ENVIRONMENTAL JUSTICE FORUM

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CITIZEN BRIEFING: HYDERABAD DATA CENTRES & AI INFRASTRUCTURE

Environmental Footprint, Community Impacts & Demands for Accountability

1. Why This Matters to the Citizens

Hyderabad is rapidly emerging as a major hub for AI and hyperscale data centres—24×7 facilities that require enormous and continuous supplies of electricity, cooling water and land. While they can bring investment, technology and employment, their concentrated resource demand can also place additional pressure on water supplies, groundwater recharge, lakes and wetlands, the Musi and its tributary catchments, urban forests, hills and biodiversity.

The key questions are: **Who benefits** from this growth—and **who bears** its long-term ecological and resource costs? **Across major US hubs like Virginia**, **unchecked data-centre expansion has already triggered widespread citizen pushback** over **rising** household **electricity bills**, **acute water stress,** and persistent neighbourhood noise—**a warning Hyderabad cannot afford to ignore**. Hyderabad's data-centre expansion must therefore be **water-secure, energy-efficient, ecologically responsible, climate-resilient and environmentally just**, ensuring that **economic growth does not compromise** drinking water, natural ecosystems, biodiversity or the environmental security of present and future generations. **We welcome technological progress—but Hyderabad's digital growth must create shared prosperity,** not shift its environmental costs onto citizens. **Data centres must protect** our water, power, health and natural ecosystems through transparent and accountable resource use.

2. How large is the energy, water and heat footprint?

Metric	Current Operating Data Centres	*Announced/Planned Data Centres*	*Long Term Potential Data Centres*
Identified Projects	Sify 01 (14.4 MW), STT 1 (4 MW)	*Yotta (50 MW), STT Future City (100 MW), Sify Exp. (250 MW)*	*CtrlS Chandanvelly*
IT Power Capacity	18.4 MW	*400 MW*	*>600 MW potential*
Peak/Full-Capacity Electricity Demand @ assumed PUE 1.4	~226 GWh / yr	*~4,906 GWh / yr*	*>~7,358 GWh / yr*
Illustrative Water Use @ assumed WUE 1.0 L/kWh (IT energy basis)	~161 ML / yr	*~3,504 ML / yr*	*>~5,256 ML / yr*
Continuous Heat Released into the Neighbourhood@1.4 PUE	~25.76 MW	*~560 MW*	*>~840 MW*

Note 1: PUE: Power Usage Effectiveness; **WUE**: Water Usage Effectiveness; **MW**: Megawatt; **L:** Litre; **ML**: Million Litres; **MLD**: Million Litres per Day; **IT**: Information Technology; **GWh**: Gigawatt-hours.

Note 2: A **100 MW facility** could use **about 2.4 ML/day** of water under the stated **WUE of 1.0 L/kWh**, assuming an **illustrative evaporative/wet-cooling, high-water-use scenario.** This is an **illustrative** estimate, **not actual** consumption. **Each facility** should **publicly disclose** and **independently verify** its ***actual*** **water** and **power** consumption/performance.

3. Key Environmental & Neighbourhood Risks

- **Water Security and Pollution:** *Water-intensive* **cooling** can **increase pressure on** municipal supplies and groundwater, **especially** in **water-stressed areas**. The **blowdown water** and **cooling chemicals** require **proper treatment** and **disposal**.
- **Heat, Humidity, Noise, Air and Water Pollution:** *Cooling systems* release heat and, with evaporative cooling, water vapour, potentially **increasing** local **heat**, **humidity** and **heat stress**. **Round-the-clock** chillers and fans, and backup diesel **generators** add **noise** and **air pollution**, while batteries and transformer-oil systems **require safeguards** against **leaks, and fires**, and **treatment** for **wastewater**.
- **Regulatory Gap:** *The EIA Notification 2006* **has no dedicated data-centre category**. Some projects may be treated as **Category 8(a), B2, with no conventional public hearing.** This makes project-wise and **cumulative** environmental assessment especially important.
- **Protected Areas, ESZs & Biodiversity: What Could Be at Risk?** Hyderabad's expanding data-centre corridors are developing **within a wider ecological landscape that includes** KBR National Park, Mrugavani National Park, Mahavir Harina Vanasthali National Park, their Eco-Sensitive Zones, lakes and wetlands, groundwater-recharge areas and the Musi–Himayatsagar catchment. These are not empty lands—they are natural assets that protect Hyderabad's water, climate, biodiversity and quality of life.
- **Large data-centre campuses,** access roads, power infrastructure and intensive cooling can add to land conversion, habitat fragmentation, groundwater stress, noise, artificial lighting and polluted runoff. Even when a facility lies outside a protected area, its **cumulative impact** on connected ecosystems and catchments can extend well beyond its boundary.
- **Cumulative Cluster Impact & Citizen Concern:** A single data centre may appear manageable, but **multiple facilities concentrated** across Hyderabad's growth corridors can collectively place **much greater pressure on** water, power, land and ecological systems. Their impacts should therefore be assessed **cumulatively—not project by project**, with particular attention to **Hyderabad's water security, groundwater recharge areas, lakes and wetlands, the Musi** and its tributary catchments, **urban heat, biodiversity and ecological connectivity**. **Digital growth must not become a hidden cost** borne by Hyderabad's water resources, natural ecosystems and local communities.

4. Cooling technologies: Citizen Demands for lower water, energy and heat footprint

Technology	Water	Energy	Assessment
Evaporative/cooling tower Uses water evaporation to remove heat	High	Lower cooling energy	Effective but water-intensive; avoid as the default in water-stressed areas.

Chilled water / air cooling Uses chilled water or air to remove heat	Low–moderate	Moderate-High	Established technology; suitable where water and energy impacts can be managed.
Free-air/economiser Uses favourable outdoor conditions for cooling	Very Low	Low	Use wherever local climate and air-quality conditions permit.
Hybrid dry + adiabatic Mainly dry cooling with limited water-based cooling	Low–moderate	Low–moderate	Practical transitional alternative, with limited water-based cooling during hot periods.
Direct-to-chip closed loop Liquid circulates thro' cold plates on high-heat chips	Very Low	Low potential	**Preferred for high-density AI where low water use is a priority.**
Immersion cooling Servers / components are immersed in dielectric liquid	Very low	Low potential	**Highly suitable for ultra-high-density AI, subject to system design and operational requirements.**

- **Efficiency has limits:** Even the most efficient cooling technology still **uses large absolute amounts of water and power** once total capacity keeps growing; **efficiency gains alone** cannot offset unchecked growth in scale.
- **Cooling choice matters:** In **water-stressed areas,** prioritise **water-efficient cooling**—such as direct-to-chip or immersion cooling, with free/dry cooling where feasible—and **avoid** water-intensive evaporative cooling.
- **Protect drinking water:** Drinking water, household needs, agriculture and other essential uses should always have **priority** over data-centre cooling when water is limited. **Minimise** potable-water and groundwater use; where water-based cooling is necessary, **use treated/recycled wastewater**.
- **Energy-efficient cooling:** Prioritise **free-air/dry cooling, efficient chillers, direct-to-chip and immersion cooling**, along with high-efficiency fans and pumps, to reduce the cooling energy. Conventional and **renewable** power sources and their utilisation are to be clearly **disclosed**.
- **Public Green–Amber–Red Dashboard:** Each data centre should report water use and source, **recycling, electricity and renewable share**, **emissions/discharges** and **compliance**, along with the **public support** it receives — land, infrastructure, incentives and concessions. **Data** should be independently checked and updated regularly against regulator-set limits.
- **Assess data centres as a cluster:** Regulators should assess the **combined impact of existing and proposed facilities** on local land, water, power, heat and the environment **before approving** major expansion.

5. Employment Realities: Low Direct Jobs vs. Massive Resource Demand

Data centres involve substantial construction activity but are highly automated during operation. The number of permanent jobs may therefore be relatively low compared with the scale of investment, land, power and water use, and the fiscal and other incentives given by governments — citizens should be able to weigh job creation directly against these resource commitments.

Indicative Estimates for a 100 MW facility:

- **Temporary jobs:** ~800–1,200 construction jobs during construction; they reduce after commissioning.

- **Direct permanent jobs:** ~100–200 specialised on-site jobs, mainly technical, operations and security, i.e.,~1-2 specialised jobs/MW IT capacity.
- **Indirect jobs:** ~300–600 regional support roles in grid, fibre, vendors and related services (indicative).

6. Key Takeaways for Citizens

- **Disproportionate Resource Load:** A **1,000 MW data-centre cluster**, operating continuously at an **illustrative PUE of 1.4**, could consume ~**12,264 MU/year**—equivalent to ~**78% of Telangana's** FY2024–25 LT **domestic electricity consumption**.
- **Significant Water Footprint:** At an **illustrative WUE of 1.0 L/kWh**, water-intensive cooling could require ~**24 ML/day**—enough for the daily domestic needs of ~**1.6 lakh people**, potentially adding pressure on Hyderabad's stressed water resources.
- **Limited Direct Jobs:** Highly automated operations may provide only **~1–2 permanent on-site jobs per MW**; actual permanent local employment and skill-development benefits should be disclosed.
- **Heat & Local Pollution:** Continuous heat rejection, diesel-backup emissions, cooling noise and chemical blowdown can add to **local heat, air-quality, noise and drainage risks**.
- **Regulatory Gap:** Data centres have **no dedicated category under the EIA Notification, 2006**. Large facilities are often processed under **Item 8(a), Category B2**, without the conventional public-consultation process, while **cumulative impacts of large clusters require specific assessment**.

7. Core Public Demands

1. **Mandatory Category 'A' EIA & Public Consultation:** Require comprehensive environmental assessment and statutory public hearings for data centres above **20 MW**, covering **cumulative** impacts and associated infrastructure.
2. **Water-Secure Development: No groundwater or potable water for cooling**; prioritise treated wastewater and closed-/low-water cooling, with **binding freshwater-use limits**.
3. **Protect Water Bodies & Catchments:** Protect **the Musi catchment**, **aquifers, recharge areas, lakes,** tanks, wetlands and through hydrological and ecological assessments.
4. **Energy, Heat & Pollution Controls:** Assess **cumulative power/grid demand** and enforce monitoring and limits for **heat, diesel emissions, noise, wastewater and chemical discharges**.
5. **Public Accountability & Local Benefits:** Establish a **public Green–Amber–Red performance** dashboard and time-bound grievance mechanism, alongside **disclosure of actual permanent local** jobs, skill development, public incentives and community benefits.

8. Citizen Test — What Should We Ask?

Water & Power: Will 24×7 **water**-cooling and massive **electricity** loads **strain** Hyderabad's **drinking water reserves** and **push higher power costs** onto households?

Heat & Health: Will hundreds of megawatts of **continuous thermal exhaust** intensify local **heat stress** during summer **heatwaves**?

Jobs vs. Cost: Do **just 1–2 permanent jobs per MW** justify **massive allocations of** public land, grid infrastructure, and state subsidies?