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Recommendation and Inputs for 'Regulatory Framework for Promoting Data Economy Through Establishment of Data Centres, Content Delivery Networks, and Interconnect Exchanges in India'

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Submitted to : **Telecom Regulatory Authority of India**

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Recommendations:

1. **Background**. The recent exponential growth in the Digital transformation of the country which has been ushered in due to path braking policy directions promulgated by the Ministry have created an imperative and urgent requirement of large number of data centres. In order to support the revolutionary initiatives, it is most essential that matching infrastructure to facilitate efficient delivery of citizen centric services is available in the country. The recent surge in demand for Cloud services even from so far reluctant sectors has been made possible only due to the policy support provided by the MeitY. Hence, it is clearly evident that if the country has to achieve the intended end state of being a truly digital economy which is truly e-Governed, MeitY has to drive in the next phase of reforms for the Data Centre industry for not only supporting e-Governance initiative but also to create compatible infrastructure for Data residency provisions. A very key requirement towards this end is simplification of Governing Guidelines promulgated by BIS and incorporated by various State bodies in the building norms. We need to make the environment mindful of the fact that a data centre building cannot be treated as just another building it is a specialised infrastructure, delivering specialised high tech IT infrastructure services and it must be treated as such. Accordingly, the administrative bodies at the State and local level have to be provided with uniform policy guidelines for the data centre buildings and hence there is a need of incorporating an amendment and creating a separate code in the NBC2016.

   Along with the abovementioned, India is in the midst of an energy transition, with the aim to cover energy demand with renewable power while adjusting to the increasing fluctuations of a wind- and solar-driven electrical grid. As intermittent renewables penetrate further into the electricity generation mix, flexibility becomes increasingly valuable. The phase out of flexible supply and inadequate storage capacities add to the potential strain on the electrical grid. Hence, the generation, consumption, storage, and migration of energy will become crucial to balancing the energy grid of tomorrow.

   Digital Transformation of society over the next decade demands infrastructure, Data Services and Cloud services at the edge of the digital networks. Internet connectivity will connect more consumers and more devices, all of which produce increasingly data- and compute intensive workloads. The large and growing size of data centers make them particularly applicable as providers of energy flexibility, grid stability, and ancillary services. The rapid growth of cloud computing, data centers with skyrocketing energy consumption, and the accelerating penetration of renewable energy sources is creating both severe challenges and tremendous opportunities. Data centers as flexible energy operators could open up a unique opportunity to smooth out the significant fluctuation and uncertainty of renewable generation. While

Data Centres can suffice these requirements, powering Data Centres hinges on the challenges of electrical power Transmission and distribution within regions or cities. While alternative power source like renewable energy, developing fuel cells on different fuels like natural gas, hydrogen and propane (LPG) to power Data Centres to withstand the future power demand and reduce the emissions and noise impact.

According to the International Energy Agency (IEA), Data centers consumed approximately 270 terawatt hours (TWh) of electricity globally in 2019, or about 1% of total global power consumption. This is expected to rise as 5G, artificial intelligence (AI), and other enabling technologies unlock a host of new applications. Facing this development in a time where renewable energy is still scarce requiring data centers to explore and utilize power supply concepts that support the energy system of the future.

2. **Proposals.** Although, the draft document is quite comprehensive and takes into consideration a wide array of contemporary requirements. However, there are few specific concerns pertaining to Data Centre that merit consideration and appropriate incorporation in the policy being formulated. In addition, we have also reflected upon some other macro level concerns of the data centre industry, which need policy support from the Government. Some of the suggestions are given in succeeding paras, although this is not an exhaustive list but these are key immediate concerns which are facing the industry.

    a. **Green Power and Grid Connected Transfer.** Data Centres consume a very large amount of power hence, in order to promote Green energy, Data Centres should be permitted to generate captive green energy at any location in India feed it to the grid and draw it at the data centre location free of any charge.

    b. **Cheaper Power.** In order to support this vital industry, the state must consider providing power to data centres at a subsidised rate or at the cost of generation considering the vital nature of this infrastructure.

    c. **Power from Two Sources.** Availability of uninterrupted and reliable power from redundant sources is vital for the Data Centres functioning at the desired level of availability and efficiency. Hence, Govt must make this as a mandatory provision for the power companies to deliver.

    d. **Open access scheme.** The open-access solar policy can allow heavy power consumers (more than 1MW) to buy cheap power from any player, without being compelled to purchase power from the local utility monopoly which can benefit data

center operators which require immense un-interrupted power supply

e. **Data Centers as Energy Centers** Grid constraints, expensive storage solutions, and the phasing out of flexible fossil fuels all increase the value of energy flexibility. Co-locating large energy consumers like data centers with renewable assets aligns with the decentralized nature of the grid of the future rather than trying to mimic the characteristics of past "demand-first" energy systems. Following recommendation may be deliberated upon Following are the recommendations for promoting Data Centers as Energy Centers

- It is believed that direct integration of Data Centre Infrastructure with Energy assets (including renewable energy) can open great window of opportunity for all the industry players.
- Data Centers shall be deemed as Energy generators and distributors of their captive power.
- An alternative of Data Centre as an Energy Centre shall mitigate challenges such as intermittency, backup power, and cost, that need to be addressed while engaging with DISCOMs
- A city grid or a community grid shall not only solve the issues of harmonics, voltage sag, frequency variations and momentary outages (enough to trip expensive servers and computers), it will also promote Data center to generate an environmentally sustainable, reliable and stable power supply which can result in significant long term operational cost saving and improve equipment reliability
- On-site power generation allows data center operators to act independently of the existing electrical infrastructure, while operating independently of any changes in demand to that same infrastructure. Reducing the dependence on the DISCOM electricity grid can also help to increase the uptime of a data center
- The Domestic Data Centres faces lack of level playing field vis-à-vis competing International Data Centre Players. Since the Indian Data Centre business needs heavy immovable asset investments, the sectors suffer disability on account of high cost of finance, inadequate availability of economic and quality power, Research and Development and inadequacies in skill development. The proposed regulatory framework shall focus to position India as a global hub of Data Centre by encouraging and driving capabilities in the country for promoting growth of Data Centres and creating an enabling environment for the industry to compete globally
    1. It is proposed that the policy framework shall introduce The Data Centre Service Link Incentive. The scheme would provision an incentive of 5% to 7% on incremental revenue (over a base year) of individual Indian Data Centers for a period of 5 years subsequent to a defined base year

2. The scheme shall be available to Indian Data Centres through an application process for initially 6 months which may be extended. The scheme would be avail by International Data Centers Players, provided they have a 40% partnership stake with Indian IT (STPI) or Data Centre Companies. This incentive scheme will boost Indian and investment from International Data Centre and allied industries.
3. The Scheme will be implemented through a SPV under TRAI – a Nodal Agency which shall act as a Project Management Agency (PMA) and be responsible for providing secretarial, managerial and implementation support and carrying out other responsibilities as assigned by TRAI from time to time.

f. **Land & Building** Land shall be provided at a subsidized cost as decided by CCITI and concerned ministers. Subsidy on Lease Rentals for a period of 3 years will also be provided. Up to 50% rebate shall be given on building fees as decided by CCITI

g. **Single Window Clearance.** In order to provide the required push to the data centre industry it is suggested that there should be a single window clearance mechanism institutionalised for all regulatory clearances required to be taken for construction of a data centre building.

h. **Uniform Standards and Procedures for Clearances.** Considering the fact that various statutory clearances required for data centres are under the purview of the State administration hence, the Central Govt must pass uniform directions and incorporate standard procedures to be followed by all state and local bodies for granting clearance to the data centres.

i. **Parking Lots.** The mandatory parking slots that need to be provisioned for buildings need to be specifically reworked for Data centre buildings as most of this infrastructure requires very less number of people to operate and manage on a daily basis hence, leaving large areas earmarked for parking will be wasteful and would have adverse economic impact on the viability of these initiatives. It is suggested that 1 car parking for 400Sq meter of area should be the norm.

j. **Stacking of Generators.** Availability of adequate redundant power source as captive source in the form of DGs is essential to ensure the desired uptime and continuity of services. Hence, a large number of DG sets of very high capacity are required in each data centre. Hence, in order to make optimum utilisation of space, these DGs should be permitted to be stacked on top of each other. Fuel should be provided at a price lower than the market rates to players in the Data Centres business.

k. **Slab to Slab Height.** Considering the specialised nature of building and the infrastructure, it is recommended that the Data Centre building construction should be permitted with 6 Meters of slab to slab height so as to accommodate the required IT and support infrastructure appropriately.

l. **Load Bearing.** The data centre building houses critical IT infrastructure in controlled environment and the load bearing capacity of the floor should be at least 1500 Kg/ Sq M to enable failsafe functionality.

m. **FSI.** The specialised nature of the Data Centre buildings demands that the FSI permitted should be upto Four (04). Thus, making the infra optimum and viable.

n. **Customs Duty/ Excise/ GST Exemptions.** In order to support this vital infrastructure and be competitive against the global competition so that the vital data of the country remains with the Indian companies, Govt must consider providing certain Tax/ duty exemptions to this industry.
Data Centre firms are exempt from the purview of the State Pollution Control Act, except in respect of IT parks/IT SEZ campuses with built up area over 20,000 sq.mt., special permissions need to be taken from SEIAA under MoEF.

Data Centre firms should be exempt from the purview of statutory power cuts

Data Centre firms are exempt from inspections under the following Acts and the Rules framed there under, barring inspections arising out of specific complaints. These units are permitted to file self-certificates, in the prescribed formats:

The Factories Act, 1948
The Maternity Benefit Act, 1961
The State Shops & Establishments Act, 1988
The Contract Labour (Regulation & Abolition) Act,1970

The Payment of Wages Act, 1936
The Minimum Wages Act, 1948
The Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959
General permission for three shift operations with women working in the night.
DC Firms are declared as essential service under TS Essential Services Maintenance Act

Government should provide 50% reimbursement of SGST for data centers. That includes the purchase of raw materials and equipment for a period of three years from the date of approval of the project.

SGST of 50% should also be reimbursed on cloud-based services provided

A 25% discount or as appropriate may be offered on the circle rate on land taken from government institutions for the development of data center parks and units.

o. **Infrastructure Status.** Although, this has been included in the draft document, reiterating this to emphasis its continued existence in the final policy document as well. Considering the fact that adequate capacity and appropriate data centres are prerequisite infrastructure for delivery of any digital initiative and also to ensure continuity of essential services. It has been clearly established during this pandemic that Data Centres are essential and vital infrastructure for continuity of essential services for the citizens hence, this industry and these buildings should be covered under vital Infrastructure status

p. **Employment Generation** additional benefits to be extended by Government for skilled employment generation; it can exclude jobs in infrastructure management. Special incentives for academia initiatives taken by Datacenter players as datacentre is a unique kind of business and requires specialised skills not found in general academia courses.

q. **R & D** grants to be provided for R&D to DC companies in tune of 10% of overall R&D expenses of the company's operations or 2% of annual turnover of company's operations whichever is lesser to promote make in India software products and solutions. The cost of filing and processing a patent application to be reimbursed to data centre.

r. **Internet** Data Centre shall be provided 25% reimbursement on internet charges for the first three years of operation

s. **Reserve Data Bank** Data is an asset (Asset needs to be liquidated for realization of Money) But now Data is Money. Crypto Currency is where natural evolution of Money has reached starting from the barter system – Barter-Leather-Metal-Paper-Plastic-Online(Data)-Cryptocurrency. RBI governs Money aspects in country - Strong need to think on creating a RDI (Reserve Data Bank) to govern all data related aspects in the nation –Data Bank is the Data Centre

These are some of the key concerns, we believe, that need to be addressed earnestly to deliver tangible support to this critical industry.

Responses to the questions:

Q.1: What are the growth prospects for Data Centres in India? What are the economic/financial/infrastructure/other challenges being faced for setting up a Data Centre business in the country?

- India generates 20 % of the world's data whereas only 2% of the Global storage capacity is in India.
- 375 MW of DC capacity in India is expected to add another 750 MW by 2025.
- Policy constraints in terms of local laws pertaining to clearances, no specific provisions for data centre building laws.
- High Opex – Power tariff.
- Infrastructure of Power and connectivity

Q.2: What measures are required for accelerating growth of Data Centres in India?

- Infrastructure status to the industry.
- Tariff and Non-Tariff policy support from the Govt.
- Protection and support to domestic players.

Q.3: How Data Centre operators and global players can be incentivized for attracting potential investments in India?

- Tariff based incentives and policy stability and predictability.
- Capitalise on availability and economy of human resources by capacity building.

Q.4: What initiatives, as compared to that of other Asia Pacific countries, are required to be undertaken in India for facilitating ease of doing business (EoDB) and promoting Data Centres?

- Stable Democratic Govt with Industry friendly and predictable policy regime.
- Single widow clearance system for all FDI proposals in DC Industry.

Q.5: What specific incentive measures should be implemented by the Central and/or the State Governments to expand the Data Centre market to meet the growth demand of Tier-2 and Tier-3 cities and least focused regions? Is there a need of special incentives for establishment of Data Centres and disaster recovery sites in Tier-2 and Tier-3 cities in India? Do justify your answer with detailed comments.

- Development of Power and Communication infra in selected Tier 2 and 3 cities.
- Tax incentives and subsidies.
- Capacity building of local youth.
- Special policy provisions of land, building and labour laws

Q.6: Will creation of Data Centre Parks/Data Centre Special Economic Zones provide the necessary ecosystem for promoting setting up of more Data Centres in India? What challenges are anticipated/observed in setting

up of new Data Parks/zones? What facilities/additional incentives should be provided at these parks/zones? Do give justification.

- Data Centre parks and zones will capitalise on the economies of scale but will become a major VA/VP from security perspective.
- Incentives given to DC Park developers should also be available to the DC companies establishing DCs in these parks.

Q.7: What should be the draft broad guidelines to be issued for Data Centre buildings, so as to facilitate specialized construction and safety approvals?

- A special Building code needs to be created for DC buildings to cater for the specialised requirements of Data Centres.
- NBC2016 to be amended in consultation with DC operators.

Q.8: Is there a need to develop India-specific building standards for construction of Data Centres operating in India? If yes, which body should be entrusted with the task? Do provide detailed justification in this regard.

- Yes, India specific building codes to be developed by BIS.

Q.9: Till India-specific standards are announced, what standards should be followed as an interim measure?

- Industry consultation be carried out by BIS for this specific requirement.

Q.10: Should there be a standard-based certification framework for the Data Centres? If yes, what body should be entrusted with the task?

- This framework already exists and in case of Indian Standards, BIS may be tasked for this.

Q.11: Should incentives to Data Centres be linked to the certification framework?

- No, It should be linked to the Govts objective fulfilment

Q.12: Are there any specific aspects of the disaster recovery standard in respect of Data Centres that needs to be addressed? If so, then provide complete details with justification.

- No, established industry practice.

Q.13: Whether trusted source procurement should be mandated for Data Centre equipment? Whether Data Centres should be mandated to have security certifications based on third-party Audits? Which body should be entrusted with the task? Should security certifications be linked to incentives? If so, please give details with justifications.

- Yes, it should be ensured and there is a need of certification on this account. STQC may be tasked for such audits.

Q.14: What regulatory or other limitations are the Data Centre companies facing with regards to the availability of captive fiber optic cable connectivity, and how is it impacting the Data Centre deployment in the hinterland? How can the rolling out of captive high-quality fiber networks be incentivized, specifically for providing connectivity to the upcoming Data Centres/data parks? Do justify.

- High capital cost and RoW charges are the challenges. Fiscal incentive may be provided.

Q.15: What are the necessary measures required for providing alternative fiber access (like dark fiber) to the Data Centre operators? Whether captive use of dark fiber for DCs should be allowed? If so, please justify.

- Yes captive dark fiber should be allowed and fiscal incentive should be provided for this to DC operators.

Q.16: What are the challenges faced while accessing international connectivity through cable landing stations? What measures, including incentive provisions, be taken for improving the reliable connectivity to CLS?

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Q.17: Is the extant situation of power supply sufficient to meet the present and futuristic requirements for Data Centres in India? What are the major challenges faced by Data Centre Industry in establishment of Data Centres in naturally cooled regions of India? What are the impediments in and suggested nonconventional measures for ensuring continuous availability of power to companies interested in establishing Data Centres in the country? What incentivization policy measures can be offered to meet electricity requirements for Data Centres?

- No, power supply situation is not adequate.
- Availability of Infra, Resources and Govt Policy support are the challenges in naturally cooled regions besides Seismic Zones constraints.
- Green power and facility of power exchange drawl with only grid charges be allowed.
- Fiscal as well as Non-Fiscal measures need to be taken. To incentivise the DC operators from Power perspective,

Q.18: Should certification for green Data Centres be introduced in India? What should be the requirement, and which body may look after the work of deciding norms and issuing certificates?

- Yes, Green data Centres concept should be introduced.
- BEE or EESL may be entrusted with this task.

Q.19: Are there any challenges/restrictions imposed by the States/DISCOMs to buy renewable energy? Please elaborate. Please suggest measures to incentivize green Data Centres in India?

- Fiscal and Non Fiscal support from the Govt like Open access, Banking facility etc

Q.20: What supportive mechanisms can be provided to Data Centre backup power generators?

- FAR relaxation for housing the DGs.
- Multi level DG Stacking to be permitted

Q.21: Availability of Water is essential for cooling of Data Centres, how the requirement can be met for continuous availability of water to the Data Centres? Are there any alternate solutions? Please elaborate.

- Uninterrupted water supply and water treatment plant as common facility for DC to be provided by State Govts.

Q.22: Whether the existing capacity building framework for vocational or other forms of training sufficient to upskill the young and skilled workforce in India for sustenance of Data Centre operations? What dovetailing

measures for academia and industry are suggested to improve the existing capacity building framework, and align it with the emerging technologies to upskill the workforce in India?

- Skill India and other such initiatives should align towards capacity building for DC management and operations.
- Industry should be involved in this for creating the appropriate Job ready content and format.

Q.23: Is non-uniformity in state policies affecting the pan-India growth and promotion of Data Centre industry? Is there a need for 73 promulgation of a unified Data Centre policy in India, which acts as an overarching framework for setting Data Centres across India? What institutional mechanisms can be put in place to ensure smooth coordination between Centre and States for facilitating DC business? Do support your answers with detailed justification.

- There should be one Policy applicable to all States and it should be promulgated by MeiTY.
- An autonomous body under Ministry of IT be established to coordinate between centre and States.

Q.24: What practical issues merit consideration under Centre-State coordination to implement measures for pan-India single-window clearance for Data Centres?

- Coordination of matter which are in different lists like land and labour laws.
- Mechanism of delivering Fiscal and non-fiscal incentives.

Q.25: Is there a need for Data Centre Infrastructure Management System (DCIM) for Data Centres in India? What policy measures can be put in place to incentivize Data Centre players to adopt the futuristic technologies? Elaborate with justification.

- Indigenously developed DCIM should be mandatory for DC management.
- DCIM should be considered in the list of domestic components eligible while calculating the percentage of domestic inputs for concerned RFPs.

Q.26: What institutional mechanism needs to be put in place to ensure digitization of hard document within a defined timeframe?

- Incentive schemes and score cards must be maintained for the digitisation of each department.

Q.27: Would there be any security/privacy issues associated with data monetization? What further measures can be taken to boost data monetization in the country?

- Privacy and security concerns would definitely be there, However, anonymous data should only be allowed for monetization purpose.
- Govt should use the insights from data to initiate policy measures which are based on specific Intelligence derived from specific data.