NEXT IAS

DAILY EDITORIAL ANALYSIS

TOPIC

IF DATA IS THE NEW OIL, WHAT DOES THAT MAKE DATA CENTRES?

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Context

- **Data centres** are increasingly being viewed as the refineries of the digital era, transforming raw data into actionable insights and services. It brings into focus the **environmental and geopolitical implications** of data infrastructure.

What Are Data Centres?

- A **data centre** is a **specialised facility** designed to house computer systems and related components, primarily **servers**, **storage devices**, and **networking equipment** that store, process, and distribute large amounts of digital data.

- They form the **backbone of the digital economy**, supporting everything from **cloud computing and social media** to **banking systems, streaming platforms, e-commerce,** and **AI** operations.

Why Is Data Considered As New Oil?

- The Phrase **'data is the new oil'** was **coined by British mathematician Clive Humby in 2006**.

- It captures how **data, much like crude oil, is a raw resource** that, when refined and processed, can generate immense economic value.

- Both are **foundational resources** that reshape economies and societies when harnessed effectively.

Rise of Data Centres: Powering the Digital Economy

- **Backbone of Digital Transformation:** Data centres are the engines **behind every online interaction** from streaming videos and banking transactions to AI-driven healthcare diagnostics.

- **Economic Growth and Employment:** For developing countries like India, data centres offer:

  - **High capital investment** in infrastructure and technology.
  - **Employment opportunities** in construction, operations, and IT maintenance.
  - **Boost to allied sectors** like renewable energy, telecom, and logistics.
    - India's data centre capacity is projected to **grow by over 70% by 2028**, signaling strong investor confidence.

- **Enabler of Innovation:** Data centres are the **foundation of AI 5G and upcoming 6G ecosystems**. They enable AI model training and deployment; Internet of Things (IoT) operations; Big Data analytics; and Real-time digital services.

  - It underpins national ambitions in **digital sovereignty**, **cybersecurity**, and **AI-led economic competitiveness**.

Concerns & Issues Surrounding Data Centres

- **Energy Consumption:** Data centres are **energy-intensive**, accounting for around **2–3% of global electricity demand**, and could **double by 2030** due to AI and cloud growth.

  - In India, it could stress infrastructure unless renewable sources are integrated where the power grid already faces reliability issues.

- **Water Usage and Ecological Stress:** Cooling servers requires massive amounts of water. Locating data centres in **water-stressed regions** can worsen scarcity and local conflicts.

  - For instance, **Chile's Cerrillos data centre by Google** faced legal action for potentially affecting aquifers (**poor site selection** can have **real ecological costs)**.

- **Hidden Carbon Footprint:** Even when powered by 'green energy' the construction and maintenance of large data centres have **embedded emissions**, from **steel, concrete, and cooling chemicals** that contribute significantly to carbon footprints.

- **Governance Deficits & Data Dumping:** In many developing economies, **weak zoning laws**, **opaque approvals**, and **poor environmental oversight** allow developers to sidestep regulations.

- ◆ Governments, eager for foreign investment, often **cut corners**, offering land and power subsidies **without adequate environmental due diligence.**
- ◆ It can lead to **'data dumping'** when global companies offload inefficient, resource-hungry facilities onto countries with lax enforcement and lower public resistance.

Issues Related To Privacy, Monopoly, and Inequality

- **Privacy Erosion:** Personal data, from browsing habits to biometric information — is constantly harvested.
  - ◆ It can be misused for surveillance, manipulation, or discrimination without safeguards.
- **Digital Monopolies:** Data has created **Big Tech monopolies** just as oil created monopolies like Standard Oil.
  - ◆ A handful of corporations control vast troves of user information, stifling competition and innovation.
- **Unequal Access:** Data-rich nations and corporations widen the global digital divide. Developing countries risk becoming **'data colonies'**, providing raw data without benefiting from its processing and monetisation.

India's Position

- India is rapidly positioning itself as a global **data-centre hub**, supported by government incentives, stable geopolitics, and a growing digital market.
  - ◆ It is projected a **77% capacity increase**, reaching **1.8 GW by 2028**, and forecasts **4.5 GW** capacity by 2030.
  - ◆ **CRISIL** estimates growth to **2.3 – 2.5 GW** by FY2028.
- However, India's **weak zoning laws**, **inconsistent environmental enforcement**, and **water stress** in key regions heighten the risk of becoming a **dumping ground** for inefficient projects.

Why is the Risk Real For India?

- **Water Stress**: Many Indian basins are already overdrawn; adding water-guzzling data centres could worsen scarcity.
- **Power Grid Pressure**: Large data loads require costly grid upgrades; without clear cost-sharing rules, households may end up subsidising industrial users.
- **Regulatory Weakness**: Reports by the **Comptroller and Auditor General (CAG)** and the **National Green Tribunal (NGT)** highlight gaps in post-clearance monitoring and environmental compliance.
- **Incentive Race**: **State-level competition** may lead to **'race-to-the-bottom'** incentives like cheap land, expedited clearances, and lax sustainability norms.

Way Ahead: Strengthening Governance

- **Incentives & Zoning:** Excessive concessions on land, power subsidies, fast-tracked permits often hide environmental shortcuts.
  - ◆ Zoning needs to classify data centres as *heavy infrastructure* with noise and buffer controls.
- **Focus on Hidden Costs:** Opaque grid arrangements can shift upgrade costs to consumers.
  - ◆ Developers should **disclose power use, water sources, cooling methods**, and generator timings.
- **Local Water Realities:** Facilities in **arid regions** should face binding **water budgets** and **public contingency plans**. Water ceilings need to reflect local basin conditions.
- **Secrecy and Non-Disclosure Agreements (NDAs):** Public utilities should not operate under NDAs for such projects.
  - ◆ **Environmental filings, audits, and incidents** need to be accessible through a **public registry**.
- **Cautious Optimism:** Hyperscale data centres require robust grids and connectivity, enforcing natural limits on unsustainable expansion.
  - ◆ India's courts and tribunals can impose accountability and deterrence.
  - ◆ Strong activist and journalistic communities can expose opaque deals and demand public disclosure.

- **Data Ethics and Sustainability:** The next phase of the data revolution must balance **innovation with ethics**. This includes:
  - **Strong data protection laws** (like India's Digital Personal Data Protection Act, 2023);
  - **Transparency in AI algorithms;**
  - **Sustainable data infrastructure** powered by renewables;
  - **Equitable access** to digital technologies;
    - The goal is to ensure that **data enriches humanity collectively**, rather than empowering only a few global giants.

Source: TH

Daily Mains Practice Question
[Q] In what ways can the analogy of data as the new oil help us understand the strategic, environmental, and ethical implications of data centres in the digital economy?

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