CONSULTATION PAPER ON "REGULATORY FRAMEWORK FOR PROMOTING DATA ECONOMY THROUGH ESTABLISHMENT OF DATA CENTRES, CONTENT DELIVERY NETWORKS, AND INTERCONNECT EXCHANGES IN INDIA". BY P.M.DUTTA

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?

[A1] The emerging "Digital India" is awaking from the incubation of Internet Of Things (IOT), Internet as a Service (IaaS), Data Interchange, CDN, VoIP, Video and many-many more in the list of digitalised NEW INDIA. To support this magnanimous whilst tumultuous need for internet the current infrastructure will be need restructuring on a new plinth of integrated Data Centre's in a diverse sociological, cultural and topographical and economical backdrop in digital India.

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

[A2] India can no longer succumb to red tape and hindering hierarchy. India will now have to take chivalrous action to cruise ahead in the techno-commercially viable solutions with a deep concern to security measures, future scalability, force-majeure manageability and recovery blue print that meets and exceeds the International standards. The framework is growing, the global acceptances are awaited.

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

[A3] The new era of Data economy as mentioned in #A2 and establish the highest competence to showcase the world on India's deep concern and ease in terms of political and economical stability, infrastructure availability and low service costs. Same has brought off-late China as alow cost manufacturing hub and previously Japan as low cost effective automotive industry.

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?

[A4] The new set of Data Centres should be robust in terms of security, disaster recovers, scalability resilient to emerging technologies like 5G and more. DC's should be seismic resistant, state-of-the-art^{++} and at-par with global trends. A single window concept will ensure effective and expedited service delivery.

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.

[A5] Tier-2 and Tier-3 cities are the major chunk of the Indian population. The deprived lot too. Strategically the blue-print of the new era should focus on voice-and-data to middle class and to the developing class. Core technology usage in power, agriculture, epidemics weather forecast, transport and perennial knowledge transfer on strategies of life & living etc. This should be a continuous process. Special Tax Holiday can be considered in this domain of investments.

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.

[A6] The global players have already gone ahead in this business domain more than 15 years back. Amazon Web Services (AWS) began offering IT infrastructure services to businesses at 2006, Wallmart online in 2000 to mention a few. India is a late starter, SEZ are in place, stringent time bound plan has to be rolled out immediately on the closure of this consultation paper and its excerpts . There will be challenges during this journey e.g. red tape-ism, budget sanction, acquisition, tendering, construction, roll out, setup of infrastructure etc. The entire project has to be managed as [1] Advance /preludes activities [2] lateral activities and [3] Serial activities. The entire project management should have a project management methodology e.g. PERT, CPM monitored twice a day (if not hourly) with rectification and high level of involvement of the project managers to meet the targeted deadlines.

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?

[A7] [1] Data Safety & GDPR compliance [2] Integrity to the nation [3] force-majeure manageability [4] Infrastructure e.g. uninterrupted green power, free land, transport network, seismic free [5] Scope for residential complex [6] Airport/s [7] Stable local Government with collaborative and developing attitude and abundance of unskilled to semiskilled labour.

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.

[A8] This should not be a show stopper. Only the ground floor reception may reflect the rich heritage and culture of India. The demography requirements has to be adhered to.

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

[A9] India has produced world architects with global vision. These architects be consulted to draw up a draft plan that is cost effective, versatile with materials that can be wholly redeployed in the final construction.

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

[A10] There is no doubt about it. Internationally accepted accreditations like :

1. Telecommunication Infrastructure Standard for Data Centers (TIS)
2. ISO 9000, 14000, 27001
3. ANSI/TIA

Are a mandate.

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

[A11] Basic certifications to meet global requirements will not attract any incentives. However, MEITy empanelment to cater to domestic clients may get some incentives.

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.

[A12] DR is a closest replica of DC. DR should have the same level of certifications as DC.

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.

[A13] The term "trusted" is very relative therefore cannot be considered as absolute in terms of standards. A mix of private & public technical team/s with commercial team/s in tandem will float an unbiased global tender to choose the right vendor/s to supply the equipment's. The above expert team will explicitly mention the certifications in parlance to international standards. The party which comply to the technical and commercial terms and qualification criteria will be considered. The above (mentioned) appointed technical & commercial team in tandem alongwith the supplier/s will be entrusted to execute the project under the apex body of the appointed technical & commercial team. On completion of tasks a separate auditing team will audit and certify the quality of service. The process should be predefined to meet the guidelines within the preset timelines.

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.

[A14] India has experienced / experience of such hurdles in developing, deploying surface railway networks, tube rails, roadways expansion and many other public network expansion. This type of laying / rolling / deep earth conduit should not pose a problem now. We must understand that it is all for the betterment of our motherland.

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.

[A15] [1] Deep Earth Conduit [2] Wireless (with climate interference leading to signal loss) in tandem.

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?

[A16] Primarily [1] Obsolete infrastructure [2] Limited resources [3] Mismatch of handshaking protocols [4] Non availability of seamless transmission carriers. The CLS should be thoroughly reviewed and revamped to meet the international standards.

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 non-conventional 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?

[A17] Currently clean & green power shortage is eminent in various parts of India including the NCR. Naturally cooled regions has its own disadvantages too. The regions should be reviewed in totality to classified on the perspective of suitability.

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?

[A18] Green DC is a globally accepted phenomena to keep life rolling on the earth. I suggest Ministry of Environment, Forest and Climate Change with IGBC will guide us on acting as an apex and certifying body.

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?

[A19] Using clean green power has no restrictions, on the contrary is encouraged by States and DISCOM's.

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

[A20] [1] Extensive use of Indian solar panels [2] Wind power [3] Allow to simultaneously draw power from multiple power substations distributing clean green power. [4] Reduced tariff on power consumed [5] Free audit of electrical equipment's [6] BIS marked or similar device procurement be made a mandate.

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.

[A21] [1] Rainwater harvesting [2] Sea/Ocean water canals covered with solar panels [3] Reusage of water [4] using Glycol based or similar coolant [5] Extensive plantations to keep the surroundings cool and attract rain clouds [6] Setting up Highly energy efficient water treatment and colling plants.

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?

[A22] India already has several vocational training institutes, in near further more has to be augmented focussed on the need for manpower in the upcoming DC, CDN. DN and IE. Existing vocational training institutes should be revamped in this line to add need-based vocational courses.

Q.23: Is non-uniformity in state policies affecting the pan-India growth and promotion of Data Centre industry? Is there a need for 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.

[A23] The effort to setup DC, CDN. DN and IE cannot be made to a success with state / central Government working in silos. The is a joint effort for our National Interest. National Data Centre Policy 2020, released by MeitY is the guideline. An apex body be formed to mitigate the issues / concerns between Central / State Governments and successfully roll out the projected activities.

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

[A24] There should be a fair predefined credit sharing guideline to create a win-win situation for Central / State Governments. Above all we must always rise up to the occasion of National Interest.

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.

[A25] It will very imprudent to manage DC's manually, semi-automatic or automatic modes. The vastness and intricacy involved can only be managed by Data Centre Infrastructure Management System (DCIM), a wholly AI based managed will be the reality. An integrated interaction ERM AI/VR,M2M control mechanism is the need.

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

[**A26] [1] [1] Every organisation has to submit their commitment to complete digitization [2] Only digitally signed documents will be accepted by the statutory bodies, returns [3] Auditors will certify in their reposts on the status of digitization in the organizations. [4] Organizations has to submit digitally signed statements on the count of digitized reports.**

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

[A27] There should be stringent laid down policies and practices security/privacy, encryption, retrieval, archiving and purge procedures.

Q.28: What long term policy measures are required to facilitate growth of CDN industry in India?

[A28] Refer A27.

Q.29: Whether the absence of regulatory framework for CDNs is affecting the growth of CDN in India and creating a non-level-playing field between CDN players and telecom service providers?

[A29] Every CDN service provider has its own procedure and practices and often one or more CDN service providers conflict with each other interests, revenue sharing, performances etc. leading to an overall fiasco and tarnished image in the international scenario. Therefore, it is necessary to set up a level playing well grounded framework to harmonize the disruptive situation.

Q.30: If answer to either of the above question is yes, is there a need to regulate the CDN industry? What type of Governance structure should be prescribed? Do elucidate your views with justification.

[A30] Refer A29.

Q.31: In case a registration/licensing framework is to be prescribed, what should be the terms and conditions for such framework?

[A31] [1] CDN services should be separated from the parent company as a separate SBU under the parent company [2] Conflicts and interest should be settled amicably without any biased intentions.

Q.32: What are the challenges in terms of cost for growth of CDN? What are the suggestions for offsetting such costs to CDN providers?

[A32] CDN services being a SBU under the parent company can easily overcome the anticipated issues.

Q.33: Do you think CDN growth is impacted due to location constraints? What are the relevant measures required to be taken to mitigate these constraints and facilitate expansion of ecosystem of Digital communication infrastructure and services comprising various stakeholders, including CDN service providers, Data Centre operators, and Interconnect Exchange providers expansion in various Tier-2 cities?

[A33] The locational impacts were significant before, however with the extensive growth infrastructure CDN constraints has improved in TIER-2 cities and expected to become at-par with the TIER-1 cities in near future.

Q.34: What measures can be taken for improving infrastructure for connectivity between CDNs and ISPs, especially those operating on a regional basis?

[A34] Multiple Integration with ISP's far and near with low latency will improve the CDN performance and accessibility.

Q.35: Is there a need to incentivize the CDN industry to redirect private investments into the sector? What incentives are suggested to promote the development of the CDN industry in India?

[A35] ROI on CDN will take some time to make the overall proposition dim from the revenue perspective. During this interim period public private participation will definitely improve and help in growth of CDN from nascent to maturity.

Q.36: How can TSPs/ISPs be incentivized to provide CDN services? Please elucidate your views.

[A36] The high investment cost in setting up of CDN infrastructure needs some incentivisation. The direct incentives can TAX holidaying, complete tax relief on capital investments, tariff relief on power and associated investments.

Q.37: Are there any other issues that are hampering the development of CDN Industry in India? If there are suggestions for the growth of CDNs in India, the same may be brought out with complete details.

[A37] the dwindling nature of Indian economic conditions in the covid era, falling of GDP has brought down the industry requirements and cutting of expenses from all sectors. The growth of CDN Industry was affected to a great extent.

Q.38: Do you think that presently there is lack of clear regulatory framework/guidelines for establishing/operating Interconnect Exchanges in India?

[A38] Same as A29.

Q.39: What policy measures are required to promote setting up of more Internet Exchange Points (IXPs) in India? What measures are suggested to encourage competition in the IXP market?

[A39] IXP will definitely improve performance and lower the costs of operations. India being a fast developing technological and economical country will need more IXP in the near future to manage this phenomenal growth at the most diverse locations of the county. The growth is accelerated further by covering the entry cost – by giving tax holidays to emerging IXP's, leasing out infrastructure, developing skilled personnel's, developing peripheral infrastructures and addressing to the core issues of the IXP's.

Q.40: Whether there is a need for separate light-touch licensing framework for operating IXPs in India? If yes, what should be the terms and conditions of suggested framework? Do justify your answer.

[A40] As mentioned in A29, A39 the need for single window licensing framework with infrastructure support, integration framework of the already existing IXP's to the emerging one's is a sensible and need of the time.

Q.41: What business models are suitable for IXPs in India? Please elaborate and provide detailed justifications for your answer.

[A41] Managing of Infrastructure and resources required by the existing and new IXP's by a fully functional apex body to the address the issues of concern in a quick and lucrative means is the need at this critical juncture.

Q.42: Whether TSPs/ISPs should be mandated to interconnect at IXPs that exist in an LSA? Do justify your response.

[A42] This has been already consulted in A39.

Q.43: Is there a need for setting up IXP in every state in India? What support Govt. can provide to encourage setting up new IXPs in the states/Tier-2 locations where no IXPs exist presently?

[A43] With the technological advancement's, demography is not a constraint any more. Revenue is the concern. A list of need based states/Tier-2 cities need to be prepared and urge to develop IXP's can be considered. It is not necessary to develop in an already concentrated / saturated locations, but to spread to new / explored viable locations.

Q.44: Whether leased line costs to connect an existing or new IXP is a barrier for ISPs? If yes, what is the suggested way out? What are other limitations for ISPs to connect to IXPs? What are the suggestions to overcome them?

[A44] In the current situation it is no longer a barrier. The infrastructure needs effectively managed towards harnessing to the brim of its potential.

Q.45: Is the high cost of AS number allocation an impediment for small ISPs to connect to IX? If yes, what is the suggested way out?

[A45] Review of tariff in view of the recent developments will bring down the cost in the parlance of tremendous growth potential and revenue generating capability.

Q.46: What other policy measures are suggested to encourage investment for establishing more number of IXPs? Any other issue relevant with IXP growth may be mentioned.

[A46] Same as in the consultation of A39, A45.

Q.47: How can the TSPs empower their subscribers with enhanced control over their data and ensure secure portability of trusted data between TSPs and other institutions? Provide comments along with detailed justification.

[A47] Agree with clause #5.39 of this consultation paper.

Q.48: What is the degree of feasibility of implementing DEPA based consent framework structure amongst TSPs for sharing of KYC data between TSPs based on subscriber's consent?

[A48] Data Empowerment and Protection Architecture (DEPA) proposed connectivity via open API's seem to be a feasible approach. Secured and preserved framework will allow significant manageability to the subscribers on their own data.

Q.49: Are there any other issues related to data ethics that require policy/regulatory intervention apart from the issues that have already been dealt with, in TRAI's recommendations on the issue of 'Privacy, Security and ownership of the Data in the Telecom Sector' dated 16th July 2018 and the draft PDP Bill? Provide full details.

[A49] Review and inclusion of GDPR guidelines/norms/framework has to be augmented in the parlance of Indian context with view to global practices.

Q.50: Stakeholders may also provide comments with detailed justifications on other relevant issues, if any.

[A50] As mentioned in clause A1 to A49.

P. M. Dutta (Senior Manager – IT) Balmer Lawrie & Co. Ltd.