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Hyperscale Data Centres, EIA Classification and Fiscal Incentives in India: Lessons from the Visakhapatnam Projects

Hamza Khan

hamza.khan@slsh.edu.in

Symbiosis International (Deemed University)

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Abstract

This paper examines the application of India's Environmental Impact Assessment (EIA) framework to hyperscale data-centre infrastructure, with particular attention to the structural features of the EIA Notification, 2006 and the environmental context of the Visakhapatnam region. Drawing on peer-reviewed analyses of groundwater vulnerability, coastal contamination, and the evolution of the EIA regime, it situates large-scale digital facilities within an already stressed hydrological and ecological baseline. The analysis proceeds through critical legal and environmental review of project classification under Schedule item 8(a), the consequences of Category B2 treatment, and the limited institutionalisation of cumulative assessment and public consultation. Regional studies document declining groundwater levels, high contamination vulnerability, and elevated heavy-metal and microbial loads in coastal soils and waters. Scholarly evaluations of the 2006 Notification consistently identify the exemption of B2 projects from full impact studies and statutory public hearings as a persistent constraint on the depth of scrutiny. When facilities whose dominant pressures arise from continuous operational demand for power and water are placed on a pathway designed around construction-phase effects and built-up area, those limitations become the operative ones. The paper argues that classification and appraisal should follow operational intensity, that cluster-level cumulative assessment should be mandatory where parks share receptors, and that fiscal eligibility should not be independent of the depth of environmental review.

1. Introduction

India is rapidly positioning itself as a major global hub for digital infrastructure, particularly hyperscale data centres and artificial intelligence computing facilities. Driven by rising demand for cloud services, artificial intelligence workloads and digital public infrastructure, central and state governments have aggressively promoted large-scale investments in the sector via policies, single-window clearances and fiscal incentives. An illustrative case is the set of hyperscale data parks clustered around Visakhapatnam and associated with Google's intended AI campus, which raises questions about the extent to which the 2006 categorisation scheme encompasses operationally intensive digital infrastructure. Land allocations were made to Raiden Infotech India Pvt. Ltd. Development of the cluster is being pursued through three Special Purpose Vehicles created by Adani Infra (India) Ltd: viz., Vizag Mega Data Centre Park Limited (Tarluvada); Vizag Rambilli Data Centre Park Limited (Rambilli); and Vizag Hyperscale Data Centre Park Limited (Adavivaram–Mudasarlova), with connectivity services provided by Nxtra by Airtel. Hereinafter, "the Visakhapatnam parks" refer to these three sites. Announced capacities in the range of multi-gigawatts test whether the 2006 Notification's classification regime covers such installations. The legal test case does not arise in isolation. International comparative literature increasingly recognises data centres as energy and water-intensive infrastructures that can generate comparable operational footprints to conventional industrial plants [17, 19, 43]. Corporate-level and sectoral projections reveal an acceleration in the rate of carbon and freshwater footprint expansion due to AI workloads that current building controls cannot adequately accommodate [3, 20]. In an Indian

context, where energy and water demands of data centres are projected to rise sharply up until 2030-35, it remains to be seen whether environmental clearance performs a truly precautionary role.

Visakhapatnam currently suffers from depleting groundwater resources, seasonal water scarcity conditions, dependence on inter-basin transfers, coastal and industrial pollution problems, and the ecological sensitivity of the Kambalakonda Wildlife Sanctuary and its Ecological Sensitivity Zone (ESZ) [13, 15, 31, 40]. Against this backdrop, the additional demands placed on the local ecological system include continuous high-energy consumption (with diesel generators as contingency backups); demand for cooling water; land conversions involving at least one project area coinciding with recorded reserve forests; and the aggregate impacts arising from clustering data centres. Appraisal must consider all these dimensions if it is to assess environmental impacts accurately. It is important to note this aspect.

Legal classification of the projects under discussion concerns their identification as B2 "Building and Construction Projects" according to Schedule Item 8(a) under the EIA Notification, 2006 (as amended). Classification as a category B activity excludes the necessity of preparing an Environmental Impact Assessment report; conducting a scoping exercise and setting Terms of Reference; and mandatory public consultations [2, 24, 27]. Opponents point out that owing to the fact that the project lies close to the Kambalakonda Wildlife Sanctuary and its Environmentally Sensitive Zone (ESZ) and there have also been claims regarding encroachment upon forest reserves, approval would require compliance with both wildlife and forestry laws. Two arguments may therefore be advanced in this regard. The first is based on the "General Condition" provided for in the 2006 Notification. According to this condition, projects falling within Category B will automatically become Category A projects when situated in specific distances from protected areas and/or ESZs. As we shall see below in Section 3, however, it is clear that Category B construction projects cannot fall under the ambit of the General Condition because this exclusion is made explicit in the Schedule itself. Therefore, this argument fails on technical grounds. The alternative argument relates to compliance with wildlife and forestry acts (namely, the Wildlife Protection Act, 1972 and Forest Conservation Act, 1980). Environmental clearances granted by the Andhra Pradesh State Environment Impact Assessment Authority in 2026 (often within days following submission of applications) have faced criticism for inadequate process (particularly for procedural shortcomings, lack of transparency and cumulative impact assessment).

These criticisms resonate with an academic critique of the B2 exemption, weak cumulative assessment and consultations put forth in Section 6 below. However, an additional element is worth noting: the existence of an equally structured fiscal-incentives scheme that works in tandem with EIA regulations. As part of its fiscal measures for Budget 2026-27, the government offered foreign cloud service providers operating globally through Indian data centre infrastructure a tax break lasting until 2047. In addition to this, state-level schemes include tax breaks or rebates (Capital subsidy/SGST reimbursement), stamp duty exemption, concessional power tariffs and electricity duties, relaxed building requirements, and assured power/electricity supply. An empirical quantitative study of clearance procedures in India found that variations in hearing structures affected clearance times as well as

preparatory activity before clearing in a significant way [25]. Such incentive structures in combination with the classification system already bias the clearance process towards speedier clearance.

Three interrelated questions follow. First, what impact does classification of hyperscale data centres as Category B2 building projects have on the quality of environmental appraisal in Visakhapatnam? Second, how are central and state fiscal incentives structured, and how does that structure interact with the depth of environmental appraisal, without treating the interaction as proof of causation in this case? Third, what reforms of classification, cumulative assessment and incentive conditionality are required to align digital-infrastructure ambition with precaution, public participation and environmental rule of law [6, 32, 45]?

The paper is a legally grounded case study. Process facts for the parks, dates of application and clearance, classification, stated built-up area, declared water and power figures, and the content of public objections, are taken from environmental-clearance orders, SEAC/SEIAA records, state affidavits, fiscal-policy instruments and contemporaneous public statements. Those sources are not peer-reviewed articles. The interpretation of that record is read against the peer-reviewed diagnosis of the 2006 Notification and against published environmental baselines for the district. The lack of journal coverage of these 2026 Orders is a shortcoming in secondary sources, not a justification for withholding the original texts. From a doctrinal perspective, the paper criticises the use of item 8(a) in cases where the main issue pertains to operation. On a policy front, it reveals that eligibility under fiscals does not depend on the thoroughness of environmental evaluations and that this framework has the potential to increase pressure on the system. Section 2 defines the environmental baseline. Section 3 provides information on the legal regime in place. Section 4 addresses the procedure for clearance. Section 5 discusses fiscal incentives. Section 6 evaluates and reformulates. And Section 7 concludes. The paper takes a critical approach to environmental regulation.

2. Environmental Baseline of Visakhapatnam and the Sensitivity of the Project Sites

Visakhapatnam’s setting is already marked by competing pressures of urban expansion, industrial activity and natural-resource constraint. Any assessment of large new infrastructure must therefore begin with existing conditions rather than treating the sites as blank slates. Baseline adequacy conditions the reliability of impact prediction, significance evaluation and mitigation [10, 38].

2.1 Groundwater stress and contamination vulnerability

A trend analysis of piezometric and open-well data for 2008–2020 across Bheemunipatnam and Visakhapatnam rural and urban mandals found declining levels at several locations, including Madhuravada, Venkatapuram, Sivajipalem and the YSR Park area [31]. Bayesian neural-network modelling of borewell records for 2002–2021 similarly identifies structured but stressed groundwater dynamics across the district [34]. Vulnerability mapping using conventional and Fuzzy-AHP DRASTIC

methods indicates that roughly 30 per cent of the district falls into highly vulnerable zones for groundwater contamination [40].

Hydrogeochemical studies show that a non-negligible share of samples, particularly those near industrial clusters and the coast, fail irrigation-suitability criteria in both pre- and post-monsoon seasons. Vemana and Kurakalva [46] report Irrigation Water Quality Index values spanning 31–96 (pre-monsoon) and 30–97 (post-monsoon), with approximately 27 per cent and 22 per cent of samples respectively classified as unsuitable for irrigation, concentrated near coastal zones and thermal power plants. Earlier work documented brackish signatures, seawater-intrusion vulnerability and mixed urban–industrial hydrochemistry [15–16, 21, 36–37]. These findings sit against a broader pattern of coastal-aquifer stress in parts of Andhra Pradesh, where prolonged dry spells and increasing extraction have lengthened recovery times.

2.2 Surface water, wastewater and coastal contamination

Greater Visakhapatnam Municipal Corporation submissions before the National Green Tribunal in late 2025 recorded daily sewage generation of approximately 224 million litres against a treatment capacity of 179 million litres across nineteen plants, leaving a persistent deficit. Several of the city’s forty-one major drains continue to discharge untreated or partially treated flows into coastal stretches. Monitoring data reported to the Tribunal showed chemical oxygen demand exceedances at multiple outfall points.

Coastal water-quality and sediment studies over the past decade have registered elevated nutrient loads, faecal indicators and, in industrial and traffic-adjacent zones, elevated heavy-metal concentrations. Geospatial assessment of inorganic heavy metals in surface soils and sediments from traffic corridors, industrial Gnanapuram and beach sites at Tenneti and Rushikonda found significant contamination, particularly for copper, zinc, lead and chromium, with geoaccumulation and ecological-risk indices indicating an increasing pollution load and potential carcinogenic risk from chromium and nickel exposure [28]. Analyses of clastic sediments between the Sarada and Gosthani river mouths report elevated contamination factors for cadmium, zinc, lead, copper and cobalt near Visakhapatnam port [22]. Soil profiles around industrial estates and thermal-power settings similarly indicate multi-element enrichment [35, 41]. Coastal-vulnerability mapping classifies substantial stretches of the tract in high and very high vulnerability classes [13].

2.3 Protected Area, Eco-Sensitive Zone and Site-Specific Sensitivities

Kambalakonda Wildlife Sanctuary, proclaimed under the Wildlife Protection Act, covers an ESZ stretching out 4.33 km from its periphery and spanning 30.51 sq.km within fourteen villages of the Anandapuram and Chinagadhili mandals. The Adavivaram-Mudasarlova site reportedly lies some 750 meters away from the sanctuary boundary and approximately 470 meters from the ESZ boundary; meanwhile, the Tarluvada site lies some 1.53 km from the sanctuary boundary. Those figures come from the clearances' files as well as subsequent litigation proceedings; none of these measurements was verified

independently in this paper. It appears that there was an Environmental Management Plan for the Tarluvada site, which noted that part of the land is recorded as Pedda Chukka Konda reserve forest in some records. The appraisal set that contention aside by reference to Survey of India topographic sheets that, according to the Authority, showed no forest cover. Those sheets have not been independently verified here.

From a purely geographical perspective, such proximity alone would raise legal concerns due to another peculiarity. Indian eco-sensitive zones represent controlled buffers with certain activities restricted and conditional, and with any development project established within such a notified ESZ and listed in the EIA Schedule requiring additional approval from the Standing Committee of the National Board for Wildlife alongside regular environmental clearances [29]. Where no zone is notified, a ten-kilometre default consideration zone around national parks and sanctuaries has been defined by office memoranda and Supreme Court orders. For item 8(a), the General Condition does not produce an upgrade to Category A, as Section 3 explains. Wildlife clearance under the Wildlife (Protection) Act remains a separate statutory question.

The Mudasarlova reservoir has historical significance for the city's water supply. Its catchment is a relatively small 16–17 square kilometres between the Kailasa, Kambalakonda and Simhachalam hill ranges, with continuous encroachment and declining runoff efficiency from urbanisation. The Adavivaram–Mudasarlova site has been recorded at about 120 metres from the reservoir, raising the possibility of changes in drainage and recharge. District groundwater-potential and flood-risk maps highlight the heterogeneity of recharge and hazard [30].

2.4 Operational Scale and the Water–Energy Footprint of Hyperscale Facilities

Capacity is reported in three non-interchangeable units in the public record. (i) Announced IT/AI capacity: initially presented as a 1 GW hub and later described as a multi-site development estimated in contemporaneous reporting at around 2.5 GW. (ii) Grid demand declared in the April 2026 appraisals for Tarluvada and Rambilli together: about 1,626 MW. (iii) On-site diesel backup for those two parks: about 354 generating sets with a combined capacity of about 971.5 MW. For Adavivaram–Mudasarlova, the later SEIAA record cites about 512 MW of power and 100 diesel sets of 2.75 MW each. This paper uses "grid demand" and "backup capacity" when discussing clearance documents, and "announced capacity" when discussing policy statements.

The three sites comprise hundreds of acres planned to host multiple gigawatts of computing capacity. Declared freshwater needs of two parks in the clearance documents amount only to hundreds of kilolitres per day, while external estimates of evaporative cooling needs are significantly higher. Studies of power-usage effectiveness (PUE) and water-usage effectiveness (WUE) show that on-site cooling water and indirect water embedded in electricity generation vary by more than an order of magnitude depending on climate, cooling technology and grid mix [17–19]. Bottom-up United States work found that a non-trivial share of servers draw direct cooling water from moderately to highly stressed

watersheds and that nearly half are powered by plants in water-stressed regions [43]. Life-cycle studies identify operational electricity as the dominant burden and cooling choice as a first-order determinant of blue-water consumption [8].

National-scale AI-expansion scenarios in other jurisdictions project large additional water and carbon loads [3, 20]. Those figures are scenario results, not an inventory for Visakhapatnam. Whether the declared freshwater figures capture full evaporative and embedded-electricity water use remains an open empirical question. The baseline and locational facts indicate that operational water, energy and land-use effects are the relevant assessment questions, not only construction-phase effects.

3. Legal Framework for Environmental Clearance of Data Centres

The principal instrument governing prior environmental clearance in India remains the Environment Impact Assessment Notification, 2006, issued under the Environment (Protection) Act, 1986. Projects listed in the Schedule are classified as Category A, appraised centrally by the Expert Appraisal Committee, or Category B, appraised at state level by the State Environment Impact Assessment Authority on the advice of the State Expert Appraisal Committee [12, 24, 27].

Data centres do not appear as a distinct Schedule entry. In practice they have been processed under item 8, “Building/Construction projects/Area Development projects and Townships.” Item 8(a) applies to building and construction projects with a built-up area of 20,000 square metres or more but less than 1,50,000 square metres and treats them as Category B. The upper bound is the line that keeps a project out of item 8(b). Item 8(b) projects are appraised as B1 and require an EIA report. A declared built-up area immediately below 1,50,000 m² therefore does more than assign the file to “buildings.” It is the numerical condition on which the B2 exemptions, no EIA report, no scoping Terms of Reference, no mandatory public hearing, rest. Building and construction projects under item 8(a) are commonly placed in B2. Appraisal then rests largely on Form 1, Form 1A and a conceptual plan [2, 11].

Screening criteria in the 2006 Notification have been criticised as inconsistent with ecological carrying capacity and as inadequately specifying the B1/B2 distinction [33]. Systematic reviews find screening, scoping, public involvement, cumulative impact assessment and post-clearance monitoring to be common weaknesses across industries [38, 42]. The original structure envisioned construction-phase impacts; nothing in the literature suggests that item 8(a) was meant to cover operations whose primary stressors are continuous high-intensity demand [11, 42].

3.1 The General Condition and Protected-Area Overlays

The General Condition attached to the Schedule provides that a Category B project is to be treated as Category A if it lies wholly or in part within a prescribed distance of listed sensitive areas, including Protected Areas under the Wildlife (Protection) Act, 1972 and eco-sensitive areas notified under the Environment (Protection) Act, 1986. For most Schedule entries that rule is the mechanism by which location upgrades the appraising authority.

Item 8 is an exception. Column 5 of the Schedule, as amended, states that the General Condition shall not apply to items 8(a) and 8(b). The Ministry of Environment and Forests clarified as early as 24 May 2011 that building and construction projects and township projects remain Category B irrespective of location relative to critically polluted or eco-sensitive areas and continue to be appraised by SEIAAs. Subsequent amendments, including the note inserted in 2014 and restated in the 29 January 2025 notification, repeat that “General Conditions shall not apply.” The Supreme Court has read that note according to its text: where the Schedule intends the General Condition to apply, Column 5 says so; for entry 8 it does not. The Andhra Pradesh SEIAA, in an affidavit concerning the Adavivaram–Mudasarlova park, took the same position: environmental clearance was granted on built-up area under item 8(a), and the General Condition was treated as inapplicable.

Two consequences follow. First, sanctuary or Eco-Sensitive Zone proximity does not, under the present Schedule, convert an item 8(a) data-centre building into a Category A project. Arguments that the Visakhapatnam parks “should have been Category A because of the General Condition” mistake a feature of item 8 for a misapplication of it. Second, that feature is itself part of the regulatory problem this paper identifies. A classification designed for ordinary buildings not only omits a full EIA and a public hearing when the project is placed in B2; it also switches off the location-based upgrade that the Notification uses for other activities.

Wildlife and forest law are not thereby exhausted. Location within a notified Eco-Sensitive Zone, or within the relevant consideration zone around a sanctuary, can still require consideration by the Standing Committee of the National Board for Wildlife. Use of recorded reserve forest still engages the Forest (Conservation) Act. Those are parallel statutory gates. It does neither require submission of a full EIA report nor hold a statutory public hearing in terms of the 2006 Notification. The classification of hyperscale data centres within item 8(a) itself is also debatable. Continuous electricity consumption, cooling water requirements, diesel generators and diesel fuel storage facilities are not merely construction residuals [19, 43]. Item 8(a) within the 2006 Schedule contains no specific category covering such infrastructure types [12, 23]. Therefore, unless a further classification route becomes available under the schedule, it appears likely that both B2 Exemptions and Disapplications of the General Condition tag along with it.

3.2 Appraisal Architecture, Public Consultation and Judicial Frame

Category A projects are examined by the central Expert Appraisal Committee. Category B projects are examined by the State Expert Appraisal Committee, whose recommendations are considered by the State Environment Impact Assessment Authority. For B2 projects the process is abbreviated: screening determines that no further environmental studies are required, scoping is dispensed with for item 8 projects, and public consultation is not mandatory. Clearance can therefore be granted on a limited documentary basis and within a compressed timeline.

Public consultation has been the most consistently studied, and most consistently found wanting, element of Indian EIA. Empirical work on hydropower hearings in Himachal Pradesh and Uttarakhand documented inaccessible information, limited familiarity with EIA, weak institutional capacity and participation that did not exemplify meaningful involvement [4–5, 44]. Later environmental-justice case studies found that gaps in EIA reports and truncated participation were important triggers for public-interest litigation, and that community concerns frequently diverged from the issues framed in official documents [6]. Legal analysis of India's implementation of Rio Principle 10 rights in the realm of environmental law points to a comparable picture: whereas there is a strong doctrinal basis for procedural rights, such rights face considerable implementation challenges as well as threats of erosion [32]. Biodiversity inclusion review of Environmental Impact Assessment (EIA) report submissions made in India suggests that indirect, secondary, and cumulative effects on biodiversity receive poor consideration in practice [1, 14]. The thresholds have changed, clarification around what constitutes built-up area has been offered, and modifications to the General Condition have been introduced, yet the core framework of a schedule-based categorisation approach wherein any new infrastructure development falls into building-construction classifications persists [11]. India's apex court continues to insist that pre-environmental clearance required under the 2006 scheme constitutes a mandate and restricts purely administrative processes for regularising any activities that have commenced by ruling that regularisation necessitates issuance of a statutory notification under Section 3 of the Environment (Protection) Act. Thus, the overall data centres' legal framework represents a case study in classification by analogy rather than intentional design. Classification within item 8(a) of Category B2 determines the extent of scrutiny and decision-making authority. Being located close to Protected Areas or Eco-Sensitive Zones is irrelevant to the category of 8(a), and thereby cannot trigger any elevation of such classifications. The example of clearances issued for Visakhapatnam shows how it plays out: B2 appraisals continued despite objections based on overlays of sanctuaries and forests under Category B2 item 8(a).

4. The Visakhapatnam Clearance Process: Procedure, Speed and Controversies

Environmental clearance of the Visakhapatnam complex proceeded rapidly and has been contested. The projects were advanced through the three special-purpose vehicles associated with Adani Infra identified in Section 1. Land allotments by the Andhra Pradesh Industrial Infrastructure Corporation ultimately exceeded 600 acres across the three locations.

Online applications for the Tarluvada and Rambilli projects were submitted on 9 April 2026. The State Level Expert Appraisal Committee took them up the following day. The Andhra Pradesh State Environment Impact Assessment Authority granted environmental clearances on 18 April 2026, nine days after filing. Those dates are taken from the online application record and the SEIAA orders as reported in the public controversy that followed. The foundation-stone ceremony, attended by the Chief

Minister, followed on 28 April. Consent to Establishment orders from the Andhra Pradesh Pollution Control Board for the two sites were issued in the same period.

Both projects were classified under Schedule item 8(a) as Building and Construction projects and placed in Category B2. The declared built-up areas were 1,48,922 m² at Tarluvada and 1,48,475 m² at Rambilli, each a few thousand square metres below the 1,50,000 m² ceiling that would have moved the project into item 8(b) and B1 appraisal with an EIA report. The Adavivaram–Mudasarlova park was subsequently documented at approximately 1,22,858 m², also within the 8(a) range. This paper does not claim that the values have been falsified. It observes that the legal consequence of staying below the threshold is large: the gap between a conceptual layout and Forms 1 and 1A, versus an environmental impact assessment including public consultation. Classification meant that a full EIA report, scoping, Terms of Reference and a statutory public hearing were not required. EIA Appraisal was carried out using Forms 1 and 1A along with the layout plan and Environmental Management Plan produced by Pridhvi Envirotech. This represents the B2 route path, which has long been criticised for lacking adequate data and stakeholder engagement in India [2, 11, 27, 38].

The turnaround and subsequent categorisation under B2 were strongly criticised. For instance, The Human Rights Forum (Statement dated 27 April 2026) requested an urgent halt to both park operations, treating them collectively as having a total installed generating capacity of 1,626 MW, backed-up by 354 units totalling around 971.5 MW via diesel generators, in addition to significant onsite fuel stockpiles, as industrial activity and requiring category A EA with public consultations held in the villages concerned. Such demands view the General Conditions of the EIA Notification as applying to Item 8(a). However, under the current version of the Schedule, this is not the case. The sharper objection, and the one this paper adopts, is that item 8(a) is the wrong entry for an installation whose operational load, diesel fleet and cooling demand are industrial in character, and that using that entry simultaneously avoids a full EIA, a public hearing and location-based elevation to Category A. Forest and wildlife clearances, if required, remain a different statutory question and were not a substitute for that EIA process. Those contentions track the functional critique in the data-centre literature: operational electrical load, diesel redundancy and cooling water are industrial-process characteristics, not construction residuals [19, 43].

Former Union Secretary E. A. S. Sarma wrote to the Ministry of Environment, Forest and Climate Change describing the clearances as hurried and piecemeal. He noted that one order (AP INFRA 2 EC VSP 04 2026 2517 dated 18 April 2026 for Tarluvada) had been issued despite claims that a substantial portion of the land fell within the Pedda Chukka Konda reserve forest, a contention the appraisal had set aside by reference to Survey of India topographic sheets. He called for the revocation of both clearances and a fresh appraisal as Category A projects.

Further objections centred on proximity to the Kambalakonda Wildlife Sanctuary and its Eco-Sensitive Zone, the absence of any cumulative impact assessment of the three related facilities, and reports of site preparation, including tree felling and land levelling, before clearance. For the Adavivaram–Mudasarlova parcel, SEIAA granted environmental clearance in June 2026 (the SEIAA affidavit in later

proceedings refers to 5 June; contemporaneous objections refer to 10 June), again under the building-construction category, and similarly attracted demands for suspension on grounds of ecological sensitivity and catchment proximity to the Mudasarlova reservoir.

The absence of cluster-level cumulative assessment is not a local anomaly. Indian EIA practice has long been criticised for appraising related projects in isolation and thereby under-examining combined effects on shared water, power, air quality, and ecological receptors [7, 14, 42]. Comparative work on cumulative assessment in the Global South identifies missing specific legal requirements, weak multi-actor governance of mitigation, and limited guidance and expert capacity as the principal barriers, precisely the conditions under which a three-park coastal cluster can be processed as three discrete building projects [39]. Himalayan hydropower scholarship likewise stresses assessment of concentrated or sequential development rather than isolated projects [7, 9, 26]. Official arguments were that necessary clearances had been provided, that renewable energy would be used extensively, and that water and power plans would absorb added demand without crisis. Opponents replied that B2 treatment, speed, isolated appraisal and the absence of a public hearing left unused the protective stages of EIA. The procedural history thus records a conflict between the lawful item 8(a)/B2 route and the operational character of hyperscale infrastructure near protected and water zones.

5. Fiscal and Tax Incentives for Data Centres and Their Interaction with Environmental Regulation

Tax incentives have emerged as an increasingly important tool for attracting foreign investment in hyperscale data centres. A combination of federal and state-level packages involving tax cuts, capital grants, and infrastructure subsidies serves to reduce entry costs and send signals about government commitment. Interactions between tax incentives and environmental clearances constitute one aspect of the dynamic forces shaping the timeline and scale of data-centre projects in India.

For example, the Union Budget 2026-27 provided a tax holiday until 2047 for any foreign enterprise that provides its cloud computing services abroad through a subsidiary engaged in data-centre services based in India. Revenues earned from Indian users must be routed through the intermediary reseller subsidiary established by the foreign cloud firm in India, thereby making them taxable. Moreover, a minimum mark-up of 15 per cent above cost for intra-group transactions is specified between the foreign cloud computing service provider and its data-centre subsidiary based in India. According to the explanatory memorandum accompanying the budget, this measure recognises the significance of data centres as infrastructure, facilitating the development of India as the preferred destination for hosting cloud computing and artificial intelligence workloads.

In another example, Andhra Pradesh adopted the Data Centre Policy 4.0 (2024-29), under which the State Investment Promotion Board approved an incentive package worth an estimated Rs 22,002 crore for the Raiden Infotech project in the Visakhapatnam cluster. The package consisted of a 25 percent reduction in land cost, 10 percent capital subsidy for plant and machinery up to ceilings, 100 percent exemption

from stamp duty and registration charges, refund of State GST on construction expenditure and leasing, an energy subsidy of Rs 1/unit of electricity for 15 years, exemptions from electricity duty as well as certain transmission charges and cross subsidies, and an industrial water tariff subsidy. The land allotment occurred on a concessional basis in Tarluvada, Rambilli and Adavivaram-Mudasarlova. Equally attractive incentive schemes have been offered to other hyperscale data-centres in Andhra Pradesh.

Both examples demonstrate incentives operating across four critical levers of data-centre economics – namely, reduced cost of land, plant and equipment, electricity, and water consumption. By reducing costs in these areas, the incentives boost the internal rate of return and shorten the payback period. Furthermore, multi-year incentives lasting from 15 years to 2047 reduce the discount rate applied to projected cash flows in future periods. As far as the latter two cost items are concerned, subsidising electricity and water without environmental conditions effectively lowers the marginal cost of production and eliminates deep assessment from eligibility criteria. The connection appears structural rather than demonstrated conclusively. However, evidence suggests that quasi-experimental variation in clearances granted around the 2006 Notification affected pre-clearance behaviour in mining cases [25]. While this case study establishes an analogue to such a causal effect, it cannot establish either causation, that is, whether the incentives prompted a nine-day clearance for Raiden Infotech, or the consequent weakening of environmental safeguards in practice, much less quantify the resulting losses [19–20, 43].

The interaction involves features built into the two regulatory systems rather than observed empirically. For one thing, eligibility criteria refer exclusively to thresholds of capacity, investment level and sometimes employment or efficiency, without regard to rigorous environmental clearance procedures. Therefore, while the clearance continues to be statutorily required, its execution is not a prerequisite to eligibility. Accordingly, the receipt of reductions in land cost, energy subsidies and tax privileges, which last anywhere from 15 years to 2047, can occur without Category A assessment and public hearing, without disclosure of PUE/WUE metrics, and without cumulative impact analysis. An argument that the combined operation of incentives and expeditious clearance leads to the socialisation of risks and the subjugation of environmental review to economic development purposes would be overstating the case. The issue at stake is more limited in that it is a characteristic feature of current institutional design. Whether this feature results in a net social welfare loss is another question altogether [45].

6. Critical Evaluation and Reform Directions

Scholarship on India's EIA system has long identified structural weaknesses that become sharper when operationally intense infrastructure is placed in older classification boxes. The 2006 Notification improved on the 1994 framework by formalising screening, scoping, public consultation and appraisal, yet it has been the subject of sustained critique for Category B2 treatment and for the progressive narrowing of participation and cumulative-assessment requirements [2, 11–12, 24, 27, 38, 42].

6.1 Documented structural features

Projects placed in Category B2 are exempted from a full EIA report and from statutory public consultation. Analyses of the 2006 Notification and later draft reforms observe that this exemption removes a mechanism through which local ecological knowledge and community concerns can inform decision-making [2, 6, 11, 32]. Item 8(a) building projects have frequently been channelled onto that pathway. The category was designed around construction-phase effects; there is no indication that it was intended for facilities whose major concerns arise from continuous high-intensity operation [11, 42–43].

The lack of compulsory cumulative assessment for project clusters is a second documented shortcoming. Reviews of Indian EIAs point to under-consideration of combined impacts on shared water, power, air and ecological receptors [7, 14, 42]. Isolated appraisal systematically overlooks baseline interactions and synergies. Comparative work on Global South practice treats cumulative assessment as an adaptation problem: vague legislation, weak allocation of mitigation among proponents, and limited guidance [39].

Public participation is a third recurring theme. Reviews of the Draft EIA Notification 2020 and of amendments since 2006 describe a diminishing participatory potential through expansion of B2 and shortened consultation windows [2, 11]. The scholarly consensus is that effective consultation is a substantive source of information that can alter design and mitigation, not a procedural ornament [4, 6, 44]. Air-quality prediction reviews of Category A reports further show that significance evaluation and mitigation remain among the weakest stages even where full studies are required [10], a finding that makes the complete omission of such studies for B2 data-centre parks still more consequential.

6.2 Sources and the limit of inference

No peer-reviewed journal article had, at the time of writing, examined the 2026 environmental clearances for the Visakhapatnam parks. That gap is acknowledged. It does not require the paper to set the clearance record aside. The orders, the designation under item 8(a), the specified built-up areas, the declared resource estimates, and the official position that the General Condition is inapplicable to item 8(a) constitute legal facts. Peer-reviewed literature diagnoses the regime in which those facts sit: the effects of B2 designation, the limited institutionalisation of cumulative assessment, and the shrinking of consultation [2, 6, 11, 24, 39, 42].

Two inferences must be kept apart. The first is structural: the omission of an EIA report and statutory consultation when operationally intensive facilities are placed on the item 8(a)/B2 route. That inference concerns the Notification itself. The second is observational: the Visakhapatnam parks were processed as three separate B2 files on a compressed timetable. Assertions that fiscal incentives caused that speed, or that expected environmental damage has already materialised, are not proven. They are possibilities allowed by the design of both regimes. There is no independent verification here of built-up-area figures, project-specific water consumption, or forest classification, nor an independent quality assessment of the Environmental Management Plan beyond its role in B2 classification. Further material may emerge from proceedings in the High Court of Andhra Pradesh and the National Green Tribunal.

6.3 Reform directions grounded in the literature

The directions below follow from the features in Section 6.1 and the process record in Section 4. They do not imply abandonment of the development goals that guide current policy.

First, analyses support an activity-specific Schedule entry, or binding guidance, that classifies on operational intensity rather than by analogy to ordinary construction [11–12, 33]. Any such entry would have to specify in Column 5 whether the General Condition applies. Leaving the activity inside item 8(a) continues to switch that condition off. Second, consultation rules should be restored or enhanced for projects likely to have substantial lasting impacts on natural resources or ecology, even where they are presently B2 [2, 6, 32]. Meaningful consultation requires accessible information, sufficient time and an institutional path from hearing to assessment, elements long found wanting in Indian practice [4–5].

Third, cumulative assessment should be mandatory for geographically contiguous or functionally related projects that share a resource base [7, 39, 42]. Three parks with gigawatt-scale energy use on a stressed coastal aquifer, next to a sanctuary eco-sensitive zone, are a clear case. Fourth, post-clearance monitoring and enforcement capacity should be strengthened so that any change in assessment procedure can be verified in operation [12, 27, 38]. Fifth, fiscal eligibility should be tied to a classification consistent with operational intensity, to reporting of PUE/WUE and resource origin, and to cumulative assessment of related facilities. Otherwise subsidies and abbreviated review will travel together [25, 45]. Future work will need to test operational water and energy use once the parks run, and to evaluate whether activity-specific classification changes appraisal practice.

7. Conclusion

Two decades of scholarship on India's EIA regime identify enduring structural limits that bear directly on novel infrastructure. Category B2 treatment exempts projects from a full impact study and from statutory public consultation [2, 11, 24, 42]. Parallel critiques underline the limited institutionalisation of cumulative assessment and the narrowing of participatory mechanisms [6, 32, 39]. Those features were designed for a project landscape that predated hyperscale digital infrastructure. When facilities whose principal pressures arise from continuous operational demand are channelled into the building-and-construction pathway, they inherit the documented constraints of that pathway [19–20, 43].

This paper has used the public clearance record of the Visakhapatnam parks as a case, and the peer-reviewed literature on the 2006 Notification as the frame in which that case is read. Empirical performance for this class of infrastructure will require further work, including verification of operational water and energy use once the parks run. The argument here is narrower: item 8(a)/B2 treatment, the non-application of the General Condition to that entry, and the absence of mandatory cluster-level cumulative assessment are a poor fit for facilities whose principal pressures are operational.

Within those limits the literature supports four observations. First, classification by analogy to conventional construction does not automatically give long-term resource and ecological effects

scrutiny equivalent to construction-phase impacts [11, 33]. Second, exemption of Category B2 projects from public consultation removes a recognised source of site-specific information and legitimacy [2, 6]. Third, the absence of mandatory cumulative assessment for related or proximate projects leaves shared-resource pressures under-examined [39, 42]. Fourth, fiscal incentives that cheapen power, water and land without environmental conditionality alter the private cost of delay. Combined with a short B2 pathway, they make the shortest lawful clearance route more attractive. That is a design interaction, not a proven causal finding for these parks [25].

None of the reform directions in Section 6.3 presupposes rejection of digital-infrastructure development. They rest on the more limited proposition that the protective purpose of environmental impact assessment is better served when classification, participation and cumulative analysis are calibrated to the actual character of the activity under review. Whether the existing regime can be adapted in that manner, or whether more fundamental revision will prove necessary, remains an open empirical and policy question. What the available scholarship does establish is that Category B2 treatment and the limited institutionalisation of cumulative and participatory requirements are genuine constraints on the depth of environmental scrutiny. Closing the gap between those constraints and the scale of contemporary digital infrastructure will require both further empirical research and deliberate regulatory design.

Declarations

Author contributions

The author conceived, researched, and wrote the manuscript. All work, including analysis and final approval.

Data availability

No new datasets were generated or analysed for this study. The findings rest on publicly available environmental clearance orders and appraisal records on the PARIVESH portal (https://parivesh.nic.in), the Union Budget and Andhra Pradesh Data Centre Policy instruments, and the peer-reviewed sources listed in the References.

Consent for publication

The author has reviewed the final manuscript and consents to its publication.

Competing interests

The author declares no competing interests.

Ethics approval and consent to participate

This article does not involve studies with human participants or animals that would require formal ethical approval. Not applicable, No human participants were involved, and no informed consent was required.

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