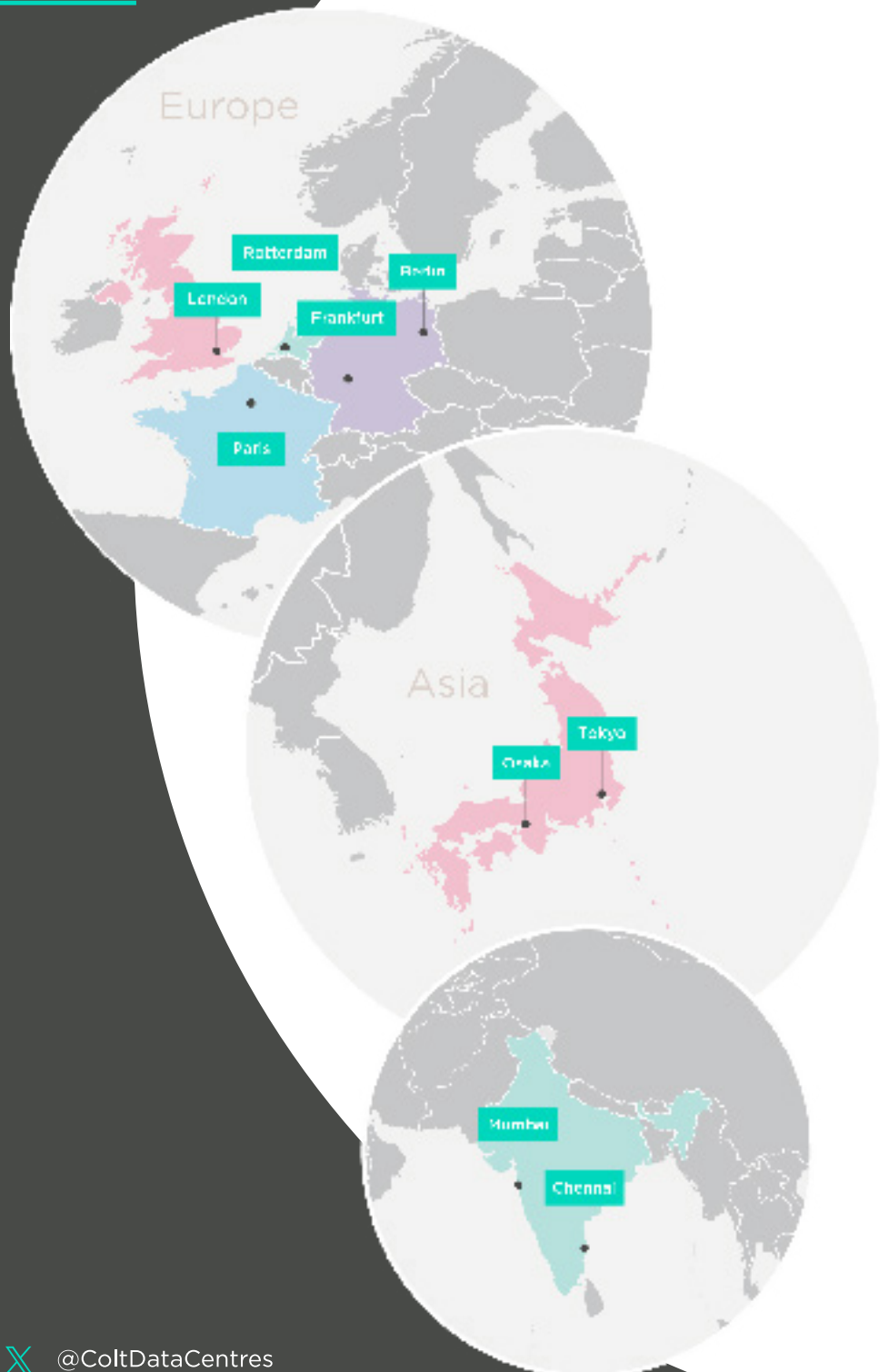
Colt Minoh City Data Centre\*  
Colt Osaka Keihanna Data Centre  
Colt Tokyo Shiohama Data Centre  
Colt Tokyo Inzai 1 Data Centre  
Colt Tokyo Inzai 2 Data Centre  
Colt Tokyo Inzai 3 Data Centre  
Colt Tokyo Inzai 4 Data Centre  
Colt Tokyo Inzai 5 Data Centre\*  
Colt Tokyo Yoshikawa 1 Data Centre\*  
Colt Tokyo Yoshikawa 2 Data Centre\*

## Netherlands

Colt Rotterdam Data Centre

## United Kingdom

Colt London West Data Centre  
Colt London North Data Centre  
Colt London 4 Data Centre\*  
Colt London 5 Data Centre\*  
Colt London 6 Data Centre\*  
Colt London 7 Data Centre\*



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Accreditations:

ISO 27001  
ISO 14001

