

SDIA Comments on Delegated Act

We welcome the drafts of the Annexes to the Delegated Act on the first phase of the establishment of a common Union rating scheme for data centers.

We especially support the approach the Commission has taken to include a holistic set of indicators in Annex 2 which consider all relevant aspects of digital infrastructure, from input resources (water, energy), to energy output, provided grid flexibility, to key indicators around the IT equipment and network traffic.

We applaud the well-researched and comprehensive approach for such an important area of Europe's infrastructure: its digital foundation for a thriving, sustainable digital economy.

Please find our short list of comments and suggestions below that we believe would strengthen the Drafts further, in line with the goals of the European Union, its Member States and Citizens.

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Supporting Comments by the Öko Institut e.V.

To avoid duplication, we explicitly would like to echo and support the “Feedback on Commission Draft Delegated Regulation” by the Öko Institut (dated 09.01.2024), which was submitted directly to the European Commission.

Timeline of the reporting

2026 is too late. Both the data center sector¹ as well as governments² agree that we will see outsized growth of digital infrastructure in the coming years. Yet, the reporting deadline will likely miss this critical period of growth, which needs to be closely monitored by policymakers & civil society.

Therefore, **we ask** to move back to the original deadline for the first reporting within 2024. The reporting entities should submit the required information by the end of 2024, so that infrastructure growth from the introduction of Generative Artificial Intelligence can be closely monitored.

Further, we **urge the Commission** to consider our proposal on the publication of the minimal data points as listed below (see “Minimal Public Data Set”) so that civil society organizations such as the SDIA may **create a long-term archive of the data** for accountability, transparency, research, and innovation which goes beyond the Eurostat storage period of 5 years. Most digital infrastructure has a useful life of 10 to 20 years, and thus environmental performance data should be stored over the same period.

¹ <https://www.cbre.com/insights/briefs/artificial-intelligence-what-is-its-future-and-how-will-it-impact-data-center-markets>

<https://www.forbes.com/sites/forbestechcouncil/2023/10/23/how-data-centers-are-evolving-to-meet-ai-demand/>

<https://www.datacenterdynamics.com/en/analysis/generative-ai-hype-opportunity-and-the-future-of-data-centers-part-i/>

“As AI use grows across Meta, more compute capacity will be needed. Peterson noted that Meta sees a future where **AI chips are expected to consume more than 5x the power** of Meta’s typical CPU servers.”, from <https://venturebeat.com/ai/meta-unveils-new-ai-data-centers-and-supercomputer-to-power-ai-first-future/>

² <https://digital-strategy.ec.europa.eu/en/news/commission-approves-eu12-billion-state-aid-seven-member-states-important-project-common-european>

Lastly, we ask the Commission to ensure that the reporting period is **clearly communicated** as 'annually' from the point of publication, ensuring that the data is collected and published henceforth on a regular basis.

Equal treatment to all operators

A change of date for the reporting obligations affecting colocation and co-hosting operators would introduce a favorable treatment and would delay by two years the first publication of a comprehensive overview of digital infrastructure in Europe. The recast of the EED should apply to every operator without distinction of market segment they belong to.

If there are concerns about the obligations colocation and co-hosting data center operators are subject to, the delegated act should try to solve them, not to find workaround to let them disclose incomplete data (reference: "Where a colocation and co-hosting data center operator cannot gather the information and key performance indicators referred to in paragraphs 1 and 2, it shall indicate the percentage of the data center computer room floor area covered by the information communicated").

Transparency

In the current draft only aggregated & calculated metrics will be made public, which hinders the work of civil society organizations & researchers. Digital infrastructure increasingly affects the lives of citizens – through noise, water-use, energy-use, etc.³

Citizens may ask:

- Why is there a data center in my neighborhood but we do not benefit from the heat it produces?
- What is the pollution generated by the diesel generators of the data center?
- How much energy does the data center in my area consume and how this affects availability of power & energy prices?

We have seen many cases of misleading, or no information provided by digital infrastructure providers, as well as efforts to obfuscate ownership of facilities⁴.

³ <https://apnews.com/article/data-centers-virginia-vote-hearing-digital-gateway-ea3d26b1746d251909dc1e9d5f9034d2> and <https://protectpwc.org/2023/12/31/virginia-business-tax-rich-data-centers-stir-up-county-controversy/>

⁴ <https://www.washingtonpost.com/climate-environment/2022/05/28/meta-data-center-zeewolde-netherlands/> and <https://www.datacenterdynamics.com/en/news/drought-stricken-holland-discovers-microsoft-data-center-slurped-84m-liters-of-drinking-water-last-year/>

Digital infrastructure touches the lives of all European citizens - both physically through the facilities, but also in an economic sense, through the digital economy. Being able to understand the correlation between the growth of the digital economy and its underlying infrastructure, down to a regional level is a key.

Minimal Public Data Set

We ask that **at least** the following data points be made public:

1. Annex II - 1) a - Installed information technology power demand
2. Annex II - 1) b - Data center total floor area
3. Annex II - 1) d - Total energy consumption
4. Annex II - 1) e - Total consumption of information technology equipment
5. Annex II - 1) i - Total water input
6. Annex II - 1) j - Total potable water input
7. Annex II - 1) k - Waste heat reused
8. Annex II - 1) l - Average waste heat temperature
9. Annex II - 1) p - Total renewable energy consumption
10. Annex II - 1) q - Total renewable energy consumption from Guarantees of Origin
11. Annex II - 1) r - Total renewable energy consumption from Power Purchasing Agreements
12. Annex II - 1) s - Total renewable energy consumption from on-site renewables

At the **very least**, the aggregation level must be reduced to the European **regional scale**, as some regions play an outsized role in the growth of digital infrastructure.

Data for Accountability

Further, **we ask that in addition**, the release of the following information to the public would support accountability:

1. Annex I - 1) a - Data center name
2. Annex I - 1) b - Owner and operator of the data center
3. Annex I - 1) c - Location of the data center
4. Annex I - 1) d - Type of data center

5. Annex I - 1) e - Year and month of entry into operation
6. Annex I - 2) - Information on the domain control by the reporting entity
7. Annex I - 3) - Information on the operation of the data center

Desired Data Set

As civil society organization, the data we hope to have public access to is structured like this:

Data Center Population

- absolute number of data centers
- distribution of reporting data centers by
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act).

Longevity

- average longevity of reporting data centers;
- distribution of reporting data centers by longevity (example: less than 2 years, less than 5 years, less than 10 years, more than 10 years, as per Annex I of the Delegated Act).

Size (floor area)

- total floor area ($\sum_1^N S_{DC}$, where "S_{DC}" is as per Annex II of the Delegated Act) of reporting data centers;
- distribution of total floor area ($\sum_1^N S_{DC}$, where "S_{DC}" is as per Annex II of the Delegated Act) of reporting data centers by
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);

- min, avg, and max of the floor areas (“S_{DC}”, as per Annex II of the Delegated Act) of reporting data centers.

Size (rooms)

- total number of rooms of reporting data centers ($\sum_1^N S_{CR}$, where “S_{CR}” is as per Annex II of the Delegated Act) of reporting data centers;
- distribution of total room floor area $\sum_1^N S_{CR}$, where “S_{CR}” is as per Annex II of the Delegated Act) of reporting data centers by
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline “N”, “N+1”, “N+X”, “2N”, as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);
- min, avg, and max surface of room floor areas (“S_{CR}”, as per Annex II of the Delegated Act) of reporting data centers.

Energy consumption

- total energy consumption ($\sum_1^N E_{DC}$, where “E_{DC}” is as per Annex II of the Delegated Act) of reporting data centers;
- distribution of total energy consumption ($\sum_1^N S_{DC}$, where “S_{DC}” is as per Annex II of the Delegated Act) of reporting data centers by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline “N”, “N+1”, “N+X”, “2N”, as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);
- min, avg, and max of energy consumption (“EDC”, as per Annex II of the Delegated Act) of reporting data centers.

Diesel Generators

- absolute ($\sum_1^N E_{DC_BG}$, where “E_{DC_BG}”, in kWh, is as per Annex II of the Delegated Act) and relative ($(\sum_1^N E_{DC_BG})/(\sum_1^N E_{DC})$, where both “E_{DC_BG}” and “E_{DC}” are measured in kWh, as per Annex II of the Delegated Act) amount of EDC contributions coming from backup generators;

- total energy generated by backup generators ($\sum_1^N E_{DC_BG}$, where “ E_{DC_BG} ”, in kWh, is as per Annex II of the Delegated Act) by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);
- min, avg, and max of energy generated by backup generators (“EDC_BG”, as per Annex II of the Delegated Act) of reporting data centers.

IT Power consumption

- information technology installed power of reporting data centers;
- distribution of information technology installed power of reporting data centers by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);
- min, avg, and max of information technology installed power of reporting data centers.

Environmental settings

- min, avg, and max temperature setpoints of the reporting data centers;
- distribution of temperature setpoints of the reporting data centers by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act).

Data traffic

- min, avg, and max annual incoming and outgoing data traffic within the reporting data centers;

- distribution of annual incoming and outgoing data traffic within the reporting data centers by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act);
- min, avg, and max amount of data stored and processed within the reporting data centers;
- distribution of amount of data stored and processed within the reporting data centers by:
 - type (enterprise, colocation, co-hosting, as per Annex I of the Delegated Act);
 - redundancy (baseline "N", "N+1," "N+X," "2N", as per Annex I of the Delegated Act);
 - information technology installed power (small, medium, large, and very large data centers, as per Annex IV of the Delegated Act).

Key Performance Indicators

On both Union and Member state levels, please replace the following metrics:

- (iii) average PUE for all reporting data centers in the MS territory, average PUE per type of data center, and average PUE per size category;
- (iv) average WUE for all reporting data centers in the MS territory, average WUE per type of data center, and average WUE per size category;
- (v) average ERF for all reporting data centers in the MS territory, average ERF per type of data center, and average ERF per size category;
- (vi) average REF for all reporting data centers in the MS territory, average REF per type of data center, and average REF per size category.

with the following ones:

- (iii) minimum, average, and maximum PUE for all reporting data centers in the [MS/Union] territory; minimum, average, and maximum PUE per type of data center; minimum, average, and maximum PUE per size category;

- (iv) minimum, average, and maximum WUE for all reporting data centers in the [MS/Union] territory; minimum, average, and maximum WUE per type of data center; minimum, average, and maximum WUE per size category;
- (v) minimum, average, and maximum ERF for all reporting data centers in the [MS/Union] territory; minimum, average, and maximum ERF per type of data center; minimum, average, and maximum ERF per size category;
- (vi) minimum, average, and maximum REF for all reporting data centers in the [MS/Union] territory; minimum, average, and maximum REF per type of data center; minimum, average, and maximum REF per size category.

Benefits of a vast public data set

Below we outline the benefits we see from releasing the 'Desired Data Set' as a public dataset that governments, researchers, civil society, and the industry itself can work with.

Greater Transparency & Accountability:

1. **Publicly Available Dataset:** By requiring digital infrastructure operators to report their environmental impact indicators, the EED can establish a publicly available dataset that allows for comprehensive analysis and comparison of data center performance across the region. This unprecedented transparency could enable stakeholders, including policymakers, environmental organizations, and the public, to gain insights into the energy consumption patterns and environmental impact of digital infrastructure.
2. **Enhanced Accountability:** The availability of data on the environmental impact of digital infrastructure can create a culture of accountability among owners & operators. Operators will be more motivated to optimize their energy usage and adopt sustainable practices to reduce their impact, as they are faced with public scrutiny and potential reputational risks associated with poor performance.
3. **Identification of Best Practices:** By analyzing the environmental impact indicators reported by various data centers, it becomes possible to identify best practices and benchmark performance across the industry. This information can be used to encourage the adoption of more efficient technologies and operational strategies, driving overall improvements in the sustainability of digital infrastructure in Europe.

Promoting Benchmarking:

1. **Comparative Analysis:** The EED's reporting requirements, could facilitate comparative analysis (assuming a rich data set is made public) of environmental impact & efficiencies across different data centers, enabling operators to benchmark their performance against industry peers. This competitive benchmarking can motivate operators to continuously strive for higher levels of efficiency, leading to a collective improvement in the industry's overall energy consumption.

2. **Identification of Deviations:** By being able to compare their environmental & energy performance to those of others, operators can identify areas where they may be underperforming and take corrective measures. This focused approach to improvement can accelerate the adoption of impact-reducing technologies and practices within specific data centers.
3. **Sharing of Knowledge:** With a public data set, the exchange of benchmarking data and insights can foster a spirit of collaboration and knowledge-sharing among digital infrastructure operators. This collective effort can accelerate the development and adoption of innovative energy efficiency solutions across the industry.

Deeper Understanding of the Digital Infrastructure Industry:

1. **Comprehensive Assessment:** A public dataset of the EED's environmental performance indicators can collectively provide a comprehensive assessment of digital infrastructure environmental performance in Europe, encompassing not just power consumption but also factors like cooling efficiency, heat reuse, and renewable energy utilization. This holistic view could enable a deeper understanding of the industry's energy footprint and the effectiveness of various optimization strategies.
2. **Analysis of Trends:** A public data set would enable tracking trends in the indicators over time, making it possible to analyze the overall trajectory of digital infrastructure energy efficiency within the European Union. This longitudinal analysis can reveal the effectiveness of policy interventions and provide insights into future energy consumption patterns. By making it public, researchers across Europe, adjacent industries, suppliers, and civil society organizations can partake in the innovation process, developing new ideas.
3. **Identification of Key Drivers:** By analyzing the correlation between KPIs and various factors, such as facility size, IT load, and location, it becomes possible to identify key drivers of energy efficiency in data centers. This knowledge can inform policy decisions, investment strategies, and operational practices to further enhance sustainability.

Task A Report: SERT exclusions

In the Task A report, under 9.2.1.1 it is mentioned that network servers and fully fault tolerant servers are excluded from the SERT rating.

It is not clear what fully fault tolerant servers refer to as most servers contain redundant PDUs, redundant storage disks and often also redundant networks. Therefore, it's not clear when a server is fully redundant or not and we would either ask to clarify or remove.

We urge the Commission to find a solution to **include the network servers** even if simply using their rated power capacity. This is in-line with the EU ambition for greater of transparency from

telecommunications infrastructure. We suggest referring to the recommendation "(3) Load correlation for Networks" by the Öko Institute (Policy Brief, 09.01.2024).

Considering ICT hardware resource-usage & electronic waste

Within the framing of the Energy Efficiency Directive, it is difficult to incorporate the resource-usage aspect, which is highlighted in the European Green Deal.

Yet within the framing of urging digital infrastructure operators to report the environmental performance of their facilities, it should be considered to require co-hosting providers, who own the ICT equipment to disclose the amount of ICT equipment which has been purchased per year (expressed in the amount CPUs, Total Memory, Total Storage). It should also be reported which % of the purchases has been invested in Refurbished Equipment. This would allow estimations of environmental impact.

Further co-hosting operators should be mandated to report the IT Asset Disposal streams; including 1) Re-Use and 2) electronic waste (WEEE) exiting their facilities. It's highly unlikely that this will create an additional burden, as both these data points are part of regular accounting practices & asset inventories.

The focus on energy reduction should not be conflicting the need to reduce hardware spending and resource consumption.

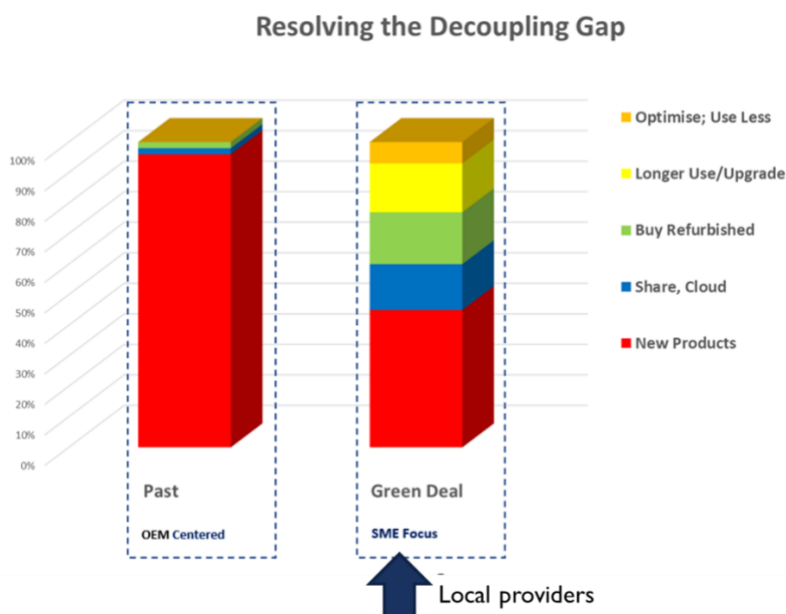


Figure 1. IT Asset Management Strategy – Free ICT Europe Foundation, 2022

Models to convert CPUs, memory, and storage capacity into an estimate of the contained critical raw materials, metals and other resources already exist. With the data being available, it becomes possible to calculate the embedded resources in those assets and take stock of potential materials that can be harvested for a European circular economy. With ICT equipment, the EU is already indirectly importing Critical Raw Materials, which can be recovered. This is an opportunity to take stock of the materials hiding within our digital infrastructure.

Avoiding unnecessary definitions

In the Annex II par. 1a, there are three options available to data center operators: the installed information technology power demand, the IT load acc. to EN_50600-4-2, and the data center rated information technology load. We suggest the European Commission to set a single requirement to guarantee a consistent reporting metric across the Union in line with “the common Union scheme for rating the sustainability of data centers [...] with an installed information technology power demand of at least 500 kW”. In case the choice would be the IT load acc. to EN_50600-4-2 the legislator should choose which Category (1, 2, or 3) should be used for the reporting.