Need for Local Data Centres

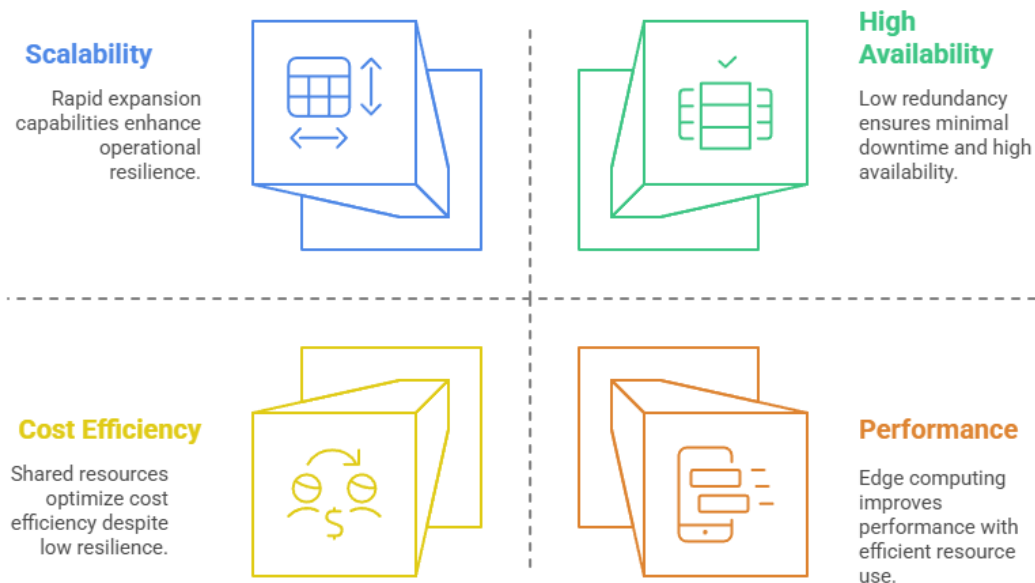**Source: BS**

Why in News?

India contributes around **20%** of the world's **digital data** but holds **less than 2% of global data centre capacity** in India, highlighting a **major infrastructure gap** to fully utilise available data.

- Underutilizing available data goes against the idea that **"data is the new oil,"** which highlights its **growing importance** in today's economy.

What are Data Centers?

- **About:** A data center is a **physical facility** that organizations use to **house their critical applications and data.**
    - Its key components include **routers, switches, firewalls, storage systems, servers**, and **application-delivery controllers**.
- **Types:**
    - **Enterprise (On-Premises):** Owned & managed by a **single company for full control** (e.g., banks, healthcare for compliance).
    - **Public Cloud (Hyperscale):** Run by **cloud service providers** (CSPs) (e.g., Azure, IBM Cloud) for shared, scalable resources.
    - **Colocation Facilities:** Companies **rent space** but own their hardware; providers manage power/cooling.
    - **Edge Data Centers:** Smaller, **decentralized facilities** closer to users to reduce latency (critical for AI, IoT).
- **Core Components:**
    - **Network Infrastructure:** This **connects servers** (physical and virtualized), data center services, storage, and external connectivity to end-user locations.
    - **Storage Infrastructure:** Storage systems are used to **hold data** that acts as **fuels of the data center.**
    - **Computing Resources:** It provides the **processing, memory, local storage, and network connectivity** that drive applications.
- **Key Benefits:**

Benefits of Data Centers

Scalability

Rapid expansion
capabilities enhance
operational
resilience.

High Availability

Low redundancy
ensures minimal
downtime and high
availability.

Cost Efficiency

Shared resources
optimize cost
efficiency despite
low resilience.

Performance

Edge computing
improves
performance with
efficient resource
use.

Why is Data Called the New Oil?

- **Fuel for Modern Economy:** Like **oil in the 20th century**, **data** now powers **modern business**, with firms like **Google, Amazon, and Foursquare** built on user data.
  - Businesses turn data into value by **predicting trends, improving operations, and personalizing services** like refining oil into high-value products.
- **Data as Strategic Resource:** Nations now treat data as a **geopolitical resource**, regulating its flow (e.g., **GDPR**, India's **DPDP Act, 2023**).
- **Foundation of Digital Economy:** Powers **e-commerce**, **fintech**, **cloud computing**, and **IoT** (smart devices, connected cars).

Why Are Local Data Centres Crucial for India?

- **India's Digital Footprint:** India tops global digital data generation, with the highest number of users on **Facebook (450 million), WhatsApp (540M), YouTube (490M)**, and **Instagram (360M)** requiring **facilities** to their **data locally.**
- **Economic Growth:** India could attract **USD 400 billion in investments** by expanding data centres to match its data growth target of **40 GW by 2030**.
  - It can boost **e-commerce, fintech, AI, and cloud computing**, key sectors for achieving India's **USD 5 trillion economy goal**.
- **Job Creation:** Data centers can create **1–2 million direct jobs** and **3 times more indirect jobs** in construction, logistics, and tech services.
- **Data Sovereignty:** Local data centres ensure **sensitive data (financial, health, citizen records)** stays within India, complying with the **Digital Personal Data Protection Act, 2023.**
  - Prevents external control over critical data flows, enhancing **national security.**
- **AI & Digital Leadership:** **Generative AI** could add **USD 2.6–4.4 trillion/year** globally.
  - Companies like **AWS, Google,** and **Microsoft** are growing their data centers in India positioning the country as a **future AI hub**.
- **Competitive Advantage:** While nations like **China (rare earth minerals), Australia (iron**

ore), and Chile (copper) leverage their natural strengths, India generates **20%** of global data yet holds **less than 2%** of the world's data centre capacity.
- Local data centers can provide **global data processing and cloud services**, similar to India's IT services success.
- **Infrastructure Boost:** India's data center growth will create demand for **800 million sq ft of construction**, boosting real estate, renewable energy, and telecom infrastructure.

What is the Current Status of Data Centres in India?

Click Here to Read: **[Current Status of Data Centres in India](#)**

What are the Key Reasons for Growth of Data Centres in India?

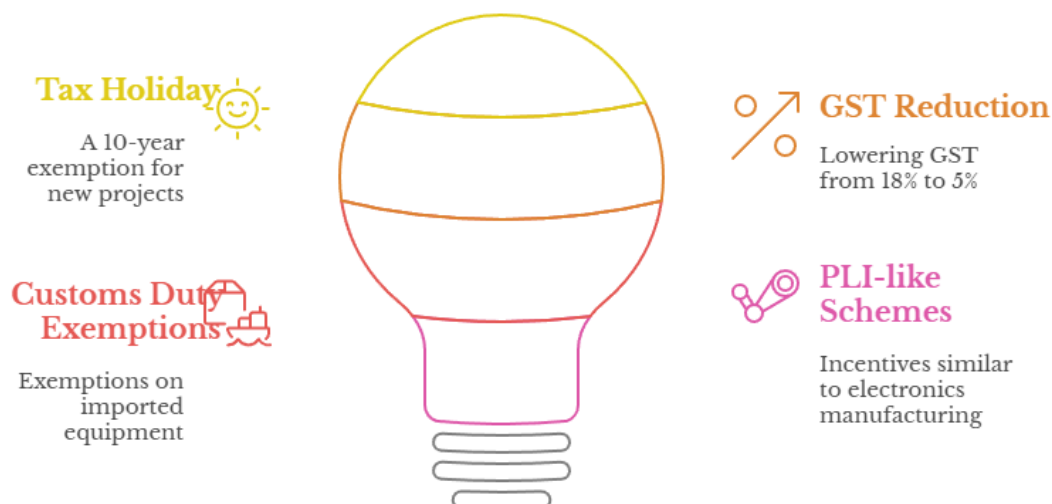Click Here to Read: **[Reasons for Growth of Data Centres in India](#)**

What are Key Concerns Related to Local Data Centers in India?

- **High Capital Investment:** Building **40 GW** of data center capacity by **2030** needs **USD 400 billion**, but long payback periods of **10–15 years** may deter private investment.
- **Trade & Economic Risks:**
  - **Reciprocal Trade Barriers:** If India forces foreign firms to store data locally, **other countries** may impose **similar restrictions** on Indian IT firms (e.g., TCS, Infosys).
  - **Higher Costs for Consumers:** Compliance costs may lead to **increased prices for cloud services,** streaming, and digital products.
  - **Reduced Competition: Smaller tech firms may exit** India due to compliance burdens, leaving only giants (Google, AWS) with resources to adapt.
  - **WTO & Legal Disputes:** Could be seen as a **protectionist policy**, inviting **trade complaints.**
- **Operational Challenges:**
  - **Unreliable Power Supply:** Frequent power outages require **expensive backup systems (diesel generators, batteries).**
  - **Cooling Requirements:** India's **hot climate** increases energy needs for cooling, raising costs.
  - **Limited Undersea Cables:** Most international data flows via **foreign-owned cables (e.g., controlled by US/China)**, creating dependency.
- **Sustainability Concerns:**
  - **Energy-Intensive:** Data centres used **1.5%** of global electricity in **2024** and may reach **3% by 2030.** India's **coal-dependent grid** raises carbon footprint concerns.
  - **Water Usage for Cooling:** It conflicts with **agricultural and drinking water needs** in drought-prone regions.
- **Cyber Risks:** Large data centers become **high-value targets** for cyberattacks or physical sabotage.

How India Can Promote Data Center Growth?

- **Policy Support:** Support measures for data centers could include:

Policy Support for Data Centers

Tax Holiday
A 10-year exemption for new projects

Customs Duty Exemptions
Exemptions on imported equipment

GST Reduction
Lowering GST from 18% to 5%

PLI-like Schemes
Incentives similar to electronics manufacturing

- **Flexibility in Data Localization: Encourage, not mandate**, localization via incentives (e.g., tax breaks for firms storing data in India).
- **Infrastructure Development:** Provide **subsidized electricity tariffs** (like China's ultra-low rates) and allow direct power procurement from **DISCOMs or renewable sources** such as solar and wind.
  - **Mandate green data centers** with incentives for **liquid cooling & energy-efficient designs.**
- **Connectivity & Fiber Networks:** Expand **undersea cable stations**, build a **National Fiber Corridor**, and develop **5G-ready infrastructure** for edge data centers.
- **Land & Real Estate:** Set up dedicated **data center zones** in cooler cities **(Shimla, Dehradun, Chandigarh)** to reduce cooling costs and use PPP models for **land allocation near industrial hubs.**
- **Skill Development & R&D:** Promote **skill development and innovation** through a **National Data Center Academy** for training in **AI, cloud, and cybersecurity,** along with R&D grants for indigenous server and cooling technologies.

Conclusion

Despite contributing **20%** of global digital data, India lacks adequate data center capacity, limiting its digital potential. Bridging this gap is **essential for economic growth, job creation, data sovereignty, and global AI leadership**. Strategic investments, policy support, and sustainable infrastructure are critical for realizing India's digital aspirations.

> **Drishti Mains Question:**
>
> Discuss how data centre development in India can contribute to achieving the USD 5 trillion economy target.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only

(b) 1, 3 and 4 only

(c) 2, 4 and 5 only

(d) 1, 2, 3, 4 and 5

Ans: (b)

PDF Refernece URL: https://www.drishtiias.com/printpdf/need-for-local-data-centres