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(Research Unit)
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INDIA TO BE A CLOUD COMPUTING AND DATA CENTRE HUB

(Ministry of Electronics and Information Technology)

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INTRODUCTION

India is witnessing a transition from an emerging to a developed market economy, and digital is slated to play a key role in this journey. With over a billion mobile phones and more than 700 million internet subscribers, India has also witnessed exponential growth in digital commerce, digital entertainment and the use of social media. India's mobile data consumption is already the highest in the world and is constantly increasing. The size of the digital economy in India is estimated to grow from $ 200 billion in 2017-18 to a staggering $ 1 trillion by 2025.[1]

CLOUD COMPUTING AND DATA CENTRES

The size of the digital population in India and the growth trajectory of digital economy necessitates a strong growth of Data Centres. A **Data Centre is a dedicated secure space within a centralized location where computing and networking equipment is concentrated for the purpose of collecting, storing, processing, distributing or allowing access to large amounts of data**.

Cloud Service providers host their IT infrastructure in Data Centres to provide the Cloud Computing services to the end users. A cloud service provider is a third-party firm offering a cloud-based platform, infrastructure, application or storage service. Examples include Amazon Web Services, Microsoft Azure, Google Cloud Services, etc.

With a clear vision of the importance of Data Centres to India's digital ecosystem, Prime Minister Narendra Modi is committed to Make India a Global Data Centre hub.[2] Further, in the Union Budget 2022-23, Union Minister for Finance and Corporate Affairs, Smt. Nirmala Sitharaman proposed that the Data Centres (along with Energy Storage Systems) would be included in the harmonized list of infrastructure.

[1] https://www.meity.gov.in/writereaddata/files/Draft%20Data%20Centre%20Policy%20-%2003112020_v5.5.pdf

[2] https://pib.gov.in/PressReleasePage.aspx?PRID=1803551

During his visit to Microsoft's Hyderabad centre Union Minister of State for Electronics & Information Technology and Skill Development and Entrepreneurship Rajeev Chandrasekhar said that Data Centres are an important element of our Digital ecosystem that is soon going to be the best in the world. "We are conducting consultations with all stakeholders for a New National Data Centre Policy."

DATA CENTRES: A GLOBAL PERSPECTIVE[3]

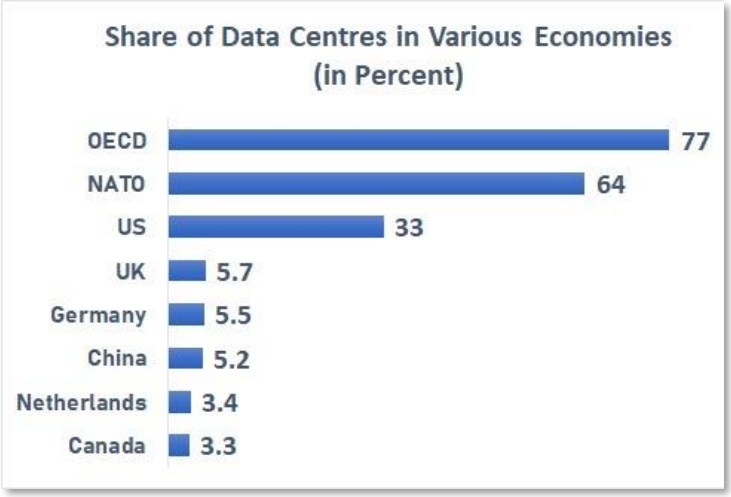
The United States, home to many of the world's leading data producing and data consuming firms (including Facebook, Amazon, Microsoft, and Google), has historically had far more data centres than any other market. In 2010, U.S. research firm IDC estimated that the annual amount of data produced would grow to 35 zettabytes by 2020, a level that was reached by 2018. In 2020, data creation was approximately 59 zettabytes. IDC now notes that by 2025, newly created data will be 175 zettabytes- a 146-fold increase in the 15-year period between 2010 and 2025. One industry observer noted that between 2018 and 2020, more data were created than in all of human history before 2018. **In valuation terms, the data processing and storage market is estimated to grow from $56 billion in 2020 to $90 billion by 2025**.

SHARE OF DATA CENTRES AMONG OTHER ECONOMIES

The significant rise of data generation and use across a variety of industries has led to a rise in demand for data servers and data centres. According to CloudScene data of 110 countries with available information, **as of January 2021 there were nearly 8,000 data centres globally**.

Among these countries, **six house a majority of data centres**:

- United States (33 percent of total),
- UK (5.7 percent),
- Germany (5.5 percent),
- China (5.2 percent),
- Canada (3.3 percent),
- Netherlands (3.4 percent).



[3] https://www.usitc.gov/publications/332/executive_briefings/ebot_data_centers_around_the_world.pdf

About 77 percent of the data centres are located in Organisation for Economic Co-operation and Development (OECD) member states, and approximately 64 percent are in North Atlantic Treaty Organization (NATO) countries.

FACTORS GOVERNING DEMAND FOR DATA CENTRES

- Demand for data centres differs by country, reflecting a variety of market forces and policies. For some jurisdictions, higher numbers of data centres may reflect demand from industry sectors.
- Government policies can direct the location of data centres in their jurisdictions with data localization measures. These measures, which legally mandate that certain (or all) data of individuals in their jurisdiction be held within that jurisdiction, can cover narrow classes of information (like health data) or much wider amounts of information. Russia, China, Turkey, Australia, France, Germany, and other countries have data localization requirements, though with wide variation in scope and enforcement.
- Other issues may be contributing to the rise of data centres in certain regions beyond their domestic needs. Five of the 10 countries with the greatest relative share of data centres as a proportion of their share of GDP are in Eastern Europe (Latvia, Moldova, Estonia, Bulgaria, and Ukraine). Several of these countries have limited cybersecurity enforcement resources but with access to multiple international markets (particularly the EU), which may be contributing to the concentration of data centres.

NEED AND VISION FOR A DATA-CENTRIC FUTURE FOR INDIA

Need for Data Centre infrastructure within the boundaries of the country is further necessitated by the **data localization provisions** of the proposed Data Protection Act and for **protection of the digital sovereignty** of the country in an increasingly connected world. Currently, as per various estimates, India has around 499 MW installed power capacity for Data Centres, which is projected to grow to 1007 MW by 2023.[4]

In this backdrop, the Ministry of Electronics & Information Technology proposed a draft Data Centre Policy in 2020 with the **vision of:**

- **Making India a Global Data Centre hub,**
- Promoting investment in the sector,
- Propelling digital economy growth,
- Enabling the provisioning of trusted hosting infrastructure, and
- Facilitating state of the art service delivery to citizens.

The detailed objectives of the Data Centre Policy 2020 can be found here.

[4] https://pib.gov.in/PressReleasePage.aspx?PRID=1801017

ENABLING A FAVOURABLE ECOSYSTEM FOR DATA CENTRES

As per the draft Data Centre Policy 2020, for the long-term growth of the Data Centre sector in the country, it is critical to create a congenial, competitive and sustainable operating environment for the businesses.

Some of the key policy thrust areas in this direction include:

1. Availability of uninterrupted, clean and cost-effective electricity for Data Centres remains as one of the most important considerations for the Data Centre sector.
2. MeitY to work with Department of Telecommunications (DoT) to facilitate robust and cost-effective connectivity backhaul.
3. **Data Centres to be declared as an Essential Service** under "The Essential Services Maintenance Act, 1968 (ESMA)"
4. Recognize Data Centres as a separate category under National Building Code
5. Setting-up of **Data Centre Economic Zones**
6. Promote indigenous technology development, research and capacity building

TRAI'S REGULATORY FRAMEWORK FOR A DATA ECONOMY[5]

The Telecom Regulatory Authority of India (TRAI) has released its recommendations on 'Regulatory Framework for Promoting Data Economy Through Establishment of Data Centres (DCs), Content Delivery Networks (CDNs), and Interconnect Exchanges (IXPs) in India on November 18, 2022.

The Authority recommended the following:

1. **Data Centre Incentivization Scheme** (DCIS) for establishing Data Centres (DCs) and **Data Centre Parks** (DC Parks)
2. **Data Centre specific portal** on National Single Window System (NSWS)
3. A national level **Data Centre Readiness Index** (DCRI) framework
4. **Data Centre Economic Zones** (DCEZs)
5. Certification standards of **green DCs** in India
6. A suggestive list of **DC related courses** at diploma, undergraduate and post-graduate level
7. A **statutory body Data Digitization and Monetization Council (DDMC)**
8. A data sharing and consent management framework
9. An overarching framework for ethical use of data

ROLE OF NATIONAL INFORMATICS CENTRE (NIC)[6]

With the increased expectations from citizens for online services and the number of e-Governance Projects being launched by the Government, the Data Centre requirements are growing exponentially. There is a continuous need to set up strategic infrastructure that

[5] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1877179
[6] https://www.nic.in/servicecontents/data-centre/

facilitates high availability, quick scalability, efficient management & optimized utilization of resources.

To address this ever-growing demand, **National Informatics Centre (NIC) has set up state-of-the-art National Data Centres** at **NIC Headquarters Delhi, Pune, Hyderabad and Bhubaneswar and 37 small Data Centres at various State Capitals** to provide services to the Government at all levels. NIC, under the Ministry of Electronics and Information Technology (MeitY), is the technology partner of the Government of India and was established in the year 1976 with the objective of providing technology-driven solutions to Central and State Governments. These Data Centres set up by NIC combine round-the-clock operations and management of systems with onsite skilled personnel. The National Data Centres form the core of the e-Governance infrastructure in India by providing services to various e-Governance initiatives undertaken by the Government of India.

- The first Data Centre was launched in **Hyderabad in 2008, followed by NDC Pune in 2010, NDC Delhi in 2011 and NDC Bhubaneshwar in 2018**.
- The foundation stone of the **first National Data Centre for the North Eastern Region (NEDC) was laid by Prime Minister Narendra Modi at Guwahati, Assam through video conferencing in February 2021**. It will have state-of-the-art network and Security Operating Centres, and the advanced facility to catalyze the digital empowerment of the region. The Network Operating Centre will monitor and manage the critical ICT infrastructure, ensuring 24×7 availability of services.

NIC launched the National Cloud Services in the year 2014 under the ***MeghRaj*** Government of India Cloud Initiative. NIC Cloud Services are being provided from multiple locations of National Data Centres at **Bhubaneswar, Delhi, Hyderabad and Pune**. In order to cater to the projects envisioned under Digital India Programme and growing requirements of existing Projects, over 18,000 Virtual Servers were provisioned and allocated to over 1100 Ministries/Departments for e-Governance Projects.[7]

OTHER DEVELOPMENTS[8]

MICROSOFT DATA CENTRES[9]

Microsoft announced its intent to establish its latest data centre region in Hyderabad, Telangana. This strategic investment is aligned with Microsoft's commitment to helping

[7] https://ts.nic.in/infrastructure/
[8] https://analyticsindiamag.com/the-rise-and-rise-of-data-centres-in-india/
[9] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1803551

customers thrive in a cloud and AI-enabled digital economy and will become part of the world's largest cloud infrastructure.

According to IDC, Microsoft data centre regions in India contributed $9.5B in revenue to the economy between 2016 and 2020. Beyond GDP impact, the IDC report estimated that **1.5 million jobs were added to the economy, including 169,000 new skilled IT jobs**.

The Hyderabad data centre region will be an addition to the existing network of three regions in India across Pune, Mumbai, and Chennai. It will offer the entire Microsoft portfolio across the cloud, data solutions, artificial intelligence (AI), productivity tools, and customer relationship management (CRM) with advanced data security, for enterprises, start-ups, developers, education, and government institutions.

To support customer needs for high availability and resiliency, Microsoft launched Azure Availability Zones in December 2021 in its Central India data centre region. This forms the most extensive network of data centres in the country, with disaster recovery provisions and coverage of seismic zones.

ANNEXURE: CLOUD SERVICE PROVIDERS IN INDIA

The following are the services providers:[10]

- Amazon Internet Services Pvt. Limited
- Bharat Sanchar Nigam Limited (BSNL)
- CtrlS Data Centres Limited
- Cyfuture India Private Limited
- ESDS Software solution Pvt. Limited
- Google Cloud India Pvt Ltd
- IBM India Private Limited
- ITI Limited
- Microsoft Corporation (India)
- Netmagic IT Services Private Limited
- Nxtra Data Limited
- Oracle India Pvt. Ltd
- Pi Datacentres Pvt. Ltd.
- RailTel Corporation of India Limited
- Reliance Corporate IT Park Limited
- Sify Technologies Limited
- Tata Communications Limited
- Webwerks India Pvt. Limited

REFERENCE

- Data Centre Policy 2020 (Draft for Discussion), MEITY
- Data Centers Around the World: A Quick Look, United States International Trade Commission
- TRAI releases recommendations on "Regulatory Framework for Promoting Data Economy Through Establishment of Data Centres, Content Delivery Networks, and Interconnect Exchanges in India" (PIB)

[10] https://www.meity.gov.in/content/gi-cloud-meghraj

FURTHER READING

- DATA CENTER POLICIES IN INDIA: A STATE-WISE COMPARISON
- PM is committed to Make India a Global Data Centre hub (PIB)
- In next two years 1.2 billion Indians will be using internet, says MoS MeitY Shri Rajeev Chandrasekhar (PIB)
- Data Centre Parks Policy soon for Private Firms to Leverage the Power of Data (PIB)
- Union Minister Dr Jitendra Singh dedicates to the nation, India's first national repository for life science data-'Indian Biological Data Center' (IBDC) at Faridabad, Haryana (PIB)
- India has become preeminent nation in using technology for governance and development, says MoS MeitY, Shri Rajeev Chandrashekar (PIB)
- India's data-centre space footprint may reach 20 million square feet by 2025 (ET)
- UP CM to inaugurate data centre project in Greater Noida on October 31 (HT)
- Blackstone launches data centre platform in asia starting from india (Mint)
- India on the cusp of a data center evolution; 45 data centres planned to come up by 2025-end (FE)

TWEETS:

- https://twitter.com/mygovindia/status/1363430764675616769?s=20&t=kcvm2QJHzLjdFs8yRBVt4A

AG/HP/RC/PPD/SS