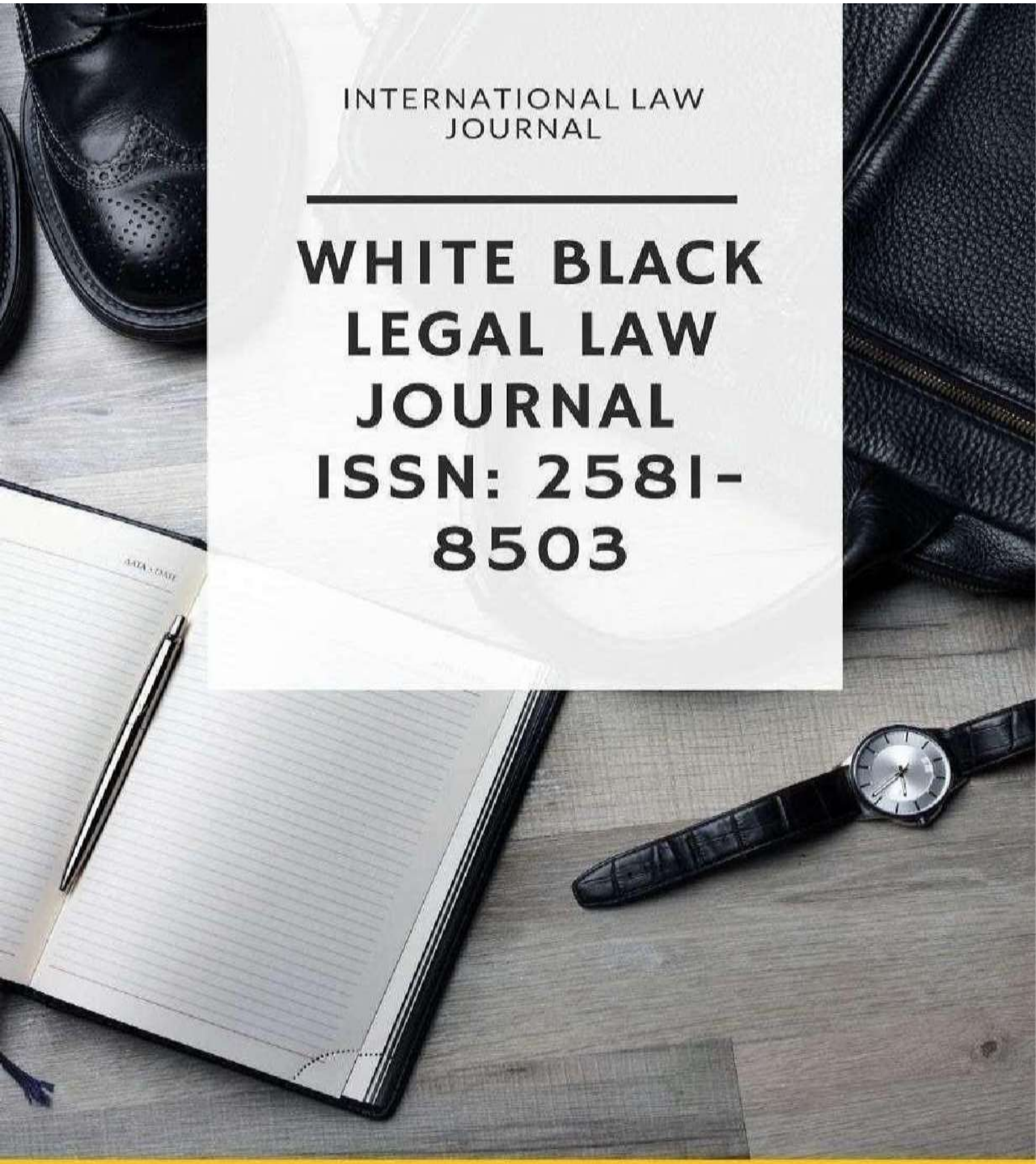

INTERNATIONAL LAW JOURNAL

WHITE BLACK LEGAL LAW JOURNAL

ISSN: 2581-8503

Peer - Reviewed & Refereed Journal

The Law Journal strives to provide a platform for discussion of International as well as National Developments in the Field of Law.

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WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal providededicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

TECHNOLOGICAL WATERSHED: UNVEILING ENVIRONMENTAL PERILS OF DATA CENTRE POLICY

AUTHORED BY - SUMEDHA M & HITESH M

I. INTRODUCTION

With the advent of the cognitive revolution, humans became capable of physically manifesting all that they could imagine. From looking up to clouds in the sky, we as a species have been able to harness the power of imagined realities by creating systems powerful enough to perform computations beyond one's imaginations within the Internet of Things. Thus was the dawn of cloud computing.

Cloud is a vast compilation of computing resources that provide a platform through integral connectivity for activities that take place in the online realm, think of it as a platform that enables users to interact with the vast digital world. It is the neural network that is formed by connecting the various components of hardware in the form of IaaS, Infrastructure as a Service in order to facilitate SaaS, Software as a Service that is employed to virtualize a world within the web. It includes all the infrastructure that make an online activity possible, encompassing everything from a singular optic fibre cable to entire data centres and all that goes into running it.

Cloud computing data centres were previously localized in enterprise specific locations, catering only to the limited services provided by that enterprise. These were limited only by their enterprise specific capabilities. Subsequently, data centres began functioning on a centralized basis with a larger capacity to function owing to state of the art infrastructure. These computing centres were able to provide varied gradations of services catering to subscription-based availability of utilizing the cloud. This was a major breakthrough for the IT industry worldwide as it allowed for large scale computation without having to worry about the infrastructure that came along. The five giants of cloud computation are AWS, Google, Oracle, Microsoft and IBM, who hyper scaled almost instantaneously. That was the advent of the ecological watershed left behind by the cloud.

II. DAWN OF DATA CENTRES IN INDIA

With India attempting to enhance its prospects of integrating into the world economy, its policies usher it towards becoming the world capital in data centres. 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.[1] The bloom of hyperscale data centres have already taken its place in the world of Information Technology Enabled Services (ITES), making it a crucial juncture for India to enact a regulatory policy that is lucrative enough to invite investors and companies while making sure that the environmental interests of the nation are not lost in translation.

III. DATA CENTRE POLICY 2020

The Draft of Data Centre Policy 2020 by the Ministry of Electronics & Information Technology (MeitY)[2] aims to provide a comprehensive regulatory framework for the establishment and functioning of data centres in India whilst paving way for business-friendly environment and creating an ideal environment for the industry to grow towards hyper scaling. 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.[3] Indian economy has tremendous potential that is yet to be harnessed in terms to creating a digital economy. It is perfectly situated to be a cradle for data centre markets owning to its large population that contributes to a significant part of the worldwide digital presence and the strategic geographical location with cost effective submarine and optic cables along with subsidized electricity. This proposed Draft aims to cement India as a global hotspot for state-of-the-art data centres by simplifying the procedures for establishment, promoting ease of doing business, paving the way for world class infrastructure to be constructed, creating favourable ecosystem for data centres to function harmoniously, all while keeping the economic interests of the country in mind. However, in the process of making the path free of hurdles, the policy has failed to fathom the ecological concerns that the unhinged prioritisation of data centres will bring about. The policy has adequately addressed the elements that need to be enhanced in order to accommodate the growing demand of data centres.

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[1] Ministry of Electronics and Information Technology, *India to be a cloud computing and data centre hub*, Press Information Bureau, (Dec. 08, 2022) https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/dec/doc2022128141601.pdf

[2] Ministry of Electronics & Information Technology, https://www.meity.gov.in/writereaddata/ files/Draft%20Data%20Centre%20Policy%20-%2003112020_v5.5.pdf (last visited on Sep. 19, 2023)

[3] *Id.*

However, there has been a gross disregard towards the harm that will befall the sensitive environment that has already been made fragile in its ongoing encounter with unprecedented scale of development.

IV. ECOLOGICAL CONCERNS OVERLOOKED BY THE DRAFT POLICY

4.1 Thirsty Clouds

The processing units that perform cloud computing are perpetually functioning, which naturally heats up in its due course. It is a delicate latticework of redundancies. Not only do the current systems need to be kept in ambient temperatures, but also the backups need to be prepared to take over at the slightest of lapses. Advanced data centres are able to employ computer room air conditioners (CRAC's) or computer room air handlers (CRAH's), but are energy intensive. Conventionally, data centres use evaporative cooling which involves allowing the water to evaporate into the air surrounding the cloud processing units. Evaporative cooling is both energy saving and cost effective which is why data centre handlers vastly prefer the latter. In 2019 alone, Google requested, or was granted, more than 2.3 billion gallons of water for data centres in three different states, according to public records posted online and legal filings.[4] Growing data centres may be a sign of growing digital infrastructure in India. However, it also will compound India's water woes. The data centres in future would need billions of litres of water in a country which houses 17% of the world's population and has just 4% of the world's freshwater reserves.[5]

4.2 Energy consumption and allied emissions.

In India, power is generated from conventional (Thermal, Nuclear & Hydro) and renewable sources (Wind, Solar, Biomass, etc.). However, Major production of electricity is achieved through coal a thermal power plant which is around 75% of the total power generation.[6] India's Central Electricity authority estimates that 1 million kWh of power produced from coal generates 975 tonnes of carbon

[4] Nikitha Sattiraju, *The Secret Cost of Google's Data Centres: Billions of Gallons of Water to Cool Servers*, TIME, (Apr. 02, 2020, 01.29 AM EDT), https://time.com/5814276/google-data-centers-water/
[5] Lokesh Choudhary, *Data Centres, Please Stop Drinking My Water*, Analytics India Magazine, (August 29, 2022), https://analyticsindiamag.com/data-centres-please-stop-drinking-my-water/
[6] Ministry of Coal, https://coal.nic.in/en/major-statistics/generation-of-thermal-power-from-raw-coal (last visited Sep. 19, 2023).

dioxide,[7] which places India in the top three of most greenhouse gas emitting countries. The advent of data centres is going to exacerbate this pollution by a massive scale. Draft policy on National Data Centre intends to accelerate the growth in the projected Data Centre capacity in the country with a capacity addition of 2000 MW by 2027. Presently, India has around 499 MW installed power capacity for Data Centres and is projected to grow to 1007 MW by 2023.[8] The forecasted growth rate of electricity and its subsequent consumption at such a pace will bring about disastrous consequences for the ambient air quality in India.

4.3 Infrastructure and Essential Service status

In the 2022-23 budget speech, the Finance Minister announced that data centres will be harmonized into the list of infrastructure. This is a will make it much easier to avail credit and funding from both Domestic and International sources. It will also ease the process of land granting and obtaining clearances as the process will be simplified to invite more investors. It has also been made an essential service to ensure that it can remain functioning even in times of uncertainty. Domestic firms such as Adani Enterprises and Hiranandani Group have also announced aggressive plans to set up data centres in Noida in the National Capital Region.[9] Adani Enterprises has been allotted 34,275 sq. meter land in Sector 62 where it will develop a world-class data centre with an estimated investment of ₹2,400 crore.[10] Large amounts of land would have to be cleared to accommodate the incoming demand of new data centres which will invariably take over the already depleting green cover in India.

4.4 E-waste Generation

Data centres have to function in optimum conditions in order to be running without repeated redundancies, and to ensure this the technology and hardware have to be replaced and revised quite often. Studies show that the carbon contribution for an average 1MW data centre includes 33,000lbs

[7] Matthew Chye and Carman Chew, *India's power output grows at fastest pace in 33 years, fuelled by coal*, Reuters, (Apr. 06, 2023, 04;59 AM GMT+5;30), https://www.reuters.com/business/energy/indias-power-output-grows-fastest-pace-33-years-fuelled-by-coal-2023-04-05/

[8] Press Information Bureau, https://pib.gov.in/PressReleasePage.aspx?PRID=1801017 (last visited on Sep. 19,2023)

[9] Surabhi Agarwal, *Govt. wants to make India a data centre hub, plans Rs. 12,000 crore sops*, The Economic Times, (Aug 24, 2021, 06:00 AM IST), https://economictimes.indiatimes.com/tech/technology/govt-wants-to-make-india-a-data-centre-hub-plans-rs-12000-crore-sops/articleshow/85572256.cms?from=mdr

[10] Live Mint, https://www.livemint.com/companies/news/adani-enterprises-gets-land-in-noida-sector-62-for-one-of-largest-data-centres-11627530549025.html (last visited Sep. 19, 2023).

of emissions from its plastic, 73,000lbs from aluminium and 377,000lbs from steel.[11] Only 22.7 per cent of the e-waste out of the total 10,14,961.21 tonnes generated in 2019-20 in India was collected, dismantled, and recycled or disposed of.[12] This waste is left stagnant in areas that do not possess the capability to reallocate the parts, which is usually in the North Eastern States of India or the remote areas of some states. This policy fails to mention how the waste of such daunting magnitude should be handled, let alone provide for a way to repurpose it. E-waste from data centres should be dismantled sustainably such that it can be reused into other appliances of allied functionality.

4.5 Constant Rackets

Over vast distances, the sonic exhaust of our digital lives reverberates: the minute vibrations of hard disks, the rumbling of air chillers, the cranking of diesel generators, the mechanical spinning of fans. Data centres emit acoustic waste, what environmentalists call "noise pollution."[13] For the people who are employed within these data centres and for the incidental neighbours, the constant racket of the data centres is bound to bring about uninvited consequences. The never ceasing reverberation cause symptoms such as hypertension, anxiety, sleeping disorder and concentration deprivation to manifest.

V. GREEN COMPUTING

Green computing is a rather recent development in the world of IT related service where computing giants make a shift towards more sustainable and environment friendly technologies. Since the contemporary digital world is moving towards more advanced computation involving machine learning and automation (Artificial Intelligence) and cryptocurrency mining, which are the most resource intensive cloud computations, there is never a better time to look into the endless possibilities of green computing.

The policy should encourage data centres to redirect evaporative cooling water into a closed-loop system for efficient water reuse. This way the limited supply of freshwater can be used judiciously.

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[11] Josephine Walbank, *Navigating and addressing the data centre e-waste crisis*, Data Centre Magazine, (Oct. 07, 2022), https://datacentremagazine.com/articles/navigating-and-addressing-the-data-centre-e-waste-crisis

[12] Radheshyam Jadhav, *Around 78% of India's e-waste is not being collected or disposed by the government*, The Hindu Business Line, (May 12, 2022, 09:49 PM), https://www.thehindubusinessline.com/data-stories/data-focus/around-78-of-indias-e-waste-is-not-being-collected-or-disposed-by-the-government/article65406820.ece

[13] Steven Gonzalez Monserrate, *The Staggering Ecological Impacts of Computation and the Cloud*, The MIT PRESS Reader, (Feb. 14, 2022), https://thereader.mitpress.mit.edu/the-staggering-ecological-impacts-of-computation-and-the-cloud/

India has been experimenting on the various forms of renewable energies, which makes it a perfect opportunity to use it on field. Data centres should be urged to mandatorily make use of energy generated by renewable resources for a fixed percentage of their consumption and invest a predetermined portion of their profits into renewable energies. Furthermore, the land granted should be placed a reasonable distance from any ecologically sensitive area and residential areas to minimize the harm done. Finally, the licences and grants provided to the Data centres should be made on a renewal basis such that it can be renewed only if there is substantial compliance with sustainable standards prescribed from time to time.

VI. CONCLUSION

India is a country that is undergoing digital revolution and it is at this juncture that it must make a crucial choice to adopt greener technologies whilst developing the field, by drawing invaluable lessons from the methods adopted by other countries further along the path. With 138 data centres, India is currently the world's 13th largest market. And 45 new data centres covering 13 million sq. ft and 1,015 MW of capacity, are expected to pop up by the end of 2025.[14] With such magnitudes of development in IT infrastructure and the economic benefit it will bring to India, the ecological consequences of an unregulated development should not be ignored.

The Policy framework released by the MeitY should be deliberated on from the point of sustainability and make stringent regulatory mechanisms to ensure accountability by data centres, before it is materialised as an Act. Since the release of the Policy on November 5th 2020, no progress is evident. The current framework prioritizes business but overlooks environmental concerns and green technology opportunities for Indian data centres. Adopting this policy as is would perpetuate environmental harm. The potential of the policy framework is grossly underestimated and does little but establish superfluous promises. Cloud computing is one of the most valuable investments of the century and must be optimally incorporated to benefit the nation in the long run. The policy framework is a positive step forward, yet there remains a considerable distance to cover in order to ensure its viability aligns with the country's ecological and environmental interests.

[14] Nidhi Singal, *India's data centre industry: Here's why the sector is seeing a flurry of new players joining in*, Business Today Magazine, (Apr. 05, 2023, 9:42 AM IST), https://www.businesstoday.in/magazine/technology/story/indias-data-centre-industry-heres-why-the-sector-is-seeing-a-flurry-of-new-players-joining-in-376118-2023-04-05