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Creating Innovative Solutions for a Sustainable Future

A Study on

Building India's Digital Future Responsibly

Guiding Principles for Sustainable & Responsible Growth of Data Centers in India



October 2026

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Executive Summary

As India's digital economy expands across public digital platforms, cloud services and AI, the infrastructure that stores and processes its data is becoming strategically important. The data center sector has grown rapidly in recent years, and further capacity is under construction or in the planning pipeline. Most of the footprints that will define the sector over the next two decades are yet to be built.

Global markets are moving from incentive-led growth towards integrated sustainability governance, and each jurisdiction reviewed offers a transferable principle: EU’s lifecycle circularity, Singapore on linking capacity to efficiency, Malaysia on water screening in approvals, Japan on co-planning power and siting, and the US on aligning policy with grid planning. India's advantage is that it can build these in now, rather than retrofit them.

The study assesses how ready India's policy environment is for that growth across six interdependent pillars: *energy, water, waste and circularity, land use, sustainability disclosures, and community.* Cooling choices may trade energy against water, siting shapes land, water and community outcomes, and no single pillar can deliver sustainable outcomes alone. The study assesses central regulatory landscape, emerging states and select global jurisdictions, with its findings meant to be directional rather than exhaustive.

India has no standalone data center law, and the draft national policy released by MeitY remains in draft form. Even so, a layered set of central laws give a largely consistent baseline, spanning environmental clearance, energy conservation, building codes, e-waste rules, SEBI's BRSR disclosures, and community safeguards whereas implementation is state led. Recent NITI Aayog Evaluation Framework further strengthened this landscape by providing states with a common sustainability-oriented framework for assessing data center projects at the approval stage. Maharashtra and Karnataka’s enabling frameworks are noteworthy, with green integrated data center parks and treated-water reuse targets. Telangana stands out for its approval mechanisms, Tamil Nadu for its renewable energy ecosystem, and Uttar Pradesh is an emerging hub with competitive incentives.

The core finding is clear: India rarely lacks policy instruments. The gap lies in integrating them into a data-center-specific pathway and implementing them consistently across states and institutions.

Energy: Measured at company rather than facility level, data center demand is not fully reflected in grid planning, and renewable policy sets a floor and not a pathway beyond it.

Water: Assessed project by project rather than in local context, and a uniform ZLD approach can potentially shift the burden to energy.

Circularity: Centers on end-of-life recycling approach and not extending lifecycle approach.

Land: Allocated before power and water are ready, and single-window effectiveness varies.

Efficiency and community: Links between efficiency metrics and policy benefits remain uneven, while community considerations often enter after siting and design.

The report proposes ***nine guiding principles*** for outcome-based, technology-neutral governance: measure and reward performance; enable clean, reliable power; plan land, power and water together; base water decisions on local hydrology; extend responsibility across the lifecycle; deliver predictable approvals; and engage communities as partners.

Performance over Prescription	***Measure What Matters***	***Reward Leadership***
Clean, Reliable, Round-the-Clock Power	***Growth Aligned with Resource Readiness***	***Context-Based Water Stewardship***
Whole-Lifecycle Responsibility	***Certainty in Delivery***	***Communities as Partners***

The study proposes a coordinated delivery pathway for responsible data center growth, building on NITI Aayog's approval-stage evaluation framework rather than creating a parallel assessment regime. Three priorities follow: align capacity commitments with power, water and site readiness; connect comparable facility-level evidence with proportionate, performance-linked support; and extend resource stewardship and community engagement across the lifecycle. Putting these principles into practice will require coordinated action: national guidance to provide common direction, states to translate the principles into delivery, and industry to contribute evidence, experience and implementation partnerships.

India can advance scale and sustainability together by aligning central and state efforts, improving delivery certainty and rewarding responsible investment.

1. India's Data Center Landscape

India is building the digital infrastructure of a continent-scale economy, and data centers sit at its core. Every digital payment, public service, cloud application and AI model depends on them. How India builds this infrastructure over the next decade will shape not only its digital future, but also the demands on its power grid, water resources and land use.

India's Digital Future and Significance of Data Centers

India is one of the world's largest and fastest-growing digital markets. It has more than 1.09 billion internet subscribers,[1] and the digital economy is projected to contribute over 20% of national income by 2030, up from about 12% in FY2023.[2] Yet this growth is far from complete: Around 400 million people are still to come online.[3] As they do, the volume of data India generates, processes and stores will rise sharply, and data centers will carry that load.

Three forces are accelerating this demand. The first is **AI and digital adoption**: India's AI market is projected to reach USD 131 billion by 2032,[4] and new facilities are being designed for higher power densities to serve rising digital use. The second is **data sovereignty**: India's digital public infrastructure, government cloud services and sovereign AI ambitions of the IndiaAI Mission are increasing the need for data and compute to be hosted domestically. The third is **policy and fiscal support**: in 2022, the government granted infrastructure status to data centers with a minimum capacity of 5 MW of IT load.[5] Together with state-level incentives and the 20-year tax holiday announced in the Union Budget 2026, this is drawing long-term capital into the sector.

[1] Indian Telecom Services Performance Indicators (Jan–Mar 2026), Telecom Regulatory Authority of India (TRAI), Government of India, 22 June 2026, available at: https://www.trai.gov.in/sites/default/files/2026-06/QPIR_22062026.pdf

[2] Future Ready: India's Digital Economy to Contribute One-Fifth of National Income by 2029-30, Press Information Bureau, Government of India, 28 January 2025, available at: https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2097125&reg=48&lang=2

[3] Population of around 1.47 billion (UNFPA); 1.09 billion internet subscribers (TRAI) ~ Approximately 380 million offline estimated

[4] AI@Work: Driving Productivity, Jobs, and Innovation, Press Information Bureau, Government of India, 12 February 2026, available at: https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=157310&ModuleId=3&reg=3&lang=2

[5] Updated Harmonized Master List of Infrastructure Sub-sectors, Ministry of Finance, Government of India, 11 October 2022, available at: www.pppinindia.gov.in/report/Harmonised%20Master%20list%20of%20Infrastruture%20sub%20sectors%202022_1685079764.pdf

Data centers are increasingly becoming an integral part of the national infrastructure, and their energy, water and land needs must be met domestically. How this capacity is built is as much a question of sustainability as of digital ambition. India must build efficiency and resilience into its next 3–5 GW of capacity from the outset while the sector is still young to do so at a manageable cost.

Where India Stands Today: Global Standing and Current Status

1.09 bn	~20%	~3%	~10+ GW
Internet subscribers	of the world's data generated in India	of global data center capacity hosted in India	of capacity at land-banking stage

India's data center sector is in a phase of rapid expansion. Installed IT load capacity has grown roughly fourfold in six years, from about 375 MW in 2020 to 1.5–1.7 GW in 2026,[6] supported by around USD 95 billion in committed investment between 2019 and 2025.[7] The future pipeline is even larger: around 3.8 GW is under construction or planned, more than 10 GW is at land-banking stage,[8] and forecasts for 2030 range from 5 GW to 8–10 GW depending on the pace of AI-driven demand.

Despite this expansion, the sector's growth potential remains largely untapped. India ranks third in APAC by operational capacity, with its pipeline (under-construction + planning stage) being among the largest relative to its installed base. (Table 1.1) It generates around one-fifth of the world's data while hosting only around 3% of global data center capacity.[9] In short, most of the capacity that will define India's data center footprint over the next two decades is yet to be built.

[6] Data Centers in India: Infrastructure for the Digital Age, Press Information Bureau, Government of India, 14 September 2026, available at: https://www.pib.gov.in/PressNoteDetails.aspx?id=159969&NoteId=159969&ModuleId=3&reg=48&lang=2

[7] CBRE, India's Data Center Market in a New Era, 12 November 2025, available at: www.cbre.co.in/insights/reports/india-s-data-centre-market-in-a-new-era

[8] Faizan Haidar, India's Data Centre development pipeline through 2030 reaches 3,860 MW, Economic Times, 16 Sep 2026, available at: https://economictimes.indiatimes.com/industry/services/property-/-cstruction/indias-data-centre-capacity-set-to-surge-by-3860-mw-by-2030-fueling-digital-growth-and-investment-opportunities/articleshow/134283064.cms

[9] Economic Survey 2025–26, Ministry of Finance, Government of India, Page 280, January 2026, available at: https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf

Table 1.1. India in Regional Context: Select APAC Data Center Markets (2025–26 estimates)

Markets	JAPAN	AUSTRALIA	INDIA	SINGAPORE	MALAYSIA
Operational Capacity	~1.8–2.1 GW	~1.6–2.1 GW	~1.5–1.8 GW	~1.4–1.7 GW	~1.1 GW
In Pipeline	~2.1 GW+	~6 GW+	~3.8 GW+	~1.7 GW+	~3–12 GW

Source: Cushman & Wakefield (2026); JP Morgan (2026); Arizton (2026); CBRE (2025). Figures are indicative and vary by methodology.

This is India's defining advantage, as developed markets have had to impose sustainability requirements after their infrastructure was already built. **Singapore** had to pause new capacity between 2019 and 2022 before reopening under a strict sustainability-linked allocation regime,[10] and **Japan** is steering new development away from the congested Tokyo–Osaka corridor.[11] India faces similar resource pressure but at an earlier stage. The cooling technologies, sites and power-sourcing models chosen for the next 3–5 GW will determine the sector's resource intensity for the near future. Decisions that are inexpensive to get right at the design stage may become costly to reverse later.

India is well placed to act on this opportunity. Installed renewable capacity has reached around 290 GW, nearly four times the 2014 level,[12] making clean power increasingly available for the sector. A large share of new capacity is being built by global hyperscale operators that have already committed to ambitious carbon, water and waste goals. The need of the hour is to build on these strengths while rewarding leading operators and giving investors certainty to position India as a preferred destination for responsible digital investment. The opportunity is to build the digital infrastructure India's economy needs while also demonstrating that scale and sustainability can advance together.

[10] Singapore pilots sustainable way to grow data center capacity, Singapore Economic Development Board, 20 July 2022, available at: https://www.edb.gov.sg/en/news-and-insights/singapore-pilots-sustainable-way-to-grow-data-centre-capacity

[11] Naoko Iwanaga, Japan's data center market expands beyond Tokyo and Osaka, JLL Insights, 23 September 2025, available at: https://www.jll.com/en-in/insights/japan-s-data-centre-market-expands-beyond-tokyo-and-osaka

[12] India Achieves Landmark 300 GW Non-Fossil Fuel Power Capacity, Press Information Bureau, Government of India, 9 August 2026, available at: https://www.pib.gov.in/PressReleaseDetail.aspx?PRID=2296782&lang=1&reg=48

2. Key Pillars for Sustainable and Responsible Data Center Growth

Energy and Carbon

Energy is the foundation of data center operation, with electricity as one of its largest operating costs. Facilities run round-the-clock, striving for near-zero interruption. It is a primary commercial concern as well as a key environmental lever. This pillar covers a data center's power consumption, energy sourcing and emissions accounting. Core questions are how efficiently power is used and what share comes from clean sources?

Water Management and Reporting

Water is central to data center cooling and is where sustainability trade-offs are most visible, since cooling designs that save energy often use more water. It affects both operational continuity and local acceptance of data center operations. The core questions under this pillar are how much water a data center uses, where it comes from, how it is recycled and discharged, and what that means for local supply.

Waste Management and Circularity

Waste management and circularity is becoming more important as AI-intensive facilities replace hardware on shorter cycles and backup systems move to battery storage, creating growing waste streams. This pillar covers the full lifecycle of materials in a data center, from construction debris to IT equipment, batteries and operational waste. The Core questions are how much is reused, refurbished or formally recycled rather than discarded at end of life.

Land Use and Ecosystems

Siting is one of the permanent decisions in a facility's life. The location cannot be changed once built, unlike cooling systems or power contracts. It determines exposure to extreme heat and floods, cooling loads and insurability. These choices shape the environmental and community outcomes. This pillar covers how sites are selected, and whether they are resilient to climate risk and respect local ecology and competing land uses.

Sustainability Disclosures and Reporting

Disclosure connects all the other pillars. Without standard metrics such as PUE, WUE and CUE, performance cannot be benchmarked or rewarded, and policy has no evidence to act on. Leading operators already track these metrics. This pillar covers how performance across energy, water, waste and land is measured, compared across facilities and verified.

Community and Human Rights

As DC clusters spread into Tier-II/III cities, peri-urban and rural areas, community trust is becoming an increasingly important factor. This pillar covers the social license to operate, including prior consultation, fair sharing of resources, local jobs, and grievance redress. It also asks whether host communities have a share in the benefits and a meaningful voice.

These pillars are interdependent – cooling technology choices may trade energy against water, siting affects land, water and communities together, and battery storage cuts diesel emissions but adds to waste. Managing these trade-offs depends on reliable disclosure, and progress on a single pillar alone cannot deliver meaningful sustainable outcomes overall.

3. National Policy and Regulatory Framework

India's data center and sustainability landscape is shaped by cross-cutting national policies spanning energy, environmental regulation, infrastructure planning and industrial development. The push for a unified framework began with Draft National Data Center Policy (2020), which proposed infrastructure status, dedicated zones, single-window clearances, and incentives for domestic manufacturing and renewable use. However, the policy is yet to be notified. Since 2025, Ministry of Electronics and IT (MeitY) has revived consultations for the national policy in line with AI-led demand and sustainability priorities.[13]

More recently, NITI Aayog released a Data Centre Evaluation Framework (Oct 2026) to help states assess proposals through sustainability, infrastructure and economic parameters. While not mandatory, it signals a growing recognition that future data-centre growth must be aligned with responsible resource use and long-term sustainability considerations. However, the framework is designed as an approval-stage evaluation tool rather than a mandatory operational standard or additional regulatory layer.

While the national policy remains in draft form, states continuing to drive implementation. The state-led approach is rooted in India's constitutional division of powers. Land and water fall under state jurisdiction, while energy sits in Concurrent List, with Center setting broad direction and states managing distribution and market access. Yet, a significant share of sustainability obligations for data centers are anchored in central laws and regulations, with states responsible for implementation rather than policy discretion. Collectively, they establish the baseline for how data centers access power, manage resources, and comply with environmental mandates – signaling India's intent to anchor hyperscale growth within a predictable, sustainability-aligned regulatory landscape, even in absence of a standalone policy.

On environmental approvals and pollution control, data center projects in India are subject to a layered approvals architecture. AI data centers do not, per se, require Environmental Clearance (EC)[14] under the Environment Impact Assessment (EIA) Notification, 2006, but projects exceeding 20,000 sq. m. of built-up area require prior EC from State EIA Authority, which assesses water use, recycling and environmental safeguards.

[13] Rajesh Kumar, MeitY Resumes National Data Center Policy Talks, Business World, 12 August 2025, available at: https://www.bwlegalworld.com/article/meity-resumes-national-data-centre-policy-talks-experts-seek-global-alignment-567223

[14] Effective use of water in AI Data centers, Press Information Bureau, Government of India, 6 August 2026, available at: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2295675&reg=48&lang=1

Facilities with potential emissions or effluent discharge must obtain Consent to Establish (CTE) and Consent to Operate (CTO) from the State Pollution Control Board (SPCB), with conditions linked to diesel generator (DG) set capacity, stack emissions, water consumption and waste handling. The use and discharge of water and greywater is regulated under Water Act 1974 and Air Act 1981.

A key consideration is the regulation of air emission and noise from backup DG set, given the grid reliability concerns. DG sets above prescribed thresholds attract emission standards under the Environment (Protection) Act 1986, and influence a facility's pollution categorization under CPCB norms, governing siting, buffer zones and monitoring. The Noise Pollution Rules 2000 apply during both construction and operation phases. These constitute the base layer of environmental governance, shaping project timelines, design choices and community management for operators.

Energy efficiency and carbon frameworks under the Energy Conservation Act 2001, including the Carbon Credit Trading Scheme 2023, are centrally designed and apply uniformly, even as compliance and monitoring are operationalized through designated agencies. On building design, the voluntary National Building Code 2016 has been replaced by the National Building Construction Standards (NBCS), notified by the Bureau of Indian Standards (BIS) in April 2026. It serves as a reference framework and is enforceable only if adopted by the state. On the other hand, the Energy Conservation and Sustainable Building Code (ECSBC) prescribes binding design and construction standards for non-residential buildings with a connected load of at least 100 kW or a contracted demand of at least 120 kVA.

On water management, groundwater extraction for infrastructure and commercial projects is governed by Ministry of Jal Shakti's Consolidated Guidelines. The Bureau of Energy Efficiency (BEE) has also issued District Cooling Guidelines 2023, recommending use of treated water as cooling tower make-up water where feasible to reduce freshwater dependence and emphasizing energy-efficient cooling technologies, optimization of cooling performance, use of alternative sources and water conservation measures.

On waste and circularity, economy-wide frameworks under the Environment Act provide a national baseline. Rules on e-waste, battery waste, plastic waste, and hazardous waste are notified centrally and enforced across states, establishing strict take-back, recycling, traceability and reporting obligations applicable to operators nationally. ***Sustainability disclosure*** requirements, notably the Securities and Exchange Board of India's (SEBI) Business Responsibility and Sustainability Reporting (BRSR) and BRSR Core 2023, reinforce nationally standardized expectations on energy, water, waste and emissions performance across value chains for SEBI-listed companies, irrespective of state location.

In addition, global practices in data center sustainability increasingly incorporate ***community and rights-based safeguards***. These social externalities cover resource impacts, local employment, shared infrastructure and cumulative environmental stress. Responsible growth depends not only on regulatory compliance but also on alignment with community resilience and development goals, spanning responsible siting, resource stewardship and community-inclusive infrastructure planning.

In India, large-scale infrastructure development operates within a broad constitutional and statutory framework that recognizes several community-facing rights on environmental impact, local welfare and resource allocation. Judicial interpretation of Article 21 recognizes the right to a clean and healthy environment[15] and the right to clean and sufficient water.[16] From a socio-economic standpoint, the right to livelihood[17] and local economic rights are embedded in Article 21 and Directive Principles of State Policy (DPSPs), notably Articles 39(a), 41 and 43, which direct the State to ensure adequate means of livelihood, the right to work, a living wage, and conditions of work ensuring a decent standard of life.[18]

Land use, rehabilitation and consent is governed under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 (LARR Act), which codifies principles of fair compensation, mandatory social impact assessment, rehabilitation and resettlement entitlements, and public consultation. These safeguards establish expectations for meaningful community engagement, particularly in peri-urban and rural projects. Collectively, these establish a rights-based framework within which the community-facing externalities of large infrastructure projects are assessed and governed.

Within this, Corporate Social Responsibility (CSR) and Corporate Environment Responsibility constitute a compliance framework for large projects. CSR under Section 135 of Companies Act 2013, is a profit-linked obligation and may not apply to projects at early stages. In contrast, Corporate Environment Responsibility applies irrespective of profitability, making it a project-linked obligation. Its expenditure is additional to EIA costs and tied to project investment, subject to prescribed caps. Activities must be site-specific, reflect public consultation, social impact assessment and local needs. They typically focus on water, sanitation, health, education, skills, local infrastructure or waste management. Monitored through EC reporting and geographically aimed at affected communities, it supports mitigation and social licence.

On state facilitation mechanisms, single-window clearance systems vary in execution timelines. While most states have operationalized the portals, their effectiveness is uneven. States shape project delivery, while central mandates provide a consistent national baseline for carbon, circularity and disclosure.

[15] MC Mehta v Union of India & Ors, (1987) 1 SCC 395; Subhash Kumar v State of Bihar & Ors, (1991) 1 SCC 598.

[16] Subhash Kumar v State of Bihar & Ors, (1991) 1 SCC 598

[17] Olga Tellis v Bombay Municipal Corporation, (1985) 3 SCC 545

[18] Narmada Bachao Andolan v Union of India & Ors, (2000) 10 SCC 664

4. Emerging States in Data Center Landscape: Key Policies & Incentives

Across Indian states, a common set of institutional mechanisms underpins data-center development, including energy governance, environmental regulation, water-resource management and investment facilitation. Within this broader landscape, several states have introduced policy provisions, incentives and governance mechanisms that offer useful examples for supporting sustainable data-center growth.

Figure 4.1. States and Data Centers: Enabling Frameworks

PILLAR / SUB-PILLAR	Maharashtra	Telangana	Tamil Nadu	Uttar Pradesh	Karnataka
PILLAR 1 ENERGY & CARBON					
1.1. Power Procurement	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ✓	✓ ✓ ✓
1.2. Renewable Energy Procurement	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
1.3. Grid Readiness & Power Infrastructure	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
1.4. Carbon Frameworks	✓ ✓	✓ ○	✓ ✓	✓ ○	✓ ✓
PILLAR 2 WATER MANAGEMENT & REPORTING					
2.1. Municipal Water Use and Alternative Sourcing	✓ ✓ ○	✓ ✓ ○	✓ ✓ ○	✓ ✓ ○	✓ ✓ ○
2.2. Groundwater Abstraction	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ✓
2.3. Treated Water Use and ZLD	✓ ✓ ✓ ✓	✓ ✓ ✓ ○	✓ ✓ ○ ○	✓ ✓ ✓ ○	✓ ✓ ✓ ✓
2.4. Water Conservation and Sustainability	✓ ✓	✓ ○	✓ ○	✓ ✓	✓ ✓
PILLAR 3 LAND USE & ECOSYSTEM					
3.1. Land use and zoning	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ✓	✓ ✓ ✓
3.2. Data center classification	✓ ✓	✓ ○	✓ ○	✓ ○	✓ ○
3.3. Approvals and timelines	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
PILLAR 4 WASTE MANAGEMENT & CIRCULARITY					
4.1. State level framework and Circularity	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ✓
4.2. Regulatory Oversight and Enforcement	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ○	✓ ✓ ○	✓ ✓ ✓
4.3. Waste Disclosure and Reporting	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
PILLAR 5 SUSTAINABILITY DISCLOSURE & REPORTING					
5.1. Environmental Reporting and Certification	✓ ✓ ✓ ○	✓ ✓ ○ ○	✓ ✓ ✓ ○	✓ ✓ ✓ ○	✓ ✓ ✓ ○
5.2. Sustainability Performance Metrics	✓ ✓ ○ ○	○ ○ ○ ○	✓ ○ ○ ○	✓ ✓ ○ ○	✓ ✓ ○ ○
5.3. Enforcement & Compliance Linkages	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓

Figure 4.1 symbol definitions: ✓ Presence of a specific policy or enabling provision; ○ Absence of a specific policy or enabling provision.

NOTE: Figure 4.1 reflects the policy intent, directional readiness and enabling environment in the five identified states, based on the presence of pre-defined policy and enabling provisions across five core pillars. It does not measure legal force, implementation quality or actual sustainability performance. A proposed policy, a conditional incentive and a binding operational obligation should therefore be read differently, even where each is marked as present. The figure is a directional aid for identifying good practices. It is not a ranking of state performance or evidence of an enforceable entitlement, and whether a provision applies to a specific project depends on the relevant instrument and its conditions. For details on the pillars, indicators and sub-indicators, please refer to the Annexure: State Indicator Matrix.

The five states examined in the study represent emerging approaches across key dimensions of planning, infrastructure, resource management and sustainability. To identify and document these best practices, a State Indicator Matrix (Annexure) was developed across 50 indicators spanning five core pillars (Figure 4.1), to highlight policy provisions and regulatory approaches that can inform future policy development and be adapted or scaled across jurisdictions. Together, they illustrate a range of approaches that can inform policy evolution across India and complement recent efforts such as NITI Aayog's Data Centre Evaluation Framework, to equip states with structured tools for assessing and facilitating responsible data center development.

Maharashtra

Maharashtra's policy framework incorporates provisions across several sustainability enablers, including energy security, water management, land-use planning, and project facilitation. The state incorporates dedicated data center provisions within the broader IT & ITeS Policy 2023, which accords infrastructure status and provides access to infrastructure-linked incentives and support mechanisms. It includes provisions intended to support reliable power availability, RE procurement, and operational continuity, including policy support for assured 24x7 power availability and exemption from planned power cuts.

On the energy front, the state provides multiple pathways for RE procurement and compliance, while introducing emerging mechanisms to support industrial decarbonization and carbon accountability.

- **RE procurement:** It enables multiple procurement pathways, including Green Energy Open Access (GEOA), 3rd-party procurement, captive generation, and RE sourcing through energy-banking arrangements, subject to applicable approvals and grid conditions.
- **Renewable Purchase Obligations (RPO):** Open-access consumers are subject to RPO requirement, with compliance permitted through multiple routes such as RE procurement, RE Certificates (RECs), captive generation, and other approved mechanisms, with carry-forward provisions.
- **RE and Storage Policy (2026–36):** Targets 100 GW of RE capacity, 100 GWh of storage, and 65% RE share by FY36, supported by grid augmentation to facilitate integration and reliability.
- **Industrial decarbonization:** State Industrial Policy 2025 proposes carbon-governance initiatives, including a GHG Rating Framework, Carbon Emission & RE Matrix, Carbon Credit & Accounting Framework to strengthen emissions monitoring, RE adoption, and sustainability-linked incentives.

On water management, Maharashtra combines policy direction with resource-management obligations, with emphasis on reuse, groundwater stewardship, and circular water systems.

- **Wastewater reuse:** State Industrial Policy 2025 promotes treated-water reuse, including a target of 25% reuse of treated water, encouragement of Zero Liquid Discharge (ZLD) or equivalent technologies in high-consumption sectors, and a long-term vision of 50% treated wastewater reuse by 2030.
- **Water Conservation:** State Water Policy 2019 promotes recycling, reuse, and efficient industrial water management as part of broader resource-conservation objectives.
- **Water availability and management:** Policy provisions support 24x7 water availability within MIDC areas (non-enforceable), alongside mandatory rainwater harvesting and groundwater recharge.

Maharashtra's **waste management and circularity framework** extend beyond national compliance mandates through state-specific restrictions and emerging circular-economy initiatives.

- **Material restrictions and EPR:** State regulations restrict specified non-biodegradable materials and reinforce EPR obligations relevant to equipment packaging, plastics, and waste recovery.
- **Circular Economy Framework:** State Industrial Policy 2025 proposes a dedicated **Circular Economy Policy**, including development of dedicated **Circular Economy Parks** to support recycling, resource recovery, and industrial symbiosis.

These measures create an increasingly structured waste management ecosystem requiring operator to integrate waste planning, recovery, and recycling considerations into long-term operations.

On sustainability disclosures and reporting, Maharashtra combines operational sustainability requirements with environmental reporting obligations.

- **Mandatory waste reporting:** Operators remain subject to annual reporting requirements on e-waste, battery waste, used oil disposal, related waste streams, irrespective of broader consent exemptions.
- **Green Integrated DC Parks:** 2024 amendment to IT/ITES Policy on sustainability-linked requirements for Green Integrated DC Parks (benchmarks on PUE, CUE, green building certifications, and RE usage)
- **Building Efficiency:** Maharashtra ECBC Rules 2025 establish energy-performance and compliance certification obligations for qualifying commercial developments.

On land use and investment front, Maharashtra combines investment incentives, operational continuity provisions, and streamlined project facilitation mechanisms.

- **Investment Facilitation and operational continuity:** It provides a range of fiscal incentives, including stamp-duty exemptions, SGST reimbursements, and investment-linked subsidies. Data centers get **essential service** status, supporting business continuity and operational resilience.
- **Project execution: MAITRI** single-window platform serves as primary mechanism for approvals, incentives, regulatory clearances, supporting streamlined project development and implementation.

Telangana

Telangana's data center framework is anchored in its Data Center Policy, 2016 and supported by ICT Policy 2021, combining fiscal incentives, operational facilitation, and infrastructure support. It includes transaction-cost reimbursements, land and capital-related incentives, and subsidized land allotment for qualifying projects. Data centers are recognized as **essential services**, supporting operational continuity, exemption from planned power cuts, and streamlined regulatory processes.

On the energy front, Telangana's framework is centered on RE expansion and diversified procurement pathways, supported by open-access, captive, and hybrid procurement models.

- **Renewables-First Strategy & procurement:** The Clean and Green Energy Policy 2025 targets approximately 20 GW of RE and storage capacity by 2030. RE procurement is permitted through open-access, captive, and hybrid models, supporting multiple pathways for RE sourcing.
- **RPO Compliance:** Obligated consumers, including eligible open-access users, are required to meet RPO targets via RE procurement, RECs, or a combination of mechanisms.

On water management and reporting, Telangana places a strong emphasis on groundwater governance, resource conservation, and wastewater management.

- **Groundwater governance:** WALTA and Groundwater Extraction Rules 2023 establish a permit-based regime for abstraction, recharge measures, monitoring, and restrictions in stressed areas.
- **Water Conservation:** Rainwater harvesting and groundwater recharge measures form a core component of the regulatory framework.
- **Water Reuse and ZLD:** Certain projects may be required to implement wastewater recycling and ZLD systems, particularly in designated urban or environmentally sensitive areas.
- **Municipal supply:** Water supply remains approval-based and subject to metering and oversight.

On land use and investment facilitation, the state framework combines dedicated data center infrastructure planning with streamlined approval mechanisms.

- **Dedicated DC Clusters:** It supports dedicated campuses, pre-planned clusters, and conversion of legacy industrial areas into digital infrastructure hubs.
- **TG-iPASS:** The state's single-window mechanism provides time-bound approvals supported by deemed-clearance provisions.
- **Environmental Siting:** Environmental classification requirements, including emissions-related approvals, may influence location and development conditions for certain facilities.

Waste management obligations are primarily driven by national regulations, with implementation overseen through the Telangana Pollution Control Board and environmental approval mechanisms.

- **EC requirements:** Larger developments requiring EC subject to waste reporting obligations.
- **Circularity Agenda:** State's broader sustainability initiatives under Vision 2047 provide a platform for integrating waste-circularity and resource-recovery objectives into future infrastructure planning.

Telangana's **sustainability disclosure and reporting** framework is linked primarily to environmental clearance and energy-efficiency requirements.

- **EC reporting:** Facilities exceeding 20,000 sq. m. built-up area are required to submit annual EC reports to State EIA Authority, covering water withdrawal, energy consumption, and waste generation.
- **Energy performance:** State Energy Conservation Building Code (TSECBC) establishes mandatory energy-efficiency requirement and certification obligation for qualifying commercial developments.
- **Building sustainability measures:** Complementary initiatives, including the Telangana Cool Roof Policy, reinforce broader energy-performance and building-efficiency objectives.

Overall, Telangana combines a **strong regulatory backbone with targeted policy incentives** for data center development. It offers fiscal and non-fiscal support, including power concessions, subsidized land and building costs, and operational relaxations, complemented by robust infrastructure provisioning, including dual power grid and dedicated parks, with an efficient single-window approval system.

Tamil Nadu

Tamil Nadu occupies a structurally distinct position among India's data center states: it combines a dedicated **Data Center Policy 2021** among the strongest RE regulatory frameworks in the country, yet is simultaneously confronted by an acute water stress – a tension that defines both its appeal and long-term locational risk. Notably, Tamil Nadu has allowed its 2021 Data Center Policy **to lapse**. The state is reportedly recalibrating its policy direction towards a more selective framework,[19] driven by concerns around environmental impact, resource intensity, and employment generation.

Tamil Nadu's **energy and carbon** ecosystem is one of the state's key enablers, supported by a mature RE market, evolving grid infrastructure, and policy-backed procurement flexibility. It has a vision of ~**30 GW of additional RE capacity by 2030,** increasing the share of renewables from **30% to 50%**.

- **Green Energy Open Access & RPO:** Enables RE procurement through open-access arrangements, supported by energy banking provisions, scheduling mechanisms, and real-time monitoring. It mandates progressively rising RPO targets, reaching 33% by FY26, 38% by FY28, and 43% by FY30.
- **Grid Modernization:** State Grid Code 2026 incorporates provisions relating to energy storage, pumped hydro, hybrid renewable integration, emerging low-carbon energy systems.
- **Operational Reliability:** Data Center Policy supports dual power supply, dedicated feeders, electricity-tax exemptions, and concessional open-access charges for qualifying facilities.

On **water management** front, the availability of water remains a significant sustainability consideration for data center development in Tamil Nadu, particularly in Chennai region.

- **Governance:** Water Regulation Bill 2026 proposes a permit-based regime for abstraction, Groundwater Protection Zones, recharge measures, and conservation requirements.
- **Water Reuse:** Combined Development & Building Rules (TNCDBR) 2019 require central AC facilities to install wastewater reclamation system and utilize reclaimed water for cooling.
- **Rainwater Harvesting:** Rainwater harvesting is a mandatory requirement under TNCDBR.
- **Water Supply:** The Data Center Policy 2021 provides that the state shall endeavor to provide 24x7 water supply, while recognizing broader resource constraints.

While ZLD is not currently mandated for data centers, the broader regulatory trajectory increasingly emphasizes water reuse, conservation, and reduced freshwater dependence.

[19] Vaitheeswaran B, Cautious optimism on data centers, Times of India, 8 March 2026, available at: https://timesofindia.indiatimes.com/city/chennai/cautious-optimism-on-data-centres/articleshow/129282439.cms

On **waste management,** Tamil Nadu does not impose significant state-specific obligations beyond the national framework. Compliance remains integrated into state's EC and pollution-control regime.

- **Consent-based compliance & oversight:** Data centers above applicable thresholds remain subject to TNPCB consent requirements and associated waste-management conditions. Monitoring, treatment, and reporting are embedded within environmental approvals and operational compliance.
- **Circularity:** It provides opportunities to strengthen future circular-economy measures around e-waste, battery waste, and resource recovery as digital infrastructure scales.

Tamil Nadu's **sustainability disclosure and reporting** approach combines incentive-linked disclosures with mandatory building-performance compliance requirements.

- **Incentive-linked reporting:** Projects availing benefits under the 2021 Policy are required to report PUE, energy sources, water recycling rates, and waste-management indicators.
- **Energy performance:** State's Energy Conservation and Building Code (TNECBC) Rules 2022 require compliance certification and energy-performance verification for qualifying facilities.
- **Environmental monitoring:** State Climate Change Mission promotes stronger monitoring and reporting frameworks relating to energy, water, and environmental performance.

Tamil Nadu's **land use and investment** facilitation framework combines dedicated data center infrastructure planning with investment facilitation and project-execution support.

- **Dedicated infra & Single window:** 2021 Policy supports developing dedicated parks, ELCOSEZs, and IT-SEZs. Approvals and investor support are coordinated through **Guidance Tamil Nadu**.
- **Land and Incentives:** Structured siting provisions and dedicated infrastructure zones seek to support long-term data center expansion. It provides tiered stamp-duty concessions and up to **100% net SGST reimbursement for seven years** for qualifying projects.

Uttar Pradesh

Uttar Pradesh's data center landscape has evolved into an investment- and infrastructure-led model with a more explicit sustainability orientation under its Data Center Policy 2026. The policy targets over 2 GW of additional capacity and more than ₹2 lakh crore in investment, while encouraging Tier III and IV facilities, AI-ready infrastructure, green-certified developments and minimum **50% RE adoption in new data centers by 2030**. Its key feature is the integration of conventional investment support with performance-linked incentives for energy efficiency, RE use and green certification.

On energy front, UP combines reliability measures with RE access and performance-linked incentives.

- **Procurement and reliability:** It permits open access and energy banking, supports dual grid for eligible parks, and assures 24×7 supply if 2 dedicated feeders are arranged by the project.
- **Energy incentives:** Eligible units receive 100% electricity-duty exemption for 10 years. Transmission and wheeling-charge exemption extend to 75% for RE sourced within state.
- **Sustainable operations:** Additional incentives are linked to recognized green certification, RE use and PUE. For DC parks, the policy recognizes PUE bands of **≤1.35**, **1.35–1.45**, and **1.45 –1.60**, and RE bands of **above 70%**, **50–70%**, and **20–50%**. Qualifying parks may receive an increase of up to ₹10 crore in interest-subsidy ceiling (₹2 crore annually) and qualifying units may receive sustainability-linked enhancements of up to **₹5 crore** in capital-subsidy ceiling (₹0.5 crore annually).

On water management, the 2026 policy links site allocation, water availability and operational water efficiency more explicitly than the earlier framework.

- **Groundwater governance & availability:** UP Ground Water Act 2019 provides for abstraction limits, rainwater harvesting, groundwater recharge, recycling and reuse. For projects in state-agency areas, water availability must be assessed before land allocation. Authority assures 24×7 supply before issuance of the Letter of Comfort, subject to statutory permissions and NOCs.
- **Treated-water reuse:** State's Safe Reuse of Treated Water Policy 2026 targets **50% reuse by 2030**, followed by 100% reuse, in areas with operational sewage-treatment infrastructure. In areas without operational STPs, targets are **30% by 2030, 50% by 2035 and 100% by 2045**.
- **Efficient Use:** DC parks to provide common water-treatment and operators to adopt water-efficient **closed-loop systems and treated-wastewater reuse** to reduce freshwater use.

On waste management, the 2026 Policy does not establish data center-specific waste or material-circularity and remain subject to national rules, administered through the SPCB. A circularity component in state framework concerns treated-water reuse rather than data center-specific material recovery.

On sustainability disclosures, the state has measurable criteria primarily through **incentive eligibility and certification**, rather than a universal annual sustainability-reporting requirement.

- **Performance evidence:** Projects seeking Green and Sustainable Operations incentives must demonstrate qualifying green certification, PUE performance and RE share. It recognizes qualifying certifications from LEED, GRIHA, IGBC, GBI, or equivalent approved by designated state committee.

- **Building energy performance:** UP Energy Conservation Building Code 2018 applies to qualifying commercial buildings or the specified plot and built-up area thresholds.

The 2026 policy does not itself establish a universal annual disclosure covering PUE, WUE, carbon emissions, water consumption and waste for every data center.

On land use and investment facilitation, the policy combines regional land incentives, specialized building norms and supporting infrastructure for hyperscale and AI-ready facilities.

- **Stamp duty:** A 100% exemption on purchase or lease from govt entity, and 50% exemption on the second transaction between a DC park and unit.
- **Operational continuity:** Data centers are classified as **essential service** providers and may operate 24x7, subject to applicable conditions. Projects exceeding **500 MW** may be considered for customized fiscal and non-fiscal support with State Cabinet approval.

Karnataka

Karnataka's data center framework is transitioning from infrastructure- and incentive-led Data Center Policy 2022–27 toward a more explicitly sustainability-oriented model. The Cabinet-approved Karnataka **Sustainable Data Center Policy 2026–31**[20] targets **1 GW of cumulative IT capacity by 2031**, seeks a **10–12% share of India's AI-ready capacity**.

On energy and carbon, the existing framework combines power-reliability measures with incentives for RE use. The recent 2026 policy is intended to strengthen this approach through greater emphasis on energy efficiency, RE, advanced cooling and carbon-emission mitigation.

- **RE incentive:** Under 2022 Policy, facility sourcing over **50%** of its energy from renewable sources may receive 5 year-reimbursement of green-power surcharge, capped at **₹1.25 crore** (₹25 lakh annually).
- **Industrial power tariff:** Data centers with at least **30% green energy** in power consumption are eligible for industrial rather than commercial power tariffs under the 2022 policy.
- **Power reliability:** 2022 policy provides for connections from two different substations and additional feeder may be provided at project cost for data centers exceeding **100 MW**.
- **Sustainability metrics:** Recently approved 2026 policy reportedly indicates monitoring of PUE, WUE, alongside incentives for RE, power and water efficiency, advanced cooling and carbon reduction. [21]

[20] Policy not released in public domain as of October 8, 2026

[21] Cabinet approves Karnataka Sustainable Data Center Policy 2026–2031, Times of India, 18 September 2026, available at: https://timesofindia.indiatimes.com/city/mangaluru/cabinet-approves-karnataka-sustainable-data-centre-policy-20262031/articleshow/134341378.cms

Karnataka's water framework combines supply facilitation, groundwater permitting, rainwater harvesting and project-specific pollution-control conditions. The proposed 2026 framework adds emphasis on resource-informed siting, advanced cooling, wastewater recycling and measurable efficiency.

- **Supply:** As per 2022 Policy, it assures to facilitate uninterrupted 24x7 water supply to entities.
- **Rainwater Harvesting:** Within BWSSB area, rainwater harvesting is mandatory for existing buildings on sites of 60x40 feet and above, and new buildings of 30x40 feet and above.
- **Groundwater Permit**: Under the amended state framework, groundwater extraction in notified and non-notified areas requires a permit/NOC, subject to exemptions. Operational use beyond the exemptions (drinking or domestic use) requires approvals.
- **Wastewater:** Treatment, discharge, reuse requirement through building approval, supply conditions and SPCB consent. 2026 policy focuses on advanced cooling, wastewater recycling and WUE monitoring, but provides no binding WUE threshold yet.

On waste and circularity, the 2022 policy does not establish a data center-specific material-circularity regime. Operations remain subject to national rules on e-waste, battery waste, used oil, and hazardous waste. KSPCB references mandatory registration under CPCB EPR portal for regulated e-waste entities.

- **DG Sets and operational waste:** DG set emissions, used oil, spent lubricants and hazardous wastes are governed through applicable emissions directions, waste authorizations. Applicability depends on generator capacity and facility configuration.
- **Authorizations:** Depending on facility's classification and operating configuration, approvals may include CTE, CTO, and authorizations for other regulated waste streams.

On sustainability disclosures, Karnataka combines building-energy compliance, pollution-control reporting and RE-linked incentives, rather than a single universal sustainability-disclosure regime.

- **Building performance:** State ECBC Code 2018 is mandatory for qualifying commercial building (connected load of 100 kW+/contract demand of 120 kVA+). It provides mandatory ECBC compliance and higher voluntary levels, ECBC+, Super ECBC as building-energy classifications.
- **Groundwater & pollution control:** Groundwater permits and KSPCB consents may require records, returns or monitoring on abstraction, sewage treatment, hazardous, e-waste and emissions.
- **Proposed PUE, WUE monitoring:** Proposed 2026 policy refers to PUE and WUE monitoring but does not yet specify the boundary, frequency, audit standard, or responsible authority.

On **land use and investment**, the 2022 policy provides specific flexibility, building relaxations and incentives, with greater benefits for projects outside Bengaluru Urban district.

- **Permitted zones:** DCs may be established in commercial, industrial and institutional zones.
- **Capital & land subsidy:** Eligible units outside Bengaluru Urban district may receive 7% capital subsidy, capped at **₹10 crore**, excluding land and building. A **10% land subsidy** is available for up to **10 acres**, capped at lower of **10% of land cost or ₹3 crore**.
- **Single-Window & operational continuity:** Karnataka's **Udyog Mitra** is the designated single-window agency for data center proposals. Data centers are treated as a public utility service under Industrial Disputes Act to support continuity of operations.

5. Global and APAC Regulatory Approaches for Sustainable Data Centers

Global markets are moving towards integrated sustainability governance, focusing on five priorities – aligning data center growth with power planning, measurable efficiency standards, water stewardship, advancing lifecycle circularity, and improving transparency. While frameworks vary in design, the direction is clear: data centers are increasingly treated not merely as IT or real estate, but as crucial infrastructure with key implications for energy, water, land, climate commitment and community resilience.

Australia's approach is largely market-led, supported by national disclosure, benchmarking and grid planning. The National Greenhouse and Energy Reporting Scheme provides statutory emissions and energy reporting, NABERS Energy for data centers enables PUE-based performance ratings, and the Australian Sustainability Reporting Standards (ASRS) are moving companies towards mandatory climate disclosure. The Australian Energy Market Operator's Integrated System Plan now factors AI and cloud load growth into long-term grid planning.

Renewable procurement, however, remains voluntary and corporate-led, supported by PPAs and national targets of 82% renewable electricity by 2030 and Net Zero by 2050. Water is addressed through state, local and utility processes, with utilities increasingly requiring demand forecasts and wastewater plans before connection, while circularity relies on product stewardship and corporate practice. Australia is a useful reference on benchmarking, disclosure and grid alignment, but also illustrates the limits of voluntary pathways, with rapid growth drawing scrutiny over water planning.

The EU represents the most prescriptive and comprehensive model reviewed. The Energy Efficiency Directive (EED) and 2024 Delegated Regulation mandate facility-level reporting above defined thresholds, covering energy consumption, PUE, WUE, energy reuse factor and renewable energy factor. The Corporate Sustainability Reporting Directive (CSRD) and European Sustainability Reporting Standards (ESRS) add enterprise-level disclosure on Scope 1, 2 and 3 emissions and value chain impacts, creating a layered framework linking facility performance to corporate accountability. At member level, Germany's Energy Efficiency Act 2023 goes further, with binding RE thresholds and PUE requirements for data centers.

The EU is also the strongest example of lifecycle circularity. The Ecodesign for Sustainable Products Regulation, Right to Repair Directive, WEEE Directive and Circular Economy Action Plan extend obligations from end-of-life waste to design, repair, reuse and refurbishment, which is particularly relevant for servers, batteries and cooling equipment. Land, water and siting approvals remain with Member States, but within a far more harmonized architecture. The EU offers the most relevant benchmark for India on standardized performance indicators, lifecycle circularity and reporting.

Japan's approach is shaped by energy security, regional resilience and industrial decarbonization. Rather than a single data center code, it relies on energy efficiency benchmarking and Green Growth Strategy and Green Transformation agenda, which set target for improving efficiency of data centers and moving towards carbon-neutral operations by 2050. Its 2025 Strategic Energy Plan designates them as critical demand nodes requiring access to decarbonized, competitively priced power.

Its distinctive element is the 'Watt-Bit' initiative, which aims to reduce concentration in Tokyo-Osaka corridor by steering deployment towards regions with cleaner power, stronger grid potential and lower concentration. Water, land use and community acceptance remain locally governed, and data center-specific circularity mandates are limited. For India, Japan demonstrates how energy planning, regional siting and resilience can be embedded into policy without a highly centralized approval model.

Malaysia is particularly relevant for India, as both markets seek to attract hyperscale investment while building regulatory and infra readiness. Its Guidelines for Sustainable Data Centers set expectations on PUE, WUE, CUE, siting and disclosure for projects seeking incentives under the DESAC framework. Rather than imposing economy-wide mandates, Malaysia uses fiscal and investment approvals as levers to drive resource efficiency. PLANMalaysia's planning guidelines further standardize site suitability and utility capacity checks, so that power, water and network readiness is confirmed before land is allocated.

On clean energy, the National Energy Transition Roadmap targets a progressive increase in renewables, while the Corporate Renewable Energy Supply Scheme enables corporate procurement. Water stress screening is increasingly part of approvals, discouraging development in high-stress locations, although circularity remains focused on collection and disposal. Malaysia offers a useful middle-path benchmark, with sustainability embedded in incentives, siting and investment rather than universal mandates.

Singapore has a centrally managed model for new capacity allocation and grid access. Facing land, power and water constraints, it has moved from unrestricted expansion to controlled capacity allocation. Under Green Data Center Roadmap 2024, new capacity is awarded only where operators demonstrate best-in-class efficiency and credible decarbonization pathways, with a target PUE of 1.3 or better at full IT load. Performance is anchored in a mature standards ecosystem, including Green Mark for Data Centers, Singapore Standard 564 and newer IT energy efficiency standards.

On water, Singapore's national water agency, the Public Utility Board (PUB), adopts integrated planning, spanning source diversification, recycled water, desalination and demand management – creating strong incentives for water-efficient cooling without a blanket ZLD mandate. International Sustainability Standards Board-aligned climate disclosure is being phased in through Singapore's Accounting and Corporate Regulatory Authority (ACRA) and the Singapore Exchange (SGX), including Scope 3 reporting for large issuers. While not fully replicable in India, Singapore shows how capacity allocation, efficiency, water planning and standards may be integrated into a single approval system.

The **USA** has no unified federal sustainability framework for private data centers, operating instead through a mix of state incentives, federal executive action, utility regulation and local permitting. It is, however, the most advanced market for clean energy procurement, with hyperscalers using corporate PPAs, utility green tariffs and open access structures to scale renewables and pursue 24/7 carbon-free energy goals. Recent federal initiatives also seek better coordination of permitting, siting and environmental review, although local zoning and community processes remain central.

The rapid growth of AI workloads has intensified grid pressure, with regulators turning to large-load tariffs, interconnection studies, cost-allocation mechanisms and transmission reforms. In several markets, power availability and grid upgrade costs matter as much as land for site viability. Water stewardship and community concerns increasingly shape local approvals, while circularity relies on voluntary frameworks such as LEED and secondary equipment markets. The key lesson for India is to align data center policy early with grid planning and cost allocation to avoid future bottlenecks.

Key Learnings

Many mature markets coordinate land, grid access, capacity allocation and environmental compliance through centralized national systems. India's federal model, by contrast, places implementation authority with states, while the Center sets directional intent. India has yet to set sector-wide efficiency benchmarks or water use norms for data centers, but energy policy and data center growth are increasingly aligned, with the Budget 2026 incentives for AI data centers and infrastructure planning.

India's trajectory carries a distinct strategic advantage. While the US, UK and Australia are retrofitting sustainability norms onto mature ecosystems, often amid regulatory tightening, moratoria or local resistance, India is in a capacity-building phase and can shape its sustainability framework alongside its major wave of hyperscale development. This architecture could be built bottom-up through the emerging states within the data center landscape.

6. Key Findings and Analysis

The findings combine national, state and international policy analysis. Each pairs an implementation pathway with a relevant global practice. Building on NITI Aayog's advisory, approval-stage Data Centre Evaluation Framework (Oct 2026), the pathways address pre-development, operations and end of life. They distinguish improvements within existing instruments from measures requiring future policy or rulemaking pertaining to data center infrastructure growth spanning central and state levels.

Responsible growth must demonstrate public value as well as resource efficiency. Proposed support can be assessed against additional digital and AI capacity enabled, delivery certainty, resilience, local skills and procurement opportunities, shared infrastructure benefits, and the allocation of grid and water infrastructure costs. These outcomes should be assessed alongside environmental performance, with evidence proportionate to project scale and local conditions. Resource efficiency alone is not sufficient. A facility's public value must also be shown through its economic and community contribution

Pillar I: Energy and Carbon

India's renewable expansion, green open access regime, carbon market and building codes give the energy pillar the strongest foundation of the six. The next step for India is to translate these economy-wide instruments into a pathway that reflects the distinctive load profile of data centers: large, continuous, concentrated and increasingly driven by AI.

Finding 1: Carbon performance is measured at the company level, not the facility level.

The Carbon Credit Trading Scheme and SEBI's BRSR framework operate at entity level, and data centers are not yet treated as a distinct infrastructure category. As a result, there is a lack of access to standardized facility-level data on energy consumption, carbon intensity and renewable energy use, limiting comparability across operators. Further, the focus on operations leaves embodied carbon largely out of view, even though concrete, steel, cooling system, electrical equipment and servers generate substantial emissions before a facility begins operating. GRIHA, LEED, ECSBC 2024 recognize lifecycle considerations, but they are voluntary or general in scope and not tailored to hyperscale facilities.

Suggested Pathway: A phased, facility-level carbon reporting framework for large operators, beginning with energy consumption, renewable share and Scope 1 and 2 emissions, and expanding over time to whole-life carbon through voluntary embodied carbon disclosure, Environmental Product Declarations (EPD) and lifecycle assessment within green certification.

Finding 2: Data center demand is not yet fully reflected in energy system planning.

The integration of projected data center load into long-term demand forecasting, transmission planning and substation development remains limited. Where land is allocated before power deliverability is confirmed, projects face connection delays and the risk of stranded investment. Implementation also shapes outcomes: open access may be available in law, but approvals, scheduling, banking and charges vary across SERCs, SLDCs and DISCOMs.

Suggested Pathway: Integrate projected data center load into national and state demand forecasting and transmission planning and strengthen coordination across power sector institutions so that procurement and grid access are predictable in practice. Priority is strong implementation rather than new instruments.

Finding 3: Renewable policy sets a compliance floor rather than a pathway beyond it.

RPO obligations establish minimum requirements, while many global operators are targeting 100% renewable matching and moving towards 24x7 carbon-free energy. Current state frameworks focus on meeting minimum targets, with fewer mechanisms to reward ambitious procurement strategies. Further, the operational complexity of matching variable renewable supply with round-the-clock demand, including storage availability, banking rules and curtailment risk, needs to be addressed.

Suggested Pathway: Tiered, incentive-linked recognition for voluntary over-compliance (e.g., at 70%, 90% and 100% renewable sourcing), priority access to green energy corridors, facilitation of hybrid and storage-backed contracts, and harmonized treatment of clean energy procurement across states.

Relevant Global Practice: Singapore's Sustainability-Gated Capacity Growth

Facing acute land, power and water limits, Singapore moved from unrestricted expansion to capacity allocation tied to sustainability performance. Its Green DC Roadmap (2024) links new capacity to energy efficiency and green energy commitments, targets a PUE of 1.3 or better at full IT load, and is supported by the Green Mark for DCs and Singapore Standard (SS) 564. Singapore's underlying principle is transferable: growth and efficiency can be linked through a single, predictable discipline. India can apply a similar principle through incentives and fast-track approvals rather than capacity limits.

Pillar II: Water Management and Reporting

Water governance in India is location-specific, shaped by state regulation, groundwater permissions, municipal supply and environmental approvals. As AI workloads raise cooling requirements, the central task is to align siting, cooling design and operations with local and basin-level water conditions, and not only to reduce consumption at the facility level.

Finding 4: Water is assessed project by project rather than in its local context.

Existing approvals focus on project-level permission and groundwater approvals, and not cumulative demand, basin-level stress or long-term availability. Alternatives to freshwater such as treated wastewater, reclaimed water and closed-loop cooling can relieve pressure on local supply, but they depend on enabling infrastructure and commercially viable supply arrangements.

Suggested Pathway: Context-based water stewardship approach: water-stress screening in siting phase, site-level water budget before construction, priority access to treated-wastewater and infrastructure.

Finding 5: A uniform ZLD approach may not always deliver the best outcome.

ZLD requirements vary across states and are generally sector-agnostic. ZLD processes such as reverse osmosis, thermal evaporation and crystallization are energy-intensive, which can raise PUE and emissions, while also generating brine and sludge that require specialized handling. A narrow focus on eliminating discharge can therefore shift the burden from water to the energy pillar.

Suggested Pathway: An outcome-based water framework calibrated to local water stress, facility type and cooling technology, allowing operators to combine treated wastewater use, recycling, closed-loop, and dry or hybrid cooling where these deliver better overall results than a uniform ZLD mandate.

Finding 6: India's new cooling efficiency metric is ready to be put to work.

Cooling Efficiency Ratio (CER) introduced by the BIS in 2026 provides a standardized measure of how efficiently cooling systems remove heat relative to the energy they consume. However, it remains voluntary and is not yet linked to approvals, incentive or certification, which limits its adoption and influence on the sector-wide performance.

Suggested Pathway: Link CER, alongside WUE, to green data center certification and incentives eligibility, with phased, technology-neutral performance standards that accommodate liquid, immersion and direct-to-chip cooling as they scale.

Relevant Global Practice: Malaysia's Water Screening in Investment Approvals

Malaysia's Guidelines for Sustainable Data Centers set expectations on PUE, WUE, CUE, siting and disclosure for projects seeking incentives. It includes water-stress screening and discourages development in high-stress locations, embedding water considerations into investment decisions rather than imposing a market-wide mandate. Malaysia's incentive-linked approach offers a practical template for India to bring water stress into siting decisions without adding a separate approval layer.

Pillar III: Waste Management and Circularity

India's EPR regimes for e-waste and batteries provide a strong baseline for responsible collection and recycling. However, data center hardware, at times, is replaced for performance upgrade rather than failure, even when it often retains productive value beyond its first deployment. Recycling remains crucial, but significant value can be unlocked further through a whole-of-lifecycle approach.

Finding 7: Circularity policy concentrates on end of life rather than the full lifecycle.

Current rules focus on collection, recycling and disposal, with relatively less emphasis on durability, modularity, traceability, reuse and refurbishment. Extending asset life through refurbishment, component recovery and redeployment reduces material demand, defers waste and lowers lifecycle emissions more effectively than recycling alone.

Suggested Pathway: Evolve from an end-of-life compliance model towards a lifecycle circularity model, encouraging circular procurement, asset tracking, component reuse, refurbishment standards and lifecycle reporting for high-value data center hardware.

Finding 8: Repairability and circular trade for enterprise hardware are still developing.

India's proposed Repairability Index framework, in its initial phase, focuses on consumer electronics such as smartphones and tablets; servers, storage, networking, power systems and AI hardware fall outside its current scope. Secondary markets for refurbished enterprise equipment are still evolving, and uncertainty over the classification and cross-border movement of used equipment can result in reusable assets being directed to recycling earlier than required. Notably, India is on track to develop the proposed Electronics Repair Services Outsourcing (ERSO)[22] initiative which could strengthen India's role within the global circular economy value chains, if implemented at scale.

Suggested Pathway: Extend repairability principles to enterprise and AI hardware, and clearly distinguish between waste, reusable equipment, repairable assets and end-of-life material. This would enable compliant cross-border movement for repair and refurbishment, preserve environmental safeguards, and position India as a hub for high-value electronics lifecycle services.

Relevant Global Practice: The EU's Lifecycle Circularity Approach

The EU's circular economy framework extends beyond end-of-life management to cover product design, repairability, reuse, refurbishment and recovery. The Right to Repair Directive, WEEE Directive, ESPR, Waste Shipment Regulation and Circular Economy Action Plan together support a lifecycle approach wherein servers, cooling systems, batteries and electrical equipment can retain value across multiple deployment cycles. Value retention delivers greater environmental benefit than recycling alone. India's EPR regime and proposed ERSO initiative sets a platform for a comparable lifecycle approach while also building domestic industrial capability.

Pillar IV: Land Use and Ecosystems

Leading states have built strong facilitation mechanisms, from single-window platforms to dedicated data center parks. However, long-term viability in siting depends on whether land allocation is synchronized with power, water, connectivity, environmental approval and community acceptance.

[22] MeitY launches pilot project on Electronics Repair Services Outsourcing (ERSO), Press Information Bureau, Government of India, 31 May 2023, available at: https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1928643&reg=48&lang=2

Finding 9: The effectiveness of state approval mechanisms varies.

Single-window systems have significantly reduced timelines and administrative friction. However, their effectiveness differs across states. In few states, approvals remain sequential across land, power, water, pollution control, building authorities, and timelines are enforceable if deemed-approval is provided.

Suggested Pathway: Strengthen mechanisms through service-level benchmarks, enforceable timeline with deemed-approval, transparent escalation to promote ease of doing business and investor certainty.

Finding 10: Land allocation can move ahead of infrastructure readiness.

In cases where land-use decisions precede substation capacity, transmission, renewable access, water sourcing and environmental approvals, the projects may face commissioning delays, cost overruns and community concerns. Planning is largely project-centric, leaving shared infrastructure like common substations, treated wastewater networks, RE corridors and district cooling under-used. Fixed designs may be subject to lock-in if cooling and compute architectures evolve in future.

Time-bound facilitation should distinguish administrative coordination from substantive statutory permission. Deemed-approval mechanisms should apply only where legally authorised and should not be presumed to waive EC, groundwater permission, pollution-control condition or applicable community safeguards. Transparent tracking, escalation and concurrent processing where permissible can improve predictability while preserving the competent authority's responsibility for substantive review.

Suggested Pathway: Develop infrastructure-ready data center zones, assessed in advance for power deliverability, renewable access, water sustainability and environmental compatibility, with shared infrastructure, modular and technology-neutral design, and periodic review of standards.

Relevant Global Practice: Japan's Watt-Bit Collaboration

Japan's Watt-Bit initiative co-plans power and digital infrastructure, encouraging siting and deployment beyond congested Tokyo-Osaka corridor toward regions with strong grid potential, lower concentration risk and greater disaster resilience. Siting is treated as an energy system and regional development decision. India's renewable-rich states and emerging hubs are natural candidates for a similar approach. Co-planning zones with RE corridors could align growth with clean power availability and widely distributing economic benefits.

Pillar V: Sustainability Reporting and Disclosures

India has broad disclosure frameworks through BRSR and environmental compliance reporting, and the BIS metrics provide a technical basis for facility-level measurement. A national performance reporting architecture tailored specifically to data centers could help bring greater consistency and comparability for metrics such as PUE, WUE, RE share and facility-level emissions.

Finding 11: Link between efficiency metrics & policy benefit remain uneven across state frameworks

Efficiency metrics like PUE and WUE are already being tracked by many operators, creating a strong foundation for policy integration. Greater standardization across definitions, reporting and methodology, and a differentiated pathway by facility type (enterprise, colocation, hyperscale and AI-intensive) could help recognize and encourage higher levels of performance.

Suggested Pathway: An incentive-led performance framework, with tiered PUE and WUE benchmarks by facility type linked to faster approvals, enhanced incentives or green data center recognition. Maharashtra's Green Integrated Data Center Parks provide a domestic model that can be scaled.

Finding 12: Comparability and scope of sustainability metrics remain evolving.

Sustainability reporting across data centers has advanced significantly, with metrics such as PUE, WUE, carbon emissions and RE use increasingly incorporated into disclosures. They provide a strong foundation for benchmarking, however, differences in reporting scope, methodologies and disclosure boundaries can affect comparability across operators. In addition, each metric captures a specific dimension of sustainability: PUE measures efficiency but not carbon intensity and WUE measures consumption but not water sourcing, watershed conditions or local impact.

Furthermore, certain dimensions remain outside of scope, including embodied carbon, land-use impact, biodiversity considerations and community outcomes. As the sector scales, leading jurisdictions are increasingly complementing traditional metrics with broader environmental and social indicators. In this context, PUE and WUE remain key foundational metrics, but are most effective when deployed in a wider reporting architecture that provides a more comprehensive view of long-term sustainability performance.

Suggested Pathway: A phased national reporting built on BIS metrics, beginning with PUE, WUE, energy use, renewable share and water source for large facilities, expanding over time to carbon intensity, CER, embodied carbon, circularity and local water-risk disclosure, supported by a national data center register.

Relevant Global Practice: The European Union's Facility-Level Reporting Regime

Under the EED and 2024 Delegated Regulation, data centers above defined capacity thresholds must report indicators including energy consumption, PUE, WUE, energy reuse factor and RE factor. EU's CSRD adds enterprise-level reporting on Scope 1, 2 & 3 emissions, connecting facility performance with corporate accountability. EU shows how standardized threshold-based reporting can precede and inform performance standards. India's BIS metrics provide the technical foundation for a comparable phased approach.

Pillar VI: Community and Human Rights

India has a robust rights-based foundation for community protection, anchored in constitutional jurisprudence on environment, water, livelihood and dignity, and operationalized through EC and Corporate Environment Responsibility. As data centers scale, the priority is to make these safeguards work earlier, more transparently and more effectively, rather than to create parallel regimes.

Finding 13: Community outcomes emerging as key consideration alongside infra planning.

Community considerations are integrated through project-level approvals and consultations post-siting and design stage. As the sector scales, there's an opportunity to complement these approaches with greater attention to cluster-level impacts, long-term outcome monitoring, and broader community benefits such as skilling, local employment and procurement. This can help align infrastructure growth with local development and community resilience objectives.

Suggested Pathway: Integrate community considerations into existing land-use, industrial and municipal planning processes, with early consultation where impacts are material, cluster-level assessment of cumulative effects, locally relevant and measurable commitments, and standardized reporting on grievance redress and mitigation outcomes.

Finding 14: Water impacts are reported in aggregate rather than local terms.

Existing disclosures typically report total withdrawal, consumption or compliance status. For communities, what matters is where water is sourced, the level of local water stress, and whether alternative sources are used. Aggregate reporting gives limited visibility into local and cumulative effects, particularly in water-stressed hubs.

Suggested Pathway: Context-based, community-facing water disclosure, particularly for large facilities in water-stressed areas, covering source mix, reuse rates, WUE, treated wastewater use, replenishment measures and community water investments.

Relevant Global Practice: Community and Water Considerations in US Local Approvals

In the US, water stewardship and community concerns increasingly shape approvals, particularly in water-stressed regions. Although requirements remain local in nature, operators are increasingly expected to show water sourcing plans, reuse strategies and local impact mitigation in approval process. US experience shows that community acceptance is becoming a key condition of sustained data center growth. By embedding early engagement and transparency in existing processes, India can build local trust ahead of cluster expansion.

Across the six pillars, most of the pathways set out above depend less on new instruments than on clear institutional roles and coordinated delivery across the project lifecycle. The delivery model would assign a state nodal agency to coordinate the project's readiness record, with power and water authorities confirming deliverability within respective mandates and operators supplying demand, design and performance evidence. Environmental and community safeguards would remain with competent authorities. Participating institutions could agree milestones for readiness review, commissioning and operational reporting, publish escalation routes, and review delivery outcomes. Industry would support evidence gathering and implementation, not replace public accountability. Such a model would build on NITI Aayog's approval-stage framework and apply the same approach across operations and end of life phases, offering a practical basis for the forthcoming national data center policy.

7. Guiding Principles for Sustainable Data Center Growth

Nine guiding principles translate the findings into a shared direction for the Center, states and operators. They combine voluntary and incentive-led measures with more structured approaches over time, retaining flexibility as technologies and markets evolve. Many operators in India are pursuing carbon, water and waste goals alongside existing policy requirements, with voluntary action and innovation already shaping practices across the sector. The principles seek to build on this progress, encourage wider adoption of good practices and support continued improvement over time.

Figure 7.1: Guiding Principles for Sustainable Data Center Growth in India

Performance over Prescription	**Measure What Matters**	**Reward Leadership**
Clean, Reliable, Round-the-Clock Power	**Growth Aligned with Resource Readiness**	**Context-Based Water Stewardship**
Whole-Lifecycle Responsibility	**Certainty in Delivery**	**Communities as Partners**

Principle 1: Performance over Prescription

Reward measurable outcomes rather than mandating specific technologies.

Cooling, power and compute architecture is changing faster than regulation can follow. Technology-neutral, outcome-based standards allow operators to choose the most effective solution for each site, avoid lock-in, and give policymakers a clear and durable basis for recognizing performance.

Principle 2: Measure What Matters

What is measured consistently can be compared, managed and rewarded.

Transparency underpins every other principle. A common measurement approach, built on the BIS metrics and aligned with national and global frameworks, makes voluntary disclosures comparable without creating an isolated compliance regime for the sector.

Principle 3: Reward Leadership

Recognize and reward operators that go beyond compliance.

Current state frameworks set a floor that leading operators already exceed. Linking fiscal and non-fiscal benefits to demonstrated performance creates momentum without imposing uniform mandates on a sector that is still scaling.

Principle 4: Clean, Reliable, Round-the-Clock Power

Power growth with an energy mix that is progressively clean, firm and grid-supportive.

Always-on demand needs clean power that is also reliable. The objective is a steady transition from annual renewable matching towards round-the-clock carbon-free energy, in a manner that remains cost-reflective and equitable for other grid users.

Principle 5: Growth Aligned with Resource Readiness

Plan land, power and water together, before capacity is committed.

Power and water deliverability, not land alone, determine whether a site is viable in the long term. Sequencing allocation around infrastructure readiness reduces the risk of stranded investment, improves bankability and steers growth towards locations that can sustain it.

Principle 6: Context-Based Water Stewardship

Base water decisions on local hydrological reality, not facility efficiency alone.

The same WUE carries very different implications in a water-secure basin and a water-stressed region. Responsible stewardship considers where water comes from, what it displaces, and how its use affects surrounding communities.

Principle 7: Whole-Lifecycle Responsibility

Assess sustainability from construction to end of life.

As operational efficiency improves, embodied carbon and hardware turnover account for a growing share of the sector's footprint. Keeping materials and equipment in productive use for longer delivers greater value than recycling alone and builds domestic industrial capability.

Principle 8: Certainty in Delivery

Translate policy intent into predictable, time-bound outcomes on the ground.

India's challenge lies less in policy design than in delivery across agencies. Predictability is an enabler of sustainability, giving operators the confidence to commit to higher-efficiency, higher-capex infrastructure.

Principle 9: Communities as Partners

Ensure data center growth creates shared value and earns local trust.

India's rights-based safeguards provide a robust foundation. The priority is to make them work earlier and more transparently within existing frameworks, rather than to introduce a parallel regime.

Bringing the Principles Together

Measurement enables reward; reward encourages performance; resource readiness and delivery certainty make that performance achievable at scale. Together, the principles connect all six pillars while preserving the growth momentum of India’s data center sector.

8. Conclusion and Way Forward

Responsible data center growth requires both capacity expansion and credible environmental and public outcomes. The nine guiding principles provide a common direction, building on existing instruments and NITI Aayog's advisory evaluation framework. Together, they could also provide a useful reference for future data center policy and regulatory formulation, complementing the NITI Aayog framework while allowing the approach to evolve with technology, market conditions and implementation experience.

Applying these principles across the data center lifecycle requires attention to both the measures themselves and how they can be taken forward. From planning and development through operations to end-of-life, some priorities can be advanced through better coordination and use of existing approvals, technical metrics, voluntary disclosures and incentive conditions. Others, including any universal facility-reporting obligation or mandatory performance standard, may require new authority or formal rulemaking. The former can improve delivery within the current architecture, while the latter would require an explicit assessment of necessity, proportionality, legal authority and compliance burden.

Across these routes, the lifecycle priorities are clear: coordinate siting, grid readiness, water availability and community engagement before development; improve renewable procurement, cooling, efficiency and disclosure during operations; and enable equipment reuse, waste management and circularity at end of life. Cumulative community impacts require attention throughout.

Progress can also be advanced within the existing policy and regulatory architecture. Under existing instruments, states and operators can test coordinated readiness checks, treated-water supply arrangements, comparable voluntary facility disclosures and earlier community engagement. A future national policy could provide common direction for scaling approaches that prove effective and clarifying institutional coordination. Any new mandatory reporting or performance requirement would need a separately defined legal basis, scope, consultation process and transition period.

States are central to delivery. A common national direction can support performance-linked incentives, renewable procurement, treated-water reuse, resource-informed land allocation and streamlined approvals, while allowing states to respond to local conditions and learn from one another.

The immediate task is to test a coordinated delivery pathway with government and industry. Early decisions on siting, cooling and power will shape long-term resource use and community outcomes. Predictable implementation can provide greater certainty for investment while strengthening environmental performance, resource efficiency and community confidence.

Annexure: State Indicator Matrix

✓ Presence of a specific policy or enabling provision; ○ Absence of a specific policy or enabling provision.

SN	Pillars and Indicators	MH	TG	TN	UP	KA
1.	**ENERGY AND CARBON**					
1.1.	**Power Procurement**					
1.1.1.	Policy provision intending to provide uninterrupted 24x7 power supply to data centers	✓	✓	○	✓	✓
1.1.2.	Provides flexibility to procure power from multi sources *(e.g., banked, 3rd party, captive plant, hybrid)*	✓	✓	✓	✓	✓
1.1.3.	Allows scheduling and real-time monitoring for managing power *(e.g., day-ahead scheduling in advance)*	✓	✓	✓	✓	✓
1.2.	**Renewable Energy Procurement**					
1.2.1	Provides incentive to Data Centers for procuring RE *(e.g., electricity duty waiver, rebates, concessions)*	✓	✓	✓	✓	✓
1.2.2.	Establishes RPO compliance targets	✓	✓	✓	✓	✓
1.2.3.	Provides flexibility in fulfilling RPO obligation through multiple routes *(e.g., banking, RECs, carry forward)*	✓	✓	✓	✓	✓
1.3.	**Grid Readiness & Power Infrastructure**					
1.3.1.	Addresses grid reliability and firming challenges *(e.g., sourcing from 3rd party, captive plant, hybrid, dual grid, feeders)*	✓	✓	✓	✓	✓
1.3.2.	Provides for capacity reservation process	✓	✓	✓	✓	✓
1.3.3.	Provides set timeline for grid capacity augmentation in future	✓	✓	✓	✓	✓
1.3.4.	Sets a time-bound state target for adding renewable energy capacity	✓	✓	✓	✓	✓

SN	Pillars and Indicators	MH	TG	TN	UP	KA
1.4.	**Carbon Frameworks**					
1.4.1.	Intends to provide a dedicated State framework on Carbon Emissions and RE Matrix, GHG Rating, or Carbon Credit and Accounting Trading Framework for sectors like data centers	✓	○	✓	○	✓
1.4.2.	Provides mechanism to account for carbon intensity of electricity use *(e.g., time-of-day RE accounting, carbon registry)*	✓	✓	✓	✓	✓
2.	**WATER MANAGEMENT AND REPORTING**					
2.1.	**Municipal Water Use and Alternative Sourcing**					
2.1.1.	Policy provision intending to provide 24x7 uninterrupted water supply to data centers	✓	✓	✓	✓	✓
2.1.2.	Defines industrial water tariff/pricing mechanism and/or mandates metering of industrial water consumption	✓	✓	✓	✓	✓
2.1.3.	Recognizes industrial water supply as a priority use case	○	○	○	○	○
2.2.	**Groundwater Abstraction**					
2.2.1.	Lays down groundwater extraction caps and mandates artificial recharge and conservation measures	✓	✓	✓	✓	✓
2.2.2.	Requires groundwater use planning by industries	✓	✓	✓	○	✓
2.2.3.	Defines restrictions in over-exploited or water-stressed zones	✓	✓	✓	✓	✓
2.3.	**Treated Water Use and Zero Liquid Discharge (ZLD)**					
2.3.1.	Mandates minimum wastewater recycling/reuse targets (%)	✓	✓	✓	✓	✓
2.3.2.	Provide for establishing dedicated wastewater reclamation/treatment plant	✓	✓	✓	✓	✓
2.3.3.	Mandates or prescribes ZLD for high water-consuming industries, including DCs	✓	✓	○	○	✓
2.3.4.	Allows alternatives to ZLD (e.g., partial reuse, equivalent tech)	✓	○	○	✓	✓

SN	Pillars and Indicators	MH	TG	TN	UP	KA
2.4.	**Water Conservation and Sustainability**					
2.4.1.	Sets state-level water conservation or reduction targets	✓	○	○	✓	✓
2.4.2.	Requires periodic reporting of water consumption, wastewater generation and reuse	✓	✓	✓	✓	✓
3.	**LAND USE & ECOSYSTEM**					
3.1.	**Land use and zoning**					
3.1.1.	Availability of dedicated land for data center development	✓	✓	✓	✓	✓
3.1.2.	Ease of land access through state mechanisms	✓	✓	✓	✓	✓
3.1.3.	Clarity on siting requirements and location restrictions *(e.g., eco sensitive areas, urban limits)*	✓	✓	○	✓	✓
3.2.	**Data center classification**					
3.2.1.	Recognition of DCs as a distinct and priority infrastructure *(e.g., classified as IT/ITeS, essential services)*	✓	✓	✓	✓	✓
3.2.2.	Clearly defined environment classification requirement *(e.g., pollution category, treatment of DG sets/backup system)*	✓	○	○	○	○
3.3.	**Approvals and timelines**					
3.3.1	Availability of a single window clearance system	✓	✓	✓	✓	✓
3.3.2.	Time-bound approvals with deemed approval provisions	✓	✓	✓	✓	✓
4.	**WASTE MANAGEMENT & CIRCULARITY**					
4.1.	**State level framework and Circularity**					
4.1.1.	Waste obligations explicitly applicable to data center operations	✓	✓	✓	✓	✓
4.1.2.	Plans to establish or have dedicated circular economy policy framework	✓	○	✓	○	✓

SN	Pillars and Indicators	MH	TG	TN	UP	KA
4.1.3.	Promotes reuse, refurbishment or longer life for IT hardware, beyond end-of-life recycling	✓	✓	✓	✓	✓
4.2.	**Regulatory Oversight and Enforcement**					
4.2.1.	State provides consent exemption for certain data centers *(i.e., relaxation on obtaining CTO/CTE from SPCB)*	✓	✓	○	○	✓
4.2.2.	Waste compliance linked to CTO conditions and monitored through SPCB inspections	✓	✓	✓	✓	✓
4.2.3.	Waste management compliance linked to SEIAA approvals	✓	✓	✓	✓	✓
4.3.	**Waste Disclosure and Reporting**					
4.3.1.	Environment Clearance (EC) process includes waste disclosure obligation	✓	✓	✓	✓	✓
4.3.2.	Requires annual waste reporting & disclosure filing *(e.g., e-waste, battery, hazardous, used-oil waste disposed)*	✓	✓	✓	✓	✓
5.	**SUSTAINABILITY DISCLOSURE & REPORTING**					
5.1.	**Environmental Reporting and Certification**					
5.1.1.	Requires annual environmental compliance reporting to authority *(incl. energy consumption, water use, etc.)*	✓	✓	✓	✓	✓
5.1.2.	Provides policy-linked incentive/benefit tied to green building certification (LEED or equivalent) for data centers	✓	○	✓	✓	✓
5.1.3.	Requires empaneled 3rd-party review under ECBC *(e.g., ETPA including energy auditors, empaneled assessor)*	✓	✓	✓	✓	✓
5.1.4.	Requires public disclosure at individual facility level sustainability performance *(e.g., state registry, dashboard)*	○	○	○	○	○
5.2.	**Sustainability Performance Metrics**					
5.2.1.	Provides for reporting Power Usage Effectiveness (PUE)	✓	○	✓	✓	✓

SN	Pillars and Indicators	MH	TG	TN	UP	KA
5.2.2.	Provides for reporting Carbon Usage Effectiveness (CUE)	✓	○	○	○	○
5.2.3.	Provides for reporting Water Usage Effectiveness (WUE)	○	○	○	✓	✓
5.2.4.	Provides for reporting Renewable Energy Factor (REF)	○	○	○	○	○
5.3.	**Enforcement & Compliance Linkages**					
5.3.1.	Sustainability disclosures linked to incentive eligibility	✓	✓	✓	✓	✓
5.3.2.	Sustainability reporting obligations integrated with state approval systems	✓	✓	✓	✓	✓
5.3.3.	Sustainability compliance subject to inspection/audit verification *(e.g., energy efficiency, green energy, water usage, waste)*	✓	✓	✓	✓	✓

DISCLAIMER FOR STATE INDICATOR MATRIX:

The matrix is intended to reflect the policy intent, directional readiness, and proposed enabling environment within the identified five states, and not as a definitive measure of actual sustainability performance. The tick marks are assigned based on the presence or absence of specific policy or enabling provisions.

It is important to note that this assessment is not a scientific evaluation and the tick-mark ascribed on different sub-indicators is not a quantitative analysis. This is based on the authors' own interpretation of the policy and regulatory frameworks, which may differ across stakeholders.

The objective of the matrix is to highlight enabling provisions, relative strengths, areas of policy focus and good practices across these states in context of data center sustainability, as examples to draw from.

The state matrix prepared may not be exhaustive in nature and could have more parameters and indicators. The ones captured above were most suited for this study.

Scope and Limitations of the Study

The study assesses India's policy and regulatory landscape for data centers across **six pillars**: energy and carbon; water management and reporting; waste management and circularity; land use and ecosystems; sustainability disclosures and reporting; and community and human rights. It reviews central legislation, regulations and standards, and assesses **five states,** *Maharashtra, Telangana, Tamil Nadu, Uttar Pradesh and Karnataka,* selected as India's leading and emerging data center hubs. Select jurisdictions across **APAC** (Australia, Japan, Malaysia and Singapore), the **US** and the **EU** are reviewed to show where India stands and to identify transferable principles.

The study relies on secondary research. Since selected five states are assessed, the findings are not representative of all Indian states. The EU is assessed largely at the Union level and frameworks across all member states are not individually assessed. Several frameworks are in transition, including Draft National Data Center Policy and recent state policies, some of which are not yet in public domain. Later publication may affect the assessment. The analysis reflects publicly available information as of October 2026.

Research Methodology

The study follows a qualitative approach based on secondary research, structured in four stages:

Pillar identification: Six pillars of sustainable and responsible data center growth were defined, drawing on global sustainability frameworks, industry metrics and environmental and social dimensions.

Policy and regulatory review: Central and state laws, policies, regulations, standards and official releases were reviewed against the identified six pillars, supplemented by industry and market reports.

Comparative assessment: States were mapped through a State Indicator Matrix of 50 regulatory indicators across five pillars, based on presence of specific provisions. Scores reflect policy intent and directional readiness. Community and human rights pillar assessed qualitatively. Global jurisdictions were reviewed for relevance to India's context rather than as models for replication.

Synthesis: Insights from the national, state and global assessments were consolidated into pillar-wise findings and policy opportunities, which informed the nine **Guiding Principles**.

Publication Details

Building India's Digital Future Responsibly

Guiding Principles for Sustainable & Responsible Growth of Data Centers in India

Published by:
Chase Advisors
74, Link Road Lajpat Nagar - III
New Delhi, 110024
+91 11 46625614
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Citation: Chase Advisors and The Energy and Resources Institute,

Building India's Digital Future Responsibly: Guiding Principles for Sustainable & Responsible Growth of Data Centers in India

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