

Sustainable Procurement Guidelines for Data Centres and Servers

Key Messages

Overview

The number of data centres is rapidly increasing, driven by economic growth, the surge in data demand—particularly from edge computing (where data is processed closer to users via smart devices)—and the rise of artificial intelligence. Since 2019, the number of internet users worldwide has more than doubled, while global internet traffic has expanded to [5.5 billion people worldwide](#). This rising energy demand contributes significantly to greenhouse gas emissions and environmental impacts.

Against this background, UNEP's United for Efficiency (U4E) initiative has developed the [Sustainable Procurement Guidelines for Data Centres and Servers](#). These Guidelines provide a starting point for government institutions and procurement authorities consider. They focus on key performance criteria and operating conditions that are most relevant and impactful for the selection of energy-efficient data centres and computer servers.

GLOBAL ENERGY CONSUMPTION OF DATA CENTRES

- Data centres consume large amounts of energy for servers, networking, lighting, air distribution and cooling systems.
- The International Energy Agency (IEA) [estimates](#) that data centres will drive more than 20% of the growth in electricity demand between now and 2030. The global electricity demand from data centres is set to more than double over the next five years, potentially consuming as much electricity by 2030 as Japan does today. In 2020, data centres and data transmission networks were responsible for [1% of energy-related greenhouse gas emissions](#), highlighting the growing environmental impact of this sector.
- Data centers are expanding in hubs such as Brazil, Malaysia, and Nigeria, driving digital growth but raising environmental concerns, including facing rising energy and water demands.

ENVIRONMENTAL FOOTPRINT OF DATA CENTRES

- Data centres are responsible for an estimated [200–250 MtCO₂e](#) (million tonnes of CO₂ equivalent) annually, according to the International Energy Agency.
- According to the International Energy Agency (IEA), data centers and data transmission networks, which are essential for digitalisation, were responsible for approximately 330 Mt CO₂ equivalent in 2020. This represents about 0.9% of energy-

related greenhouse gas emissions, or [0.6% of total global GHG emissions](#). This highlights the urgent need for more energy-efficient technologies.

- Many data centres use significant volumes of water. According to the World Economic Forum, [1 megawatt \(MW\) data centre can consume as much as 25.5 million litres of water each year only for cooling](#), comparable to the daily water use of around 300,000 people. This dependency can pose serious challenges, especially in regions already facing water scarcity.

ENABLING GOVERNMENTS THROUGH BEST PRACTICES AND COLLABORATION

- Governments play a central role in driving the transition to sustainable data centre development. The Sustainable Procurement Guidelines for Data Centres and Servers are designed to support public institutions and procurement agencies in selecting data centres and computer servers that meet high standards of energy efficiency and sustainability.
- By integrating these internationally recognized best practices (ISO/IEC, ETSI, CEN-CENELEC) into procurement frameworks, countries can lead by example and align infrastructure development with environmental and climate goals.
- The guidelines provide a set of recommendations for countries, including key performance indicators (KPIs) such as Power Usage Effectiveness (PUE), Cooling Efficiency Ratio (CER), Water Usage Effectiveness (WUE), Renewable Energy Factor (REF), and IT Equipment Utilization for Servers (ITEUsv) to promote efficient and sustainable data centre operations.
- The guidelines were reviewed by a wide range of stakeholders, including service providers, data centre operators, digital industry associations, and research institutions, to ensure they reflect practical, high-impact sustainability practices.

SUPPORT FOR DEVELOPING COUNTRIES

- The rapid growth of data centres in developing countries presents both challenges and opportunities. As these expand their digital infrastructure, adopting sustainable practices is crucial to prevent the escalating consumption of energy and resources.
- UNEP's guidelines serve as a key reference, as very few countries have established a comprehensive framework for sustainable data centre operations.

HOW COUNTRIES CAN APPLY THESE GUIDELINES

These guidelines enable countries to adopt measurable energy efficiency standards, integrate them into Minimum Energy Performance Standards (MEPS), and apply them to procurement specifications. Additionally, they support the development of incentive mechanisms, such as labelling schemes, to encourage data centre operators to meet sustainability criteria, further driving the transition to energy-efficient and resource-conscious practices.